

TWO NEW PHLEBOTOMINE SAND FLIES
FROM COLOMBIA (DIPTERA: PSYCHODIDAE)^{1,2}

DAVID G. YOUNG

Department of Entomology & Nematology
University of Florida, Gainesville, Florida 32601

ABSTRACT

Descriptions and illustrations are given of *Lutzomyia recurva* n. sp. from Chocó Dep., Colombia and *Lutzomyia nocticola* n. sp. from Antioquia Dep., Colombia. Both species belong in the subgenus *Psychodopygus* Mang., series *panamensis* and 1 of them (*L. recurva*) is a common man-biter in forests on the Pacific side of the Chocó.

Recent collections of phlebotomine sand flies in Chocó and Antioquia Deps., Colombia have yielded over 15,000 specimens belonging to 50 species in 3 genera - *Lutzomyia* França (45 spp.), *Brumptomyia* França & Parrot (3 spp.) and *Warileya* Fairchild & Hertig (2 spp.). At least 2 of the *Lutzomyia* spp. are new and are described here to make their names available for a forthcoming review of the Colombian species.

Holotypes and allotypes are to be deposited in the U.S. National Museum. Paratypes are in the collection of INDERENA (Natural Resources Development Institute, Bogotá), Fla. State Collection of Arthropods, and in the collection of the author. All measurements in the text are in millimeters and were obtained from specimens mounted on microslides in Canada balsam.

Lutzomyia (Psychodopygus) recurva n. sp.
(Fig. 1-10)

Male: A medium sized sand fly; mesonotum strongly infuscated, head, procoxae, anterior abdominal tergites and genitalia faintly to moderately pigmented, rest of insect pale. Cibarium lacking horizontal teeth but with remnants of vertical teeth; chitinous arch ill defined, apparently complete but lower (more anterior) than in female. Pigment patch subtriangular as in female, barely visible. Pharynx (about 0.18 long) with transverse ridges posteriorly. Eyes large, separated by distance = to about 4 facets. Length of antenna 3 (0.20-0.22), nearly 1.2X length of 4 + 5; ascoids as figured, simple, on all flagellar segments except last 6. Proboscis length about 0.18. Palp formula 1-4-5-2-3, mean length of segments as follows (8 specimens): 1 (0.029), 2 (0.077), 3 (0.108), 4 (0.041), 5 (0.057); Newstead's scales scattered over distal 2/3 of palp 3. With 8-13 upper and 5-11 lower episternal setae. Wing length 1.50-1.60, width about 0.45; length of vein sections as follows (8 specimens): *alpha* (0.35-0.42), *beta* (0.18-0.25), *delta* (0.04-0.10). Length of femorae, tibiae and basitarsi of slide 124 as follows: foreleg, 0.61, 0.94, 0.52; midleg, 0.61, 1.00, 0.61;

¹This investigation was supported in part by U. S. Army Medical Department Contract No. DADA 17-72-C-2139 and by the Air Force Office of Scientific Research, Office of Aerospace Research, U. S. Air Force, AFOSR Grant No. 68-1455.

²Florida Agricultural Experiment Stations Journal Series No. 4768.

