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**MEDICAL ENTOMOLOGY STUDIES - XVII. BIOSYSTEMATICS  
OF *KENKNIGHTIA*, A NEW SUBGENUS OF THE MOSQUITO  
GENUS *AEDES* MEIGEN FROM THE ORIENTAL REGION  
(DIPTERA: CULICIDAE)**

By

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**MEDICAL ENTOMOLOGY STUDIES - XVII. BIOSYSTEMATICS OF  
KENKNIGHTIA, A NEW SUBGENUS OF THE MOSQUITO GENUS Aedes  
MEIGEN FROM THE ORIENTAL REGION (DIPTERA: CULICIDAE)**

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**ABSTRACT**

A new subgenus *Kenknightia*, of the genus *Aedes*, is described and includes 11 species of which 6 are new (*gaffigani*, *harbachi*, *lerozeboomi*, *litwakae*, *pecori* and *wilkersoni*) and 5 are transferred from the subgenus *Finlaya* (*dissimilis*, *karwari*, *leucomeres*, *luzonensis* and *paradissimilis*). Two species groups (Dissimilis and Luzonensis) are designated for the new subgenus. Each species is described and pertinent stages/structures are illustrated. Synonymy, type data, distribution, bionomics and a comparative discussion are provided for the subgenus and each species. Tables of the pupal and larval chaetotaxy are given. Keys to known adults, pupae and larvae are included. Lectotypes are designated for *dissimilis* and *karwari*. *Aedes leucopleurus* is placed in synonymy with *aureostriatus*. *Aedes karwari* is accorded specific status. A new seta is described and a change in the paddle seta terminology is proposed for the pupa. Several new measurements and indices are proposed for structures of the male genitalia. The abbreviation for *Kenknightia* is *Ken*.

**INTRODUCTION**

Giles (1904) described *Stegomyia leucomeres*, the first species of those now included in this new subgenus. This species was followed by *Stegomyia dissimilis* described in 1908 by Leicester. Barraud (1924) described the new variety, *karwari*, for the species *Finlaya dissimilis*. Edwards (1932) placed these 3 nominal taxa in Group H of *Aedes* (*Finlaya*) along with several other species. Three new species (*leucopleurus*, *luzonensis* and *paradissimilis*) were described by Rozeboom (1946) and placed in the Dissimilis Group of the subgenus *Finlaya*. He also reviewed the other species associated with the group. Knight and Hull (1951) included 4 of the present

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species in their Group H (*geniculatus* Group) along with 4 other species. Later, Knight and Marks (1952) refined the classification of Group H (Geniculatus Group: *Protomacleaya*) and subdivided it into 7 subgroups of which Subgroup II was designated the Dissimilis Subgroup and included the species *dissimilis*, *dissimilis* variety *karwari*, *leucomeres*, *leucopleurus*, *luzonensis* and *paradissimilis*.

Five taxa previously placed in *Finlaya* are included in the new subgenus *Kenknighthia* along with 6 new species. *Kenknighthia* is very distinct and shows little similarity in all stages to the type species, *Ae. kochi* (Doenitz), of the subgenus *Finlaya*. The new subgenus is defined in detail (including ranges for characters) and each included species has all known stages described and pertinent stages and structures illustrated. The species are separated, in all stages, into the Dissimilis and Luzonensis Species Groups, the former with 5 species and the latter with 6 species. Appendix A lists the current taxonomic status of the species assigned to the subgenus. Dichotomous keys are provided for separating adults, pupae and fourth instar larvae of the species. Tables list the detailed chaetotaxy of pupae and fourth instar larvae. Synonymy, type data, geographical distribution (from both specimens and literature), bionomics and a comparative discussion are provided for each species of *Kenknighthia*. A conspectus of taxonomic changes is included in Appendix B. Primary types of all species included in the subgenus have been examined. The proposed abbreviation for *Kenknighthia* is *Ken*.

In the synonymy sections, an asterisk following the abbreviations used (♀ = female, ♂ = male, A = adult, P = pupa and L = larva) indicates that at least some portion of that sex or stage is figured. In the distribution and type data sections and Appendix A, the abbreviations used are the same as in the synonymy sections, but with the following 3 additions: g = genitalia, p = pupal exuviae and l = larval exuviae. The scale used for the illustrations is in millimeters. Distribution records are indicated with countries in capital letters, provinces/states in italics, and place names with the first letter capitalized. The number of specimens examined from each province/state follows the place names. Information in the distribution and bionomics sections was taken from the collection data sheets and specimen labels of the specimens that I examined and from the published literature. In the type data sections information within parentheses is additional to that included on the original specimen labels.

Chaetotaxy and nomenclature follow Harbach and Knight (1980, 1982) except for the terminology of the legs (legs I-III = fore-, mid- and hindlegs; coxae I-III = fore-, mid- and hindcoxae; etc.), abbreviations of terga/sterna and segments (S-IX, S-VIII, Te-IX, Te-VIII, etc.), and 1-Pa is proposed for paddle seta 1 instead of 1-P. The latter designation would conform to the abbreviation used for the paddle (Pa) and avoid confusion with the abbreviation used for the larval prothorax (P). Additionally, on the pupae of *Kenknighthia* species, a minute seta was discovered on the posterior dorsal margin of segment VIII caudomesad of seta 9-VIII and laterad of seta 4-VIII which I refer to as 5-VIII. In larvae, the saddle width is defined as "wide" if the widest aspect of the sclerite extends ventrally over most of segment X and "narrow" if it is less than or extends to approximately 0.5.

New measurements and indices (unless otherwise indicated) introduced for structures of the male genitalia are:

Aedeagus length (Ae length) = length measured along a straight line from the base to the apex.

Aedeagus width (Ae width) = width measured at the widest point.

Basal mesal lobe/gonocoxite index (BML/Gc index) = ratio determined by dividing the basal mesal lobe length by the gonocoxite length.

Basal mesal lobe length (BML length) = length measured along a straight line from the lateral lobe to the apex or apex of the stem (Schick 1970: 12, Fig. 9), minus any setae or appendages.

Basal piece/aedeagus index (BP/Ae index) = ratio determined by dividing the basal piece length by the aedeagus length.

Basal piece length (BP length) = length measured from the apex to the base along a line perpendicular to the base.

Gonocoxite length (Gc length) = length measured along a straight line from the tip of the dorsal attachment of gonocoxite (dga of Knight and Harrison 1988) to the apex.

Gonostylar claw/gonostylus index (GC/Gs index) = ratio determined by dividing the gonostylar claw length by the gonostylus length.

Gonostylar claw length (GC length) = absolute length measured from the base to the apex.

Gonostylus/gonocoxite index (Gs/Gc index) = ratio determined by dividing the gonostylus length by the gonocoxite length.

Gonostylus length (Gs length) = absolute length of gonostylus, minus gonostylar claw, measured from the tip of the basal apodeme to the apex.

Paramere/aedeagus index (Par/Ae index) = ratio determined by dividing the paramere length by the aedeagus length.

Paramere length (Par length) = length measured along a straight line from the base to the apex.

## TAXONOMIC TREATMENT

GENUS *AEDES* MEIGENSUBGENUS *KENKNIGHTIA*, NEW SUBGENUS

Type Species: *Stegomyia dissimilis* Leicester

*Stegomyia* in part of Giles (1904: 367); Banks (1906: 984); Leicester (1908: 91); Brunetti (1912: 445, 1920: 129).

*Aedes* in part of Edwards (1922: 259).

*Finlaya* in part of Barraud (1924: 864).

*Aedes* (*Finlaya*) in part of Edwards (1929: 2, 1932: 154); Barraud (1934: 204); Bohart (1945: 57); Rozeboom (1946: 587); Knight and Hull (1951: 248); Knight and Marks (1952: 540); Stone, Knight and Starcke (1959: 161); Delfinado, Viado and Coronel (1963: 439); Thurman (1963: 55); Basio (1971: 16); Stone and Delfinado (1973: 297); Baisas (1974: 13); Knight and Stone (1977: 93); Lu and Li (1982: 29); Miyagi et al. (1985: 138); Tsukamoto, Miyagi and Toma (1985: 152); Cagampang-Ramos, McKenna and Pinkovsky (1985: 7); Apiwathnasorn (1986: 9).

Chaetotaxy and other features are summarized as follows.

**FEMALE.** *Head.* Antennal pedicel dark, with a few short fine dark setae on mesal surface, flagellomere 1 with a few small broad dark scales, 0.60-0.81 length of proboscis; maxillary palpus dark-scaled, short, 0.15-0.20 length of proboscis; proboscis dark-scaled, long, narrow, 1.02-1.33 (except 0.95-0.99 in *litwakae*) length of femur I; clypeus dark, bare; ocular line and interocular space covered with broad silvery scales, ocular and interocular setae dark and well developed; vertex covered with recumbent broad spatulate dark scales (some species, e.g., *dissimilis* with a few pale scales on anterior of coronal suture and on posterior areas), a few semierect narrow forked black scales along posterior margin of ocular line; occiput with a patch of erect forked scales; postgena with broad recumbent spatulate scales, mostly silvery-colored, but usually with a band of dark scales separating upper and lower silvery-scaled patches; eyes contiguous in front. *Thorax.* Scutum with cuticula dark, covered with narrow piliform scales except for bare prescutellar area; acrostichal, dorsocentral, and median and posterior scutal fossal setae absent; 2-6 anterior promontory, 3-7 anterior scutal fossal, 1 lateral scutal fossal (absent in *harbachi*), several prescutellar, 1 parascutellar, 1 short and 1 long antealar, and numerous supraalar setae present and usually dark (except for a patch of supraalar setae anterior to wing base which are short and dark or golden); scutellum with a patch of broad spatulate scales and a few long and short setae on each lobe; mesopostnotum bare; pleural cuticula dark; anteprepronotum with an elongate patch of overlapping broad spatulate silvery scales, several posterior setae; postpronotum covered with broad overlapping spatulate silvery scales, 2-6 (usually 2-4) posterior setae; proepisternum with upper area covered with overlapping broad spatulate silvery

scales, 1-4 (usually 1,2) setae, lower area bare; subspiracular, hypostigmal, mesomer and metameral areas bare; postspiracular area without scales, 1-5 (usually 2,3) setae; paratergite covered with a large triangular patch of overlapping broad spatulate silvery scales; prealar knob without scales, 5-10 (usually 5-7) setae; mesokatepisternum with a large patch of overlapping broad spatulate silvery scales on upper 0.5 and extending down over lower posterior area (patch separated mesally in *karwari*), setae as follows, 1 (2 in some species) moderately long to long on upper anterior area, 1,2 (usually 1) long one on median posterior area and 1-5 (usually 2-4) on lower posterior area; mesepimeron with a moderately large patch of overlapping broad spatulate silvery scales covering upper anterior 0.25, 1-6 (usually 2-4, except *karwari* with 7-11) short setae on upper posterior area, lower setae absent. *Legs*. Coxae I-III each with a patch of broad silvery scales, I also usually with brown scales on median area, I-III with several setae; trochanters I-III with white scales; femur II with anterior surface with a patch of silvery scales mesally at about midlength, femur III with approximately basal 0.6 and apical area silvery-scaled; tibiae I-III and tarsi I-III with dark scales; posttarsi I-III each with 2 ungues, equal in size, I,II each with a tooth, III simple. *Wing*. Dorsal and ventral veins with dark scales (except *karwari* which possesses a small patch of 3-8 white scales near base of anterior margin of costa); alula with a single row of narrow brown scales on margin; upper calypter with a number of long setae on margin; remigial setae absent (except *karwari* which has 1 seta present on 1 wing of 1 specimen). *Halter*. Capitellum with dark scales; pedicel pale. *Abdomen*. Terga each dark-scaled with a large basolateral patch of silvery scales, silvery scales may extend onto dorsum and form complete or incomplete basal or subbasal bands on terga IV-VII, VIII with a basal band of silvery scales which does not reach lateral margins; sterna with basal areas with silvery scales and apical portions with dark scales; terga and sterna with a few caudally directed short dark setae along posterior and lateral margins; segment VIII laterally compressed.

**FEMALE GENITALIA.** *Tergum VIII*. Basal 0.25-0.60 (usually 0.40-0.45) retracted into segment VII, covered with minute spicules, moderately to heavily pigmented, base gently concave, basolateral corners broadly rounded, apex rounded, numerous broad spatulate dark and pale scales on apical 0.72-0.86, several short to moderately long setae on apical 0.46-0.78, apical margin with 5-12 (usually 6-9) moderately long to long stout setae, basolateral seta present, Te-VIII index 0.48-0.86, Te-VIII/Te-IX index 1.38-2.36, length 0.22-0.35 mm, width 0.33-0.56 mm. *Sternum VIII*. Covered with minute spicules, moderately to heavily pigmented, base nearly straight to very slightly concave mesally, apex with a minute (0.01-0.06 of dorsal length) mesal depression, gently sloping from apicolateral corners to midline, lateral margins nearly straight except slightly concave near base, 0-3 scales (usually absent), numerous short setae covering most of apical 0.77-0.85 except for basolateral areas, 5-10 (usually 6-8) short to moderately long stout setae on apical margin, setae decrease in length mesally, a number of short curved lanceolate setae on apical margin which are intermixed with stout setae, setae 1-4-S in a more or less row on submedian area, 2,3 moderately long setae laterad of these, basolateral seta usually absent, apical intersegmental membrane nonpigmented, intersegmental membrane between segments VII and VIII short, covered with minute spicules, S-VIII index

0.71-0.91, length 0.32-0.45 mm, width 0.39-0.56 mm. *Tergum IX*. Covered with minute spicules, composed of 2 short to long, moderately wide, heavily pigmented and elongate lateral plates with ends rounded, a lightly pigmented mesal strip between plates, 1-6 short setae apically on each side of midline, 3-12 total setae, apical margins of plates with a few small wart-like structures with long hair-like spicules distally, Te-IX index 0.86-1.54 (Dissimilis Group 0.86-1.05, Luzonensis Group 1.11-1.54 except 1 specimen of *luzonensis* 1.03), length 0.12-0.19 mm, width 0.11-0.18 mm, dorsal spheres present. *Insula*. Covered with minute spicules, lightly pigmented, lip-like, 2-5 long thin setae on apical area on each side of midline, 4-9 total setae. *Lower vaginal lip*. Covered with short spicules, lightly pigmented, narrow, broader at hinge, lower vaginal sclerite absent, ventral tuft present. *Upper vaginal lip*. Covered with short spicules, moderately to heavily pigmented, narrow, caudal margin nearly straight, but slightly bowed, posterolateral corners more or less squared, upper vaginal sclerite absent or very small and consisting of a very thin strip or small triangular plate along mesal margin of lip. *Spermathecal eminence*. Membranous, nonpigmented, somewhat dome-shaped caudally, basolateral area with several short thin simple spermathecal eminence spicules. *Postgenital lobe*. Covered with short spicules, those on approximately distal 0.55 of lateral and apical margins moderately long to long, lobe narrow throughout length, apex sharply rounded, basal mesal apodeme crooked, long, narrow and heavily pigmented, 6-26 setae on each side of midline, 13-51 total setae, ventral PGL/cercus index 0.65-0.81, dorsal PGL index 1.45-2.53, ventral PGL index 2.64-4.11, ventral length 0.15-0.21 mm. *Proctiger*. Small groups of minute spicules scattered over entire area, membranous. *Cercus*. Covered with short spicules except longer ones on lateral and apical margins, moderately long, wide, approximately apical 0.33 tapered from apicomeral angle proximally to apicolateral margin, this flattened apical margin with 6 (rarely 5 or 7) stout setae, long ones at apex, others decrease in size toward apicolateral margin, proximal most stout seta short and with distal portion very slightly curved mesad, flattened apical margin with several short curved lanceolate setae, inner margin nearly straight, but proximal portion slightly bowed, dorsal surface without scales, numerous setae on apical 0.49-0.71, 3,4 long stout ones distally and remainder thin and short, ventral surface with a few short thin setae along flattened apical margin, cercus index 2.25-2.92, cercus/dorsal PGL index 2.08-2.78, length 0.22-0.31 mm, width 0.08-0.13 mm. *Spermathecal capsules*. One large and 2 medium-sized ones, heavily pigmented, spherical, a patch of small spermathecal capsule pores near orifice. *Accessory gland duct*. Base lightly to moderately pigmented.

**MALE.** Similar to the female but with the following differences. *Head*. Antenna plumose with setae directed primarily dorsally and ventrally, pedicel bare, 0.61-0.70 length of proboscis; maxillary palpus noticeably shorter than proboscis, 0.69-0.90 (usually 0.74-0.83) length of proboscis, slender throughout, more or less straight, palpomeres 4 and 5 short and with only a few short to moderately long apical and or ventral setae, palpomeres 2 and 3 long; proboscis 1.05-1.37 length of femur I. *Thorax*. Scutum often with pale-scaled patterns which in some species may be extensive on median areas; scutal and pleural areas usually with slightly fewer

setae. *Legs*. Posttarsi I-III each with 2 unguis, I and II with a large and a medium-sized unguis each with a tooth, III with unguis equal in size, small and simple. *Abdomen*. Sternum VIII dark-scaled with a large basolateral patch of silvery scales; terga and sterna with a few caudally directed short dark setae primarily along posterior and lateral margins; tergum VIII with apex broadly rounded, wider than base and with several long and moderately long stout setae, most of surface covered with broad scales except for narrow apical and basal strips; sternum VIII with apex broadly rounded, narrower than base and with several moderately long stout setae, entire pigmented surface covered with broad scales, basolateral setae present.

**MALE GENITALIA.** *Tergum IX*. Moderately pigmented, covered with minute spicules, caudal margin with a heavily pigmented small broad lobe on each side of midline, each lobe bearing 1-5 moderately long stout curved setae, 2-8 total setae, cephalic margin with a deep median concave area and with lateral portions rounded. *Gonocoxite*. Moderately pigmented, covered with minute spicules, long and narrow, tergal surface with thin setae more or less evenly spaced along mesal margin, those on approximately basal 0.5 short while those on approximately apical 0.5 moderately long, a linear patch of moderately long to long stout setae on median area, a few long broad scales on basolateral area, lateral surface with long stout setae and long broad scales, sternal surface with a few moderately long setae on mesal area, a few short setae on basomesal area, a few moderately long and long stout setae on apical area, numerous long broad scales on most of this surface, Gc length 0.34-0.44 mm. *Gonostylus*. Moderately pigmented, moderately long, narrow but slightly increasing in width proximally, a few to numerous small thin spicules on basal 0.52-0.90, a small tubercle subapically and with or without a subapical minute seta (2 setae in *luzonensis*), Gs length 0.13-0.18mm, Gs/Gc index 0.36-0.47, gonostylar claw attached subapically, long, GC length 0.05-0.07 mm, nearly uniformly narrow throughout length, slightly curved, apex bluntly rounded and slightly recurved, GC/Gs index 0.28-0.50. *Basal mesal lobe*. Attached basomesally to sternal surface of gonocoxite, consisting of a short to very short scoli-like projection which is moderately pigmented, covered with minute spicules, connected by a broad band with its mate, projection with 1 long stout seta apically or subapically (*lerozeboomi* and *luzonensis* without long stout seta, but with 2 moderately long apical setae) and 1-3 short to moderately long setae on mesal or tergal areas, BML/Gc index 0.11-0.16, BML length 0.04-0.07 mm. *Proctiger*. Paraproct moderately long, moderately broad, heavily pigmented on distal portion which terminates in a short curved beak-like point, base curved and connected to tergum X, cercus membranous and with a moderately pigmented elongate cercal sclerite, 3-5 short cercal setae. *Tergum X*. Moderately pigmented, covered with very minute spicules, consisting of a narrow curved elongate plate attached to apicoventral margin of tergum IX lobe. *Phallosome*. Aedeagus trough-like, moderately long, moderately wide, apex flattened and without teeth, base concave, approximately basolateral 0.66 expanded onto tergal area, distal portion only slightly or noticeably narrower than proximal portion, Ae length 0.11-0.13 mm, paramere narrow, Par/Ae index 0.70-0.88, Par length 0.08-0.11 mm, basal piece moderately pigmented, short, moderately wide, BP/Ae index 0.43-0.67, BP length 0.05-0.09 mm. *Sternum IX*. Median large and

lateral narrow areas moderately pigmented, covered with minute spicules, 3-9 (usually 4-6) short and moderately long setae on caudomesal area.

**PUPA.** *Cephalothorax.* Setae 1-3-CT moderately long; 1-CT with 2-8 branches (rarely single); 2-CT with 2-6 branches (rarely single); 3-CT with 2-8 branches; 4-CT with 2-9 branches, long; 5-CT single to 6-branched, very long, stout, usually sparsely aciculate; 6-CT with 2-9 branches (very rarely single), short; 7-CT with 2-7 branches, very long, moderately stout; 8-CT with 2-9 branches (rarely single), long, usually sparsely to moderately aciculate; 9-CT single to 3-branched, moderately long to long; 10-CT single to 6-branched, moderately long to long; 11-CT single to 5-branched, moderately long to very long, laterad and cephalad (*Dissimilis* Group) or caudad (*Luzonensis* Group) of 10-CT; 12-CT single to 7-branched, moderately long to very long; metanotum with 2-4 small pale tuberculi laterad of 12-CT, 1 of these at location of 13-CT. *Trumpet.* Heavily pigmented; index 3.29-5.36; pinna short to long, 0.09-0.30 length of trumpet. *Abdomen.* Seta 0-II-VIII single or 2-branched; 1-I with 11-32 branches, moderately long to very long, stout, fan-like, densely aciculate with long spicules; 1-II with 2-16 branches, moderately long to very long, thin or stout; 1-III with 2-19 branches; 1-IV with 2-11 branches; 1-V with 2-7 branches; 1-VI single to 7-branched; 1-VII single to 4-branched; 2-I,II single or 2-branched; 2-III-VII single; 3-I single to 4-branched, moderately long to very long; 3-II single (rarely 2,3-branched), very long, stout; 3-III-VII moderately long; 3-III with 2-7 branches (rarely single); 3-IV with 2-8 branches; 3-V single to 4-branched; 3-VI,VII single to 6-branched; 4-I with 4-16 branches; 4-II with 3-13 branches; 4-III with 3-9 branches; 4-IV single to 5-branched; 4-V with 4-12 branches; 4-VI,VII with 2-7 branches; 4-VIII single to 4-branched; 5-I with 2-7 branches, short; 5-II with 3-13 branches, moderately long; 5-III with 3-14 branches, moderately long; 5-IV-VI very long, stout; 5-IV,VII usually single (rarely 2-branched); 5-V single; 5-VII single to 5-branched, short; 5-VIII single, minute; 6-I single to 4-branched, long; 6-II single to 3-branched, long; 6-III-VI moderately long; 6-III single to 8-branched; 6-IV single to 7-branched; 6-V,VII single to 6-branched; 6-VII with 2-12 branches, short to moderately long; 7-I single to 10-branched (usually 2-5 branched, rarely single or 10-branched), long; 7-II with 2-7 branches (rarely single), long; 7-III-V short; 7-VI,VII moderately long; 7-III with 2-9 branches (rarely single); 7-IV,VII single to 4-branched; 7-V with 3-10 branches; 7-VII single to 5-branched; 8-III-VII short; 8-III with 4-10 branches; 8-IV with 2-6 branches; 8-V with 2-8 branches; 8-VI with 2-9 branches; 8-VII with 2-10 branches; 9-I single to 3-branched, short; 9-II-VI single, tiny; 9-VII with 2-10 branches, short, moderately stout to stout, without to moderately aciculate; 9-VIII with 6-16 branches, moderately long, stout, moderately to densely aciculate with long spicules; 10-I absent or single; 10-III-VII long, thin; 10-III,IV with 2-7 branches; 10-V single or 5-branched; 10-VI single; 10-VII single to 4-branched; 11-I-VII short, very thin; 11-I absent to 3-branched; 11-II absent to 7-branched; 11-III,IV single; 11-V,VII single (rarely 2-branched); 11-VI single to 3-branched; 14-III-VII single, tiny; 14-VIII single or 2-branched, small; genital lobe of male with a patch of small spicules on ventral surface. *Paddle.* Index 1.08-1.43; ovoid, buttress on basal 0.60-0.78 (0.46-0.53 in *gaffigani*), basolateral margin more darkly pigmented, thickened and with small serrations on distal portion, 0.22-0.40 (0.47-0.54 in *gaffigani*) of apicolateral margin



more or less flattened and with short spicules on proximal area or extending to apex and onto distal portion of mesal margin; midrib extends from base to apex, distal portion weaker; seta 1-Pa single, long (except short in *wilkersoni*), attached on apical margin of paddle at lateral margin of midrib.

**LARVA. Head.** Moderately pigmented; setae 0-2-C single, 0-C minute, 3-C stout, long, curved; 4-C with 2-10 thin branches, short, usually forked, far caudad of anterior margin of head and caudomesad of antennal base; 5-C single to 4-branched, stout, very long, pigmented, with or without aciculae, caudolaterad of 4-C; 6-C single (very rarely 2-branched), stout, long to very long, almost always aciculate, slightly cephalad and laterad of 4-C and cephalad of 5-C, lines between alveoli of 4-6-C form a small triangle; 7-C with 2-15 branches, moderately long to long, with or without aciculae; 8,9-C with 2-5 thin branches (8-C rarely single), moderately long; 10-C single to 5-branched, thin, moderately long; 11-C with 2-8 branches, moderately long; 12-C with 4-14 thin branches, short, usually forked; 13-C with 3-6 branches, thin to thick, short to long, with or without aciculae; 14-C single (2-branched in 1 specimen of *lerozeboomi*), short, stout; 15-C with 2-9 branches, branched or forked; dorsomentum with 23-29 teeth, triangular shaped; mandible with rake blade 1 heavily pigmented, with a large stout curved apical tooth and 2 large stout and 1 rudimentary subapical teeth, mandibular lobe moderately long to long, apex bifurcate with labula separated from lobe, shape distinctive for most species.

**Antenna.** Long and narrow, moderately pigmented, shaft gently tapered from seta 1-A alveolus to apex, shaft basad of 1-A alveolus with a few thin spicules; 1-A single (2-branched on 1 side of 1 specimen of *harbachi*), stout, attached 0.42-0.56 from base of shaft, tip of seta extends beyond or does not reach apex of shaft; 2-A long; 4-A about 0.5 length of 2-A (*Luzonensis* Group) or approximately equal to length of 2-A (*Dissimilis* Group); 2-6-A at apex of shaft. **Thorax.** Seta 0-P with 7-14 branches, short, usually dendritic; 1-P single or 2-branched, length and development distinctive for many species; 2-P single to 3-branched, shorter, equal to or longer than 1-P; 3-P with 2-6 branches (often single in *harbachi*), shorter than 2-P; 4-P with 2-5 branches (may be 3-10 branched in *luzonensis*), moderately long; 5,7-P single to 4-branched, long, usually stout, aciculate; 6-P single, long, with or without aciculae; 8-P single to 4-branched, short; 9-12-P attached to a heavily pigmented setal support plate; 9-P single to 4-branched; 10-P single (rarely 2,3-branched); 11-P single to 5-branched; 12-P single (rarely 2-branched); 14-P single to 3-branched, moderately long; 1-M with 2-7 branches (rarely single), short to long; 2-M single to 5-branched, short; 3-M single to 7-branched; 4-M with 2-8 branches; 5-M single (single or 2-branched in *luzonensis*) 6-M with 2-6 branches, long, stout; 7-M single, moderately long; 8-M with 3-8 branches, long, stout; 9-M with 3-7 branches, long, stout; 10-M single, long, stout; 13-M with 7-13 branches, short to moderately long, dendritic; 14-M with 8-27 branches; 1-T with 2-6 branches, short to long; 2-T with 2-11 branches; 5-T single, short; 6-T single to 6-branched; 7-T with 5-11 branches, long, stout; 8-T with 6-14 branches, short, often dendritic; 9-T with 3-6 (2,3-branched in *luzonensis*), long, stout; 10-T single, long, stout; 11-T single to 4-branched, short; 12-T single to 4-branched, moderately long; 13-T with 3-15 branches. **Abdomen.** Seta 0-II-VIII single; 1-I with 2-11 branches (rarely single); 1-II-IV with 2-7 branches (rarely single on II); 1-V with

2-6 branches; 1-VI single to 5-branched; 1-VII single to 3-branched; 1-VIII with 3-11 branches, moderately long; 2-I single to 3-branched; 2-II-VII single (rarely 2-branched on V,VI); 2-VIII single to 6-branched, attached close to 1-VIII; 3-I-IV with 2-9 branches (rarely single on III); 3-V with 2-8 branches; 3-VI single to 5-branched; 3-VII with 3-13 branches; 3-VIII with 2-10 branches, moderately long, stout, aciculate; 4-I with 8-21 branches, pectinate; 4-II with 5-14 branches; 4-III with 2-5 branches (rarely single); 4-IV single to 5-branched; 4-V with 2-10 branches; 4-VI with 2-9 branches; 4-VII with 2-7 branches; 4-VIII single, attached close to 3-VIII; 5-I with 3-8 branches (rarely 2-branched); 5-II with 2-12 branches; 5-III with 2-9 branches; 5-IV single to 4-branched; 5-VI with 2-5 branches; 5-VII with 3-10 branches; 5-VIII with 3-7 branches, moderately long; 6-I,II with 2-4 branches, stout, relatively moderately long in comparison to other subgenera of *Aedes*; 6-III, IV, VI single to 3-branched; 6-V single to 4-branched; 6-VII with 6-24 branches; 7-I single to 4-branched, 0.46-0.88 length of 6-I; 7-II with 2-9 branches; 7-III with 2-13 branches; 7-IV with 3-11 branches; 7-V,VI with 2-10 branches; 7-VII with 2-8 branches; 8-II with 2-8 branches; 8-III,V single to 3-branched, moderately long or long on III; 8-IV single to 4-branched; 8-VI with 4-10 branches; 8-VII with 7-22 branches; 9-I with 2-5 branches; 9-II-VI single (rarely 2-branched on II,V,VI); 9-VII with 2-8 branches; 10-I,II single or 2-branched (rarely 3-branched on II); 10-III,V,VII single to 6-branched; 10-IV single to 7-branched; 10-VI single to 3-branched; 11-I with 2-5 branches (rarely single); 11-II,IV with 2-4 branches (rarely single on II); 11-III,V,VI single to 4-branched; 11-VII single or 2-branched; 12-I,II,VI single to 6-branched; 12-III single to 5-branched; 12-IV single to 3-branched; 12-V single to 4-branched; 12-VII single to 8-branched; 13-I with 2-5 branches (rarely single); 13-II with 6-13 branches; 13-III with 2-8 branches; 13-IV with 2-7 branches; 13-V with 2-6 branches; 13-VI with 9-57 branches; 13-VII with 3-12 branches; 14-III,V-VII single (rarely 2-branched on V,VII, 2,3-branched on VI); 14-IV single to 3-branched; 5-VIII single, minute; 14-VIII single or 2-branched; VIII with comb composed of 33-117 scales in a triangular patch, scales with or without a median longer stout spine and with shorter thinner spicules at apex; 1-X single and moderately stout or with 2-7 thin branches, moderately long; 2-X with 5-12 branches, 0.4-0.5 length of 3-X; 3-X single, very long; ventral brush (4-X) composed of 10 (Dissimilis Group) or 12 (Luzonensis Group) setae, caudal 8 setae long and with 5-12 branches, cephalic 2 setae with 3-10 branches (2-branched in 1 specimen of *gaffigani*); saddle incomplete ventrally, narrow to wide, heavily pigmented with anterior and ventral margins more heavily pigmented, acus present or absent (small and detached when present), posterior margin with minute to well developed spicules; 4 pointed anal papillae, dorsal pair short to long, ventral pair short to long (always shorter than dorsal pair). *Siphon*. Heavily pigmented; index 2.02-5.51; acus well developed, attached; pecten on basal 0.39-0.59, composed of 13-29 evenly spaced spines, shape distinctive for each species; seta 1-S with 3-6 branches, moderately long, with or without aciculae, borne on basal 0.47-0.65 distad and ventrad of last pecten spine; 2-S single, short; 6-S single, long; 8-S with 2-7 (usually 4-6) branches; spiracular apodeme with apex pointed to flat.

EGG. Not described for any of the species assigned to the subgenus *Kenknightsia*.

**DISCUSSION.** The subgenus *Kenknightia* includes species that are very similar to each other morphologically, especially in the adult females and male genitalia. Features of the pupal and larval stages offer some of the best characters for separating the species.

The following principal features are most distinctive for *Kenknightia* and they can be used in separating this subgenus from the others in the genus *Aedes*: adults by the combination of (1) head with vertex covered with recumbent broad scales and ocular line covered with broad silvery scales, (2) acrostichal and dorsocentral setae absent, (3) scutellum with only broad scales on each lobe, (4) postpronotum covered with overlapping broad silvery scales, (5) paratergite covered with a large triangular patch of overlapping broad silvery scales which extends to prealar knob, (6) proepisternum with upper area covered with overlapping broad silvery scales and usually 1,2 long setae, (7) subspiracular, postspiracular and lower prealar areas without scales, (8) mesokatepisternum with 1 (rarely 2) long upper, 1 (rarely 2) long median posterior and 1-5 lower posterior setae, (9) maxillary palpus, proboscis, tibiae and tarsi dark-scaled, (10) mesepimeron with 1-6 (7-11 in *karwari*) upper posterior setae; and (11) male maxillary palpus noticeably shorter than proboscis, slender throughout, apical 2 palpomeres short and with only a few short to moderately long setae; female genitalia by the combination of (1) sternum VIII with apex with a minute (0.01-0.06 of dorsal length) mesal depression and gently sloping to apicolateral corners, 5-10 (usually 6-8) short to moderately long stout setae on apical margin which decrease in length mesally, short curved lanceolate setae intermixed on apical margin, scales usually absent (0-3); (2) tergum IX composed of 2 heavily pigmented elongate lateral plates with a lightly pigmented mesal strip between plates; (3) insula lip-like with 4-9 long thin setae; (4) upper vaginal sclerite absent or very small; (5) postgenital lobe narrow throughout length, apex sharply rounded, 13-51 total setae; and (6) cercus moderately long, wide, approximately apical 0.33 tapered and flattened from apicomesal angle proximally to apicolateral margin, this area with 6 (rarely 5 or 7) stout setae, long ones at apex and decreasing in length laterally to a short seta having distal portion very slightly curved, also short curved lanceolate setae intermixed on this area; male genitalia by the combination of (1) basal mesal lobe short to very short, with 3-5 (usually 3,4) setae, 1 of which is usually long and stout, (2) aedeagus trough-like, apex flattened and without teeth, distal portion only slightly to noticeably narrower than proximal portion, (3) gonostylus moderately long, Gs/Gc index 0.36-0.47, with a simple gonostylar claw which is long and narrow, and (4) gonocoxite long and narrow, tergal surface with thin setae more or less evenly spaced along mesal margin, those on approximately proximal 0.5 short while those on approximately distal 0.5 moderately long; pupae by the combination of (1) paddle with a well developed buttress on basolateral 0.60-0.78 (except 0.46-0.53 in *gaffigani*), apicolateral margin more or less flattened, and seta 1-Pa single; (2) seta 5-CT very long and seta 4-CT long, with 2-9 branches; (3) seta 7-CT very long, with 2-7 branches and seta 6-CT short; (4) seta 3-III moderately long, with 2-7 branches (rarely single); (5) seta 5-IV-VI very long and stout; and (6) setae 1-I, 9-VIII with branches moderately to densely aciculate, aciculae long; and larvae by the combination of (1) setae 5,6-C long to very long and stout, 6-C shorter than 5-

C, 4-C short; (2) arrangement of setae 4-6-C (attached in a small triangle) and position (displaced caudad from anterior margin of cranium); (3) antenna long and narrow with only a few small thin spicules on shaft basad of alveolus of seta 1-A which is single, stout and attached 0.42-0.56 from base; (4) mandibular rake blade 1 with a large stout curved apical tooth and 2 large stout and 1 rudimentary subapical teeth, mandibular lobe moderately long to long with apex bifurcate; (5) comb with 33-117 scales in a triangular patch; (6) seta 6-I,II stout and relatively moderately long; (7) seta 4-X with 10 or 12 setae, caudal 8 setae long and with 5-12 branches; and (8) several species with some stout setae (e.g., 1-A, 5,6-C, 1-P, 9-M,T, 6-I,II) with distal portion with bluntly pointed tips.

Female genitalia of the species assigned to the subgenus *Kenknighthia* are easily separated into 2 groups based on the development and index of tergum IX. The female genitalia of this subgenus have some similarity to those of the Gubernatoris Subgroup of *Finlaya*, but are easily separated by the development of sternum VIII, tergum IX and postgenital lobe.

Male genitalia of species included in the subgenus *Kenknighthia* are very similar in most structures, however, the development and setae (number, length and placement) of the basal mesal lobe provide the best diagnostic features. Other characters, measurements and indices are useful in separating some species, these are included in the species descriptions and discussions. The basal mesal lobe with a short to very short scolus-like apical projection and usually a single long stout seta (plus a few short ones), shape of the aedeagus, presence of cercal setae, and gonocoxite long, narrow and with dorsomesal setae arrangement and development separate *Kenknighthia* from the other subgenera of the genus *Aedes*.

Larvae of *Kenknighthia* show the closest similarity to species of the Aureostriatus and Gubernatoris Subgroups of *Finlaya* (Subgroups as outlined by Knight and Marks 1952: 523, 528); however, they can be distinguished from these subgroups and other subgenera of *Aedes* by the combination of principal features mentioned above.

It is noted that species of mosquitoes whose immatures inhabit treeholes or bamboos tend to have adults with fewer thoracic setae, especially on the dorsocentral and acrostichal areas. *Kenknighthia* species conform to this observation.

It is a pleasure to name this new subgenus, *Kenknighthia*, in honor of Dr. Kenneth L. Knight, in recognition of his many outstanding contributions to the biosystematics and morphology of the Culicidae.

**DISTRIBUTION.** The known distribution of species of *Kenknighthia* is in Southeast Asia. Specimens have been reported from Bangladesh, India, Malaysia, the Republic of the Philippines, Thailand and Vietnam.

**BIONOMICS.** Immatures have been collected during every month of the year from colored or clear, fresh, temporary, stagnant water, usually in treeholes, occasionally from bamboo stumps and holes and rarely from stump holes, rot holes, knot holes, and log holes in trees, coconut shells, *Colocasia* leaf axils, palm stubs, rock holes, small tin pots, a wooden bucket, an old paint can, a water can, usually in partially or heavily shaded areas, usually in secondary and primary rain forests, but also recorded from secondary evergreen forests, orchard, banana and rubber

plantations, a beach forest, a secondary bamboo grove and cutover dipterocarp forests, located usually in valley, hilly or mountain (rarely in plain) terrain and at altitudes from sea level (rarely) to 1,523 m.

Females of *dissimilis* were taken in ground-level biting catches during the day in Malaysia. Blooded females of *luzonensis* were collected in a buffalo-baited trap in the Republic of the Philippines. *Aedes paradissimilis* females were taken in the Republic of the Philippines biting in the jungle.

### SPECIES GROUPS OF SUBGENUS *KENKNIGHTIA*

#### Dissimilis Group

Included species. *Aedes dissimilis*, *harbachi*, *karwari*, *pecori* and *wilkersoni*.

Distribution. Bangladesh, India, Malaysia (Peninsular, except *pecori* also in Sabah), Thailand and Vietnam.

Female genitalia. Tergum IX with lateral plates short to moderately long, Te-IX index 0.86-1.05.

Male genitalia. Gs/Gc index 0.36-0.39; GC/Gs index 0.39-0.50; proctiger usually with 3 (rarely 4) cercal setae.

Male. Maxillary palpus with several long setae ventrally on palpomeres 4 and 5.

Pupa. Seta 6-VII mesad and caudad of seta 9-VII; seta 11-CT laterad and slightly cephalad of seta 10-CT; seta 5-CT single.

Larva. Seta 4-X with 10 setae; setae 2,4-A long, approximately equal in length; seta 12-VII single to 3-branched; comb with 33-72 scales.

#### Luzonensis Group

Included species. *Aedes gaffigani*, *lerozeboomi*, *leucomeres*, *litwakae*, *luzonensis* and *paradissimilis*.

Distribution. The Republic of the Philippines and Malaysia (*gaffigani* in Sabah only).

Female genitalia. Tergum IX with lateral plates long, Te-IX index 1.11-1.54.

Male genitalia. Gs/Gc index 0.40-0.47; GC/Gs index 0.28-0.37 (0.4 in 1 specimen of *lerozeboomi*); proctiger usually with 4,5 (rarely 3) cercal setae.

Male. Maxillary palpus with only a few setae ventrally on palpomeres 4 and 5.

Pupa. Seta 6-VII mesad and cephalad of seta 9-VII; seta 11-CT laterad and slightly caudad of seta 10-CT; seta 5-CT with 2-6 branches (rarely single in *paradissimilis*).

Larva. Seta 4-X with 12 setae; seta 4-A approximately 0.5 length of seta 2-A; seta 12-VII with 4-8 branches; comb with 76-117 scales.

KEYS TO SPECIES OF *AEDES* (*KENKNIGHTIA*)

## ADULTS

1. Scutellum with silvery scales nearly covering midlobe ..... *litwakae*  
 Scutellum with only dark scales<sup>3</sup> on all lobes..... 2
2. Mesokatepisternum with 2 scale patches separated at about level of median posterior seta; costa of wing with a small white-scaled patch on anterior margin near base ..... *karwari*  
 Mesokatepisternum, with 1 large continuous scale patch; costa of wing dark-scaled..... 3
3. Mesokatepisternum with posterior margin of scale patch straight; tergum V with a complete silvery-scaled subbasal band..... *leucomeres*  
 Mesokatepisternum with posterior margin of scale patch with a notch at median posterior seta; tergum V without a complete silvery-scaled band..... 4
4. Scutum without lateral scutal fossal seta; long supraalar setae golden; prescutal suture with a narrow to moderately broad line of narrow golden scales along posterior margin ..... *harbachi*  
 Scutum with a lateral scutal fossal seta; long supraalar setae dark; prescutal suture without line of golden scales along posterior margin ..... 5
5. Coxa I with only silvery scales; femur II with a narrow anteroventral line of silvery scales from base connected to median silvery-scaled patch ..... *gaffigani*  
 Coxa I with a small median patch of brown scales between dorsal and ventral silvery-scaled areas; femur II without an anteroventral line of silvery scales reaching base..... 6
6. Terga VI, VII without a pale-scaled band..... 7  
 Tergum VII with a silvery-scaled band, tergum VI usually with a silvery-scaled band..... 9
7. Postspiracular area with 1 seta; female with antenna 0.77 length of proboscis and proboscis 1.05 length of femur I..... *wilkersoni*

- Postspiracular area with 2-5 setae; female with antenna 0.66-0.73 length of proboscis and proboscis 1.20-1.33 length of femur I..... 8
8. Postgena with upper area dark-scaled and lower anterior area silvery-scaled; occiput with erect forked golden scales .....*dissimilis*
- Postgena entirely silvery-scaled; occiput with erect forked scales dark brown in female and usually medium brown in male .....*pecori*
9. Femur I of female (and some males) with a small silvery-scaled spot subapically on ventral surface ..... *lerozeboomi*
- Femur I of female and male dark-scaled ..... 10
10. Femur II with anterior surface with a short thin silvery-scaled patch at about midlength and with an apical silvery-scaled patch which does not reach, nor extend onto, dorsal surface; prealar knob of female with 6,7 setae .....*paradissimilis*
- Femur II with anterior surface with an elongate thin silvery-scaled patch at about midlength which often reaches to basal 0.3 and with an apical silvery-scaled patch which extends onto dorsal surface (at least in female); prealar knob of female with 8,9 setae .....*luzonensis*

<sup>3</sup>Some specimens of *karwari* and *pecori* with 1-3 broad silvery scales on midlobe.

#### PUPAE<sup>4</sup>

1. Seta 6-VII noticeably caudad of seta 9-VII..... 2
- Seta 6-VII slightly cephalad of seta 9-VII ..... 5
2. Seta 3-I moderately long, with 2-4 branches..... 3
- Seta 3-I long to very long, single ..... 4
3. Seta 10-CT single; seta 1-II with stout branches .....*dissimilis*
- Seta 10-CT with 2,3 branches (rarely single); seta 1-II with thin branches .....*pecori*
4. Seta 4-II with 4-8 branches; seta 5-II with 7-13 branches; seta 1-II noticeably longer than lateral margin of segment III; seta 1-Pa long ..... *harbachii*

- Seta 4-II with 3 branches; seta 5-II with 3-5 branches; seta 1-II equal to or only slightly longer than lateral margin of segment III; seta 1-Pa short.....*wilkersoni*
5. Seta 12-CT single<sup>5</sup>, very long, noticeably longer than setae 10-CT and 11-CT ..... 6
- Seta 12-CT with 2-5 branches, moderately long to long, approximately equal in length to seta 10-CT and equal to or shorter than seta 11-CT..... 7
6. Seta 1-CT with 2-5 branches; seta 3-I single; seta 1-IV with 4-6 branches; seta 6-III single to 4-branched .....*paradissimilis*
- Seta 1-CT with 7,8 branches; seta 3-I with 2,3 branches<sup>6</sup>; seta 1-IV with 8-11 branches; seta 6-III with 5-7 branches .....*gafigani*
7. Seta 5-V 0.84-0.87 of combined lengths of lateral margins of segments VI,VII; seta 11-CT noticeably longer than seta 12-CT ..... *lerozeboomi*
- Seta 5-V 0.93-1.05 of combined lengths of lateral margins of segments VI,VII; seta 11-CT approximately equal in length to seta 12-CT..... 8
8. Setae 10-12-CT approximately equal in length; seta 1-II with 8-11 (rarely 7) branches; seta 4-II with 8-11 branches .....*litwakae*
- Setae 11,12-CT noticeably longer than 10-CT; seta 1-II with 5,6 branches; seta 4-II with 3-7 branches.....*luzonensis*

<sup>4</sup>Pupae of *karwari* and *leucomeres* are not known.

