Effect of Cicada Emergence on Copperhead (Agkistrodon contortrix) Density in the Koomer Ridge Campground

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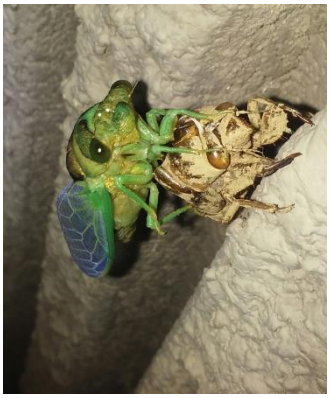
Introduction

Copperhead snakes are an abundant North American pit viper. They are nocturnal ambush predators and secondary consumers. This means they prey upon small mammals, reptiles and insects, but are also preyed upon by larger predators.

A newly observed behavior has been documented through this study of copperhead actively foraging for cicada.

Cicada are insects whom emerge from the ground on either an annual or periodic basis, depending on the species. They emerge from the ground as a nymph and climb up a nearby tree or other surface to molt. They



then molt their exoskeleton, leaving behind a shell or exuvia. When the emerging cicada dries, they can begin to make their distinctive chorus.

In the Koomer Ridge Campground, a high density of copperhead have been found coinciding with cicada emergence

Methods

Transects were established in the campground and two random arrays in the forest for comparison. Exuvia and copperhead were searched for on the transects, but the main focus of the transect search was to locate exuvia. The transect searches were started before the cicada emergence on Koomer Ridge to obtain a baseline.

Study Area

Koomer Ridge Campground

The Koomer Ridge Campground is a camping area in the Red River Gorge of the Cumberland District of the Daniel Boone National Forest. It includes 53 campsites. The primary focus area of the study encompassed sites 46 – 50. It is an open grassy area, with a sparse mix of large trees and saplings, having the greatest concentration near the center. This makes prime habitat for cicada, and easy prey opportunities for the copperhead.

Copperhead were searched for after dark with an active searching method. I used tongs, snake bags, and buckets to safely capture and store snakes. New captures were held till the next morning for processing.

New captures would be weighed, measured, sexed, PIT tagged, and released. Recaptures were released the night of capture, as to minimally disrupt their foraging behavior.

Conclusion

Based on preliminary data, the copperhead density increases in the campground due to aggregate foraging behavior; preying upon the cicada and nymphs. The data quantifies the unique behavior of the copperhead at Koomer Ridge by showing how the copperhead density in the campground sharply increased with the emergence of cicada in the campground. There appears to be a relationship with the number of copperhead in the campground corresponding with cicada emergence, but more data is required to definitively show this newly discovered phenomenon. Body data was analyzed for the snakes and the data shows that the males are significantly bigger than females as shown in figure 3.

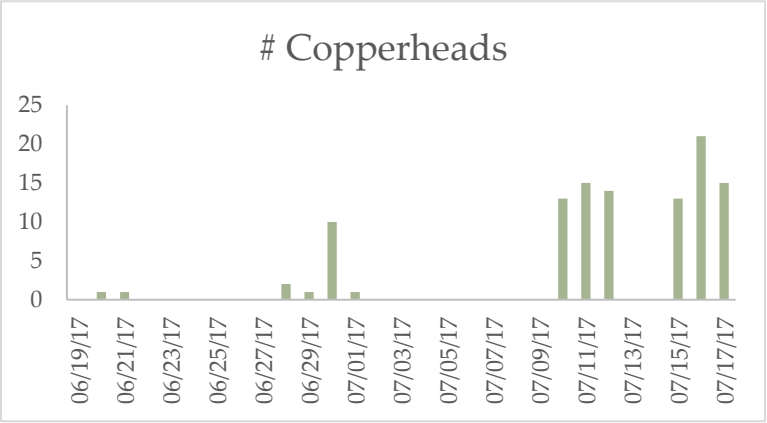


Figure 1

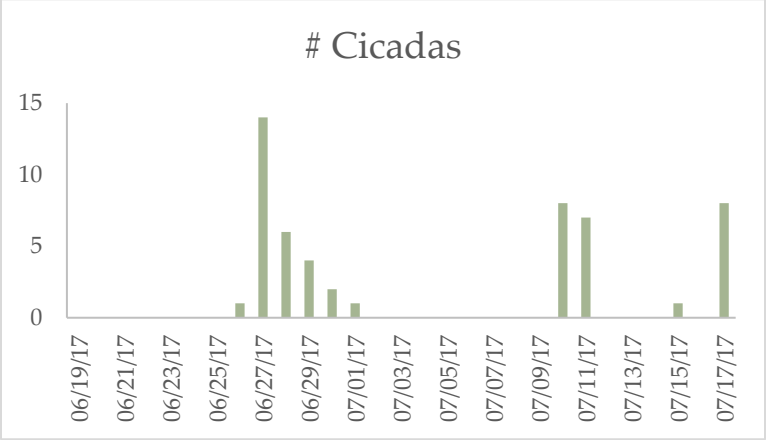


Figure 2

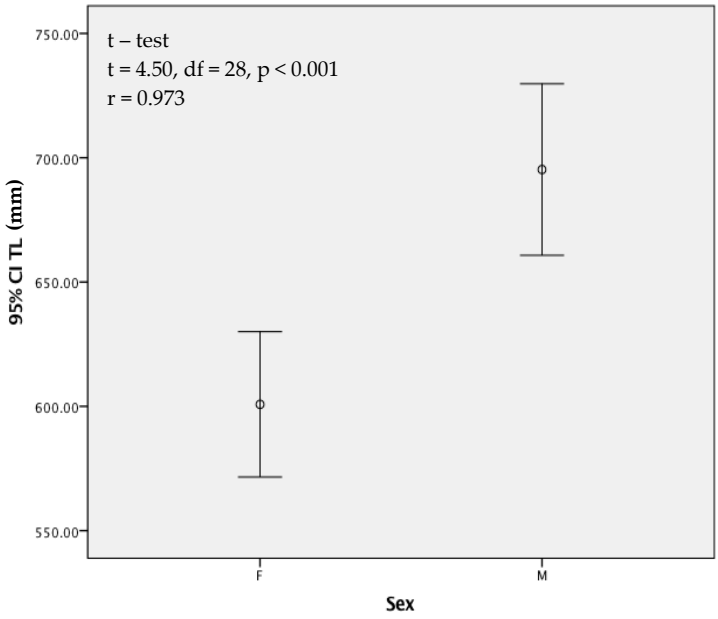


Figure 3

References

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