

**NATURAL HISTORY OBSERVATIONS OF  
*SALTICUS AUSTINENSIS* (ARANEAE, SALTICIDAE)  
IN NORTH-CENTRAL TEXAS**

The zebra spider, *Salticus austinensis* Gertsch, is a small jumping spider reported only from Texas. In north-central Texas it is widely distributed and in suitable habitats may reach high population densities. The localized density of this zebra spider as well as its diurnal habits, preference for open, exposed foraging grounds, and conspicuously bold black-and-white markings, makes it an ideal subject for field behavioral studies. Although some behavioral investigations into the closely-related *S. scenicus* (Clerck) are available (Jacques and Dill 1980, Am. Nat. 116:899-901), no such information exists for *S. austinensis*.

A population of *Salticus austinensis* inhabiting the outside walls of a brick veneer home in Wichita Falls, Texas, constituted our original sample. Observations of the spiders' activities from April through July 1986 were recorded on an almost daily basis for periods varying from ten minutes to four hours. A captive population of 18 adult zebra spiders (2 males, 16 females) was maintained in a single cage measuring 40 × 20 × 25 cm for further observations and collection of reproductive data. Field observations were conducted in Archer, Baylor, Clay, and Wichita counties of north-central Texas. The following generalizations regarding aspects of the natural history of *S. austinensis* are based on our observations under both natural and controlled situations.

**Periods of activity.**—Zebra spiders exhibited more restricted periods of active foraging than other species of sympatric hunting spiders (i.e., *Phidippus audax*, *Metacryba taenolia*, *Platycryptus undatus* and *Metaphidippus* imm.) and were usually the last to appear and first to retire. Although we have sightings from shortly after sunrise to one hour before sundown, most sightings were during the hours of maximum light from ca 1000 h to 1500 h. Since *Salticus*, like many species of spiders, is not a daily forager, the maximum number of sighted adult individuals at our original site fluctuated considerably.

Temperatures during our period of observations ranged from near 22° to 40° C, and seemed to have no major effect on spider activity. However, overcast and rainy days resulted in noticeably lessened activity. Winds seemed to curtail foraging on some days, especially when gusts exceeded 32 kmp.

**Distribution and habitat.**—Carpenter (1972, Southwestern Nat. 17(2):161-168) noted that the zebra spider in Wichita County was restricted largely to vertical surfaces such as tree trunks and walls of buildings. Throughout our study area, we found this to be true, although overhanging surfaces of buildings and rock cliffs were equally suitable. Preferred foraging surfaces were relatively smooth, exposed, and well-lit, presumably to avoid ambush by predators.

Single spiders were occasionally noted foraging along tree trunks or collected by beating shrubs and trees. *Salticus austinensis* may well be widely distributed in sparse numbers at such sites. Greatly increased densities of *S. austinensis* (surpassing that of other spider species combined) was predictable in our study area where large areas of open foraging surfaces were available (e.g., walls of buildings, rock-faced cliffs, concrete dams), and wherever their preferred species of prey (midges) were abundant. Midges are aquatic breeders and occur in large populations near water. Foraging surfaces along shorelines of lakes, streams, and

large stock ponds, or surfaces farther from the water (but still within flight range of midges) that are illuminated at night and consequently attract midges, permit sizeable *Salticus* populations.

**Prey species.**—Forty-six prey items were randomly removed from feeding spiders. The majority of the prey were chironomid midges (74%). These were followed by mosquitoes (11%), small lepidoptera (9%), two small dipterans (4%) and a small beetle. The largest observed prey was a house fly. The chironomids comprised the majority of prey due to their abundance and their ease of capture.

**Population biology.**—Sex ratios heavily favored females. Males, readily characterized by their more slender build and elongate, dark chelicerae, never exceeded 10 percent of any observed population. Because of this sex bias, and because zebra spiders do not usually emerge daily, males often were not detected at observation sites.

Intraspecific interactions are characterized by mutual avoidance, although territorial displays between adult males were observed on two occasions. In the first such instance, the spiders met head-to-head with chelicerae and pedipalps oriented laterally at nearly a 180-degree angle for about five seconds before mutual retreat. The second encounter occurred within a small collecting vial in which two specimens were held. This interaction was only observed during the latter stage. One male assumed an immobile (and presumably submissive) posture while the second animal with fully extended chelicerae and pedipalps approached from the left side. Contact was maintained for several seconds before retreat by the aggressor. The two spiders remained indifferent to each other and were subsequently transferred into the population cage. Jacques and Dill (1980, *Am. Nat.* 116:899-901) record intraspecific encounters between *Salticus scenicus* but do not specify the sexes of their specimens.

We did not observe the hibernacula (webbed shelters) of *Salticus austinensis* under natural conditions, as they are apparently in available cracks and crevices in and around foraging grounds. A small crack in the overhang of our original study site was the entrance to overnight shelter for several adult spiders, which were noted to emerge from it, often within seconds of each other. Hibernacula of captive individuals appeared to be randomly dispersed in the population cage. Although there is no evidence that communal denning commonly occurs, we speculate that such may be the case in instances where suitable shelter for hibernacula is scarce. However, this would appear to be more a case of opportunistic behavior than of true sociality.

Reproductive potential of *Salticus austinensis* is low. Of seven egg clutches laid by captive specimens, the range of egg/clutch is two to five (mean, 3.6).

**Interspecific relationships.**—Zebra spiders carefully avoid all contact with other species of spiders, regardless of size. During foraging, zebra spiders carefully skirted webs of various sizes and species of theridiids. Observed predation by other spiders on *S. austinensis* was a rare event. A large *Phidippus audax* (Hentz) was observed feeding on an adult female zebra spider. On two occasions, adult female *Salticus* were observed in the webs of theridiids, one was dead and the other was still attempting to escape. These webs appeared abandoned, as they were vacated and cluttered with debris, and the trapping was apparently accidental.

Several mud-daubers, both *Sceliphron caementarium* (Drury) and *Chalybion californicum* (Saussure), were noted near some of our study sites, but

examination of the nests revealed oxyopids, thomisids, and a single *Platycryptus* to be the prey of these wasps.

At sites where *S. austinensis* was the most abundant species, the second most commonly found spider was the larger salticid, *Platycryptus undatus* (De Geer). The two species appear to occupy similar niches, although *P. undatus* often reside in exposed hibernacula and appear to be less active foragers. The two species exhibit mutual avoidance. On several occasions, the larger *Platycryptus* was attracted by the movement of a foraging zebra spider, but would never approach. We once confined adult females of each species together in a small plastic vial for 24 hours in an attempt to induce agonistic behavior, but none was observed.

In summary, some aspects of the population biology of the zebra spider, *Salticus austinensis*, appear unusual for the family Salticidae, and deserve further study:

—ecological and behavioral relationships among *Salticus* individuals and between *Salticus* and *Platycryptus undatus*;

—indicated low reproductive potential of this species, so conspicuous in markings and foraging behavior, and therefore presumably more prone to predation.

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