Factors affecting foraging success of the Eastern Copperhead

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Introduction

• The Eastern copperhead (Agkistrodon contortrix) is evolutionarily adapted to be wait-ambush predators on the forest floor that feed on small vertebrates such as mice and small birds.
• However, A. contortrix shift their foraging behavior to actively hunting annual cicadas emerging on trees during the summer months.
• We aim to understand how different factors can attest their foraging success measured by number of cicadas it consumes.

Methods

• Sample at Koomer Ridge Campground
• Nightly sampling using circular transects
• Record number of cicadas and snakes seen per night
• Scan snakes for ID (PIT tags)
• Capture snakes for measurements

Results

• Positive, significant relationship between number of cicadas eaten by individual snakes and number of active cicadas each year (Fig 1) (t = 3.741, df = 41, P = 0.001).
• Positive, although non-significant, relationship between total number of cicadas eaten each year and the number of active cicadas (Fig 2) (t = 2.947, df = 3, P = 0.098).
• Medium-sized snakes tended to consume more cicadas than both smaller and larger snakes (Fig 3).
• Positive, significant relationship between number of nights copperheads visited the campground and number of cicadas eaten (Fig 4) (t = 6.782, df = 40, P < 0.001).

Conclusions

• Prior to these analyses, we were unsure how foraging success related to frequency. Interestingly, there appears to be a benefit of increased foraging success.
• As expected, copperheads consume more cicadas when there are more cicadas present.
• Potential limitations:
  - Each year contained a decreasing number of cicada emergence since 2019.
  - Data from 2022 were limited because of the REU program schedule.
  - Previous years might have underestimated foraging success because this is the first year we focused on it.
• Further research should be done to explain why we observed less cicada emergence in 2022 and how location of emergence affects cicada survival.

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