<sup>5</sup>Seta 12-CT occasionally 2-branched in *paradissimilis*.

<sup>6</sup>Seta 3-I single on 1 side of 1 specimen.

#### FOURTH INSTAR LARVAE<sup>7</sup>

1. Setae 2,4-A approximately equal in length; saddle with 10 setae in ventral brush; comb with 33-72 scales..... 2
- Seta 4-A approximately 0.5 length of seta 2-A; saddle with 12 setae in ventral brush; comb with 76-117 scales ..... 5
2. Seta 10-III-V,VII with 2,3 branches; seta 2-VIII with 2,3 branches, not attached to a pigmented setal support plate; seta 5-C single..... 3
- Seta 10-III-V,VII single; seta 2-VIII single, attached to pigmented setal support plate; seta 5-C usually with 2-4 branches<sup>8</sup> ..... 4



3. Seta 1-X with 2,3 branches; 58-69 comb scales with apices having approximately equal length thin spicules; pecten with 21-26 spines, median spines of pecten long, narrow and with a small acute angle at base of ventromedial large spicule, no spicules in angle .....*harbachi*

Seta 1-X single; 35-51 comb scales with apices having a longer stout median spine and several shorter thin spicules; pecten with 13-15 spines, median spines of pecten moderately long, broad at base and with a broadly curved angle at base of ventromedial large spicule, usually 1-3 small spicules in median area of angle .....*wilkersoni*

4. Comb with 33-51 scales with apices having a longer stout median spine and several shorter thin spicules .....*pecori*

Comb with 54-72 scales with apices having spicules of approximately equal length .....*dissimilis*

5. Seta 6-III-VI with 2-4 branches; seta 7-I 0.80-0.88 length of seta 6-I .....*luzonensis*

Seta 6-III-VI single; seta 7-I 0.51-0.73 length of seta 6-I ..... 6

6. Seta 6-I,II with distal portions thin, numerous aciculae; seta 9-M with distal portion thin .....*litwakae*

Seta 6-I,II with bluntly pointed tips, only a few aciculae on basal 0.5-0.7; seta 9-M with bluntly pointed tips ..... 7

7. Setae 1-P and 9-T with bluntly pointed tips; seta 1-P only slightly longer or noticeably shorter than seta 2-P ..... 8

Setae 1-P and 9-T with distal portion thin; seta 1-P noticeably longer than seta 2-P .....*paradissimilis*

8. Seta 1-P single, equal to or only slightly longer than seta 2-P; comb scales with apices having thin spicules of approximately equal length; saddle wide, with small detached acus .....*lerozeboomi*

Seta 1-P with 2 branches, noticeably shorter than seta 2-P; comb scales with apices having a longer stout median spine and several shorter thin spicules; saddle narrow, acus absent .....*gaffigani*

<sup>7</sup>Larvae of *karwari* and *leucomeres* are not known.

<sup>8</sup>Seta 5-C rarely single in *dissimilis* and *pecori*.

*Aedes (Kenknightsia) dissimilis* (Leicester)  
(Figs. 1, 2, 5, 7, 12, 13, 15, 24, 33)

*Stegomyia dissimilis* Leicester, 1908: 91 (♀, ♂); Brunetti 1912: 445, 1920: 130.

*Aedes dissimilis* of Edwards 1922: 259 (♀ key).

*Finlaya dissimilis* of Barraud 1924: 864 (♀\*, ♂\*).

*Aedes (Finlaya) dissimilis* of Edwards 1932: 154; Barraud 1934: 204 (♀, ♂\*, L\*); Rozeboom 1946: 589 (♂\*); Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 161; ; Thurman 1959: 121, 122, 1963: 55; Macdonald and Traub 1960: 98; Macdonald, Smith and Webb 1965: 337; Aslamkhan 1971: 152; Stone and Delfinado 1973: 295; Knight and Stone 1977: 93; Lu and Li 1982: 29, 124, 133 (A\*, L\*); Apiwathnasorn 1986: 9; Nagpal and Sharma 1987: 145; Ahmed 1988: 191.

The following is supplemental to the subgenus description.

FEMALE (Figs. 1,5). *Head*. Antenna 0.66-0.73 length of proboscis; maxillary palpus 0.15-0.16 length of proboscis; proboscis 1.20-1.33 length of femur I; vertex covered with brownish-black scales, a few pale dusty-white scales intermixed, more numerous posteriorly, ocular line narrow and with silvery scales extending caudad on coronal suture to form a small patch in most specimens, lateral area of ocular line connected with a narrow patch of similar scales on lateral margin of vertex and extending to posterior margin in front of anteprepronotum, ocular and interocular setae brownish-black; postgena with upper area dark-scaled and lower area, at least anterior portion, silvery-scaled; occiput with a number of erect forked scales golden (medium brown in some specimens). *Thorax*. Scutum covered with narrow piliform brownish-black scales, a few specimens also with a few piliform scales golden or with small narrow patches of similar scales on anterior acrostichal area and occasionally a few on dorsocentral area and rarely on posterior supraalar area; dark setae as follows: 2-4 on anterior promontory, 3-5 anterior and 1 lateral on scutal fossal area, supraalar area with a patch of short dark brown setae anterior to wing base (setae golden-brown in 1 specimen from Thailand and 9 specimens from Malaysia), other supraalar setae long and reddish-black, 2-5 on posterior of postpronotum, 1-4 (usually 2,3) golden on upper proepisternum, 2-5 on postspiracular area, 1 upper, 1 golden median posterior and 2-4 lower posterior on mesokatepisternum, 5-8 (usually 5,6) on prealar knob, 2-6 golden on upper posterior of mesepimeron; mesokatepisternum with a small notch in posterior margin of scale patch at site of median posterior seta; scutellum with a patch of broad spatulate brownish-black scales on each lobe, midlobe with 4,5 long and 4,5 short dark setae, lateral lobe with 3 long and 2-4 short dark setae. *Legs*. Coxa I with broad silvery scales extending from dorsal area over anterior and ventral areas, a small patch of broad dark brown scales at about midlength laterally, II,III each with an elongate patch of broad silvery scales; femur I with scales on anterior surface brownish-black with a ventrobasal elongate patch of white scales on approximately basal 0.4 and similar scales forming a small anteroventral patch subapically, posterior surface dark-scaled with a minute

apicoventral spot of 2-5 pale scales, II with scales on anterior surface brownish-black with a short elongate patch of silvery scales anteroventrally at about midlength and similar scales forming an anteroventral patch at apex, patch not reaching dorsal surface and with a few dark scales distally, posterior surface dark-scaled with an elongate patch of dusty-white scales mesally on basal area and a small posteroventral patch of silvery scales subapically which connects ventrally with patch on anterior surface, III with anterior and posterior surfaces with scales on approximately basal 0.61 snowy-white and approximately apical 0.22 with similar scales, these 2 patches separated by an area of brownish-black scales. *Wing*. Dorsal and ventral veins dark-scaled. *Abdomen*. Terga I-VII each with scales brownish-black and with a large basolateral patch of silvery scales, VIII with a silvery-scaled basal band, remainder of scales brownish-black.

**FEMALE GENITALIA** (Fig. 7). *Tergum VIII*. Basal 0.45-0.60 retracted into segment VII, numerous broad scales on apical 0.73-0.82, several short to moderately long setae on apical 0.62-0.69, 7,8 moderately long stout setae on apical margin, Te-VIII index 0.60-0.69, Te-VIII/Te-IX index 2.08-2.36, length 0.25-0.32 mm, width 0.41-0.46 mm. *Sternum VIII*. Apex with a minute (0.03-0.04 of dorsal length) mesal depression, 0-3 scales (usually absent), numerous short setae on apical 0.78-0.83, 6-8 (usually 6) short to moderately long stout setae on apical margin, S-VIII index 0.71-0.83, length 0.32-0.40 mm, width 0.45-0.49 mm. *Tergum IX*. Composed of 2 short plates, 1-3 (usually 2) short setae apically on each side of midline, 3-6 total setae, Te-IX index 0.86-0.96 (usually 0.86-0.88), length 0.12-0.14 mm, width 0.13-0.16 mm. *Insula*. 2-4 setae on each side of midline, 5-8 total setae. *Upper vaginal lip*. Sclerite absent or very small. *Postgenital lobe*. 12-21 setae on each side of midline, 25-41 total setae, ventral PGL/cercus index 0.66-0.74, dorsal PGL index 1.85-2.09 (usually 2.0), ventral PGL index 2.95-3.65, ventral length 0.15-0.19 mm. *Cercus*. Tapered flattened area with 6 (very rarely 7) stout setae, dorsal surface with setae on apical 0.49-0.62, cercus index 2.45-2.91, cercus/dorsal PGL index 2.26-2.55, length 0.23-0.26 mm, width 0.09-0.10 mm.

**MALE** (Fig. 2). Generally similar to the female except for sexual features and pale scutal scaling. *Head*. Antenna 0.61-0.66 length of proboscis; maxillary palpus 0.77-0.80 length of proboscis, palpomeres with the following approximate proportion of total length, 5 = 0.10, 4 = 0.15, 3 = 0.40, 2 = 0.29 and 1 = 0.06, palpomere 5 may be slightly bent downward, palpomeres 4,5 with several long setae on ventral areas; proboscis 1.25-1.37 length of femur I; vertex also with broad golden-brown or dusty-white scales on approximately 0.65 of posterior area. *Thorax*. Scutum covered with narrow piliform scales golden except for a small patch of narrow piliform brownish-black scales on posterior portion of lateral scutal fossal area, other specimens with median area golden-scaled and with brownish-black scales over most of areas laterad of dorsocentral area and on posterior dorsocentral and supraalar areas, other specimens with intermediate amounts of dark-scaled areas between these two extremes, but always with a sizable median golden-scaled area.

**MALE GENITALIA** (Figs. 12, 13). *Tergum IX*. Each lobe bearing 1-4 setae, 2-7 total setae. *Gonocoxite*. Length 0.36-0.39 mm. *Gonostylus*. A few small thin

spicules on approximately basal 0.75, a small tubercle subapically (1 specimen also with a minute subapical seta), Gs length 0.13-0.15 mm, Gs/Gc index 0.37-0.39, gonostylar claw length 0.06-0.07 mm, GC/Gs index 0.39-0.50. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally and 2,3 short thin setae on mesal and tergal areas, BML/Gc index 0.15-0.16, BML length 0.06 mm. *Proctiger*. 2-4 (usually 3) cercal setae. *Phallosome*. Aedeagus with distal portion only slightly narrower than proximal portion, Ae length 0.11 mm, Par/Ae index 0.78-0.84, Par length 0.08-0.09 mm, BP/Ae index 0.51-0.63, BP length 0.05-0.07 mm. *Sternum IX*. 3-6 (usually 4-6) short and moderately long setae on caudomesal area.

**PUPA** (Fig. 15). Chaetotaxy as figured and recorded in Table 1. *Cephalothorax*. Seta 1,4-CT with 2-4 branches; 5,10,11-CT single; 10,12-CT moderately long; 11-CT very long, stout, laterad and slightly cephalad of 10-CT; 12-CT with 3,4 branches. *Trumpet*. Index 3.29-3.98; widest on apical 0.3; pinna long, 0.19-0.30 length of trumpet. *Abdomen*. Seta 1-I long; 3-I with 3,4 branches, moderately long; 1-II with 3-5 (usually 3,4) branches, stout, sparsely aciculate; 4-II with 3-6 branches; 1-IV with 2-5 (usually 2-4) branches; 6-VII shorter, thinner, mesad and noticeably caudad of 9-VII; 9-VII stout, with long stout aciculae; 9-VIII with 6-8 branches, fan-like, densely aciculate with long stout spicules. *Paddle*. Index 1.08-1.27; seta 1-Pa long.

**LARVA** (Fig. 24). Chaetotaxy as figured and recorded in Table 10. *Head*. Seta 4-C with 5-7 branches, forked; 5-C single to 3 (usually 2,3) branched, sparsely aciculate; 5,6-C very long; 6-C single (2-branched on 1 side of 1 specimen), approximately equal to length of 5-C, aciculate; 7-C with 5-8 branches, fan-like; 7,11,13-C stout, aciculate; 7,13-C long; dorsomentum with 27 teeth; 6-Mx single; mandibular lobe moderately long, labula narrowly separated from lobe apically. *Antenna*. Seta 1-A with tip slightly longer than apex of antennal shaft, apical portion thin, attached 0.48-0.50 from base; 4-A approximately equal in length to 2-A. *Thorax*. Seta 1-P usually 2-branched (occasionally single), distal portion of branches thin, slightly longer than 2-P; 1,5-7-P, 1-M long; 3-P with 3,4 branches, shorter than 2-P; 1-3-P attached to a single heavily pigmented setal support plate; 5-7-P stout, densely aciculate; 14-P single or with 2 (usually 2) branches; 1-M,T with 2 branches; 9-M with distal portion of branches thin; 13-M short, dendritic; 1-T moderately long; 2-T with 2,3 branches, pectinate, longer than 1-T; 6-T single; 9-T aciculate, distal portion of branches thin. *Abdomen*. Setae 1-I,II, 3-IV with 2-4 branches; 1-I, 13-II,VI,VII moderately long; 1-III, 6-IV-VI with 2 branches; 1-VII, 8-III single to 3-branched, stout, very sparsely aciculate; 2-VIII, 3-III-V, 6-IV-VI, 8-III, 10-I,VII long; 2-VIII, 10-III-VII single; 2-VIII noticeably longer than 1-VIII; 2,3-VIII always and 1,4-VIII usually each attached to a separate small heavily pigmented setal support plate; 3-I longer than 1-I; 3-III-IV very sparsely aciculate; 3-VII with 3-5 branches; 4-VIII noticeably longer than 3-VIII; 6-I stout, aciculate, distal portion of branches thin; 6-II with 3 (rarely 4) branches, stout, aciculate, distal portion of branches thin; 6-IV-VI very sparsely aciculate; 7-I stout, 0.66-0.79 length of 6-I; 10-II-VI, 13-III-V, 1-IV-VII, 3-VI very long; 13-I short; comb with 54-72 scales with apices having approximately equal length thin spicules; saddle wide, margins darker pigmented, moderately developed spicules on posterior margin, acus absent; 1-X single,

moderately long; 2-X with 5-9 (usually 7) branches, about 0.5 length of 3-X; 4-X composed of 10 setae, caudal 8 setae each with 5-9 branches; anal papillae with dorsal pair moderately long, ventral pair short. *Siphon*. Index 2.02-2.46; pecten on basal 0.52-0.57, composed of 18-26 spines, median ones with a large distal spicule followed by 3-5 (usually 3) smaller spicules on basal 0.3 of ventral margin and 2-6 minute spicules on basal area of dorsal margin; 1-S moderately long, aciculate, borne on basal 0.59-0.65 of siphon distad of pecten; 8-S with 4-7 branches; spiracular apodeme (Fig. 33) with apex flattened.

**TYPE DATA.** Two female and 1 male syntypes are deposited in the Natural History Museum (NHM), London, United Kingdom. This differs from Townsend (1990: 67) who reported syntypes as 1 female and 1 male. I hereby select the male as lectotype which possesses the following adult label information: Hollow of tree Ampang jungle, 2/9/03 (handwritten on the underside of an 8-sided paper card on which the adult is secured near the center with a minuten pin, and with an insect pin near the margin which holds the labels); Kuala Lumpur, Fed. Malay States, Dr. G. F. Leicester, 1912-350; Co-type (printed on top of a small circular paper label with a yellow border), *Stegomyia dissimilis* Leic. (handwritten on underside of label); Syntype (printed on top of a small circular paper label with a blue border); WRBU ACC. 1363; and *Stegomyia dissimilis* Leicester, LECTOTYPE ♂, By: John F. Reinert, 1989 (rectangular paper label with a red border line). The first paralectotype female possesses labels similar to the lectotype, but with the following data differences: 22/8/03 (collection date on underside of the 8-sided label); Kuala Lumpur absent from second label; T89.9 Term. (genitalia preparation number); PARALECTOTYPE ♀, No. 1 (paper label with a blue border line). The second paralectotype female, which was not previously labeled as a syntype, but that I believe to be part of the type series, possesses the following information on labels similar to the lectotype and the first paralectotype: Larva from Hollow of tree Ampang jungle, 6 miles fr. Kuala Lumpur, 15/9/03 (on the underside of an 8-sided label); Fed. Malay States, Kuala Lumpur, Dr. A. T. Stanton; Pres. by Imp. Bur. Ent., 1922-45; and PARALECTOTYPE ♀, No. 2 (paper label with a blue border line).

**DISCUSSION.** Adult females of *dissimilis* from Malaysia possess erect forked scales which are all golden (84%) or medium brown (16%) and the scutum completely covered with brownish-black scales (73%) or with a few golden scales on acrostichal area (27%). Females from Thailand possess erect forked scales which are all golden (80%) or medium brown (20%) and the scutum completely covered with brownish-black scales (80%) or with a few golden scales on acrostichal area (20%).

Male genitalia of *dissimilis* have the basal mesal lobe with the sculus-like projection short and with 1 long stout seta apicolaterally and 2,3 short thin setae on the mesal or tergal areas and the aedeagus with the distal portion only slightly narrower than the proximal portion.

Pupae of *dissimilis* have the following combination of distinctive features: seta 10-CT single and moderately long; seta 11-CT single and very long; seta 12-CT with 3,4 moderately long branches; seta 3-I with 3,4 moderately long branches; and seta 1-II with 3-5 stout branches. *Aedes pecori* pupae are similar to those of *dissimilis*,

but differ in having seta 10-CT with 2,3 branches (rarely single) and seta 1-II with thin branches.

Some of the most distinctive features of the larvae of *dissimilis* which separate them from *harbachi* and other species of the subgenus are: shape of pecten spines, setae 2-VIII and 10-III-V, VII single, setae 1-3-P all attached to a single heavily pigmented setal support plate, seta 5-C usually with 2,3 branches, seta 1-X single, setae 2,3-VIII and usually 1,4-VIII each attached to a heavily pigmented setal support plate, saddle with moderately developed spicules on posterior margin, and shape and number (54-72) of comb scales.

A few larval specimens of *dissimilis* from Malaysia and Thailand possessed 1 or 2 of the features normal for *harbachi*, e.g., in Malaysia 13 of 27 specimens (Collection Nos. 385, 881, 898, 1475, 1637) from Perak State, 1 of 2 specimens (Collection No. 677) from Pahang State and 1 of 5 specimens (Collection No. 1063) from Perlis State have seta 5-C single on 1 or both sides, in Thailand 7 of 10 specimens (Collection Nos. 00089, 00122) from Kanchanaburi Province have seta 5-C single on 1 or both sides, 7 other larval specimens from Chiang Mai Province possess 1 or 2 features (often on only 1 side of the specimen) similar to *harbachi* (e.g., branching of setae 2-VIII, 5-C or 1-X), adults and pupae (except 5 of the latter 7 associated specimens) of the above specimens are typical for *dissimilis*. Most third instar larvae of *dissimilis* examined have seta 5-C single, but a few are 2-branched.

Thurman (1959: 121, 122, 1963: 55) reported *dissimilis*, *leucopleura* and *paradissimilis* from Thailand, however, all specimens in the NMNH, labeled as above, are *dissimilis* (see my discussion under *paradissimilis*). Barraud (1927: 552) stated that his new species *subsimilis* appeared to be related to *Finlaya dissimilis*, but differed in the presence of white rings on tarsus III, the markings on the maxillary palpus, and in other details. Reinert (1990: 206), after examining the holotype of *subsimilis*, found it to be a typical *Udaya* Thurman and transferred it to this genus. Macdonald, Smith and Webb (1965: 337) reported *dissimilis* from Kampong Pangkalan Kuap, Sarawak, Malaysia. *Aedes gaffigani* and *pecori* occur in Sabah, Malaysia, but I have not seen any specimens of *dissimilis* from either Sabah or Sarawak. I believe this record of *dissimilis* needs to be confirmed.

**DISTRIBUTION.** 421 specimens examined: 51 ♀ pl, 2 ♀ p, 32 ♀, 5 ♀ g, 28 ♂ pl, 8 ♂ p, 7 ♂ g, 28 ♂, 11 pl, 5 p, 2 l and 63 L.

**INDIA.** *Assam* (1 ♀ pl, 2 L); *Bengal* (North), Sukna (4 ♀, 4 ♂, 1 ♂ g); *Madras*, Coonoor, Nilgiri Hills (1 ♀).

**MALAYSIA.** *Kedah*, Sintok Forest Reserve (1 ♂); *Pahang*, Fraser's Hill, Mela, Kuala Lipis (2 ♀ pl, 1 ♂); *Perak*, Cameron Highland Road (14th and 21st mile), Chior Big Game Forest Reserve, Kg. Sg. Itek, Gopeng, Lasah FLDA, Pos Lesap (1 Km from Kg. Pemoek) (23 ♀ pl, 1 ♀ p, 14 ♀, 3 ♀ g, 11 ♂ pl, 2 ♂ p, 14 ♂, 2 ♂ g, 3 pl, 1 p, 16 L); *Perlis*, Kubang Tiga (2 ♀ pl, 1 pl, 2 L); *Selangor*, Kuala Lumpur, Ampang jungle, Ulu Klang, Ulu Gombak, Ulu Klang (near National Zoo), Ulu Langat, Ulu Langat Forest Reserve (4 ♀ pl, 4 ♀, 3 ♂ pl, 1 ♂ p, 4 ♂, 1 ♂ g; and 2 ♀, 1 ♀ g, 1 ♂, 1 ♂ g, type series).

**THAILAND.** *Chiang Mai*, Amphoe Chiang Dao, Chiang Dao Road, Amphoe Mae Taeng, Huey Hin Fone Lang, Amphoe Muang, Doi Suthep, Farng (15

♀ pl, 1 ♀ p, 4 ♀, 1 ♀ g, 10 ♂ pl, 5 ♂ p, 3 ♂, 2 ♂ g, 6 pl, 4 p, 2 l, 18 L); *Chumphon*, Ban Khao Tha Lu, Ban Wang Phi (2 ♀ pl, 4 ♂ pl, 2 L); *Kanchanaburi*, Ban La Wa, Sangkhla Buri, Huai Mae Nam Noi (1 ♀ pl, 5 L); *Nakhon Nayok*, Amphoe Muang (1 L); *Nakhon Si Thammarat*, Ban Thuan Lek (1 L); *Prachin Buri*, Ban Bu Phram (1 ♀ pl); *Songkhla*, Amphoe Haad Yai, Ton Nga Chang Waterfall (1 ♀, 1 L); *Surat Thani*, Ko Samui Island, Khao Yai (2 L); *Tak*, Khao Salak Phra (7 L); *Trang*, Amphoe Gun Tung Mui, Kan Tang Tai, Amphoe Muang, Tumbol Tung Ka Beau (1 ♀, 1 lp, 4 L).

VIETNAM. *Pleiku*, Plei Djereng (1 ♀, 2 L).

*Distribution from the literature.*

BANGLADESH (Ahmed 1988: 191).

INDIA. *Assam*, Haflong, Nongpoh; *Bengal* (Eastern), Rangamati, (Northern), Sukna, Darjeeling Hills, Sureil, Tindharia (Barraud 1924: 865); S. W. and N. E. India (Barraud 1934: 205); *Arunachal Pradesh*; *Assam*; *Meghalaya* (Nagpal and Sharma 1987: 145).

MALAYSIA. Ampang (Leicester 1908: 92); *Selangor* (Macdonald and Traub 1960: 98); *Perak*, Chior Big Game Forest Reserve (Knight and Harrison 1988: 220).

THAILAND (Thurman 1959: 121,122, 1963: 55); *Chiang Mai* (Rattana-ithikul and Harrison 1988: 86).

BIONOMICS. In India, immatures were collected once from a treehole and once in a combined collection from a small bamboo stump and a treehole containing clear, fresh, temporary and stagnant water located in a heavily shaded area.

In Malaysia, immatures were collected during March, April and June through December from small treeholes (13 times), hollow of a tree (3 times), small bamboo stumps (6 times) and small tin pots (once), containing colored (usually) or clear (rarely), fresh, temporary and stagnant water, in partial (usually), heavily (4 times) or no (once) shaded areas of secondary rain forest (19 times), secondary evergreen forest (once) and banana-rubber plantation (once), located in valley (9 times), hilly (7 times), mountain (3 times) and plain (once) terrain at altitudes ranging from sea level to 990 m (usually 30-91 m).

In Thailand, immatures were collected during February, March, May through October from small and large treeholes (28 times), large tree stump hole (once), small knot hole (once), root hole (once), small bamboo stump (once), small and large rock pools (2 times), coconut shell (once) and *Colocasia* leaf axil (once), containing colored (rarely clear), fresh, temporary and stagnant water, usually in partial (occasionally in heavily and rarely in no) shaded areas of secondary deciduous forests (4 times), primary rain forests (3 times), secondary bamboo grove (once) and secondary evergreen forest (once), located in mountain (11 times) and valley (3 times) terrain at altitudes of 70 to 1,520 m.

In Vietnam, immatures were collected once from a treehole during November.

Literature references for India indicate that larvae were collected from treeholes during July through October (Barraud 1924: 865); from treeholes and as a fairly common forest species where there was heavy rainfall (Barraud 1934: 205); and from holes in bamboo at Kathal and Gulmohar (Nagpal and Sharma 1987: 147). In

Malaysia, immatures were taken from water in the hollow of a tree in the jungle (Leicester 1908: 92); from treeholes, bamboo stumps in lowland dipterocarp forest and adults occasionally were taken in ground-level biting catches during the day (Macdonald and Traub 1960: 98); and from a bamboo stump in a rain forest at 300 feet elevation (Knight and Harrison 1988: 220). Rattanaarithikul and Harrison (1988: 87) reported immatures collected in Thailand from natural plant containers in partial or heavy shade, located in a secondary evergreen deciduous forest on mountain peaks and in association with *Ae. (Fin.) reinerti* Rattanaarithikul and Harrison.

*Aedes (Kenknightsia) gaffigani*, New Species  
(Figs. 6, 11, 16, 25, 33)

The following is supplemental to the subgenus description.

**FEMALE** (Fig. 6). *Head*. Antenna 0.70-0.81 length of proboscis; maxillary palpus 0.16-0.18 length of proboscis; proboscis 1.03-1.07 length of femur I; vertex covered with brownish-black scales; occiput with erect forked scales brownish-black; silvery-scaled patch in front of antepnotum small and restricted to anterior margin; head otherwise similar to *luzonensis*. *Thorax*. Scutum covered with brownish-black scales; dark setae as follows: 4 on anterior promontory, 3,4 anterior and 1 lateral on scutal fossal area, supraalar area with a patch of short black setae anterior to wing base, other supraalar setae long and black, 3,4 on posterior of postpronotum, 2 on upper proepisternum (upper 1 golden or black and lower anterior 1 golden), 1,2 on postspiracular area, 1 upper, 1 median posterior and 2-4 lower posterior on mesokatepisternum, 5,6 on prealar knob, 1-3 golden on upper posterior of mesepimeron; scutellum with a patch of brownish-black scales on each lobe, midlobe with 4 long and 3,4 short dark setae, lateral lobe with 3,4 long and 1-3 short dark setae. *Legs*. Similar to *dissimilis* except coxa I with only a large patch of broad silvery scales; femur I with anterior surface with basoventral and apicoventral silvery-scaled patches smaller, posterior surface with a small apicoventral patch of silvery scales; femur II with anterior surface with a small silvery-scaled patch at about midlength and extending as a narrow line along ventral margin to base (ventral line somewhat incomplete in specimen S-499-10) in addition to apical silvery-scaled patch, posterior surface with scales dark except for a minute apicoventral patch of silvery scales; femur III with posterior surface with dorsal and lateral portions of apex brown-scaled. *Wing*. Similar to *dissimilis*. *Abdomen*. Similar to *dissimilis* except tergum VII with a narrow subbasal incomplete silvery-scaled band.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII*. Basal 0.35-0.40 retracted into segment VII, numerous broad scales on apical 0.82, several short and moderately long setae on apical 0.6-0.7, 5,6 moderately long stout setae on apical margin, Te-VIII index 0.65-0.71, Te-VIII/Te-IX index 1.65-1.84, length 0.23-0.27 mm, width 0.33-0.41 mm. *Sternum VIII*. Apex with a minute (0.01-0.02 of dorsal length) mesal depression, scales absent, numerous short setae on apical 0.78-0.79, 7-9 (usually 7) short to moderately long stout setae on apical margin, S-VIII index 0.77-0.85, length 0.33-0.36 mm, width 0.39-0.47 mm. *Tergum IX*. Composed of 2 long



plates, 2-4 setae apically on each side of midline, 4-8 total setae, Te-IX index 1.11-1.34, length 0.13-0.16 mm, width 0.11-0.12 mm. *Insula*. 3 setae on each side of midline, 6 total setae. *Upper vaginal lip*. Sclerite very small or absent. *Postgenital lobe*. 6-15 setae on each side of midline, 13-30 total setae, ventral PGL/cercus index 0.72-0.74, dorsal PGL index 1.88-2.17, ventral PGL index 3.68-3.89, ventral length 0.16-0.17 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.60-0.67, cercus index 2.57-2.74, cercus/dorsal PGL index 2.50-2.66, length 0.22-0.24 mm, width 0.08-0.09 mm.

MALE. Not known.

PUPA (Fig. 16). Chaetotaxy as figured and recorded in Table 2. *Cephalothorax*. Seta 1-CT with 7,8 (usually 8) branches; 4-CT with 7-9 branches; 5-CT with 3 branches; 10-CT with 2 branches or 2-forked, long; 10,11,12-CT sparsely aciculate; 11-CT with 2-5 branches, moderately long, dendritic, laterad and slightly caudad of 10-CT; 12-CT single, very long, stout. *Trumpet*. Index 3.84-4.26; widest on middle 0.3; pinna moderately long, 0.13-0.14 length of trumpet. *Abdomen*. Setae 1,3-I, 1-II moderately long; 3-I with 3 branches or 2-forked (single on 1 side of 1 specimen), moderately stout, sparsely aciculate; 1-II with 9-16 thin branches, very sparsely or not aciculate; 4-II with 9-13 branches; 1-IV with 8-11 branches; 6-VII shorter, thinner, mesad and noticeably cephalad of 9-VII; 9-VII stout, aciculate; 9-VIII with 11-15 branches, fan-like, slightly dendritic, densely aciculate with long stout spicules. *Paddle*. Index 1.10; seta 1-Pa long.

LARVA (Fig. 25). Chaetotaxy as figured and recorded in Table 11. *Head*. Seta 4-C with 4-8 thin branches, forked; 5-C with 2-4 branches, stout; 5,6-C very long; 5,6,11-C sparsely aciculate; 6-C single (2-branched on 1 side of 1 specimen), stout, slightly longer than 5-C; 7-C with 8-11 branches, long, stout, densely aciculate; 13-C with thin branches, simple; 13-C, 6-Mx moderately long; dorsomentum with 24-26 teeth; 6-Mx single; mandibular lobe long, labula thumb-like and with apex bluntly rounded. *Antenna*. Seta 1-A with tip noticeably shorter than apex of antennal shaft, distal portion with a bluntly pointed tip, attached 0.44-0.46 from base; 4-A approximately 0.5 length of 2-A. *Thorax*. Seta 1-P with 2 branches, stout, pigmented, noticeably shorter than 2-P; 1-P, 9-M,T with distal portion of branches with bluntly pointed tips; 2,14-P single; 3-P with 2-4 branches, shorter than 1,2-P; 1-3-P not attached to a pigmented setal support plate; 5-7-P long, moderately thickened, sparsely aciculate; 1-M with 4-7 (usually 6) branches; 1-M, 1,2,6-T with thin branches; 1-M,T short; 1-T with 4-6 (usually 5) branches; 2-T with 5-7 branches, moderately long; 6-T with 2,3 branches; 9-T aciculate. *Abdomen*. Many setae with thin branches (e.g., 1-I-VI, 2-VIII, 3-I-VII, 10-II-VII, 13-I-V,VII); 1-I with 4-6 branches; 1,13-I short; 1-II, 3-I,II, 8-III, 13-II,VI,VII moderately long; 1-III with 3-6 branches; 1-VII, 4-VIII, 6-III-VI, 10-I single; 1-III-VII, 3-III-VI, 10-II-VII, 13-III-V very long; 1-IV,V, 3-I,IV,V, 10-V pectinate; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 2,3 branches, slightly longer than 1-VIII; 3-II with 5-7 branches; 3-IV with 5,6 branches; 4-VIII noticeably longer than 3-VIII; 6-I with 2,3 (usually 2) branches, stout, heavily pigmented, basal 0.5 aciculate, distal portion of branches with bluntly pointed tips; 6-II with 2 branches, stout, heavily pigmented, aciculate on basal 0.6, distal portion of branches with bluntly pointed tips; 6-III-VI, 10-I long; 7-I sparsely

aciculate, 0.46-0.51 length of 6-I; 8-III with 2 (single on 1 side of 1 specimen) branches; 10-III,VII with 4-6 branches; 10-IV with 4,5 branches; 10-V with 4-6 branches; 13-II,VI dendritic; comb with 82-117 scales with apices having a longer stout median spine and several shorter thin spicules, spicule on both sides of median spine somewhat thicker than others; saddle narrow, anterior and ventral margins darker pigmented, posterior margin with moderately developed spicules, acus absent; 1-X with 4 (5 on 1 side of 1 specimen) thin branches, moderately long; 2-X with 8,9 branches, about 0.4 length of 3-X; 4-X composed of 12 setae, caudal 10 setae each with 5-9 branches; anal papillae with dorsal pair long, ventral pair long and approximately 0.9 length of dorsal pair. *Siphon*. Index 5.18-5.51; pecten on basal 0.39-0.43, composed of 21-24 spines, median ones moderately long and moderately broad, ventrobasal area with 2 short and 1 or 2 minute spicules; 1-S moderately long, aciculate, borne on basal 0.47-0.49 distad of pecten; 8-S with 4,5 branches; spiracular apodeme (Fig. 33) with apex bluntly pointed.

**TYPE DATA.** The holotype female contains 6 labels with the following information: No: S.499-10, Pensiangan, Sabah, Malaysia; *Aedes (F.) dissimilis* ♀, Det. A. G., 1971; 'Mosquitoes of Malaysia', Dept. Parasit., U. of Malaya; SEAMP Acc. 300; T89.41 Term. (genitalia preparation number); and HOLOTYPE, *Aedes (Ken.) gaffigani*, Det: John F. Reinert (rectangular paper label with a red border line). The associated pupal and larval exuviae are mounted in balsam on a microscope slide and the genitalia are mounted in balsam on a second microscope slide. The collection data sheet for S.499-10 indicates the following additional information: Sapulut, 12 April 1970, 1125 hours, Sulaiman bin Omar and Chia Yiew Wang collectors, collected from colored, fresh, temporary, stagnant water in a small treehole 1-2 meters above ground, in a partially shaded area of a secondary rain forest and in hilly terrain at an altitude of 600 feet. Paratypes are 1 female (collection number S.491-11) with associated pupal and larval exuviae and genitalia (T89.34 Term.), 1 female (collection number S.491) and 1 whole larva (collection number S.491) mounted in balsam on a microscope slide. These paratypes contain essentially the same data on the labels and collection data sheet as the holotype except for the collection number, S.491, and the time of collection, 0825 hours. The type series is deposited in the National Museum of Natural History (NMNH), Museum Support Center, Smithsonian Institution, Washington, DC 20560.

**DISCUSSION.** The adult female is similar to *dissimilis*, but differs primarily as follows: vertex of head covered with brownish-black scales; occiput with erect forked scales brownish-black; silvery-scaled patch in front of antepnotum small and restricted to anterior margin; proboscis 1.03-1.07 length of femur I; coxa I with a large patch of only silvery scales; femur II with anterior surface with a narrow line of silvery scales extending along ventral margin to base from silvery-scaled patch at midlength; and tergum VII with a narrow subbasal incomplete silvery-scaled band.

Pupae of *gaffigani* have the following combination of distinctive features: seta 10-CT with 2 branches or 2-forked and long; seta 11-CT with 2-5 branches, moderately long and dendritic; seta 12-CT single and very long; seta 3-I with 3 branches or 2-forked (once single) and moderately long; and seta 1-II with 9-16 thin branches and moderately long. *Aedes gaffigani* differs from *paradissimilis* by seta 1-

CT with 7,8 branches, seta 3-I with 2,3 branches (once single), seta 1-IV with 8-11 branches, and seta 6-III with 5-7 branches.

The most distinctive features of *gaffigani* larvae are: seta 1-P with 2 stout branches, distal portion of branches with bluntly rounded tips, shorter than seta 2-P; setae 9-M,T and 6-I,II with distal portion of branches with bluntly pointed tips; and seta 6-C longer than seta 5-C. This combination of features separates this species from all others of the subgenus.

I am pleased to name this new species for Mr. Thomas V. Gaffigan, Walter Reed Biosystematic Unit (WRBU), for his technical assistance during preparation of this article and others.

DISTRIBUTION. 10 specimens examined: 2 ♀ pl, 1 ♀, 2 ♀ g and 1 L.

MALAYSIA. *Sabah*, Pensiangan, Sapulut (1 ♀ plg, holotype, 1 ♀ pl, 1 ♀, 1 ♀ g and 1 L, paratypes).

BIONOMICS. In Malaysia, immatures were collected twice during April from colored, fresh, temporary, stagnant water, from small treeholes 1-2 m above ground in partially shaded areas of a secondary rain forest, and in a hilly area at an altitude of 600 feet.

*Aedes* (*Kenknightsia*) *harbachi*, New Species  
(Figs. 3, 11, 13, 17, 26, 33)

The following is supplemental to the subgenus description.

FEMALE (Fig. 3). *Head*. Antenna 0.66-0.76 length of proboscis; maxillary palpus 0.17-0.20 length of proboscis; proboscis 1.27-1.31 length of femur I; vertex with brownish-black scales; occiput with erect forked scales golden, some specimens with a few dark brown scales on lateral areas; head otherwise similar to *dissimilis*. *Thorax*. Covered with narrow piliform reddish-black scales except for narrow golden scales forming a moderately broad line along posterior margin of prescutal suture and extending from anterior supraalar area to dorsocentral area, similar scales forming a narrow line on acrostichal area, some specimens also with a narrow line on posterior medial scutal area and on supraalar area; golden setae as follows: 4 on anterior promontory, 4-7 on anterior scutal fossal area, lateral scutal fossal seta absent, supraalar area with a patch of short golden setae anterior to wing base, other supraalar setae long and golden, 2,3 on posterior of postpronotum, 2,3 on upper proepisternum, 2-4 on postspiracular area, 1 upper (2 in 1 specimen), 1 median posterior (2 in 1 specimen) and 2-4 lower posterior on mesokatepisternum, 5-7 on prealar knob, 2-4 on upper posterior of mesepimeron; scutellum with a patch of broad brownish-black scales on each lobe, midlobe with 3,4 long and 2-4 short brown setae, lateral lobe with 3,4 long and 1-3 short brown setae. *Wing, Legs and Abdomen*. Similar to *dissimilis*. Some specimens with pale-scaled patches on posterior surfaces of femur II longer.

FEMALE GENITALIA (Fig. 11). *Tergum VIII*. Basal 0.25-0.45 retracted into segment VII, numerous broad scales on apical 0.79-0.81, several short to moderately long setae on apical 0.58-0.74, 8,9 moderately long stout setae on apical

margin, Te-VIII index 0.60-0.67, Te-VIII/Te-IX index 2.00-2.13, length 0.27-0.30 mm, width 0.4-0.5 mm. *Sternum VIII*. Apex with a minute (0.03-0.04 of dorsal length) mesal depression, scales absent, numerous short setae on apical 0.77-0.83, 5-7 (usually 6) short to moderately long stout setae on apical margin, S-VIII index 0.75-0.82, length 0.35-0.39 mm, width 0.47-0.49 mm. *Tergum IX*. Composed of 2 moderately long plates, 2,3 (usually 3) setae apically on each side of midline, 5,6 total setae, Te-IX index 0.99-1.02, length 0.14-0.15 mm, width 0.14-0.15 mm. *Insula*. 2,3 setae on each side of midline, 5,6 total setae. *Upper vaginal lip*. Sclerite usually absent or when present very small. *Postgenital lobe*. 12-17 setae on each side of midline, 25-33 total setae, ventral PGL/cercus index 0.69-0.70, dorsal PGL index 1.89-2.20, ventral PGL index 3.27-3.60, ventral length 0.16-0.18 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.52-0.63, cercus index 2.43-2.57, cercus/dorsal PGL index 2.39-2.57, length 0.23-0.27 mm, width 0.09-0.10 mm.

**MALE** (Fig. 3). Generally similar to female except for sexual features and scutal golden scaling more extensive. *Head*. Antenna 0.67-0.70 length of proboscis; maxillary palpus 0.85-0.90 length of proboscis, number of setae on apical palpomeres similar to *dissimilis*; proboscis 1.19-1.21 length of femur I; vertex also with silvery scales on lateral and posterior areas. *Thorax*. Golden-scaled areas as follows: a moderately broad stripe on acrostichal area extending onto posterior medial scutal area where it forks and extends along lateral margins of bare prescutellar area, line along posterior margin of prescutal suture similar to female, and a narrow stripe on posterior dorsocentral area, also many specimens with a distinct or indistinct stripe on anterior dorsocentral area; setal differences follow: 3,4 on anterior promontory, 3-5 on anterior scutal fossal area, a few specimens with 1,2 dark setae mixed with long golden ones in supraalar area, 1-3 on posterior of postpronotum, 4-6 on prealar knob. *Legs*. Femur II with silvery-scaled patch at midlength smaller.

**MALE GENITALIA** (Fig. 13). *Tergum IX*. Each lobe bearing 1,2 setae, 3 total setae. *Gonocoxite*. Length 0.37 mm. *Gonostylus*. Numerous short thin spicules on approximately basal 0.9, a small tubercle subapically (1 specimen also with a minute subapical seta), Gs length 0.13 mm, Gs/Gc index 0.36, gonostylar claw length 0.05 mm, GC/Gs index 0.39. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally and 3 short and moderately long thin setae on mesal and tergal areas, BML/Gc index 0.14, BML length 0.05 mm; proctiger with 4 cercal setae. *Phallosome*. Aedeagus with distal portion only slightly narrower than proximal portion, Ae length 0.11 mm, Par/Ae index 0.78, Par length 0.09 mm, BP/Ae index 0.51, BP length 0.06 mm. *Sternum IX*. 4 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 17). Chaetotaxy as figured and recorded in Table 3. *Cephalothorax*. Seta 1-CT with 2-5 (usually 4) branches; 4-CT with 2-5 (usually 3,4) branches; 5,11-CT single; 10-CT with 2 branches (rarely single or 3-branched); 10,12-CT long; 11-CT very long, stout, sparsely aciculate, laterad and slightly cephalad of 10-CT; 12-CT with 3-5 (usually 3,4) thin branches. *Trumpet*. Index 3.76-4.31; slightly wider on apical 0.3 than middle 0.3; pinna moderately long to long, 0.12-0.21 (usually 0.15-0.18) length of trumpet. *Abdomen*. Seta 1-I,II, 3-I very long; 3-I single, stout; 3-

I, 1-II, 9-VII simple; 1-II with 2-4 (usually 2) branches, moderately thick; 4-II with 4-8 (usually 5,6) branches; 1-IV with 3-8 (usually 5-7) branches; 6-VII slightly longer, thinner, mesad and noticeably caudad of 9-VII; 9-VII moderately stout; 9-VIII with 8-10 branches, fan-like, dendritic, moderately aciculate. *Paddle*. Index 1.15-1.37; seta 1-Pa long.

**LARVA** (Fig. 26). Chaetotaxy as figured and recorded in Table 12. *Head*. Seta 4-C with 4-6 branches; 5,6-C single, very long, 6-C slightly shorter than 5-C; 7-C with 3-5 (usually 4,5) branches, moderately long, fan-like; 11-C usually 4,5-branched; 13-C long, sparsely aciculate; dorsomentum with 29 teeth; 6-Mx single (2-forked on 1 side of 1 specimen); mandibular lobe moderately long, labula separated from lobe apically. *Antenna*. Seta 1-A tip reaches or extends slightly beyond apex of antennal shaft, apical portion thin, attached 0.50-0.51 from base; 4-A approximately equal in length to 2-A. *Thorax*. Seta 1-P usually single (occasionally 2-branched), slightly longer than or approximately equal to length of 2-P, noticeably longer than 3-P; 1-3-P not attached to a setal support plate; 1,5-7-P long; 1-P, 9-M,T with distal portion of branches thin; 5-7-P with moderately thick branches, sparsely aciculate; 8-P, 1-T short; 14-P with 2 (rarely 3) branches; 1-M with 3,4 (occasionally 2) branches; 1-M, 2-T moderately long; 13-M short, dendritic; 1-T with 2-4 branches; 1,2-T with thin branches; 2-T pectinate; 6-T single; 9-T aciculate. *Abdomen*. Many setae with thin branches (e.g., 1,3-I-IV, 13-II); 1-I with 2-5 branches; 1-I,II, 13-I short; 1-III with 2-4 (usually 3,4) branches; 1-III, 3-III,IV, 6-III-V, 8-III, 10-I,VII long; 1-IV-VII, 4-VIII, 10-II-VI, 13-III,IV very long; 1,3,6-VI, 6-VI, 13-V single (occasionally 2-branched); 1-VII single (rarely 2-branched), stout, very sparsely aciculate; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 2 (occasionally 3) branches, slightly longer than 1-VIII; 2-VIII, 3-I,II, 13-II,VI,VII moderately long; 3-II with 3-5 (usually 4,5) branches; 3-III,IV pectinate; 3-IV with 2-5 (usually 4) branches; 3-V very long but shorter than 1-V; 4-VIII, 8-III single; 6-I,II with 2,3 branches, stout, aciculate, distal portion of branches thin; 6-III usually with 2 branches (occasionally single), very sparsely aciculate; 6-IV with 2 (rarely single) branches; 6-V single or 2-branched; 7-I stout, 0.79-0.86 length of 6-I; 10-I caudolaterad of 13-I; 10-II single (2-branched on 1 side of 1 specimen); 10-III with 2 branches; 10-IV usually with 2 (rarely 3) branches; 10-V with 2 branches; 10-VII with 2,3 branches, caudad of 13-VII; comb with 58-69 scales with apices having approximately equal length thin spicules; saddle wide, anterior and ventral margins darker pigmented, posterior margin with very minute spicules, acus absent; 1-X with 2,3 (very rarely single) branches, moderately long; 2-X with 6,7 branches, slightly less than 0.5 length of 3-X; 4-X composed of 10 setae, caudal 8 setae each with 7-11 branches; anal papillae with dorsal pair long, ventral pair moderately long. *Siphon*. Index 2.36-2.61; pecten on basal 0.49-0.51, composed of 21-26 spines, median ones long, narrow and pointed, ventral margin with a medium-sized distal spicule followed by one or 2 smaller and 2-5 minute spicules on basal 0.26; 1-S moderately long, borne on basal 0.54-0.57 distad of pecten; 8-S with 2-6 branches; spiracular apodeme (Fig. 33) with apex pigmented and pointed.

