

Review of the Afrotropical species of the tribe Lysitermini Tobias (Hymenoptera: Braconidae: Lysiterminae)

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Carinitermus gen. nov. (type species: *Carinitermus reticulatus* spec. nov. from Uganda), two new species of the genus *Acanthormius* Ashmead, 1906, and one species of the genus *Lysitermus* Foerster, 1862, are described from the Afrotropical region. A key to the genera and species of the Afrotropical Lysitermini is presented.

Introduction

The small tribe Lysitermini Tobias, 1968 (Braconidae: Lysiterminae) is represented in the Afrotropical region by four genera, and a fifth genus (*Carinitermus* gen. nov.) is described in this paper from Gambia. *Acanthormius* Ashmead, 1906 is a medium-sized genus (Papp & van Achterberg, 1999) widely distributed in the Old World (van Achterberg, 1991, 1995) but is unknown from Europe. Van Achterberg (1995) published a key to all known species; for the taxonomic history of the group, see Papp & van Achterberg (1999). The Afrotropical species deviate from the Indo-Australian species by having vein M+CU of the hind wing shorter than vein 1-M and, in this respect, converge towards the genus *Lysitermus* Foerster, 1862. In this paper one new species which is the second known Afrotropical species of *Lysitermus* is described. The biology of the species described in this paper is unknown, but one Afrotropical species of *Acanthormius* has been reared from Xyloryctidae (Lepidoptera) and one Palaearctic species of *Lysitermus* has been reared several times from Psychidae (van Achterberg, 1991). An up-dated checklist of both genera is given by Papp & van Achterberg (1999). For the recognition of the subfamily Lysiterminae, see van Achterberg (1993; 1995; 1997). A key to the Afrotropical genera and species of Lysiterminae is given in this paper; for the terminology used, see van Achterberg (1988).

Key to Afrotropical genera and species of the tribe Lysitermini

1. Third metasomal tergite with a narrow emargination medio-posteriorly (figs 9, 18 in Belokobylskij & Quicke, 1999); fore wing strongly reduced, short and narrow, stylet-shaped or oval *Neolysitermus* Belokobylskij & Quicke, 1999
 - a. Antenna of ♀ with 17 segments, and its apical segment dark brown; length of mesosoma 1.7-1.8 times its height (fig. 7, l.c.); scutellum flat (fig. 7, l.c.); propodeum without lateral tubercles (fig. 7, l.c.); metasoma more slender (fig. 9, l.c.); length of first metasomal tergite about 0.8 times its apical width (fig. 9, l.c.) *N. turneri* Belokobylskij & Quicke, 1999
 - Antenna of ♀ with 14 segments, and its apical segment whitish; length of

mesosoma 1.3-1.4 times its height (fig. 167, l.c.); scutellum strongly pointed (fig. 16, l.c.); propodeum with lateral tubercles (fig. 16, l.c.); metasoma more robust (fig. 18, l.c.); length of first tergite about 0.6 times its apical width (fig. 18, l.c.) *N. spinator* Belokobylskij & Quicke, 1999

- Third tergite without narrow emargination medio-posteriorly (figs 7, 24); fore wing long, normal (fig. 1) 2

2. First metasomal tergite immovably joined to second tergite (figs 41, 43 in van Achterberg & Steiner, 1996); vein M+CU of hind wing about as long as vein 1-M and vein cu-a of hind wing present (fig. 39, l.c.); mesoscutum granulate (fig. 47, l.c.); vein 2-SR of fore wing comparatively short (fig. 39, l.c.) *Afrotritermus* Belokobylskij, 1995

a. First metasomal tergite less narrowed basad, its apical width about twice its width near dorsope, and 1.4 times its length (fig. 9 in Belokobylskij, 1995); temple 0.8-0.9 times as long as transverse diameter of eye in dorsal view (fig. 1, l.c.); vertex smooth; median carina of propodeum 0.75 times antero-lateral side of areola (fig. 3, l.c.) *A. capensis* (Hedqvist, 1963)

- First tergite more strongly narrowed basad, its apical width 2.4-2.5 times its width near dorsope, and 1.6-1.8 times its length (fig. 18, l.c.); temple 0.6-0.8 times as long as transverse diameter of eye in dorsal view (fig. 13, l.c.); vertex usually finely granulate; median carina of propodeum nearly equal to, or slightly shorter than, antero-lateral side of areola (fig. 20, l.c.) *A. natalicus* Belokobylskij, 1995

- First tergite movably joined to second tergite (figs 43, 373, 395 in van Achterberg, 1995); vein M+CU of hind wing distinctly shorter than vein 1-M or vein cu-a of hind wing absent; mesoscutum largely smooth 3

3. Veins r-m of fore wing and cu-a of hind wing absent (fig. 1); central third of antenna of ♀ largely glabrous (fig. 3); second metasomal suture largely absent (figs 3, 7); mesoscutum with 3 carinae (fig. 2); head coarsely reticulate dorsally (figs 3, 4) *Carinitermus* gen. nov.

