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TWO NEOTROPICAL COCKROACHES OF THE GENUS *ISCHNOPTERA* (DICTYOPTERA: BLATTELLIDAE) ESTABLISHED IN FLORIDA

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ABSTRACT

Ischnoptera bilunata Saussure, previously known from northern Argentina, Paraguay, and southern Brazil, and *Ischnoptera nox* Hebard, known from Panama, are now established in Florida. Redescriptions of both species, diagnostic characters, and a key for their identification are presented.

RESUMEN

Ischnoptera bilunata Saussure, previamente conocida del norte de Argentina, Paraguay, y el sur de Brasil, e *Ischnoptera nox* Hebard, conocida de Panama, se han establecido en Florida. Se presentan redescripciones de ambas especies, caracteres de diagnóstico, y una clave para su identificación.

There are 69 species of cockroaches known from the continental United States, 24 of which have been introduced from other areas (Atkinson et al. 1991). Recently 38

species were listed from Florida including 13 exotics (Atkinson et al. 1990a). An additional introduced species, *Ischnoptera bilunata* Saussure, was later reported from the state (Atkinson et al. 1990b.; treated as *I. bergrothi* [Griffini] due to an error in identification). During a survey of peridomestic cockroaches in central and southern Florida (Atkinson et al., unpublished) we discovered an established population of yet another neotropical species, *Ischnoptera nox* Hebard, in southern Florida. The genus *Ischnoptera* includes 65 neotropical species and a single nearctic species, *I. deropeltiformis* (Brunner), that is widely distributed in the eastern United States from the Florida Keys to Illinois and New Jersey (Princis 1969, Atkinson et al. 1991). *Ischnoptera rufa occidentalis* Saussure has been listed from Texas and Louisiana, but probably does not occur there (Hebard 1943, Atkinson et al. 1991).

Both of these newly detected species are redescribed and figured here. We have modified Helfer's (1963) key to the cockroaches of the United States to allow identification of these exotic species. Comments on their ecology in Florida are also included. Collections in which specimens are deposited are: Academy of Natural Sciences, Philadelphia, Pennsylvania (ANSP), Archbold Biological Station, Lake Placid, Florida (ABSC), Florida State Collection of Arthropods, Gainesville, Florida (FSCA), and U.S. National Museum, Washington, D.C. (USNM).

Ischnoptera bilunata Saussure 1869

DIAGNOSIS

This species superficially resembles a species of *Blattella* because of its pale brown color and two prominent dark markings on the pronotum (Fig. 1C). The abdominal venter of all species of *Blattella* known from the southeastern U.S. (*B. germanica* (L.) [German cockroach], *B. asahinai* Mizukubo [Asian cockroach], *B. vaga* Hebard [field cockroach]) are pale colored, and similar in color to the tegmina. The venter of the abdomen of *I. bilunata* is dark brown to black, much darker than the dorsal surfaces. The slender body, pale color of the pronotum and tegmina, the paired dark areas of the pronotum, and male secondary sexual characters (Figs. 2, 3) serve to distinguish this species from the other *Ischnoptera* in the U.S.

DESCRIPTION

Male: Length 13.5-15.5 mm. The pronotum and tegmina are light brown to reddish brown. There are 2 prominent, semicircular, black spots on the pronotum, separated by an area at least as wide as the spots (Fig. 1C). The humeral areas of the tegmina usually have dark, irregular patches. The venter of the abdomen and thorax is dark brown to black, strongly contrasting with the pale legs and tegmina.

Abdominal segments 7 and 8 are highly modified in dorsal aspect (Fig. 2B), without any well-defined concave area on segment 7 surrounding the tergal gland and associated appendages. The dorsum of the last abdominal segment is strongly truncate, with a slight indentation on the posterior margin that is visible in most specimens. The coloration ranges from pale brown to white as indicated in Fig. 2B. The venter of the last abdominal segment is asymmetrical (Fig. 3B). The asymmetry is less pronounced than that in either *I. deropeltiformis* or *I. nox*.

