**Niche conservatism above the species level by Elizabeth A. Hadly, Paula A. Spaeth, and Cheng Li**

This paper aims to show that ecological niches can be expanded beyond the species level to the genus and even family level. They use mammals since most of the genera denote actual evolutionary groups. In order to tell if climatic changes were the major factor influencing range size they used fossil evidence and current knowledge of geographic distribution of different genera and families over the last 130,000 years. This led them to see that climatic changes may have had some impact, but a far greater determiner for success at the level of genera were traits that are expressed in this higher level taxonomic group. These traits that were manifest at the level of genera can determine success at the species level as well, where competition is the major driving for behind range size. They also note that the expansion of range sizes can be attributed to a larger range for the resources due to retreating glaciers. On a final note, they mention that over the last one hundred years these conserved geographic range have begun to decline. This is likely due to hunting, range reduction from agriculture or urbanization and has had a significant impact on the stability of these groups. According to the article, preservation at the generic level rather than the species level is critical for North American mammals to continue into the future.

I felt that this paper was fairly easy to read. I enjoyed the discussion. It helped to solidify the ideas presented in the results into something tangible as opposed to statistical significances. This is a novel way for me to think about ecological niches, and I feel that most people think that saving each individual species is of the utmost importance. That would pose a challenge that is basically impossible to meet since species go extinct all of the time. The maintenance of niches at the level of genera can allow an ecosystem to exist as it always has. If a trait is lost due to the extinction of an entire family or genus (or a single species that makes up a genus) it could have detrimental effects on the ecosystem of which it was a part.

There was not much that I did not like in this article. I do have to say the introduction seemed a bit lengthy compared to the rest of the article. There were at least two paragraphs in the introduction that I feel should have been delegated to the methods section, but that could just be my personal taste. I also felt that the results were presented in a way that made it difficult for me to comprehend what exactly everything meant without being told in the discussion, but the discussion made up for it. The methods section seemed to have just been thrown in at the last minute, and it is odd to me that it is formatted differently. It does well to explain why they did what they did, however.

Overall I feel like the figures helped, but that table has some issues. I think it would have been better left in the supplementary documents. Throwing strings of numbers with five decimal places onto a sheet of paper can be dizzying for even the most adept statisticians. It looks like a bit of a mess to throw that right in the middle of the paper, but it is an easy way to see exactly what their results were. Figure 1 is an unfamiliar format for me, but it is fairly straight forward and makes the table comprehensible. Figure 2 was a great visualization of the range size data, and it made the data much more tangible in my opinion. The correlation in Figure 3 seems to hold more true for those genera with larger range sizes which also may be due to sampling methods. Figure 4 was my favorite because it helped to drive home the fact that the geographic range at the generic level expanded even with the extinction of one of the species. The other two species in the genus were able to fill the niche occupied by *Canis dirus*.