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EMPICORIS SUBPARALLELUS (HEMIPTERA: HETEROPTERA: REDUVIIDAE), A PREDATORY BUG NEW TO THE FAUNA OF FLORIDA

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ABSTRACT

The predatory hemipteran *Empicoris subparallelus* McAtee and Malloch, belonging to the family Reduviidae, subfamily Emesinae, is reported from Grassy Key, Key Largo, Long Point Key, and No Name Key in the Florida Keys, Monroe County, Florida. This is a new species record for the Florida fauna, and only the second state record for the United States. A diagnosis, description, and digital images of the adult are provided to help distinguish this species from other species of *Empicoris* in Florida.

Key Words: Florida Keys, Reduviidae, new record

RESUMEN

Se reporta el hemíptero predatorio *Empicoris subparallelus* McAtee y Malloch, de la familia Reduviidae, subfamilia Emesinae, de Grassy Key, Key Largo, Long Point Key, y No Name Key en los Cayos de Florida, Condado de Monroe, Florida. Esto es una nueva cita para la especie de la fauna de Florida, y solamente la segunda cita estatal de los Estados Unidos. Se proveen un diagnóstico, una descripción, e imágenes digitales para distinguir esta especie de otras especies de *Empicoris* en Florida.

Translation provided by the authors.

During the past several years, a small reduviid (Hemiptera: Heteroptera) belonging to the subfamily Emesinae was occasionally taken in light trap collections from the Florida Keys. These specimens were recently identified by one of us (TJH) as *Empicoris subparallelus* McAtee and Malloch (1925), a species not previously known from Florida.

The Florida Keys are a chain of islands that lie east and south of the Florida peninsula. They are part of the South Florida rockland ecosystem, and have a flora derived from both temperate and tropical components (Stern & Brizicky 1957; Snyder et al. 1990). The Florida Keys Mosquito Control District regularly collects mosquitoes (Diptera: Culicidae) as part of routine surveillance. Adult mosquitoes are collected weekly via dry ice-baited light traps (American Biophysics Company), and larval mosquitoes, along with a sample of water, are collected daily from their habitat by use of half-pint dippers or turkey basters. Examination of those collections has revealed a number of invertebrates hitherto unrecorded from the Florida Keys, including *E. subparallelus* reported herein.

In this paper, we review the literature treating *E. subparallelus*, provide a diagnosis, description, and images of the adult male to assist in identification, and give new distribution records for this emesine reduviid from Florida and Mexico.

McAtee & Malloch (1925) described *E. subparallelus* from a male taken by E. A. Schwarz at Cayamas, Cuba. They also mention a female collected by H. G. Barber at Brownsville, Texas, a record repeated by Froeschner (1988) as the only United States report for this species. We have compared our specimens with McAtee and Malloch's type material, deposited in the National Museum of Natural History, Washington, DC, and find them conspecific.

Reduviidae (Hemiptera) are a large, widespread group of predatory Heteroptera, with 159 species in 46 genera in North America (Froeschner 1988). Members of the subfamily Emesinae generally are nocturnal, living at various heights on vegetation, but also in bird's nests, caves, spider webs, and within houses. They are predatory, in particular entomophagous; they will also feed on spiders and occasionally on spider eggs (Wygodzinsky 1966). At least 6 references to emesines feeding on mosquitoes or phlebotomine sand flies (Diptera: Psychodidae) exist; most interesting was the case reported by Schulze (1919), who observed *Ploiaria domestica* Scopoli feeding on a blood-engorged *Phlebotomus* sp. sand fly in Macedonia. Based on their observations in northern Africa, Robaud & Weiss (1927) even suggested that one Tunisian species of *Ploiaria* had potential as a biocontrol agent of mosquitoes and phlebotomine sand flies.

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It is interesting to speculate whether the collection of these specimens in light traps set for mosquitoes is coincidental or if there may be some relation between the mosquitoes and the bugs. Emesines are frequently attracted to light; species in at least 10 genera have been so collected (Wygodzinsky 1966). Wygodzinsky (1966) remarked that large numbers of emesines sometimes can be found within the same trap, perhaps as the result of flight dispersal. Because no specimen of *E. subparallelus* has been observed feeding on a mosquito, it is impossible to answer the question at present.

The detection of an emesine not previously recorded in the Florida Keys is not a complete surprise given the proximity of southern Florida to many of the Caribbean islands and the dramatic increase in international travel and world trade now occurring. In the recent past, numerous new records have been reported from the Keys and South Florida, e.g., mosquitoes (Darsie et al. 2002; Darsie 2003; Darsie & Shroyer 2004), copepods (Reid & Hribar 2006), a biting midge (Grogan & Hribar 2006), and true bugs (Henry & Froeschner 1993; Henry & Brambila 2003; Henry 2003; Dobbs & Brambila 2004). It is likely that there will be many more detections of exotic arthropods in South Florida as additional surveys are conducted and more specimens are identified.