**TYPE DATA.** The type series consists of the holotype male with associated pupal and larval exuviae (collection number 04510-8), allotype with associated pupal and larval exuviae (collection number 04511-5) and 14 paratypes with associated

exuviae (collection numbers: 04510-1 ♂pl, -2 ♂pl, -3 ♂pl, -4 ♂pl, -5 ♂pl, -6 ♂pl, -7 ♂pl, -100 ♂p, -101 ♂p; 04511-1 ♀pl, -3 ♂pl, -4 ♀pl, -6 ♀pl; 04512-2 ♂pl). The adult labels possess the following information: THAILAND, Chiang Mai, Ban Choeng, Doi Suthep, 1970, U. S. ARMY-SMRL (SEATO Medical Research Laboratory); SEAMP Acc. No. 271; and the type label (rectangular paper label, holotype and allotype with a red border line, paratypes with a blue border line). The collection data sheets for 04510, 04511 and 04512 indicate the following additional information: immatures collected from colored, fresh, temporary, stagnant water in small bamboo stumps, in partial shaded area of a secondary deciduous forest in mountain terrain and at an altitude of 800 m. The type series is deposited in the NMNH except for 1 paratype male and 1 paratype female, each with associated pupal and larval exuviae, which will be deposited in the NHM and 1 paratype male with associated pupal and larval exuviae which will be deposited in the Florida State Collection of Arthropods, Gainesville, Florida.

**DISCUSSION.** Adult females of *harbachi* are easily separated from all species of the subgenus by the absence of the lateral scutal fossal seta and the golden color of the long supraalar setae. From *dissimilis* they also differ in the presence of the moderately broad line of golden scales along the posterior margin of the prescutal suture which extends from the supraalar area to the dorsocentral area, the supraalar patch of short and long setae all golden, and the maxillary palpus 0.17-0.20 length of the proboscis. Adult male specimens are easily distinguished from *dissimilis* by the absence of the lateral scutal fossal seta, presence of short and long golden supraalar setae, the golden scale pattern on the scutum, antenna 0.67-0.70 length of proboscis, maxillary palpus 0.85-0.90 length of proboscis, and proboscis 1.19-1.21 length of femur I. Male genitalia of *harbachi* have the basal mesal lobe with the scolus-like projection short and with 1 long stout seta apicolaterally and 3 short and moderately long thin setae on the mesal and tergal areas and the aedeagus with the distal portion only slightly narrower than the proximal portion.

Pupae of *harbachi* have the following combination of distinctive features: seta 10-CT with 2 (rarely single or 3) branches and long; seta 11-CT single and very long; seta 12-CT with 3-5 thin branches and long; and seta 1-II with 2-4 branches, very long, moderately thick, simple. *Aedes harbachi* pupae differ from those of *wilkersoni* by seta 4-II with 4-8 branches, seta 5-II with 7-13 branches, seta 1-II very long and noticeably longer than lateral margin of segment III, and seta 1-Pa long.

I am provisionally including in *harbachi* 3 female (1 with a larval exuviae) specimens from India all of which have the lateral scutal fossal seta absent, supraalar area with the patch of short setae anterior to wing base golden, the prescutal suture with golden scales along posterior margin, and the mesokatepisternum with a single large patch of overlapping broad silvery scales. One female from East Bengal (No. 1265), however, has the wing with about 5 white scales on the anterior margin of the costa near its base, the mesokatepisternum with 1,2 upper and 2 median posterior setae, and the supraalar area with the long setae reddish-brown, features that are similar to *karwari*. The larval exuviae associated with the female (No. 1265) is in poor condition and no pupa exuviae is on the slide; this larva appears to fit *harbachi* in that setae 1-3-P are not attached to a setal support plate, pecten spine shape,

dorsomentum with 29 teeth, and seta 1-X with 5 branches; however, seta 2-VIII is single on 1 side (missing on the other side) and seta 5-C is missing. The other 2 females from Sukna, North Bengal, have a reduced number of golden scales along the posterior margin of the prescutal suture and the long supraalar setae are reddish-brown, features resembling *dissimilis*.

Some of the most distinctive features of the larvae of *harbachi* used in separating them from *dissimilis* and other species are: seta 10-III-V, VII with 2,3 branches; seta 2-VIII with 2,3 branches (very rarely single, i.e., single on 1 side in 2 specimens); seta 5-C single; shape of pecten spines; saddle with very minute spicules on caudal margin; many thoracic and abdominal setae with thin branches; 9-M, T with apical portion of branches thin; 6-I, II with apical portion of branches thin; dorsomentum with 29 teeth; and comb with 58-69 scales. Third instar larvae of *harbachi* have seta 2-VIII rarely single.

I am pleased to name this new species for Dr. Ralph E. Harbach, WRBU, in recognition of his outstanding contributions to the biosystematics and morphology of the mosquitoes.

**DISTRIBUTION.** 188 specimens examined: 14 ♀ pl, 4 ♀ p, 1 ♀ l, 7 ♀, 4 ♀ g, 17 ♂ pl, 8 ♂ p, 6 ♂, 3 ♂ g, 4 pl, 4 l and 37 L.

**INDIA.** *Bengal* (North), Darjeeling District, Sukna (2 ♀, 1 L), (East), Rangamatti (1 ♀ l).

**THAILAND.** *Chanthaburi*, Ban Laem Sing (2 ♀ pl, 1 p, 1 L); *Chiang Mai*, Amphoe Maung, Doi Suthep, Pha Ngero, Ban Choeng, Ban Mae Sa, Ban Pa Miang, Ban Tham Klaep, Doi Khum Tan, Amphoe Sunpatong, Doi Ton Tong, Amphoe Chiang Dao, Chiang Dao Road, Amphoe Hoad, Huey Mae Lon (10 ♀ pl, 4 ♀ p, 4 ♀, 3 ♀ g, 16 ♂ pl, 4 ♂ p, 5 ♂, 3 ♂ g, 2 pl, 21 L); *Chon Buri*, Amphoe Siracha, Ban Huey Klum, Bang Pea, Kasemsau Waterfall (1 ♀ pl, 1 ♂ pl, 1 pl); *Khon Kaen*, Amphoe Phu Wiang (3 ♂ p, 1 ♂, 1 pl, 4 L); *Lampang*, Nam Mae Na Rua (2 L); *Mae Hong Son*, Doi Chang (1 ♂ p); *Nakhon Nayok*, Amphoe Bhanna, Kaeng Waterfall (1 ♀ pl, 1 ♀, 1 ♀ g, 4 L); *Nakhon Si Thammarat*, Chong Khao (3 p); *Nan*, Ban Pha Man (1 L); *Tak*, Doi Sam Sao (3 L).

**BIONOMICS.** In Thailand, immatures were collected during May through November from small and large treeholes (16 times), small log hole (once), very large stump hole (once), bamboo stumps (5 times), coconut shell (once), and small and large rock pools with leaves (5 times), containing colored (usually) or clear (rarely), fresh, temporary and stagnant water, usually in partially or heavily shaded areas (4 times in lightly shaded areas) of secondary deciduous forests (7 times), primary rain forests (3 times), secondary rain forests (2 times), secondary scrub (3 times), and orchard plantation (once), located in mountain (9 times), hilly (4 times), valley (2 times) and plain (once) terrain at altitudes ranging from 5 to 1,000 meters (usually above 400 meters).

*Aedes (Kenknightsia) karwari* Barraud  
(Figs. 2, 5, 8)

*Finlaya dissimilis* var. *karwari* Barraud, 1924: 865 (♀); of Edwards 1932: 154; Barraud 1934: 204 (♀); Rozeboom 1946: 590; Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 161; Knight and Stone 1977: 94.

The following is supplemental to the subgenus description.

**FEMALE** (Figs. 2, 5). *Head*. Antenna 0.7 length of proboscis; maxillary palpus 0.2 length of proboscis; proboscis 1.18-1.25 length of femur I; scale pattern and colors similar to *dissimilis*. *Thorax*. Scutum, in lectotype, covered with narrow piliform scales golden except for narrow piliform brownish-black scales on lateral scutal fossal area, a few on anterior area between acrostichal and dorsocentral areas, posterior area between acrostichal and dorsocentral areas and on middle of supraalar area, in the paralectotype the golden-scaled areas are more extensive; brown setae as follows: 4 on anterior promontory, 4 anterior and 1-3 lateral on scutal fossal area, supraalar area with patch of short setae anterior to wing base reddish-brown, other supraalar setae long and reddish-brown, 4-6 on posterior of postpronotum, 3,4 golden on upper proepisternum, 2,3 on postspiracular area, 2 upper, 1,2 median posterior and 3-5 lower posterior on mesokatepisternum, 9,10 on prealar knob, 7-11 golden on upper posterior of mesepimeron; mesokatepisternum with a large upper and a small lower posterior patch of broad silvery scales separated by a bare space; scutellum with a patch of broad dark brown scales on each lobe, midlobe also with 4 silvery scales on basal area, midlobe with 6 long and about 5 short dark brown setae, lateral lobe with 3,4 long and 3,4 short dark brown setae. *Legs*. Similar to *dissimilis* except the small ventroapical pale-scaled patch on femur I is absent and the posterobasal pale-scaled patch is much reduced. *Wing*. Dorsal and ventral veins dark-scaled except for a small patch of white scales (8 in lectotype, 3 in paralectotype) on anteroventral margin of costa near base (only basal about 0.5 of 1 wing on each specimen remains), 1 remigial seta on lectotype. *Abdomen*. Similar to *dissimilis*.

**FEMALE GENITALIA** (Fig. 8). *Tergum VIII*. Basal 0.5 retracted into segment VII, numerous broad scales on apical 0.8, several short to moderately long setae on apical 0.55, 8 moderately long stout setae on apical margin, Te-VIII index 0.58, Te-VIII/Te-IX index 1.95, length 0.33 mm, width 0.56 mm. *Sternum VIII*. Apex with a minute (0.02 of dorsal length) mesal depression, 1 scale present, numerous short setae on apical 0.85, 8 short to moderately long stout setae on apical margin, S-VIII index 0.8, length 0.45 mm, width 0.56 mm. *Tergum IX*. Composed of 2 moderately long plates, 3 setae on each side of midline, 6 total setae, length 0.17 mm, width 0.16 mm. *Insula*. 3 setae on each side of midline, 6 total setae. *Upper vaginal lip*. Sclerite very small. *Postgenital lobe*. 21,22 setae on each side of midline, 43 total setae, ventral PGL/cercus index 0.68, dorsal PGL index 1.92, ventral PGL index 3.38, ventral length 0.21 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.58, cercus index 2.47, cercus/dorsal PGL index 2.61, length 0.31 mm, width 0.13 mm.



MALE, PUPA and LARVA. Not known.

TYPE DATA. Two female syntypes are deposited in the NHM. I hereby select female number 934 as lectotype which possesses the following adult label information: India, Karwar, P. J. Barraud, Sept. 1921, l. treehole (printed and handwritten on a small rectangular paper label, also with a 1 inside a circle, both red, in the upper right corner of the label); 934 (collection number); P. J. Barraud, B. M. 1935-622; Syn-type (printed on a small circular paper label with a blue border); WRBU ACC. 1363; T89.28 Term. (genitalia preparation number); and *Aedes karwari* Barraud, LECTOTYPE ♀, By: John F. Reinert (hand printed on a rectangular paper label with a red border line). The second female syntype is labeled as a paralectotype and possesses identical labels as the lectotype except for the following: first label with 2 inside a circle (in red); 935 (collection number); and PARALECTOTYPE ♀, *Aedes karwari* Barraud, By: John F. Reinert, 1989 (rectangular paper label with a blue border line).

DISCUSSION. *Aedes karwari* was described from India by Barraud (1924: 865) as a variety of *dissimilis*. While examining the 2 syntypes I noted numerous differences from the type series (and other specimens) of *dissimilis*. I believe *karwari* to be distinct, and therefore I am elevating it to species status. *Aedes karwari* possesses features which make it the easiest to identify in the adult female stage of all species of the subgenus. Some of these characters are: scutum mostly covered with golden scales; 1-3 (2,3 in lectotype) lateral scutal fossal setae; midlobe of scutellum with 6 long setae and a few silvery scales basally; postpronotum with 4-6 posterior setae; proepisternum with 3,4 long upper setae; mesokatepisternum with an upper and a lower scale patch separated by a bare area, 2 upper and 1,2 median posterior setae; mesepimeron with 7-11 upper posterior setae; and wing with a small anteroventral pale-scaled patch near base of costa.

DISTRIBUTION. 3 specimens examined: 2 ♀ and 1 ♀g.

INDIA. North Kanara, Karwar (1 ♀, 1 ♀g, lectotype and 1 ♀, paralectotype).

*Distribution from the literature.*

INDIA. Karwar, North Kanara (Barraud 1924: 865, 1934: 204).

BIONOMICS. Barraud (1924: 865) reported that larvae were collected from treeholes during September at Karwar, India.

*Aedes* (*KenKnightia*) *lerozeboomi*, New Species  
(Figs. 6, 11, 14, 18, 27, 33)

The following is supplemental to the subgenus description.

FEMALE (Fig. 6). *Head*. Antenna 0.77-0.81 length of proboscis; maxillary palpus 0.16-0.18 length of proboscis; proboscis 1.02-1.07 length of femur I; vertex with broad brownish-black scales; occiput with erect forked scales dark brownish-black; otherwise similar to *luzonensis*. *Thorax*. Scutum covered with narrow piliform brownish-black scales except for 4 specimens which also have a narrow line of piliform grayish-white or golden scales on acrostichal area; dark setae as follows: 4 on anterior promontory, 4-6 anterior and 1 lateral on scutal fossal area, supraalar

area with a patch of short brownish-black ones anterior to wing base, other supraalar setae long and brownish-black, 3-5 on posterior of postpronotum, 1,2 golden on upper proepisternum, 1-3 on postspiracular area, 1 upper, 1 golden-brown median posterior and 1,2 lower posterior on mesokatepisternum, 5,6 on prealar knob, 3-6 golden-brown on upper posterior of mesepimeron; scutellum with a patch of broad brownish-black scales on each lobe, midlobe with 4 long and 3-5 short dark setae, lateral lobe with 3 long and 2-4 short dark setae; remainder of thorax similar to *luzonensis*. *Wing*. Similar to *dissimilis*. *Legs*. Similar to *luzonensis* except femur I which has a small silvery-scaled spot subapically on ventral surface and can barely be seen on anterior and posterior surfaces, anterior surface with a few scattered silvery scales in a line near base; femur III with a line of brown scales on dorsal surface of basal silvery-scaled patch nearly reaching base in most specimens. *Abdomen*. Terga VI,VII with a silvery-scaled subbasal narrow band, VIII with a silvery-scaled basal band; abdomen generally similar to *luzonensis*.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII*. Basal 0.40-0.55 retracted into segment VII, numerous broad scales on apical 0.78-0.86, several short and moderately long setae on apical 0.62-0.78, 9-11 moderately long stout setae on apical margin, Te-VIII index 0.63-0.72, Te-VIII/Te-IX index 1.38-1.67, length 0.26-0.28 mm, width 0.39-0.43 mm. *Sternum VIII*. Apex with a minute (0.01 of dorsal length) mesal depression, 0-3 scales (usually absent), numerous short setae on apical 0.77-0.80, 7,8 (usually 7) short to moderately long stout setae on apical margin, S-VIII index 0.76-0.78, length 0.37-0.39 mm, width 0.48-0.50 mm. *Tergum IX*. Composed of 2 long lateral plates, 2-4 (usually 3) setae apically on each side of midline, 5-7 total setae, Te-IX index 1.16-1.32, length 0.16-0.19 mm, width 0.13-0.14 mm. *Insula*. 3,4 (usually 3) setae on each side of midline, 6,7 total setae. *Upper vaginal lip*. Sclerite absent. *Postgenital lobe*. 19-26 setae on each side of midline, 39-51 total setae, ventral PGL/cercus index 0.74-0.78, dorsal PGL index 1.81-2.00, ventral PGL index 3.12-3.57, ventral length 0.19-0.21 mm. *Cercus*. Tapered flattened area with 6,7 (usually 6) stout setae, dorsal surface with setae on apical 0.58-0.64, cercus index 2.55-2.64, cercus/dorsal PGL index 2.28-2.43, length 0.24-0.27 mm, width 0.09-0.11 mm.

**MALE** (Fig. 6). Generally similar to female except for sexual features and scutal pale scaling. *Head*. Antenna 0.64-0.67 length of proboscis; maxillary palpus 0.82-0.87 length of proboscis, setae on apical palpomeres few as in *luzonensis*; proboscis 1.07-1.13 length of femur I; occiput with erect forked scales pale to medium brown. *Thorax*. With a short to moderately long narrow line of piliform white to grayish-white scales on acrostichal area (3 specimens without pale scales), stripe caudad of anterior margin always possesses dark scales, 2 specimens also with acrostichal white-scaled line somewhat wider and with a few similar scales on dorsocentral area; setal differences as follows: 2,3 on anterior promontory, 1 specimen with an additional lateral scutal fossal seta on 1 side, 2-4 on posterior of postpronotum, 2,3 on upper proepisternum, 2,3 on upper posterior of mesepimeron. *Legs*. Femur I with silvery-scaled subapical ventral spot often absent; femur II with silvery-scaled patch at about midlength reduced in size.

**MALE GENITALIA** (Fig. 14). *Tergum IX*. Each lobe bearing 2,3 setae, 5 total setae. *Gonocoxite*. Length 0.34-0.36 mm. *Gonostylus*. Numerous short thin

spicules on approximately basal 0.73-0.80, a small tubercle subapically, Gs length 0.14 mm, Gs/Gc index 0.4, gonostylar claw length 0.05-0.06 mm, GC/Gs index 0.37-0.41. *Basal mesal lobe*. Scolus-like projection very short, with 1 moderately long thin seta apicolaterally and 2 moderately long thin setae subapically on apicomesal area (only 1 apicomesal seta on 1 side of 1 specimen), BML/Gc index 0.12-0.13, BML length 0.04 mm. *Proctiger*. 3-5 (usually 3) cercal setae. *Phallosome*. Aedeagus with distal portion only slightly narrower than proximal portion, Ae length 0.12 mm, Par/Ae index 0.74-0.84, Par length 0.09-0.10 mm, BP/Ae index 0.51-0.56, BP length 0.06 mm. *Sternum IX*. 4 moderately long setae on caudomesal area.

**PUPA** (Fig. 18). Chaetotaxy as figured and recorded in Table 4. *Cephalothorax*. Seta 1-CT with 4,5 branches; 4-CT with 3,4 branches; 5-CT with 2 branches; 10-CT with 2-4 branches, forked, moderately long; 11-CT single, stout, laterad and slightly caudad of 10-CT, slightly shorter than 12-CT; 11,12-CT long, very sparsely aciculate; 12-CT with 3-5 (usually 3,4) branches. *Trumpet*. Index 3.60-5.36; wider on middle 0.33 than apical 0.33; pinna short, 0.09-0.13 length of trumpet. *Abdomen*. Seta 1-I,II moderately long; 3-I single, long, stout, usually very sparsely aciculate; 1-II with 6-10 thin branches, simple; 1-IV with 6-9 (usually 6-8) branches; 6-VII shorter, thinner, slightly mesad and cephalad of 9-VII; 9-VII with 4-6 branches, stout, sparsely to moderately aciculate; 9-VIII with 9-14 (usually 11) branches, fan-like, moderately aciculate with long spicules. *Paddle*. Index 1.17-1.23; seta 1-Pa long.

**LARVA** (Fig. 27). Chaetotaxy as figured and recorded in Table 13. *Head*. Seta 4-C with 5,6 branches, forked; 5,6-C single (each 2-branched or forked on 1 side of 1 different specimen), very long, stout, heavily pigmented, very sparsely aciculate, distal portion with bluntly pointed tip, 6-C noticeably shorter than 5-C; 7-C with 6,7 branches, moderately thick, long, fan-like; 7,11-C sparsely aciculate; 11-C moderately thick; 13-C with thin branches, short, simple; dorsomentum with 23-25 teeth; 6-Mx single to 4-branched, moderately long; mandibular lobe (Fig. 33) long, labula thumb-like and with apex bluntly rounded. *Antenna*. Seta 1-A with tip nearly reaching or reaching apex of antennal shaft, heavily pigmented, sparsely aciculate, distal portion with a bluntly pointed tip, attached 0.43-0.47 from base; 4-A approximately 0.5 length of 2-A. *Thorax*. Setae 1,14-P single; 1-P stout, pigmented, equal to or slightly longer than 2-P; 1-3-P not attached to a pigmented setal support plate; 1-P, 9-M,T with distal portion of branches with bluntly pointed tips; 2-P single or 2-branched; 3-P with 3-5 (usually 3,4) branches, shorter than 2-P; 5-7-P long; 5,6-P moderately thickened, sparsely aciculate; 7-P stout, densely aciculate; 1-M with 5-7 (usually 5,6) branches, moderately long; 1-M, 1,2,6-T with thin branches; 1-T with 4,5 branches, short; 2-T with 5-7 branches, moderately long, pectinate; 6-T with 2-4 (usually 3,4) branches; 9-T aciculate. *Abdomen*. Many setae with thin branches (e.g., 1-I-III,VI, 2-VIII, 3-I-VI, 10-II-VII, 13-VII); 1-I with 4-7 branches, short; 1-II, 3-I,II, 8-III, 13-VI,VII moderately long; 1,3-II,III pectinate; 1-III with 4-6 (usually 5,6) branches; 1-III,IV,VI, 3-IV-VI, 6-III-VI, 10-II-V,VII, 13-III-V long; 1-V,VII, 4-VIII, 10-VI very long; 1-VII, 4-VIII, 6-III-VI single; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 2-4 (usually 3,4) branches, approximately equal to or slightly longer than 1-VIII; 3-II,IV with 5,6 branches; 3-V with 4-6 (usually 5) branches; 4-VIII noticeably longer than 3-VIII; 6-I with 3 (2 in 1 specimen) branches;

6-I,II stout, heavily pigmented, basal 0.6 aciculate, distal portion of branches with bluntly pointed tips; 6-II with 2 (3 on 1 side of 1 specimen) branches; 7-I moderately thick, aciculate, 0.51-0.70 length of 6-I; 8-III with 2 branches; 10-III with 3-5 (usually 4) branches; 10-V with 2-5 branches; 10-VI single (2-branched on 1 side of 1 specimen); 10-VII with 2-4 (usually 3,4) branches; 13-II,VI dendritic; comb with 78-105 scales with apices having approximately equal length thin spicules; saddle wide, anterior and ventral margins darker pigmented, middle ventral darker area expanded dorsally and with a central small lighter pigmented area (similar to *luzonensis*), posterior margin with small spicules, acus represented by a small heavily pigmented plate detached from anteroventral margin; 1-X with 4-7 thin branches, moderately long; 2-X with 9-11 (usually 10,11) branches, approximately 0.4 length of 3-X; 4-X composed of 12 setae, caudal 10 setae each with 8-11 branches; anal papillae with dorsal pair long, ventral pair long and approximately 0.85 length of dorsal pair. *Siphon*. Index 3.23-5.12; pecten on basal 0.46-0.47, composed of 19-26 spines, median ones long, narrow and pointed, narrow at base, ventral margin with 3 medium to small pointed spicules widely spaced on approximately basal 0.33, some specimens with 1-3 minute spicules basad; 1-S moderately long, sparsely aciculate, borne on basal 0.52-0.55 distad of pecten; 8-S with 4-6 branches; spiracular apodeme (Fig. 33) with apex flat, heavier pigmented.

**TYPE DATA.** The type series consists of the holotype male (collection number 46-3) with associated pupal and larval exuviae and genitalia preparation (T89.38 Term.), allotype (collection number 46-1) with associated pupal and larval exuviae and genitalia preparation (T89.37 Term.) and 6 paratypes (21-1 ♂plg, -3 ♀pl, -101 ♂p; 41-1 ♀pl, -6 ♀plg, -7 ♀pl). The adult labels possess the following information: PHILIPPINES, 1969, collection number, HUANG & PEYTON; SEAMP Acc. No. 192; and type label (rectangular paper label, holotype and allotype with a red border line, paratypes with a blue border line). The collection data sheets for 21, 41 and 46 indicate the following information: Calso (Dalton Pass), 6 June 1969, Y-M. Huang and E. L. Peyton collectors, immatures collected from small treeholes, in heavily shaded area of secondary rain forest in mountain terrain and at an altitude of 3,500 feet. The type series is deposited in the NMNH.

**DISCUSSION.** The adult female of *lerozeboomi* is similar to *luzonensis* and *paradisimilis*, but differs in possessing a small silvery-scaled spot subapically on ventral surface of femur I. The adult male differs from *luzonensis* in the length of the maxillary palpus which is 0.82-0.87 length of the proboscis and from both *luzonensis* and *paradisimilis* in the pale-scaled pattern of the scutum. The male genitalia of *lerozeboomi* have the basal mesal lobe very short with moderately long setae as in *luzonensis*, but with the aedeagus with the distal portion only slightly narrower than the proximal portion as in *dissimilis*.

Pupae of *lerozeboomi* have the following distinctive features: seta 10-CT with 2-4 branches, forked and moderately long; seta 11-CT single, long, stout and slightly shorter than seta 12-CT; seta 12-CT with 3-5 branches and long; seta 3-I single, long and stout; and seta 1-II with 6-10 thin branches and moderately long. This species differs from both *litwakae* and *luzonensis* by the length of seta 5-V which is 0.84-0.87 the combined length of lateral margins of segments VI,VII while this seta is 0.96-1.05

and 0.93-0.94 in the other 2 species.

Larvae of *lerozeboomi* are somewhat similar to those of *gaffigani*, but differ in the following: setae 5,6-C single and with distal portion having a bluntly pointed tip; seta 1-P single, equal to or longer than seta 2-P and distal portion with a bluntly pointed tip; pecten on basal 0.46-0.47 and seta 1-S on basal 0.52-0.55 of siphon; development of the saddle and with acus present; and shape of pecten spines. The above features, in combination with the following, separate this species from all others of the subgenus: setae 1-A, 9-M,T and 6-I,II each with distal portion with bluntly pointed tips; seta 13-C short, with thin branches which are simple; and seta 6-III-VI single.

I am pleased to name this new species for Dr. L. E. Rozeboom in recognition of his basic studies, published in 1946, concerning several species which I include in this new subgenus and for his other contributions dealing with the Culicidae.

DISTRIBUTION. 109 specimens examined: 11 ♀ pl, 3 ♀ p, 5 ♀, 3 ♀ g, 6 ♂ pl, 8 ♂ p, 8 ♂ g, 2 pl, 1 l and 15 L.

REPUBLIC OF THE PHILIPPINES. Luzon Island, *Laguna*, Mt. Makiling (1 ♀ pl, 4 ♀, 1 ♂ pl, 2 pl, 1 l, 13 L); *Nueva Viscaya*, Calso, Dalton Pass, Malet, Dalton (10 ♀ pl, 3 ♀ p, 1 ♀, 3 ♀ g, 5 ♂ pl, 8 ♂ p, 8 ♂ g, 2 L).

BIONOMICS. In the Republic of the Philippines, immatures were collected during June, July, September through November from small (10 times) and large (4 times) treeholes containing colored, fresh, temporary, stagnant water, in partially (6 times) or heavily (7 times) shaded areas of secondary (11 times) or primary (3 times) rain forests, located in mountain (13 times) terrain at altitudes of 3,500 and 3,700 feet.

*Aedes* (*Kenknightsia*) *leucomeres* (Giles)

(Figs. 4, 5, 9)

*Stegomyia leucomeres* Giles, 1904: 367 (♀); of Banks 1906: 984; Brunetti 1907: 335, 1912: 447, 1920: 129.

*Aedes leucomeres* of Edwards 1922: 259 (♀ key).

*Aedes* (*Finlaya*) *leucomeres* of Edwards 1929: 2, 1932: 154; Bohart 1945: 57; Rozeboom 1946: 590; Knight and Hull 1951: 249 (♀); Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 165; Delfinado, Viado and Coronel 1963: 439; Basio 1971: 16; Knight and Stone 1977: 98; Stone and Delfinado 1973: 297; Cagampang-Ramos, McKenna and Pinkovsky 1985: 7; Tsukamoto, Miyagi and Toma 1985: 152; Apiwathnasorn 1986: 10.

The following is supplemental to the subgenus description and is based on the holotype.

FEMALE (Figs. 4,5). *Head*. Both antennae missing; maxillary palpus 0.18 length of proboscis; vertex covered with broad brownish-black scales except for a broad band of moderately broad spatulate silvery scales on ocular line and extending slightly caudad on median area as well as forming a broad band on lateral area;

postgena with a broad band of spatulate brownish-black scales on upper area anterior to antepnotum, silvery scales below; occiput with a number of erect forked dark brown scales, some scales with basal portions pale brown. *Thorax*. Scutum badly rubbed but with dark reddish-brown narrow piliform scales (no golden or pale scales present) indicating that anterior 0.2 of scutum, scutal fossal area and supraalar area anterior to wing base are covered with these scales; dark setae as follows: 3 on anterior promontory, 4,5 anterior and 1 lateral (setal alveoli present on both sides, setae rubbed off) on scutal fossal area, supraalar area with a patch of short dark reddish-brown setae anterior to wing base, other supraalar setae long and reddish-brown, 3 on posterior of postpronotum, 2 golden on upper proepisternum, 2,3 on postspiracular area, 1 upper, 1 long and 1 short median posterior and 3 lower posterior on mesokatepisternum, 7 on prealar knob, 3 pale on upper posterior of mesepimeron; mesokatepisternum with posterior margin of scale patch straight at site of median posterior setae; scutellum with a patch of dark brown scales on each lobe, midlobe with 4 long and a few short setae, lateral lobe with 3 long and a few short setae. *Legs*. All legs missing except right leg II which has femur, tibia and tarsomere 1 remaining and is similar to *dissimilis*. *Wing*. Right wing missing; left wing similar to *dissimilis*. *Abdomen*. Terga dark brown-scaled, I-IV each with a large basolateral patch of silvery scales, IV also with a few silvery scales forming an incomplete subbasal band on tergal surface, V-VII each with a moderately broad subbasal band of silvery scales.

**FEMALE GENITALIA** (Fig. 9). *Tergum VIII*. Basal 0.45 retracted into segment VII, numerous broad scales on apical 0.85, several short to moderately long setae on apical 0.71, 10 moderately long stout setae on apical margin, Te-VIII index 0.64, Te-VIII/Te-IX index 1.77, length 0.32 mm, width 0.51 mm. *Sternum VIII*. Apex with a minute (0.02 of dorsal length) mesal depression, scales absent, numerous short setae on apical 0.8, 7 short to moderately long stout setae on apical margin, S-VIII index 0.81, length 0.44 mm, width 0.54 mm. *Tergum IX*. Composed of 2 long lateral plates, 3,4 setae apically on each side of midline, 7 total setae, Te-IX index 1.15, length 0.18 mm, width 0.16 mm. *Insula*. 3 setae on each side of midline, 6 total setae. *Upper vaginal lip*. Sclerite very small. *Postgenital lobe*. 16,18 setae on each side of midline, 34 total setae, ventral PGL/cercus index 0.72, dorsal PGL index 2.13, ventral PGL index 3.3, ventral length 0.19 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.66, cercus index 2.41, cercus/dorsal PGL index 2.16, length 0.27 mm, width 0.11 mm.

**MALE, PUPA and LARVA**. Not known.

**TYPE DATA**. The holotype female is deposited in the NHM and possesses the following adult label information: *Stegomyia leucomeres* Giles, *Type*; Camp Stotsenburg [sic], Pamp., Philippine Is., Autumn 1904, "Taken in the woods", Lieut. E. R. Whitmore, U. S. Army Med. Dept.; T89.26 Term. (genitalia preparation number); **HOLOTYPE** (small circular paper label with a red border); and *N.B.* - A number of new spp. & genera of mosquitoes from Camp Stotsenberg, Angeles, Pampanga, Luzon, Philippine Is., Forwarded by Dr. Eugene R. Whitmore, 1st Lt., Asst. Surg. U. S. A., are described by C. S. Ludlow, *Canad. Ent.*, Vol. XXXVII (1905), pp. 94-102 & 129-135, E. E. Austen, 24.IV.05 (handwritten on a large

(1905), pp. 94-102 & 129-135, E. E. Austen, 24.IV.05 (handwritten on a large rectangular paper label).

DISCUSSION. Giles' (1904: 367) original description indicated that femur III had the basal 0.5 white and that femora I-III each possessed a white-scaled apical spot. However, many of the other features mentioned in the original description appear to be at variance to the holotype specimen which I examined and described above.

The adult female possesses the following distinctive features: silvery-scaled ocular line broad and connected to a broad silvery-scaled band on lateral margin of vertex; mesokatepisternum with posterior margin of scale patch straight at position of 2 median posterior setae; and tergum IV with an incomplete subbasal silvery-scaled band.

DISTRIBUTION. 2 specimens examined: 1 ♀ and 1 ♀g.

REPUBLIC OF THE PHILIPPINES. Luzon Island, *Pampanga*, Camp Stotsenberg (1 ♀, 1 ♀g, holotype).

*Distribution from literature.*

REPUBLIC OF THE PHILIPPINES (Giles 1904: 367), and Luzon Island, *Pampanga*, Clark Air Base (Cagampang-Ramos, McKenna and Pinkovsky 1985: 7).

BIONOMICS. The holotype label indicates the adult female was "taken in the woods" in the autumn; this was also reported by Giles (1904: 367).

*Aedes* (*Kenknightsia*) *litwakae*, New Species  
(Figs. 3, 5, 11, 14, 19, 28, 33)

The following is supplemental to the subgenus description.

FEMALE (Fig. 5). *Head*. Similar to *luzonensis* in scale pattern; antenna 0.76-0.80 length of proboscis; maxillary palpus 0.17-0.19 length of proboscis; proboscis 0.95-0.99 length of femur I; vertex with brownish-black scales; occiput with erect forked scales all brownish-black. *Thorax*. Scutum covered with dark reddish-brown narrow piliform scales except for bare prescutellar area; setae dark reddish-brown and as follows: 3,4 on anterior promontory, 4,5 anterior and 1 lateral on scutal fossal area, supraalar area with patch of short setae anterior to wing base dark reddish-brown, other supraalar setae long and dark reddish-brown, 3,4 on posterior of postpronotum, 1 (2 on 1 side of 1 specimen) golden-brown on upper proepisternum, 1,2 on postspiracular area, 1 upper, 1 posterior median and 3,4 lower posterior on mesokatepisternum, 6-8 on prealar knob, 1,2 golden on upper posterior of mesepimeron; scutellum with a patch of broad spatulate scales on each lobe, scales on midlobe silvery and usually with a few posterior dark reddish-brown ones, lateral lobe with a patch of dark reddish-brown scales, midlobe with 3,4 long and 2,3 short dark setae, lateral lobe with 2,3 long and 2,3 short dark setae. *Legs*. Similar to *luzonensis* except femur II which has silvery-scaled patch at about midlength moderately long and apical silvery-scaled patch not extending over dorsal surface; femur III with apical white-scaled band incomplete on posterior surface. *Wing*.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII*. Basal 0.25-0.35 retracted into segment VII, numerous broad scales on apical 0.78-0.81, several short and moderately long setae on apical 0.58-0.78, 6,7 (usually 7) moderately long stout setae on apical margin, Te-VIII index 0.70-0.76, Te-VIII/Te-IX index 1.78-1.87, length 0.32-0.35 mm, width 0.44-0.47 mm. *Sternum VIII*. Apex with a minute (0.04-0.05 of dorsal length) mesal depression, 0-1 scale (usually absent), numerous short setae on apical 0.82-0.84, 6,7 short to moderately long stout setae on apical margin, S-VIII index 0.79-0.84, length 0.41-0.42 mm, width 0.49-0.52 mm. *Tergum IX*. Composed of 2 long plates, 2-6 (usually 2,3) setae apically on each side of midline, 4-12 total setae, Te-IX index 1.26-1.54, length 0.17-0.19 mm, width 0.12-0.14 mm. *Insula*. 2,3 (usually 3) setae on each side of midline, 4-6 total setae. *Upper vaginal lip*. Sclerite absent or very small when present. *Postgenital lobe*. Apical portion narrow, 16,17 (usually 17) setae on each side of midline, 33,34 total setae, ventral PGL/cercus index 0.73-0.74, dorsal PGL index 2.10-2.53, ventral PGL index 3.69-4.11, ventral length 0.18-0.19 mm. *Cercus*. Tapered flattened area with 6,7 (usually 6) stout setae, dorsal surface with setae on apical 0.55-0.71, cercus index 2.38-2.45, cercus/dorsal PGL index 2.08-2.44, length 0.25-0.26 mm, width 0.10-0.11 mm.

**MALE** (Fig. 3). Similar to the female but with the following differences. *Head*. Antenna 0.65-0.68 length of proboscis; maxillary palpus similar to *luzonensis*, 0.77-0.82 length of proboscis; proboscis 1.09-1.25 length of femur I. *Thorax*. Scutum with dark reddish-brown narrow piliform scales except for a moderately broad median stripe of dusty-white narrow piliform scales covering area between dorsocentral areas and extending caudad to about posterior medial scutal area, the latter area and a small portion along anterior margin of scutum with dark reddish-brown narrow piliform scales. *Abdomen*. Tergum V also with an incomplete subbasal silvery-scaled band in addition to complete subbasal bands on VI and VII.

**MALE GENITALIA** (Fig. 14). *Tergum IX*. Each lobe bearing 3 setae, 6 total setae. *Gonocoxite*. Length 0.37-0.38 mm. *Gonostylus*. Numerous small thin spicules on approximately basal 0.72, a small tubercle subapically and usually a minute seta subapically, Gs length 0.16-0.17 mm, Gs/Gc index 0.42-0.43, gonostylar claw length 0.05 mm, GC/Gs index 0.30-0.31. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally, 1 moderately long thin seta apicomeresally (absent on 1 side of 1 specimen) and 1 moderately long and 1 short setae on mesal and tergal areas, BML/Gc index 0.14, BML length 0.05 mm. *Proctiger*. 4 cercal setae. *Phallosome*. Aedeagus with distal portion noticeably narrower than proximal portion, Ae length 0.12 mm, Par/Ae index 0.75-0.81, Par length 0.09 mm, BP/Ae index 0.52-0.57, BP length 0.05-0.06 mm. *Sternum IX*. 5-8 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 19). Chaetotaxy as figured and recorded in Table 5. *Cephalothorax*. Seta 1-CT with 3-7 (usually 3,4) branches; 4-CT with 4-6 (usually 4,5) branches; 5-CT with 2,3 branches; 10-CT with 2-4 (usually 2) branches; 10,11-CT moderately long, sparsely aciculate; 11-CT with 2,3 (usually 2) branches, approximately equal in length to 10,12-CT, laterad and slightly caudal of 10-CT; 12-CT with 2-5 (usually 2-4) thin branches, very sparsely aciculate. *Trumpet*. Index 3.86-4.39; very slightly wider on apical 0.33 than middle 0.33, pinna long, 0.20-0.22 length



of trumpet. *Abdomen*. Seta 1-I,II moderately long; 3-I single, long, stout, very sparsely aciculate; 1-II with 8-11 (usually 8,9) thin branches; 4-II with 8-11 (usually 9,10) branches; 1-IV with 4-7 (usually 5,6) branches; 6-VII shorter, thinner, mesad and noticeably cephalad of 9-VII; 9-VII with 4-6 branches, stout, moderately aciculate with long spicules; 9-VIII with 11-16 (usually 11,12) branches, fan-like, heavily aciculate with long spicules. *Paddle*. Index 1.16-1.31; seta 1-Pa long.

LARVA (Fig. 28). Chaetotaxy as figured and recorded in Table 14. *Head*. Seta 4-C with 4-9 (usually 4-6) thin branches, branched; 5-6-C single (5-C rarely 2-branched), very long, stout, sparsely aciculate, 6-C slightly shorter than 5-C; 7-C with 5-8 (usually 7,8) branches; 7,11-C, 6-Mx stout; 7,13-C moderately long; 7,11,13-C aciculate; 12-C with 7-12 branches; 15-C with 6-9 branches; dorsomentum with 24-26 teeth; 6-Mx single (2-branched on 1 side of 1 specimen), long; mandibular lobe long, labula thumb-like and with apex bluntly rounded. *Antenna*. Seta 1-A with tip noticeably shorter than apex of antennal shaft, stout, dark, sparsely aciculate, distal portion with a bluntly pointed tip, attached 0.48-0.49 from base; 4-A approximately 0.5 length of 2-A. *Thorax*. Seta 1-P single or 2-branched, long, stout, noticeably longer than 2-P, distal portion thin; 2-P single; 3-P with 3,4 branches, shorter than 2-P; 5-7-P long, stout, aciculate; 14-P single (3-forked on 1 side of 1 specimen); 1-M with 4-7 thin branches, short; 9-M with distal portion of branches thin; 13-M short, branched; 1-T with 4-6 (usually 4,5) thin branches, short; 2-T with 4-6 (usually 5,6) thin branches, long, pectinate; 10-T single to 3 (usually 2) branched, thin; 9-T aciculate, distal portion of branches thin. *Abdomen*. Many setae with thin branches (e.g., 1-I-III,VI, 2-VIII, 3-I-VI, 10-III-V,VII, 13-VII); 1-I with 5-11 (usually 6-9) branches; 1,13-I short; 1,3-I-IV pectinate; 1-II,III,V,VI, 1-III with 4-6 branches; 1-IV,VII, 3-IV, 4-VIII, 10-II-VI, 13-III-V very long; 1-VII single (rarely 2-branched), stout; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 2,3 (usually 2) branches, slightly longer than 1-VIII; 3-I-VI, 10-VII long; 3-II with 5,6 branches; 3-IV with 4-6 (usually 5,6) branches; 4-VIII, 6-III single; 4-VIII noticeably longer than 3-VIII; 6-I with 3 branches, stout, densely aciculate on basal 0.8, distal portion of branches thin; 6-II, 8-III, 10-VII with 2,3 branches; 6-II stout, densely aciculate, distal portion of branches thin; 6-III-VI single, sparsely aciculate; 6-III-VI, 10-I long; 7-I moderately stout, aciculate, 0.71-0.73 length of 6-I; 10-III with 2-4 (usually 3,4) branches; 10-IV,VI with 3-5 (usually 4,5) branches; 13-II,VI dendritic; comb with 84-98 scales with apices with approximately equal length spicules, median 3 spicules slightly longer and thicker; saddle wide, anterior, ventral and posterior margins darker pigmented, median ventral darker area expanded dorsally and with a central small lighter pigmented spot, posterior margin with well developed spicules, acus present and represented by a small heavily pigmented plate detached from anteroventral margin of saddle; 1-X single to 3-branched (rarely single), thin, moderately long; 2-X with 6-9 branches, approximately 0.5 length of 3-X; 4-X composed of 12 setae, caudal 10 setae each with 8-11 branches; anai papillae with dorsal pair short, ventral pair short and approximately 0.8 length of dorsal pair. *Siphon*. Index 3.17-3.69; pecten on basal 0.45-0.49, composed of 22-29 spines, median ones long, narrow and pointed, dorsal surface with a bend, ventrobasal area with a large stout distal spicule and 2-4 small spicules basally; 1-S moderately long,

aciculate, borne on basal 0.50-0.54 distad of pecten; 8-S with 3-5 branches; spiracular apodeme (Fig. 33) with apex blunt.

**TYPE DATA.** The type series consists of the holotype male with associated pupal and larval exuviae and genitalia (collection number P2015-13), the allotype with associated pupal and larval exuviae (collection number P2017-15) and paratypes [collection numbers: P2015-2 ♀, -8 pl, -9 pl, -11 pl, -12 pl, -14 pl, -15 pl, -16 pl, -17 ♀ pl, -18 pl, -19 pl, -21 pl, -22 ♀ pl, -23 pl, -24 pl, -25 l, -26 pl, -27 pl; P2016-8 pl, -12 pl, -13 pl, -16, 17 (1 p and 2 l), -18 pl, -21, 22 (2 p and 2 l); P2017-2 pl, -3 ♀ and ♀ g, -5 l, -6 pl, -7 (1 p and 2 l), -8 pl, -9 ♀ plg, -10 pl, -11 ♂, -12 ♀ pl, -13 ♂ pl, -14 pl, -16 pl, -17 pl, -18 pl, -19 ♂ pl, -20 pl, -21 ♀ pl, -77 ♀ and ♀ g; P2017, 2 ♂, 2 ♂ g and 2 l]. The adult labels possess the following information: Simi-shaded [sic] treehole on beach forest, Caburan, Davao, Mindanao, 25-1-47, the collection number; *Ae. dissimilis* group or complex; and *Aedes* (Ken.) *litwakae*, Det: J. F. Reinert (holotype and allotype with a red border line, paratypes with a blue border line). The type series is deposited in the NMNH. The slides with the immature exuviae have labels which include the collection number, 3rd MGL (3rd Medical General Laboratory), *Ae. dissimilis* group or complex, and the type label. Location of the missing associated specimens of the type series mentioned above is not known.