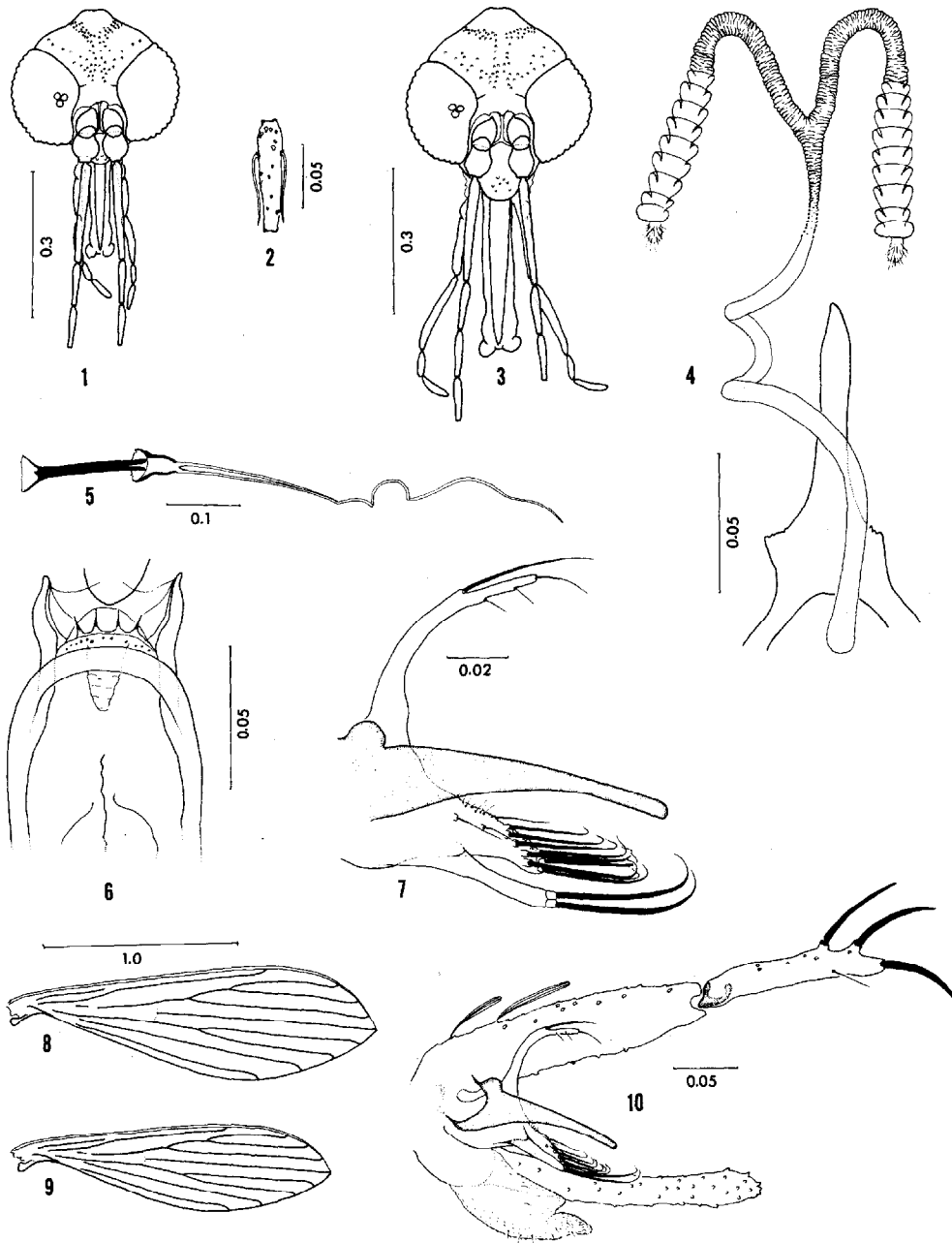


Fig. 1-10 *Lutzomyia recurva* n. sp. 1. Male head (no. 87); 2. Male antennal segment 4; 3. Female head (no. 127); 4. Female spermathecae, drawn in phenol (no. 128); 5. Male genital pump and filaments (no. 61); 6. Female cibarium (no. 112); 7. Male aedeagus and paramere (no. 125); 8. Female wing (no. 128); 9. Male wing (no. 150); 10. Male genitalia (no. 61). Scale in mm.

hind leg, 0.68, 1.20, 0.68. Abdominal tergites with broad, scalelike setae. Genital filaments about 2.8X length of pump, their tips simple. Style with 3 major spines plus a small bristle at about 0.72 of segment. Coxite lacking nondeciduous setae, its length slightly less than that of the unmodified lateral lobe. Aedeagus rather long (about 0.12), slender distally and somewhat downwardly curved. Paramere complex as shown, consisting of an arched dorsobasal arm, a slender lateral arm bearing 2 (rarely 3) terminal strong recurved setae and a main lobe also with mostly strong, recurved setae. Cercus usually as figured but sometimes broader according to angle of view.

