

# A New North American Species of *Pseudacteon* (Diptera: Phoridae), Parasitic on *Nylanderia arenivaga* (Hymenoptera: Formicidae)

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**ABSTRACT** A new species of ant-parasitizing *Pseudacteon* Coquillett phorid is described. *Pseudacteon gracilisetus* n. sp. was discovered parasitizing the ant species *Nylanderia arenivaga* (Wheeler). This species is the second known *Pseudacteon* parasite of *Nylanderia* ants.

**KEY WORDS** *Nylanderia*, parasitism, *Pseudacteon*, *Solenopsis*

The phorid fly genus *Pseudacteon* has received extensive attention recently because of their potential to control introduced fire ants (*Solenopsis* Westwood) in North America and elsewhere. More than 100 papers have been published on these flies since 1992, when Feener and Brown (1992) first proposed that they could be used to control introduced fire ants by disrupting the foraging behavior of the workers. They are now probably the best-known group of phorids with respect to the biology, behavior, and population spread of the introduced species.

The total species diversity and taxonomy of *Pseudacteon* is not yet well studied, however. Of the 62 described species, the ≈20 species that commonly attack *Solenopsis saevissima* group ants have been keyed with excellent illustrations (Porter and Pesquero 2001), and the 21 species associated with *Solenopsis geminata* group ants were revised (Plowes et al. 2009), but for the rest, the latest key is that of Borgmeier (1969). Furthermore, B.V.B. estimates that only one half or less of the genus attacks *Solenopsis*, with other ant hosts including *Azteca* Forel, *Crematogaster* Lund, *Formica* L., and *Liometopum* Mayr. Further species have known hosts, but the host records are on museum specimen labels that are still unpublished. Finally, many species remain undescribed and have no host records whatsoever.

Here, we describe one of the unknown species and document its host and host-seeking behavior.

## Materials and Methods

Phorid fly specimens are deposited in the collection of the Natural History Museum of Los Angeles County (LACM). Ant specimens are deposited in the National Museum of Natural History (NMNH). Terms are those of Cumming and Wood (2009).

## *Pseudacteon gracilisetus* n. sp.

(Figs. 1 and 2)

**Type Material.** HOLOTYPE (female): USA: South Carolina: Carolina Sandhills National Wildlife Refuge, 34° 31' 39.9" N, 080° 13' 40.8" W. Collected flying outside of entrance to *N. arenivaga* nest, harassing worker ants. 9-VI-2009, J. S. LaPolla and S. A. Schneider, JSL090609-01. PARATYPE: 1 female, same data as holotype.

**Species Recognition.** This species is similar to the Brazilian and Argentinian *Pseudacteon convexicauda* Borgmeier. It differs in that the lateral and ventral setae of the ovicape and the ventral setae on segment 6 are much shorter and thinner (compare with Borgmeier 1962, fig. 1; Porter and Pesquero 2001, fig. 3), and the halter is yellow, instead of brown. The form of the ovicape is similar, however, and the host of *P. convexicauda* is *Nylanderia fulva* (Mayr), a species in the same genus (these ant species were until recently in the genus *Paratrechina*, see LaPolla et al. [2010] for updated taxonomy of the ants) as the host of *P. gracilisetus*. We agree with Porter and Pesquero (2001) that the association of *P. convexicauda* with *Solenopsis* (Borgmeier 1962) is probably spurious.

In the latest key to species, *P. gracilisetus* keys out to *P. convexicauda*, if one assumes at couplet five that the anterior scutellar setae are long (equal to or greater than one half the length of the posterior setae). If the anterior setae are found to be shorter than one-half the length of the posterior pair, this species would key to couplet 7, where it matches neither lead.

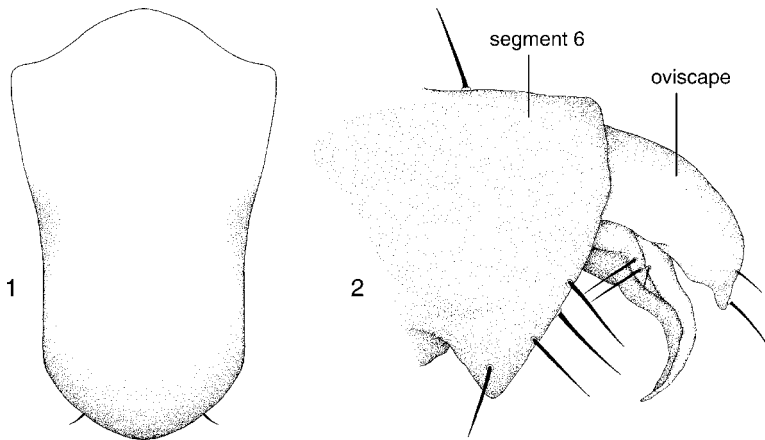
**Description of Specimens.** Body length 0.75–0.8 mm. Body color brown, legs yellow except mid- and hind femur light brown. Halter and palpus yellow. Flagellomere 1 of female flat, oval, with slight apical point; arista present, but short, slightly longer than length of flagellomere 1. Frons with 2-4-4-4 setae and one pair of supra-antennal setae. Anterior scutellar setae absent (broken off) in both specimens. Wing vein  $R_{2+3}$  absent; mean costal length 0.37 wing length, range 0.37–0.38. Venter of segment 6 with posterior row of setae, without sclerite. Ovicape dome-shaped dorsally with extremely

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Figs. 1–2. *P. gracilisetus* n. sp. (1) Oviscape, dorsal. (2) Apex of abdomen and female terminalia, lateral.

fine, short setae near apex (Figs. 1 and 2); ventrally with pointed apex; laterally with few thin, longer setae.

**Geographical Distribution.** Known only from the type locality in South Carolina. The host ant *Nylanderia arenivaga* (Wheeler) has a wide but spotty range that stretches from New Jersey to Nebraska and Texas south to Florida. *N. arenivaga* is found in relatively open canopy, sandy soil environments. With its open canopy longleaf pine forest and deep sandy soils, the Carolina Sandhills National Wildlife has abundant nests of *N. arenivaga*.

**Derivation of Specific Epithet.** The name is from Latin *gracilis* for thin, referring to the setae of the venter of segment 6 and the oviscape.

**Natural History.** The *N. arenivaga* nest discovered being parasitized by *P. gracilisetus* was in a clearing shaded by short, patchily distributed deciduous bushes  $\approx 10$ – $15$  m from a dirt road in the morning of 9 June 2009. The nest entrance was a simple crater in sandy soil with several workers migrating to and from the entrance. Despite the fact that there were several other *N. arenivaga* nests nearby this was the only active nest entrance, probably due to shading from a nearby bush; otherwise *N. arenivaga* is nocturnal (Trager 1984). Returning to the same area at night confirmed that *N. arenivaga* were actively foraging. Two *P. gracilisetus* females were discovered harassing worker ants near the entrance to the nest, displaying a “dive-bombing” behavior as ants returned to the nest. The workers seemed to be agitated by this behavior and responded aggressively by snapping their mandibles at the flies.

**Other Material Examined.** *Pseudacteon convexicauda*. ARGENTINA: Misiones: Reserva Vida Silvestre Uruguayí, 25.97° S, 54.11° W, 2&, 10–12-XII-2003, B. Brown, G. Kung, Malaise trap #5 (LACM).

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