

***Interactive comment on* “Trace elements in mussel shells from the Brazos River, Texas: environmental and biological control” by Alexander A. VanPlantinga and Ethan L. Grossman**

Anonymous Referee #2

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Alexander A. VanPlantinga & Ethan L. Grossman prepared an interesting work which aimed to provide a better understanding of how environmental and biological factors affect the trace elemental composition in freshwater mussel shells. Yet, my feeling is that the authors may rephrase the title as proposed before, for example, focusing on the application of freshwater mussel shell trace elements to retrospective monitoring of riverine discharge. If the structure of the work went this way, the authors may likely shy away of one of the major flaws of this work – water samples were not filtered and acidified thereby hindering the reliable calculation of distribution coefficient. Actually, I think this parameter is not closely related to the story, as there are already several studies which reported such data even in freshwater bivalve species (Mg, Sr, Mn as

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well as Ba). As such, I would urge the authors to consider these suggestions, especially given that these results are very interesting.

Several minor comments listed below: Introduction – should be rephrased to give a clear clue of the work. Line 17, The definition of sclerochronology is not complete, simply referring to Wikipedia and references therein. Line 56, why did the authors expect a relationship between Sr/Ca and temperature?

Method Lines 99-101, I appreciate that authors are not trying to hide this flaw in the manuscript but this indeed strongly limits the strength of conclusions.

Results & Discussion Lines 142-143, if the authors reported and discussed trace elemental concentrations in shells in the form of element-to-calcium ratio (Me/Ca), so please stay consistent throughout the manuscript. In fact, calcium concentration in bivalve shells can most likely be consistent over time. Line 173, in the leading sentence, if you are talking about “significantly”, “p” value should always be given. Section 3.6, in my opinion, the authors should devote efforts to discussing the potential of Mn/Ca as an indicator of riverine discharge.

Conclusion The leading two sentences are nicely written to give a clear summary of the work. In line 345, removing Roach et al. (2014).

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