

Ad Referee #1

Thank you for your feedback. It is a very good and important review, which leads – after the adaptation of the manuscript – to a better understanding of the paper.

Generally: We rephrased section 4.2. and adapted the citation of Lopez (1979). Besides, we included the aspect that chloroplasts in *E. excavatum* may not be functional due to the observation of Lopez (1979).

Results: We added values in the text, for a better description of our results. Additionally, a table of all pN and pC values will be given in the supplementary part.

Line 194: The difference in mean pC between the 20 (0.07318) and the 25 (0.07306) PSU levels is very low, but our statement is correct. It will be more clearly, after we added mean values to the text.

Lines 203-204: We corrected these sentences.

Lines 243-245: We improved the text here.

Lines 255-259: An increase of food uptake considering pC is just seen if you look at a correlation line based on the mean values and not via ANOVA. We added more information to this paragraph and also the aspect of a „tendency“ of food uptake.

Discussion: We added all your suggested literature and also rephrased section 4.2. (see above).

Lines 287-290: We added this information and reference to the manuscript.

Lines 293-301: We added more references, and also expanded the discussion by including the aspect of the accumulation of lipid droplets.

Section 4.2.: As described above, we have rephrased this section and inserted all your comments.

Minor comments:

Line 51: We skipped this phrase.

Lines 57-58: We adapted the literature.

Lines 63-64: We modified these sentences.

Lines 97-102: We removed this paragraph.

Lines 152-153: 20 foraminifera were put per tin capsule – we added this information.

Lines 151-157: Yes, we did this – we also added this information to the manuscript.

Line 199: Thank you for this hint, indeed we meant N uptake, we adjusted it in the text now.

Figure 1: We adapted this figure to your suggestion and also increased the size of the axis legend.

Line 262: We added this information to the section title.

Ad Referee #2

Thank you for your feedback. We cannot agree with you, that the experiments are not well designed to investigate targeted factors. Highly significant results were generated concerning the tested factors, which would be not possible if experiments were not well planned. Furthermore, we cannot agree with your statement of using inappropriate statistics. As described below, the usage of the term „marginal significant effect“ for a p – value of 0.080 (significance level 0.05) may not correspond to some conventions but $p=0.080$ is definitively a „trend“ and so we can deal with this result. This „trend“ allows us to speculate about the C uptake of foraminifera and therefore the accusation of overinterpretation/misunderstanding of the results seems inappropriate. Additionally, N uptake shows even a highly significant difference ($p<0.001$) and therefore justify statements like “significant differences of salinity based food uptake”. To avoid further misunderstanding, we clarified our statements in the discussion.

Major Points

1. The amount of food: The food (5 mg) was provided at the beginning of the experiment. At the end of the experiment there was enough food remaining in the dishes, otherwise the experiments would make no sense. Therefore, sufficient food was available for foraminifera during the whole experiment.

2. Food source: *D. tertiolecta* is very commonly and successfully used for feeding experiments in other studies (Lintner et al. 2020, Wukovits et al. 2018, 2017, Grabenstatter et al. 2013, Linshy et al. 2014, Nomaki et al. 2006, Heinz et al. 2002, Lee et al. 1961, ...). We use this algae for many years in our culture lab. In addition using *D. tertiolecta* enables us to compare quantitatively our results with previous studies investigating other species or variations with other factors.

Please keep in mind, we assumed that both algae are not a preferred food source, due to the low uptake values in comparison to other tested foraminiferal species. We speculated, that this low uptake may be due to the unfavorable food source, but since no one has yet examined the food uptake of *E. excavatum* we cannot compare our values. Maybe *E. excavatum* has generally a lower uptake of food than other foraminifera. But we rephrased this in the discussion so it becomes clearer to everybody. Also, we would be very careful to use this pC and pN values as absolute values! We think the activity of foraminifera depends strongly on seasonal fluctuations.

3. Marginal significant effect

As described in the introduction, we rephrased this part and changed „marginal significant effect into „trend“.

4. Incorrect results description

We corrected the mistakes and added the values to the text.

5. Data representation

We changed axes titles as suggested by reviewer 2, although “time (d)” would be more consistent to other studies published in Biogeosciences. For Fig. 3 we can think about a replacement of the name. We think it is very confusing to plot all points. This way you would have 9 data points at a single x-value and this is not easy to read. All data would be provided as a supplementary file in the final published version. We produced a bar plot for the numbers in tab. 3.

