

REDESCRIPTION OF THE ADULT AND LARVA AND FIRST DESCRIPTION OF THE PUPA OF *ANOPHELES (KERTESZIA) LANEANUS*

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ABSTRACT. *Anopheles (Kerteszia) laneanus* is redescribed and compared with other species of the subgenus *Kerteszia*. The pupal stage is described for the 1st time and information on bionomics is provided.

KEY WORDS *Anopheles*, *Kerteszia*, *Anopheles (Kerteszia) laneanus*, redescription, taxonomy.

INTRODUCTION

The subgenus *Kerteszia* Theobald includes 12 species of Neotropical *Anopheles* Meigen. Nine of the species were reviewed by Zavortink (1973) and 3 others have been described since, *An. auyantepuiensis* by Harbach and Navarro (1996), *An. rollai* by Cova-Garcia et al. (1977b), and *An. gozalezrinconesi* by Cova-Garcia et al. (1977a). Among *Kerteszia* species, *An. cruzii* Dyar and Knab, *An. bellator* Dyar and Knab, *An. neivai* Howard, Dyar, and Knab, and *An. homunculus* Komp were demonstrated to be primary vectors of human malaria (Zavortink 1973). *Anopheles lepidotus* Zavortink and *An. laneanus* Corrêa and Cerqueira were suspected to be involved in human malaria transmission. In addition, Boraceia virus was isolated from *An. cruzii* by Lopes and Sacchetta (1974). Overall, the epidemiologic importance of the subgenus *Kerteszia* remains largely unknown. Some species are not known in all life stages: *An. auyantepuiensis* (male unknown), *An. lepidotus* Zavortink and *An. laneanus* (pupa unknown), and *An. boliviensis* (Theobald) (male, pupa, and larva unknown). Recent works include a redescription of *An. cruzii* by Wilkerson and Peyton (1992) and description of *An. auyantepuiensis* by Harbach and Navarro (1996). *Anopheles (Kerteszia)* eggs are known only for *An. cruzii* and *An. bellator* (Forattini and Marucci 1993), *An. laneanus* (Forattini et al. 1997), and *An. neivai* (Baerg and Boreham 1974).

We redescribe here the male, female, and larva of *An. laneanus*, and for the 1st time describe the pupa. We followed Harbach and Knight (1980, 1982) for terminology of morphologic characters, Belkin (1962) for wing veins, and Wilkerson and Peyton (1990) for wing spots nomenclature.

DESCRIPTION

Anopheles (Kerteszia) laneanus

Corrêa and Cerqueira

(Figs. 1 and 2)

Corrêa and Cerqueira 1944:112 (male). Type locality: Campos do Jordão, State of São Paulo, Brazil (FSP). Corrêa 1946:605; Martinez 1949:13 (Bolivia); Romeo-Viamonte and Castro 1951:313; Lane 1951:336 (as ssp. of *An. cruzii*); Lane 1953:286 (as ssp. of *An. cruzii*, ♂*, ♀, L, dist.); Forattini 1962:445 (elevated to specific rank ♂*, ♀*, L*, key, dist.); Zavortink 1973 (♂*, ♀*, L, key, dist., references); Forattini et al. 1997:369 (E*).

Female. Integument dark brown with gray pilinose markings. **Head:** Interocular space with frontal tuft of long, pale yellow setae, and semierect, white, spatulate scales, anterior scales longer than posterior scales and projecting forward; vertex immediately posterior to frontal tuft with erect, white, spatulate scales and a few long, pale yellow setae; remainder of vertex and occiput with erect, dark brown, spatulate scales; postgena with tuft of white, spatulate scales and a few short, pale yellow setae at junction of eyes; ocular setae black. Clypeus bare. Pedicel of antenna dark brown medially, yellowish brown laterally, without scales; flagellomere 1 with a few dark brown scales on medial surface. Proboscis dark-scaled; length 1.93–2.35 mm (\bar{x} = 2.16 mm, 10 specimens were measured for this and all other measures), 1.32–1.46 length of forefemur (\bar{x} = 1.39), 1.04–1.14 length of maxillary palpus (\bar{x} = 1.09). Maxillary palpus mostly dark-scaled with small patches of white scales dorsally at apices of palpomeres 3–5; scales erect on palpomere 2 and medially on base of palpomere 3; length 1.80–2.19 mm (\bar{x} = 1.98 mm), 0.88–0.96 length of proboscis (\bar{x} = 0.92); length palpomere 2/palpus length = 0.33–0.40 (\bar{x} = 0.37); length palpomere 3/palpus length = 0.31–0.40 (\bar{x} = 0.35), length palpomere 4/palpus length = 0.16–0.19 (\bar{x} = 0.18), length palpomere 5/palpus length = 0.10–0.13 (\bar{x} = 0.11). **Thorax:** Integument pruinose with pattern of light to dark brown areas. Scutum with 4 longitudinal dark brown stripes between acrostichal and dorso-central areas and between dorsocentral area and lateral margin; pale yellow setae on acrostichal area, dorsocentral area except on anterior and posterior ends, scutal fossa, antear area, anteriorly and lat-