Only *C. reticulatus* spec. nov. from Uganda.

- Veins r-m of fore wing and cu-a of hind wing present (figs 12, 15, 19, 26); central third of antenna of ♀ setose; second metasomal suture present (figs 16, 22); mesoscutum without carinae; head largely smooth dorsally (figs 21, 27) 4

4. Propodeal areola long petiolate, because of a long median carina (figs 14, 18); metasoma without distinct teeth apico-laterally (figs 13, 17); antenna with 16 segments (♀; ♂ up to 18) *Lysitermus* Foerster, 1862

a. Apico-lateral flange of third metasomal tergite protruding (fig. 13); propodeal areola comparatively wide and surface of propodeum between carinae superficially granulate (fig. 14); vein 2-SR of fore wing partly absent (fig. 12); precoxal sulcus elongate, reaching anterior margin of mesopleuron; notauli complete posteriorly, without isolated medio-posterior groove; length of fore wing about 1.0 mm *L. granulosus* Papp & van Achterberg, 1999

- Apico-lateral flange of third metasomal tergite not protruding (fig. 17); propodeal areola comparatively narrow and surface of propodeum between carinae smooth (fig. 18); vein 2-SR of fore wing complete (fig. 15); precoxal sulcus oval, remaining far removed from anterior margin of mesopleuron; notauli absent posteriorly and with isolated medium-sized medio-posterior

- groove; length of fore wing about 1.5 mm *L. nervosus* spec. nov.
- Propodeal areola (sub)sessile, median carina absent (figs 23, 30), or short, much shorter than anterior side of areola; metasoma with pair of teeth apico-laterally (figs 20, 22, 24, 25, 31, 33); antenna with 18-24 segments (♀ ♂)
 *Acanthormius* Ashmead, 1906
- a. Two apical segments of antenna of ♀ dark brown; vein r of fore wing about 0.3 times vein 3-SR (fig. 194 in Granger, 1949); teeth of third tergite short, about 0.3 times median length of tergite (fig. 194, l.c.)
 *A. dentatus* Granger, 1949
- Only one apical segment of antenna of ♀ dark brown; vein r of fore wing 0.4-0.9 times vein 3-SR (figs 19, 26, 32); teeth of third tergite 0.3-0.6 times median length of tergite (figs 20, 24, 31) b
- b. Vein 3-SR of fore wing comparatively long (fig. 19), about 1.5 times vein 2-SR; vein r of fore wing about 0.4 times vein 3-SR (fig. 19); tooth of third tergite robust, about 0.3 times median length of tergite (figs 20, 22); propodeal areola comparatively wide (fig. 23) *A. longiradialis* spec. nov.
- Vein 3-SR of fore wing comparatively short (figs 26, 32), 0.6-0.8 times vein 2-SR; vein r of fore wing 0.6-0.8 times vein 3-SR (figs 26, 32); tooth of third tergite 0.4-0.6 times median length of tergite (figs 24, 31); propodeal areola comparatively narrow (figs 28, 30) c
- c. Apical tooth of third tergite less differentiated, about 0.4 times median length of third tergite in dorsal view (fig. 31), in lateral view lower margin of tooth nearly straight and somewhat serrate (fig. 33); antenna of ♀ ♂ with 20-21 segments; vein r issuing from middle of pterostigma (fig. 32), and about 0.6 times as long as vein 3-SR (fig. 32); minimum width of temple about 0.5 times width of eye in lateral view (fig. 29); propodeal areola narrower (fig. 30); 6-7 preapical segments of antenna whitish, but apical segment partly brown; length of body 1.8-1.9 mm *A. evertsi* Papp & van Achterberg, 1999
- Apical tooth of third tergite well pronounced, about 0.6 times median length of third tergite in dorsal view (fig. 24), in lateral view lower margin of tooth concave and largely smooth (fig. 25); antenna of ♀ with 24 segments; vein r issuing just distally of middle of pterostigma (fig. 26), and about 0.8 times as long as vein 3-SR (fig. 26); minimum width of temple 0.3 times width of eye in lateral view (fig. 27); propodeal areola slightly wider (fig. 28); apical and 5 preapical segments of antenna pale yellowish; length of body 2.3 mm
 *A. concavus* Papp & van Achterberg, 1999

Descriptions

Subfamily Lysiterminae Tobias, 1968

Tribe Lysitermini Tobias, 1968

Carinitermus gen. nov.

(figs 1-11)

Type species: *Carinitermus reticulatus* spec. nov.

Etymology.— From “carina” (Latin for “keel”) and the generic name *Lysitermus* Foerster, 1862, because it is related to this genus and it has three carinae on the mesoscutum (fig. 2).

