Background Color Matching in Texas Horned Lizards

Introduction

- Background color matching has been hypothesized to be the primary defensive adaptation in horned lizards against visually oriented predators like birds. (1)
- Texas horned lizards are a threatened species in the state of Texas and the subject of many conservation organizations including TCU. (2)
- Current conservation strategies include reintroducing lizards in areas where they no longer occur.
- To date these reintroduction efforts have been unsuccessful.
- High predation is often blamed for the low survival rates of reintroduced lizards.
- Background color matching is currently not factored into reintroduction strategies.
- Biologists in Dean Williams’ lab at TCU are the first researchers to test the extent of back ground color matching in Texas horned lizards.

Methods

- We used a GIS analysis with a Munsell soils map of Texas and over a 1000 Texas horned lizard pictures from iNaturalist to compare average Color Overlapping Index (COI) scores calculated from a lizards background coloration to see how well it matched the soil color from where it was found.
- Lizard coloration was also qualitatively scored as gray, tan, or red and compared to the soil coloration from which it was found.
- We focused our preliminary analysis to 30 lizards from 3 counties in Texas: Karnes, Brewster, and Freer that had COI scores calculated.

Results

- Preliminary results look like Texas horned lizards match the surrounding substrates better than substrates from other areas.
- Supports the hypothesis that background color-matching is their primary defensive adaptation.
- We found significant differences in color matching between populations of lizards found in different areas.
- This leads to more questions for future study:
  - Why do some lizard populations match their surroundings better than others?
  - How can we use this information to inform conservation decisions in the future?

Discussion

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References