**DISCUSSION.** The most distinctive features of the adults of *litwakae* are the midlobe of the scutellum, which is covered with a patch of broad silvery scales and usually with a few broad reddish-brown scales on posterior margin, and the presence of silvery-scaled bands on terga VI and VII.

Male genitalia of *litwakae* have the basal mesal lobe with the scolus-like projection short and with 1 long stout seta apicolaterally, 1 moderately long thin seta apicomesally (absent on 1 side of 1 specimen) and 1 moderately long and 1 short seta on mesal and tergal areas. The aedeagus has the distal portion noticeably narrower than the proximal portion. The latter feature is similar to *luzonensis*, but the former character differs significantly from this species.

Pupae of *litwakae* have the following combination of distinctive features: seta 10-CT with 2-4 branches; seta 11-CT with 2,3 branches; seta 12-CT with 2-5 branches; setae 10-12-CT moderately long and approximately equal in length; seta 3-I single and long; and seta 1-II with 8-11 thin branches and moderately long. *Aedes litwakae* pupae differ from those of *luzonensis* by the development and branching of setae 10-12-CT and 1,4-II and from *lerozeboomi* by the length of seta 5-V which is 0.96-1.05 the combined length of lateral margins of segments VI, VII while this seta is 0.84-0.87 in *lerozeboomi*.

Larvae of *litwakae* show similarities to those of *luzonensis*, but can be separated by: seta 6-III-VI single and long; saddle with well developed spicules on posterior margin; seta 7-I 0.71-0.73 length of 6-I; shape of pecten spines; seta 15-C with 6-9 branches; seta 9-M with distal portion of branches thin; setae 10-I and 6-III-VI single; seta 13-V with 2 branches; seta 13-VII with 3,4 branches; and seta 2-VIII with 2,3 branches. The above features also separate this species from the others of the subgenus.

I am pleased to name this new species for Miss Taina R. Litwak, WRBU, for her outstanding contributions in illustrating mosquitoes in this article and many

others.

DISTRIBUTION. 136 specimens examined: 9 ♀ pl, 3 ♀, 4 ♀ g, 8 ♂ pl, 3 ♂, 4 ♂ g, 30 pl, 2 p and 9 l.

REPUBLIC OF THE PHILIPPINES. Jolo Island, Talipao, Mampallam (3 ♀ pl, 5 ♂ pl, 2 ♂ g, 1 pl, 1 l); Mindanao Island, *Davao*, Caburan (6 ♀ pl, 3 ♀, 4 ♀ g, 3 ♂ pl, 3 ♂, 2 ♂ g, 29 pl, 2 p and 8 l, type series).

BIONOMICS. In the Republic of the Philippines, immatures were collected 3 times (type series) from semishaded treeholes in a beach forest during January on Mindanao Island and once from a treehole (collection number Cl.47) during November on Jolo Island.

*Aedes* (*Kenknightsia*) *luzonensis* Rozeboom  
(Figs. 5, 10, 14, 20, 29, 33)

*Aedes* (*Finlaya*) *luzonensis* Rozeboom, 1946: 589 (♀, ♂\*, L\*); of Knight and Hull 1951: 249 (♂, L); Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 166; Delfinado, Viado and Coronel 1963: 439; Basio 1971: 16; Stone and Delfinado 1973: 297; Baisas 1974: 13 (♂\*, P\*, L\*); Knight and Stone 1977: 99; Cagampang-Ramos, McKenna and Pinkovsky 1985: 7; Tsukamoto, Miyagi and Toma 1985: 152; Apiwathnasorn 1986: 10.

The following is supplemental to the subgenus description.

FEMALE (Fig. 5). *Head*. Antenna 0.72-0.78 length of proboscis; maxillary palpus 0.16-0.18 length of proboscis; proboscis 1.07-1.17 length of femur I; similar to *dissimilis* in scale pattern except lateral silvery-scaled patch of vertex smaller and not extending to posterior margin, postgena with upper dark-scaled patch larger and extending posteroventrally behind lower silvery-scaled patch; occiput with erect forked scales dark brown. *Thorax*. Scutum completely covered with dark narrow piliform scales reddish-brown except for bare prescutellar area; dark setae as follows: 4-6 on anterior promontory, 3-6 anterior and 1 lateral on scutal fossal area, supraalar area with patch of short setae anterior to wing base dark reddish-black, other supraalar setae long and dark, 2-4 on posterior of postpronotum, 2 golden on upper proepisternum, 2,3 on postspiracular area, 1 upper, 1 median posterior and 2,3 lower posterior on mesokatepisternum, 8,9 on prealar knob, 2-4 golden on upper posterior of mesepimeron; scutellum with a patch of dark reddish-black scales on each lobe, midlobe with 2,3 long and 2-5 short dark setae, lateral lobe with 4 long and 4,5 short dark setae; pleural scale patterns similar to *dissimilis*. *Legs*. Femur I with both anterior and posterior surfaces dark brown-scaled, II with anterior surface with silvery-scaled patch near midlength longer and often reaching to basal 0.3 and extending to, or nearly to, ventral margin, apical silvery-scaled patch extending onto dorsal surface and with basal area somewhat expanded, posterior surface with a small ventroapical patch of pale scales, III with anterior surface with basal silvery-scaled patch expanded distally on anteromesal area and with a narrow line of brown scales on dorsal margin of distal area, apical silvery-scaled patch with a longer basal

area than *dissimilis* and usually extending over posterior surface to form a band (incomplete in some specimens). *Wing*. Similar to *dissimilis*. *Abdomen*. Similar to *dissimilis* except that terga VI,VII with a nearly basal silvery-scaled band, band on VI occasionally incomplete.

**FEMALE GENITALIA** (Fig. 10). *Tergum VIII*. Basal 0.30-0.55 retracted into segment VII, numerous broad scales on apical 0.82-0.86, several short and moderately long setae on apical 0.67-0.71, 9-12 moderately long stout setae on apical margin, Te-VIII index 0.62-0.69, Te-VIII/Te-IX index 1.69-1.87, length 0.29-0.33 mm, width 0.45-0.52 mm. *Sternum VIII*. Apex with a minute (0.02-0.03 of dorsal length) mesal depression, 0-1 scale (usually absent), numerous short setae on apical 0.79-0.85, 6-9 (usually 7) short to moderately long stout setae on apical margin, S-VIII index 0.73-0.81, length 0.37-0.43 mm, width 0.50-0.54 mm. *Tergum IX*. Composed of 2 long plates, 2-4 (usually 3,4) setae apically on each side of midline, 5-8 total setae, Te-IX index 1.11-1.18 (one specimen 1.03), length 0.15-0.18 mm, width 0.13-0.18 mm. *Insula*. 3,4 setae on each side of midline, 6-8 total setae. *Upper vaginal lip*. Sclerite very small or absent. *Postgenital lobe*. 15-23 setae on each side of midline, 31-42 total setae, ventral PGL/cercus index 0.76-0.81, dorsal PGL index 1.75-2.05, ventral PGL index 3.26-3.77, ventral length 0.19-0.21 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.53-0.65, cercus index 2.42-2.61, cercus/dorsal PGL index 2.18-2.39, length 0.25-0.27 mm, width 0.10-0.11 mm.

**MALE**. Similar to female but with the following differences. *Head*. Antenna 0.69-0.70 length of proboscis; maxillary palpus similar to *dissimilis* except flagellomere 5 slightly longer, setae on apical 2 flagellomeres shorter and fewer in number, 0.69-0.75 length of proboscis; proboscis 1.05-1.23 length of femur I; occiput with erect forked scales light or dark brown. *Thorax*. As in the female; mesepimeron with 1-3 upper posterior setae. *Abdomen*. Tergum VI with silvery-scaled basal band incomplete in some specimens.

**MALE GENITALIA** (Fig. 14). *Tergum IX*. Each lobe bearing 3,4 setae, 7,8 total setae. *Gonocoxite*. Length 0.34-0.37 mm. *Gonostylus*. Numerous small thin spicules on approximately basal 0.8, a small tubercle or with a minute seta subapically and with a second subapical minute seta, Gs length 0.15-0.18 mm, Gs/Gc index 0.44-0.47, gonostylar claw length 0.05 mm, GC/Gs index 0.28-0.32. *Basal mesal lobe*. Scolus-like projection very short with 2,3 moderately long or 2 moderately long and 1 short thin setae on apicolateral and apicomesal areas, BML/Gc index 0.11-0.13, BML length 0.04-0.05 mm. *Proctiger*. 4 cercal setae. *Phallosome*. Aedeagus with distal portion noticeably narrower than proximal portion, Ae length 0.13 mm, Par/Ae index 0.76-0.80, Par length 0.10-0.11 mm, BP/Ae index 0.46-0.53, BP length 0.06-0.07 mm. *Sternum IX*. 5-7 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 20). Chaetotaxy as figured and recorded in Table 6. *Cephalothorax*. Seta 1-CT with 3-6 (usually 3-5) branches; 4-CT with 3-8 (usually 5,6) branches, long; 5-CT with 3-6 (usually 3) branches; 10-CT with 2-6 (usually 2-4) thin branches, forked, moderately long to long; 11-CT single (2-forked on 1 side of 1 specimen), stout, laterad and slightly caudad of 10-CT; 12-CT with 2-4 (usually 3,4) branches, branched or forked; 11,12-CT long, approximately equal in length but slightly longer than 10-CT, very sparsely aciculate. *Trumpet*. Index 3.41-4.84; very

slightly wider on middle 0.33 than apical 0.33; pinna moderately long, 0.13-0.16 length of trumpet. *Abdomen*. Seta 1-I,II moderately long; 3-I single, long, stout, simple; 1-II with 5,6 branches, moderately thick, very sparsely aciculate; 4-II with 3-7 branches; 1-IV with 4-11 (usually 5-8) branches; 6-VII shorter, thinner, mesad and cephalad of 9-VII; 9-VII with 3-6 branches, stout, sparsely aciculate; 9-VIII with 10-12 branches, fan-like, moderately aciculate with long spicules. *Paddle*. Index 1.16-1.21; seta 1-Pa very long.

**LARVA** (Fig. 29). Chaetotaxy as figured and recorded in Table 15. *Head*. Seta 4-C with 5-10 branches, forked; 5,6-C single, 5-C very long, stout, 6-C long (noticeably shorter than 5-C), moderately stout; 6,7,13-C simple; 7-C with 8-15 (usually 9-11) branches, moderately long; 7,13-C with thin branches; 13-C long; dorsomentum with 25 (1 specimen with 27) teeth; 6-Mx single or 2-branched, long, stout; mandibular lobe long, labula thumb-like and with apex bluntly rounded. *Antenna*. Seta 1-A with tip not reaching apex of antennal shaft, apical portion thin, aciculate, attached 0.51-0.55 from base; 4-A less than 0.5 length of 2-A. *Thorax*. Seta 1-P single (2-branched in 1 specimen), stout, longer than 2,3-P; 1-P, 9-T with distal portion of branches thin; 2-P with 2,3 branches (single on 1 side of 1 specimen); 3-P with 3-5 branches, shorter than 2-P; 5-7-P long; 5,6-P sparsely aciculate; 7-P densely aciculate; 14-P single; 1-M with 4-8 branches, moderately long; 1-M, 1,2-T with thin branches; 9-M with distal portion of branches with bluntly pointed tips; 13-M short, dendritic; 1-T with 4-6 branches, short; 2-T with 6-11 (usually 7-9) branches, long, pectinate; 6-T with 2-6 (usually 4,5) branches; 9-T with 3 (2 on 1 side of 1 specimen) branches, sparsely aciculate, distal portion of branches thin. *Abdomen*. Many setae with thin branches (e.g., 1,3-I-VI, 2-VIII, 10-III-V, 13-II,VII); 1-I with 5-8 (usually 5,6) branches; 1-I,II, 13-I short; 1-III with 4-6 (usually 4,5) branches; 1,3-III-VI, 4-VIII, 10-II-VII, 13-III-V long; 1-IV, 3-I-V pectinate; 1-VII, 6-VI with 3 branches; 1-VII very long; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 4-6 branches, slightly longer than 1-VIII; 3-I, 6-III-VI, 8-III, 10-I, 13-II,VI,VII moderately long; 3-II with 6-9 (usually 6,7) branches; 3-IV with 6-9 (usually 6) branches; 4-VIII single, noticeably longer than 3-VIII; 6-I with 3,4 (usually 3) branches, stout, aciculate on basal 0.7, distal portion of branches thin; 6-II with 3 branches, stout, sparsely aciculate on basal 0.5, distal portion of branches thin; 6-III,V with 3,4 branches; 6-IV, 8-III with 2,3 branches; 7-I 0.80-0.88 length of 6-I; 8-III with 2,3 branches; 10-I with 2 branches; 10-III with 4-6 (usually 4,5) branches; 10-IV with 2-7 (usually 4,5) branches; 10-V with 3-6 (usually 4-6) branches; 10-VII with 3-5 (usually 3,4) branches; 13-II,VI dendritic; comb with 76-98 scales with apices having approximately equal length thin spicules; saddle wide, anterior, ventral and posterior margins darker pigmented, median ventral darker area expanded dorsally and with a central small lighter spot, posterior margin with a few minute spicules, acus represented by a small heavily pigmented plate detached from anteroventral margin of saddle; 1-X with 2-4 (usually 3,4) thin branches, moderately long; 2-X with 8 branches, approximately 0.5 length of 3-X; 4-X composed of 12 setae, caudal 10 setae each with 8-11 branches; anal papillae with dorsal pair moderately long, ventral pair moderately long and slightly shorter than dorsal pair. *Siphon*. Index 2.76-3.57; pecten on basal 0.43-0.45, composed of 21-27 spines, median ones long, narrow and

pointed, narrow at base, ventrobasal area with 1 moderately large and 1 or 2 smaller spicules; 1-S with thin branches, moderately long, simple, borne on basal 0.54-0.57 distad of pecten; 8-S with 4-7 branches; spiracular apodeme (Fig. 33) with apex blunt.

TYPE DATA. The holotype male is deposited in the NMNH and contains labels with the following information: 1050.3 (collection number); ♂; Subic Bay, Luzon, P. I., 7/10/45; Rozeboom, Knight & Laffoon Coll.; and *Aedes (Finlaya) luzonensis* LER, Holotype (large rectangular paper label with a red border). The associated pupal and larval exuviae are mounted on a microscope slide and the associated male genitalia are mounted on a second microscope slide. The collection data sheet for 1050 indicates the following additional information: Lubid Point, McMillan (collector), and treehole. The following paratypes are in the NMNH and possess essentially the same data on the labels and collection data sheets as the holotype: 1034.5 (♂ plg), 1034.14 (♀ plg), 1034.16 (♂), Luzon, Subic Bay, Olongapo, 7/6/45, Rozeboom and McMillan (collectors), treeholes; 1050.4 (♀ plg) same as holotype; 1081.1 (♀ plg), 1081.2 (♀, ♀ g), 1081 (♀), Luzon, Subic Bay, Olongapo, 7/20/45, Rozeboom, Zolik and McMillan (collectors), wooden bucket; and 1084.3 (♂), 1084 (2 ♀), Luzon, Subic Bay, Olongapo, small but deep crevice in root of tree at NSD camp, shady, water appeared to be clear. The following paratypes are in the Johns Hopkins University collection: 1034.16 (plg), 1050 (1 L) and 1081.2 (pl), collection data as listed above. Rozeboom (1946: 589) stated that additional paratypes were deposited in the NHM.

DISCUSSION. Adults of *luzonensis* are similar to *dissimilis*, but differ in the presence of silvery-scaled bands on terga VI,VII and the shorter proboscis. Females of *luzonensis* are difficult to separate from those of *paradisimilis*, but the former species has 6,7 setae on the prealar knob and femur II with the anterior surface with an elongate thin silvery-scaled patch at about midlength which often reaches to the basal 0.3 and with an apical silvery-scaled patch which extends onto the dorsal surface. The latter species possesses 8,9 setae on the prealar knob and femur II has the anterior surface with a small thin silvery-scaled patch at about midlength and with an apical silvery-scaled patch which does not reach, nor extend onto, the dorsal surface. These features, however, may not hold true when specimens from a wider range are examined. Males of *luzonensis* have the antenna 0.69-0.70 of the length of the proboscis and the maxillary palpus 0.69-0.75 of the length of the proboscis while those of *paradisimilis* have the antenna 0.62-0.68 of the length of the proboscis and the maxillary palpus 0.74-0.85 of the length of the proboscis.

Male genitalia of *luzonensis* have the basal mesal lobe with the scolus-like projection very short and with moderately long thin setae which is similar to *lerozeboomi* and the aedeagus with the distal portion noticeably narrower than the proximal portion which is similar to *litwakae*. The combination of these features easily separates this species from the others of the subgenus.

Pupae of *luzonensis* have the following distinctive features: seta 4-CT with 3-8 (usually 5,6) branches, long; seta 10-CT with 2-4 branches and moderately long to long; seta 11-CT single (2-forked on 1 side of 1 specimen) and stout; seta 12-CT with 2-4 branches; setae 11,12-CT long and approximately equal in length but slightly longer than seta 10-CT; seta 3-I single, long and stout; seta 1-II with 5,6 branches and

moderately long; and seta 1-Pa very long. *Aedes luzonensis* pupae differ from those of *litwakae* by the development and branching of setae 10-12-CT and 1,4-II, and from those of *lerozeboomi* by the length of seta 5-V which is 0.93-0.94 the combined length of lateral margins of segments VI, VII while this seta is 0.84-0.87 in *lerozeboomi*.

Larvae of *luzonensis* possess the following distinctive features: seta 6-III-VI moderately long, usually 3,4-branched; shape of pecten spines; and seta 7-I 0.80-0.88 length of seta 6-I. The following characters, when used in combination with the above, separate other species: seta 6-C noticeably shorter than seta 5-C; seta 13-C with thin branches, simple; seta 1-P longer than setae 2,3-P; seta 9-M with distal portion of branches with bluntly pointed tips; seta 9-T with distal portion of branches thin; seta 6-I,II with distal portions of branches thin; development of the saddle; and seta 2-X with 4-6 thin branches.

DISTRIBUTION. 104 specimens examined: 9 ♀ pl, 20 ♀, 8 ♀ g, 6 ♂ pl, 5 ♂, 6 ♂ g, 7 pl, 1 l and 5 L.

REPUBLIC OF THE PHILIPPINES. Luzon Island, *Laguna*, Mt. Makiling, San Pablo City, Sto. Angel (4 ♀, 2 ♂, 1 ♂ g, 3 pl, 1 l, 1 L); *Zambales*, Lubid Point, Olongapo, Subic Bay, Subic Bay U. S. Naval Base (9 ♀ pl, 16 ♀, 8 ♀ g, 6 ♂ pl, 3 ♂, 5 ♂ g, 4 pl, 4 L).

*Distribution from the literature.*

REPUBLIC OF THE PHILIPPINES. Luzon Island, Subic Bay (Rozeboom 1946: 589); Mindoro, San Jose (Knight and Hull 1951: 249); and U. S. Naval Reservation at Subic (Baisas 1974: 14).

BIONOMICS. In the Republic of the Philippines, immatures were collected during July through September and November from water in treeholes (9 times), a deep crevice in the root of a tree (once), a bamboo stump (once), a wooden bucket (once), an old paint can (once) and a water can at a saw mill (once). Adults were collected blooded once in a buffalo-baited trap during October.

Literature references for the Republic of the Philippines indicate that immatures were collected from treeholes and a wooden bucket during July (Rozeboom 1946: 589), and from treeholes and an oil drum filled with rain water (Baisas 1974: 14).

*Aedes* (*Kenknightsia*) *paradissimilis* Rozeboom  
(Figs. 3, 5, 11, 14, 21, 30, 33)

*Aedes* (*Finlaya*) *paradissimilis* Rozeboom, 1946: 587 (♀, ♂\*, L\*); Bick 1949: 2; Knight and Hull 1951: 248; Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 169; Delfinado, Viado and Coronel 1963: 439; Basio 1971: 17; Stone and Delfinado 1973: 298; Baisas 1974: 15; Knight and Stone 1977: 101; Cagampang-Ramos, McKenna and Pinkovsky 1985: 8; Miyagi et al. 1985: 138; Tsukamoto, Miyagi and Toma 1985: 152; Apiwathnasorn 1986: 10.

*Aedes* (*Finlaya*) *leucopleurus* Rozeboom, 1946: 588 (L\* only); in part of: Knight and Marks 1952: 540; Stone, Knight and Starcke 1959: 165; Delfinado, Viado and Coronel 1963: 439; Basio 1971: 16; Stone and Delfinado 1973: 297;

Cagampang-Ramos, McKenna and Pinkovsky 1985: 7; Miyagi et al. 1985: 138; Tsukamoto, Miyagi and Toma 1985: 152; Apiwathnasorn 1986: 10.

The following is supplemental to the subgenus description.

**FEMALE** (Fig. 5). *Head*. Antenna 0.72-0.79 length of proboscis; maxillary palpus 0.16-0.18 length of proboscis; proboscis 1.04-1.11 length of femur I; vertex with silvery-scaled ocular line very narrow and connected laterally with a small silvery-scaled patch; occiput with erect forked scales brownish-black; remainder of scaling similar to *luzonensis*. *Thorax*. Scutum covered with reddish-black narrow piliform scales, some specimens with a few yellowish-white narrow piliform scales while others with a well developed stripe of similar scales on median portion of acrostichal area, however, dark scales always on anterior area; dark setae as follows: 3,4 on anterior promontory, 3,4 anterior and 1 lateral on scutal fossal area, supraalar area with patch of short setae anterior to wing base reddish-black, other supraalar setae long and reddish-black, 2-4 on posterior of pronotum, 1,2 reddish-black on upper proepisternum, 2-4 on postspiracular area, 1 upper, 1 median posterior and 1-3 lower posterior on mesokatepisternum, 6,7 on prealar knob, 1-3 golden on upper posterior of mesepimeron; scutellum with a patch of broad brownish-black scales on each lobe, midlobe with 4 long and 2,3 short dark setae, lateral lobe with 2,3 long and 2-4 short dark setae; pleural areas similar to *luzonensis*. *Legs*. Similar to *luzonensis* except for femur II which has both the median and apical silvery-scaled patches shorter, apical patch does not reach, nor extend onto, dorsal surface, femur III with posteroapical area brown scaled or at most with a very few posterodorsal and/or posteroventral white scales. *Abdomen*. Similar to *luzonensis* except the silvery-scaled bands on terga VI,VII are subbasal, band on VI often incomplete mesally and band on VII narrow dorsomesally.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII*. Basal 0.40-0.45 retracted into segment VII, numerous broad scales on apical 0.79-0.85, several short and moderately long setae on apical 0.64-0.69, 5-9 moderately long stout setae on apical margin, Te-VIII index 0.63-0.86, Te-VIII/Te-IX index 1.64-2.30, length 0.30-0.34 mm, width 0.39-0.48 mm. *Sternum VIII*. Apex with a minute (0.02-0.06 of dorsal length) mesal depression, 0-2 scales (usually absent), numerous short setae on apical 0.79-0.83, 8-10 (usually 8,9) short to moderately long stout setae on apical margin, S-VIII index 0.81-0.91, length 0.41-0.42 mm, width 0.46-0.52 mm. *Tergum IX*. Composed of 2 long plates, 3-5 (usually 3,4) setae apically on each side of midline, 6-9 total setae, Te-IX index 1.11-1.41, length 0.15-0.18 mm, width 0.12-0.16 mm. *Insula*. 2-4 setae on each side of midline, 5-8 total setae. *Upper vaginal lip*. Sclerite very small or absent. *Postgenital lobe*. 12-22 setae on each side of midline, 27-42 total setae, ventral PGL/cercus index 0.73-0.79, dorsal PGL index 1.86-2.16, ventral PGL index 3.67-4.05, ventral length 0.19-0.20 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.57-0.67, cercus index 2.45-2.79, cercus/dorsal PGL index 2.32-2.72, length 0.24-0.27 mm, width 0.09-0.10 mm.

**MALE** (Fig. 3). Similar to the female but with the following differences. *Head*. Antenna 0.62-0.68 length of proboscis; maxillary palpus similar to *luzonensis*, 0.74-0.85 length of proboscis; proboscis 1.09-1.21 length of femur I. *Thorax*. Scutum



with anterior approximately 0.5 covered with narrow piliform yellowish-white scales except for anterior margin and lateral portion of scutal fossal area, posterior 0.5 of scutum (except bare prescutellar area) covered with narrow piliform reddish-black scales, some specimens with a few similar scales on anterior of dorsocentral area. *Abdomen*. Tergum V with a dorsal subbasal silvery-scaled band which may be complete or incomplete in addition to the silvery-scaled bands on VI-VIII.

**MALE GENITALIA** (Fig. 14). *Tergum IX*. Each lobe bearing 3-5 setae, 6-8 total setae; gonocoxite length 0.35-0.38 mm. *Gonostylus*. Numerous small thin spicules on approximately basal 0.7-0.8, a small tubercle subapically, Gs length 0.15-0.16 mm, Gs/Gc index 0.40-0.45, gonostylar claw length 0.05-0.06 mm, GC/Gs index 0.33-0.37. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally and 1 moderately long or short seta on mesal area (3 setae in 1 specimen), BML/Gc index 0.13-0.14, BML length 0.05 mm. *Proctiger*. Distal portion only slightly narrower than proximal portion, Ae length 0.12-0.13 mm, Par/Ae index 0.79-0.88, Par length 0.10-0.11 mm, BP/Ae index 0.48-0.58, BP length 0.06 mm. *Sternum IX*. 6-9 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 21). Chaetotaxy as illustrated and recorded in Table 7. *Cephalothorax*. Seta 1-CT with 2-5 (usually 3-5) branches; 4-CT with 2-6 (usually 5,6) branches; 10-CT single or 2,3-forked (usually 2-forked), long; 11-CT single or 2-forked (usually single), laterad and slightly caudad of and slightly shorter than 10-CT; 11,12-CT sparsely aciculate; 12-CT single or 2-forked, very long, stout. *Trumpet*. Index 3.6-4.7; very slightly wider on apical 0.33 than middle 0.33; pinna moderately long, 0.09-0.16 length of trumpet. *Abdomen*. Seta 1-I,II moderately long; 3-I single, long, simple; 1-II with 4-9 (usually 6,7) thin branches; 4-II with 5-9 branches, forked; 1-IV with 4-6 branches; 6-VII shorter, thinner, mesad and cephalad of 9-VII; 9-VII with 3-6 branches, very sparsely aciculate; 9-VIII with 8-14 (usually 8-10) branches, fan-like, with numerous long aciculae. *Paddle*. Index 1.16-1.43; seta 1-Pa long.

**LARVA** (Fig. 30). Chaetotaxy as figured and recorded in Table 16. *Head*. Seta 4-C with 2-7 (usually 4-6) branches, forked; 4,11,13-C with 3-6 thin branches; 5,6-C single (2-branched on 1 side of holotype), very long, 6-C noticeably shorter than 5-C, simple; 5-7-C stout; 7-C with 6-9 (usually 7,8) branches, long, densely aciculate, fan-like; 11-C with 3-6 branches; 12-C dendritic; 13-C with 3-6 branches, short, simple; dorsomentum with 23-26 teeth; 6-Mx with 2 branches (single in 1 specimen), long, stout; mandibular lobe long, labula thumb-like and with apex bluntly rounded. *Antenna*. Seta 1-A with tip noticeably shorter than apex of antennal shaft, stout, dark, distal portion with a bluntly pointed tip, attached 0.42-0.48 from base; 4-A approximately 0.5 length of 2-A. *Thorax*. Seta 1-P stout, long, very sparsely aciculate, noticeably longer than 2-P; 1-P, 9-T with distal portion of branches thin; 1,2,14-P single; 3-P with 3,4 branches (2-branched on 1 side of 1 specimen), shorter than 2-P; 5-7-P long, stout; 5-7-P, 9-T aciculate; 1-M with 4-7 (usually 5,6) thin branches, short; 9-M with distal portion of branches with bluntly pointed tips; 13-M short, dendritic; 1-T with 3-6 (usually 5,6) thin branches, short; 2-T with 3-6 (usually 4,5) thin branches, moderately long, pectinate; 6-T single to with 3 (usually 2) branches. *Abdomen*. Many setae with thin branches (e.g., 1-I-VI, 2-VIII, 3-I-VII, 10-II-VII, 13-V,VII); 1-I with 5-8 branches; 1,13-I short; 1,3-II-IV,VI, 10-III,IV, 13-

II,III,VII moderately long; 1-III with 2-6 (usually 3) branches; 1-III-V, 3-I,IV,V, 10-IV pectinate; 1,3-V, 4-VIII, 6-III-VI, 10-I,II,V-VII, 13-IV,V long; 1-VII, 4-VIII, 6-III-VI, 10-VI single; 1-VII very long; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII with 2-4 (usually 3) branches, slightly longer than 1-VIII; 3-II,IV with 3-6 branches; 4-VIII noticeably longer than 3-VIII; 6-I with 2 (3 in 1 specimen) branches, stout, heavily pigmented, sparsely aciculate on basal 0.7, distal portion of branches with bluntly pointed tips; 6-II with 2 (3 on 1 side of 1 specimen) branches, stout, heavily pigmented, distal portion of branches with bluntly pointed tips; 6-III-V single; 7-I 0.6-0.7 length of 6-I; 8-III with 2 (rarely single) branches; 10-III with 3-5 (usually 3,4) branches; 10-IV with 3-5 (usually 4,5) branches; 10-V with 2-4 (usually 3,4) branches; 10-VII with 3,4 branches; 13-VI dendritic; comb with 89-99 scales with apices having a longer stout median spine and several shorter thin spicules; saddle narrow, anterior and ventral margins darker pigmented, posterior margin with small spicules, acus absent; 1-X with 2-6 (usually 4,5) thin branches, moderately long; 2-X with 11,12 branches, approximately 0.4 length of 3-X; 4-X composed of 12 setae, caudal 10 setae each with 8-12 branches; anal papillae with dorsal pair long, ventral pair moderately long to long and approximately 0.8 length of dorsal pair. *Siphon*. Index 3.44-4.26; pecten on basal 0.41-0.45, composed of 20-25 spines, median ones moderately long and moderately broad, ventrobasal area with 2,3 short spicules; 1-S moderately long, aciculate, borne on basal 0.50-0.54 distad of pecten; 8-S with 2-5 branches; spiracular apodeme (Fig. 33) with apex flattened.

**TYPE DATA.** The holotype male contains labels with the following information: 1601.2 (collection number); Cape Melville, Balabac, P. I., 6/23/45; ♂; and Rozeboom, Knight & Laffoon Coll. The associated pupal and larval exuviae are mounted on a microscope slide and the genitalia are mounted on a second microscope slide. The collection data sheet for 1601 indicates the following additional information: immatures collected by D. R. Johnson and Jean Laffoon from treeholes. The holotype and the following paratypes are deposited in the NMNH: 1 ♀ plg (1601.4; T89.3 Term.), 1 ♀ (1601.6), 14 L (1601), same data as holotype; 1 ♂ g (1621), same data as holotype except collection number; 1 L (850) and 1 L (851), 2 June 1945, P. I., Palawan Island, Irahnan River, 3 miles inland, D. R. Johnson and Jean Laffoon, immatures from treeholes (850, a very narrow, deep treehole with water far below entrance); 2 ♂, 1 ♂ g, 1 ♀, 1 ♀ g, 2 L (No. 71), 20 December 1944, P. I., Calicoan Island, J. H. Paullus; 1 ♀ (No. 97), same as No. 71 except date, 29 December 1944; 1 ♂, 1 ♂ g (69); 1 ♂, 1 ♀ (Lot 69A); 1 ♂ (Lot 75-1); 1 L (#85); and 1 ♀ (339.9). The following paratypes are deposited in the Johns Hopkins University collection: 851 (1 L), 1601.7 (♂ plg), 1601.10 (♀) and 1601 (6 L), collection data as listed above. Laffoon (1946: 588) lists data on other paratypes deposited in the NHM and the Academy of Natural Sciences of Philadelphia. The holotype of *Ae. (Fin.) leucopleurus* is discussed below.

**DISCUSSION.** Adults are very similar to those of *luzonensis* (see discussion section under that species). Female genitalia of *paradissimilis* usually have 9,10 stout setae on the apical margin of sternum VIII which distinguishes this species from most others in the subgenus.

Male genitalia of *paradissimilis* have the aedeagus with the distal portion only

slightly narrower than the proximal portion and the basal mesal lobe with the scolus-like projection with 1 long stout seta apicolaterally, 1 moderately long thin seta apicomesally and 1 moderately long or short seta on mesal area.

Pupae of *paradisimilis* have the following distinctive features: seta 10-CT single or 2,3-forked and long; seta 11-CT single or 2-forked, very long and stout; seta 3-I single and long; and seta 1-II with 4-9 thin branches and moderately long. *Aedes paradisimilis* pupae differ from those of *gaffigani* by seta 1-CT with 2-5 branches, seta 3-I single and long, seta 1-IV with 4-6 branches, and seta 6-III single to 4-branched.

Larvae of *paradisimilis* are similar to those of *luzonensis*, but can be separated by: seta 6-I,II with distal portion of branches with bluntly pointed tips; development of the narrow saddle; shape of the pecten spines; seta 6-III-VI single; comb scales with a longer stout median spine; seta 15-C with 5-8 branches; and seta 10-I single. *Aedes paradisimilis* larvae are also similar to those of *lerozeboomi* and *gaffigani* in having the branches of seta 6-I,II with distal portions of the branches having bluntly pointed tips, however, both these species are easily distinguished by seta 1-P being very stout and with bluntly pointed tips and the shape of the pecten spines.

Rozeboom (1946: 588), in his new species description of *Ae. (Fin.) leucopleurus* clearly based the species on the larval stage which was described in detail and illustrated. A microscope slide (specimen number 851.9) with mounted larval and pupal exuviae is labeled as holotype for this species. These exuviae are conspecific with *Ae. aureostriatus* (Doleschall), 1857, therefore *Ae. (Fin.) leucopleurus* is hereby placed in synonymy with this species and the larval and pupal exuviae are considered to be the holotype for the species. Rozeboom provided an extremely brief description of the male of *leucopleurus* (3 characters given, all of which are within the variation displayed by *paradisimilis*) and he stated that the genitalia were indistinguishable from those of *paradisimilis*. An adult male (pinned) with associated genitalia (mounted on a microscope slide) possess labels indicating collection number 851.9 and holotype for *Ae. (Fin.) leucopleurus*. This male and its genitalia are conspecific with *paradisimilis* and apparently were either mislabeled or incorrectly associated with the collection number 851.9, and are therefore not considered as representing the holotype (International Code of Zoological Nomenclature, 3rd Edition, Article 17). The above specimens are deposited in the NMNH.

Several of the specimens labeled as paratypes of *paradisimilis* contain only collection numbers (i.e., 69, Lot 69A, Lot 75-1, #85 and 339.9) and no other collection information. Collection data sheets could not be located, therefore some of the localities reported by Rozeboom (1946: 588) probably refer to the above collection numbers.

Thurman (1959: 121, 122, 1963: 55) reported *paradisimilis* and *leucopleura* from Thailand. I have examined one female in the NMNH which has the following information on the labels: Doi Sutep, Chiangmai Prov., Thailand, Aug. 1955; D. C. and E. B. Thurman Colln., M694-10; *Aedes (Finlaya) paradisimilis* Rozeboom complex, Det E. Thurman 1955; *Aedes (Finlaya)* prob. *leucopleurus* Rozeboom 1946, det E. Thurman 1955. This female is *dissimilis*. A microscope slide in the NMNH

contains one pupal and one larval exuviae mounted in balsam with the following label data: Doi Sutep, Chiangmai Prv., Thailand, above Buker cabin, Treehole, 12 March 1953, D. C. Thurman, Thurman Coll. No. M592x; and *Aedes* check *paradissimilis* complex, 592x. These pupal and larval exuviae appear to belong to a species of the Gubernatoris Group of *Finlaya*. Additionally, I have examined 3 whole larvae, 2 larval and 3 pupal exuviae in the NMNH from the Thurman collection (Thailand, Chiangmai Prv., Doi Sutep and Farng, Numbers M483, M560 and M593) which are *dissimilis*. Therefore, I believe *paradissimilis* should be excluded from the list of species occurring in Thailand.

DISTRIBUTION. 144 specimens examined: 1 ♀ pl, 1 ♀ l, 25 ♀, 6 ♀ g, 3 ♂ pl, 34 ♂, 23 ♂ g, 1 l and 41 L.

REPUBLIC OF THE PHILIPPINES. (5 ♀, 3 ♂, 1 ♂ g, 1 L); Balabac Island, Cape Melville (1 ♀ pl, 1 ♀ l, 3 ♀ g, 2 ♂ pl, 1 ♂, 3 ♂ g, 28 L); Calicoan Island (10 ♀, 3 ♀ g, 10 ♂, 9 ♂ g, 7 L); Luzon Island, *Laguna*, Mt. Makiling (1 ♀, 1 ♂ pl, 14 ♂, 7 ♂ g); Mindanao Island, *Davao*, Sitio Taglawag, Tagaum (6 ♀, 5 ♂, 2 ♂ g, 1 l, 2 L); Palawan Island, Irahuan River, 3 miles inland (3 ♀, 1 ♂, 1 ♂ g, 3 L).

*Distribution from the literature.*

REPUBLIC OF THE PHILIPPINES. Balabac Island, Cape Melville; Calicoan Island, N'golos; Leyte Island, Baybay, Lagolago, Libjo, Dinagat, Tacloban, Diit River (Rozeboom 1946: 588, 589); Mindoro, San Jose (Knight and Hull 1951: 248); Luzon Island, *Laguna*, Mt. Makiling (Baisas 1974: 15); Palawan (Miyagi et al. 1985: 138).

BIONOMICS. In the Republic of the Philippines, immatures were collected from water in treeholes 15 times, once in a dense jungle and 3 times in a cutover dipterocarp forest. Females were taken biting in the jungle on Balabac Island.

Literature references for the Republic of the Philippines indicate that immatures were collected from treeholes, cut bamboo and "palm stubs" during January, April, June, September and December (Rozeboom 1946: 588, 589), and from a large treehole in a well-preserved forest on the western side of Mt. Makiling (Baisas 1974: 15).

*Aedes* (*Kenknightsia*) *pecori*, New Species  
(Figs. 6, 11, 13, 22, 31, 33)

The following is supplemental to the subgenus description.

FEMALE (Fig. 6). *Head*. Antenna 0.60-0.67 length of proboscis; maxillary palpus 0.15-0.17 length of proboscis; proboscis 1.22-1.33 length of femur I; vertex covered with dark brown scales with a few dusty-white scales intermixed, mostly on lateral and posterior areas, postgena completely silvery-scaled, not separated by a dark scaled area; occiput with erect forked scales dark brown; head otherwise similar to *dissimilis*. *Thorax*. Scutum covered with narrow piliform dark reddish-black scales except bare prescutellar area and a narrow line of narrow piliform golden scales on acrostichal area which extends from an area near anterior margin caudally to an expanded patch on posterior medial scutal area and then forks into a narrow

line along the lateral margins of the bare prescutellar area (some specimens with golden scales restricted to acrostichal area); dark setae as follows: 3,4 on anterior promontory, 4-6 anterior and 1 lateral on scutal fossal area, supraalar area with a patch of short golden ones anterior to wing base, other supraalar setae long and reddish-brown, 2-4 on posterior of postpronotum, 2,3 golden on upper proepisternum, 2-4 on postspiracular area, 1 upper, 1 posterior median and 2-4 lower posterior on mesokatepisternum, 4-7 on prealar knob, 4-6 golden on upper posterior of mesepimeron; scutellum with a patch of broad brownish-black scales on each lobe (some specimens also with 1-3 broad silvery scales on midlobe), midlobe with 4,5 long and 2-5 short dark setae, lateral lobe with 2,3 long and 2-4 short dark setae; remainder of thorax similar to *dissimilis*. *Legs, Wing and Abdomen*. Similar to *dissimilis*.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII*. Basal 0.40-0.45 retracted into segment VII, numerous broad scales on apical 0.72-0.82, several short and moderately long setae on apical 0.64-0.68, 6-9 moderately long stout setae on apical margin, Te-VIII index 0.58-0.66, Te-VIII/Te-IX index 2.00-2.23, length 0.29-0.30 mm, width 0.45-0.51 mm. *Sternum VIII*. Apex with a minute (0.04-0.06 of dorsal length) mesal depression, 0-3 scales (usually absent), numerous short setae on apical 0.80-0.84, 7,8 (usually 8) short to moderately long stout setae on apical margin, S-VIII index 0.82-0.84, length 0.41-0.42 mm, width 0.49-0.51 mm. *Tergum IX*. Composed of 2 short plates, 2-5 (usually 3) setae apically on each side of midline, 5-8 total setae, Te-IX index 0.91-0.98, length 0.13-0.15 mm, width 0.15-0.16 mm. *Insula*. 3-5 (usually 4) setae on each side of midline, 7-9 total setae. *Upper vaginal lip*. Sclerite very small. *Postgenital lobe*. 19-24 setae on each side of midline, 41-47 total setae, ventral PGL/cercus index 0.73-0.77, dorsal PGL index 2.10-2.19, ventral PGL index 3.52-3.69, ventral length 0.18-0.20 mm. *Cercus*. Tapered flattened area with 5,6 (usually 6) stout setae, dorsal surface with setae on apical 0.49-0.52, cercus index 2.25-2.45, cercus/dorsal PGL index 2.19-2.33, length 0.25-0.26 mm, width 0.11 mm.

**MALE**. Generally similar to female except for sexual features and pale scutal scaling. *Head*. Antenna 0.62-0.70 length of proboscis; maxillary palpus 0.74-0.76 length of proboscis, setae more numerous on apical palpomeres as in *dissimilis*; proboscis 1.21-1.29 length of femur I; occiput with erect forked scales golden-brown. *Thorax*. Scutum with narrow piliform golden scales forming a broad stripe on acrostichal area and extending from near anterior margin (a few dark scales on anterior margin) caudally over posterior medial scutal area and along lateral margins of bare prescutellar area, some specimens with similar scales on posterior dorsocentral area and separated from acrostichal golden scales by a narrow stripe of dark reddish-brown scales, other specimens with area between and including acrostichal areas covered with golden scales, also with a small golden-scaled patch on supraalar area, remainder of scales dark reddish-brown; mesepimeron with 3,4 upper posterior setae. *Abdomen*. Tergum and sternum VIII each with a narrow basal silvery-scaled band.

**MALE GENITALIA** (Fig. 13). *Tergum IX*. Each lobe bearing 2-5 setae, 4-9 total setae. *Gonocoxite*. Length 0.41-0.44 mm. *Gonostylus*. A number of small thin spicules on approximately basal 0.75, a small tubercle subapically and usually a

minute subapical seta, Gs length 0.15-0.17 mm, Gs/Gc index 0.36-0.39, gonostylar claw length 0.07-0.08 mm, GC/Gs index 0.46-0.52. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally and 2 short thin setae on mesal area, BML/Gc index 0.14-0.16, BML length 0.06-0.07 mm. *Proctiger*. 3,4 (usually 3) cercal setae. *Phallosome*. Aedeagus with distal portion only slightly narrower than proximal portion, Ae length 0.12-0.13 mm, Par/Ae index 0.70-0.85, Par length 0.08-0.11 mm, BP/Ae index 0.55-0.67, BP length 0.07-0.09 mm. *Sternum IX*. 4-6 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 22). Chaetotaxy as illustrated and recorded in Table 8. *Cephalothorax*. Seta 1-CT with 2,3 branches (single on 1 side of 1 specimen); 4-CT with 3,4 (usually 4) branches; 5,11-CT single; 10-CT with 2,3 branches (single in 1 specimen), forked, long, approximately equal in length to 12-CT; 10,11-CT simple; 11-CT very long, stout, laterad and slightly cephalad of 10-CT; 12-CT with 3-7 (usually 4-6) branches, forked, very sparsely aciculate. *Trumpet*. Index 3.45-3.56; widest on middle 0.33; pinna long, 0.16-0.27 length of trumpet. *Abdomen*. Seta 1-I very long; 3-I with 2-4 branches, long; 1-II with 3-5 (usually 4,5) branches; 1-IV with 4-6 (usually 4,5) branches; 6-VII shorter, thinner, mesad and noticeably caudad of 9-VII; 9-VII with 2-4 branches, stout, moderately aciculate with long spicules; 9-VIII with 6-8 branches, fan-like, with numerous long aciculae. *Paddle*. Index 1.17-1.26; 1-Pa long.