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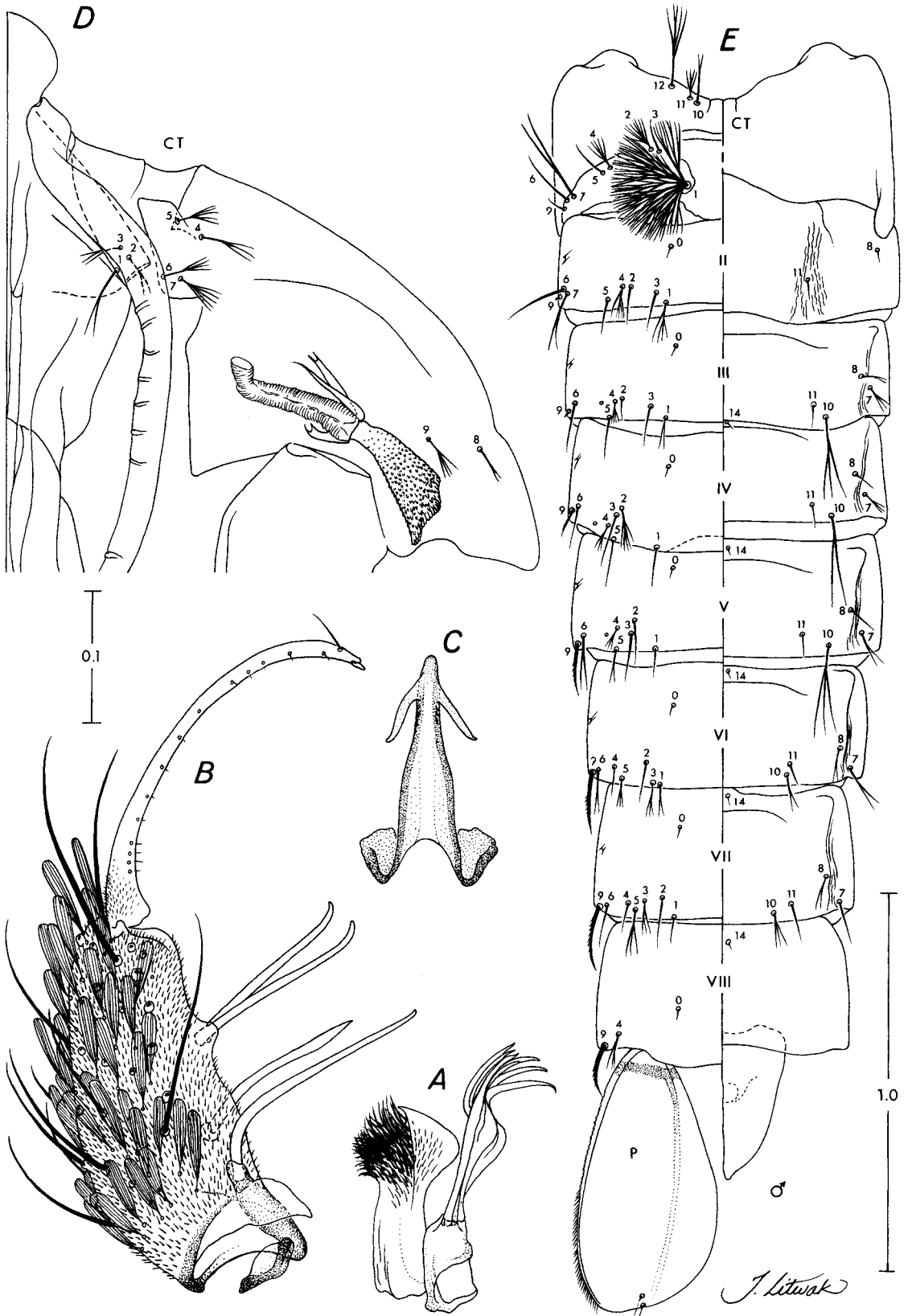