Diagnosis.— Antennal segments (of ♀) 13, fourth-eighth segments largely glabrous (fig. 3); apex of scapus truncate (fig. 3); antennal sockets protruding (fig. 4); head coarsely reticulate dorsally (fig. 4), gradually narrowed ventrally (fig. 11); malar suture absent (fig. 11); mesoscutum with 3 carinae (fig. 2), largely setose; vein 2-SR of fore wing completely sclerotized (fig. 1); vein m-cu of fore wing short (fig. 1); veins 1-SR and r-m of fore wing and vein cu-a of hind wing absent (fig. 1); first subdiscal cell of fore wing narrow and vein CU1b present (fig. 1); parastigma not differentiated; first metasomal tergite movably joined to second tergite (fig. 3); dorsope of first tergite absent; second metasomal suture largely absent (fig. 7); third tergite with distinctly protruding flange posteriorly (figs 3, 7, 8); fourth and fifth tergites smooth and retracted and without lateral crease (fig. 3); ovipositor sheath distinctly protruding, medium-sized, and shorter than metasoma (fig. 3).

Biology.— Unknown.

Distribution.— Afrotropical.

Note.— Easy to separate from all other genera of Lysiterminae by the reticulate head and by the absent veins cu-a of hind wing and r-m of fore wing.

Carinitermus reticulatus spec. nov.

(figs 1-11)

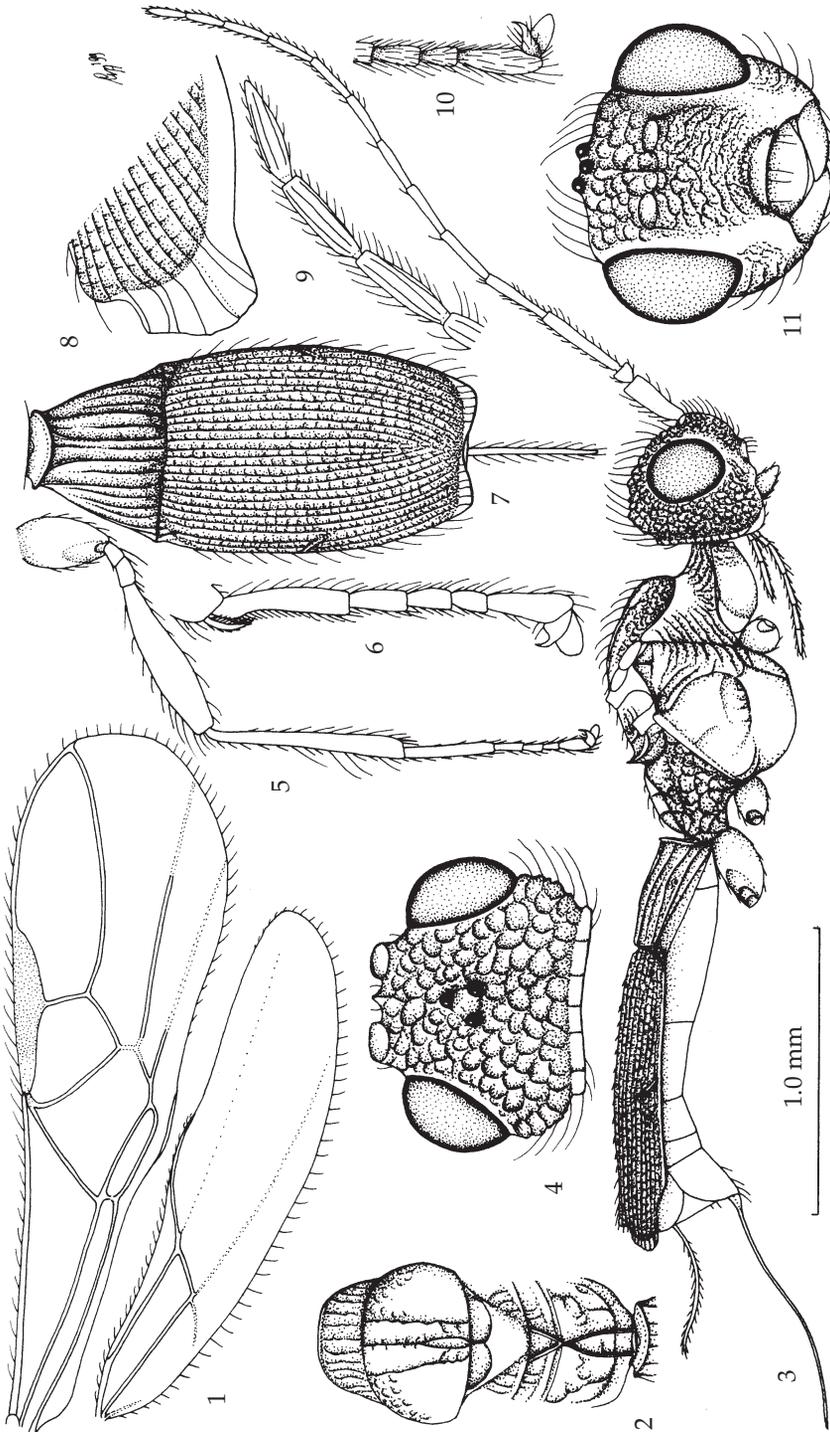
Material.— Holotype, ♀ (RMNH), "Uganda, Kibale Forest, Kanyware, 20.vii.1995, M. Nummelin, RMNH'95".

