NEW NEOTROPICAL SPECIES OF “STICK-TICK”
(DIPTERA: CERATOPOGONIDAE) FROM KATYDIDS

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ABSTRACT

Forcipomyia (Microhelea) tettigonaris Wirth and Castner new species is described from two females captured while attached tick-like to the scutellum of the katydid Roselana crassicornis (Stal)(Orthoptera: Tettigonidae) near Iquitos, Peru, on the Amazon River. Hosts of the four previously described species of this group of tick-like biting midges have been confined to stick insects (Orthoptera: Phasmatidae). A third female of this species is reported from a katydid in Costa Rica.
RESUMEN

Se describe la nueva especie Forcipomyia (Microhelea) tetigoniaria Wirth y Castner, de dos hembras capturadas cuando estaban pegadas al estilo-garrapata, al escutelo del cigarrón Toxelana crassicornis (Stal) (Orthóptera: Tettigoniidae), cerca de Iquitos, Perú, en el río Amazona. Hospederos de las cuatro especies previamente descritas de este grupo de mosquitos que pican parecido a las garrapatas, han sido confinados a los insectos de palo (Orthóptera: Fasminidae). Se reporta una tercera hembra de esta especie de un cigarrón de Costa Rica.

Female midges of the dipterous family Ceratopogonidae have evolved an amazing variety of feeding habits dependent on the basic nematocerous piercing-sucking arrangement of their mouthparts (Downes 1955, 1958, 1978). Distinct patterns of feeding have generally evolved in parallel with structural features which form the basis of subfamily and tribal classification, even as far as genera. For example, most Leptoconopinae as well as the genus Culicoides Latreille in the tribe Culicoidini are blood-feeders on vertebrates. All members of the subfamily Ceratopogoninae, except those in the tribe Culicoidini, are predaceous. They capture and suck haemolymph from insects smaller or not much larger than themselves, causing death of the prey. All members of the subfamily Dasyheleinae are autogenous and subsist on nectar and sugar-rich plant products. It is in the subfamily Forcipomylinae that the most amazing variety of feeding habits has evolved, ranging from carrion and pollen-feeding, to feeding on haemolymph of meloid beetles (Wirth 1966b, 1980). In the genus Forcipomyia Meigen, various subgenera have evolved a variety of parasitic feeding patterns, none of which seriously harms the host (Wirth 1966a). Midges of the subgenus Lasiohelea Kieffer have retained what is thought to be the primitive habit of sucking vertebrate blood; species of Trichohelea Goetgeheuer and Pterobosca Macfie are ectoparasitic on the wings of dragonflies or on the bodies or appendages of a wide variety of insects and other arthropods larger than themselves. In the subgenus Microhelea Kieffer one group of species sucks haemolymph from a variety of smooth-bodied caterpillars and sawfly larvae (Wirth 1972), while another group feeds on phasmid stick-insects. The abdomens of the latter swell with developing eggs to grotesque tick-like proportions, for which the common name “stick-ticks” was coined (Wirth 1971).

The junior author has recently collected a new species of this group of “stick-ticks” on the River Amazon near Iquitos (Department of Loreto), Peru. It was observed feeding on the katydid Roxelana crassicornis (Stal) (Orthóptera: Tettigoniidae), a habit previously unrecorded in the New World. Wirth (1971) summarized our knowledge of the “stick-ticks,” pointing out the difference in structure and habits separating this group of species from the caterpillar parasites in the subgenus Microhelea; giving host records for the two common and widespread species, F. izodoides (Fiebrig-Gertz) and F. obesa Costa Lima, known to feed on stick insects; and describing two new species, F. amazonica Wirth from Mauana, Brazil, and F. willistoni Wirth from Brazil, Jamaica and Puerto Rico. The present new species from Peru also feeds on an orthopteran, but is the first American species known to feed on a host other than a phasmid.