Female: Larger than male; pigmentation the same. Cibarium with 4 prominent, equidistant horizontal teeth and usually a nearly even row of 8-15 small, subequal vertical teeth; chitinous arch complete and high; pigment patch as shown, faintly pigmented in most specimens. Pharynx (about 0.20 long) unarmed, with transverse ridges posteriorly. Interocular distance = to about 4.5 facets. Length of antenna 3 (0.20-0.24) about 1.1X length of 4+5; ascoids as in male, on all flagellar segments except last 2. Proboscis length 0.27-0.30. Palp formula 1-4-5-2-3, mean length of segments as follows (8 specimens): 1 (0.038), 2 (0.121), 3 (0.160), 4 (0.049), 5 (0.072); Newstead's scales as in male. With 14-24 upper and 9-15 lower episternal setae. Wing length 1.80-1.96, width about 0.58, length of vein sections as follows (10 specimens): *alpha* (0.49-0.56), *beta* (0.17-0.26), *delta* (0.11-0.21). Length of femorae, tibiae and basitarsi of slide 151 as follows: foreleg, 0.70, 1.00, 0.60; midleg, 0.66, 1.15, 0.66; hind leg, 0.76, 1.36, 0.73. Abdominal tergites with recumbent scale-like setae. Spermathecae imbricated, each with 9-10 distinct annuli; individual duct = to or slightly greater than length of spermatheca; common duct smooth walled except tapered, rugose portion as shown. Cercus acute, subtriangular.

Type data: *Holotype* male (slide 61), approx. 3 km SE of the mouth of Rio Curiche and about 1 km inland from Humboldt Bay, Chocó Dep., Colombia in shannon trap, 22-IV-67, D. G. Young. *Allotype* female (slide 62), same data as holotype. *Paratypes* (slides 63-151), all collected at or near the type locality by D. G. Young in 1967—1 male, 1 female, same data as holotype. 2 females in malaise trap, 6-V. 15 females in shannon trap, 13-V. 5 females biting man, 16-V. 1 male, 1 female in malaise trap, 16-V. 32 females biting man, 18-V. 1 female biting man, 23-V. 1 male, 1 female in malaise trap, 29-V. 1 male in shannon trap, 4-VI. 2 males in malaise trap, 4-VI. 1 male, 21 females biting man, 8-VI. 1 male in malaise trap, 10-VI. 1 male in malaise trap, 1-VII. 1 male in shannon trap, 17-X. About 400 additional females, taken at the type locality, are stored in vials of alcohol in the author's collection.

Discussion: *L. recurva* belongs in the subgenus *Psychodopygus* Mang., series *panamensis* as defined by Theodor (1965). The included species are: *L. ayrozai* (Barretto & Coutinho), *L. carrerai* (Barretto), *L. fairchildi* Barretto, *L. hirsuta* (Mang.), *L. nicaraguensis* (Fchld. & Hertig), *L. nocticola* n. sp., *L. panamensis* (Shannon), *L. paraensis* (Costa Lima), *L. pessoana* (Barretto), and *L. tintinabula* Fchld. & Christensen.

The male of *L. recurva* differs markedly from the above males in the following respects. Each paramere has a slender, curved dorsobasal arm as well as a main lobe and smaller lateral arm which bear recurved setae. The other species lack dorsal arms of the parameres and have either simple or blade-like setae on the main or lateral lobes. The aedeagi of *L. recurva*, unlike those of the other males, are rather long and slender.

The female of *L. recurva* closely resembles *L. amazonensis* (Root), known only from the female, in having few, nearly subequal vertical teeth in the cibarium. The other *Psychodopygus* females have teeth of varying size, often with the largest ones forming median longitudinal rows, not seen in *L. recurva* or *L. amazonensis*.