**LARVA** (Fig. 31). Chaetotaxy as figured and recorded in Table 17. *Head*. Seta 4-C with 4-6 branches, forked; 5-C usually 2,3-branched (rarely single or 4-branched), very long, not to sparsely aciculate; 5,6-C very long; 6-C single, slightly shorter than 5-C, densely aciculate on basal 0.5; 7-C with 7-11 branches, fan-like; 7,13-C long, stout, aciculate; 13-C with 3 (rarely 4) branches; 6-Mx single (2-branched on 1 side of 1 specimen); dorsomentum with 27 teeth; mandibular lobe moderately long, labula with apex slightly recurved and narrowly separated from lobe apically. *Antenna*. Seta 1-A with tip noticeably longer than apex of antennal shaft, apical portion thin, attached 0.48-0.56 from base; 4-A approximately equal in length to 2-A. *Thorax*. Seta 0-P with 7-11 branches; 1-P with 2 branches, distal portion of branches thin, approximately equal in length to 2-P and noticeably longer than 3-P; 1,5-7-P, 1-M, 1,2-T long; 3-P with 4-6 branches; 1-3-P attached to a single heavily pigmented setal support plate; 5-7-P stout, heavily aciculate; 14-P with 2 branches (3-branched on 1 side of 1 specimen); 1-M with 2 branches; 9-M with distal portion of branches thin; 13-M moderately long, pectinate; 1,2-T with 2 branches; 6-T single; 9-T aciculate, distal portion of branches thin. *Abdomen*. Seta 1-I with 2-4 (usually 2,3) branches; 1-I,II, 2-VIII, 3-III-VI, 6-III-VI, 10-I,VI,VII, 12-VII, 13-II,VII long; 1-II,VII, 3-II, 6-III,V with 2,3 branches; 1-III with 2 (3 on 1 side of 1 specimen) branches; 1-III-VII, 10-II-V, 13-III-V very long; 1-VII, 6-III stout, sparsely aciculate; 1-3-VIII always and 4,5-VIII usually each attached to a separate small heavily pigmented setal support plate; 2-VIII, 10-I-V,VII, 12-VII single; 2-VIII approximately equal to or slightly longer than 1-VIII; 3-I approximately equal in length to 1-I; 3-II slightly shorter than 1-II; 3-IV, 6-IV,VI with 2 branches; 4-I with 8-14 branches; 4-VIII slightly shorter than 3-VIII; 6-I,II with 3,4 branches, distal portion of branches thin; 6-I,II,IV-VI stout, aciculate; 7-I with 2 branches

(occasionally single), stout, 0.63-0.68 length of 6-I; 13-I, VI moderately long; comb with 33-51 scales with apices having a longer stout median spine and several shorter thin spicules; saddle wide with a small median ventral notch, margins darker pigmented, moderately to well developed spicules along posterior margin, acus absent; 1-X single, moderately long; 2-X with 5-7 branches, about 0.5 length of 3-X; 4-X composed of 10 setae, caudal 8 setae each with 6-8 branches; anal papillae with dorsal pair moderately long, ventral pair short and approximately 0.5 length of dorsal pair. *Siphon*. Index 2.12-2.44; pecten on basal 0.53-0.59, composed of 20-26 spines, median ones long and pointed, basal area of dorsal margin with 4-6 small spicules, ventral margin with a large distal spicule followed proximally by 5-8 smaller spicules on basal 0.4; 1-S moderately long, aciculate, borne on basal 0.64-0.65 of siphon distad of pecten; 8-S with 4-7 branches; spiracular apodeme (Fig. 33) with apex bluntly pointed.

**TYPE DATA.** The type series consists of the holotype female (collection number 1538-20) with associated pupal and larval exuviae and genitalia (preparation number T89.29 Term.), allotype (collection number 1538, genitalia preparation number T89.42 Term.) and 16 paratypes (1538-19 ♀ plg, -21 ♀ pl, 1538 6 ♂, 2 ♂ g, 4 ♀, 1 ♀ g and 4 L). The adult labels possess the following information: collection number, C. Highlands, Pahang, Malaya; 'Mosquitoes of Malaysia', Dept. Parasit., U. of Malaya; *Aedes* (*F.*) *dissimilis*, Det. A. G. 1980; SEAMP Acc. No. 300; and type label (rectangular paper label, holotype and allotype with a red border line, paratypes with a blue border line). The collection data sheet for 1538 indicates the following additional information: Gunong Jasar, Cameron Highlands, 21 July 1968, 1000 hours, Samuel Wilson James, Chia Yiew Wang and Cheh Wah Patt collectors, immatures collected from colored, fresh, temporary, stagnant water in several small treeholes, in partially shaded area of a primary rain forest in mountain terrain and at an altitude of 5,000 feet. The type series is deposited in the NMNH.

**DISCUSSION.** The adult female is similar to *dissimilis*, but differs primarily as follows: postgena of head completely silvery-scaled, not separated by a dark-scaled area; occiput with erect forked scales dark brown; scutum with golden scales restricted to a narrow line on acrostichal area and in some specimens with golden scales on posterior medial scutal area and along lateral margins of bare prescutellar area; and antenna 0.60-0.67 length of proboscis.

Pupae of *pecori* have the following distinctive combination of features: seta 10-CT with 2,3 branches, forked, long, approximately equal in length to seta 12-CT; seta 11-CT single, very long, stout; seta 12-CT with 3-7 branches, forked; seta 3-I with 2-4 branches, long; and seta 1-II with 3-5 thin branches, long. *Aedes pecori* pupae differ from those of *dissimilis* by seta 10-CT with 2,3 branches and seta 1-II with thin branches.

Larvae of *pecori* are similar to those of *dissimilis*, but are easily distinguished by the number of comb scales (i.e., 33-51) which have a longer stout median spine at apex in addition to the shorter thin spicules, shape of pecten teeth, and seta 4-VIII slightly shorter than seta 3-VIII.

I am pleased to name this new species for Mr. James E. Pecor, WRBU, for his technical assistance during the preparation of this article and others.

**DISTRIBUTION.** 74 specimens examined: 7 ♀ pl, 4 ♀, 3 ♀ g, 8 ♂ pl, 9 ♂, 4 ♂ g, 1 pl and 7 L.

**MALAYSIA.** *Pahang*, Cameron Highlands, Gunong Jasar (3 ♀ pl, 4 ♀, 3 ♀ g, 7 ♂, 3 ♂ g, 4 L, type series); *Perak*, Cameron Highlands (23rd and 27th mile) (1 ♀ pl, 4 ♂ pl, 1 ♂, 1 ♂ g, 1 L); *Sabah*, Beaufort, Sipitang Forest Reserve, Tenom, Kemabong, Mandalom Forest Reserve (3 ♀ pl, 4 ♂ pl, 1 ♂, 1 pl, 2 L).

**BIONOMICS.** In Malaysia, immatures were collected during March, April and July from small treeholes (6 times), small treehole in a fallen log (once) and bamboo stumps (once), containing colored (once clear), fresh, temporary and stagnant water, in partially (6 times) and heavily (2 times) shaded areas of secondary rain forests (6 times), primary rain forest (once) and a rubber plantation (once), located in mountain (3 times), hilly (3 times), valley (once) and plain (once) terrain at altitudes ranging from 30 to 1,523 m (898-1,523 m in Pahang and Perak; 30-259 m in Sabah).

*Aedes (KenKnightia) wilkersoni*, New Species  
(Figs. 6, 11, 13, 23, 32, 33)

The following is supplemental to the subgenus description.

**FEMALE** (Fig. 6). *Head.* Antenna 0.77 length of proboscis; maxillary palpus 0.17 length of proboscis; proboscis 1.05 length of femur I; vertex covered with dark brown scales; occiput with erect forked scales dark brown; head otherwise similar to *dissimilis*. *Thorax.* Scutum covered with dark reddish-brown scales; dark setae as follows: 3 on anterior promontory, 4 anterior and 1 lateral on scutal fossal area, supraalar area with a patch of short dark brownish-black setae anterior to wing base, other supraalar setae long and brownish-black, 3 on posterior of postpronotum, 2 long golden on upper proepisternum, 1 on postspiracular area, 1 upper, 1 median posterior and 3 lower posterior on mesokatepisternum, 1 pale golden on upper posterior of mesepimeron; scutellum with a patch of dark brownish-black scales on each lobe, midlobe with 3 long and 2-4 short dark setae, lateral lobe with 3 long and 2,3 short dark setae; remainder of thorax similar to *dissimilis*. *Legs.* Differ from *dissimilis* as follows: coxa I with a small dorsal and ventral patch of broad silvery scales separated by a large median patch of broad brown scales; femur I with anterior surface with a linear ventroapical patch of silvery scales; femur II with anterior surface with a large linear patch of silvery scales at about midlength which extends proximad ventrally in addition to apical patch of silvery scales, posterior surface with a few pale scales on basoventral area and a large linear patch of silvery scales apicoventrally. *Wing and Abdomen.* Similar to *dissimilis*. Allotype with scales badly rubbed on left side of several terga.

**FEMALE GENITALIA** (Fig. 11). *Tergum VIII.* Basal 0.4 retracted into segment VII, numerous broad scales on apical 0.73, several short and moderately long setae on apical 0.46, 6 moderately long stout setae (based on setae and alveoli) on apical margin, Te-VIII index 0.48, Te-VIII/Te-IX index 1.85, length 0.22 mm, width 0.45 mm. *Sternum VIII.* Apex with a minute (0.02 of dorsal length) mesal



depression, scales absent, numerous short setae on apical 0.8, 5 short to moderately long stout setae on apical margin, S-VIII index 0.77, length 0.32 mm, width 0.42 mm. *Tergum IX*. Composed of 2 short plates, 1,2 setae on each side of midline, 3 total setae, Te-IX index 0.95, length 0.12 mm, width 0.12 mm. *Insula*. 3 setae on each side of midline, 6 total setae. *Upper vaginal lip*. Sclerite very small. *Postgenital lobe*. 12,13 setae on each side of midline, 25 total setae, ventral PGL/cercus index 0.65, dorsal PGL index 1.45, ventral PGL index 2.64, ventral length 0.15 mm. *Cercus*. Tapered flattened area with 6 stout setae, dorsal surface with setae on apical 0.61, cercus index 2.34, cercus/dorsal PGL index 2.78, length 0.23 mm, width 0.10 mm.

**MALE**. Generally similar to the female except for sexual features and scutal scaling. *Head*. Only basal portion of proboscis and palpi and entire right antenna remain, other appendages missing; occiput with erect forked scales golden. *Thorax*. Scutum similar to male of *dissimilis* in golden-scaled areas; pleural areas similar to female except: postpronotum with 1 posterior seta; mesokatepisternum with 2 short lower posterior setae; and mesepimeron with 2,3 upper posterior setae. *Legs*. Similar to *dissimilis*. Left legs I-III missing.

**MALE GENITALIA** (Fig. 13). *Tergum IX*. Each lobe bearing 2 setae (only setal alveoli remain in holotype), 4 total setae. *Gonocoxite*. Narrower, length 0.36 mm. *Gonostylus*. Several small thin spicules on approximately basal 0.52, a small tubercle subapically and a minute subapical seta (holotype with seta present on 1 gonostylus, but only alveolus present on other), Gs length 0.14 mm, Gs/Gc index 0.39, gonostylar claw length 0.06 mm, GC/Gs index 0.39. *Basal mesal lobe*. Scolus-like projection short with 1 long stout seta apicolaterally, 1 moderately long thin seta apicomesally and 1 short subapical thin seta on tergal area, BML/Gc index 0.12, BML length 0.04 mm. *Proctiger*. 3 cercal setae. *Phallosome*. Aedeagus with distal portion only slightly narrower than proximal portion, Ae length 0.12 mm, Par/Ae index 0.73, Par length 0.09 mm, BP/Ae index 0.43, BP length 0.05 mm. *Sternum IX*. 4 short and moderately long setae on caudomesal area.

**PUPA** (Fig. 23). Chaetotaxy as figured and recorded in Table 9. *Cephalothorax*. Seta 1-CT with 2,3 (usually 2) branches; 4-CT with 2 branches; 5,10,11-CT single; 10-CT long; 11-CT very long, stout, laterad and slightly cephalad of 10-CT; 12-CT with 3-6 branches, moderately long. *Trumpet*. Index 3.75-4.05; widest on middle 0.3; pinna moderately long, 0.13-0.14 length of trumpet. *Abdomen*. Seta 1-I,II long; 3-I single, very long, stout; 1-II with 2,3 (usually 3) branches, stout, sparsely aciculate; 4-II with 3 branches; 1-IV with 2,3 branches; 6-VII longer, thinner, mesad and noticeably caudad of 9-VII; 9-VII moderately stout, simple; 9-VIII with 8-14 branches, fan-like, dendritic, sparsely aciculate. *Paddle*. Index 1.23-1.24; seta 1-Pa short.

**LARVA** (Fig. 32). Chaetotaxy as figured and recorded in Table 18. *Head*. Seta 4-C with 3 branches, forked; 5,6-C single, very long, simple, 6-C slightly shorter than 5-C; 7-C with 2-5 branches; 7,11-C sparsely aciculate; 13-C stout, long, aciculate; dorsomentum with 23-25 teeth; 6-Mx single, long, stout; mandibular lobe moderately long, labula with apex blunt and narrowly separated from lobe apically. *Antenna*. Seta 1-A with tip shorter than apex of antennal shaft, apical portion thin, attached 0.53-0.56 from base; 4-A approximately equal in length to 2-A. *Thorax*. Seta 1-P

single or 2-branched, distal portion thin, shorter than 2-P; 3,14-P with 2 branches; 3-P shorter than 1,2-P; 5-7-P long, moderately stout, not or very sparsely aciculate; 1-M single to 3-branched, thin, moderately long; 9-M with distal portion of branches thin; 13-M short, pectinate; 1-T with 2 thin branches, moderately long; 2-T with 3,4 thin branches, pectinate, longer than 1-T; 6-T single; 9-T sparsely aciculate, distal portion of branches thin. *Abdomen*. Many setae with thin branches (e.g., 1-II-VI, 2-VIII, 3-II-VI, 10-I-VII, 13-II-VII); 1-I,VII, 6-V single or 2-branched; 1,13-I short; 1-II, 3-I, 13-II-VII moderately long; 1-IV-VI, 2-VIII, 3-III-V, 6-II-V, 10-I,II,VII, 13-IV,V long; 1-III, 3-IV with 3,4 branches; 1-IV, 6-I with 3 branches; 1-IV, 3-I-V, 4-II pectinate; 1-VII, 4-VIII, 10-III-VI very long; 1,2,4-VIII not attached to pigmented setal support plates; 2-VIII, 6-III,IV, 10-III-V,VII with 2 branches; 2-VIII noticeably longer than 1-VIII, attached close to 1-VIII; 4-VIII single, noticeably longer than 3-VIII, attached close to 3-VIII; 5-II with 2,3 branches; 6-I stout, very sparsely aciculate, distal portions of branches thin; 6-II very slightly aciculate on proximal area, distal portion of branches thin; 6-VI, 8-III single; 7-I 0.65-0.68 length of 6-I; 13-II,VI dendritic; comb with 35-51 scales with apices having a longer stout median spine and several shorter thin spicules; saddle narrow, anterior and basal portion of ventral margins darker pigmented, posterior margin without or with a very few minute spicules, acus absent; 1-X single, moderately long; 2-X with 5,6 branches, about 0.5 length of 3-X; 4-X composed of 10 setae, caudal 8 setae each with 5-9 branches; anal papillae damaged, only 1 moderately long pointed one remaining on each specimen. *Siphon*. Index 2.88-3.15; pecten on basal 0.47-0.49, composed of 13-15 spines, median ones moderately long and pointed, broad at base and with a broad curved angle at base of ventromedian large spicule, usually 1-3 small spicules in median area of angle, 2,3 smaller and usually 1-3 minute spicules basad of large ventromedian spicule; 1-S moderately long, borne on basal 0.55-0.59 of siphon distad of pecten; 8-S with 5 branches; spiracular apodeme (Fig. 33) with apex pointed.

**TYPE DATA.** The holotype male contains the following information on the adult labels: No: 38-10, Ulu Gombak, Selangor, Malaya; SEAMP Acc. No. 58; Prep. No. 68/508 Term. (genitalia preparation number); and HOLOTYPE ♂, *Aedes* (Ken.) *wilkersoni*, Det: John F. Reinert (rectangular label with a red border line). The associated pupal and larval exuviae are mounted in balsam on a microscope slide and the associated genitalia are mounted in balsam on a second microscope slide. The collection data sheet for 38-10 lists the following additional information: collected by Dr. S. Ramalingam as a larva on 16 December 1965 from colored, fresh, temporary, stagnant water in a small bamboo stump, located in a heavily shaded area of a secondary rain forest in hilly terrain and at an altitude of 550 feet. The allotype contains the following data on the adult labels: No: 465-10, Ampang F. R. (Forest Reserve), Selangor, Malaya; 'Mosquitoes of Malaysia', Dept. Parasit., U. Malaya; SEAMP Acc. No. 159; T89.35 Term. (genitalia preparation number); and ALLOTYPE, *Aedes* (Ken.) *wilkersoni*, Det: John F. Reinert. The collection data sheet for 465-10 lists the following additional information: collected on 14 February 1967 at 1050 hours, Sulaiman bin Omar and Samuel Wilson James collectors, from clear, fresh, temporary, stagnant water in a small bamboo stump, located in a heavily shaded area of a secondary rain forest in valley terrain and at an altitude of 200 feet.

The type series is deposited in the NMNH.

**DISCUSSION.** The adult female is similar to *dissimilis*, but differs primarily as follows: vertex of head dark-scaled; occiput with erect forked scales dark brown; antenna 0.77 length of proboscis; maxillary palpus 0.17 length of proboscis; proboscis 1.05 length of femur I; only 1 seta on postspiracular area and 1 on upper mesepimeron; coxa I with a large median patch of brown scales separating small dorsal and ventral patches of silvery scales; femur I with a linear apicoventral patch of silvery scales; and femur II with a larger linear patch of silvery scales at about midlength and extending proximad ventrally.

Female genitalia of *wilkersoni* are the most distinctive of all the species included in the subgenus *Kenknighthia* and can be separated from the other species by Te-VIII index 0.48, Te-IX width 0.12 mm, PGL ventral length 0.15 mm, dorsal PGL index 1.45 and ventral PGL index 2.64.

Male genitalia of *wilkersoni* have the basal mesal lobe with the scolus-like projection short and with 1 long stout seta apicolaterally, 1 moderately long thin seta apicomesally and 1 short subapical thin seta on the tergal area. The aedeagus has the distal portion only slightly narrower than the proximal portion.

Pupae of *wilkersoni* have the following combination of distinctive features: seta 10-CT single and long; seta 11-CT single and very long; seta 12-CT with 3-6 branches and moderately long; seta 3-I single, very long and stout; seta 1-II with 2,3 branches, long, stout and sparsely aciculate; seta 9-VII moderately stout, simple; and seta 1-Pa short. *Aedes wilkersoni* pupae can be separated from those of *harbachi* by seta 4-II with 3 branches, seta 5-II with 3-5 branches, seta 1-II equal to or only slightly longer than lateral margin of segment III, and seta 1-Pa short (long in other species).

Larvae of *wilkersoni* differ from those of *harbachi* in the comb scale number (35-51) and shape, pecten spine number (13-15) and shape, seta 1-X single, seta 1-A does not extend to tip of antennal shaft, seta 2-P longer than setae 1,3-P, and seta 4-C with 3 branches. Other features which, in combination with the above, distinguish the larvae from those of other species of the subgenus are: setae 5-7-P not or very sparsely aciculate; setae 7-P and 3-M single; many abdominal setae with thin branches; seta 5-II with 2,3 branches; seta 3-VII with 4,5 branches; and saddle narrow.

I am pleased to name this new species for Dr. Richard C. Wilkerson, WRBU, in recognition of his contributions to the biosystematics of the Culicidae and the Tabanidae.

**DISTRIBUTION.** 11 specimens examined: 2 ♀ pl, 1 ♀ g and 1 ♂ plg.

**MALAYSIA.** *Selangor*, Ampang Forest Reserve (1 ♀ plg, allotype and 1 ♀ pl, paratype), Ulu Gombak (1 ♂ plg, holotype).

**BIONOMICS.** Immatures of the type series were collected twice during March and December from bamboo stumps containing colored (once) or clear (once), fresh, temporary and stagnant water, in heavily shaded areas of secondary rain forests, once in a hilly area at 550 feet altitude and once in a valley at 200 feet altitude.

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## LIST OF FIGURES

1. *dissimilis* - adult female
2. *dissimilis* - adult male; *karwari* - adult female
3. *harbachi* - adult male and female; *paradissimilis* - adult male; *litwaka* - adult male
4. *leucomeres* - adult female
5. *luzonensis* - female abdomen, head, legs; *litwaka* - female abdomen, legs; *leucomeres* - female abdomen; *karwari* - female abdomen; *dissimilis* - female legs; *paradissimilis* - female legs
6. *lerozeboomi* - female legs, male scutum and scutellum; *gaffigani* - female coxa I and femur II; *pecori* - female head; *wilkersoni* - female coxa I and legs
7. *dissimilis* - female genitalia
8. *karwari* - female genitalia
9. *leucomeres* - female genitalia
10. *luzonensis* - female genitalia
11. *gaffigani*, *wilkersoni*, *litwaka*, *harbachi*, *pecori*, *paradissimilis*, *lerozeboomi* - female genitalia (tergum IX, sternum VIII)
12. *dissimilis* - male genitalia
13. *dissimilis*, *harbachi*, *pecori*, *wilkersoni* - male genitalia (gonostylus, basal mesal lobe, aedeagus)
14. *litwaka*, *luzonensis*, *paradissimilis*, *lerozeboomi* - male genitalia (gonostylus, basal mesal lobe, aedeagus)
15. *dissimilis* - pupa
16. *gaffigani* - pupa
17. *harbachi* - pupa
18. *lerozeboomi* - pupa
19. *litwaka* - pupa
20. *luzonensis* - pupa
21. *paradissimilis* - pupa
22. *pecori* - pupa
23. *wilkersoni* - pupa
24. *dissimilis* - larva
25. *gaffigani* - larva
26. *harbachi* - larva
27. *lerozeboomi* - larva
28. *litwaka* - larva
29. *luzonensis* - larva
30. *paradissimilis* - larva
31. *pecori* - larva
32. *wilkersoni* - larva
33. *lerozeboomi* - larval mandible and spiracular apodeme; *dissimilis*, *gaffigani*, *harbachi*, *litwaka*, *luzonensis*, *paradissimilis*, *pecori*, *wilkersoni* - larval spiracular apodeme



## LIST OF FIGURE ABBREVIATIONS

## Female Genitalia

AGDB	= Accessory gland duct base	Pr	= Proctiger
BMA	= Basal mesal apodeme	SCa	= Spermathecal capsule
BLS	= Basolateral seta	SCaP	= Spermathecal capsule pore
Ce	= Cercus	SE	= Spermathecal eminence
DPGL	= Line of attachment of proctiger to dorsal surface of PGL	SES	= Spermathecal eminence spicule
DS	= Dorsal sphere	S-VIII	= Sternum VIII
H	= Hinge	Te-IX	= Tergum IX
I	= Insula	Te-VIII	= Tergum VIII
LVL	= Lower vaginal lip	UVL	= Upper vaginal lip
LVS	= Lower vaginal sclerite	UVS	= Upper vaginal sclerite
PGL	= Postgenital lobe	VT	= Ventral tuft

## Male Genitalia

Ae	= Aedeagus	Par	= Paramere
BML	= Basal mesal lobe	Ppr	= Paraproct
BP	= Basal piece	Pr	= Proctiger
Gc	= Gonocoxite	S-IX	= Sternum IX
GC	= Gonostylar claw	Te-IX	= Tergum IX
Gs	= Gonostylus	Te-X	= Tergum X

## Pupa

Bu	= Buttress	Mr	= Midrib
CT	= Cephalothorax	Mtn	= Metanotum
GL	= Genital lobe	Pa	= Paddle
I-VIII	= Abdominal segments I-VIII	T	= Trumpet

## Larva

A	= Antenna	P	= Prothorax
APP	= Anal papilla	PS	= Pecten spine
C	= Cranium	PT	= Pecten
CS	= Comb scale	S	= Siphon
Dm	= Dorsomentum	SA	= Siphon acus
I-VIII, X	= Abdominal segments I-VIII, X	SaA	= Saddle acus
M	= Mesothorax	SAd	= Spiracular apodeme
Mx	= Maxilla	T	= Metathorax

Fig. 1

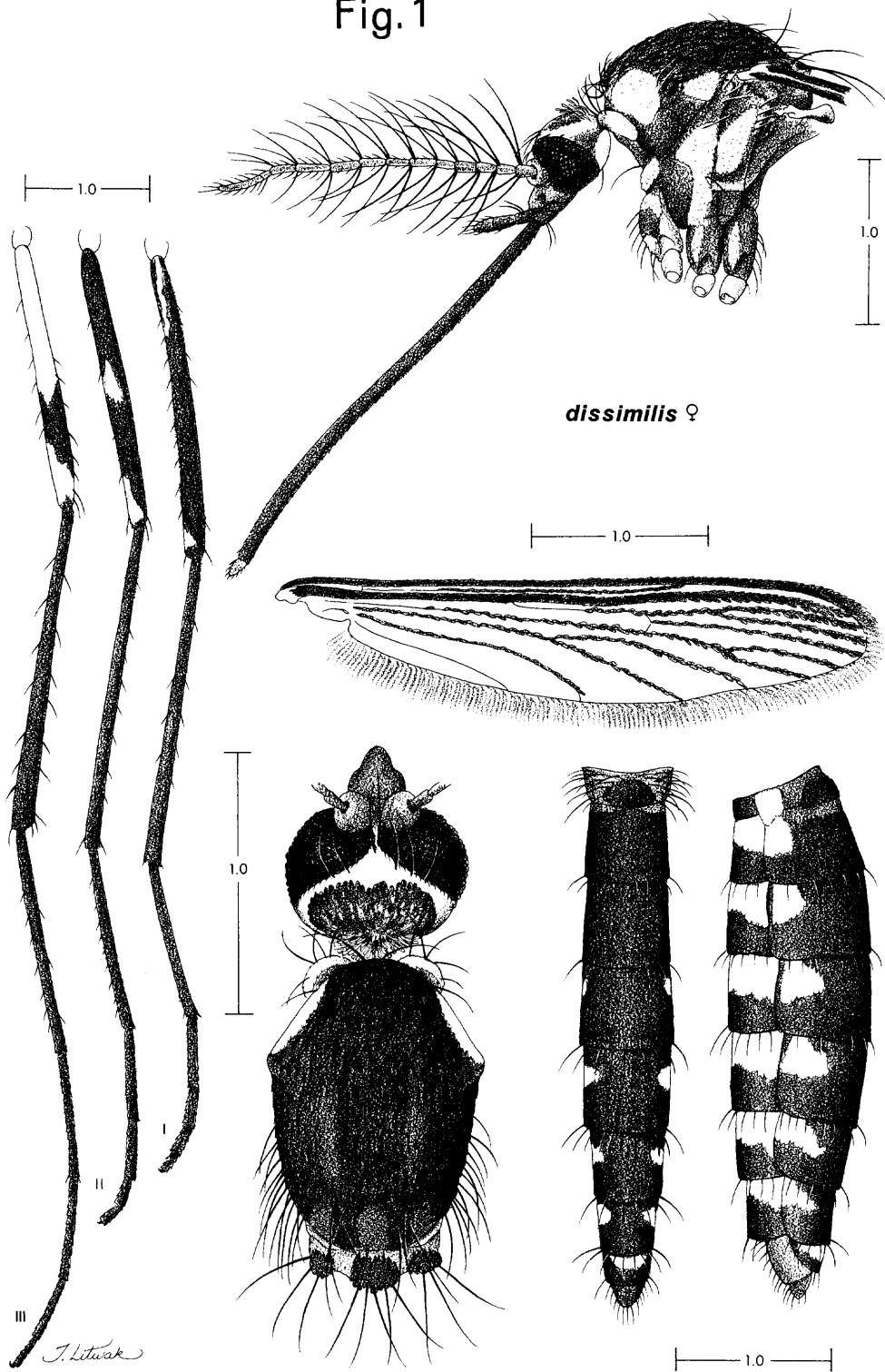
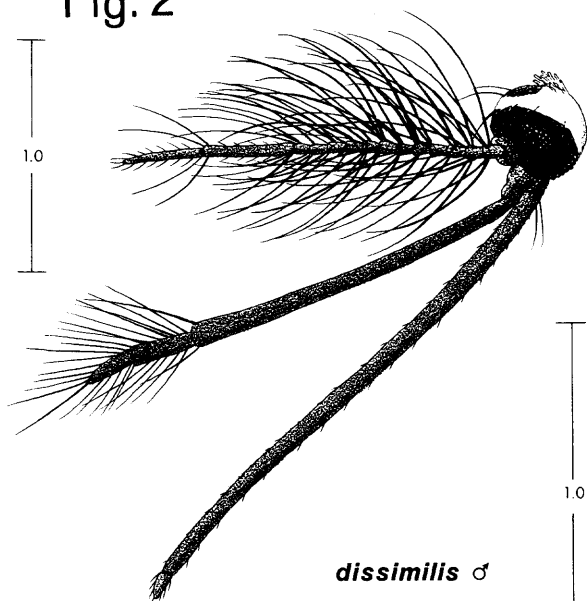


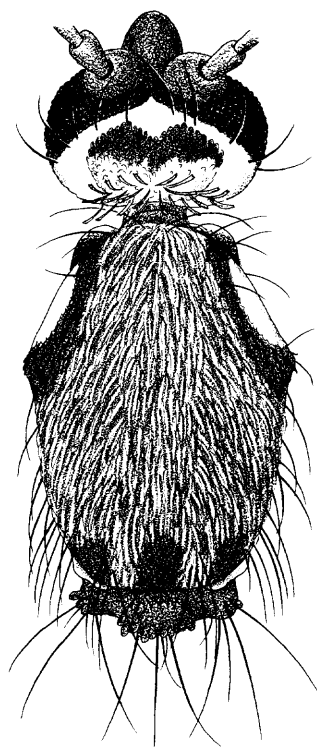
Fig. 2

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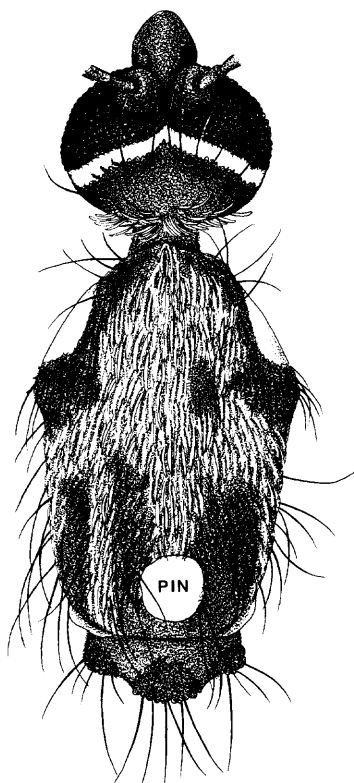


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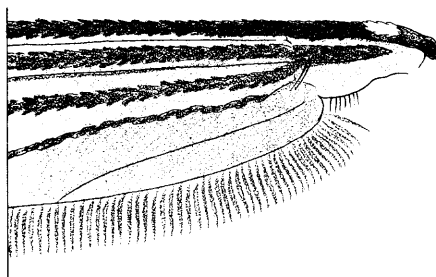


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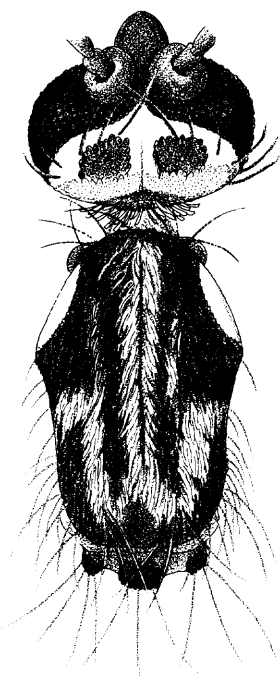
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*karwari* ♀

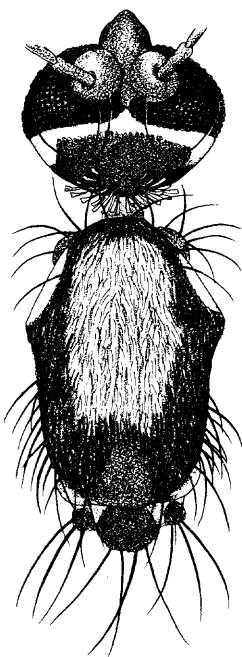
Fig. 3



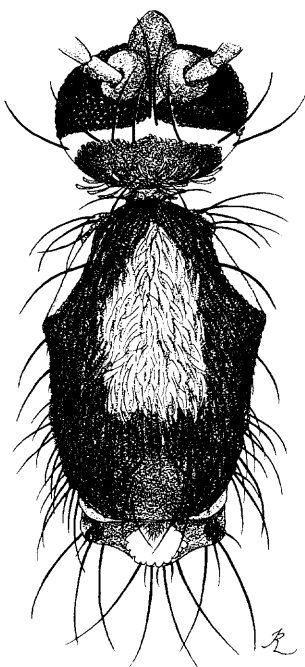
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*harbachi* ♀



*paradissimilis* ♂



*litwakae* ♂

Fig. 4

*leucomeres* ♀

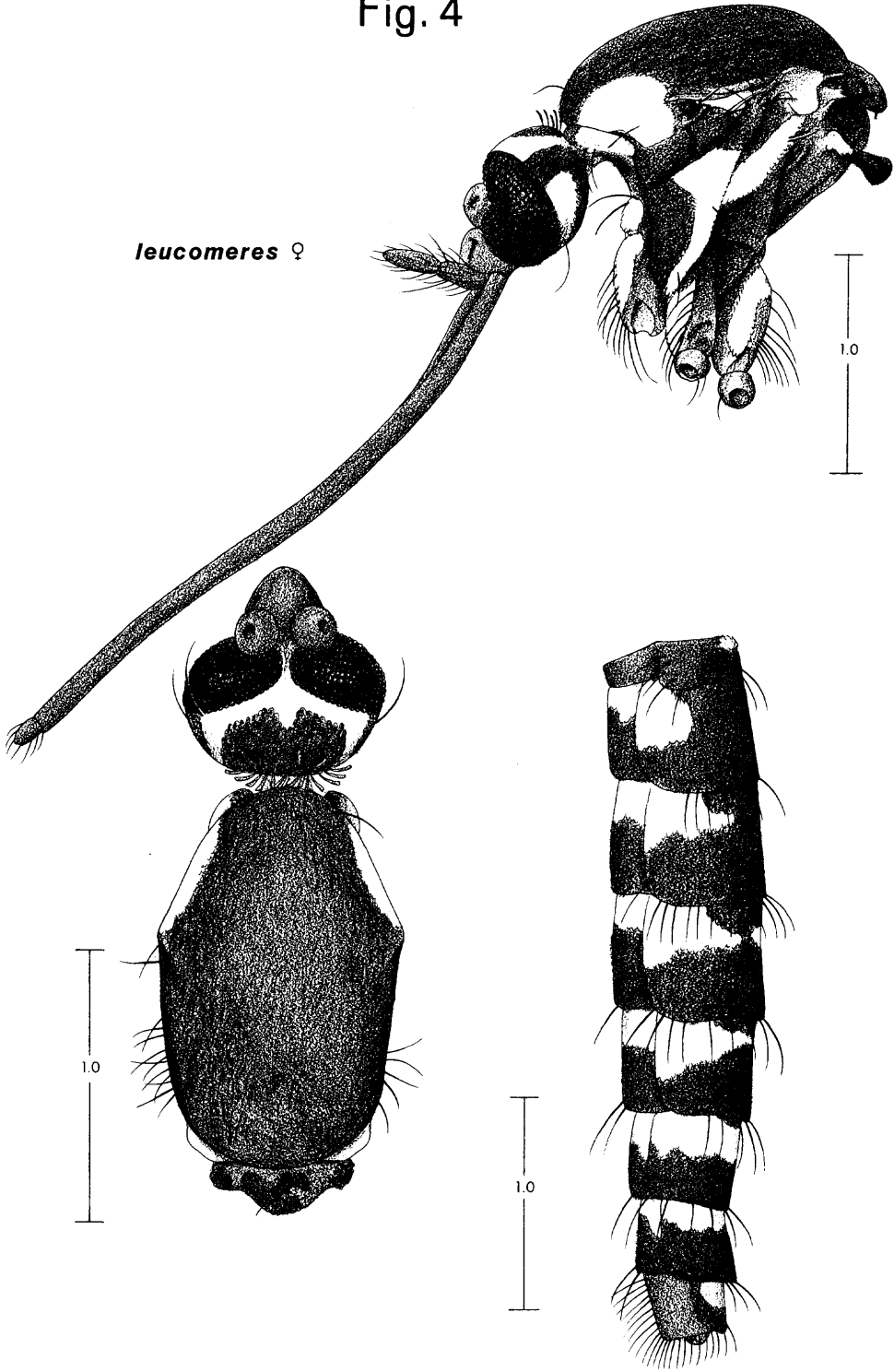


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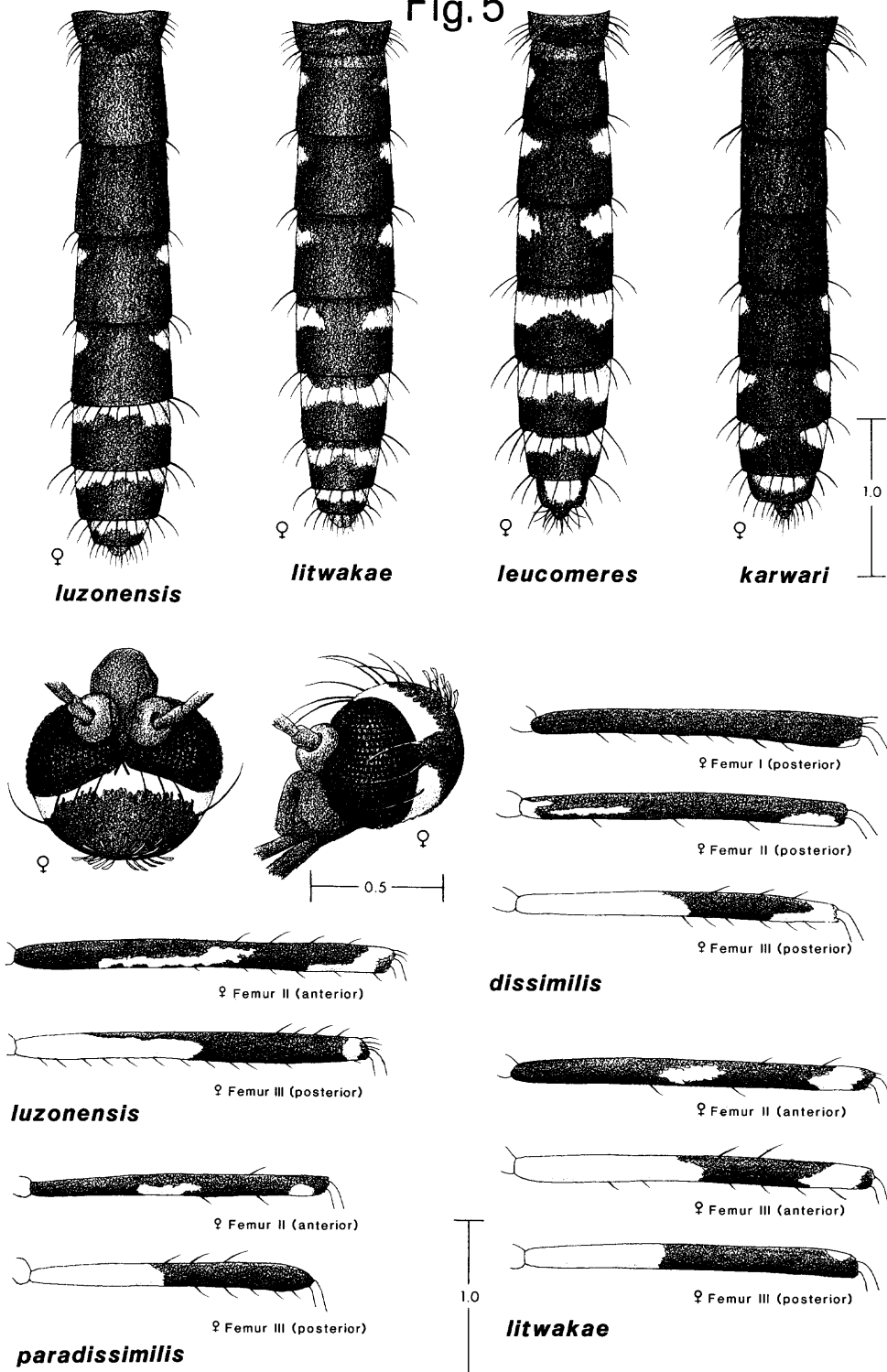
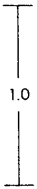
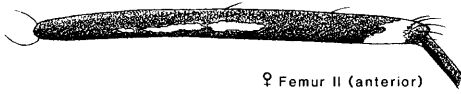
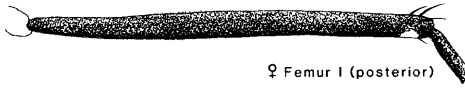
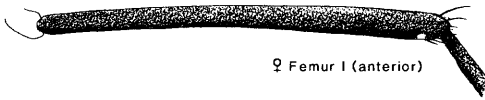
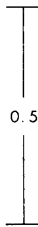
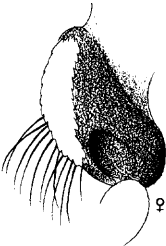
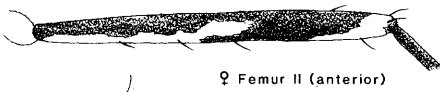
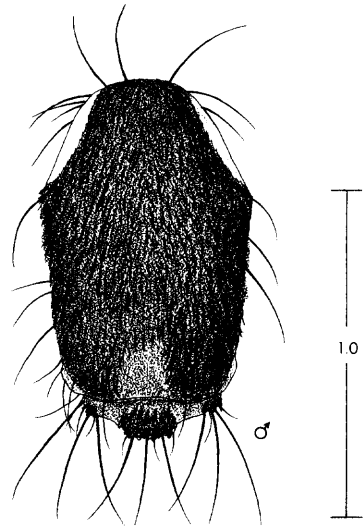


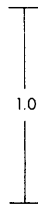
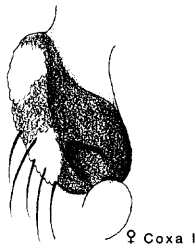
Fig. 6



***lerozeboomi***



***gaffigani***



***wilkersoni***

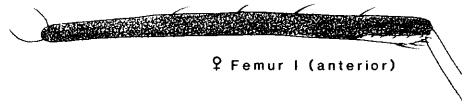
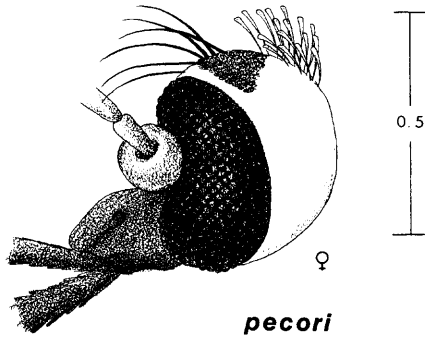
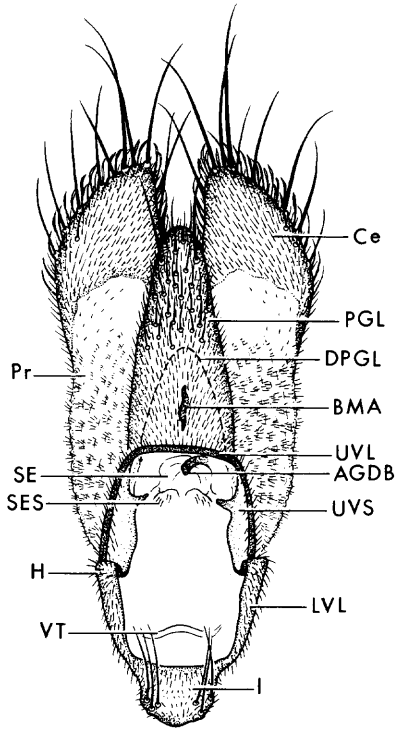
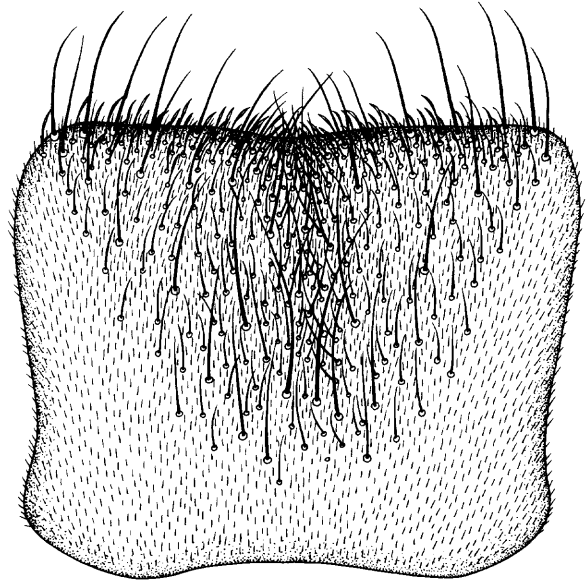


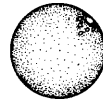
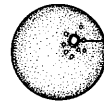
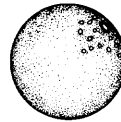
Fig. 7



ventral

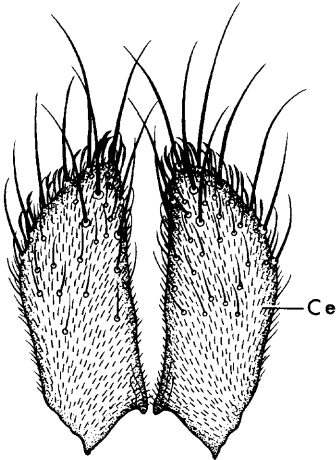


S-VIII



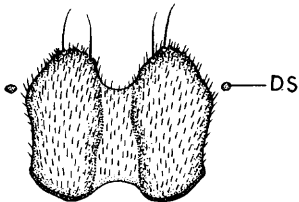
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SCaP



