

A NEW SPECIES OF *NEMAPALPUS*
(DIPTERA; PSYCHODIDAE; BRUCHOMYIINAE)
FROM NORTHEASTERN COLOMBIA

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ABSTRACT

Nemapalpus patriciae n.sp. is described and illustrated from male and female specimens collected at Arboledas, Northeastern Colombia. It is the first species of this widespread genus to be recorded from Colombia, and is the 26th *Nemapalpus* species to be described. On the basis of the structure of the male genitalia and presence of tufts of long setae on tergites 3-7, it is suggested that *N. patriciae* should be placed in the *sziladyi* species group.

RESUMEN

Se describen e ilustran *Nemapalpus patriciae* sp. n. de muestras de machos y hembras colectadas en Arboledas, al noreste de Colombia. Es la primera especie de este extendido género de ser registrada de Colombia, y es la 26 especie de *Nemapalpus* de ser descrita. Basado en la estructura de la genitalia del macho y la presencia de mechones de setas largas en las tergitas 3-7, se sugiere que *N. patriciae* debe de incluirse en el grupo de especies "*sziladyi*".

The genus *Nemapalpus* Macquart 1838 (the variant spelling *Nemopalpus* Macquart 1839 has been commonly accepted, but Duckhouse & Lewis (1980) pointed out that by priority the original spelling should be adopted) shows a disjunct distribution, with most of the 26 known species occurring in geologically ancient parts of the world, such as South Africa, the Canary Islands, South America, Hispaniola, Australia and New Zealand (Stuckenberg 1962). One exception is *N. nearcticus* Young, found in Northern Florida (Young 1974). This distribution pattern may reflect the great age of the genus, with present-day species representing the remnants of a group that was formerly much more widespread and diverse (Quate 1961). The family Psychodidae, which includes *Nemapalpus* and the haematophagous phlebotomine sand flies, is known to have arisen by the Permian (250 myr ago) and fossil psychodids dating from this time closely resemble modern species. Two fossil species of *Nemapalpus* have been recovered from Oligocene Baltic amber (Edwards 1921) and members of this genus, together with others in the Bruchomyiinae, are thought to be the most primitive of living psychodids (Young 1974).

Very little is known about the biology of *Nemapalpus*. Adults of most species are generally found resting in the same habitats as phlebotomine sand flies during the day and, like them, occur both in semi-arid areas of the Old World, such as the Canary Islands, and forested areas of the Neotropics. Adult *Nemapalpus* may be collected from cracks in rocks, buttress roots and lower tree trunks during daylight. It is not known whether these insects are diurnal or nocturnal, nor is it known whether they feed as adults. Unlike sand flies, the females are not haematophagous.

Larvae of *Nemapalpus* have been found in the same habitat as larval sand flies in Panama (Hanson 1968) and are morphologically very similar. They can be reared in the

laboratory on the same types of medium used for sand fly colonies (Alexander unpublished, Endris et al. 1983) and probably feed on leaf litter and other detritus in the wild.

No species of *Nemapalpus* has been recorded previously from Colombia, although examples are known from most parts of the Neotropics, including Venezuela (Ortiz & Scorza 1963). Collections from the Municipality of Arboledas, Norte de Santander (7°39'N, 72°48'W) during 1985-6 revealed the presence of three species, including one previously recorded only from Guatemala and Mexico, and two new species, one of which is described here for the first time.

Nemapalpus patriciae Alexander, new species
(Fig. 1-8)

MALE: General coloration dark brown. Head infuscated, eyes black and large, separated at narrowest distance by 3 facet diameters. Proboscis length 0.10-0.12 mm, (n=8). Length of palpal segments (in mm): 1(0.06-0.07, n=5); 2(0.10-0.12, n=7); 3(0.13-0.16, n=7); 4(0.17-0.18, n=6); 5(0.52-0.57, n=5). Approximately 15 peg-like sensory rods (Newstead's scales) at proximal end of palpal segment 3.