Female: Females are similar in overall appearance and size to males. The dorsal coloration of females is slightly darker than that of males and the pronotal spots are proportionally larger. In some specimens these spots are contiguous anteriorly and posteriorly, giving the appearance of a dark circle with a pale center. The differences in coloration are sufficient to separate males and females in a series. The abdomen is slightly shorter and more rounded posteriorly than is the case with males and lacking the structures described on segments 7, 8, and 10.

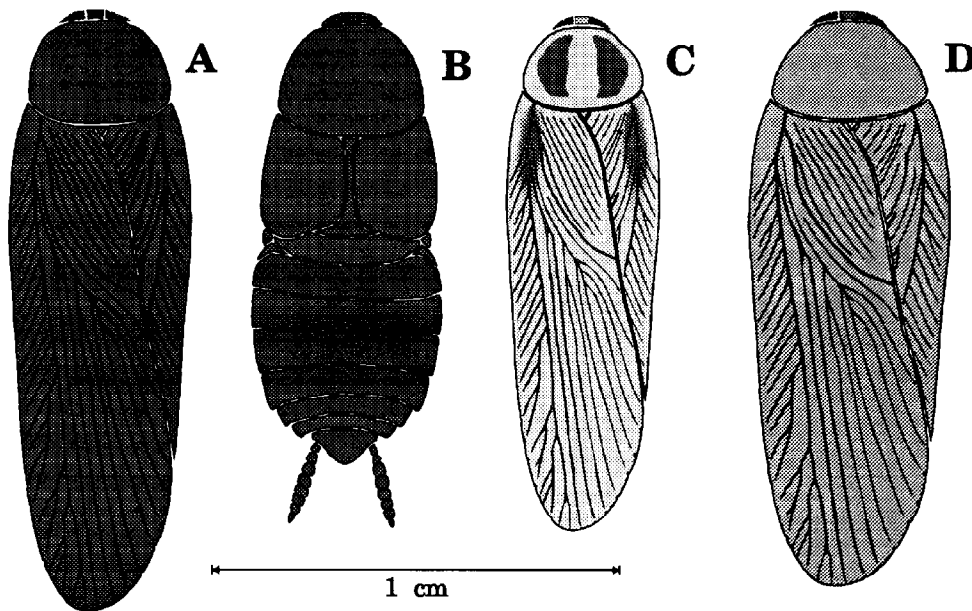


Fig. 1. Habitus of *Ischnoptera* species known from the United States. A) *I. deropeltiformis*, male. The pronotum is generally dull black. The tegmina range in color from dull black to dark reddish brown. B) *I. deropeltiformis*, female. Females are uniformly dull black. C) *I. bilunata*, male. The tegmina and pronotum are a pale brown. The two crescent-shaped spots on the pronotum are black. Females are darker brown than are males and the pronotal spots are larger. D) *I. nox*, male. Pronotum and tegmina of males and females are unicolorous and shining on all specimens seen, ranging from dark reddish brown to black.