The females of these 2 species are separable on the basis of the individual ducts of the spermathecae. In *L. recurva*, these ducts are much longer than those of *L. amazonensis*, each being equal to or greater than the length of the spermathecal body. In *L. amazonensis*, based on Root's description (1934) and on the lectotype in the U. S. National Museum of Natural History each individual duct is about 1/3 the length of the spermatheca.

Other differences, which may or may not be significant, include the following. In *L. recurva*, the procoxae are lightly pigmented. The common duct of the spermathecae is smooth walled except for the noticeably tapered rugose portion. In *L. amazonensis*, the procoxae are pale and the common spermathecal duct, including the rugose portion, is nearly uniform in width throughout. It also seems to have faint transverse striations below the rugose portion but these are barely discernible in the 1 specimen examined.

L. recurva was collected in rain forests on the Pacific side of Chocó Dep. where it appears to be seasonally abundant. Of 380 females taken in routine human bait collections from April 1967 to December 1967, 375 were collected from May to early July. Four were taken in August and only 1 in November. During this 8 month period, only *L. panamensis*, *L. hartmanni* (Fchld. & Hertig) and *L. sanguinaria* (Fchld. & Hertig) were more common in night human bait collections. Other specimens of *L. recurva* were captured in light, shannon, and malaise traps but none were found resting in the daytime, although tree cavities were the only diurnal resting sites adequately sampled.

Lutzomyia (Psychodopygus) nocticola n. sp.
(Fig. 11-23)

Male: A medium sized, nearly pale sand fly, with only lateromedian aspect of mesonotum faintly to moderately infuscated. Cibarium unarmed except for about 20 reduced vertical teeth; chitinous arch apparent only at sides; pigment patch indiscernible. Pharynx (about 0.16 long) unarmed, with posterior ridges. Eyes large, separated by distance = to about 4 facets. Length of antenna 3, 0.20-0.22, slightly over 1.1X length of 4+5; ascoids as figured, on all flagellar segments except last 6. Proboscis length about 0.18. Palp formula 1-4-5-2-3, mean length of segments as follows (3 specimens): 1 (0.033), 2 (0.085), 3 (0.114), 4 (0.044), 5 (0.055); Newstead's scales scattered over distal 2/3 of palp 3. With 8-12 upper and 3-8 lower episternal setae. Wing length 1.73-1.81, width about 0.51; length of certain vein sections as follows (5 specimens): *alpha* (0.40-0.47), *beta* (0.20-0.23), *delta* (0.05-0.11). Length of femorae, tibiae, and basitarsi of slide 215 as follows: foreleg, 0.75, 1.13, 0.78; midleg, 0.69, 1.27, 0.82; hind leg, 0.80, 1.44, 0.88. Genital filaments about 3X length of pump with simple tips. Style with 3 major spines plus a small bristle at about 0.67 of segment. Coxite without nondeciduous setae, its length less than that of unmodified lateral lobe. Aedeagus broad, pigmented only at distal end. Paramere complex, consisting of a main lobe bearing about 14 relatively long, blade-like setae and a slender, relatively long ventral arm as shown. Cercus as figured.