Holotype, ♀, length of body 3.0 mm, and of fore wing 2.4 mm.

Head.— Antenna 0.8 times as long as body and about as long as fore wing (fig. 3), with 13 segments; length of third segment 1.3 times fourth segment, third, fourth and penultimate segments 6.2, 5.0, and 3.8 times their width, respectively; head in dorsal view 1.5 times as broad as long; length of eye 1.7 times temple in dorsal view; temple reticulate, roundly narrowed posteriorly (fig. 4); occipital carina complete, strong, crenulate in front (fig. 4); POL:diameter of posterior ocellus:OOL = 14:3:3; eye in lateral view 1.3 times as high as wide, temple widened ventrally and in lateral view its minimum width about equal to width of eye (fig. 3); length of malar space 1.1 times basal width of mandible; frons coarsely reticulate, convex; vertex coarsely reticulate; face rugose (fig. 11).

Mesosoma.— Mesosoma 1.3 times as long as high in lateral view; notauli not impressed; propodeum areolate, median carina very short (fig. 2), and surface of propodeum largely smooth, with some rugae and carinae; side of pronotum rugose, but smooth dorsally (fig. 3); precoxal sulcus largely smooth and absent posteriorly (fig. 3); mesonotum rugose anteriorly, and median carina branched posteriorly, remainder largely smooth (fig. 2); metapleuron coarsely reticulate; mesopleuron smooth except for some striae dorsally and postero-ventrally (fig. 3).

Wings.— Fore wing: pterostigma narrowly triangular; r issuing submedially from middle of pterostigma and nearly 1.5 times as long as width of pterostigma (fig. 1); r:3-SR+SR1:2-SR = 9:50:12; m-cu postfurcal; subdiscal cell distally closed, CU1a joining m-cu directly (fig. 1); cu-a short and just postfurcal. Hind wing: m-cu rather long and curved basad (fig. 1).



Figs 1-11, *Cariniitermus reticulatus* gen. nov. & spec. nov., ♀, holotype. 1, wings; 2, mesosoma, dorsal aspect; 3, habitus, lateral aspect; 4, head, dorsal aspect; 5, hind leg; 6, fore tarsus, lateral aspect; 7, metasoma, dorsal aspect; 8, apex of third tergite, lateral aspect; 9, apex of antenna; 10, outer hind claw; 11, head, frontal aspect. 1, 3, 5: scale-line (= 1.0 ×); 2, 7: 1.1 ×; 4, 11: 1.7 ×; 6, 8-10: 2.5 ×.

Legs.— Hind coxa smooth; fore femur somewhat more robust than middle femur; fore telotarsus somewhat widened (fig. 6); length of femur, tibia and basitarsus of hind leg 4.2, 10.0, and 7.3 times their width, respectively (fig. 5); outer side of tibiae largely glabrous.

Metasoma.— Length of first tergite 0.8 times its apical width, its surface costate-striate with interspaces largely smooth (fig. 7), its dorsal carinae complete and its circular basal carina strong and subvertical (fig. 3); second and third tergites coarsely longitudinally striate, with fine connecting transverse sculpture (fig. 7); apical lamella of third tergite rather long (fig. 8), not serrate, and somewhat concave medio-apically (fig. 7); length of ovipositor sheath 0.19 times fore wing (fig. 3).

Colour.— Black(ish); legs, tegulae, palpi, metasoma ventrally pale yellowish; three basal segments and bases of fourth-eighth segments of antenna brownish-yellow, remainder dark brown; face laterally, clypeus and lamella of metasoma brown; pterostigma (except its yellowish basal fifth) rather dark brown; wing membrane subhyaline; veins brown.

Lysitermus nervosus spec. nov.
(figs 12-14)

Material.— Holotype, ♂ (RMNH), "Uganda, Kibale Forest, Kamywara, 20.vii.1995, M. Nummelin, RMNH'95".