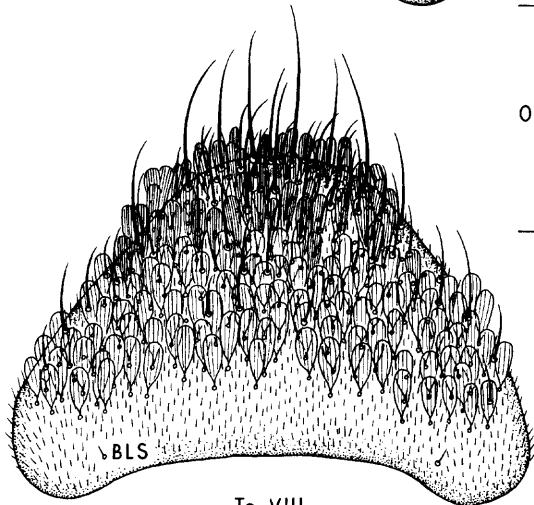
dorsal

Ce



Te-IX

DS



Te-VIII

BLS

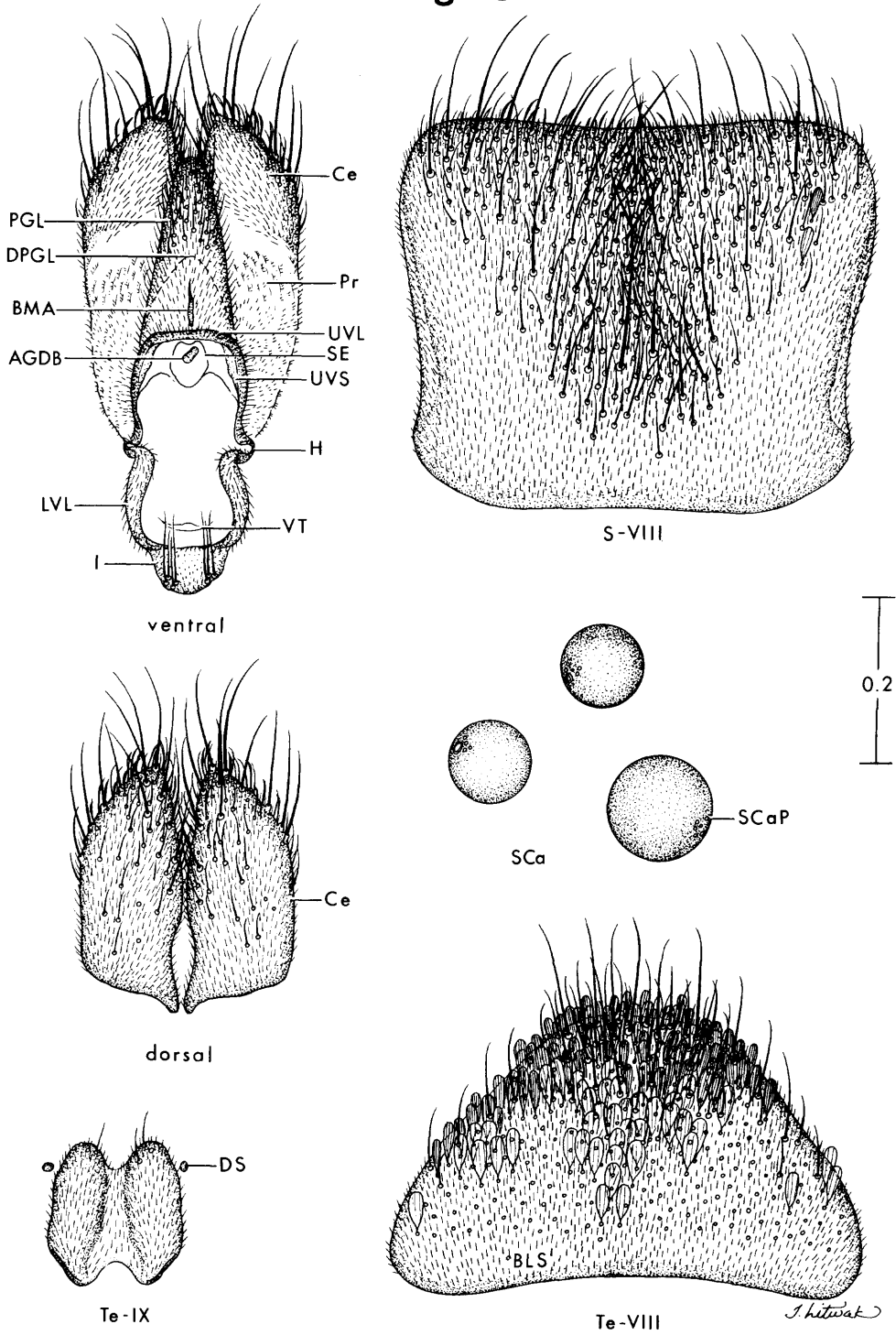
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*J. Petráš*

**dissimilis** ♀



**Fig. 8**



***karwari* ♀**

Fig. 9

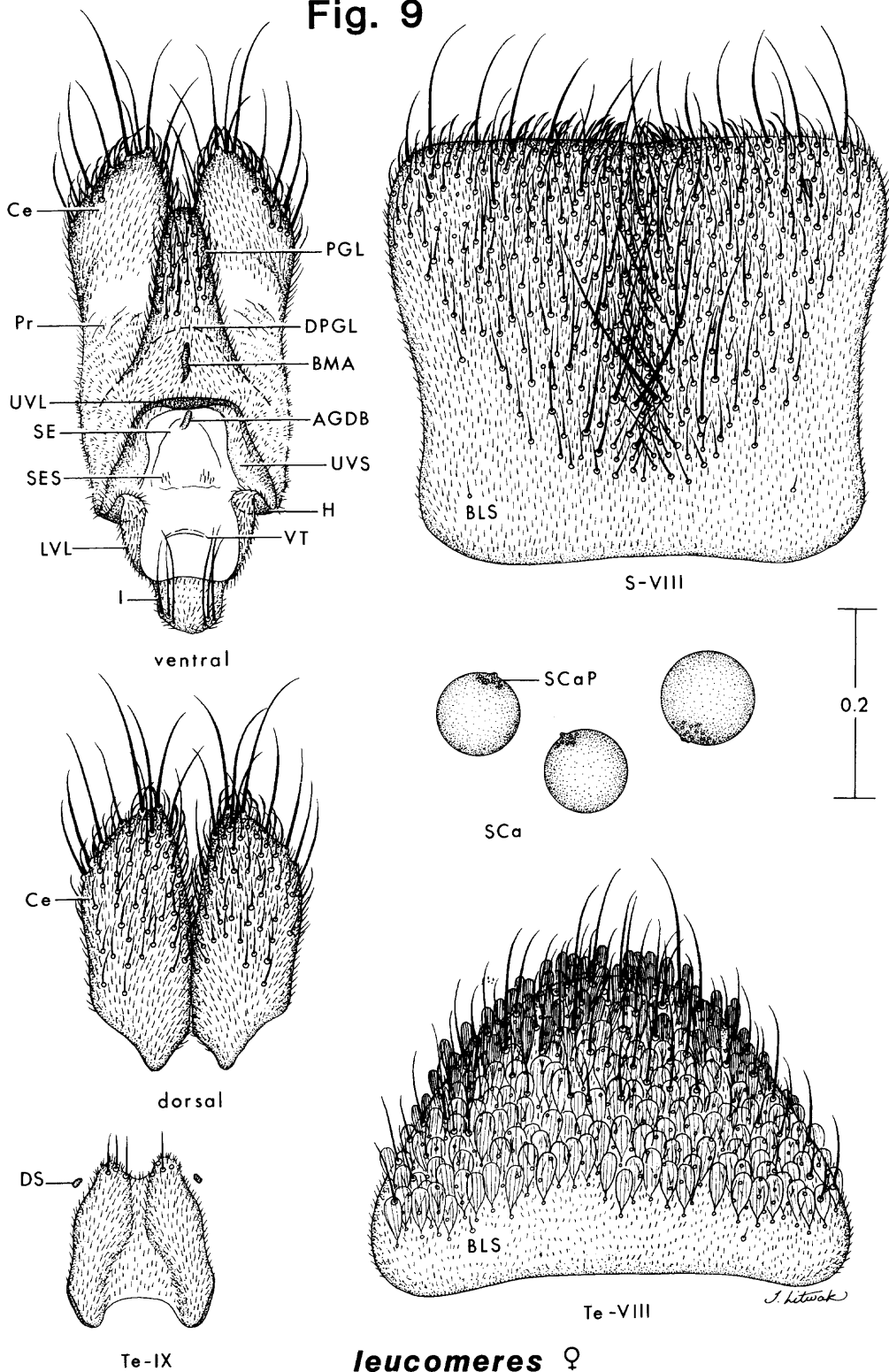
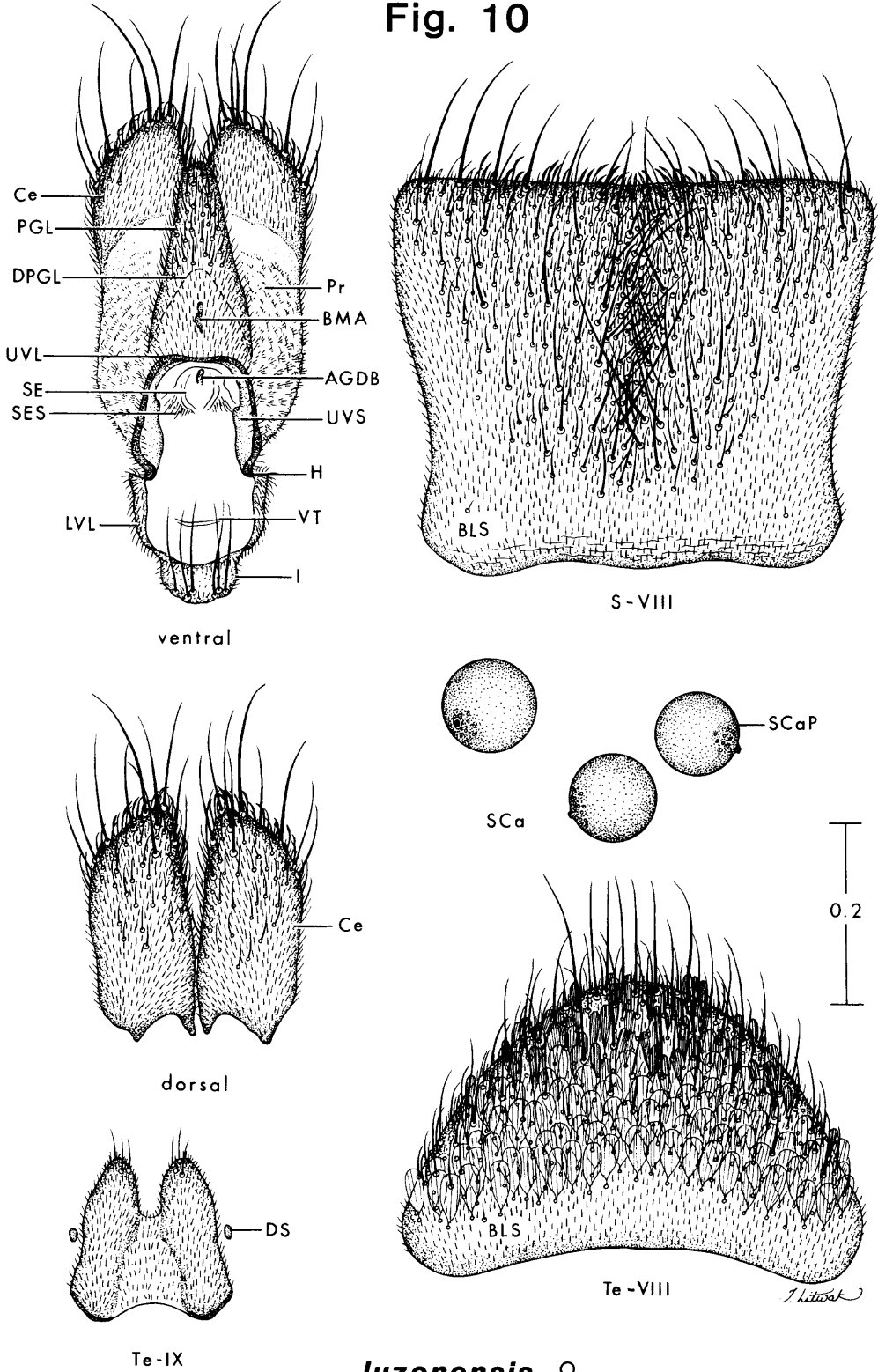
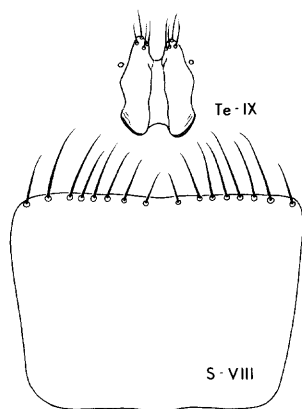


Fig. 10

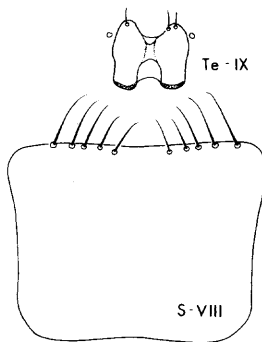


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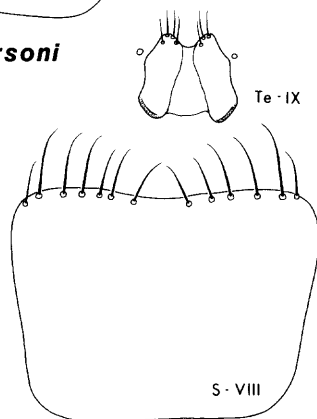
Fig. 11



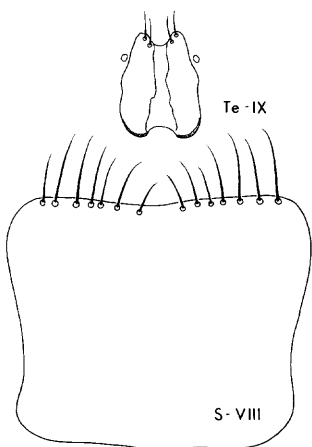
***gaffigani***



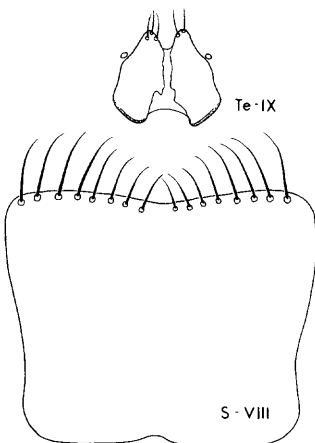
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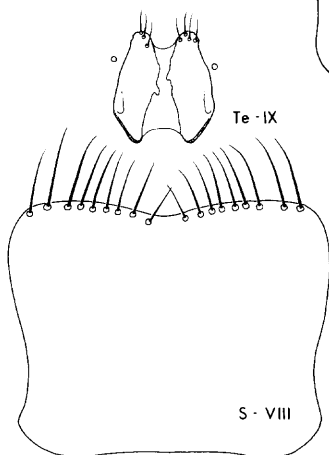
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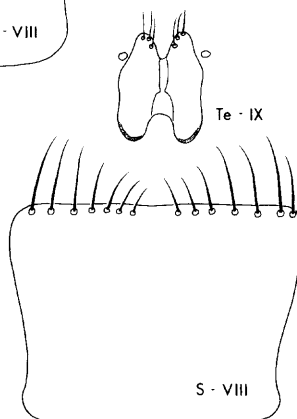
***litwakae***



***pecori***



***paradissimilis***



***lerozeboomi***

Fig. 12

*dissimilis* ♂

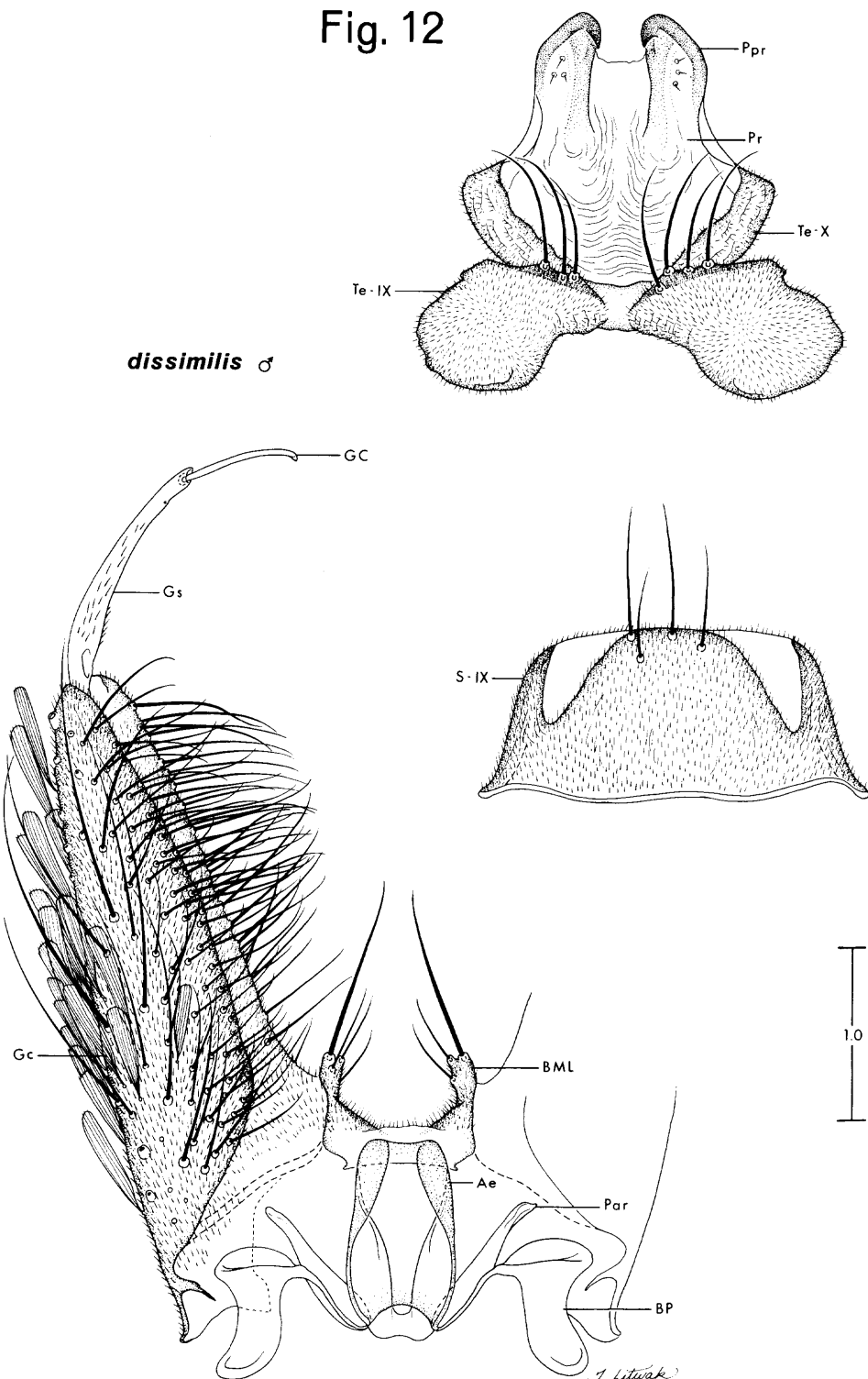


Fig. 13

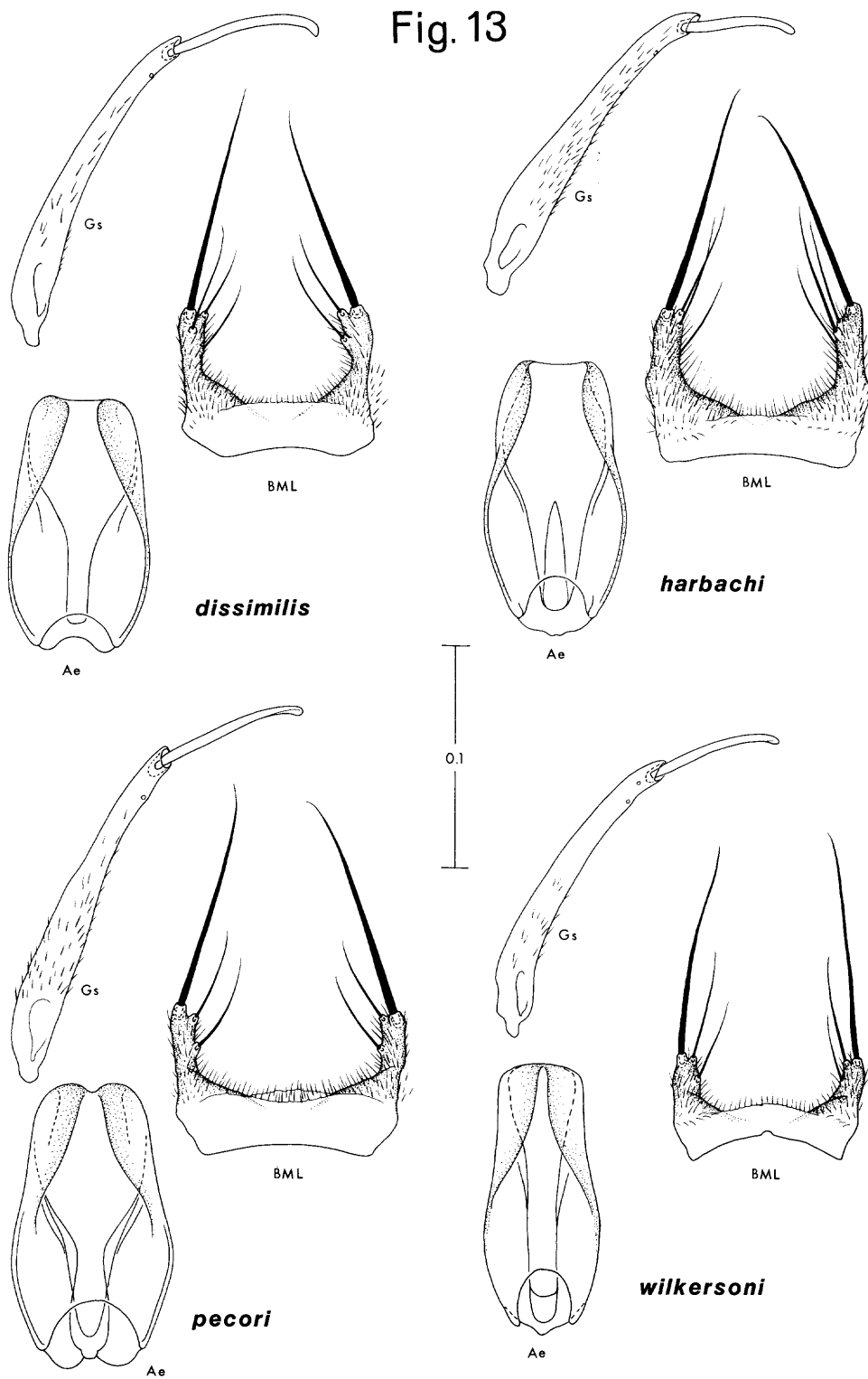
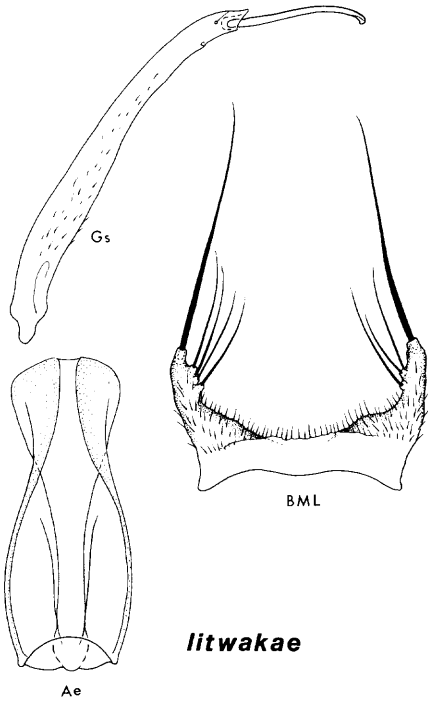
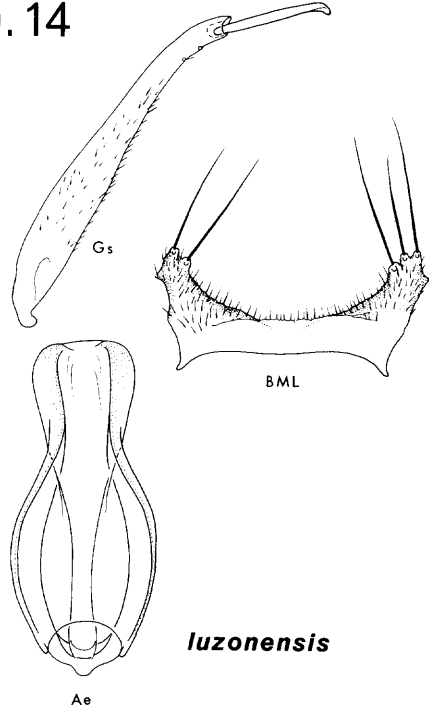


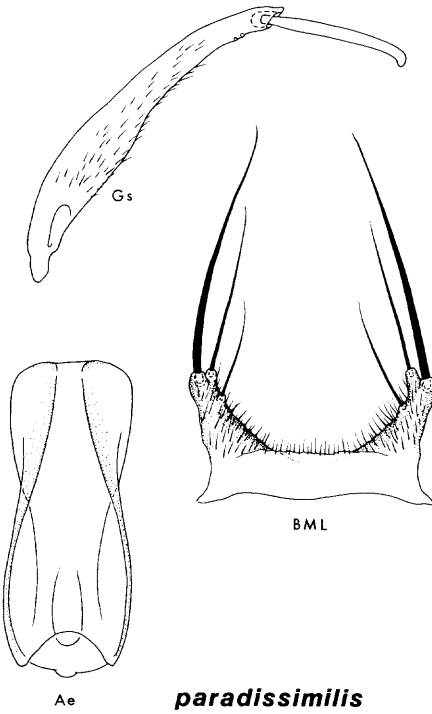
Fig. 14



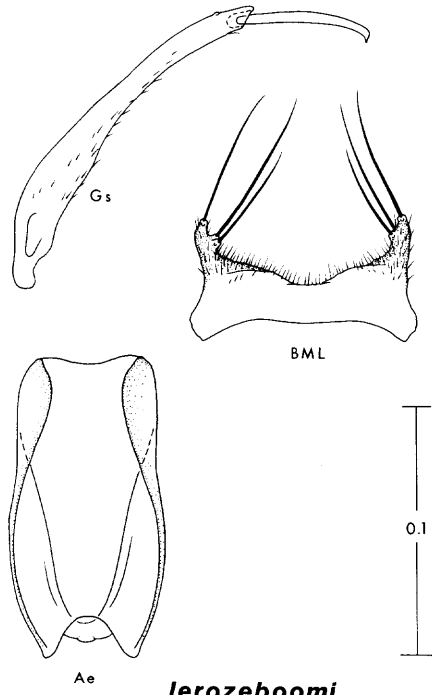
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***luzonensis***



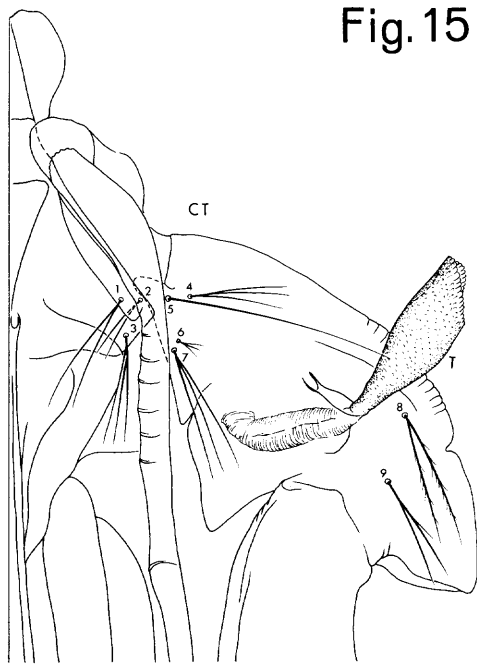
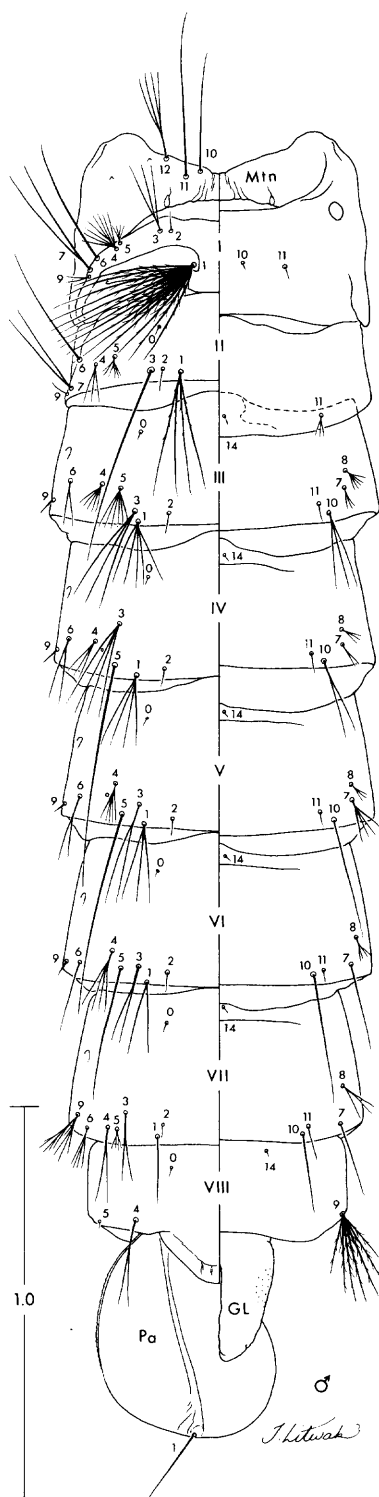
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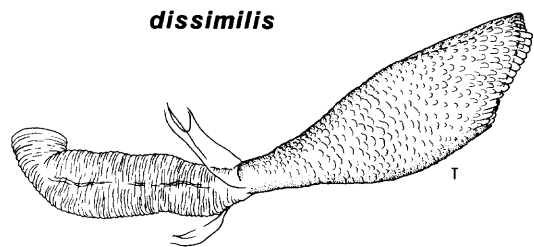
***lerozeboomi***

0.1

Fig.15



**dissimilis**



0.5

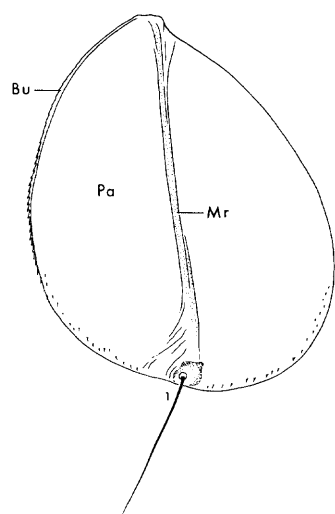
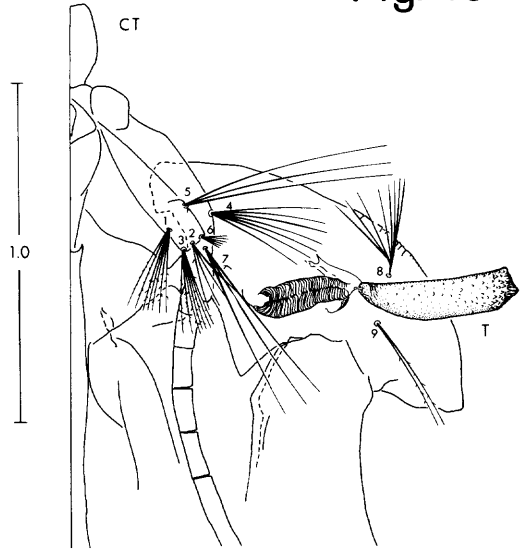
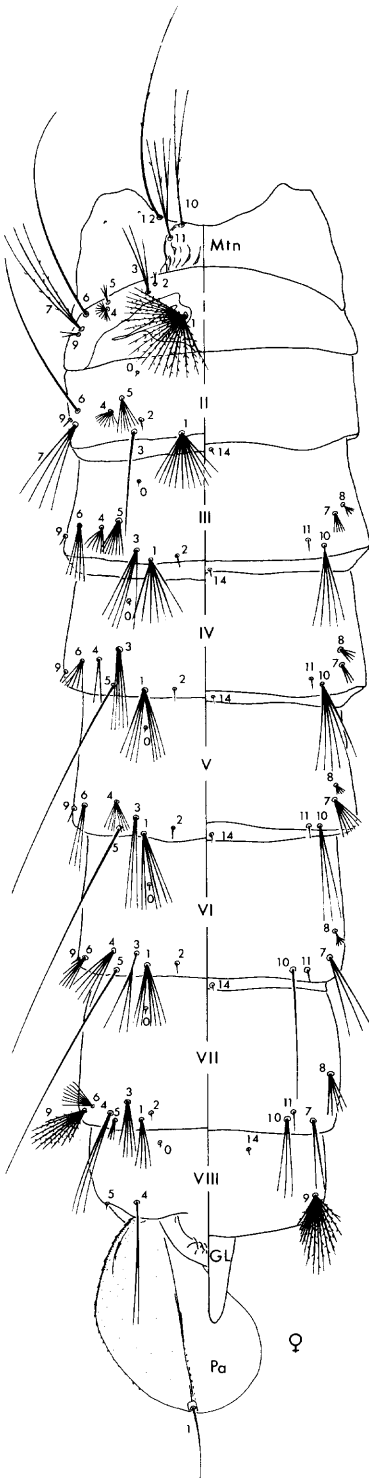
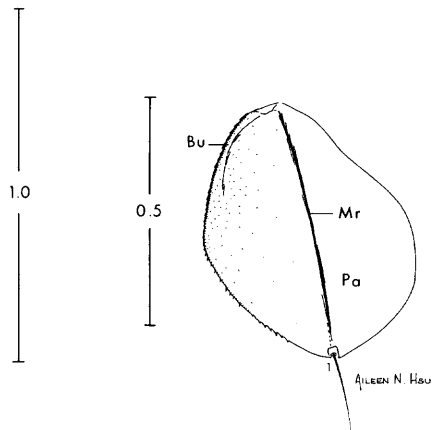
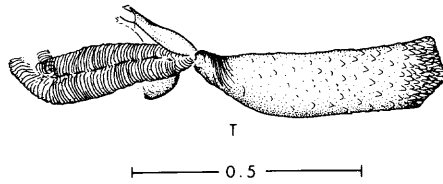




Fig. 16

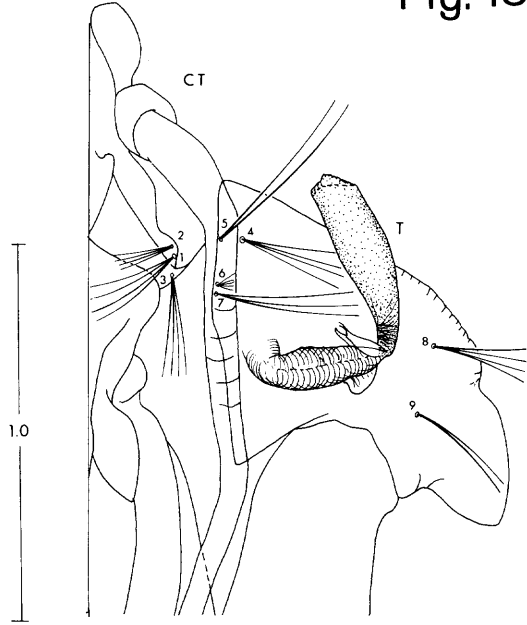
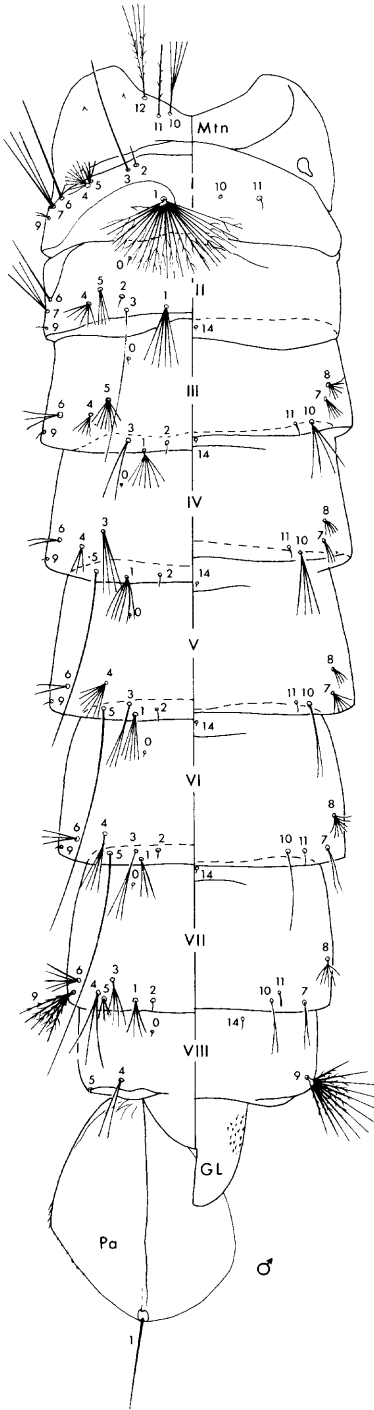


*gaffigani*

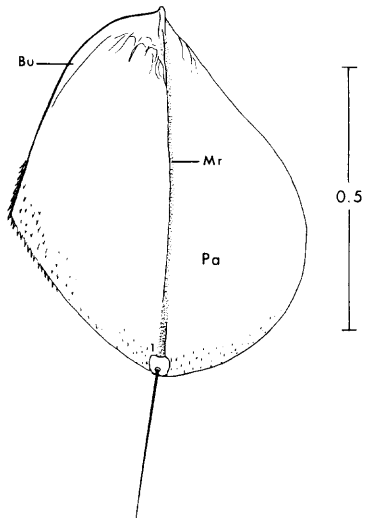
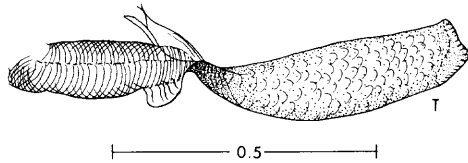


AILEEN N. HSU

Fig. 18

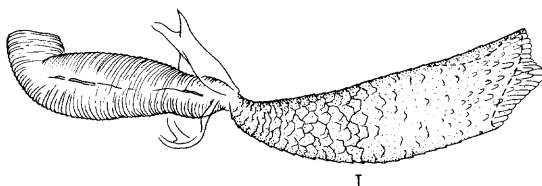
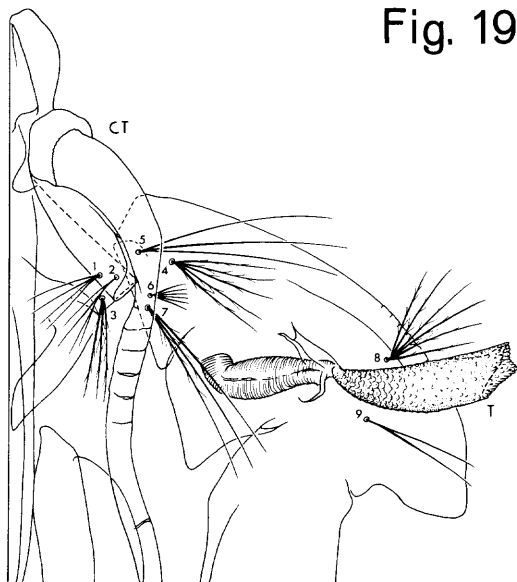
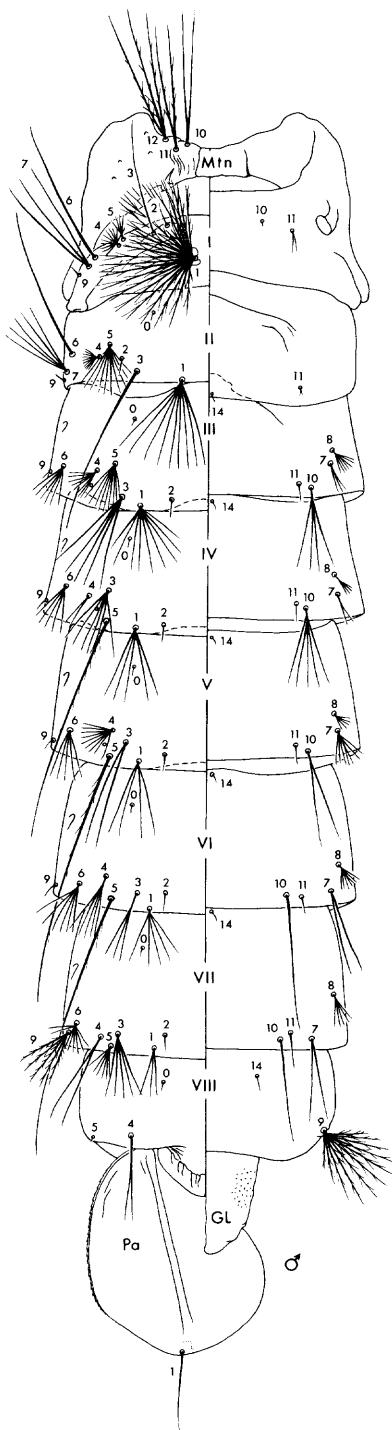


*Ierozeboomi*



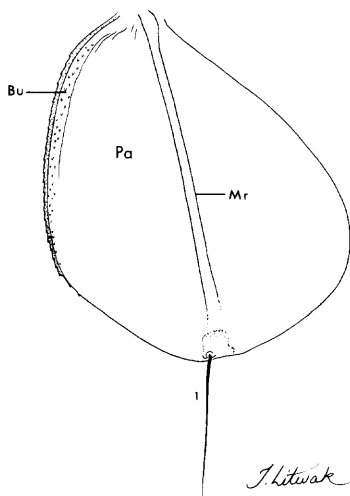
D. Fehér

Fig. 19



*litwakae*

0.5



1.0

*I. litwakae*

Fig. 20

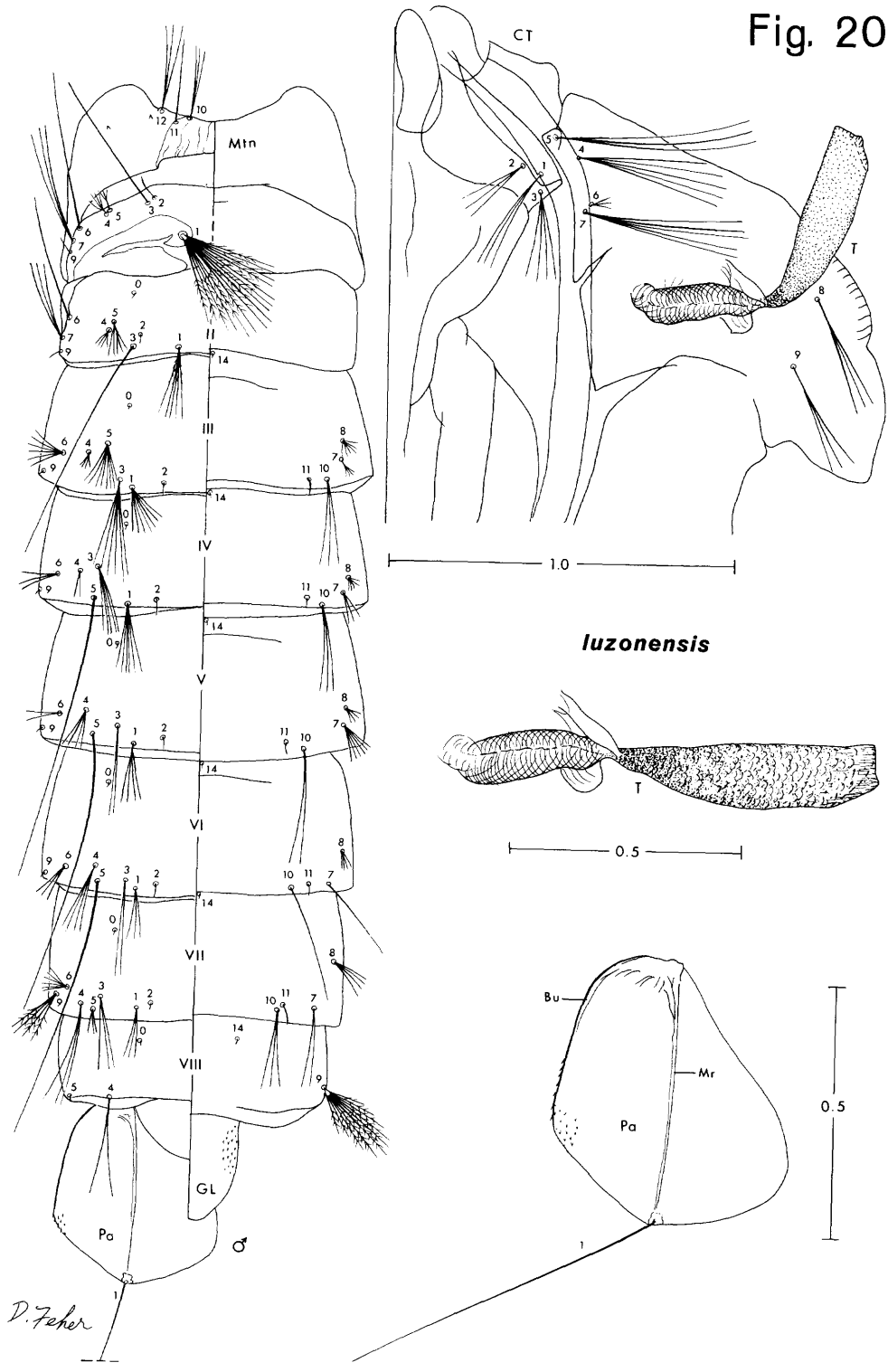
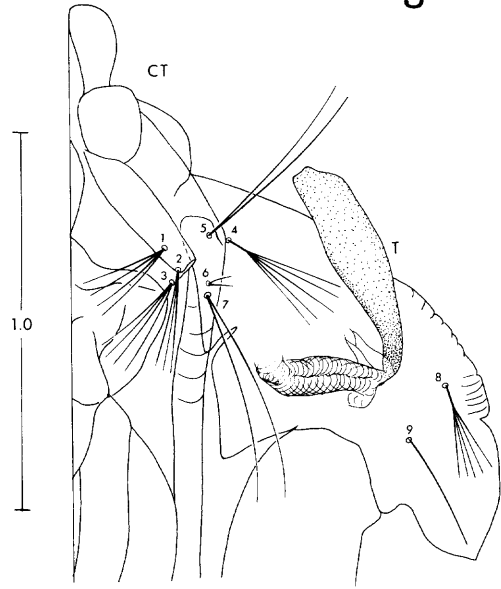
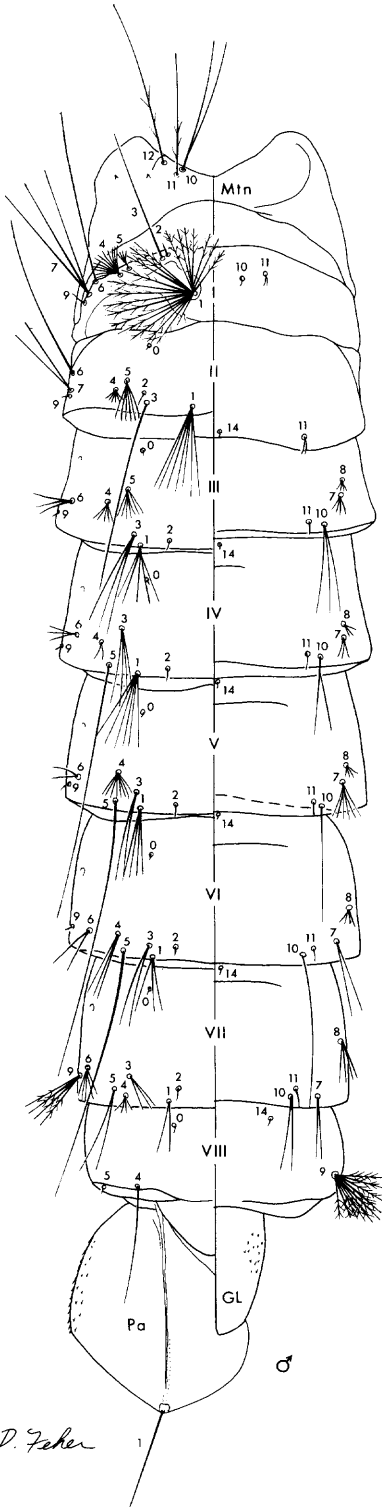


