

## General comments:

This study investigated stable isotope niche width, and protein expression for vent crab *Xenograpsus testudinatus* from the shallow water hydrothermal vents located off Kueishan Islet, Taiwan. To do this, authors provided total of 16 samples, nine from the white vent (WV) and seven from the yellow vent (YV) for comparison. In addition, authors also compared the benthic community between the two habitats using the quadrates along four transects. However, in my opinion, the scientific quality and rigors of this manuscript do not fulfil the requirement of *Biogeosciences* for the following reasons:

1. There is no clear hypothesis or research question. Specifically, the authors failed to demonstrate why it is important to investigate the endemic vent crabs in different vent types in this shallow-water hydrothermal vent environment. It is unclear why this would be interesting for the scientific community to gain this knowledge. In addition, since protein expression depends on a variety of factors such as physiological (e.g. stress) and environmental condition (e.g. pollution, pH, etc.), I would assume the protein results would be different because the YV and WV conditions are vastly different, so where do the authors go with this information?
2. Sample sizes are too small for robust inference. Given that the main question in the paper is to examine whether the isotope niche widths of *X. testudinatus* from two vent types are similar, total of 16 samples are too small for this. Although authors used the corrected standard ellipse area (SEAc) to lessen the biases towards smaller sample sizes, I suspect additional data will change the SEAc and overlapped SEAc as well. The authors should discuss any potential biases due to the sample sizes and how the niche width may change when sample sizes are increased in the discussion.
3. Data needs more thoughtful interpretation. Several paragraphs in the discussion were written like results. The authors listed some previous literature without properly connected to the interpretation of their own data. For example, section 4.2 paragraph 1: The isotope values between the YV and the WV from this study were not significant different, but a previous study by Wu et al., (2021) did show differences in isotope values between the YV and WV in different sampling year. The authors mentioned Wu et al.'s work, but never discussed what factors might have contributed the different outcomes between the two studies. The authors also mentioned another study that compared isotope values of vent crabs between different sex but also did not connect to their own study. Another example, in section 4.2 paragraph 3, the authors compared the isotope niche overlap percentages observed in the vent crabs with hermit crabs from a totally different environment (in Pechora Sea). However, it is difficult to see why the hermit crab is relevant to the study site in KS. This part should be better explained or deleted.
4. The writing needs an overhaul: A) The Introduction is unfocused and did not present a clear hypothesis. The stable isotope and proteome methods in the Introduction seem to be out of place. B) There are a lot of repetitive geochemical information for the KS vent region in the Introduction and Method. Some of these values (e.g. temperature ranges, etc) don't even match. Similarly, there are a lot of repetitive information in the Results and Interpretation for the isotope niche width. This information needs to be condensed and streamlined. C) There are numerous unclear sentences in the manuscript, e.g. line 102-104, 105-107, 200-204 etc. D) The authors cited some previous work, but required readers to go into the original references and figure out what they mean, e.g. line 207-209: 4N and 9N.

**Specific comments:**

Line 51: Change “more depleted” to “lower”. You can say “something is depleted in 13C” but you can not say “depleted d13C values”. The correct way is to say “lower d13C values”

Line 59: Reference Lopez-Pedrouso et al., is missing in reference list.

Line 96: Unclear, please rephrase.

Line 116: The standard ellipse area is SEA, the corrected standard ellipse area is SEAc. Please change.

Line 151: Change “insignificantly different” to “not significantly different”. This expression has been used in several places, e.g. line 18-19, line 187, please change them all.

Line 164, Remove “the first study”. This is not the first study to investigate the feeding habits of vent crab (*X. testudinatus*) in the KS vent sites (see Wang et al., 2020 <https://www.biorxiv.org/content/10.1101/2020.09.09.288985v1.full>). Also, this kind of claim should be avoided in general.

Line 196: Change “insignificant differences” to “no significant differences”

Line 200: Changed to “varied from 18-34%”

Line 205: I am unclear why this reference in Pechora Sea is relevant to the study. The environment is completely different.

Line 206: The 4N and 9 N are study sites from the cited reference, but readers have to find the original paper to get this information. Again, it is unclear how the study site in Pechora Sea is relevant to KS site.

Line 212-220, See my general comments about interpretation.

Line 243: Remove “the first study”. This kind of claim should be avoided in general.