Antennae with 3 segments, dimensions (in mm) as follows: **scape** (0.08-0.10, n=7); **pedicel** (0.06-0.07, n=8); **flagellomere 1**(0.44-0.51, n=8); 2(0.39-0.44, n=8); 3(0.40-0.45, n=8); 4(0.40-0.43, n=8); 5(0.39-0.41, n=8); 6(0.36-0.41, n=8); 7(0.34-0.38, n=8); 8(0.31-0.36, n=8); 9(0.30-0.33, n=8); 10(0.29-0.31, n=7); 11(0.25-0.31, n=6); 12(0.25-0.26, n=5); 13(0.22-0.25, n=4); 14(0.20-0.21, n=3). Ascoids mushroom-shaped, 1 on inner, distal part of each flagellomere.

Wing length 3.9-4.1 mm, (n=7); width 0.9-1.0 mm (n=8); wing venation as shown, cross vein r-m proximal to fork of M₁-M₂. Mesonotum and pleurae infuscated, with sparse, fine setae on pleura. Halteres pale brown.

Legs dark, except for tarsi which are covered in closely-appressed silvery-white scales. Short, erect, black setae sparsely distributed on all segments of legs. Dimensions of segments as follows (in mm): **foreleg** coxa (0.53-0.61, n=8); trochanter (0.12-0.15, n=8); femur (1.38-1.53, n=6); tibia (2.68-3.23, n=6); tarsus (3.03-3.21, n=6); **midleg** coxa (0.46-0.56, n=7); trochanter (0.13-0.15, n=7); femur (1.53-1.66, n=6); tibia (3.29-3.40, n=6); tarsus (2.96-3.26, n=6); **hindleg** coxa (0.49-0.53, n=8); trochanter (0.13-0.18, n=8); femur (1.61-1.84, n=6); tibia (3.49-3.82, n=6); tarsus (2.93-3.59, n=6).

Abdomen infuscated. Tergites 3-7 each bearing paired verrucae from which emerge tufts of long, whitish setae, anterior to smaller tufts of shorter setae. Long, whitish setae also diffusely distributed on tergite 2, and scattered, short setae present on all abdominal segments. Dorsum of tergites 1-3 divided by groove along midline.

Genital pump length approximately 0.38 mm, one-third length of partially-coiled, annulated sperm ducts. Ducts end in funnel-like expansions, in which a few fine spines are visible. Genitalia inverted and complex. Aedeagus tubular, bifurcating at tip into spinose, membranous projections as shown. Gonostylus ending in single sclerotized curved spine. Paramere triramous and well sclerotized. Each of two lateral processes further divided into 2 flattened arms, with shorter of these partially overlapping outer, longer arm, which bears outward-pointing spine near tip.

FEMALE: Size and coloration as for male. Lengths of proboscis, palpal segments, and antennal segments 1 & 2 same as in male. Other antennal segments missing on allotype specimen.

Leg dimensions (in mm) as follows (allotype only): Foreleg coxa 0.57; trochanter 0.14; femur 1.45; tibia 2.70; tarsus 2.93; Midleg coxa 0.49; trochanter 0.12; femur, tibia and tarsus missing; Hindleg coxa 0.51; trochanter 0.18; femur 1.78; tibia and tarsus missing.

