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Four new South African monotypic grass-feeding leafhopper genera and a revision of *Lecacis* (Hemiptera, Cicadomorpha, Cicadellidae)

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Abstract

Four new monotypic leafhopper genera in Deltocephalinae and their type species are described: *Ochromelanus brachyphallus* **gen.n. & sp.n.** (Deltocephalini), *Teinopterus microphallus* **gen.n. & sp.n.** (Paralimnini), *Tytthuspilus onychophallus* **gen.n. & sp.n.** (Paralimnini) and *Umeqi okhahlamba* **gen.n. & sp.n.** (Paralimnini). These genera and species are associated with grass mainly in the Fynbos and Grassland Biomes of South Africa. The revision of *Lecacis* Theron (Paralimnini) concerns the redescription of the male type species of *L. platypennis*, the new description of the female, and two new species. *Lecacis* species appear to be distributed somewhat randomly in the Grassland and Savanna Biome of South Africa.

Key words: Herbivore, Fynbos, Grassland, Afrotropical, endemic, morphology, Deltocephalinae, Paralimnini, Deltocephalini

Introduction

This is the sixth in a series of taxonomic contributions on grass-feeding leafhoppers of South Africa (Stiller, 1998, 2009a, 2009b, 2010a, 2010b). Four new monotypic genera are described in the Deltocephalinae, with three in Paralimnini and one in Deltocephalini. Three are probably endemics in the Grassland Biome of South Africa and the fourth has been recorded from both the Fynbos and Grassland Biomes.

Ochromelanus brachyphallus **gen.n. & sp.n.** that occurs in widely disjunct localities in the Fynbos Biome of the Western Cape Province and Grassland Biome (Karoo Escarpment Grassland vegetation type (as defined by Mucina & Rutherford (2006)) of the Eastern Cape Province. A similar disjunct distribution has been found in *Pravistylus deltoplacus* Stiller (2010a) that occurs in the Fynbos and Grassland Biomes.

Umeqi okhahlamba **gen.n. & sp.n.** is known from a number of locations in the Drakensberg of KwaZulu-Natal Province.

Teinopterus microphallus **gen.n. & sp.n.** occurs in a number of habitats in the Eastern Cape and Western Cape Province, on *Merxmuellera disticha* (Nees) Conert and *M. drakensbergensis* (Schweick.) Conert (Poaceae). In some localities where this leafhopper was collected these grasses had become dominant in grazed grassland because they are unpalatable to ungulates. Other habitats where the latter was found were grazed pastures and grasslands dominated by *Themeda triandra* Forssk. (Poaceae), but still contained the former two *Merxmuellera* species. All these localities where *T. microphallus* was found are defined by Mucina and Rutherford (2006) as the Karoo Escarpment Grassland.

Tytthuspilus onychophallus **gen.n. & sp.n.** appears to be limited to the vegetation unit referred to as the Stormberg Plateau Grassland within the Drakensberg Grassland Bioregion (as defined by Mucina & Rutherford, 2006). This unit is intermediate between the Karoo Escarpment Grassland to the west and the Southern Drakensberg Highland Grassland towards higher altitudes to the east. The species has not yet been found in neighbouring units, but more intensive sampling is needed.

Lecacis Theron (1982) has submacropterous or sometimes macropterous tegmina and the hind wing always fully developed. The external appearance of this genus resembles that of *Elginus* Theron, *Nicolaus* Lindberg and

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Pravistylus Theron, but it is distinguished by internal features of the male and female genitalia. It is relatively common in the Grassland Biome of South Africa, but a number of records originate from the Savanna Biome. Collection records appear to suggest that the species of this genus are scarce and have an erratic distribution. Three pure grass stands in which this leafhopper was collected were *Eragrostis curvula* (Schrad.) Nees, *Schmidtia pappophoroides* Steud. and *Themeda triandra* Forssk. (Poaceae). Specimens were also collected in diverse grass stands that included *Aristida*, *Bothriochloa*, *Brachiaria*, *Eragrostis*, and *Melinis* species and other habitats that consisted of an even wider range of these and other grass species.