Fig. 21



*paradissimilis*

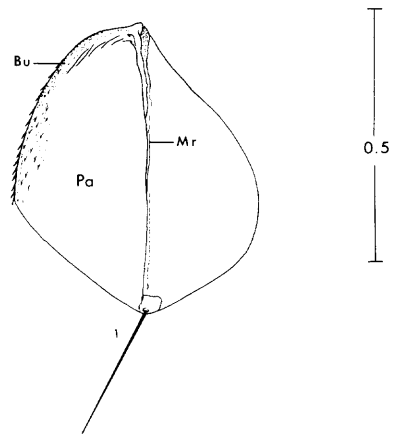
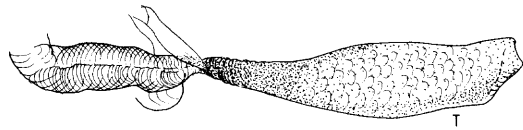
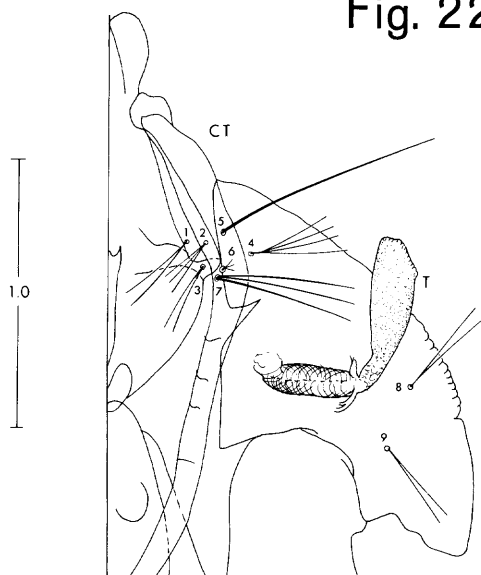
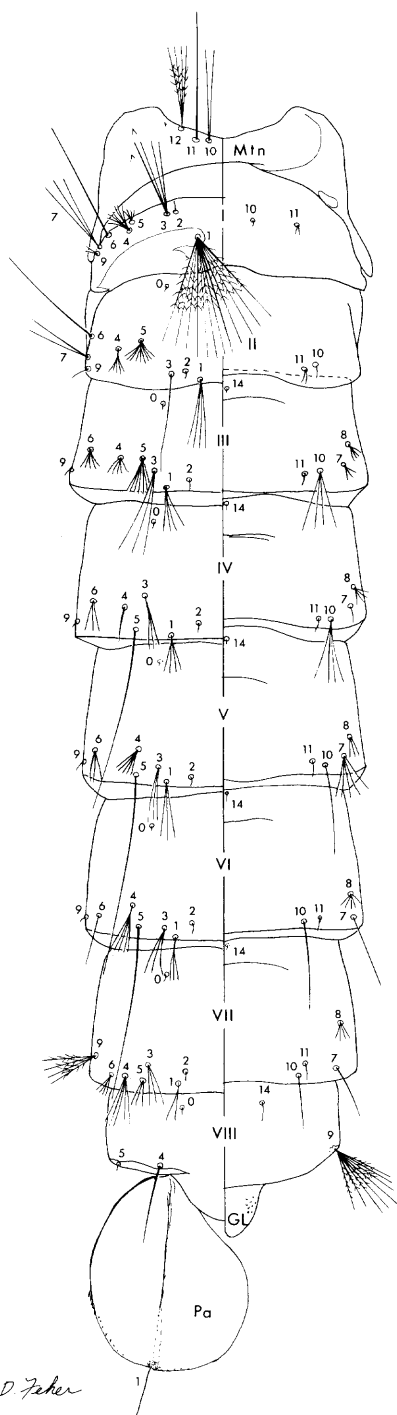


Fig. 22



**pecori**

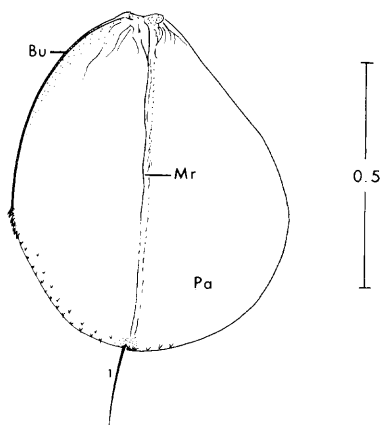
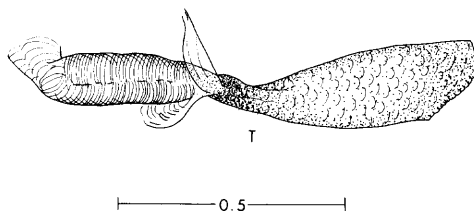


Fig. 23

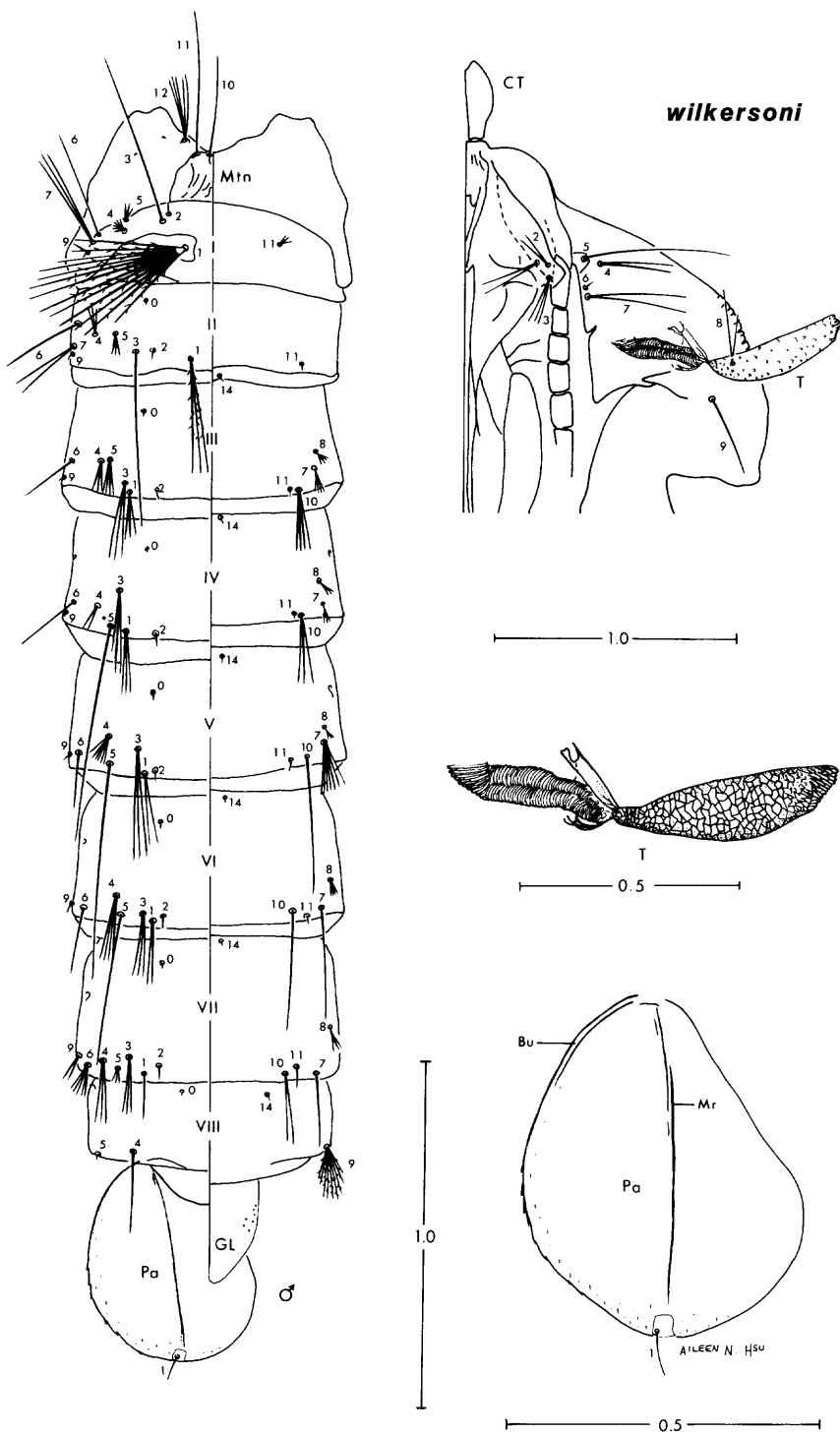




Fig. 24

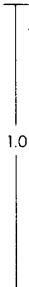


Fig. 25

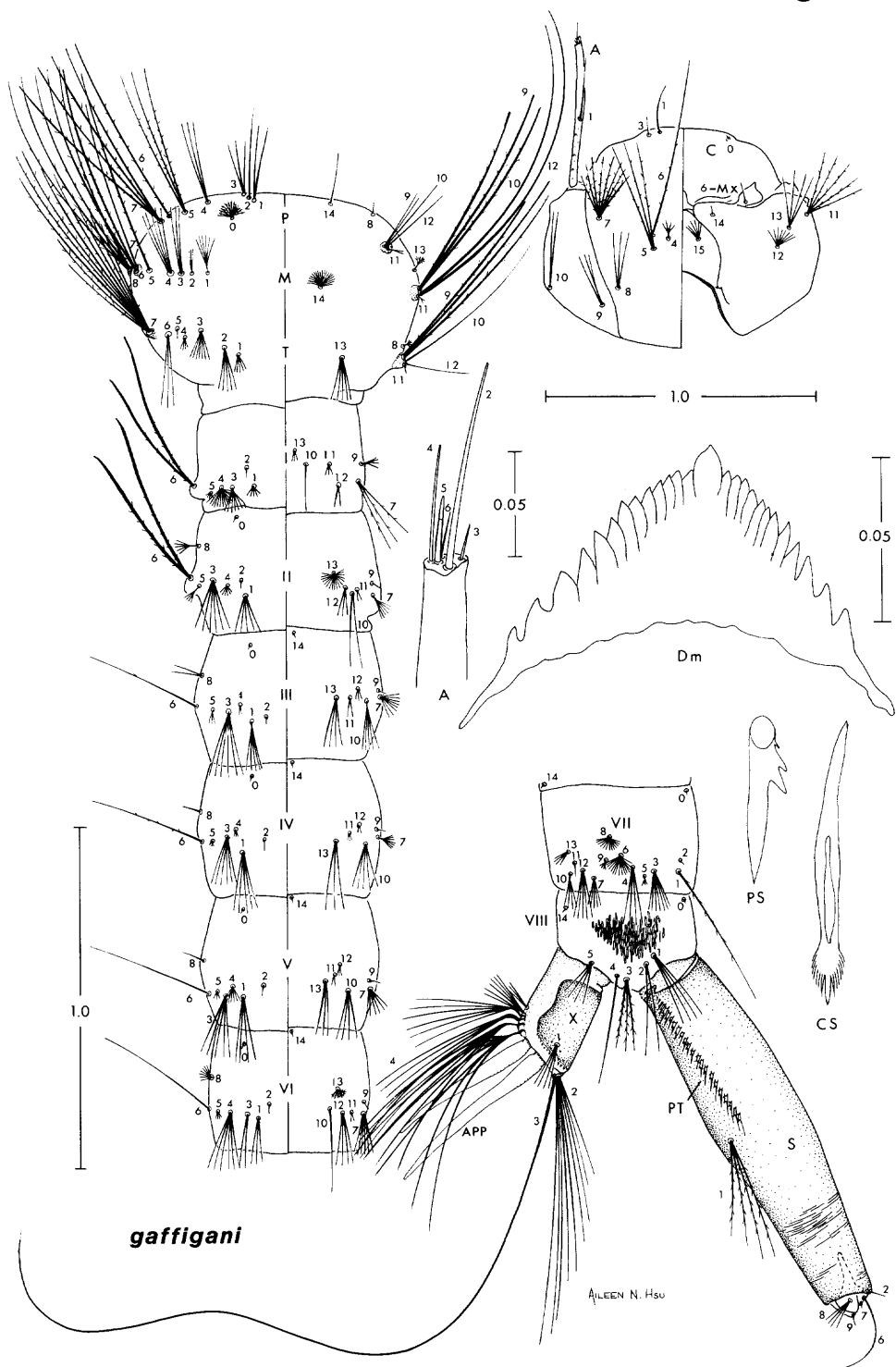


Fig. 26

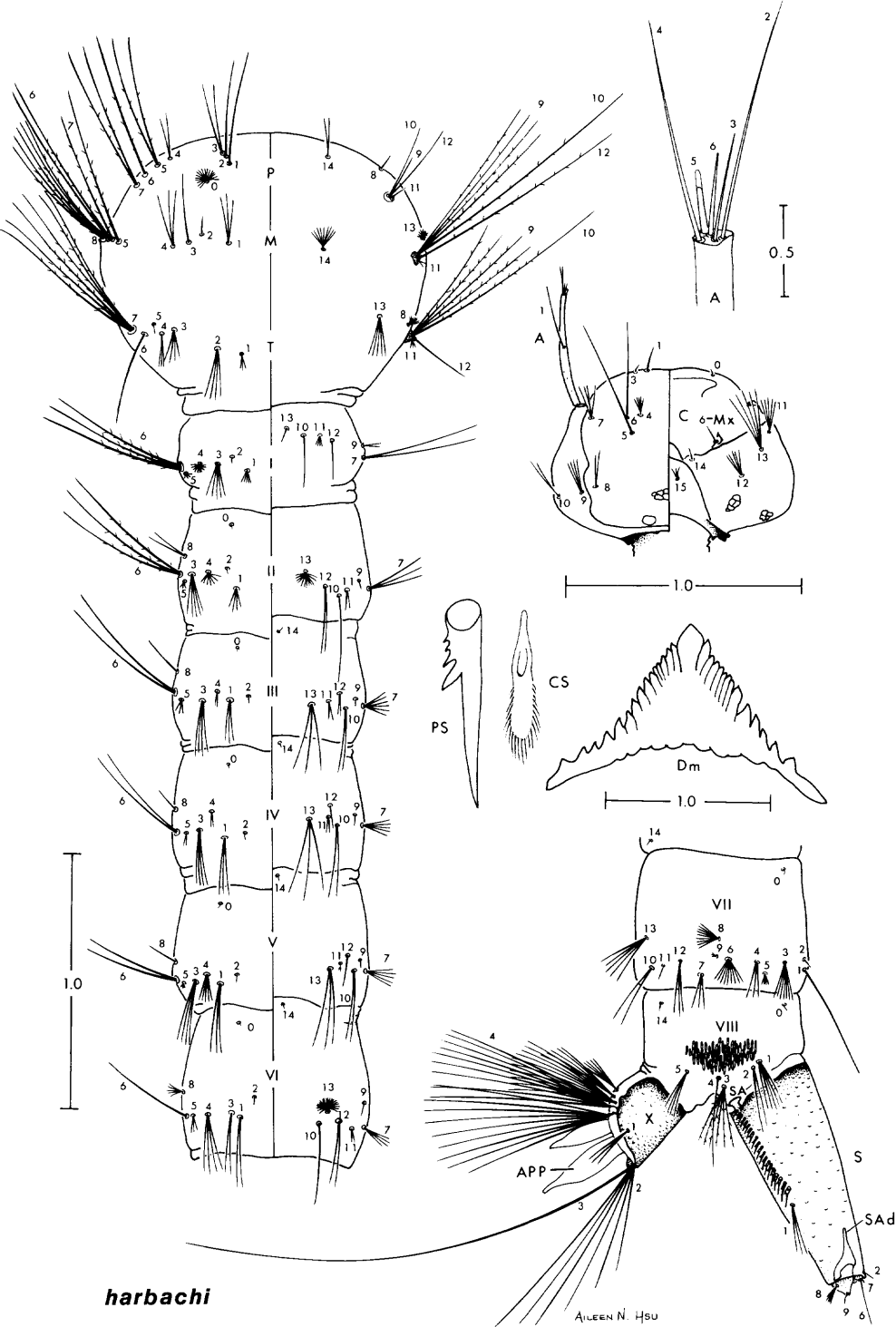


Fig. 27

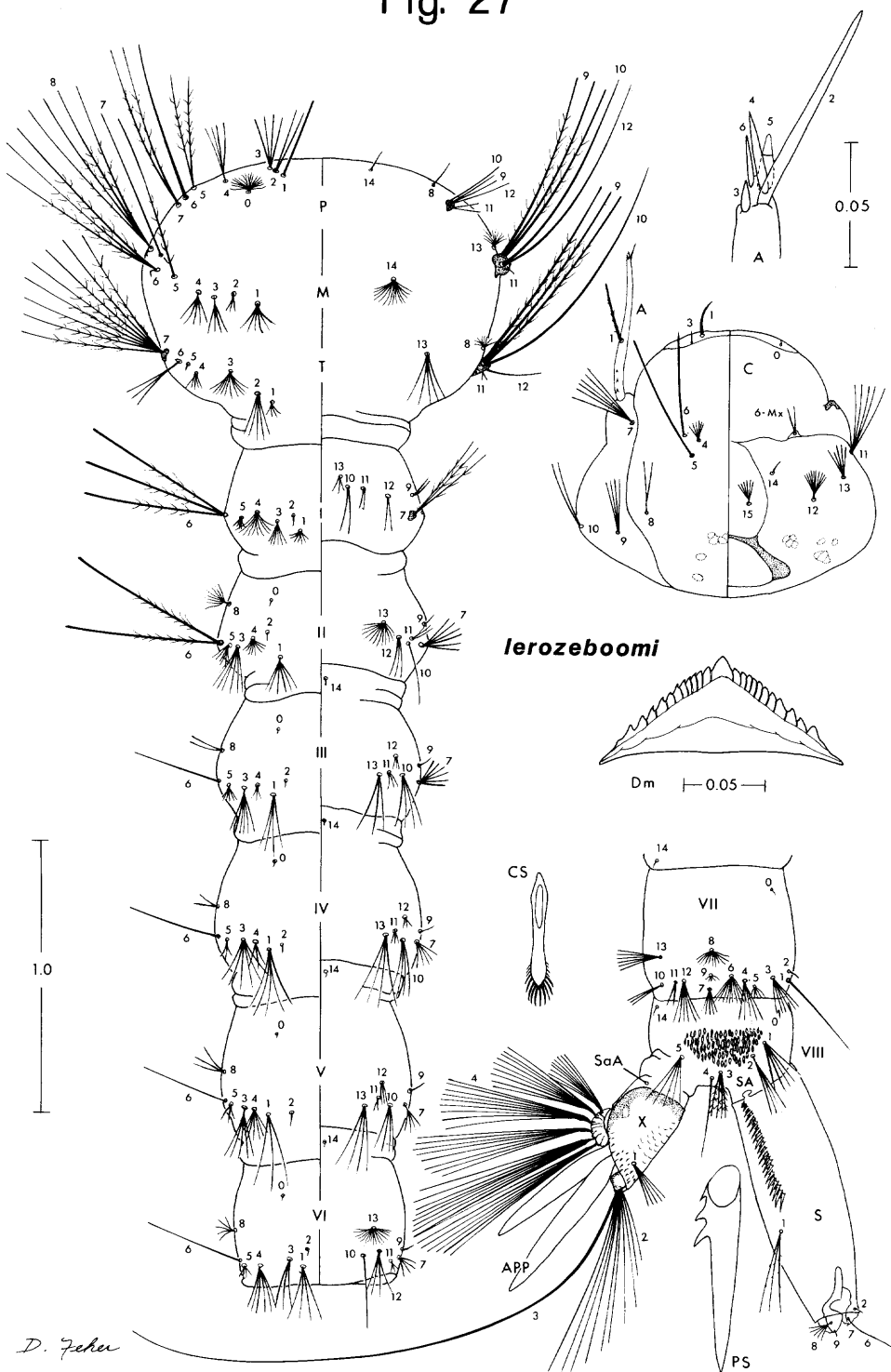


Fig. 28

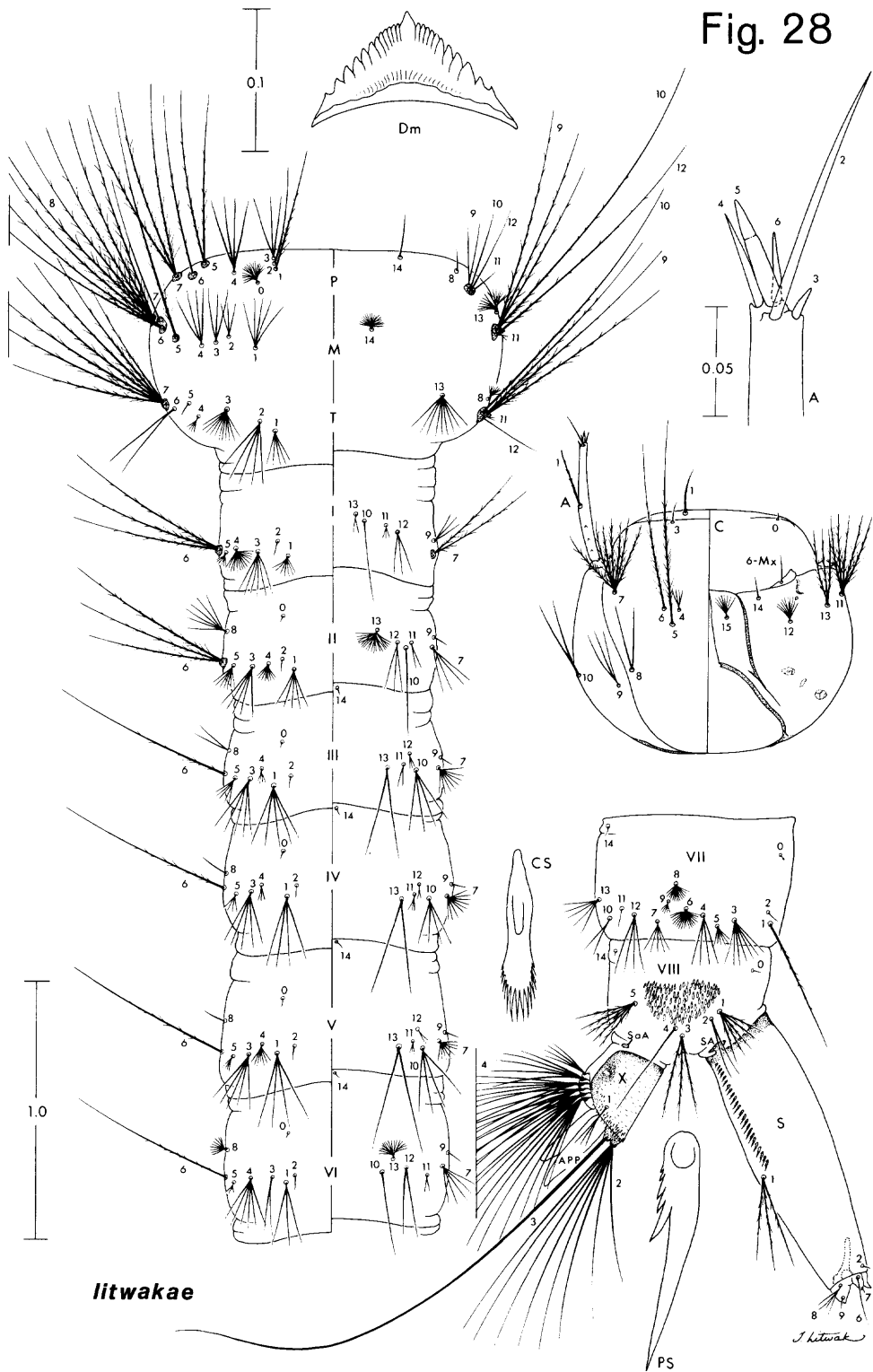


Fig. 29

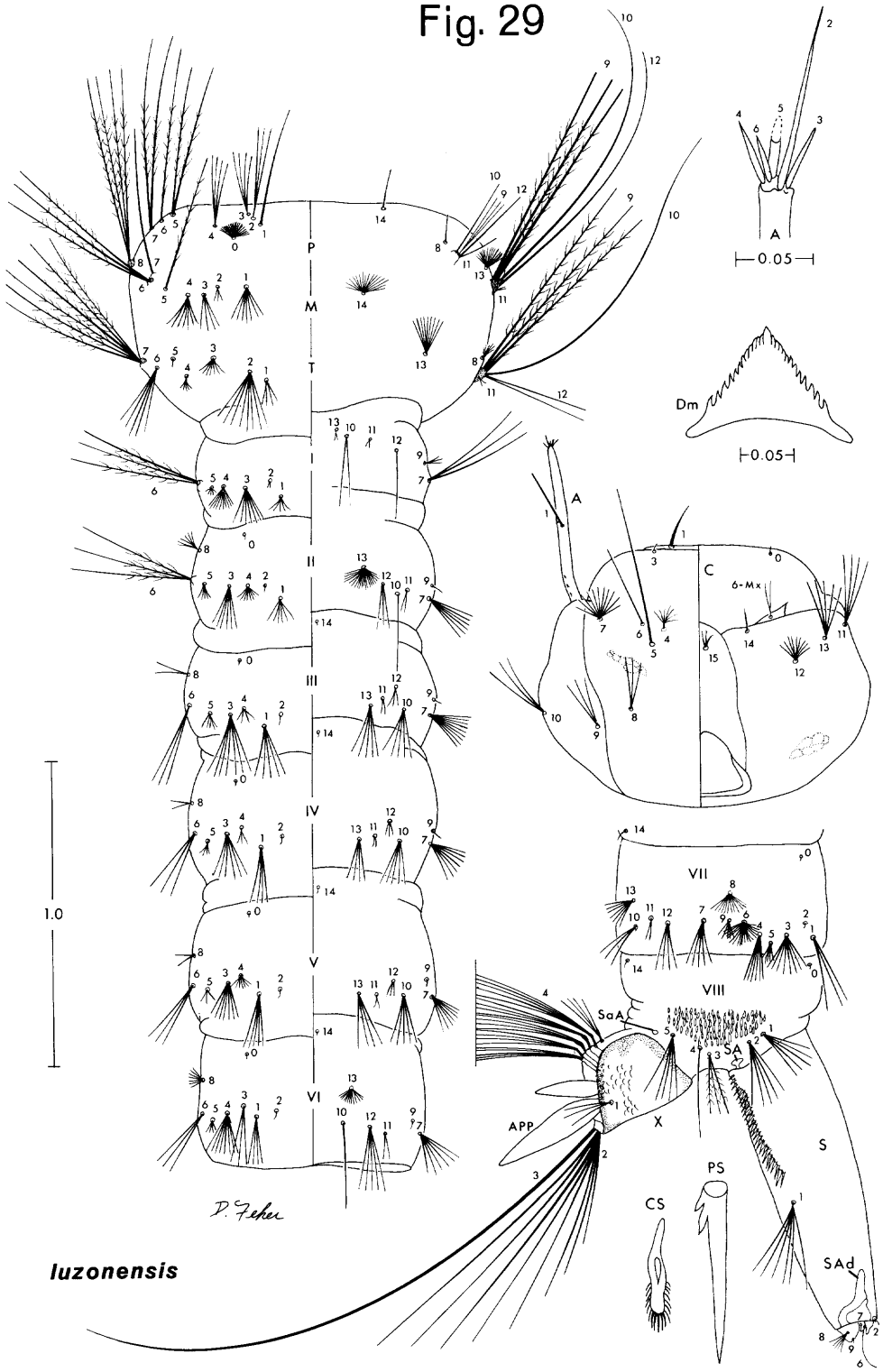


Fig. 30

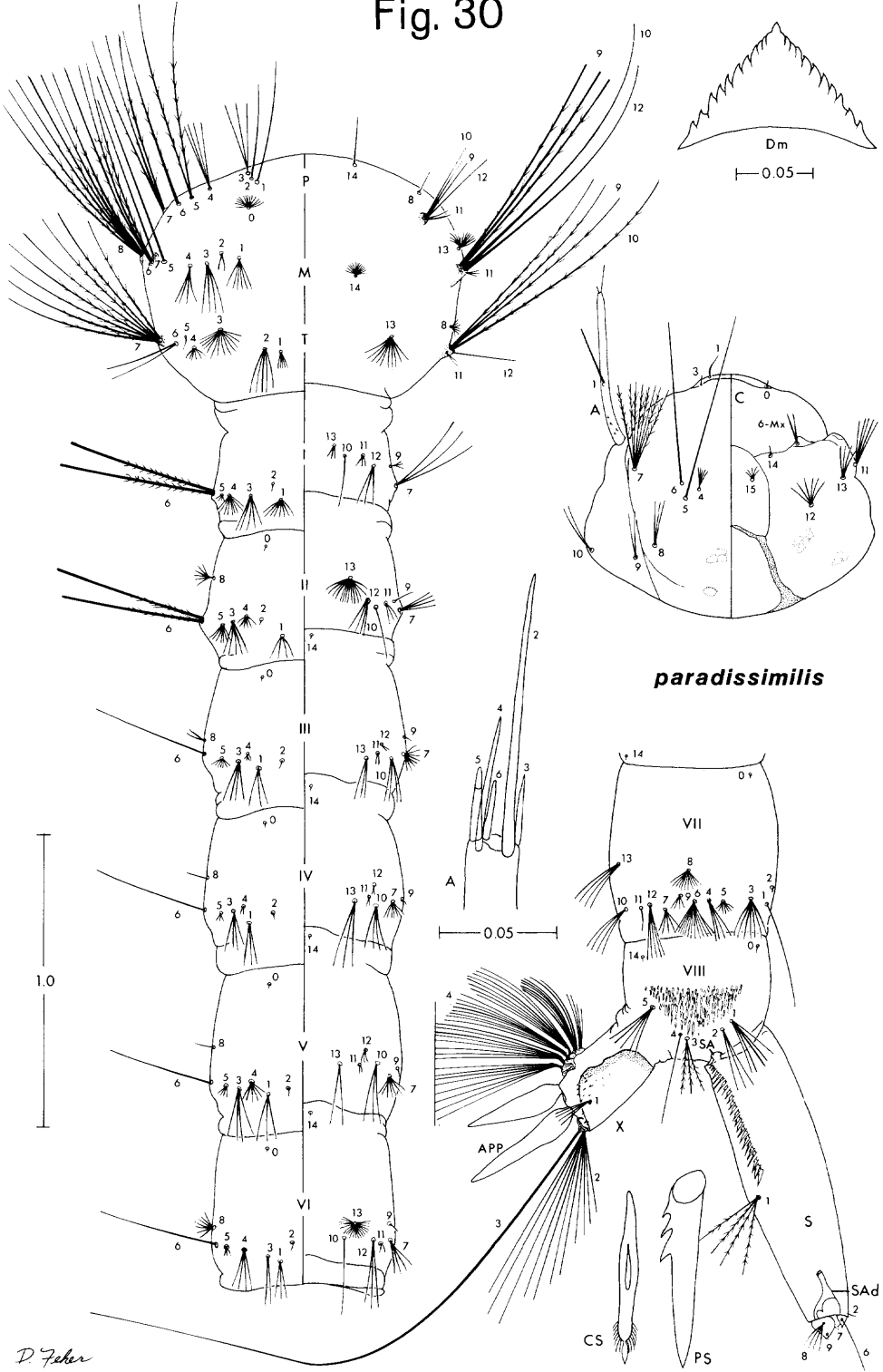


Fig. 31

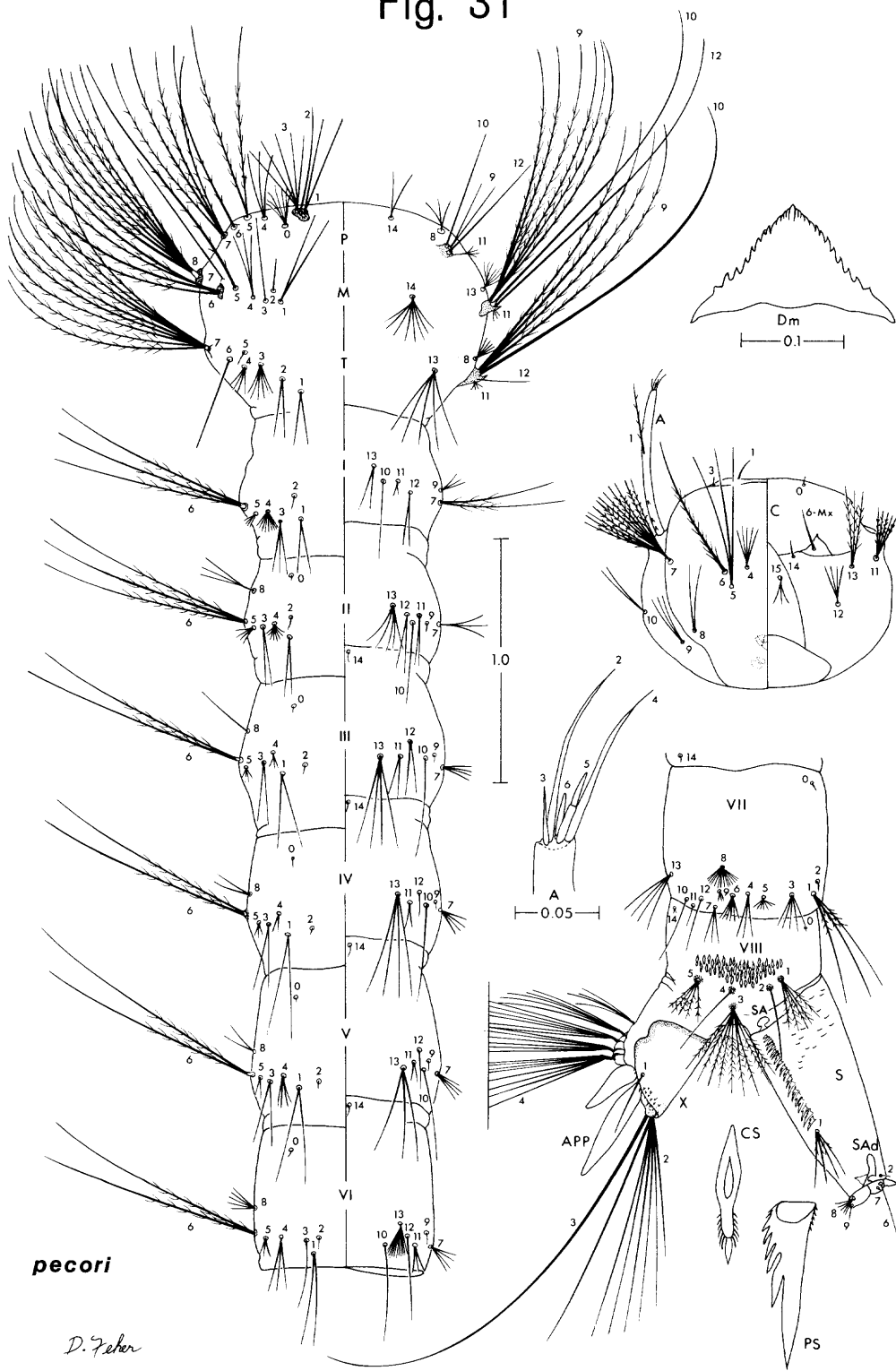




Fig. 32

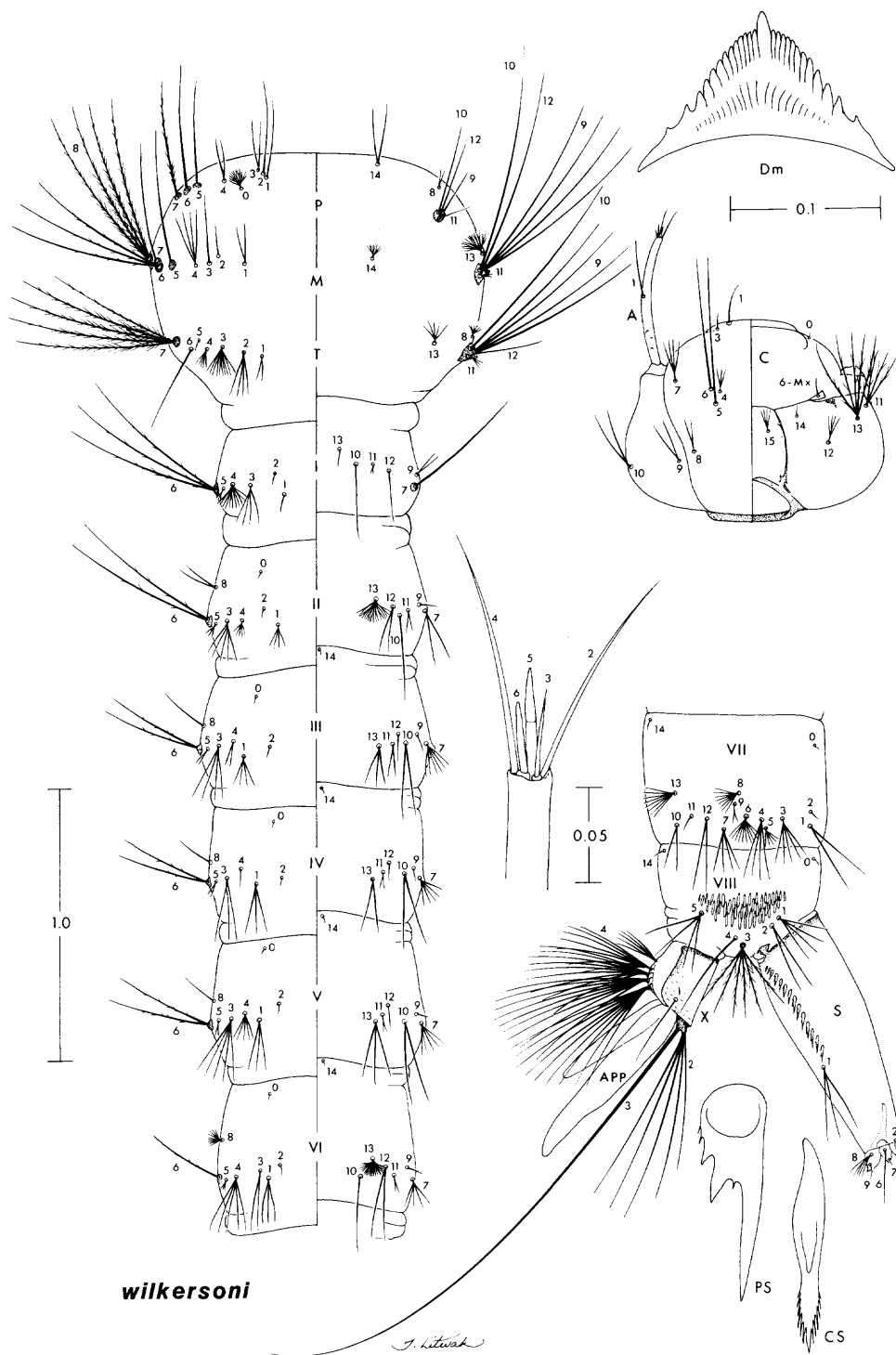
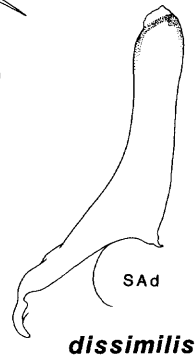
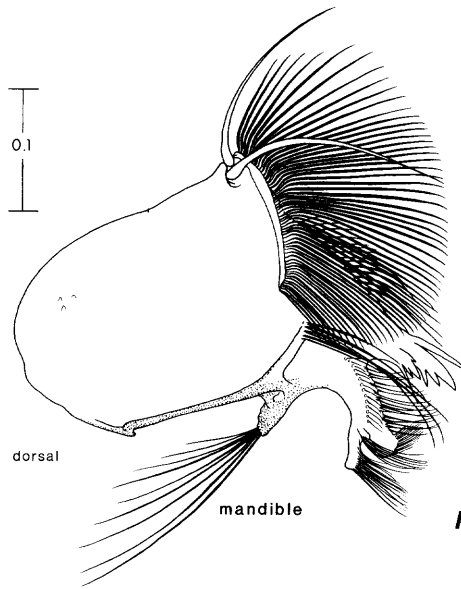
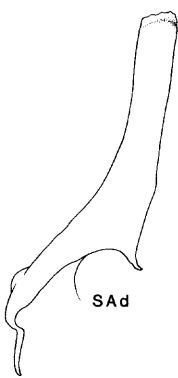


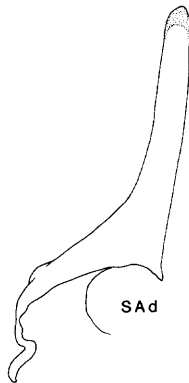
Fig. 33



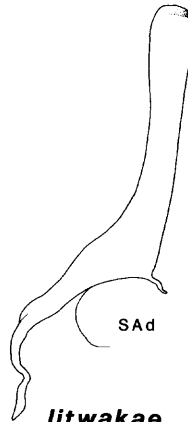
**dissimilis**



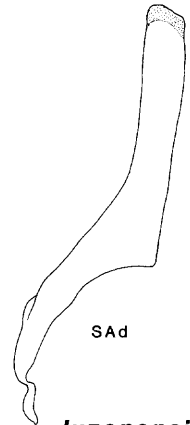
**gaffigani**



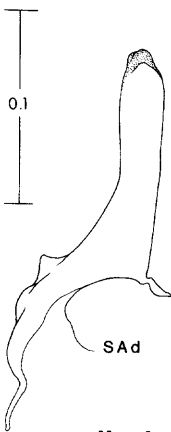
**harbachi**



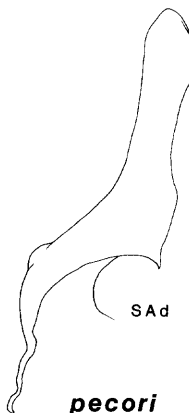
**litwakae**



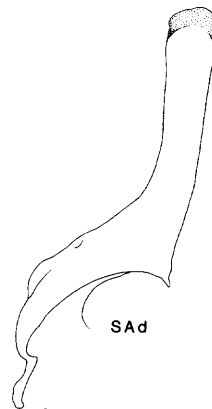
**luzonensis**



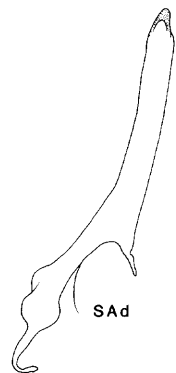
**paradissimilis**



**pecori**



**lerozeboomi**



**wilkersoni**

**Table 1.** Record of the branching of the setae on pupae of *Aedes* (*Kenknightsia*) *dissimilis* (5 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1,2 (1)	1
1	2-4 (2)	12-17 (14)	3-5 (3)	2-5 (5)	2-5 (4)
2	2,3 (2)	1,2 (1)	1	1	1
3	3,4 (3)	3,4 (3)	1	3	3-5 (4)
4	2-4 (3)	6-12 (8)	3-6 (3)	3-7 (5)	2-4 (3)
5	1	3-7 (4)	5-10 (6)	4-8 (6)	1
6	2-4 (3)	1	1	2,3 (2)	2-4 (2)
7	2-4 (3)	2,3 (2)	2,3 (2)	2-5 (3)	1-3 (2)
8	2,3 (2)	-	-	4-7 (5)	3,4 (3)
9	1,2 (2)	1-3 (2)	1	1	1
10	1	1	-	2-4 (3)	2-4 (2)
11	1	1	0-7 (1)	1	1
12	3,4 (3)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				Paddle Pa
	V	VI	VII	VIII	
0	1	1,2 (1)	1,2 (1)	1,2 (1)	-
1	2-5 (3)	2-4 (2)	1-3 (1)	-	1
2	1	1	1	-	-
3	1-3 (2)	2,3 (2)	2,3 (2)	-	-
4	4-7 (5)	3,4 (4)	2-4 (4)	1-3 (2)	-
5	1	1	1-3 (2)	1	-
6	1,2 (2)	1,2 (1)	2-5 (4)	-	-
7	4-6 (4)	1-3 (1)	1,2 (1)	-	-
8	3,4 (3)	3-6 (4)	2-4 (3)	-	-
9	1	1	2,3 (3)	6-8 (7)	-
10	1,2 (1)	1	1,2 (1)	-	-
11	1,2 (1)	1	1	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	1	1	1	1	-