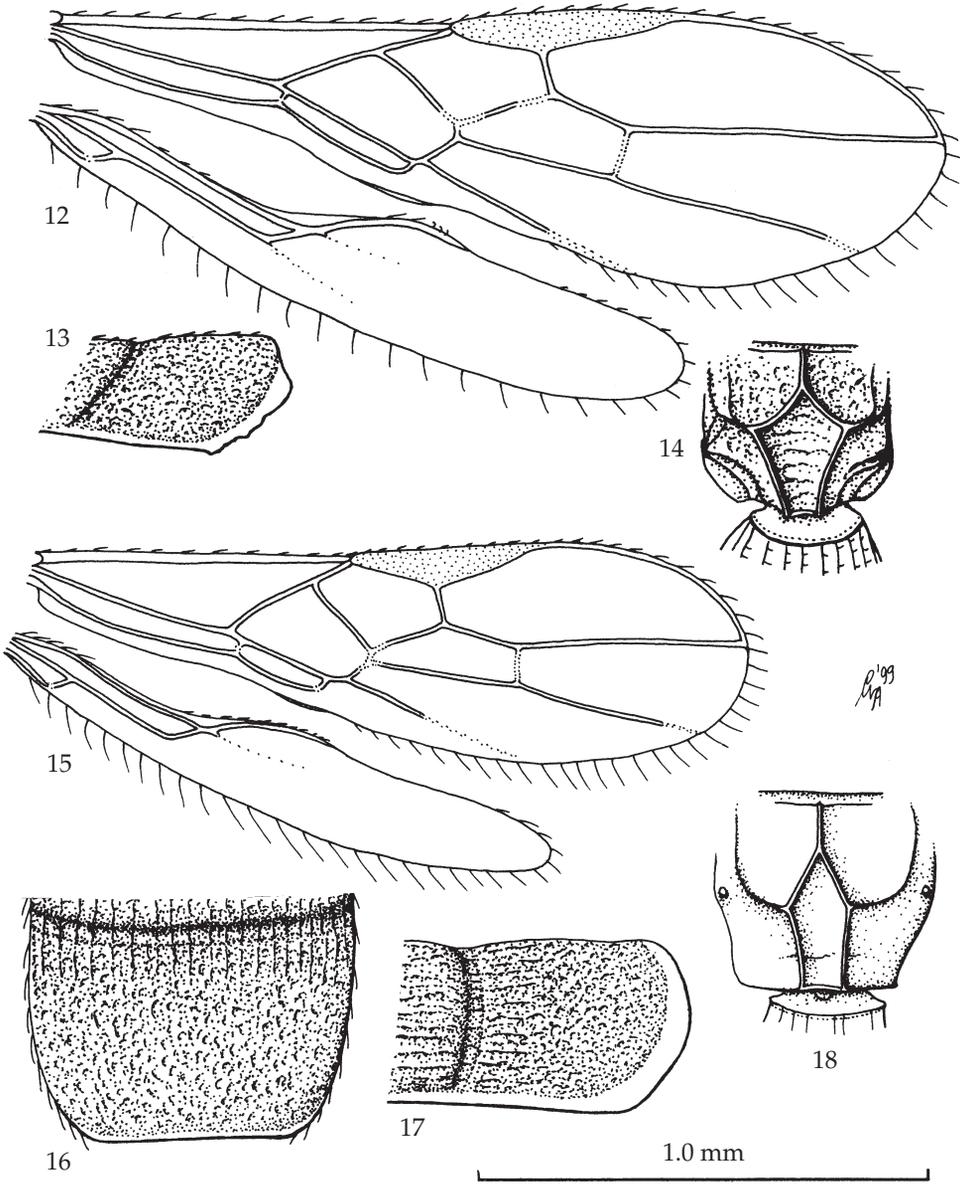
Holotype, ♂, length of body 1.5 mm, and of fore wing 1.5 mm.

Head.— Antenna 1.5 times as long as fore wing, with 18 segments, length of third segment 1.1 times fourth segment; third, fourth and penultimate segments 4.8, 4.4, and 4.7 times their width, respectively; head in dorsal view 1.7 times as broad as long, eye 2.2 times as long as temple, roundly narrowed posteriorly, smooth; occipital carina rather strong and in front of it smooth; POL:diameter of posterior ocellus: OOL = 3:2:4; eye in lateral view 1.5 times as high as wide, temple somewhat broadening ventrally and width of eye 1.7 times minimum width of temple; malar space 0.7 times as long as height of eye and 1.1 times as long as basal width of mandible; frons and vertex smooth, convex; face and clypeus smooth.

Mesosoma.— Mesosoma 1.5 times as long as high in lateral view; notauli evenly deep, but shortly absent posteriorly, not reaching the rather long medio-posterior groove of mesoscutum, smooth; propodeal areola rather slender, surface of propodeum (except for carinae) smooth, its median carina distinctly shorter than anterior side of areola (fig. 18); side of pronotum largely smooth, with some rugae and crenulae anteriorly, and some rugae postero-ventrally; precoxal sulcus deep, oval, and only medially present, smooth; mesonotum and scutellum smooth, shiny; metapleuron largely smooth; mesopleuron smooth, convex; mesosternal sulcus smooth.