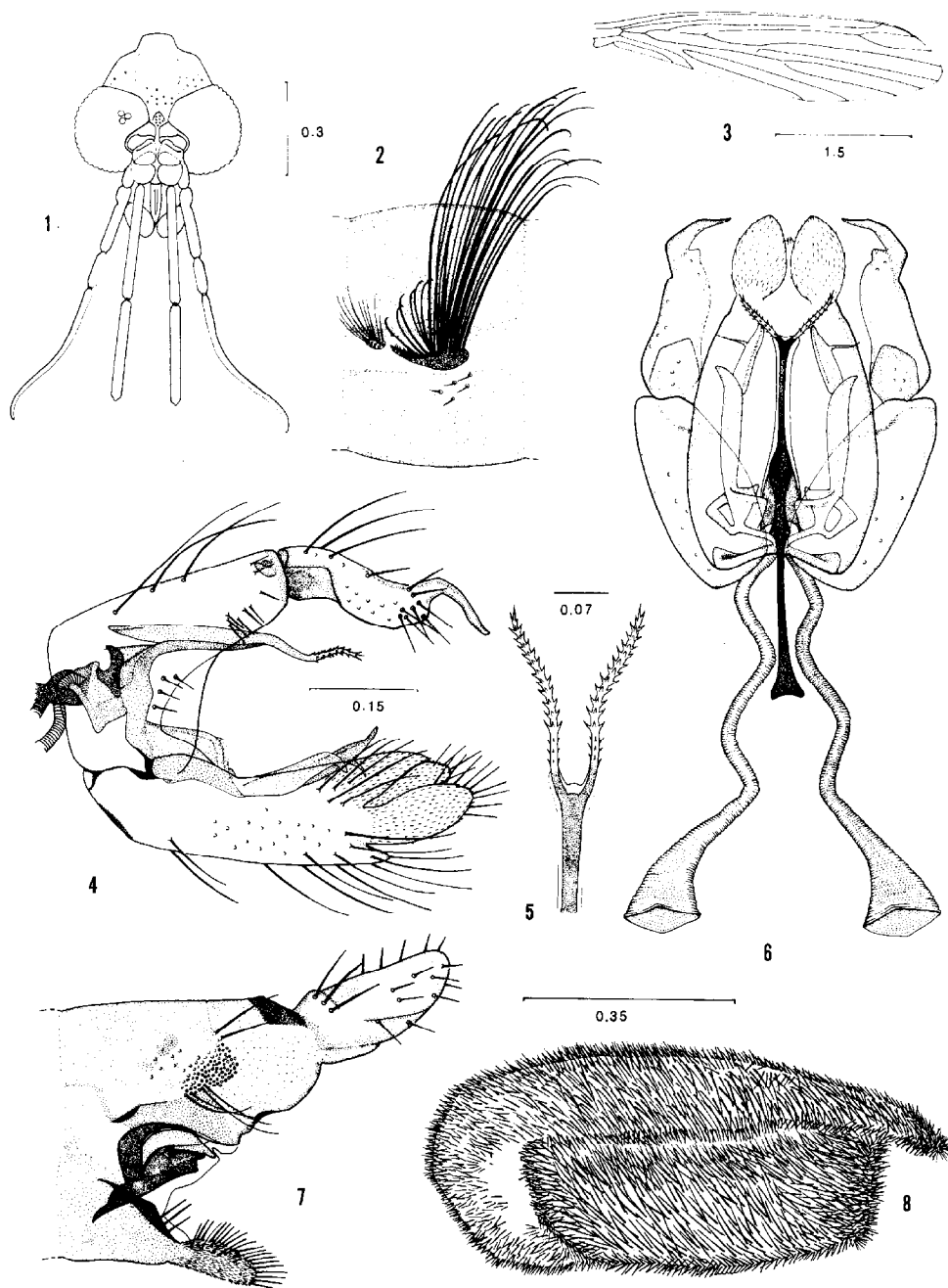


Fig. 1-8. *Nemopalpus patriciae* n.sp. 1) Male head; 2) Abdominal segment of male, showing setal tufts; 3) Male wing; 4) Male genitalia, lateral view; 5) Aedeagus; 6) Male genitalia, ventral view; 7) Female genitalia, lateral view; 8) Spermatheca. Figs. 2, 4, 6 & 7 to same scale. All measurements in mm.

Abdomen lacking paired tufts of long setae. Single spermatheca 0.92 mm long, 0.35 mm wide, with dense covering of small spines over entire surface and groove running four-fifths of length, curving down to join lower surface. No other distinctive features visible.