It appears that there are more grass associated leafhopper species in mountainous regions to the south and west and fewer in the northern parts of the Grassland Biome. A number of species occur on grass in the Fynbos as well as grass in the Grassland Biome. Species in Paralimnini in the Grassland Biome are well known, and one new genus and species in Deltocephalini will be described later. About 70 species in Paralimnini and 1 species in Deltocephalini are probably endemics to the Grassland Biome. *Drakensbergena* Linnavuori in Drakenbergeninae is a distinctive endemic to the Grassland Biome. Fynbos paralimnines require more work, with a revision of *Platentomus* required. The expansive Savanna Biome requires much work. There are many new species associated with forbs and shrubs in the Grassland Biome as well as adjoining biomes in South Africa and further. This and previous studies have been expediated by vacuum sampling isolated and moribund grasslands.

Material and methods

About 500 specimens were examined. They were collected with a sweep net and DVac motorized suction device. Dissections of specimens cleared in cold KOH were made in glycerine, and examined under a transmission light microscope. Images were recorded with an Olympus microscope and software. Certain details in some drawings have been omitted, such as macrosetae on the plate and lateral view of the pygofer that would otherwise obscure underlying parts. Sculptured areas of the ultrastructure of the female first valvulae are more extensive than shown in the drawings; sculpturing shown is meant to illustrate variability across different parts of the structure. Stacking of images to improve depth of field was done by using CombineZP software (Hadley, 2010). Terminology follows that used previously (Stiller, 1998, 2009a, 2009b, 2010a, 2010b). Chaetotaxy terminology follows Davis (1975). Material is deposited in the insect collection of The Natural History Museum, London (BMNH), Illinois Natural History Survey, Champaign, Illinois, USA (INHS) and the National Collection of Insects, Pretoria, South Africa (SANC). Holotype depositions are designated in material examined paragraphs, and paratype depositions are made proportionally.

Species accounts

Tytthuspilus gen.n.

