2023

Comparing Salamander Activity Through Temperature Humidity and Rain

William Jones
Cal Poly Humboldt, wsj5@humboldt.edu

Comparing Salamander Activity Through Temperature Humidity and Rain

William Jones – California Polytechnic University Humboldt – 1 Harpst Street Arcata, CA, 95521

Introduction

- Amphibians have been declining across the world for several decades now.
- One of the main reasons talked about for this is climate change (Walther et al. 2002)
- Salamanders have been shown to be an important indicator species to study how an ecosystem is changing (Heyer et. Al. 2014).
- There are a variety of salamander species that can be found in Humboldt county (Figure 1 and Figure 2).
- Looked at how salamander activity varied based upon meteorological conditions
- Looked at temperature, humidity, and presence of rain

Methods

- Visual encounter surveys conducted across 30 transects that were 15 meters long in the Arcata Community Forest
- Spotlighted for salamanders for 20 minutes per transect.
- Recorded weather variables off of NOAA website

Results

- None of the studied variables were shown to have any significant influence on salamander activity.
- Temperature, humidity, and rain were shown to not be significant and not have a high enough magnitude to affect salamander activity (Figure 1 and Figure 2).

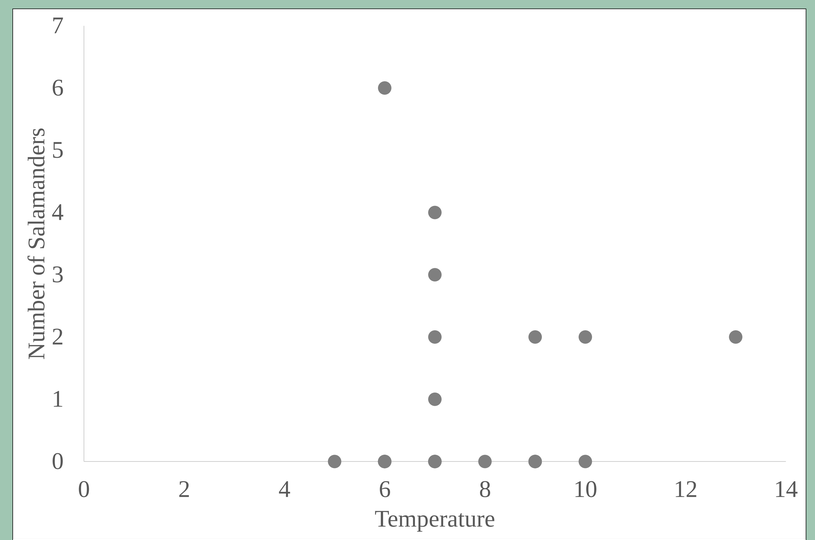

Figure 1. How the temperature at night affected the number of salamanders that were found while surveying in the Arcata Community Forest. Humidity levels followed the same pattern as temperature did.

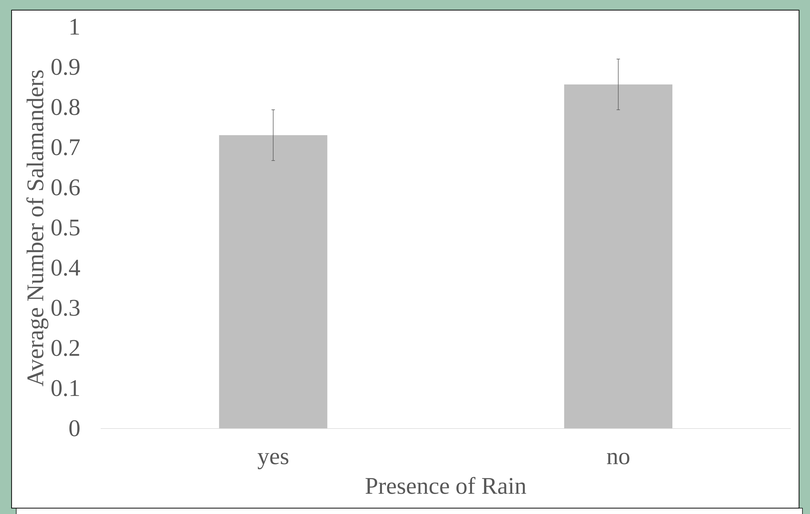

Figure 2. How the presence of rainfall during the day affected the average number of salamanders that were found while surveying the Arcata Community Forest.

Discussion

- There were several reasons that this lack of correlation might have been shown.

1. Abnormally cold season could have caused salamanders to retreat
2. Excess amount of rain could have caused issues (Hall 2022)

References

Hall, J. M. 2022. Rains From successive hurricanes reduce nesting success of the marbled salamander (*Ambystoma opacum*). Herpetological Conservation and Biology 17:180-195.

Heyer, R. W., M. A. Donnely, R. W. McDiarmid, L. A. C. Hayek, and M. S. Foster. 2014. Measuring and monitoring biological diversity: standard methods for amphibians. Smithsonian Institution Press, Washington, and London.

Walther, G.R., E. Post, P. Convey, A. Menzel, C. Parmesan, T. J. C. Beebee, J. M. Fromentin, O. H. Guldberg, and F. Bairlein. 2002. Ecological responses to recent climate change. Nature 416:389–395.

Acknowledgements

I would like to think James Jones and Brianna Jones for assisting me in my research throughout this project. I would also like to thank David Sinn for his assistance as my senior project instructor. And finally, I would like to thank Aidan Wilson for being willing to come out and survey in the rain with me.