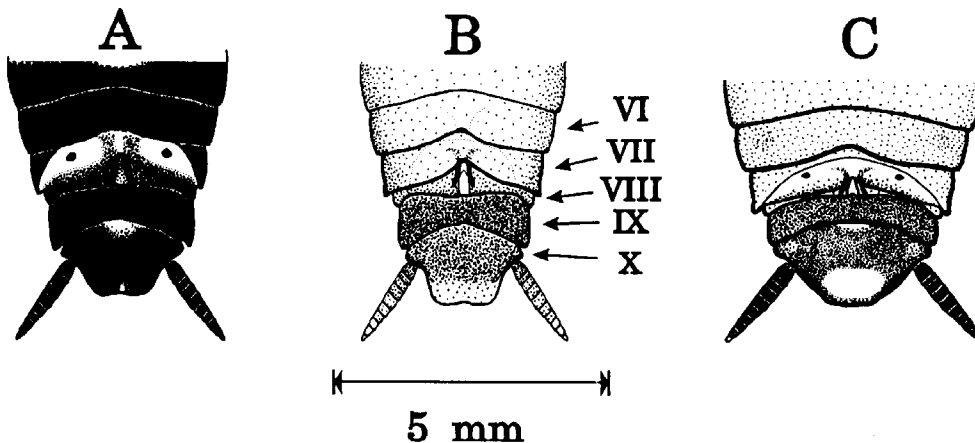


Fig. 2. Dorsal view of posterior portion of the male abdomen. Numbering of abdominal segments follows Roth (1969) and differs from that of Hebard (1917) and Helfer (1963). A) *I. deropeltiformis*, B) *I. bilunata*, C) *I. nox*.

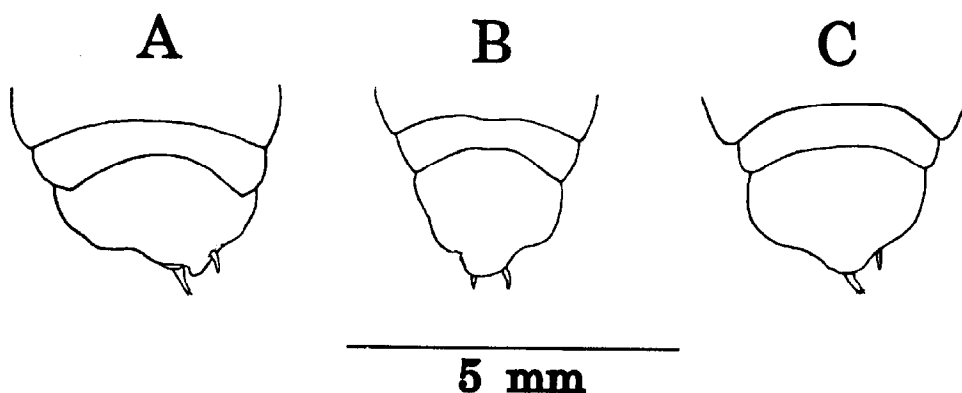


Fig. 3. Ventral view of terminal segments of the male abdomen as seen from below. A) *I. deropeltiformis*, B) *I. bilunata*, C) *I. nox*.

SPECIMENS SEEN

ARGENTINA: Prov. de Santiago, del Estero Troncal, 40 k O. de Salamina, 1909, E.R. Wagner (ANSP); Chaco de Santa Fe, Las Garzas, "Bords du Rio Las Garzas, 25 k a l'O D'Ocampo", 1903, E.R. Wagner (ANSP); Gran Chaco, "Bords du Rio Tapenanga, Colonie Florencia", 1903, E.R. Wagner (ANSP); Chaco de Santiago del Estero, Icaño (Rio Salado), 1902, E.R. Wagner (ANSP); Carcaraña (ANSP); PARAGUAY: Asunción, 1900, A. DeW. Bertoni (ANSP); Sapucay, 20-XII-1901 (ANSP); BRAZIL: Mato Grosso, Cuyaba (ANSP). UNITED STATES: Florida: Alachua Co., Gainesville, VII-90, T. H. Atkinson (FSCA); Bay Co., Lynn Haven, 24-V-87, 9-VI-88, 10-VI-88, 3-IX-89, 7-IX-89, N.J. Lamb, flying to light (FSCA); Marion Co., Belleview, 29-V-90, T. Greaves, at light (FSCA); Highlands Co., Lake Placid, 16-III-90, M. Deyrup (ABSC, FSCA); Hillsborough Co., Tampa, 15-V-90, T.H. Atkinson & J.R. Mangold, pitfall traps baited with bread and beer, (FSCA, USNM, ANSP); Broward Co., Pompano, 4-I-91, J. Williams (FSCA); Pinellas Co., Clearwater, 14-V-90, T.H. Atkinson & J.R. Mangold, pitfall traps baited with bread and beer (FSCA).

Florida specimens were identified by comparison with male and female specimens identified by M. Hebard in the Academy of Natural Sciences at Philadelphia by the senior author. There are no apparent differences between the South American and the Florida specimens.