Fig. 1. *Anopheles laneanus* male genitalia and pupa. (A) Ventral and dorsal claspettes dorsal aspect. (B) Gonocoxite and gonostylus dorsal aspect. (C) Aedeagus dorsal aspect. (D) Cephalothorax. (E) Metathorax and abdomen, left side dorsal, right side ventral. Scale in mm.

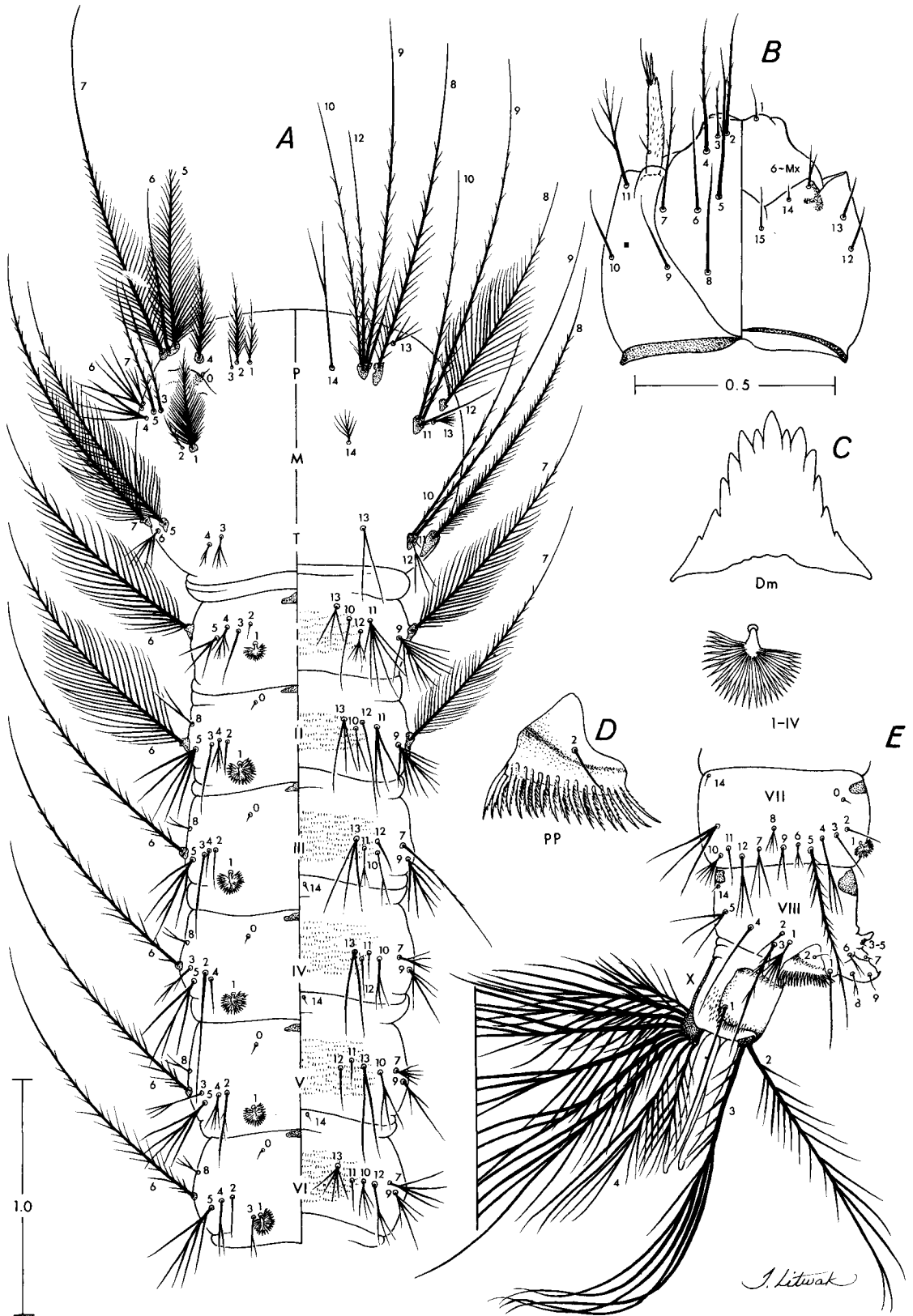


Fig. 2. *Anopheles laneanus* larva. (A) Thorax and abdominal segments I-VI, left side dorsal, right side ventral. (B) Head, left side dorsal, right side ventral. (C) Dorsomentum. (D) Pecten and pecten plate. (E) Abdominal segments VII-X side view. Scale in mm.