Minor points

We will check this PSU-problem and will than rephrase the paper.

L 18/24/54/80/104/124/136/173/183/184/191/197/199/250/264/293/315/321/369/393: We corrected this.

L 47: Morphological variability – we added this to the text.

L 110: Illuminated, we added this in the text now.

L 126: The calculation of the values is described in detail at 2.4. Isotope analysis

L 133: We took foraminifera >150 µm and only individuals which tests were totally filled with cytoplasm – we added this information to the text.

L 137: Also a modified seawater has a salt concentration and therefore it would be ok to use salt concentration, but we adapted the text here.

L 138: 15 PSU to the „Schwentinemündung“ and 25 PSU to the outer Fjord. The information is now added to the text.

L 139: We used fluorescence tubes from the incubator as a light source with 30 µmol photons m⁻² s⁻¹. The information is now added to the text.

L 140/150: 5 mg/cristallisation dishes. The information is now added to the text.

L 141: We know from other studies (not published by now) that after 1d you have no significant different food uptake by *E. excavatum* if you change the environmental parameters (light intensity, heavy metal concentration, ...).

L 144/242/244: 16:8 is correct and was corrected in the text

L144: We replaced the term “cells” by “foraminifera”.

L 152: It is okay. We did not see any tests broken up due to osmotic shock.

L 168 – 172: For background values, we used 20 foraminifera for one data point – also triplicates were done. These foraminifera were taken freshly from the main culture. These foraminifera were not incubated to prevent contamination of this individuals with isotopes!

L 199: This is right – we adapted the text here.

L 268: We rephrased this.

L 272: We considered this point and changed „preference“ into „uptake“.

L 275 We proofed this and adapted this point.

L 294: Yes, statistics was added.

Section 4.2.: The second part was rephrased, maybe now it becomes more clearly.

L 336: This part was also rephrased. But generally, if individuals contain fewer plastids it does not mean that they have no plastids, therefore they can also represent the general feature of kleptoplasts with even fewer plastids.

L 357: We treated it as a „trend“. But again, it will not change the interpretation of the results here.

L 378: We adapted this part to your suggestions.

Fig. 2: It was added to the caption. The error bars are deliberately shifted to avoid overlapping with the „light-data“. If you look carefully at fig. 1 it is the same and I think it is very useful to have more information about the error bars.

Ad. Referee #3

Thank you very much for your input and your ideas.

Major Concerns: We added some SEM pictures and clarified this.

Discussion: The part with Lopez was rephrased; also we added this suggested literature; we used this algae because we had stable cultures from both algae at our laboratory. Therefore we were able to produce isotopic labelled food sources. Another argument was, that *D. tertiolecta* is frequently used in other studies and so we were able to compare and discuss these results better. We fed with 5 mg algae per cristallisation dish and used a light intensity of 30 $\mu\text{mol photons m}^{-2} \text{ s}^{-1}$. We added this information to the text. All minor-comments were considered in the new manuscript version.

Materials:

Line 106: Light penetration depth was added.

Line 131: The experiments started 4 days after the sampling of the sediment.

Line 142: Food addition was 5 mg per cristallisation dish at the beginning of the experiments. After the experiments sufficient food still remained in the dishes so food was not a limiting factor.

Line 145: We used 30 $\mu\text{mol photonen m}^{-2} \text{ s}^{-1}$ from a fluorenscent tube.

Line 151: 20 foraminifera were used for 1 data point. At each combination of time and salinity we produced 3 data points (triplicates). We noticed no breakup of the tests during the washing steps, therefore we could say there was no loss of C and N.

Results: We increased the size and added the information to tab. 2.

Discussion:

Line 321/331: Text was adapted.

Line 336: We agree that we cannot state this, but that's the reason why we „assumed“ it – to avoid misunderstanding, we rephrased this part.

Line 353: The number of chloroplasts plays a minor role for food uptake – we changed the text here.

Line 368: At this point we were just discussing the food preference of *E. excavatum*. Of course they are not able to obtain kleptoplasts from dead diatoms. Foraminifera can just use chloroplasts from living benthic diatoms.