ECOLOGY

We have collected this species extensively in the Gainesville area and in the Tampa Bay area in similar habitats. *Ischnoptera bilunata* is most commonly associated with moist, weedy vegetation on the margins of streams, rivers and ponds. It apparently does not require well defined, semi-permanent cavities for harborages as do species of *Periplaneta* or *Parcoblatta* (e.g., hollow trees, structures, wood piles, culverts, etc.) since we have trapped numerous adults in weedy areas far from any harborages of this sort. In a study on the University of Florida campus (Atkinson et al., unpublished) we found that trap catches of this species declined drastically in heavily wooded areas or mowed lawns even when these were in close proximity to more favored habitats.

We have found this species in large numbers near residences that are located near favorable habitats (e.g. marshy lakefront or riverfront properties with little tree cover). It was present in yards of 5 of 21 residences sampled in Hillsborough and Pinellas Counties in June, 1990 (Atkinson et al., unpublished).

Ischnoptera nox Hebard 1920

DIAGNOSIS

Males and females of this species are uniformly dark reddish brown to black and shiny in appearance. The pronotum, tegmina, legs, and venter of the body are similar in color. The combination of color, lack of any obvious patterning, and shiny appearance is unique for native or exotic cockroaches of this size range (1-3 cm length). Males might be confused with males of *I. deropeltiformis*, but these are more slender, generally dull black in appearance and have yellow to reddish brown legs that contrast with the body coloration.

DESCRIPTION

Male: Length 14-17 mm. Males are uniformly dark reddish brown to black and shining in appearance (Fig. 1D). There is very little variation in color anywhere on the body or appendages. Abdominal segments 7 and 8 are highly modified dorsally, as is generally true of males in this genus. Segment 7 has a well-defined, concave, depressed area, open posteriorly (Fig. 2C). This depressed area is paler in color than the surrounding cuticle and there are 2, clearly visible "spots", possibly glandular, to either side of the central tergal gland and associated appendages. The dorsum of segments 9 and 10 is dark, similar in color to the venter, except for a large translucent, trapezoidal area on segment 10. The venter of the 10th abdominal segment (Fig. 3C) is strongly asymmetrical.

Female: The female is similar in color and size to the males, differing only in the slightly shorter and more rounded abdomen and lacking the structures described on segments 7, 8, and 10.

SPECIMENS SEEN

PANAMA: Porto Bello, 20-IV-1912, A. Busck, male holotype (USNM); Tabernilla, Canal Zone, A. Busck, female allotype (USNM); Chorrera, 17-V-12, A. Busck (USNM); UNITED STATES: Florida: Broward Co., Ft. Lauderdale, 14,15-VI-90, paint can trap baited with distiller's grain, T.H. Atkinson & J.R. Mangold (FSCA, USNM, ANSP); same locality, 9-I-91, J.R. Mangold (FSCA).

Florida specimens were directly compared to the holotype and paratype series in the U.S. National Museum by the senior author.

ECOLOGY

A breeding population of this species was discovered during a survey of peridomestic cockroaches in southern Florida (Atkinson & Mangold, unpublished). At present a single, well-established population is known from a suburban-commercial area in Ft. Lauderdale. It was not found elsewhere in the Ft. Lauderdale or Miami areas. The area is within 1 mi of an exit of the Florida Turnpike, a major highway, and within 1.5 mi of the Ft. Lauderdale Executive Airport. The cockroaches have been found in large numbers in extensively landscaped grounds of several adjacent motels. Because of the dense vegetation and sprinkler systems the areas where the cockroaches have been collected are generally very humid.

