A Tale of Two Morphs: Understanding the Influence of Temperature on Eastern Red-Backed Salamander Color Morphs

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Background

Study Species:
Plethodon cinereus, the Eastern Red-Backed Salamander

Research Question:

Does temperature affect *P. cinereus* color morph frequency and body condition within the same population?

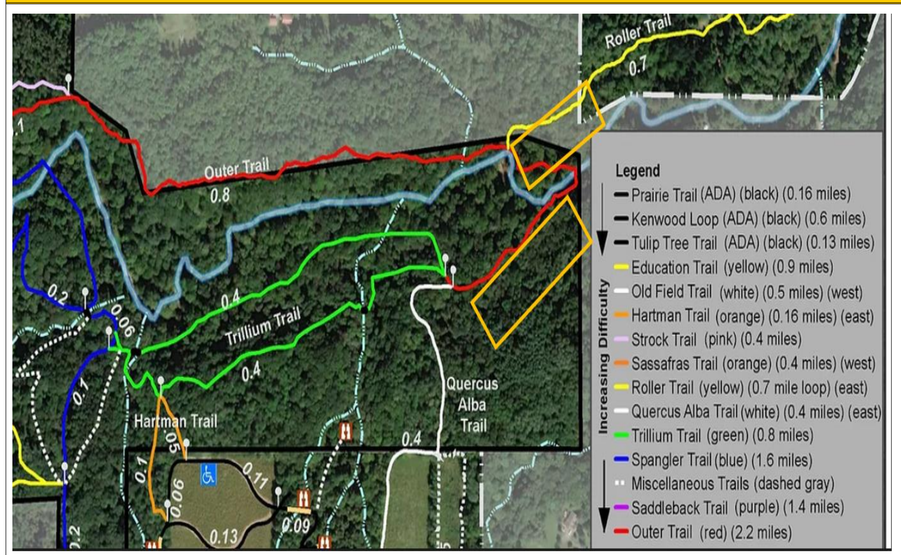
Hypotheses (based on previous studies):

- *P. cinereus* morph frequency will differ between the different slopes.
- *P. cinereus* body condition will differ between the different slopes.

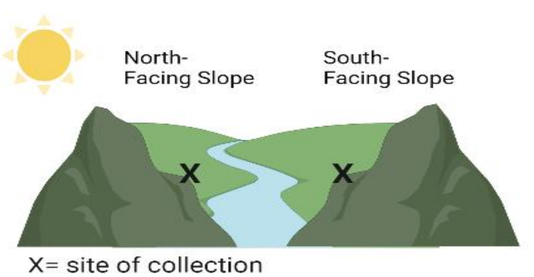
Predictions:

- Striped morph frequency will be higher in the North-facing (cooler) slope and lower in the South-facing (warmer) slope, and the opposite will be seen for unstriped morphs.
- Body condition will decrease in the South-facing slope.

Methods



Partial trail map of Wooster Memorial Park (formally known as Spangler Park).



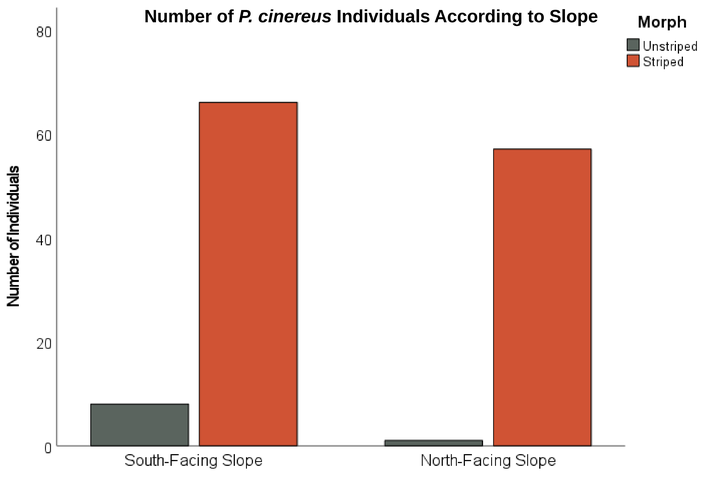
Example of salamander mass and length data

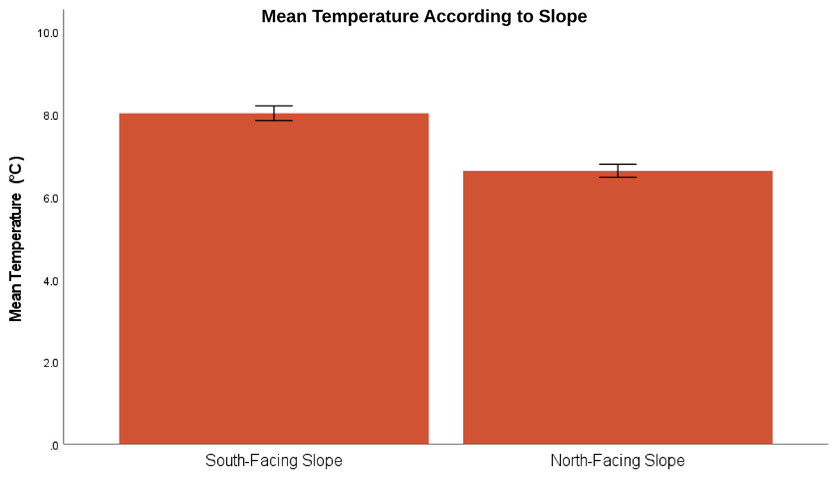
A **Morph Frequency**
1. Hourly Soil Temperature Readings
2. Collection/Identification of Salamanders
   - Unstriped=_____
   - Striped=_____

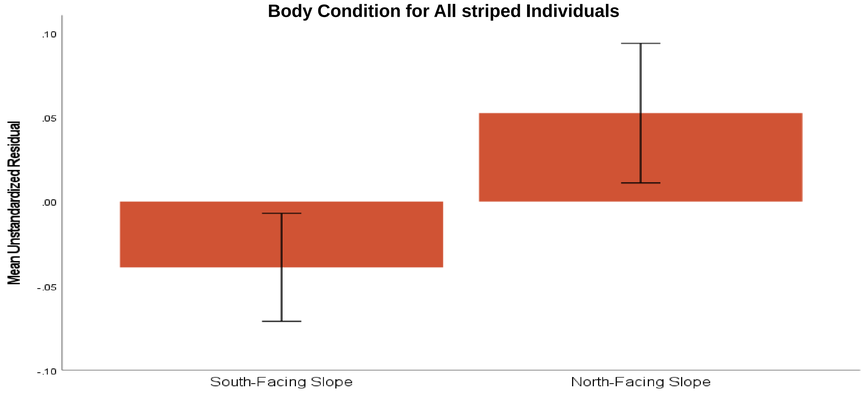
B **Body Condition**
1. Salamander mass
2. Salamander length
3. Input into ImageJ and SPSS

Created in BioRender.com

Results







Salamander Photo!

Discussion and Future Directions

- Striped morphs had worse body condition on the South-facing (warmer) slope.
- A higher frequency of unstriped morphs were found on the South-facing (warmer) slope.
- Color morph frequency patterns may be attributable to natural selection and/or phenotypic plasticity.
- More studies are needed to determine cause of morph frequency patterns.

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