**Table 2.** Record of the branching of the setae on pupae of *Aedes (Kenknightia) gaffigani* (2 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	7,8 (8)	21-32	9-16	7-19 (7)	8-11
2	4,5	1,2	1	1	1
3	4-8 (7)	2,3 (2)	1	4-7 (5)	4-7 (5)
4	7-9 (7)	11-16	9-13 (9)	6-8	1-3 (2)
5	3	3,4 (4)	7-9 (7)	8-12 (8)	1
6	5,6 (6)	1	1	5-7 (6)	3-7
7	2,3	3	4-7 (4)	5-9	2-4 (4)
8	7-9 (8)	-	-	4-8	4,5 (4)
9	2	2	9	1	1
10	2	-	-	4-7 (5)	5,6
11	2-5 (4)	-	-	1	1
12	1	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				X	Paddle Pa
	V	VI	VII	VIII		
0	1	1	1	1	-	-
1	4-6 (6)	3-7	3,4 (3)	-	-	1
2	1	1	1	-	-	-
3	3	3-6 (3)	4-6	-	-	-
4	6-12	5-7 (5)	2,3 (3)	2,3 (2)	-	-
5	1	1	3-5 (3)	1	-	-
6	3-6	4-6	6-11	-	-	-
7	6-10 (6)	3,4	2-5 (2)	-	-	-
8	4-7 (5)	5-7	5,6 (5)	-	-	-
9	1	1	6-10 (6)	11-15	-	-
10	2-5	1	2-4 (3)	-	-	-
11	1	1-3 (1)	1	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	1	1	1	1	-	-

**Table 3.** Record of the branching of the setae on pupae of *Aedes* (*Kenknightsia*) *harbachii* (5 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1,2 (1)	1
1	2-5 (4)	11-20 (16)	2-4 (2)	3-8 (4)	3-8 (5)
2	2-4 (3)	1,2 (1)	1	1	1
3	3-5 (4)	1	1	2-4 (3)	3,4 (3)
4	2-5 (3)	6-11 (8)	4-8 (6)	4-8 (5)	1-3 (2)
5	1	2-5 (4)	7-13 (8)	3-5 (5)	1
6	2-4 (4)	1	1	1-3 (2)	1-4 (2)
7	3-5 (4)	3,4 (4)	2-4 (2)	1-7 (4)	2-4 (3)
8	3,4 (3)	-	-	6-10 (6)	4-6 (5)
9	1,2 (2)	1	1	1	1
10	1-3 (2)	0,1 (0)	-	2-4 (3)	2-4 (4)
11	1	0,1 (0)	-	1	1
12	3-5 (4)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				X	Paddle Pa
	V	VI	VII	VIII		
0	1,2 (1)	1,2 (1)	1	1	-	1
1	3-5 (4)	1-5 (3)	2,3 (2)	-	-	-
2	1	1	1	-	-	-
3	2,3 (2)	2-4 (3)	2-5 (4)	-	-	-
4	5-8 (7)	3-5 (4)	1-3 (2)	1,2 (2)	-	-
5	1	1	2-6 (5)	1	-	-
6	1-4 (1)	1-4 (2)	4-6 (5)	-	-	-
7	5-10 (6)	1	1	-	-	-
8	4-7 (6)	4-7 (7)	3-7 (5)	-	-	-
9	1	1	2-5 (2)	8-10 (9)	-	-
10	1	1	1,2 (1)	-	-	-
11	1	1	1	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	1	1	1	1	-	-

**Table 4.** Record of the branching of the setae on pupae of *Aedes (KenKnightia) lerozeboomi* (5 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	4,5 (4)	20-25 (22)	6-10 (6)	5-14 (7)	6-9 (6)
2	3-6 (3)	1	1	1	1
3	3-5 (3)	1	1	2-4 (2)	3-6 (4)
4	3,4 (4)	7-11 (9)	6-12 (6)	4-9 (5)	2-4 (3)
5	2	2-6 (4)	3-12 (4)	8-12 (8)	1,2 (1)
6	4-6 (5)	1-4 (1)	1	2-5 (3)	2-5 (2)
7	2,3 (3)	2-5 (3)	2-4 (3)	5-8 (5)	3,4 (3)
8	3-6 (4)	-	-	6-10 (7)	3-5 (5)
9	1-3 (2)	1,2 (1)	1	1	1
10	2-4 (4)	-	-	2-6 (4)	2-5 (4)
11	1	0,1 (0)	-	1	1
12	3-5 (4)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments					Paddle Pa
	V	VI	VII	VIII	X	
0	1	1	1	1	-	-
1	3-6 (4)	3-5 (3)	2-4 (2)	-	-	-
2	1	1	1	-	-	1
3	1-3 (3)	1-3 (3)	2-5 (4)	-	-	-
4	5-12 (7)	3-5 (4)	2-4 (3)	2-4 (2)	-	-
5	1	1	2,3 (3)	1	-	-
6	2-5 (2)	2-6 (3)	4-6 (5)	-	-	-
7	4-10 (6)	2,3 (2)	2,3 (2)	-	-	-
8	3-6 (5)	5-9 (8)	4-8 (6)	-	-	-
9	1	1	4-6 (5)	9-14 (11)	-	-
10	1,2 (2)	1	1-3 (2)	-	-	-
11	1	1-3 (2)	1,2 (1)	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	1	1	1	1,2 (1)	-	-

**Table 5.** Record of the branching of the setae on pupae of *Aedes* (*Kenknightsia*) *litwakae* (6 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	3-7 (4)	19-28 (23)	8-11 (9)	6-11 (9)	4-7 (5)
2	3-5 (4)	1,2 (1)	1,2 (1)	1	1
3	3-5 (4)	1	1-3 (1)	2-7 (5)	4-7 (6)
4	4-6 (5)	9-13 (10)	8-11 (9)	3-8 (8)	2-5 (2)
5	2,3 (3)	3,4 (4)	5-11 (10)	7-14 (9)	1,2 (1)
6	3-8 (6)	1-3 (1)	1-4 (1)	4-8 (6)	3-7 (5)
7	3-5 (3)	3-5 (4)	3-5 (4)	3-6 (3)	1-4 (2)
8	4-7 (6)	-	-	4-8 (6)	3-5 (5)
9	1-3 (2)	1	1	1	1
10	2-4 (2)	1	-	3-7 (4)	3-7 (5)
11	2,3 (2)	1,2 (2)	2-4 (3)	1	1
12	2-5 (3)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				Paddle Pa
	V	VI	VII	VIII	
0	1	1	1	1	-
1	3-5 (4)	4,5 (4)	2-4 (3)	-	1
2	1	1	1	-	-
3	2,3 (2)	2-4 (3)	3-5 (5)	-	-
4	7-11 (7)	3-5 (5)	2,3 (2)	1-3 (2)	-
5	1	1,2 (1)	4-7 (6)	1	-
6	3-6 (5)	3-6 (6)	6-12 (7)	-	-
7	5-9 (6)	1-3 (2)	1-3 (2)	-	-
8	3-6 (5)	5-8 (7)	4-7 (4)	-	-
9	1	1	4-6 (5)	11-16 (12)	-
10	1-3 (2)	1	1,2 (1)	-	-
11	1	1,2 (1)	1,2 (1)	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	1	1	1	1,2 (1)	-

**Table 6.** Record of the branching of the setae on pupae of *Aedes (Kenknightia) luzonensis* (5 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	3-6 (4)	14-30	5,6 (6)	6-12 (7)	4-11 (6)
2	2-4 (3)	1	1	1	1
3	3-6 (4)	1	1	3-7 (6)	5-8
4	3-8 (5)	4-12 (10)	3-7 (4)	4-7 (5)	2,3 (2)
5	3-6 (3)	3-7 (4)	5-10 (10)	7-11 (8)	1
6	2-6 (3)	1	1	2-6 (4)	2-6 (3)
7	3-7 (6)	2-5 (3)	3-5 (3)	4-7 (5)	1-4 (3)
8	3-5 (4)	1	-	5-10 (6)	4-6 (5)
9	2,3 (3)	-	1	1	1
10	2-6 (3)	-	-	2-5 (4)	3,4 (4)
11	1,2 (1)	0,1 (0)	-	1	1
12	2-4 (3)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.			Abdominal Segments		X	Paddle Pa
	V	VI	VII	VIII		
0	1	1	1	1	-	-
1	3-7 (4)	3-6 (3)	2-4 (3)	-	-	1
2	1	1	1	-	-	-
3	2-4 (2)	1-4 (2)	1-4 (3)	-	-	-
4	4-6 (4)	2-6 (4)	2-5 (2)	2,3 (2)	-	-
5	1	1	2,3 (3)	1	-	-
6	2-6 (2)	2-5 (3)	5-9 (6)	-	-	-
7	4-10 (6)	1-3 (1)	1,2 (2)	-	-	-
8	2-8 (5)	4-9 (4)	4-10 (7)	-	-	-
9	1	1	3-6 (3)	10-12 (10)	-	-
10	1-3 (2)	1	2-4 (3)	-	-	-
11	1	1,2 (1)	1	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	1	1	1	1	-	-



**Table 7.** Record of the branching of the setae on pupae of *Aedes* (*Kenknightia*) *paradisialis* (4 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	2-5 (4)	16-27	4-9 (7)	5,6 (5)	4-6 (6)
2	2-4 (4)	1	1	1	1
3	2-6	1	1	1-4 (3)	2-5 (4)
4	2-6 (5)	5-12 (12)	5-9	4-7 (5)	2,3 (2)
5	1,2 (2)	2-4 (4)	4-6 (4)	6-8 (7)	1
6	2-7 (2)	1	1-3 (1)	1-4 (3)	1-3 (3)
7	2,3 (2)	1-4 (3)	1-4 (2)	3-5 (4)	1-4
8	3-6 (5)	-	-	4-7 (4)	3-5 (3)
9	1,2 (1)	1	1	1	1
10	1-3 (2)	1	-	2-4 (3)	2-4 (2)
11	1,2 (1)	1,2 (2)	1,2 (1)	1	1
12	1,2 (1)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments					Paddle Pa
	V	VI	VII	VIII	X	
0	1	1	1	1,2 (1)	-	-
1	3-5 (4)	2-5 (3)	2-4 (2)	-	-	1
2	1	1	1	-	-	-
3	1-4 (2)	1-3 (2)	3,4 (3)	-	-	-
4	6-8 (8)	2-4 (3)	3,4 (4)	1-3 (1)	-	-
5	1	1	2	1	-	-
6	1-3 (2)	2-4 (2)	3-7 (5)	-	-	-
7	5-8 (6)	1-3 (1)	2	-	-	-
8	3,4 (3)	2-5 (4)	3-5 (4)	-	-	-
9	1	1	3-6 (4)	8-14 (10)	-	-
10	1,2 (1)	1	2,3 (2)	-	-	-
11	1	1,2 (1)	1,2 (1)	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	1	1	1	1,2 (1)	-	-

**Table 8.** Record of the branching of the setae on pupae of *Aedes (Kenknightsia) pecori* (4 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1,2 (1)	1,2 (1)	1
1	2,3 (2)	12-17 (12)	3-5 (4)	4-6 (4)	4-6 (4)
2	2,3 (3)	1	1	1	1
3	2,3 (2)	2-4 (4)	1	2-4 (3)	3,4 (3)
4	3,4 (4)	6-10 (7)	3-7 (5)	4-7 (5)	1-3 (1)
5	1	3-5 (4)	8-12 (9)	4-8 (7)	1
6	3-6 (3)	1	1,2 (1)	2-5 (5)	2-4 (3)
7	2-4 (3)	2,3 (3)	2-4 (3)	2-5 (3)	1-3 (1)
8	2-5 (2)	-	-	4-7 (4)	2-4 (4)
9	2,3 (2)	1-3	1	1	1
10	1-3 (2)	1	1	4,5 (4)	3,4
11	1	1,2 (1)	1,2 (1)	1	1
12	3-7 (4)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				Paddle Pa
	V	VI	VII	VIII	
0	1	1,2 (1)	1	1,2 (1)	-
1	3,4 (3)	3,4 (3)	1,2 (2)	-	1
2	1	1	1	-	-
3	2,3 (3)	2-4 (3)	2-4 (3)	-	-
4	4-8 (5)	4-6 (5)	2-5 (5)	1,2 (1)	-
5	1	1	2-4 (3)	1	-
6	2,3 (3)	1,2 (1)	3-6 (4)	-	-
7	3-7 (5)	1,2 (1)	1,2 (1)	-	-
8	2-5 (3)	4-7 (5)	3-5 (3)	-	-
9	1	1	2-4 (3)	6-8 (8)	-
10	1,2 (1)	1	1,2 (1)	-	-
11	1	1,2 (1)	1	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	1	1	1	1	-

**Table 9.** Record of the branching of the setae on pupae of *Aedes* (*Kenknightsia*) *wilkersoni* (2 specimens).

Seta No.	Cephalothorax	Abdominal Segments			
	CT	I	II	III	IV
0	-	-	1	1	1
1	2,3 (2)	13-15 (13)	2,3 (3)	3,4 (3)	2,3
2	2,3 (2)	1	1	1	1
3	2,3 (3)	1	1	3,4	3,4
4	2	4-6 (6)	3	3,4	1,2 (2)
5	1	2,3	3-5 (3)	3,4 (4)	1
6	1,2 (1)	1	1	1	1
7	2,3	3	2,3 (2)	3,4 (4)	3
8	2,3 (2)	-	-	4,5	3,4 (3)
9	1,2 (1)	1	1	1	1
10	1	-	-	3,4 (4)	2,3 (3)
11	1	0-3	0,1	1	1
12	3-6 (3)	-	-	-	-
13	-	-	-	-	-
14	-	-	-	1	1

Seta No.	Abdominal Segments				Paddle Pa
	V	VI	VII	VIII	
0	1	1	1	1	-
1	2	2,3 (2)	1	-	1
2	1	1	1	-	-
3	2,3 (3)	2,3 (3)	2-5 (3)	-	-
4	5-7 (6)	3,4 (4)	3,4	1,2	-
5	1	1	2,3 (3)	1	-
6	1	1,2 (1)	4,5 (5)	-	-
7	4-7 (7)	1	1	-	-
8	3,4 (3)	3,4 (4)	3-6 (3)	-	-
9	1	1	2-4 (2)	8-14	-
10	1	1	1,2 (2)	-	-
11	1	1	1	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	1	1	1	1	-

**Table 10.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightia*) *dis similis* (6 specimens).

Seta No.	Head	Thorax		Abdominal Segments			
	C	P	M	T	I	II	III
0	1	9-16 (10)	-	-	-	1	1
1	1	1,2 (2)	2	2	2-4 (3)	1,2 (2)	2
2	-	1	1	2,3 (2)	1,2 (1)	1	1
3	1	3,4 (4)	1	6-10 (9)	2-4 (3)	2-4 (3)	2,3 (2)
4	5-7 (6)	2,3 (3)	2,3 (3)	3-7 (4)	9-15 (12)	6-14 (8)	2,3 (3)
5	2,3 (2)	1,2 (2)	1	1	3-7 (4)	4-12 (4)	3-7 (5)
6	1,2 (1)	1	3-6 (4)	1	2,3 (3)	3,4 (3)	2
7	5-8 (6)	3,4 (3)	1	6-8 (6)	1-3 (2)	2-5 (2)	2-8 (4)
8	2,3 (2)	2-4 (2)	4-7 (4)	8-14 (11)	-	2-4 (3)	1-3 (1)
9	2-4 (3)	1,2 (2)	4-6 (4)	3-6 (4)	2-4 (2)	1	1
10	1,2 (1)	1-3 (1)	1	1	1	1	1
11	4-6 (4)	2-5 (3)	3,4 (3)	2-4 (2)	2-4 (3)	2,3 (2)	1-3 (2)
12	4-7 (4)	1,2 (1)	1	1	1-4 (2)	2,3 (2)	1-3 (2)
13	3-5 (5)	-	8-12 (9)	4-6 (5)	2,3 (2)	7-13 (11)	2-4 (4)
14	1	1,2 (2)	8-12 (11)	-	-	-	1
15	2-4 (3)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	2	2,3 (2)	1,2 (2)	1-3 (2)	3,4 (3)	1
2	1	1	1	1	1	5-9 (7)
3	2-4 (2)	2,3 (2)	1,2 (1)	3-5 (4)	6-10 (6)	1
4	2-4 (2)	2-4 (3)	2-4 (3)	2,3 (2)	1	-
5	2,3 (2)	2,3 (2)	2-4 (2)	6-10 (6)	4-6 (5)	-
6	2	2	2	7-11 (8)	-	-
7	3-6 (3)	2-5 (3)	2-4 (3)	2,3 (2)	-	-
8	2-4 (2)	2,3 (2)	4-6 (6)	7-13 (9)	-	-
9	1	1	1	3-6 (3)	-	-
10	1	1	1	1	-	-
11	2-4 (2)	2-4 (2)	2-4 (2)	1,2 (1)	-	-
12	1,2 (2)	1,2 (1)	1	1	-	-
13	3,4 (3)	3-5 (3)	9-17 (12)	3-6 (3)	-	-
14	1	1	1	1	1,2 (2)	-
15	-	-	-	-	-	-

**Table 11.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightsia*) *gaffigani* (3 specimens).

Seta No.	Head	P	Thorax	T	Abdominal Segments		
	C		M		I	II	III
0	1	15-23 (10)	-	-	-	1	1
1	1	2	4-7 (6)	4-6 (5)	4-6	5,6 (5)	3-6 (5)
2	-	1	2-4 (2)	5-7 (6)	1	1	1
3	1	2-4 (3)	3-7 (3)	7-13 (11)	5-7	5-7 (6)	5-7
4	4-8 (4)	3	2-5 (5)	3-6 (4)	14-16 (15)	6-12 (8)	2,3 (3)
5	2-4	2-4 (3)	1	1	5-8 (5)	4,5 (5)	3-5 (5)
6	1,2 (1)	1	3-5 (3)	2,3 (3)	2,3 (2)	2	1
7	8-11 (8)	3,4 (4)	1	9-11 (10)	3,4 (3)	4-7	6-8 (8)
8	2,3 (2)	1,2 (1)	4-6	4-11	-	5-7 (5)	1,2 (2)
9	2,3	2	3,4 (3)	3	2-5 (4)	1	1
10	2,3 (2)	1	1	1	1	1,2 (2)	4-6
11	4-6 (5)	2,3 (2)	2,3	1	3,4 (4)	1-3 (2)	2,3
12	7-10 (8)	1	1	1	2-6	3,4 (3)	2-4 (3)
13	4-6 (4)	-	16-19 (16)	5-8	2-4 (3)	17-24 (23)	3,4 (4)
14	1	1	19-27 (19)	-	-	-	1
15	4-6 (6)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	4-6 (5)	4	3	1	4,5 (4)	4,5 (4)
2	1	1	1	1	2,3 (2)	8,9 (9)
3	5,6	4-6 (5)	2	6-8 (7)	2-5 (3)	1
4	2-4 (3)	5-8	5-7 (6)	4,5 (4)	1	-
5	3,4 (3)	2-4 (3)	4	4-7 (5)	4,5 (4)	-
6	1	1	1	13-20 (15)	-	-
7	6-9 (7)	6-9	6,7 (6)	5	-	-
8	1	1,2	4-7 (7)	9-13 (13)	-	-
9	1	1	1	3-5 (4)	-	-
10	4,5 (5)	4-6 (4)	1,2	4-6 (4)	-	-
11	2-4 (3)	2	2	1	-	-
12	2	1-3 (3)	3,4 (4)	5-7 (7)	-	-
13	2,3	2,3 (3)	25-36 (32)	3-6 (4)	-	-
14	1	1	1	1	1	-
15	-	-	-	-	-	-

**Table 12.** Record of the branching of the setae on larvae of *Aedes (Kenknightsia) harbachi* (5 specimens).

Seta No.	Head	Thorax			Abdominal Segments		
	C	P	M	T	I	II	III
0	1	14-30 (17)	-	-	-	1	1
1	1	1,2 (1)	2-4 (3)	2-4 (3)	2-5 (4)	3-5 (4)	2-4 (3)
2	-	1	1,2 (1)	3,4 (4)	1	1	1
3	1	1-3 (2)	1,2 (1)	4-9 (4)	3-5 (5)	3-5 (5)	4-6 (4)
4	4-6 (5)	2,3 (2)	3,4 (3)	2-4 (3)	9-13 (10)	5-13 (7)	1-3 (2)
5	1	1,2 (2)	1	1	3-7 (4)	3-5 (3)	3-6 (3)
6	1	1	3,4 (3)	1	2,3 (3)	2,3 (3)	1,2 (2)
7	3-5 (4)	1,2 (2)	1	5-7 (6)	1,2 (2)	2-5 (3)	4-6 (6)
8	2,3 (2)	1,2 (1)	4-6 (5)	7-11 (9)	-	2-4 (2)	1
9	2-5 (4)	1,2 (1)	4	4	2-4 (2)	1	1
10	2	1	1	1	1	1,2 (1)	2
11	2-5 (5)	1,2 (1)	1-3 (2)	1-3 (3)	3,4 (4)	1-3 (2)	2,3 (2)
12	4-8 (5)	1	1	1	1	1,2 (2)	1,2 (1)
13	3-5 (5)	-	10-20 (10)	3-5 (5)	1,2 (1)	6-16 (12)	2,3 (3)
14	1	2,3 (2)	8-13 (9)	-	-	-	1
15	3-6 (3)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	2-4 (3)	2-4 (2)	2,3 (2)	1,2 (1)	3-7 (3)	2,3 (3)
2	1	1	1	1	2,3 (2)	6,7 (6)
3	2-5 (4)	3-5 (4)	2,3 (2)	6-8 (7)	5-7 (6)	1
4	1-3 (2)	3-6 (5)	3-5 (4)	2-4 (3)	1	-
5	1-3 (2)	2-6 (3)	2,3 (3)	3-5 (4)	3-5 (4)	-
6	1,2 (2)	1,2 (2)	1,2 (1)	8-12 (9)	-	-
7	4-7 (5)	5-7 (5)	3,4 (4)	3,4 (3)	-	-
8	1	1	4-8 (5)	7-13 (9)	-	-
9	1	1	1	3-6 (3)	-	-
10	2,3 (2)	2	1-3 (2)	2,3 (2)	-	-
11	2,3 (2)	1-3 (1)	1,2 (2)	1	-	-
12	1,2 (1)	1-3 (1)	1-3 (2)	2,3 (3)	-	-
13	2-4 (3)	2,3 (3)	13-24 (20)	4-6 (5)	-	-
14	1	1	1	1	1	-
15	-	-	-	-	-	-

**Table 13.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightsia*) *lerozeboomi* (5 specimens).

Seta No.	Head	Thorax		Abdominal Segments			
	C	P	M	T	I	II	III
0	1	17-29 (20)	-	-	-	1	1
1	1	1	5-7 (6)	4,5 (4)	4-7 (7)	4-6 (6)	4-7 (4)
2	-	1,2 (2)	2-4 (3)	5-7 (5)	1-3 (2)	1	1
3	1	3-5 (3)	3,4 (4)	8-15 (10)	4-8 (4)	5,6 (6)	4-6 (6)
4	5,6 (6)	3-5 (4)	4,5 (5)	5,6 (5)	10-16 (10)	8-13 (8)	3,4 (4)
5	1,2 (1)	2,3 (2)	1	1,2 (1)	4-7 (6)	5-11 (6)	5-7 (6)
6	1	1	3,4 (3)	2-4 (3)	2,3 (3)	2,3 (2)	1
7	6,7 (6)	2,3 (2)	1	5-8 (8)	2-4 (3)	5,6 (6)	5-8 (6)
8	2,3 (2)	1-3 (1)	3-7 (4)	7-11 (8)	-	4-8 (8)	2,3 (2)
9	2-4 (3)	1,2 (2)	3	3	2-4 (2)	1	1
10	1-3 (2)	1	1	1	1,2 (1)	1,2 (1)	3-5 (4)
11	3-6 (4)	1-3 (2)	1	2	2-4 (2)	2-4 (3)	2,3 (3)
12	8-12 (10)	1	1	1-4 (1)	2-4 (2)	3-6 (3)	2-5 (3)
13	4-6 (5)	-	7-11 (9)	5-8 (4)	2-4 (2)	11-24 (12)	2-8 (3)
14	1,2 (1)	1	9-17 (15)	-	-	-	1
15	3-6 (6)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	4-7 (5)	3-5 (3)	2-4 (3)	1	4-7 (4)	4-7 (6)
2	1	1,2 (1)	1	1	2-4 (4)	9-11 (10)
3	5,6 (6)	4-6 (5)	2,3 (3)	6-8 (6)	3-8 (3)	1
4	2-4 (3)	6-10 (7)	5-7 (6)	3-6 (4)	1	-
5	2-4 (3)	3-5 (3)	3-5 (4)	5-7 (5)	4-6 (5)	-
6	1	1	1	12-17 (12)	-	-
7	4-7 (5)	3-8 (4)	2-7 (4)	4-8 (5)	-	-
8	1-3 (2)	1-3 (3)	4-8 (5)	10-13 (11)	-	-
9	1	1,2 (1)	1	4,5 (5)	-	-
10	3,4 (4)	2-5 (4)	1,2 (1)	2-4 (3)	-	-
11	2,3 (3)	2-4 (2)	3,4 (3)	1,2 (2)	-	-
12	2,3 (3)	3,4 (3)	1-4 (4)	5-8 (5)	-	-
13	2-7 (4)	2-5 (4)	16-30 (16)	4-12 (6)	-	-
14	1,2 (1)	1	1,2 (1)	1,2 (1)	1	-
15	-	-	-	-	-	-

**Table 14.** Record of the branching of the setae on larvae of *Aedes (KenKnightia) litwakae* (5 specimens).

Seta No.	Head	Thorax		Abdominal Segments			
	C	P	M	T	I	II	III
0	1	22-36 (27)	-	-	-	1	1
1	1	1,2 (1)	4-7 (5)	4-6 (5)	4-11	4-7 (5)	4-6 (5)
2	-	1	2,3 (3)	4-6 (5)	1	1	1
3	1	3,4 (3)	2-4 (3)	7-11 (11)	5-7 (6)	5,6 (5)	5-7 (5)
4	4-9 (5)	3,4 (4)	4-6 (4)	4-7 (4)	14-21 (17)	8-12 (10)	2-4 (3)
5	1	2	1	1	4-6 (6)	6-8 (7)	4-7 (5)
6	1	1	3,4 (3)	1-3 (2)	3	2,3 (3)	1
7	5-8 (7)	2,3 (3)	1	6-8 (7)	2	4-6 (4)	5-10 (8)
8	2,3 (2)	1,2 (1)	4,5 (5)	6-10 (8)	-	4-6 (6)	2,3 (2)
9	3	1,2 (2)	3,4 (3)	3	3,4 (3)	1	1
10	2	1	1	1	1	1	2-4 (4)
11	3-5 (4)	1-3 (1)	1,2 (2)	1-4 (2)	2-4 (3)	1-3 (2)	2,3 (2)
12	7-12 (10)	1	1	1	2-4 (3)	2-4 (3)	2-4 (3)
13	3	-	9-20 (15)	6-11 (9)	2,3 (3)	23-29 (23)	2,3 (2)
14	1	1-3 (1)	18-22 (21)	-	-	-	1
15	6-9 (8)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	4-6 (4)	3-5 (4)	3,4 (3)	1,2 (1)	3-6 (3)	1-3 (3)
2	1	1	1	1	2,3 (2)	6-9 (8)
3	4-6 (5)	4-7 (5)	2,3 (2)	6-9 (7)	3	1
4	2,3 (3)	4-8 (7)	5,6 (6)	4-6 (4)	1	-
5	3,4 (4)	4,5 (4)	3-5 (4)	5-7 (6)	3-5 (4)	-
6	1	1	1	14-18 (18)	-	-
7	6-10 (8)	6-10 (8)	3-7 (5)	4-6 (5)	-	-
8	1-3 (1)	1,2 (1)	7-10 (9)	13-18 (14)	-	-
9	1	1	1	4-7 (5)	-	-
10	3-5 (4)	3-5 (4)	1	2,3 (2)	-	-
11	2,3 (3)	2-4 (3)	1,2 (2)	1,2 (1)	-	-
12	2,3 (2)	2,3 (2)	2-4 (2)	4,5 (4)	-	-
13	2-5 (2)	2	26-36 (28)	3-5 (5)	-	-
14	1	1	1	1,2 (1)	1	-
15	-	-	-	-	-	-



**Table 15.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightsia*) *luzonensis* (5 specimens).

Seta No.	Head		Thorax		Abdominal Segments		
	C	P	M	T	I	II	III
0	1	22-41 (26)	-	-	-	1	1
1	1	1,2 (1)	4-8 (7)	4-6 (4)	5-8 (5)	4-8 (6)	4-6 (5)
2	-	1-3 (3)	2-5 (2)	6-11 (8)	1,2 (2)	1	1
3	1	3-5 (4)	4-7 (4)	7-14 (13)	5-9 (7)	6-9 (6)	6-9 (7)
4	5-10 (7)	3-10 (4)	5-8 (7)	4-7 (5)	9-21 (14)	6-13 (8)	3,4 (4)
5	1	2	1,2 (1)	1	4-8 (5)	5-8 (8)	5-7 (5)
6	1	1	3,4 (3)	2-6 (5)	3,4 (3)	3	3,4 (3)
7	8-15 (11)	2,3 (2)	1	5-7 (6)	3,4 (3)	4-7 (6)	5-9 (9)
8	2-5 (3)	1	3,4 (4)	6-13 (11)	-	4-7 (5)	2,3 (2)
9	2-5 (3)	2-4 (2)	3	2,3 (3)	2,3 (3)	1,2 (1)	1
10	2-5 (3)	1,2 (1)	1	1	2	1	4-6 (5)
11	3-8 (4)	1-3 (1)	2-4 (2)	2,3 (2)	1-4 (2)	2-4 (2)	2,3 (2)
12	8-11 (9)	1	1	1,2 (2)	1	2-6 (3)	2,3 (3)
13	3-5 (5)	-	15-23 (15)	8-12 (9)	1,2 (1)	20-30 (27)	2-6 (5)
14	1	1	16-20 (16)	-	-	-	1
15	2-4 (3)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	4-7 (5)	4-6 (5)	3-5 (4)	3	4-11 (5)	2-4 (3)
2	1	1,2 (1)	1,2 (1)	1	4-6 (5)	8
3	6-9 (6)	6-8 (7)	3-5 (3)	8-13 (8)	2-4 (3)	1
4	3,4 (3)	3-7 (7)	7-9 (8)	4-7 (6)	1	-
5	3,4 (3)	3-6 (3)	3-5 (4)	4-8 (6)	4-7 (5)	-
6	2,3 (3)	3,4 (3)	3	18-24 (20)	-	-
7	5-7 (7)	6-8 (7)	3-10 (6)	4-7 (5)	-	-
8	2,3 (2)	2,3 (2)	5-8 (7)	12-22 (15)	-	-
9	1	1	1	2-5 (5)	-	-
10	2-7 (5)	3-6 (5)	1	3-5 (3)	-	-
11	2-4 (2)	2,3 (2)	2,3 (2)	1,2 (1)	-	-
12	2,3 (3)	2-4 (3)	3-6 (5)	4-7 (6)	-	-
13	2-6 (4)	3-6 (4)	31-57 (41)	6-8 (7)	-	-
14	1	1	1	1	1	-
15	-	-	-	-	-	-

**Table 16.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightia*) *paradisimilis* (6 specimens).

Seta No.	Head		Thorax		Abdominal Segments		
	C	P	M	T	I	II	III
0	1	13-24 (14)	-	-	-	1	1
1	1	1	4-7 (6)	3-6 (5)	5-8 (8)	3-5 (3)	2-6 (3)
2	-	1	2,3 (2)	3-6 (5)	1	1	1
3	1	2-4 (3)	2-4 (3)	8-14 (13)	2-7 (5)	3-6 (5)	3-7 (4)
4	2-7 (5)	2-4 (4)	3-5 (4)	5-7 (6)	7-21 (9)	5-12 (9)	2-5 (3)
5	1,2 (1)	1,2 (2)	1	1	4-8 (4)	5-9 (7)	5-9 (7)
6	1,2 (1)	1	2,3 (3)	1-3 (2)	2,3 (2)	2,3 (2)	1
7	6-9 (7)	2,3 (3)	1	6-9 (8)	2-4 (3)	4-9 (4)	5-13 (8)
8	2,3 (2)	1,2 (1)	4-7 (6)	6-11 (7)	-	3-6 (6)	1,2 (2)
9	2-4 (2)	1-3 (1)	3	3,4 (3)	2-5 (2)	1	1
10	2,3 (2)	1	1	1	1	1-3 (1)	3-5 (4)
11	3-6 (6)	1,2 (2)	2,3 (2)	1-3 (2)	3-5 (3)	2,3 (2)	2-4 (3)
12	6-14 (6)	1	1	1,2 (1)	2-4 (3)	2-4 (4)	2-4 (4)
13	3-6 (4)	-	9-20 (13)	6-15 (10)	2-5 (3)	14-28 (18)	2,3 (3)
14	1	1	8-24 (14)	-	-	-	1
15	5-8 (5)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	3-6 (3)	3-5 (3)	2-4 (3)	1	3-7 (4)	2-6 (4)
2	1	1	1	1	2-4 (3)	11-12 (11)
3	3-6 (3)	3-6 (4)	2	5-11 (7)	3-5 (3)	1
4	3-5 (3)	3-10 (6)	3-5 (4)	4,5 (4)	1	-
5	1-4 (3)	2-5 (4)	2-4 (3)	5-8 (7)	3-6 (3)	-
6	1	1	1	11-15 (13)	-	-
7	5-11 (6)	5-9 (7)	4-7 (4)	5,6	-	-
8	1,2 (1)	1,2 (1)	5-10 (7)	9-13 (11)	-	-
9	1	1	1	4-8 (4)	-	-
10	3-5 (4)	2-4 (3)	1	3,4 (3)	-	-
11	2,3 (2)	2,3 (2)	1-3 (2)	1,2 (1)	-	-
12	2,3 (2)	3	3,4 (3)	5	-	-
13	2-4 (2)	2-4 (2)	19-32 (20)	4-8	-	-
14	1	1	1	1	1	-
15	-	-	-	-	-	-

**Table 17.** Record of the branching of the setae on larvae of *Aedes* (*Kenknightsia*) *pecori* (7 specimens).

Seta No.	Head	P	Thorax		Abdominal Segments		
	C		M	T	I	II	III
0	1	7-11 (7)	-	-	-	1	1
1	1	2	2	2	2-4 (2)	2,3 (2)	2,3 (2)
2	-	1,2 (1)	1,2 (1)	2,3 (2)	1	1	1
3	1	4-6 (5)	1	4-10 (6)	2-4 (3)	2,3 (3)	1,2 (2)
4	4-6 (4)	2-4 (3)	2,3 (3)	2-4 (4)	8-14 (9)	6-12 (8)	2,3 (3)
5	2-4 (3)	2-4 (2)	1	1	2-6 (4)	3-6 (4)	2-4 (4)
6	1	1	3-5 (4)	1	3,4 (3)	3,4 (3)	2,3 (2)
7	7-11 (11)	3,4 (4)	1	6-10 (9)	1,2 (2)	2-4 (3)	3-6 (4)
8	1-3 (2)	2-4 (3)	5-8 (7)	8-11 (9)	-	2,3 (3)	1,2 (1)
9	2-5 (3)	2,3 (2)	5-7 (6)	4-6 (4)	2-4 (3)	1	1
10	2,3 (2)	1	1	1	1	1	1
11	4-8 (5)	2-5 (4)	3,4 (3)	2-4 (4)	2,3 (2)	2,3 (2)	2,3 (2)
12	4-6 (4)	1	1	1	2,3 (2)	1,2 (2)	1-3 (2)
13	3,4 (3)	-	8-15 (11)	4-8 (6)	2-4 (2)	4-11 (6)	3-5 (4)
14	1	2,3 (2)	8-14 (8)	-	-	-	1
15	2-5 (3)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	-
1	2-4 (2)	2,3 (2)	2,3 (2)	2,3 (2)	4-6 (5)	1
2	1	1	1	1	1	5-7 (7)
3	2	2,3 (2)	1	4-6 (5)	6-9 (9)	1
4	1-3 (2)	3-6 (4)	2,3 (3)	2-4 (3)	1	-
5	2,3 (2)	2-4 (2)	2-4 (3)	6-10 (7)	5,6 (5)	-
6	2	2,3 (2)	2	6-10 (6)	-	-
7	3-5 (4)	3-5 (4)	2-4 (4)	2-4 (3)	-	-
8	2,3 (2)	2	4-8 (5)	10-16 (14)	-	-
9	1	1	1,2 (1)	2-7 (3)	-	-
10	1	1	1	1	-	-
11	2-4 (2)	1-3 (2)	2-4 (2)	1	-	-
12	1,2 (1)	1,2 (1)	1	1	-	-
13	3-6 (4)	2-4 (3)	10-15 (13)	3-5 (4)	-	-
14	1-3 (1)	1,2 (1)	1-3 (1)	1	1,2 (1)	-
15	-	-	-	-	-	-

**Table 18.** Record of the branching of the setae on larvae of *Aedes (Kenknightsia) wilkersoni* (2 specimens).

Seta No.	Head	P	Thorax		Abdominal Segments		
	C		M	T	I	II	III
0	1	12-22 (15)	-	-	-	1	1
1	1	1,2 (1)	1-3 (2)	2	1,2 (1)	3-5 (4)	3,4 (4)
2	1	1	1	3,4 (4)	1	1	1
3	1	2	1	10-11 (10)	4,5 (4)	4,5 (4)	4
4	3	2	3,4 (4)	3-5 (4)	9-12 (11)	5-8 (5)	1-3 (2)
5	1	1	1	1	3-6	2,3	2-4 (2)
6	1	1	3,4 (3)	1	3	2,3 (3)	2
7	2-5 (4)	1	1	4,5	1,2 (1)	2-4 (2)	6,7 (6)
8	2	1,2 (2)	4	7-10	-	2,3 (2)	1
9	2,3 (2)	1	4	3-5 (4)	2	1	1
10	2	1	1	1	1,2 (1)	1	2
11	3,4	1,2 (1)	2	2,3	2,3 (2)	2,3 (2)	1,2
12	4,5 (4)	1	1	1-3 (1)	1	2	2
13	4,5 (5)	-	9-18	5	1,2	16-20 (18)	2,3 (3)
14	1	2	8-10 (8)	-	-	-	1
15	3-5 (4)	-	-	-	-	-	-

Seta No.	Abdominal Segments					
	IV	V	VI	VII	VIII	X
0	1	1	1	1	1	1
1	3	2,3 (3)	2-4 (3)	1,2	4,5 (4)	5,6
2	1	1	1	1	2	1
3	3,4	4,5	2,3 (2)	4,5 (5)	5,6	-
4	1,2	4,5 (5)	4-6 (5)	3-5 (4)	1	-
5	2	2	2-4 (2)	5	3,4	-
6	2	1,2 (2)	1	9,10 (10)	-	-
7	4,5	5-7 (5)	4,5	3,4 (4)	-	-
8	1,2 (1)	1	5-7 (6)	8-11 (11)	-	-
9	1	1	1	2,3 (2)	-	-
10	2	2	1	2	-	-
11	2	2	2	1	-	-
12	1	1-3 (1)	2	2,3	-	-
13	2	3,4 (3)	23-27 (23)	5-8 (5)	-	-
14	1,2 (1)	1	1	1	1	-
15	-	-	-	-	-	-

**Appendix A.** Current taxonomic status of species in the subgenus *Kenknightia*.

Species	♀	♀ g	♂	♂ g	P	L
<i>dissimilis</i>	**	**	**	**	**	**
<i>gaffigani</i>	**	**			**	**
<i>harbachi</i>	**	**	**	**	**	**
<i>karwari</i>	**	**				
<i>lerozeboomi</i>	**	**	**	**	**	**
<i>leucomeres</i>	**	**				
<i>litwakae</i>	**	**	**	**	**	**
<i>luzonensis</i>	**	**	*	**	**	**
<i>paradissimilis</i>	**	**	**	**	**	**
<i>pecori</i>	**	**	*	**	**	**
<i>wilkersoni</i>	**	**	*	**	**	**

\* Stage/structure has been described.  
\*\* Stage/structure has been illustrated.

**Appendix B.** Conspectus of taxonomic changes.

## New Taxa

*Kenknightsia* Reinert, new subgenus of *Aedes* Meigen

*gaffigani* Reinert, new species of *Kenknightsia*

*harbachii* Reinert, new species of *Kenknightsia*

*lerozeboomi* Reinert, new species of *Kenknightsia*

*litwakae* Reinert, new species of *Kenknightsia*

*pecori* Reinert, new species of *Kenknightsia*

*wilkersoni* Reinert, new species of *Kenknightsia*

## Changes in Taxonomic Status

*dissimilis* (Leicester), from subgenus *Finlaya* to subgenus *Kenknightsia*

*karwari* (Barraud), from *dissimilis* variety to species status and from subgenus *Finlaya* to subgenus *Kenknightsia*

*leucomeres* (Giles), from subgenus *Finlaya* to subgenus *Kenknightsia*

*leucopleurus* Rozeboom, to synonymy with *Ae. (Fin.) aureostriatus* (Doleschall)

*luzonensis* Rozeboom, from subgenus *Finlaya* to subgenus *Kenknightsia*

*paradissimilis* Rozeboom, from subgenus *Finlaya* to subgenus *Kenknightsia*

## Lectotype Designations

*dissimilis* (Leicester)

*karwari* (Barraud)

## SYSTEMATIC INDEX

Valid taxa are in Roman type, synonyms are italicized. Bold face page numbers are those which begin the primary treatment of the taxon. Figure numbers are in parentheses.

<i>Aedes</i>	1, 2, 4, 10-14, 18, 21, 22, 24, 26, 27, 30, 32, 33, 37, 39, 42, 43, 46, 47, 50-52, 55, 56, 58, 59, 99-116, 118
<i>aureostriatus</i>	1, 51, 118
<i>Colocasia</i>	12, 23
<i>dissimilis</i>	1, 2, 4, 13, 15, 17, <b>18</b> , 21, 22, 24, 26-28, 30-34, 36, 38, 39, 42-44, 46, 51-53, 55-57, 59, 64, 99, 108, 117, 118 (1, 2, 5, 7, 12, 13, 15, 24, 33)
<i>Finlaya</i>	1, 2, 4, 12, 18, 22, 24, 26, 32, 37, 43, 46, 47, 50-52, 55, 118
<i>gaffigani</i>	1, 8, 10, 11, 13, 14, 16, 17, 22, <b>24</b> , 26, 27, 37, 51, 64, 100, 109, 117, 118 (6, 11, 16, 25, 33)
<i>geniculatus</i>	1, 2
<i>harbachii</i>	1, 4, 9, 13-15, 17, 22, <b>27</b> , 30, 31, 59, 64, 101, 110, 117, 118 (3, 11, 13, 17, 26, 33)
<i>karwari</i>	1, 2, 5, 11, 13-17, 30, <b>32</b> , 33, 64, 117, 118 (2, 5, 8)
<i>Kenknightsia</i>	1, 2, <b>4</b> , 10-14, 18, 24, 26, 27, 32, 33, 37, 39, 42, 43, 47, 52, 56, 58, 59, 99-118
<i>kochi</i>	2
<i>lerozeboomi</i>	1, 7, 9, 13, 15-17, <b>33</b> , 36, 37, 42, 46, 47, 51, 64, 102, 111, 117, 118 (6, 11, 14, 18, 27, 33)
<i>leucomeres</i>	1, 2, 13, 14, 16, 17, <b>37</b> , 38, 64, 117, 118 (4, 5, 9)
<i>leucopleurus</i>	1, 2, 22, 47, 50, 51, 118
<i>litwakae</i>	1, 4, 13, 14, 16, 17, 36, <b>39</b> , 42, 46, 47, 64, 103, 112, 117, 118 (3, 5, 11, 14, 19, 28, 33)
<i>luzonensis</i>	1, 2, 6, 7, 9, 10, 13, 15-17, 24, 33, 34, 36, 39, 40, 42, <b>43</b> , 46-48, 50, 51, 64, 104, 113, 117, 118 (5, 10, 14, 20, 29, 33)
<i>paradissimilis</i>	1, 2, 13, 15, 16, 17, 22, 26, 36, 46, <b>47</b> , 50-52, 64, 105, 114, 117, 118 (3, 5, 11, 14, 21, 30, 33)
<i>pecori</i>	1, 13, 15, 17, 21, 22, <b>52</b> , 55, 64, 106, 115, 117, 118 (6, 11, 13, 22, 31, 33)
<i>Protomacleaya</i>	2
<i>reinerti</i>	24
<i>Stegomyia</i>	1, 4, 18, 21, 37, 38
<i>subsimilis</i>	22
<i>Udaya</i>	22
<i>wilkersoni</i>	1, 9, 13, 14, 16, 17, 30, <b>56</b> , 58, 59, 64, 107, 116-118 (6, 11, 13, 23, 32, 33)