Table 1. Number of branches for setae of the pupa of *Anopheles laneanus*: range (mode).¹

Seta no.	Cephalo-thorax CT	Abdominal segments									Paddle P	
		I	II	III	IV	V	VI	VII	VIII	IX		
0	—	—	1	1	1	1	1	1	1	1	—	—
1	1-4 (2)	8-12 (8)	2-5 (4)	1-4 (2)	1-3 (1)	1-3 (1)	1-4 (2)	1-5 (1)	—	1	1	1
2	2-4 (2)	4-11 (8)	1, 2 (1)	1, 2 (1)	3-5 (5)	1-3 (1)	1-4 (1)	1-5 (1)	—	—	—	1-3 (2)
3	1-4 (3)	1-2 (1)	1-4 (1)	1-3 (1)	1, 2 (1)	1-5 (1)	1-5 (3)	2-9 (3)	—	—	—	—
4	2-7 (3)	4-9 (7)	3-10 (5)	2-6 (4)	2-4 (3)	1-6 (3)	1-5 (1)	1-5 (1)	1-5 (1)	1-5 (3)	—	—
5	4-10 (5)	1-3 (1)	1-3 (1)	1-3 (1)	1-3 (1)	1-5 (2)	1-6 (2)	2-5 (3)	—	—	—	—
6	3-6 (4)	1-7 (1)	1-4 (1)	1, 2 (1)	1, 2 (1)	1-4 (2)	1-3 (2)	2-6 (2)	—	—	—	—
7	2-5 (5)	2-7 (5)	2-7 (2)	1-6 (3)	2-4 (3)	1-3 (2)	1-3 (2)	1-4 (1)	—	—	—	—
8	1, 2 (2)	—	1-3 (1)	1-4 (2)	1-3 (1)	1-3 (1)	1-3 (2)	1-3 (2)	—	—	—	—
9	3-7 (4)	1	1	1, 2 (1)	1	1	1	1	1, 2 (1)	—	—	—
10	1-3 (2)	—	—	2-4 (3)	1-4 (2)	1-5 (3)	1-3 (2)	1-5 (3)	—	—	—	—
11	2-7 (4)	—	1	1, 2 (1)	1	1	1, 2 (1)	1-3 (1)	—	—	—	—
12	4-8 (5)	—	1	—	—	—	—	—	—	—	—	—
13	1	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	—	1, 2 (1)	1	1	1	1, 2 (1)	—	—	—

¹ Based on counts made on 17-20 setae except for seta 1-I, 8 counts.

erally on prescutellar area; long, dark brown setae on supraalar area, laterally on prescutellar area, and anteriorly and posteriorly on dorsocentral area; narrow, white spatulate scales on anterior 0.3-0.4 of acrostichal area and anterior promontory, anterior 0.3-0.4 of dorsocentral area, lateral fossal margin, antealar and supraalar areas and a few scattered ones on scutal fossa; anterior end of dorsocentral area with a few, dark spatulate scales. Scutellum with a few white spatulate scales intermixed with short, pale yellow setae on median lobe, posterior margin with long and short dark brown setae. Mesopostnotum bare. Anteprepronotum with dark setae and patch of dark spatulate scales on upper area, remainder of anteprepronotum with pale yellow setae and a few scattered, white spatulate scales. Pleura with pale yellow setae on upper proepisternum, prespiracular area, upper mesokatepisternum, prealar knob, and upper mesepimeron; small patches of white spatulate scales on upper mesokatepisternum, posterior border of middle mesokatepisternum, prealar knob, upper mesepimeron and middle anterior mesepimeron; posterior border of metepisternum with or without small patch of semierect, pale spatulate scales intermixed with a few pale setae. *Wing*: Length 2.88-3.58 mm (\bar{x} = 3.23 mm), veins dark-scaled with spots of white scales as follows: costa always with basal pale, sector pale, subcostal pale, and preapical pale spots; humeral pale spot usually present but sometimes reduced to 1 or 2 scales ventrally, accessory sector pale spot absent on C in about 50% of wings; remigium white-scaled except at humeral crossvein; vein R base pale about 0.5 distance to sector pale spot; R₁ with accessory sector pale, subcostal pale and preapical pale spots; R₂ with or without preapical pale spot; R₃ with 2-4 narrow, distal, white scales; R₂₊₃ with 2, 3 narrow, white scales at basal end and with or without variable apical pale spot extending to base of veins R₂ and R₃; vein R₂ with small, distal, pale