IDENTIFICATION

Helfer's (1963) key is the most recent key to the cockroaches of the U.S. and is widely used. We have modified his key to accommodate males of all species of *Ischnoptera* now known to occur in the U.S. Roth (1969) observed that Hebard (1917) and most subsequent authors had called the first abdominal segment the median segment and

considered the second segment as segment 1. This numbering system was followed by Helfer and our modification of the key also follows the same notation to avoid inconsistency. Roth's (1969) numbering system is used in the species descriptions. Couplet 9 (p. 38) is modified as follows:

- 9a. Tegmina reddish brown to black; male with dorsum of sixth and seventh abdominal segments highly specialized (seventh and eighth *sensu* Roth); subgenital plate strongly asymmetrical, one style more than twice as long as the other .. 9.1
- 9b. Tegmina pale yellowish brown; male with dorsum of sixth abdominal segment modified, seventh unmodified (seventh and eighth, respectively, *sensu* Roth); subgenital plate not strongly asymmetrical *Latiblattella rehni* Hebard
- 9.1a. Tegmina dark reddish brown to black, pronotum without markings 9.2
- 9.1b. Tegmina chestnut brown, pronotum with 2 prominent, black, crescent-shaped markings *Ischnoptera bilunata* Saussure
- 9.2a. Tegmina and pronotum dull brown to black; females with short tegmina, covering less than 1/3 length of abdomen (fully developed in males)
..... *Ischnoptera deropeltiformis* (Brunner)
- 9.2b. Tegmina and pronotum shining, dark reddish brown to black; both sexes with fully developed tegmina and mesothoracic wings . *Ischnoptera nox* Hebard

The key as written does not allow identification of females of most blattellids. Females of *I. bilunata* and *I. nox* would easily key to couplet 8. The only other species that would key to that point in Helfer's key with females whose tegmina are longer than the abdomen is *Phoetalia pallida* (Brunner) (treated as *Leurolestes pallidus*), a blaberid that is clearly distinguishable based on the figure and diagnosis given on page 39 (Helfer 1963).

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SEEDLING FEEDING DAMAGE AND PREFERENCE OF
SCAPTERISCUS SPP. MOLE CRICKETS
(ORTHOPTERA: GRYLLOTALPIDAE) ASSOCIATED WITH
HORTICULTURAL CROPS IN WEST-CENTRAL FLORIDA

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ABSTRACT

Both *Scapteriscus vicinus* Scudder and *S. acletus* Rehn and Hebard were recovered in soil flushes within and adjacent to commercial fields of tomato, strawberry, chrysanthemum and gypsophila in west central Florida. However, the latter species dominated at all locations, ranging from 67 to 90% of the specimens collected. Both species damaged seedlings primarily by girdling or excising stems at or immediately below the soil. Excised plants sometimes were pulled into surface tunnels for feeding. Above-ground plant parts often were consumed overnight. Occasionally, foliage was consumed before the whole plant was consumed. Taller seedlings of tomato, pepper, pigweed and eggplant were less damaged by both *S. acletus* and *S. vicinus* than shorter seedlings. Tall tomato and pepper seedlings were damaged more and survived fewer days than tall pigweed seedlings when given a choice by either species of mole cricket.

RESUMEN

En el centro occidental de Florida se recuperaron de suelo contiguo a campos comerciales de tomate, fresa, crisantemo y gypsophila, los grillos *Scapteriscus vicinus* Scudder y *S. acletus* Rehn y Hubard. Sin embargo, la última especie fué encontrada como dominante en todos los lugares, con un rango entre el 67 al 90% de los especímenes colectados. Ambas especies destruyeron plantulas al cortar tallos superficialmente o por debajo de la tierra. Las plantas trozadas eran algunas veces trasladadas hacia los tuneles para alimento de los grillos. La parte aérea de las plantas fue consumida durante la noche. Ocasionalmente el follaje fue consumido antes que toda la planta. Plantulas altas de tomate, pimentón, hierba de puerco y berenjena fueron dañadas en menor escala por *S. acletus* y *S. vicinus* que las plantulas bajas. Cuando se dió a escojer entre plantulas altas de tomate y pimentón y plantulas de hierba de puerco, las primeras fueron dañadas mas por ambas especies de grillos y sobrevivieron menos días al ser comparadas con esta última planta.

