Investigating the Thermal Performance of Fossorial Species

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Background

Fossorial species = species that spend the majority of their lives underground

Hypothesis: We assume that fossorial species are exposed to a narrow range of temperatures, therefore, they should evolve a narrow thermal performance breadth

Figure 1. Soil temperatures fluctuate less as depth is increased

Methods

Data collection:Used the Sunday thermal tolerance database and classified ~1000 species as fossorial or not

Linear mixed effects model: created two LME models for mammals and ectotherms, fixed effects included fossorial classification, range difference between critical thermal maximum and minimum, and the difference between the environment maximum and minimum, random effects included family and order

Results

Ectotherms
- Fossorial ectotherms do not have a narrower thermal performance range

Mammals:
- Fossorial mammals do have a narrower thermal performance range!
- Fossorial mammals have a higher thermal minimum than non fossorial mammals

Next steps?
- Include other variables of interest to explain thermal limits, such as body size
- Assess whether fossorial species will be at a greater risk to negative climate change impacts

Conclusion

Acknowledgements

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References