spot, adjacent to preapical pale spot on R₁; R₄₊₅ with small basal pale spot and submedian pale line; CuA with subbasal and median pale spot, median pale spot joins pale spot at base of mcu; M₃₊₄ with small pale spot at mcu; veins M₂, M₃₊₄, and CuA with small pale spot at apex; pale fringe spots at apices of veins R₂, M₂, M₃₊₄, CuA, and 1A. *Halter*: Scabellum and pedicel with pale integument; capitellum dark-scaled with patch of pale scales at base. *Legs*: Anterior surface of forecoxa with dark scales proximally and white scales distally, posterior surface with patch of ventrally directed white scales at apex; outer surface of midcoxa with white scales, proximal scales semierect, posterior surface with a few white scales at apex; anterior surface of hindcoxa with small patch of white scales. Foretrochanter with dark and white scales; mid- and hindtrochanters with white scales. Foretarsomeres 1-3 with dorsal white scaling, foretarsomere 2 with apical 0.51-0.81 (\bar{x} = 0.70) white, foretarsomere 3 with apical 0.68-0.84 (\bar{x} = 0.76) white, foretarsomeres 4, 5 entirely dark-scaled; midtarsomeres 1, 2 with dorsal white scaling, midtarsomere 2 with apical 0.49-0.62 (\bar{x} = 0.54) white, midtarsomere 3 with or without dorsal white scaling, midtarsomeres 4, 5 entirely dark-scaled; hindtarsomere 1 mostly white-scaled with subbasal and subapical dark bands, hindtarsomeres 2-5 with variable but relatively broad apical white bands, hindtarsomere 2 with apical 0.52-0.66 (\bar{x} = 0.59) white, hindtarsomere 3 with apical 0.60-0.72 (\bar{x} = 0.65) white, hindtarsomere 4 with apical 0.46-0.55 (\bar{x} = 0.49) white, and hindtarsomere 5 with apical 0.31-0.56 (\bar{x} = 0.43) white. *Abdomen*: Integument light to dark brown with reddish sheen; terga and sterna without scales.

Male. Similar to female except for sexual differences. Maxillary palpus dark-scaled, scales semierect on most of palpomere 2, decumbent on apex of palpomere 2, and palpomeres 3-5; medial

surface of palpomeres without scales; palpomere 3 with long, dark brown setae at apex of ventral surface, palpomere 4 with long, dark brown setae on medial surface; palpomere 3 with dorsoapical patch of white scales, palpomere 4 with patch of white scales on dorsoapical 0.25, and palpomere 5 with patch of white scales on dorsoapical 0.75. *Genitalia* (Fig. 1): Parabasal seta arising from long tubercle, apex truncate; internal seta flattened, tapered toward apex, with pointed tip. Ventral claspette with long spicules except laterally; lateral expansion broad, prominent, rounded, tergo-lateral margin curved ventrad posteriorly. Aedeagus with tiny denticles around leaflets and 1 pair of long, strong, basally directed, lateral leaflets; leaflets about 0.3 length of aedeagus.