TYPE DATA: This species is named in memory of my mother, Patricia Mary Alexander, who died in Edinburgh, Scotland on September 18, 1985, after a long illness.

The type locality is a coffee plantation at altitude 900 m, in the Eastern Cordillera of the Colombian Andes. Specimens were obtained using a flight trap or by aspirating resting adults from trunks of large trees which provide shade for coffee bushes.

HOLOTYPE: Male, flight trap, finca La Esperanza, Vereda (district) Siravita, 2.5 km E of Arboledas, Norte de Santander, Colombia, 24-VII-1986.

ALLOTYPE: Female, tree trunk, finca La Esperanza, 22-VII-1986.

PARATYPES: 1 male, flight trap at finca El Tejar, Siravita, 24-VII-1985; 1 male, tree trunk, La Esperanza, 10-VI-1986; 1 male, tree trunk, La Esperanza, 30-VI-1986; 3 males, flight trap, La Esperanza, 23-VII-1986; 1 male, flight trap, La Esperanza, 24-VII-1986.

Holotype, allotype and paratypes all mounted in Canada balsam on slides. Holotype and allotype to be deposited in Florida State Collection of Arthropods. Paratypes in collections of author, Dr. D. G. Young (University of Florida, USA), U.S. National Museum, Washington, USA, Dr. D. Duckhouse (University of Adelaide, Australia), Dr. A. Morales (Instituto Nacional de Salud, Bogota, Colombia) and British Museum (Natural History), London, UK.

DISCUSSION

This species brings the number of described Neotropical *Nemopalpus* species to 14. It differs from *N. dampfianus* Alex., 1940 in having pleural setae, small spines in the expanded portion of the sperm ducts and complex parameres. The latter two features also distinguish *N. patriciae* from *N. pallipes* (Shannon and Del Ponte, 1927); *N. pilipes* Tonnoir, 1922; *N. immaculatus* Freeman, 1949; *N. brevinervis* Barretto and d'Andretta, 1946; and *N. dissimilis* (Barretto and d'Andretta, 1946).

The new species differs from *N. antillarum* Fairchild, 1952 in general coloration, and the male style of the latter species terminates in paired, sclerotized blades, rather than a single spine; *N. arroyi* de Leon, 1950 has very similar female terminalia to the new species but again differs in structure of the male terminalia. Males of *N. arroyi* lack tufts of long setae on tergites 3-7; male terminalia of *N. mopani* de Leon, 1950 show similarities to the new species but the style bears three spines, rather than a single one; males of *N. moralesi* de Leon, 1950 also lack long setae on tergites 3-7 and the style bears four finger-like lobes; *N. sziladyi* Tonnoir, 1940 is the species which resembles *N. patriciae* most closely, particularly in the structure of the parameres and style. The legs of both species are clothed in shining appressed scales and dark erect setae. The species differ in that the spinose, bifurcate aedeagus of *N. sziladyi* is markedly shorter and broader and the style bears a blade-like process as well as a strong spine; *N. torrealbai* Ortiz and Scorza, 1962 is also similar to the new species in the male genital armature but is distinguishable by the presence of a small blade-like process in addition to the strong spine on the style. Finally, *N. yucatanensis* Vargas and Diaz Najera, 1958 resembles *N. patriciae* in the structure of the parameres but the four-lobed style is quite unlike that of the new species.

