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# Size-selective oviposition by phorid (Diptera: Phoridae) parasitoids on workers of the fire ant, *Solenopsis saevissima* (Hymenoptera: Formicidae)

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ABSTRACT. *Size-selective oviposition by phorid (Diptera: Phoridae) parasitoids on workers of the fire ant,* Solenopsis saevissima *(Hymenoptera: Formicidae).- Pseudacteon tricuspis* and *Pseudacteon curvatus* (Diptera: Phoridae) oviposit on different sized workers of *Solenopsis saevissima* (Hymenoptera: Formicidae). The phorid parasitoid, *Pseudacteon tricuspis*, oviposited on significantly larger workers of the fire ant *Solenopsis saevissima*, than did another coocurring species, *P. curvatus*. Because of the defensive posture taken by workers and the abandonment of the foraging area by larger workers, an array of phorid parasites might affect different caste components of the colony and affect their efficient deployment in exterior tasks.

KEY WORDS. Formicidae, *Solenopsis*, Phoridae, *Pseudacteon*, Oviposition, Behavior, Selection

A number of species of phorid flies have been reported as probable parasitoides of a number of species of tropical fire ants, *Solenopsis* spp. in South America (Williams & Whitcomb, 1974; Williams, et al., 1973). Recently, Feener (1987) has described size-selective patterns of oviposition in *Pseudacteon crawfordi* Coquillett on *Solenopsis geminata* (F.), and subsequently called attention to the fact that the presence of phorid flies results in diminished ant foraging behavior (Feener & Brown,

In south-eastern Brazil, at least 7 species of *Pseudacteon* have been observed ovipositing on the fire ant *Solenopsis saevissima* (Fr. Smith) (Pesquero, et al., in press). Here, we describe the oviposition behavior of two sympatric species of *Pseudacteon* on differing worker sizes of *S. saevissima* in the field.

On July 3, 1992, between 10:30 and 11:30 h, we placed a laboratory colony of *S. saevissima* in the field in a white plastic tray (25 X 40 X 5 cm), whose sides had been covered with Teflon@ to prevent the escape of workers. During the observation period, we collected phorids after ovipositional attempts with an aspirator, and collected the parasitized ant for later measurement. Species identification was performed with live flies in a glass vial after chilling on ice under a stereo microscope and was based upon the characteristic ovipositor of each species. Upon identification of

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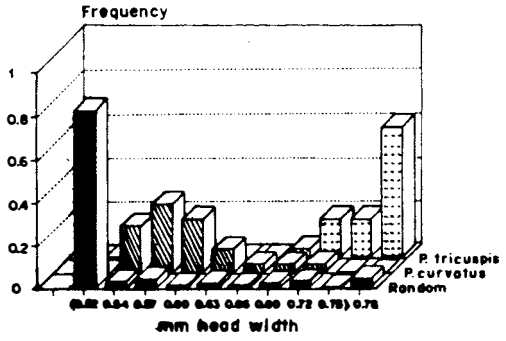


FIGURE. 1. The distribution of ovipositional events by *Pseudacteon curvatus* (N = 28) and *Pseudacteon tricuspis* (N = 27) on differing worker sizes of the fire ant, *Solenopsis saevissima*, and a random sample of foraging workers (N = 109).

[La distribución de oviposiciones por *Pseudodaceton curvatus* (N = 28) y *Pseudaceton tricuspis* (N = 27) en obreras de tamaños diferentes de la hormiga roja, *Solenopsis saevissima*, y una colección aleatoria de obreras externas al nido (N = 109).]

the phorid, it was released near the tray. Posteriorly, we collected a random sample of ants under the same conditions from the laboratory colony which were foraging during the same time period to compare size distributions with those which had been parasitized. For both parasitized and random samples, we measured the maximum head width of the workers, which has been used previously to index worker size variation (Wilson, 1978).

Twenty-seven workers were parasitized by *P. tricuspis* Borgmeier, and 28 by *P. curvatus* Borgmeier during our observation. Both phorid species oviposited on larger individual workers than expected when compared with our random sample (n=109) [Mann-Whitney U test (Siegel 1956): *P. tricuspis*, z=8.529, p<0.01; *P. curvatus*, z=6.134, p<0.01] (fig. 1). However, *P. tricuspis* oviposited on workers which were significantly larger than those attacked by *P. curvatus* (fig. 1) (z=6.297, p<0.01).

During these observations, workers of *S. saevissima* were observed to take a characteristic posture and other defensive behaviors described by Feener (1987). Larger workers rapidly entered the plastic nest box whenever phorids were present.

Feener (1987) commented that *P. crawfordi* parasitized larger workers of *S. geminata*, and that this might have a serious effect on the ant's foraging behavior, which he later confirmed (Feen 5-13).

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