Pupa (Fig. 1). Position and development of setae as figured; range and modal number of branches in Table 1. *Cephalothorax*: Integument weakly to moderately pigmented; trumpet angusticorn, without meatal cleft; pinna about 0.25 of trumpet length. Seta 13-CT, or its alveolus, present. *Abdomen*: Weakly to moderately pigmented, segment II darker than the other segments. Setae 2-, 4-IV and 3-, 5-IV usually more or less in line with each other; 3-VI laterad of 1-VI; 11-II or its alveolus, present; seta 1-VII inserted on posterior margin of segment; 14-III absent. Seta 9-II, -III short, peglike, 9-IV-VIII long with strong lateral aciculae more evident on segments V-VIII. Ratios of setae 9-II-VI and VIII to 9-VII as follow: II, 0.005-0.09 (\bar{x} = 0.07); III, 0.06-0.13 (\bar{x} = 0.10); IV, 0.29-0.76 (\bar{x} = 0.55); V, 0.63-0.97 (\bar{x} = 0.84); VI, 0.90-1.10 (\bar{x} = 0.98); VIII, 0.63-0.99 (\bar{x} = 0.84). *Paddle*: Index 1.71-1.95 (\bar{x} = 1.81). Spicules of marginal fringe very short basally, about 0.5 of length of 1-P distally. Dark pigmented area present near base. Seta 1-P 0.02-0.06 length of paddle (\bar{x} = 0.05).

Larva (Fig. 2). Position and development of setae as figured, range and modal number of branches in Table 2. With characteristic reddish color. *Head*: Antennal length 0.22-0.25 mm (\bar{x} = 0.23 mm); width 0.04-0.05 mm (\bar{x} = 0.03 mm); antenna curved slightly outward. Seta 1-A single, length 0.89-2.0 width of antenna (\bar{x} = 1.39); distance of 1-A from base of antenna 0.23-0.39 length of antenna (\bar{x} = 0.29); seta 4-A often single, occasionally bifid. Seta 2-C 1.06-1.31 length of antenna (\bar{x} = 1.19), usually with sparse aciculae or sometimes with longer aciculae; 3-C stout, 0.51-0.76 length of 2-C (\bar{x} = 0.63) with small sparse aciculae, occasionally with stout aciculae; 4-C stout with stout aciculae or sometimes with less developed aciculae, about as long as 2-C; 5-, 7-C aciculate; 6-C sparsely aciculated or occasionally bifid, inserted slightly posteriorly to 5-, 7-C; 11-C stout with 4-8 (6) branches. *Thorax*: Seta 9, 10-P, -M, -T aciculate; 2-, 3-M aciculate, 2-M with long basal aciculae. *Abdomen*: Seta 1-I-VII palmate, less developed on segments I and VII, leaflets moderately developed, lanceolate. Seta 3-VI laterad of 1-VI; 5-II-VI well

Table 2. Number of branches for setae of the larva of *Anopheles laneanus*: range (mode).¹

Seta no.	Head C	Thorax		
		P	M	T
0	—	1	—	—
1	1	7-16 (8)	37-60 (48)	1
2	1	18-37 (18)	1, 2 (1)	1
3	1	1	1	3-8 (4)
4	1	21-39 (26)	3-6 (4)	1-4 (3)
5	1, 2 (1)	35-73 (65)	1	32-70 (59)
6	1-3 (1)	1-3 (1)	3-9 (4)	3-7 (5)
7	1-3 (1)	38-67 ³	2-6 (3)	36-62 (58)
8	1	36-71 (36)	28-43 (43)	40-109 (83)
9	1-2 (1)	1	1	1
10	1	1	1	1
11	4-8 (6)	1-3 (1)	1	1
12	1, 2 (1)	1	2-4 (2)	2, 3 (3)
13	1	3-5 (3)	4-10 (6)	2, 3 (2)
14	1-4 (1)	1-3 (2)	5-8 (7)	—
15	1	—	—	—

¹ Based on counts made on 10-20 setae except for seta 7-P, 8 counts. NC, not counted.

² Number of pairs.

³ Mode indefinite.

developed; 6-III-VI subequal in development, aciculate; 3-II simple, 2-III simple or sparsely aciculate, 3-, 7-III aciculate, 2-IV, -V aciculate, 4-VI simple, and 5-VII aciculate. Pecten teeth subequal in length with fine spinules on dorsal margin of dorsal teeth and on both ventral and dorsal margins of ventral teeth. Saddle more pigmented on basal and basoventral margins basal to seta 1-X; posteroventral margin with long, single spicules intermixed with apically branched, stouter spicules; 2-X long, about as long as 3-X; most caudal setae of 4-X longer than saddle, multibranching.

Distribution. Known from southeastern Brazil, State of São Paulo, Argentina and Bolivia.