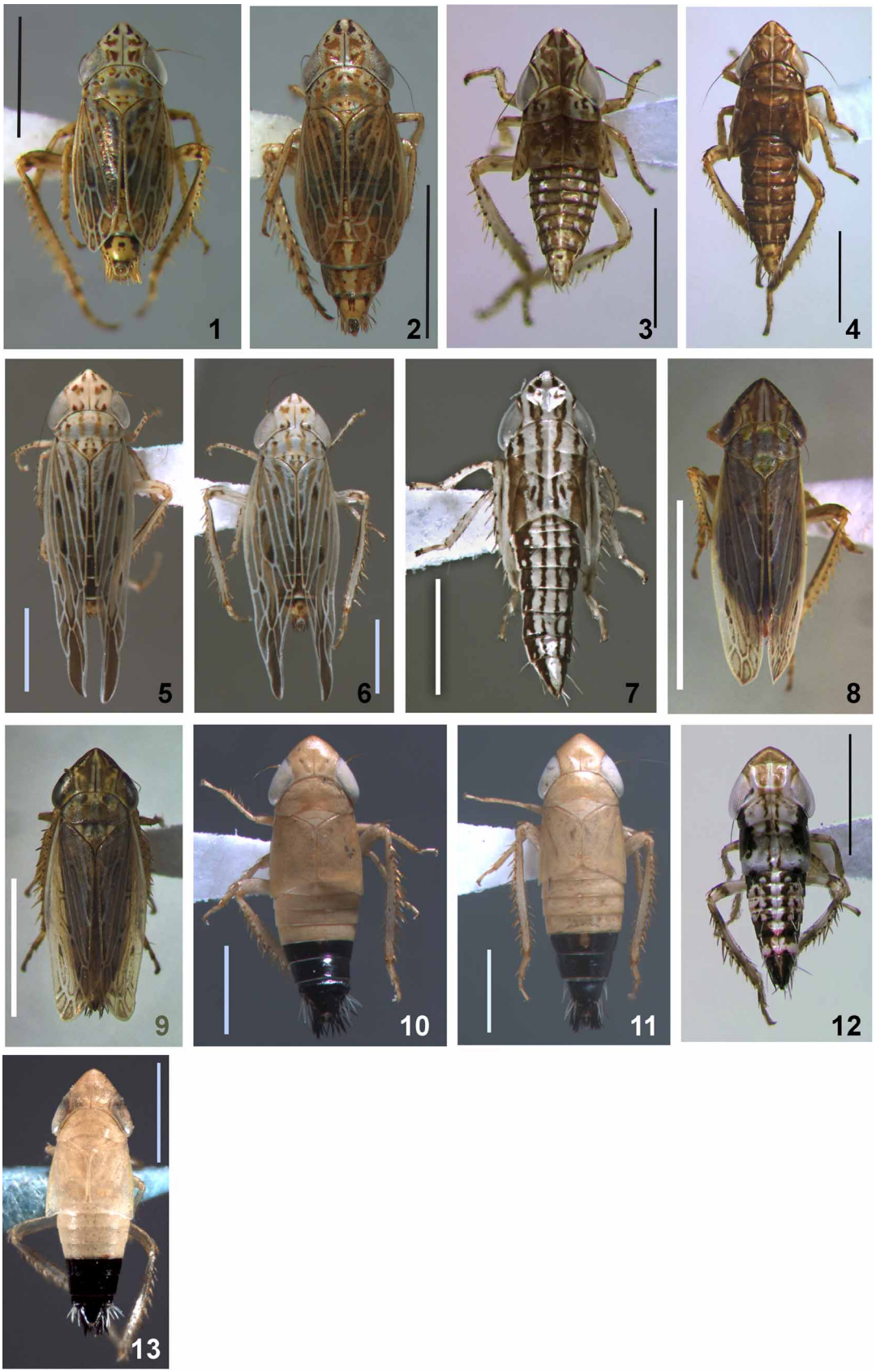
Type species: *Tytthuspilus onychophallus* sp.n. (Figs 1–4, 14–28).

Diagnosis. Submacropterous, 2.2–3.2 mm long. Plate wider and longer than pygofer lobe, without macrosetae. Connective about twice as long as wide, arms parallel. Style with robust, sclerotized apophysis. Aedeagus simple.

Etymology. Greek, *tytthos*, small, for the size of the leafhopper and *spilos*, spot, to describe the maculate colour pattern. Gender masculine.

External features. **Male and female**. Vertex 1.3–2.0 times longer medially than length of vertex next to eye. Width of head 1.0–1.1 times wider than width across pronotum. Ocellar diameter 28 µm, ocellocular distance 33–47 µm. Vertex narrowly rounded to face, shagreened, disc of vertex smooth. Pronotum smooth. Face brown, with pale horizontal arcs. Clypellus rectangular, laterally convergent, subparallel margins. Gena extending slightly beyond posterior margin of clypellus, slightly incised below eye.

Chaetotaxy. Dorsal macrosetae of protibia 1+4. Profemur setal row AV short, relatively thick; intercalary row about three times longer than AV, AV1 slightly longer and thicker than intercalary setae. Mesotibial setal formula 4+4. Metafemoral setal formula 2+2+1, apical pair slightly shorter than preapical pair, preapical pair of different length and thickness, adlateral seta about ⅓ the length of ablateral seta.