Wings.— Fore wing: pterostigma elongate triangular and about 5 times as long as wide (fig. 15), r issued near its middle and about as long as width of pterostigma; 3-SR 2.1 times as long as r, SR1 straight and reaching tip of wing; m-cu postfurcal, rather short (fig. 15); subdiscal cell distally closed, CU1b joining m-cu directly (fig. 15).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.9, 12.3 and 11.0 times their width, respectively.



Figs 12-14, *Lysitermus granulatus* Papp & van Achterberg, ♀, holotype; figs 15-18, *L. nervosus* spec. nov., ♂, holotype. 12, 15, wings; 13, 17, apex of third tergite, lateral aspect; 14, 18, propodeum, dorsal aspect. 12: 1.9 ×; 13, 14: 2.6 ×; 15: scale-line (= 1.0 ×); 16-18: 2.3 ×.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface superficially granulate (nearly smooth), shiny, its dorsal carinae complete, strong, with a pair of lateral rugae, and without apico-lateral pits; medial length of second tergite equal to its basal width, and 1.5 times as long as third tergite; apico-lateral flange of third tergite receding, smooth, not serrate (fig. 17); second tergite longitudinally striate, with transverse interstriations; third tergite mainly granulate, with some rugae basally (fig. 16).

Colour.— Dark brown; anterior half of pronotum, propleuron, malar space ventrally, scapus and pedicellus yellowish; antenna (except scapus and pedicellus), pterostigma, veins (but veins M+CU and 1-1A of fore wing basally yellowish), and tegulae brown; palpi, coxae, trochanters and trochantelli whitish; remainder of legs yellow; wing membrane rather infusate.

Note.— Differs from the Palaearctic species by the presence of vein 2-SR of the fore wing, the long hind basitarsus, and the granulate third tergite. From the Neotropical species by the longer vein m-cu of the fore wing, the somewhat wider propodeal areola and the non-serrate apical-lateral flange of the third tergite.

Acanthormius longiradialis spec. nov.
(figs 19-23)

Material.— Holotype, ♀ (RMNH), "Gambia, Kombo North District, Bijilo Forest Park, 18.xii.1992, M. Manneh, RMNH'97".

Holotype, ♀, length of body 2.0 mm (2.5 mm including protruding part beyond third tergite), and of fore wing 1.6 mm.