On the basis of the structure of the male genitalia and the presence of paired tufts of long setae on tergites 3-7, *N. patriciae* should probably be grouped with *N. antillarum*, *N. sziladyi*, *N. torrealbai*, *N. mopani*, *N. yucatanensis* and the sole North American species, *N. nearcticus*. Ortiz & Scorza (1963) have proposed the name "sziladyi group" for all *Nemopalpus* species in which the males bear setal tufts; on this basis alone, the new species would also be grouped with *N. dissimilis*, in which the style is simple, and *N. immaculatus*, in which the parameres are virtually absent and tufts of erectile hairs are restricted to tergites 6 & 7. Tonnoir (1940) suggested that the

erectile hairs of *Nemapalpus* might function as disseminators of a sex pheromone, and the fact that they are restricted to males may be evidence that they play some part in the courtship of certain species, although no detailed physiological or behavioral studies have been made of this to date. It is not known whether the long setae of *N. patriciae* can be erected or flattened at will, although they are morphologically similar to those of other *sziladyi* group species. The presence of a groove on tergites 1-3 may be further evidence that the setae are erectile.

Specimens of *Nemapalpus patriciae* were caught or seen on the following dates:— 24-VII-1985 (4 males, flight trap); 10-VI-1986 (1 male, tree trunk); 16-VI-1986 (1 seen, tree trunk); 24-VI-1986 (1 seen, tree trunk); 30-VI-1986 (1 male, tree trunk); 5-VII-1986 (1 seen, tree trunk); 12-VII-1986 (1 female, tree trunk); 22-VII-1986 (1 female, tree trunk, 1 seen, tree trunk. & 1 male, flight trap); 23-VII-1986 (3 males, in flight trap); 24-VII-1986 (2 males, flight trap); 12-VIII-1986 (1 male, flight trap); 2-IX-1986 (1 male, flight trap). Males outnumbered females 14 to 2 in collections. Sampling from tree trunks was done between 08.30 and 11.30 each morning during June, July and August of 1985, November 1985, June and July 1986, and October and November 1986. Flight traps were in place on finca El Tejar from 17-VI-1985 to 25-VII-1985 and on finca La Esperanza from 17-VII-1986 to 20-IX-1986.

This species is structurally similar to phlebotomine sand flies, although considerably larger and more agile, and like the 17 sand fly species which occur in the same habitat at Arboledas, shows a sex ratio skewed markedly in favor of males in both resting site and flight trap collections (Alexander, unpublished). It is not known why this is so, since presumably *N. patriciae* shows a 50:50 sex ratio, as in phlebotomine sand flies and most other Diptera.

A single specimen of another undescribed *Nemapalpus* species was caught in the flight trap at El Tejar on 24-VII-1985, and two male *Nemapalpus mopani* (de Leon) were found on tree trunks at finca El Encanto, Vereda El Uvito, approximately 1 km from Arboledas. This species has not been recorded from Colombia before, but is known from Mexico and Guatemala (Fairchild 1952).

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NEW GENERA AND SPECIES OF ANTILLOCORINI FROM TRINIDAD AND BRAZIL (HEMIPTERA:LYGAEIDAE)

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ABSTRACT

Arimacoris pileacola, NEW GENUS and NEW SPECIES from Trinidad, and *Gemmacoris* NEW GENUS (TYPE SPECIES *G. nitens*, new species), from Trinidad and *G. albidus*, NEW SPECIES from Brazil are described. The generic relationships are discussed. Feeding habits of *A. pileacola* are discussed and the nymphs described. Illustrations are given for *A. pileacola* and *G. nitens*.

RESUMEN

Se describen *Arimacoris pileacola*, género nuevo y especie nueva de Trinidad, y *Gemmacoris*, género nuevo (especie tipo, *G. nitens*, nueva especie), de Trinidad, y la especie nueva *G. albidus* del Brazil. Se discuten las relaciones genéricas. Se discuten los hábitos de alimentación de *A. pileacola* y se describen sus ninfas. Se presentan ilustraciones de *A. pileacola* y de *G. nitens*.

The tribe Antillocorini is represented by many taxa and is much more diverse and the relationships more complex than previously suspected. Slater, Sweet and Baranowski (1977) and Slater (1980) have described a number of new taxa; the latter paper discusses the phylogeny and provides a cladogram and a key to the Western Hemisphere genera. Slater (1982) suggests that the Antillocorini may well be a paraphyletic tribe.