Bionomics. Immatures of *An. laneanus* were taken from terrestrial and arboreal bromeliads. The larva and pupa have characteristic red pigmentation similar to that of *An. cruzii* (Wilkerson and Peyton 1992). The oviposition sites and larval habitat of the species seem to be restricted to bromeliads in high-altitude rain forest. Larvae of *An. laneanus* were collected in association with larvae of *Phonomyia antunesi* (Lane and Guimarães), *Culex (Microculex) imitator* Theobald and *Cx. (Mcx.) worontzowi* Pessoa and Galvão. Adult females were collected on human bait between 1800 and 2000 h.

Medical importance. *Anopheles laneanus* was suspected to be involved in human malaria transmission in Bolivia (Martinez and Prosen 1953).

Type material (examined). Holotype male, adult on pin with associated male genitalia on slide with the following collection data: BRAZIL, State of São Paulo, Serra da Mantiqueira, Campos do Jordão, F. Lane coll. I-1936 (FSP no. 2227, slide number 640).

Other material examined. One hundred fifty-

Table 2. Extended.

Abdominal segments								
I	II	III	IV	V	VI	VII	VIII	X
—	1	1	1	1	1	1	1	—
15-18 (18)	20-32 (26)	21-30 (26)	25-35 (30)	27-42 (29)	22-34 (23)	NC	3-7 (6)	1
1	1	1	1	1	1, 2 (1)	1, 2 (1)	1	12-20 (15)
1, 2 (1)	1	1	3-5 (4)	2-4 (3)	1-4 (2)	1-3 (1)	3-11 (5)	7-11 (8)
5-10 (6)	4-7 (4)	1-3 (1)	1, 2 (1)	3-6 (4)	1-4 (2)	1-4 (3)	1, 2 (1)	8, 9 (9) ²
2-5 (3)	4-8 (7)	4-7 (5)	3-9 (4)	3-9 (5)	3-9 (4)	1	2-4 (3)	—
36-51 (41)	30-60 (49)	1	1	1	1	2-5 (3)	1-S	1-4 (2)
35-61 (51)	35-76 ³	1	3-6 (4)	3-6 (5)	3-5 (4)	3-6 (3)	2-S	1
—	1-3 (2)	1-4 (2)	1-4 (2)	1-4 (2)	2-5 (3)	3-5 (3)	6-S	3-5 (3)
5-12 (9)	7-12 (9)	5-8 (6)	3-5 (4)	2-5 (3)	3-5 (4)	2-5 (2)	7-S	1
1, 2 (1)	1-4 (2)	2-4 (3)	2-4 (3)	2-4 (3)	2-5 (4)	3-7 (5)	8-S	1-3 (2)
4-13 (6)	2, 3 (3)	1, 2 (1)	1	1, 2 (1)	1	1	9-S	1, 2 (1)
2-5 (5)	1, 2 (1)	1	1	1	2-4 (3)	3-5 (3)	—	—
3, 4 (3)	3, 4 (3)	2, 3 (2)	2, 3 (2)	2-4 (2)	3-6 (5)	2, 3 (3)	—	—
—	—	—	1	1-2 (1)	1	1	1	—
—	—	—	—	—	—	—	—	—

nine specimens were examined, consisting of 36 females, 21 males, 54 pupal exuviae, 43 larval exuviae, 5 male genitalia from BRAZIL, State of São Paulo, Serra da Mantiqueira, Campos do Jordão, Reserva Florestal do Pico do Itapeva (22°45'31"S, 45°30'55"W), at elevations of 1,840 m, Marques et al. coll., 15 Mar. 1994, 3♂, 1♂G, 5♀, 8Pe, 8Le; 22 Mar. 1994, 4♂, 2♀, 1♂G, 4Pe, 4Le; 30 Mar. 1994, 6♀, 3♂, 1♂G, 9Pe, 10Le; 12 Apr. 1994, 6♀, 1♂, 7Pe, 5Le; 8 Nov. 1994, 8♂, 7♀, 1♂G, 17Pe, 7Le; 12 Mar. 1992, Sallum det. 1992, 6♀, 6Le, 5Pe; Gomes coll., Feb. 1989, Sallum det., 1990, 1♀, 1Pe; Natal coll., Apr. 1986, Sallum det., 2♂, 1♀, 3Le, 3Pe; R. Corrêa coll., 1946, Coutinho det., 1946, 2♀, 1♂G.

