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3rd Writing Assignment

Niche conservatism above the species level

**Article Summary**

In this paper, the authors show the niche conservatism within higher taxa (above species level) using mammals in North America. They gather the geographical range of genus and family level of North American mammal fauna between Late Pleistocene and Late Holocene and compare how their geographical range has changed and how this phenomenon affects the niche conservatism of mammals. From this research, the authors found out that ecological niche of high level taxa were conserved even though there was geographical area change (due to ice melting during interglacial period). Moreover, Hadly et al., also states that genus-level niche model is less effected by the climate change compare to the species-level niche model because higher taxa model is more influenced by the intrinsic properties of mammals such as dispersal ability than environmental change. Thus, the authors conclude that higher level niche-model could be the useful model to figure out the ecological-niche model with global climate change since it is more stable and constant model compare to the species-level niche model.

**Things you liked about the paper**

One thing I like about this paper is that it gives glimpse of hope using vertebrate animals in qualitative research. Vertebrate animals are not usually dealt within the world of qualitative paleontology due to their small fossil amount. However, ‘proper’ number of mammal fossils in North America show that pattern and ecological model can be made from vertebrate fossils. Moreover, I like how Hadly et al., provide detail information in this paper. They give lengthy introduction to explain the concepts of ecological conservatism and what paper is going to represent. Also, their ideas are firmly supported from their research data and they suggest out intriguing question which can be researched in future from their ideas.

**Things you did not like about the paper**

I feel like due to the topic of this paper, the aspect of climate change and taphonomy is not discussed thoroughly in this paper. Most of limitation in terrestrial vertebrate fossils is coming from small number of fossil data. Even though, North American land mammal fauna gives us good amount of fossil data, it is still caught in the net of preservational bias. I know it is almost impossible to solve this problem in paleontology but providing the background of taphonomy would allow scientists to set more accurate model of geography.

Moreover, even though this paper tells us that climate change (environmental change) is important aspect of this paper, it seems like environmental change itself is not thoroughly discussed in this paper. The authors provide us only few aspects about environmental change: The retreat of glacial after Late Pleistocene and human’s agricultural expansion. However, I wanted to know how climate exactly affected the geographical range of animals. Besides of glacial retreat, did flora across the North America changed to affect niche of higher taxon? What about hunting of humans? Maybe hunting itself reduced the range of some animals, either? (Since hunting is also suspected as a reason for North American megafauna extinction).

**Evaluate the graphs and figures**

This paper’s graphs and figures are decent, in my opinion. Their result table seems to be useful to understand what authors try to convey in this paper. Also, figures are simple and clear enough to understand what these figures are trying to say. Table and figures are good visual guide for this paper. However, they themselves actually do not convey many of messages (except table).