Debenham (1987) recorded two females of Forcipomyia (Microhelea) willisi Debenham feeding on the abdomen of a katydid (Polichne sp.: Tettigoniidae, Phaneroptera) in Queensland, Australia, the first record of a Microhelea species from this host family. Forcipomyia willisi is closely related to F. fuliginosa (Meigen) and the group of caterpillar parasites, and does not have the morphological modifications of the Neotropical “stick-ticks.” An unidentified species of Microhelea which Wirth (1971) placed close to but not identical with F. fuliginosa was reported by Edwards (1926) from a large phasmid on Buru Island, Indonesia, as F. hirtipes (de Meijere).
The terminology used in this paper is the same as that used in previous papers by Wirth (1971, 1972) on Neotropical species of the *Forcipomyia* subgenus *Microhelea*.

*Forcipomyia* (*Microhelea*) *tettagonaris* Wirth and Castner, new species
(Figs. 1-5)

**Holotype Female.**—Wing length 1.25 mm; breadth 0.51 mm.

Head. Dark brown, antenial segments 3-10 yellowish. Antenna with lengths of flagellar segments in proportion of 12-11-11-11-11-12-15-25-28-33-x-x (segments 13-15 missing); segment 11 2.0 times as long as 10 (Fig. 5). Palpus (Fig. 1) with lengths of segments in proportion of 12-15-31-15-8; third segment swollen on one side from base nearly to tip, swollen portion obliquely truncated distally, sensory pit extending from pore near tip of swollen portion of segment nearly to base of segment; several tear-shaped hyaline sensilla scattered on surface near pore opening; palpal ratio 2.2. Mandible (Fig. 2) with 15 dark brown teeth in a curving row, gradually increasing in size from minute teeth at apex to large, somewhat proximally curved teeth at base of row, proximal teeth forming a distinct lateral expansion of mandible. Maxilla (Fig. 3) well sclerotized and gradually tapering distally, with 11 well-sclerotized, dark-pigmented, transverse corrugations.

Thorax: Dark brown; mesonotum with moderately long yellowish setae. Legs yellowish including coxae and trochanters, with long yellow setae; tarsal ratios (T1/T2) of fore, mid and hind legs 0.68, 0.43, and 0.54 respectively. Wings damaged, much abraded; membran infuscated; costal ratio of paratype 0.54. Halter color not observed.

Abdomen: Both specimens gravid with abdomen much distended tick-like, with numerous fully-developed, spindle-shaped, yellowish eggs. Terga and sternae reduced to small, quadrate, transverse, brownish sclerites with long yellowish setae on lateral ends. Pleural membrane much distended, with sparse vestiture of short, pale brown setae arising from brownish-pigmented punctures. Spermathecae (Fig. 4) two, ovoid, without necks, slightly unequal, measuring 0.091 by 0.070 mm and 0.082 by 0.065 mm.

![Figs. 1-5. Forcipomyia tettagonaris, female: 1, palpus; 2, mandible; 3, maxilla; 4, spermathecae; 5, antenial segments 9-12.](image-url)
Male.—Unknown.

Distribution.—Peru, Costa Rica.

Types.—Holotype female, 1 female paratype, both taken from scutellum of the katydids Rozena crassicornis (Stal), Iquitos, Loreto Department, Peru, 30 VII. 1987, J. L. Castner (Holotype deposited in National Museum of Natural History, Smithsonian Institution, Washington, D.C.; paratype in Florida State Collection of Arthropods, Gainesville, Florida).

Etymology.—The species takes its name from the family name of the host insect, a katydid in the subfamily Pseudophyllinae and tribe Pterochrozini.

Discussion.—When he reviewed this paper, Art Borkent of Agriculture Canada recalled a female specimen in the Canadian National Collection which he kindly loaned us. The female, collected from a katydids thorax, La Selva, Costa Rica, 18.II.1980, D. M. Wood, is conspecific with the types from Peru. This extension of the range of the species indicates to us that perhaps these midges are not rare in nature, and that special efforts should be made to look for them when observing katydids.

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