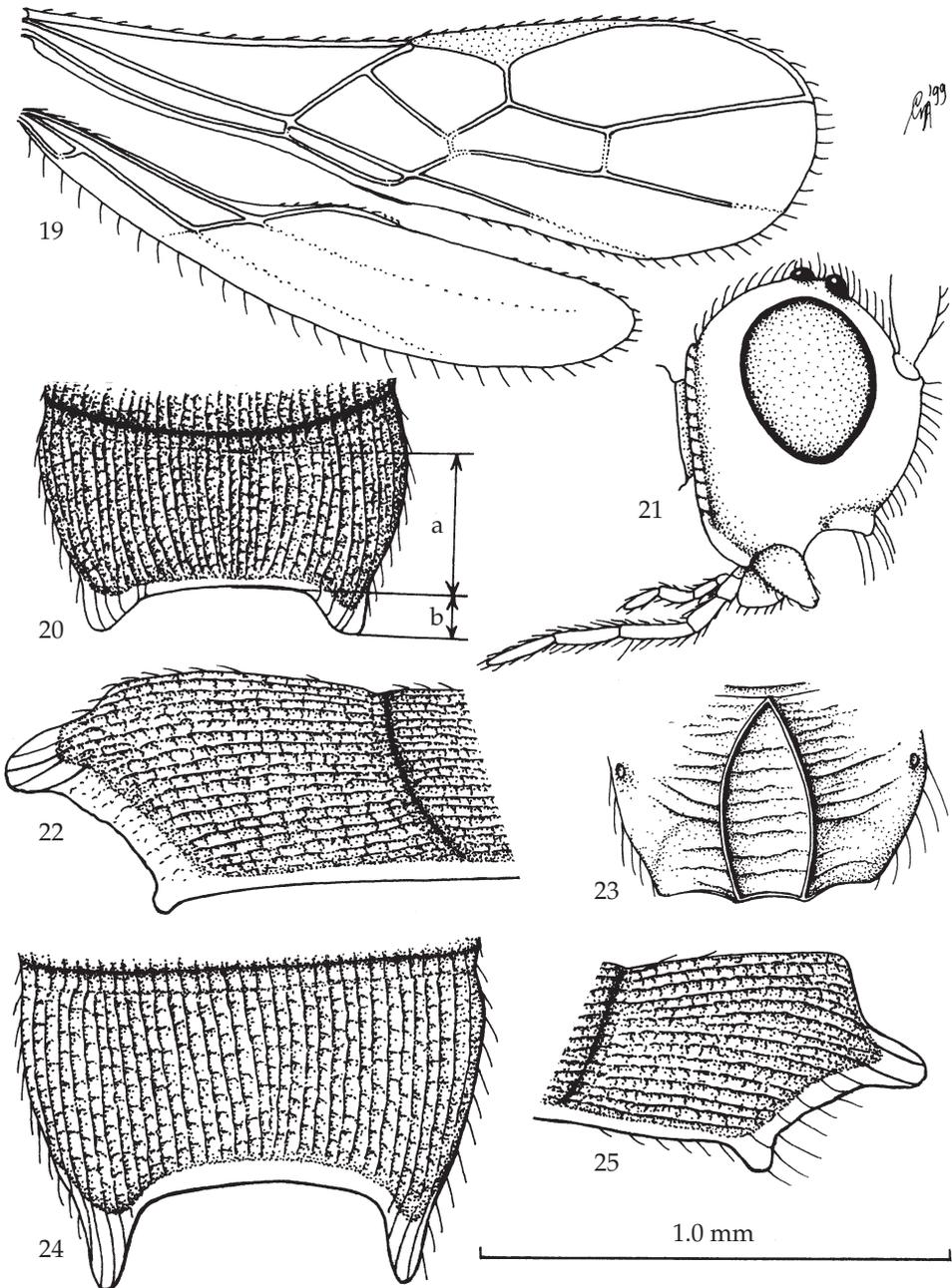
Head.— Antenna 1.5 times as long as fore wing, with 20 segments, third segment as long as fourth segment, third, fourth and penultimate segments 5.0, 5.0, and 3.2 times their width, respectively; head in dorsal view 1.8 times as broad as long, eye 2.6 times as long as temple, roundly narrowed posteriorly, long setose (fig. 21); occipital carina strong, crenulate; POL:diameter of posterior ocellus:OOL = 3:2:4; eye 1.3 times as high as wide in lateral view, temple widening ventrally and width of eye 0.4 times minimum width of temple (fig. 21); malar space 0.55 times height of eye and 1.8 times as long as basal width of mandible; frons, vertex, face and clypeus smooth.

Mesosoma.— Mesosoma 1.3 times as long as high in lateral view; notauli crenulate and deep anteriorly, obsolescent and smooth posteriorly, not reaching medio-posterior groove; propodeal areola wide (fig. 13), surface of propodeum rugulose; side of pronotum densely setose, micro-sculptured, anteriorly rugose; precoxal sulcus deep and smooth, absent on posterior 0.3 of mesopleuron; mesonotum largely smooth, shiny; metapleuron rugose; mesopleuron smooth, convex.

