

# Feeding habits of the jumping spider *Anasaitis canosa* (Araneae: Salticidae) in the field

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*Anasaitis canosa* (Walckenaer) (Araneae: Salticidae), known as the twin flagged jumping spider, is widespread and abundant across the southeastern USA (Bryant 1940; Richman et al. 2011). This spider is especially effective when hunting ants (Edwards et al. 1974). Based on binary choices made under previous laboratory observations, *A. canosa* has been categorized as a generalist ant-eating spider (i.e., myrmecophagous) (Edwards et al. 1974; Jackson & Van Olphen 1991), exhibiting dietary specialization (i.e., stenophagy) (Pekar et al. 2012). However, spiders in nature have more choices of food source. In fact, *A. canosa* has been observed feeding on a diverse number of invertebrates by naturalists (Gruber 2017), but no studies have verified that this spider species exhibits the same prey preferences in the laboratory as in the field. We report here to bridge this gap and observe the diet of *A. canosa* in a semi-disturbed field location.

This study took place in the Lake Claire natural area (28.606817°N, 81.200061°W) at the University of Central Florida, Orlando, Florida, USA, at 3 sites within 10 m of each other (each about 2 m<sup>2</sup>; total size: 6.71 m<sup>2</sup>). Each site was observed for 10 min per d over two 15-d blocks from 24 Jun to 8 Jul and 6 to 21 Aug 2019. The number of spiders as well as each genus of ant associated with hunting behavioral data were recorded each d. Each time a spider attacked an invertebrate, it was counted as a single attack. Spider attacks were considered successful if it captured the prey and proceeded to feed. Spiders observed carrying prey were recorded as successful attacks, even if the original attack was not observed. Spider density in each site was calculated and compared with Student's *t*-test in Microsoft Excel and verified in R (R Core Team 2017). The relative frequency of attacks against each ant species was compared with the relative frequency each ant was consumed as prey using a chi-squared test in Microsoft Excel and verified in R to determine prey preference.

We observed a total of 484 spiders (70 females, 99 males, 315 unidentified sex) during about 17.5 h of observation conducted over the 30 observation d. The number of spiders observed each d per site was not significantly different (df 29; *p* > 0.05), with an average observed spider density of 2.43 ± 1.35 spiders per m<sup>2</sup> per d. Thirty-two attacks (1.83 per h of observation) were observed on a variety of prey (Table 1) with 40.6% overall success rate. Fifteen attacks were observed on ants, with a 60% success rate. The 17 attacks on non-Formicids had a 23.5% success rate. Moreover, the percentage of observations and attacks for ant genera consumed by the spider was not significantly different (df 4; *p* > 0.1) but there was a significant difference between ant genera observed and attacked (df 11; *p* < 0.01).

Based on our field observations, the feeding habits of *A. canosa* in the field do not fit the definition of stenophagy. The specialized attack strategy of *A. canosa* of seizing ant prey behind the head (Ed-

**Table 1.** Prey identified from field observations. "Times noted" collected only for Formicidae.

Prey	Times noted	Times attacked	Attacks successful (%)
Diptera			
Unknown spp.	–	13	2 (15.39%)
Formicidae			
<i>Brachymyrmex</i> sp.	3	NA	NA
<i>Brachyponera</i> sp.	1	NA	NA
<i>Camponotus</i> sp.	18	NA	NA
<i>Cyphomyrmex</i> sp.	29	3	0
<i>Crematogaster</i> sp.	13	NA	NA
<i>Dorymyrmex</i> sp.	1	1	0
<i>Formica</i> sp.	1	NA	NA
<i>Nylanderia</i> sp.	4	NA	NA
<i>Odontomachus</i> sp.	2	NA	NA
<i>Pheidole</i> sp.	38	3	3 (100%)
<i>Pseudomyrmex</i> sp.	10	1	1 (100%)
Unknown sp.	4	7	5 (71.4%)
Insecta			
Unknown sp.	–	3	2 (66%)
Salticidae			
<i>Anasaitis canosa</i>	–	1	0

wards et al. 1974) appears to make it more successful at capturing ants compared with other prey items (60% vs. 25%), but this fact doesn't change the type of prey it attacks. Although most of the successful attacks were against ants (69.2%), this spider species may be opportunistically attacking any prey crossing its path rather than waiting for specific prey. Pekar et al. (2012) posited that 7% of spiders observed will have prey and suggested that 500 spiders was a sufficient sample number to understand foraging choices. We observed 484 spiders, 6.6% with prey, which differs little from the observations of Pekar et al. (2012). This suggests that our results can be considered representative for understanding the foraging choices of *A. canosa* in semi-disturbed sites in Central Florida.

On an unrelated field note, we observed a case of scavenging by a male spider that picked up a dead mosquito and, after moving away from the observer, began to feed. This observation was excluded from calculations because our experimental aim is to determine the natural diet of *A. canosa* and this represented a feeding event under artificial conditions.

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## Summary

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The twin flagged jumping spider, *Anasaitis canosa* (Walckenaer) (Araneae: Salticidae) is a common ant-predating spider whose diet has been quantified previously only in the laboratory. We investigated the diet of this spider species in the field, as well as approximated its abundance in the observation area. During 30 d of observation, *A. canosa* occurred in a density of  $2.43 \pm 1.35$  spiders per  $m^2$  where 32 attacks were observed on a variety of invertebrate prey. These results parallel previous observations of spiders having greater success killing ant workers opposed to other invertebrates in addition to providing evidence that these spiders likely are not dietary specialists on ant prey.

Key Words: stenophagy; myrmecophagy; spider ecology; Florida

## Sumario

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La araña saltarina de bandera gemela, *Anasaitis canosa* (Walckenaer) (Araneae: Salticidae) es una araña depredadora de hormigas común cuya dieta se ha cuantificado previamente solo en el laboratorio. Investigamos la dieta de esta especie de araña en el campo, así como aproximamos su abundancia en el área de observación. Durante 30 días de observación, *A. canosa* se presentó en una densidad de  $2.43 \pm 1.35$  arañas por  $m^2$  donde se observaron 32 ataques en una variedad

de presas invertebradas. Estos resultados son paralelos a las observaciones previas de arañas que tienen más éxito matando a las hormigas trabajadoras en comparación con otros invertebrados, además de proporcionar evidencia de que estas arañas probablemente tienen una dieta especializada en las hormigas presas.

Palabras Clave: estenofagia; mirmecofagia; ecología de arañas; Florida

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