First Records of *Empicoris subparallelus* from Florida

Specimens were collected from Grassy Key, Key Largo, Long Point Key, and No Name Key (all Monroe Co.) as follows:

> No Name Key, 21 Sep 2004, L. Hribar, coll., ex. light trap; Grassy Key, 21 Sep 2004, L. Hribar, coll., ex. light trap; Key Largo, 7 Jul 2006, M. Howey, coll., ex. light trap; Long Point Key, 20 Jun 2006, D. DeMay, coll., ex. light trap; Long Point Key, 13 Sep 2006, D. DeMay, coll., ex. light trap; Long Point Key, 28 Sep 2006, D. DeMay, coll., ex. light trap.

Most of the above collections were of 1 or 2 individuals, but the collection on 13 Sep yielded 7 specimens. Voucher specimens have been deposited in the National Museum of Natural History (Washington, DC), the Florida State Collection of Arthropods (Gainesville), and the Yale University, Peabody Museum of Natural History (New Haven, CT).

Other specimens examined from the USNM collection that have been intercepted at ports of entry: 1 female, 1 (sex unknown, abdomen missing), intercepted at New Orleans, from Cuba, 5 & 11 May 1934, on pineapple; 1 female, (and 1 nymph), intercepted at Brownsville, Texas, from Mexico, 25 May 1951, on; 1 female, intercepted at Laredo, Texas, 20 May 1937, from Loma Bonita, Oaxaca, Mexico, on pineapple.

The following diagnosis and description will help separate *E. subparallelus* from other species of *Empicoris* in the United States.

Empicoris subparallelus McAtee and Malloch (Figs. 1, 2)

Empicoris subparallelus McAtee and Malloch 1925: 21 (original description); Wygodzinsky 1966: 385 (distribution, key); Froeschner 1988: 630 (catalog); Maldonado 1990: 151 (catalog).

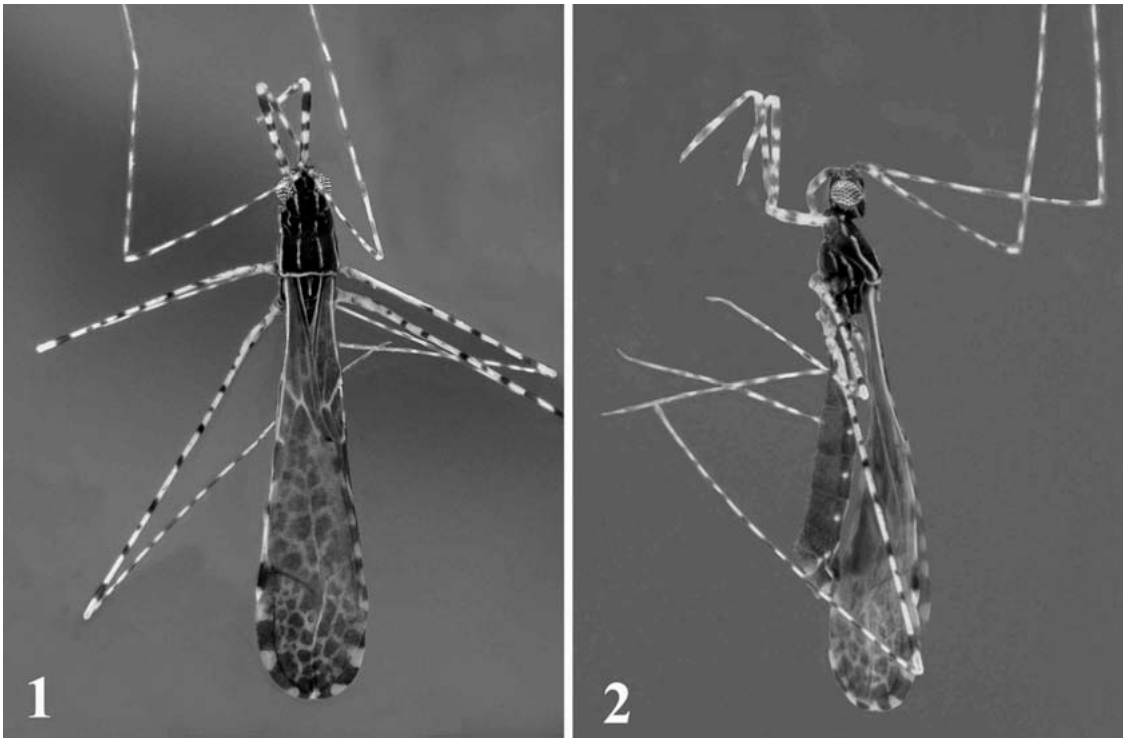
Diagnosis: *Empicoris subparallelus* can be distinguished from all other North American *Empicoris* by the small size, dark brown coloration with 4 white pronotal carinae (the lateral of which extends to the bases of the calli), the small pronotal tubercle at the base of the median line, the reclining scutellar spine, and the reticulate pattern of the hemelytra.