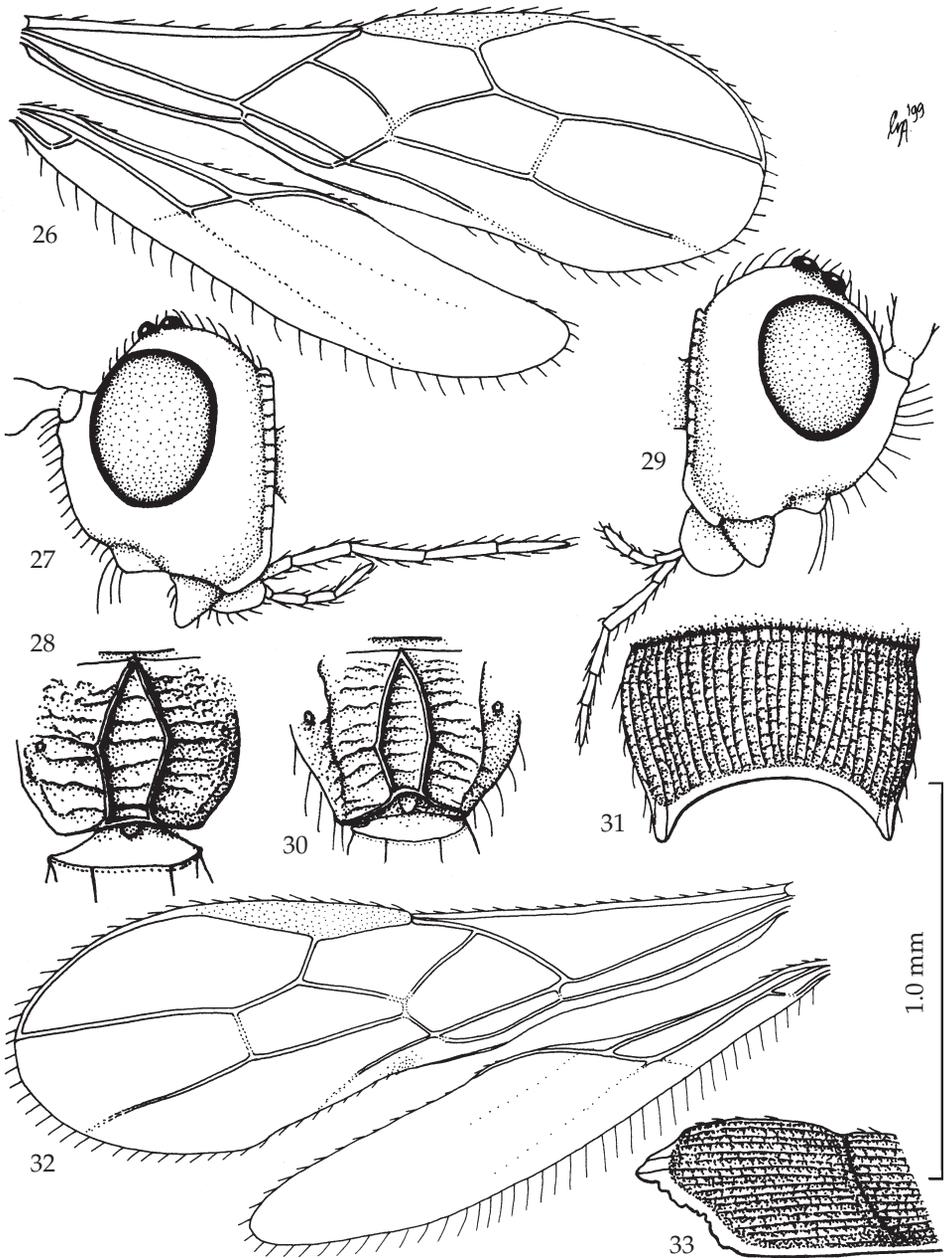
Wings.— Fore wing: pterostigma narrowly triangular (fig. 19) and about 5 times as long as wide, r issuing submedially from pterostigma and nearly as long as width of pterostigma, 3-SR 1.5 times as long as r, 2-SR 0.4 times 3-SR (fig. 19), SR1 straight; m-cu postfurcal; subdiscal cell distally closed, base of CU1a close to m-cu (fig. 19).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.8, 13.3 and 11.5 times their width, respectively.

Metasoma.— Length of first tergite 0.7 times its apical width; median length of second tergite 0.7 times its basal width and twice as long as third tergite; pair of pos-



Figs 19-23, *Acanthormius longiradialis* spec. nov., ♀, holotype; figs 24, 25, *A. concavus* Papp & van Achterberg, ♀, holotype. 19, wings; 20, 24, third tergite, dorsal aspect (a = medial length of tergite, b = length of apical tooth); 21, head, lateral aspect; 22, 25, third tergite, lateral aspect; 23, propodeum, dorsal aspect. 19: scale-line (= 1.0 ×); 20, 22: 2.3 ×; 21: 1.4 ×; 23: 1.7 ×; 24, 25: 1.6 ×.



Figs 26-28, *Acanthormius concavus* Papp & van Achterberg, ♀, holotype; figs 29-33, *A. evertsi* Papp & van Achterberg, ♀, holotype. 26, 32, wings; 27, 29, head, lateral aspect; 28, 30, propodeum, dorsal aspect; 31, third tergite, dorsal aspect; 33, third tergite, lateral aspect. 26: scale-line (= 1.0 ×); 27: 1.6 ×; 28: 1.8 ×; 29-31, 33: 1.9 ×; 32: 1.3 ×.

tero-lateral teeth of third tergite 0.3 times median length of tergite (fig. 20); lower margin of tooth concave and not serrate in lateral view (fig. 22); first-third tergites longitudinally striate, with fine transverse interstriations; length of ovipositor sheath 0.24 times fore wing.

Colour.— Blackish brown; palpi whitish; third-twelfth antennal segments (but basal segments rather yellowish), apical antennal segment and ovipositor sheath dark brown; 13th antennal segment light brown, 14th-19th segments pale yellowish; malar space, temple ventrally, scapus and pedicellus, and legs yellow; prothorax, mesopleuron antero-dorsally and ventrally, mesosternum, mesoscutum partly posteriorly, metanotum, propodeum and metasoma more or less yellowish-brown; wing membrane faintly infuscate; pterostigma and veins (except mainly yellowish veins of basal third of wings) and tegulae brown.

Note.— Differs from the East Palaearctic and Oriental species by the short vein M+CU of the hind wing, the wide propodeal areola, and the comparatively short vein 2-SR of the fore wing. The latter two characters differentiate it from the other Afrotropical species as well.

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