DISCUSSION

Harbach and Navarro (1996) considered the presence of acrostichal scales on *An. auyantepuiensis* to be a unique condition among species of the subgenus *Kerteszia*; however, they also occur in *An. laneanus*, *An. rollai*, and *An. gozalezrinconesi*. Adults of *An. laneanus* are easily differentiated from those of *An. rollai*, *An. gozalezrinconesi*, and *An. auyantepuiensis* in possessing both upper and median anterior mesepimeral scales, and from *An. rollai* and *An. gozalezrinconesi* by not having abdominal scales.

Anopheles laneanus, *An. homunculus*, *An. cruzii*, and *An. bellator* closely resemble each other in general adult morphology, male genitalia, and immature stages. However, the adult of *An. laneanus* is easily differentiated from those of *An. cruzii*, *An. bellator*, and *An. homunculus* in possessing white scales on the anterior 0.3-0.4 of acrostichal and dorsocentral areas, and on the median lobe of the scutellum, and from *An. homunculus* and *An. cruzii* in having the larger acrostichal, dorsocentral, and

median scutellar setae predominantly pale, vein M mostly or entirely white-scaled basad of level of furcation of vein C, from *An. bellator* in possessing broad apical white bands on hindtarsomeres 2-5, and from *An. homunculus* in having abdominal tergites slightly to conspicuously reddish. Within the subgenus *Kerteszia*, *An. laneanus*, *An. bellator*, and *An. cruzii* are the only 3 species in which aedeagal leaflets are present; however, this condition rarely occurs in *An. homunculus*. The male genitalia of *An. laneanus* most closely resemble those of *An. bellator*, from which they can be distinguished by the presence of minute denticles on the aedeagus around the aedeagal leaflets (Fig. 1), which are absent in *An. bellator*. For further details about differences in male genitalia structures see Forattini (1962) and Zavortink (1973).

Fourth-stage larvae of *An. laneanus* are similar to those of *An. cruzii*, *An. homunculus*, and *An. bellator* in having seta 6-VI long and aciculate, seta 1-I palmate, 4-C as strong as or stronger than 2-C, and pecten teeth with spicules mostly on 1 side. Larvae of *An. laneanus*, *An. cruzii*, and *An. bellator* differ from those of *An. homunculus* in possessing a characteristic dorsal pattern of reddish pigment, whereas *An. homunculus* has a violet pattern or is blackish (*An. bellator* is blackish from 1st to 3rd instars, becoming reddish during the 4th-instar and pupal stages). Larvae of *An. laneanus* also differ from *An. homunculus* and *An. bellator* in having pecten teeth equally long; from *An. homunculus* in having the most ventral seta 4-X moderately developed, longer than anal saddle, seta 3-C less developed than 2-C, seta 5-II-V distinctly branched, and leaflets of palmate setae with short points and smooth margins; from *An. bellator* in having leaflets of palmate setae not extended into long, slender points, seta 2-, 3-C with evident aciculae, and seta 14-P long; and from *An. cruzii* in having seta 8-C

extending beyond base of 6-C, and 2-, 3-C with obvious aciculae.

The pupal stages of *An. cruzii*, *An. bellator*, *An. homunculus*, and *An. laneanus* differ from all other *Kerteszia* species in possessing seta 9-V long, paddle somewhat obovate with short marginal serrations, and setae 1-, 2-P present. Pupae of *An. laneanus* can be distinguished from those of *An. homunculus* in having a characteristic reddish color, similar to those of *An. cruzii* and *An. bellator*, whereas *An. homunculus* is dark. *Anopheles laneanus* also differs from *An. homunculus* and *An. bellator* in possessing seta 9-IV about 0.45–0.87 length of 9-V, and from *An. homunculus* in having seta 12-CT with 4–8 branches. *Anopheles homunculus* has seta 9-IV about 0.25–0.50 length of 9-V, and 12-CT with 3, 4 branches, and *An. bellator* has seta 9-IV about 0.25–0.33 length of 9-V. *Anopheles laneanus* also differs from *An. bellator* in possessing a lightly pigmented paddle with moderately long, numerous, and closely spaced marginal spicules. *Anopheles bellator* has the paddle well pigmented, as dark or darker than segment VIII with a few widely spaced marginal spicules. The pupa of *An. laneanus* is nearly indistinguishable from that of *An. cruzii*. However, the studied population of *An. laneanus* seems to differ from *An. cruzii* in having abdominal segment II darker than the remaining segments, whereas *An. cruzii* has the metathorax and abdominal segments I–IV equally tanned but slightly darker than segments V–VIII.

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