FIGURES 1–13. Habitus. **1–4**, *Tytthuspilus onychophallus* **sp. n.**; **1**, male; **2**, female, **3**, nymph, early second instar; **4**, nymph, late second instar; **5–7**, *Teinopterus microphallus* **sp. n.**; **5**, male, **6**, female, **7**, nymph, second instar; **8–9**, *Umeqi okhahlamba* **sp. n.**, male, female respectively; **10–13**, *Ochromelanus brachyphallus* **sp. n.**; **10–12**, Eastern Cape Province specimens; **10**, male; **11**, female; **12**, nymph, second instar; **13**, male, Western Cape Province specimen. Scale=1 mm.

Tegmina. Submacropterous (see Figs 1, 2), extending to region of tergite 9 or pygofer; one anteapical cell, four apical cells (Fig. 22). Hind wing reduced, about ⅓ as long as length of tegmina.

Abdominal apodemes. Anterior apodeme with short membranous medial lobes, with sclerotized lattice-like structure medially, arms bifurcate. Posterior apodeme lobes narrow (Fig. 21).

Genitalia. **Male**. Anal tube short, incised about ⅓ into pygofer, tergite 10 short, about as wide as long (Fig. 19). Pygofer in lateral view slightly shorter than plate; posterior margin produced into bluntly rounded triangular lobe (Fig. 20). Pygofer lobe triangular; heavily set with macrosetae; medially with sclerotized ridge, articulating ventrally with dorsal apodeme of aedeagus, dorsally with tergite 10 (Figs 19, 20). Plate with lateral margin broadly rounded, in dorsal view extending laterally beyond outline of pygofer lobe (Fig. 19); median margin concave, macrosetae absent, fine, sparse pubescence (Fig. 18). Valve triangular, laterally fused to plate (Fig. 18). Aedeagus in dorsal view with tapering shaft, dorsal apodeme short, about ⅓ as long as shaft; shaft in lateral view curved ventrally; gonopore ventral, elongate, apical, about ⅓ length of shaft (Figs 14, 15). Style with anterior lateral and medial arms short, broad; apophysis narrow at base, wider at apex, apex serrate, ventrally with extensive band of fine serration (Fig. 17). Connective with stem and arms of similar length, stem about as wide as long, arms sub-parallel; articulating with aedeagus (Fig. 16).

Genitalia. **Female**. Sternite 7 posterior margin with parallel-sided notch, flanked by broad, rounded lobes (Fig. 23). Valvula 3 with two paired setae ventrally near apex (Fig. 24). Valvula 2 with fine denticulation dorsally (Figs 25, 26). Valvula 1 lanceolate (Fig. 27), sculpture imbricate (Fig. 28).

Relationships. This genus is placed in the tribe Paralimnini. According to definitions of this tribe by Webb & Heller (1990) and Zahniser & Dietrich (2008) the aedeagus is articulated with the connective and the arms of the connective are either fused (over longer or shorter distance), looped (touching) or parallel, but never Y-shaped. In the Afrotropical region *Tytthuspilus* and *Hiltus* Theron have the connective arms parallel or subparallel. From drawings in Ossiannilsson (1983) the Palaearctic paralimnine genera *Pinumius* Ribaut and *Sorhoanus* Ribaut also have the connective with parallel arms. There appear to be no other known Southern African leafhoppers with a remotely similar combination of features mentioned in the diagnosis above. With regard to colour pattern, shape and size, there is some resemblance with *Pravistylus.* Some genera share similarly shaped structures in the male genitalia. The aedeagal shaft of *Afrosus* Linnavuori, 1959 is also curved ventrally but bears apical paired spines. *Tytthuspilus* and *Lecacis* Theron (1982) share similarly shaped styles. Differences between *Lecacis* and *Tytthuspilus* are as follows:

1a. The plate of *Tytthuspilus* bears no macrosetae and in dorsal/ventral view has its margin extended beyond that of the pygofer (Figs 18, 19).
1b. The plate of *Lecacis* bears uniseriate macrosetae and in dorsal/ventral view is hidden under the pygofer (Figs 91, 108, 129).
2a. The aedeagus of *Tytthuspilus* is elongate, curved ventrad and with wrinkles on the mediolateral surface (Fig. 15).
2b. The aedeagus of *Lecacis* is expanded laterad with sclerotized points marginally and an asymmetric process near the gonopore (Figs 86, 103, 104, 120, 122).

