Investigating a Range Expansion Associated with Anthropogenic Alterations in Cope’s Gray Treefrog (Hyla chrysoscelis) Utilizing Prey Selection Parameters

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Introduction

- Amphibians are among the most vulnerable vertebrates to the impacts of climate change due to their morphological and physiological traits
- Habitat loss and alteration, along with fire suppression, are the most serious threats to amphibians
- Climate change also has numerous consequences on amphibians including:
  - breeding phenology changes
  - range shifts
  - population declines
  - morphological changes
  - decreased immune function
  - food availability

Cope’s gray treefrog (Hyla chrysoscelis):
- arboreal, insectivorous, nocturnal anuran
- occurs in Appalachian woodlands in the eastern U.S.
- Recently, the distribution in Nebraska has extended west from its original range

Hypothesis: H. chrysoscelis has expanded from its native range because of climate change and other human activities and this has initiated changes to their diet.

Purpose: The conservation status of H. chrysoscelis is of least concern, however, this study could provides insight into their ecology and other ecologically similar species.

Methods

- Study Sites:
  - Pioneers Park Nature Center (PPNC)
  - Wagon Tongue Creek Preserve (WTCP)
  - Crane Trust Nature and Visitor Center (CTNVC)
- Sample size: 60 frogs
- Capturing methods:
  - By hand at PPNC during nightly visits to breeding choruses
  - With the use of PVC pipe refugia duringally at PPNC, WTCP, and CTNVC
- Procedures and Analysis:
  - The stomach contents of each treefrog was flushed following a stomach flushing technique
  - Specimens were held for 48 hours and any fecal samples produced were collected
  - The extracted stomach contents was then analyzed for insect species and richness as well as the fecal samples
  - ANOVA was used to determine the relationship between prey selection and range location

Results

- 14 H. chrysoscelis were captured between PPNC and WTCP; data collection is ongoing
- Stomach flushing did not produce any stomach contents
- Contrary to a study by Mahan and Johnson (2007) of Hyla versicolor, it was determined that H. chrysoscelis feeding was nocturnal
- Difficulty in producing stomach contents has been cited in other frog species
- Fecal samples were collected but need to be analyzed for insect species and richness

Future Work

- Increase the sample size to produce a more robust data set
- Collect data at CTNVC with an increased number of PVC pipe refugia
- Collect specimens earlier in the day to improve stomach flushing success
- Analyze fecal matter

Literature Cited


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