RESEARCH NOTES

ANTI-PREDATOR BEHAVIOR OF *ACHAEARANEA TEPIDARIORUM* (THERIDIIDAE) TOWARDS *STENOLEMUS LANIPES* (REDUVIIDAE): PRELIMINARY OBSERVATIONS

Stenolemus lanipes Wygodzinsky is a reduviid hemipteran of the subfamily Emesinae. The Emesinae have been reported associated with spider webs by several authors (Howard 1901, Smith 1910, Wickham 1910, Dicker 1941, Usinger 1941, Brown and Lollis 1963, Wygodzinsky 1966). The degree of specialization of these insects for web-related prey is not clear, and probably varies between genera (Readio 1927). Snoddy et al. (1976), through the use of scanning electron microscopy, have revealed highly specialized morphological adaptations which enable *S. lanipes* to move about freely in spider webs. *S. lanipes* appears to be a predator on small instars of the common house spider, *Achaearanea tepidariorum* (C. L. Koch) (Theridiidae). The following behavioral observations were made in Griffin, Georgia and Athens, Georgia during July through October of 1983. They provide evidence for a specialized predator/prey relationship between *S. lanipes* and *A. tepidariorum.*

Adults of *S. lanipes* are commonly found resting in or near webs of *A. tepidariorum.* Young nymphs often occur in large groups in protected areas (house eaves, window ledges, etc.) inhabited by house spiders (pers. obs.). In one instance six nymphs were congregated under a ledge near a web containing an egg sac but no adult spider. The following day the eggs in the sac hatched and the nymphs dispersed throughout the web and actively consumed spiderlings. In laboratory observations an individual nymph devoured the contents of one egg sac (50-75 spiderlings) within three days. This apparently intense predation on spiderlings suggests that *S. lanipes* could have a considerable impact on the fitness of *A. tepidariorum.* Individuals successful at escaping predators are at a selective advantage and thus natural selection should favor anti-predator adaptations (Pianka 1978). This raises the question: do house spiders have any defenses against *S. lanipes?*

Laboratory observations were carried out in 13 x 8 x 3.5 cm clear plastic boxes. Adult *S. lanipes* are much smaller in terms of body weight than larger house spider instars. In two observed cases an adult bug introduced into the web of a larger instar house spider was consumed. However, on three occasions *S. lanipes* were observed to remain in the web for many days, until starvation. Though the spiders attacked and fed upon vestigal-winged *Drosophila* during this period, *S. lanipes* did not. The spiders either ignored or did not detect *S. lanipes.* When individual *S. lanipes* were introduced into the webs of early instar spiders, the behavior of the spiders was very different from the typical grasping, biting and wrapping response of theridiid spiders to prey (Turnbull 1973). Upon entering a web, the bug assumed an upside-down position, suspended by the

mid and hind legs, and periodically "bobbed". "Bobbing" behavior was characterized by spasmodic up-and-down oscillations, which the insect initiated by flexing its mid and hind legs while it probed the web with its raptorial front legs and arched leg-like antennae. Smaller spiders and spiderlings responded to these vibrations by frantically searching the web. Often the spiders seemed unable to locate the source of the vibrations, although they sometimes searched the web within 2-3 cm of the bug. If the bug was located, spiders approached cautiously and then retreated several times. In five instances spiders were observed to approach the bug and remain "face-to-face", within 1 cm of the bug, for several hours. In each case the spider was later found being eaten by the bug. In three other observations naive spiders would approach, circle, throw silk about the bugs legs and/or antennae, and retreat. This process was repeated several times. In two of the three interactions the bug was eventually entangled in silk and cut from the web. In the third interaction the bug was killed and eaten. These observations indicate that young *A. tepidariorum* respond to *S. lanipes* with caution not usually shown to a prey item which is comparable to the spider in size.

Many details of the natural history of *S. lanipes* need to be investigated. Its morphological adaptations and predilection for spiderlings plus the high degree of egg sac guarding and maternal care in *A. tepidariorum* leads to the prediction of complex predator/anti-predator strategies. Further field and laboratory observations are needed to reveal the extent of their evolutionary relationship.

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