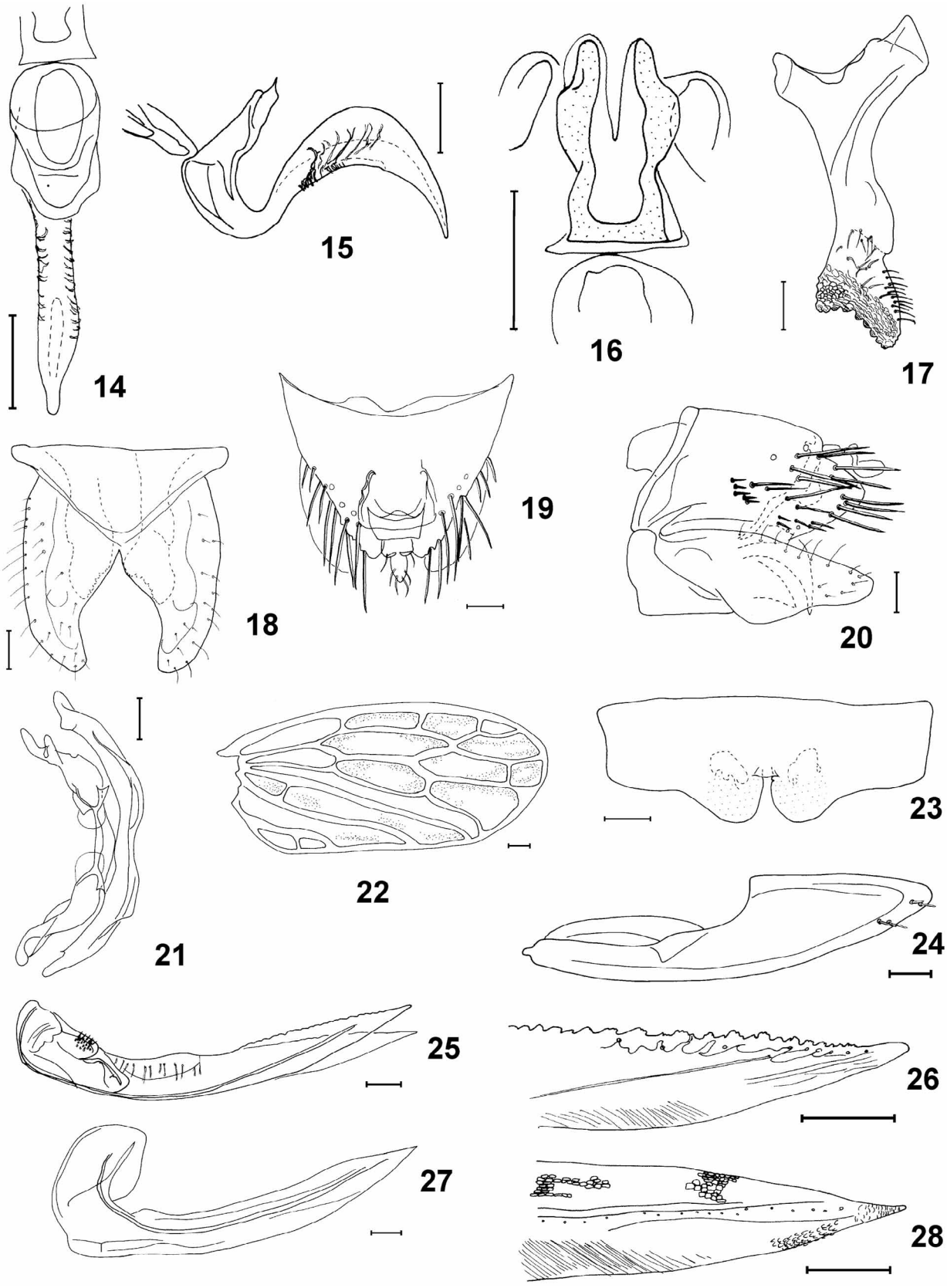
Tytthuspilus onychophallus sp. n.

