SHORT COMMUNICATION

Habitat selection and potential antiherbivore effects of *Peucetia flava* (Oxyopidae) on *Solanum thomasiifolium* (Solanaceae)

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Abstract. Several spider species use plants as shelter and foraging sites, but the relationships among these organisms are still poorly known. Lynx spiders of the genus *Peucetia* do not build webs, and many species live strictly in plants bearing glandular trichomes. *Peucetia flava* Keyserling 1877 inhabits *Solanum thomasiifolium* in southeastern Brazil and usually preys on herbivores and other small insects adhered to the glandular trichomes of its host plant. To evaluate the potential anti-herbivore protection of this spider species for *S. thomasiifolium*, we glued termites used as herbivore models on trichomes of *S. thomasiifolium* and on neighboring plants lacking glandular trichomes. Leaf miner damage and spider density were recorded for *S. thomasiifolium* plants in July 1997. There was a positive relationship between plant size and spider density. The removal of termites in *S. thomasiifolium* by *P. flava* was higher than in plants without glandular trichomes. The leaf miner damage was negatively related to spider density. Our results suggest that *P. flava* may be an important plant bodyguard in the defense of *S. thomasiifolium* from its natural herbivores.

Keywords. Animal-plant interactions, host plant specificity, lynx spider, plant protection
removed. Termites were affixed with non-toxic white glue (Cascolar®) to plants without glandular hairs to prevent them from falling off. This glue had no influence on spider behavior (unpublished data, GQR). Additionally, previous studies have used similar methods for the same purpose and shown that this type of glue does not interfere with predatory behavior (e.g., Oliveira et al. 1987). All the plants were checked once during the experiment in an attempt to record predation events. The removal rate of termites from both plant types was compared using a *t*-test for independent samples.

To estimate the relationship between *P. flav* and herbivory on *S. thomasiifolium*, we calculated spider density and estimated leaf miner damage in July 1997. We evaluated leaf miner herbivory because it is the commonest kind of damage caused by herbivores on *S. thomasiifolium* in the study area (personal communication). Plants were randomly selected, and four branches of each individual were evaluated for leaf miner damage. The numbers of intact and damaged leaves were recorded for 20 plants, and the ratio between damaged and total leaves was calculated. Spider density was estimated as the ratio between the number of spiders and the plant size in cubic meters. The relationship was tested using linear regression. Data normality and homoscedasticity were verified. Logarithm transformations were applied when necessary prior to the analyses (Zar 1999).

Voucher specimens of the spiders collected (males and females) were deposited in the Arachnological Collection of the Laboratório de Artrópodes Peçonhistos, Instituto Butantan, São Paulo (accession numbers: IBSP 12982, IBSP 12940, IBSP 12891, and IBSP 12887). *Solanum thomasiifolium* exsiccates were deposited at Universidade Estadual de Campinas Herbarium (UEC-Herbarium).

In 1996, we examined 17 *Solanum thomasiifolium* plants and found 57 *P. flav* individuals. In 1997, we recorded 694 spiders on 59 plants. Linear regressions indicated that spider abundance was positively correlated with plant size during both sampling periods (Figure 1). Figure 2 displays the results of the termite removal experiment on the 30 observed plants, with significantly higher predation rates on *S. thomasiifolium* than for other plants (*t* = 3.88; *df* = 28; *P* < 0.001). *P. flav* accounted for 11 of the 17 termite predation events observed on *S. thomasiifolium* (Figure 3). The other six events were recorded on plants without glandular trichomes. These termites were removed by ants (*n* = 4) and salticid spiders (*n* = 2).

Larger plants had more spiders, probably because they provided more suitable habitat sites for the spiders. In a study of salticid-bromeliad association, Romero et al. (2007) showed that *Coryphasia monteverde* Santos & Romero 2007 inhabited large rosettes of...
Figure 3.—Peucetia flava preying on termite placed on Solanum thomasiifolium (Photo G. B. J.).

Aechmea distichantha and suggested that these spiders may actively select their microhabitats based on host plant size. Additionally, large plants may also represent a more suitable resource for many insects that constitute the main prey of the spiders. This hypothesis was proposed by Romero & Vasconcellos-Neto (2004a), who reported that another bromeliad-dwelling salticid, Eustiromastix nativo Santos & Romero 2004, had a similar microspatial distribution on two bromeliad species, possibly because larger plants have a higher probability of being visited by insects as a result of their large surface area.

Although we have no replicates or exclusion experiments demonstrating the influence of spiders on leaf miner density, observational and correlative data associated with the experiment using termites as herbivore models suggest that P. flava might act as an important plant bodyguard. The higher predation rates of the termite prey models on S. thomasiifolium compared to species without glandular trichomes suggest that P. flava is a very active insect predator, apparently surpassing the performance of sympatric ants and salticid spiders.

The role of Peucetia species in the reduction of the herbivore population and its destructive impact has already been already demonstrated in studies with other plants. For instance, Louda (1982) has shown that P. viridans (Hentz 1832) can decrease herbivore damage to its host plant, Haplopappus venetus (Asteraceae). In addition, Romero et al. (2008) recently showed that P. flava and P. rubrolineata maintain mutualistic relationships with their host plant, Trichogoniopsis adenantha (Asteraceae), the spiders removing herbivores from their host plants and the glandular hairs of the plants improving the spiders’ growth by facilitating predation on adhering insects.

In this study, we have provided evidence that the relationship between P. flava and S. thomasiifolium might be mutualistic. However, more definite conclusions should be obtained in the future by using spider exclusion experiments in the field.

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