Description: Male (n = 3): Length to apex of hemelytral membrane 3.46-3.64 mm, length to apex of abdomen 2.82-2.84 mm. Head: Length 0.35-0.37 mm, width across eyes 0.38-0.40 mm, vertex 0.16-0.18 mm. Labium: Length 0.48-0.50 mm, extending to middle of prosternum. Antenna: Segment I, length 1.52-1.84 mm; II, 1.26-1.46 mm; III, 0.61-0.64 mm; IV, 0.32 mm. Pronotum: Length 0.54-0.56 mm, basal width 0.43-0.45 mm, length of lateral carina 0.32-0.34 mm.

Female (n = 3): Length to apex of hemelytral membrane 3.68-3.74 mm, length to apex of abdomen 2.94-3.23 mm. Head: Length 0.40 mm, width across eyes 0.38-0.40 mm, vertex 0.16-0.18 mm. Labium: Length 0.56-0.64 mm. Antenna: Segment I, length 1.76-1.84 mm; II, 1.54-1.58 mm; III, 0.72-0.75 mm; IV, 0.34-0.40 mm. Pronotum: Length 0.56-0.59 mm, basal width 0.46-0.50 mm; length of lateral carina 0.37-0.40 mm.

Overall color dark brown, with pale or white patches and lines. Head quadrate, bilobed, eyes prominent, strongly faceted, dorsal length subequal to length of hind lobe, clypeus and frons margined with fine, white setae; posterior lobe with a narrow line of white setae on either side of median line and two loose lines of white setae on sides. Labium stout, curled, segment I pale with two dark brown bands, subequal to combined length of segments II and III. Antenna long, slender, combined lengths of segments much longer than body; segments I and II pale, strongly banded with dark brown. Pronotum rectangular, dark brown, calli prominent and depressed between, with two lines of white setae, one marginal and one through middle; posterior lobe with a distinct, white, lateral carina extending from posterior angle to base of callus (ending in an acute, detached point) and a short, straight carina on either side of median line sometimes broken anteriorly before continuing onto callus and ending posteriorly before narrow, white, basal margin; base of median line with a short, indistinct tubercle, absent or hardly visible on some specimens. Scutellum small, posteriorly rounded, scutellar spine sharp, reclining, with relatively long, semierect, pale setae; metanotal spine distinct, semierect.

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Figs. 1, 2. *Empicoris subparallelus*, adult male. 1, dorsal aspect. 2, lateral aspect.

Hemelytron dark brown, with fine pale lines creating a network of quadrate dark blotches; lateral margins on distal third with 3 or 4 larger white patches, inner margin with 6 or 7 slightly smaller white patches. Ventral surface largely dark brown, contrasted only by the white spiracular tubercles on the abdomen; meso- and metapleural areas with 2 to 3 narrow lines of white setae; abdomen uniformly set with very short, fine pale setae. Legs long, slender, combined lengths of segments much longer than length of body; largely pale or white, femora and tibiae with numerous dark brown bands, subapical femoral bands widest, two or more times width of other bands.

Remarks: McAtee & Malloch (1925) compared *E. subparallelus* with their new species *E. nudus* McAtee and Malloch, described from Paradise Key, Florida. Although these 2 species are generally similar in the overall dark brown color, banded antennae and legs, and lines of white setae on the head and pronotum, *E. nudus* has much more extensively pale hemelyra, the lateral carinae on the pronotum do not end anteriorly in an acute detached point, the median carinae on either side of the median line converge (but do not touch) before continuing onto the anterior margin of the calli, and the median tubercle at the base of the pronotum is very large and broad, and subequal in height to length of scutellar spine. *Empicoris subparallelus* is also similar to *E. barberi* (McAtee and Malloch) in overall size, coloration, and markings, but *E. barberi* is readily distinguished by the lack of a scutellar spine and the presence on each side of abdominal segments II to VI with a series of round, glabrous, dark spots.

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