FIRST RECORD OF A MANTISPINE LARVA (NEUROPTERA: MANTISPIDAE) ASSOCIATED WITH AN ADULT CADDISFLY (TRICHOPTERA: LEPTOCERIDAE)[1,2]

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ABSTRACT: A first instar of *Mantispa pulchella* was discovered clinging to the abdomen of an adult *Oecetis inconspicua*. This is the first record of a larva of the Mantispinae naturally infesting an insect. Because this association is most likely an act of phoresy and not a true parasite-host relationship, it is possible that such phoretic behavior may play a minor role in larval mantispine dispersal.

All known larvae of the mantispid subfamily Mantisipinae develop exclusively by feeding on spider eggs (Redborg and MacLeod 1985, Brushwein 1986). First instars employ two general strategies in order to gain access to spider eggs: larvae may either seek out and penetrate an egg sac, or they may board spiders and enter the egg sac as the eggs are being laid. Larvae which board spiders can maintain themselves for several months by feeding on host hemolymph and can be considered true ectoparasites at this stage (Redborg and MacLeod 1984). First instars of *Mantispa viridis* Walker have been shown to be obligate egg sac penetrators (Redbord and MacLeod 1985, Brushwein 1986), larvae of *Climaciella brunnea* (Say) to be obligate spider boarders (Redborg and MacLeod 1983), and larvae of *Mantispa uhleri* Banks to use both strategies (Redborg and MacLeod 1985). Recent studies indicate first instars of *Mantispa pulchella* (Banks) are also obligate spider boarders (Hoffman and Brushwein 1988).

While sorting through an ultraviolet light trap sample, a single first instar of *M. pulchella* was discovered clinging to the abdomen of an adult female caddisfly, *Oecetis inconspicua* (Walker). This is the first record of a mantispine larva being found associated with an insect. The sample was collected on 20 July 1983 in Crawford County, Georgia, approximately 5 miles SSE of Roberta at Spring Creek, a small blackwater stream bordered with typical low riparian coastal plain vegetation. The light trap used was a Ellisco® trap with a 15-watt ultraviolet bulb, operated by R.W. Holzenthal

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and the junior author. The first instar of *M. pulchella* and the adult female *O. inconspicua* were deposited in the Clemson University Arthropod Collection (CUAC), Department of Entomology, Clemson University, Clemson, South Carolina.

Batra (1972) confined first instars of the mantispine *C. brunnea* with various insects and spiders, and reported that larvae boarded workers of a bumblebee and a wasp, as well as a spider. Redborg and MacLeod (1983) have since shown *C. brunnea* to be an obligate spider boarder, attributing the earlier report of boarding Hymenoptera to the inability of larvae to determine the suitability of the host until after contact is made. We propose that the occurrence of the first instar of *M. pulchella* on the abdomen of *O. inconspicua* was the result of a similar exploratory boarding.

During the day, adult caddisflies often rest in concealed crevices or on foliage near aquatic habitats (Ross 1944). All of the known spider hosts of *M. pulchella* actively hunt rather than construct webs for prey capture, almost all are arboreal hunters, and most of them spend the day in silk retreats in crevices or on foliage (Hoffman and Brushwein 1988). Therefore, adult caddisflies often occur in the microhabitats that first instars of *M. pulchella* are most likely to occupy, so that occassional boardings would not be unexpected. In addition, adults of *O. inconspicua* as well as other members of the Leptoceridae are often hosts for parasitic mites (Resh and Haag 1974). This is in contrast to the general lack of parasites found on members of other caddisfly families, and Resh and Haag (1974) have suggested that either a behavioral or morphological feature may be unique to the Leptoceridae that renders them more susceptible to parasitic infestations.

The extent to which mantispine larvae on spiders exploit their hosts as dispersal agents is unknown, but the potential would seem to be considerable in light of the long period of time that larvae can survive on spiders. However, the use of insects as dispersal agents would be limited to short periods of time unless larvae could maintain themselves on the hemolymph of the host insect. At present, there is no evidence that the *M. pulchella* larva fed on caddisfly hemolymph. The abdomens of *M. pulchella* larvae on spiders are commonly distended, presumably due to hemolymph intake, and the dorsal banding pattern becomes correspondingly more diffuse the more the abdomen is distended (Hoffman and Brushwein 1988). The abdomen of the larva found on the caddisfly was not distended and the dorsal banding pattern was distinct, thereby indicating that the larva had not fed extensively, if at all. Therefore, the use of non-aranaeoid hosts for dispersal by mantispine larvae, while intriguing, must at this time be considered an occasional and probably accidental extension of their normal boarding behavior.

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