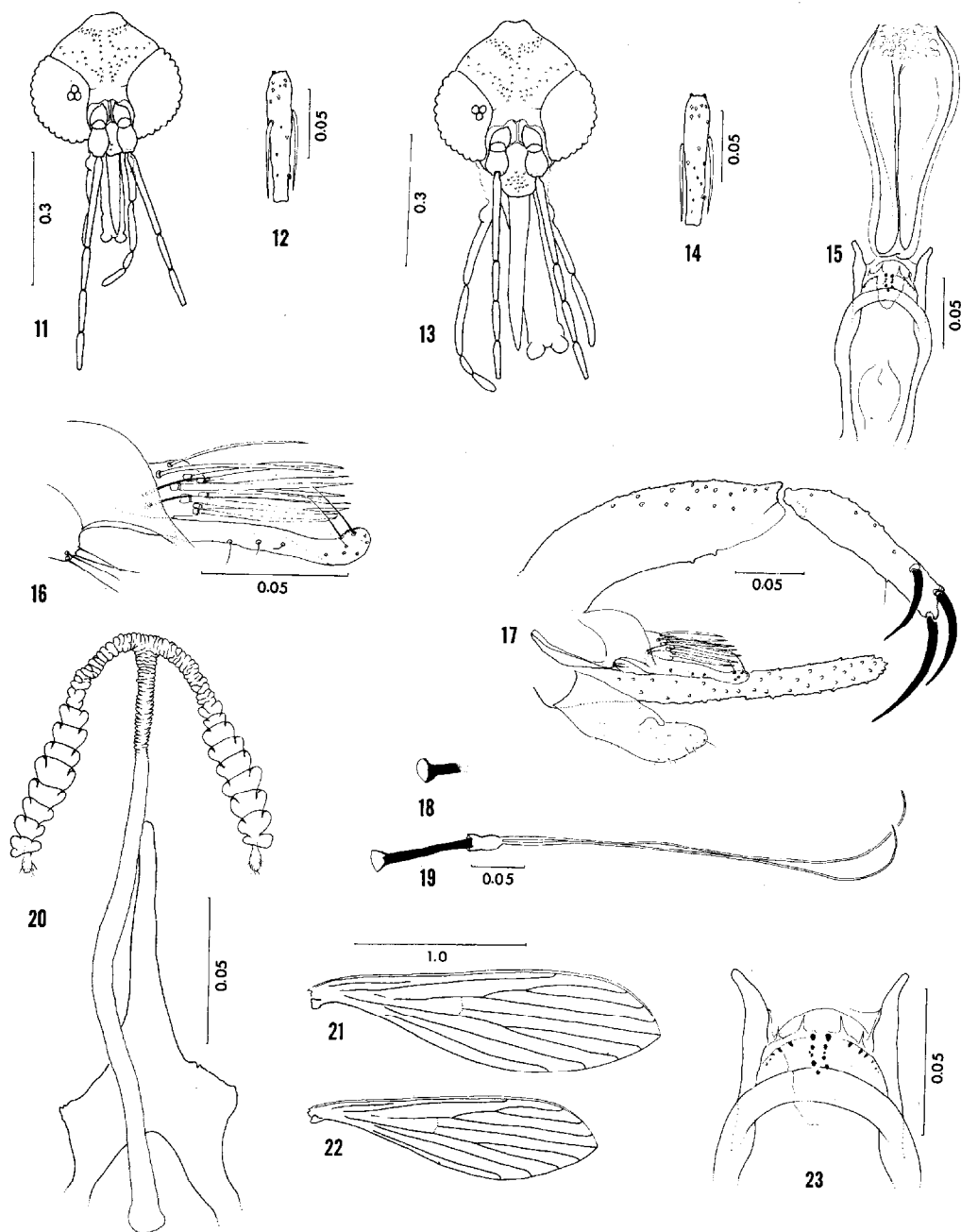


Fig. 11-23. *Lutzomyia nocticola* n. sp. 11. Male head (no. 224); 12. Male antennal segment 4 (no. 224); 13. Female head (no. 231); 14. Female antennal segment 4 (no. 233); 15. Female cibarium and pharynx (no. 233); 16. Male aedeagus and paramere (no. 224); 17. Male genitalia (no. 224); 18. Anterior end of genital pump (no. 215); 19. Genital pump and filaments of male (224); 20. Female spermathecae, drawn in phenol (no. 231); 21. Female wing (no. 231); 22. Male wing (224); 23. Female cibarium (no. 233). Scale in mm.

Female: Slightly larger than male, degree and distribution of pigmentation the same. Cibarium as figured, with 4 horizontal teeth, with 2 median longitudinal rows (sometimes uneven) of 4-7 teeth in each row and with usually smaller vertical teeth just anterior (under) the horizontal teeth, lateral teeth, although inconspicuous, present; chitinous arch complete and high but less distinct in middle; pigment patch as shown, only lightly infuscated. Pharynx (about 0.19 long) unarmed as shown. Eyes large, interocular distance = to about 6 facets. Length of antenna 3 (0.19-0.23), about 1.1X length of 4+5; ascoids as shown, on all flagellar segments except last 2. Proboscis length 0.34-0.37. Palp formula 1-4-5-2-3, mean length of segments as follows (11 specimens): 1 (0.047), 2 (0.155), 3 (0.176), 4 (0.049), 5 (0.064); Newstead's scales as in male. With 11-22 upper and 3-7 lower episternal setae. Wing length 1.89-2.13, width about 0.57; length of vein sections as follows (10 specimens): *alpha* (0.47-0.61), *beta* (0.22-0.30), *delta* (0.07-0.17).

Length of femorae, tibiae, and basitarsi of slide 216 as follows: foreleg, 0.86, 1.29, 0.88; midleg, 0.79, 1.44, 0.90; hind leg, 0.90, 1.67, 1.02. Spermatheca imbricated, each with 7-10 distinct annuli, terminal segment normally symmetrical; spermathecal ducts as shown. Cerci subtriangular, unremarkable.

Type Data: *Holotype* male (slide 215), about 24 km SW of Zaragoza, near Rio Anori, Antioquia Dept., Colombia (elev. about 550 m above sea level), in light trap, 9 May 1970, C. H. Porter coll. *Allotype* female (slide 216), same data as holotype except collected on 17 Sept. 1970, by D. G. Young. *Paratypes* (slides 217-230, all collected in light traps from the type locality in 1970); 5 females, 3 May, C. H. Porter coll. 1 female, 7 May, C. H. Porter coll. 1 female, 23 May, C. H. Porter coll. 1 male, 16 Sept., D. G. Young coll. 1 male, 3 females, 17 Sept., D. G. Young coll. 2 males, 2 females, 20 Sept., D. G. Young coll. 2 females, 22 Sept., D. G. Young coll.

Discussion: Although closely related to *Lutzomyia ayrozai*, *L. tintinabula*, *L. paraensis* and its allies, the male of *L. nocticola* differs from them in the shape and setation of the paramere. In this species the main lobe is reduced and bears only 10-14 long, blade-like setae. The lateral arm is relatively much longer than that of *L. ayrozai* or *L. tintinabula*. The other species, *L. paraensis*, *L. fairchildi*, *L. pessoana*, etc., have more setae, either simple or blade-like, implanted on a broader main lobe.

The female of *L. nocticola* was associated with the male on the basis of collecting data, metrical characters, and color. Also, no other possible mates were found in the Rio Anori study area. It can be separated, with some hesitation, from the other *Psychodopygus* females by the following combination of characters: cibarium with 4 nearly straight horizontal teeth, one transverse row of 8-15 vertical teeth below the horizontal teeth and usually 2 median rows of larger longitudinal teeth as shown; pigment patch very faint; proboscis length less than 0.40; mesonotum only faintly pigmented; spermatheca longer than individual duct, with terminal segment normally symmetrical and with 7-10 distinct annuli; common duct smooth walled except for rugose portion.

Other than being attracted to light traps in forested areas near the Rio Anori, nothing is known about the habits of *L. nocticola*. Most of the well-studied sand flies in the subgenus *Psychodopygus* are anthropophilic and some such as *L. panamensis*, *L. paraensis*, *L. wellcomei* Fraiha, Shaw & Lainson, and 1 undescribed species from northern Brazil have been found naturally

infected with promastigotes of *Leishmania braziliensis* (see Christensen et al. 1969, and Lainson and Shaw 1972).

ACKNOWLEDGEMENTS

For help during part of the field work, I wish to thank the following persons: Dr. Thomas M. Yuill, Mr. Charles H. Porter, Mr. Norman E. Peterson of the University of Wisconsin, LTC Bruce F. Eldridge, Walter Reed Army Institute of Research, and Dr. G. B. Fairchild of the University of Florida who kindly offered support and suggestions whenever needed.

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The Florida Entomologist 56(2) 1973

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