(Figs 1–4, 14–28)

Diagnosis. Plate, in ventral view, enlarged, lateral margins extending beyond margins of pygofer, lateral margin curved, medial margin concave, macrosetae absent. Aedeagus, in lateral view, with shaft claw-shaped. Style with broad base and apophysis robust, extensively serrated. Female sternite 7 with deep, narrow notch, flanked by rounded lobes.

Etymology. Greek, *onychos*, claw, for the shape of the aedeagus (*phallos*).

Colour. **Male**, **female and nymph**. Base colour greyish to ochraceous, with irregular fuscous, paired markings on vertex, pronotum, scutellum and abdomen. Tegmina with veins ochraceous, cells usually lined with fuscous; four apical cells, one anteapical cell and two discal cells. Paired fuscous marking dorsolaterally near anterior margin of pygofer (Figs 1, 2). Nymph colour as in Figs 3, 4. Clypeus dark brown, with numerous light brown, horizontal arcs.



FIGURES 14–28. *Tytthuspilus onychophallus* **gen. n. & sp. n.** Male and female genitalia, forewing and male abdominal apodeme. **14–22**, male; **14**, aedeagus, dorsally; **15**, aedeagus, laterally; **16**, connective; **17**, style; **18**, plate; **19**, pygofer, dorsally; **20**, pygofer, laterally; **21**, abdominal apodemes, anterior, posterior; **22**, forewing; **23–28**, female; **23**, sternite 7; **24**, valvula 3; **25**, valvula 2; **26**, valvula 2, ultrastructure; **27**, valvula 1; **28**, valvula 1, ultrastructure. Scale=0.1 mm.

Male. **Dimensions**. (n=27) Length from apex of vertex to apex of tegmina 2.0–2.1 mm, length from apex of vertex to apex of abdomen 2.3–2.5 mm, median length of vertex 0.4 mm, length of vertex next to eye 0.3 mm, length of pronotum 0.3 mm. Greatest width of head 0.8 mm, greatest width of pronotum 0.7–0.8 mm. Ocellar diameter 28 µm, ocellocular distance 32.8–44 µm.

Genitalia. Plate enlarged lateroposteriorly, lateral margin broadly rounded, medial margin concave, in dorsal or ventral profile extending beyond apex of pygofer (Fig. 19); without macrosetae, only finely pubescent (Figs 18, 20). Aedeagus, in dorsal view, with tapering, compressed shaft, dorsal apodeme reduced; shaft, in lateral view, curved ventrally with medial irregular ridges; gonopore ventral, at apex, about ⅓ as long as shaft (Figs 14, 15). Style with short, widely separated basal arms, distally with wide apophysis; preapical lobe reduced, preapical angle shallow; apophysis narrow at base, wider at apex than width across preapical angle, apex serrate, emarginate medially, ventrally with extensive band of fine serration (Fig. 17).

Female. **Dimensions**. (n=23) Length from apex of vertex to apex of tegmina 2.3–2.6 mm, length from apex of vertex to apex of abdomen 2.8–3.2 mm, median length of vertex 0.5 mm, length of vertex next to eye 0.3 mm, length of pronotum 0.3 mm. Greatest width of head 0.9 mm, greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 28 µm, ocellocular distance 39.2–47.3 µm.

Genitalia. Sternite 7 as in Fig. 23. Valvula 1 as in Figs 27, 28. Valvula 2 as in Figs 25, 26. Valvula 3 with two pairs of macrosetae near apex, distal pair 24 µm and 34 µm, proximal pair 24 µm and 21 µm in length, other setae up to 11 µm in length (Fig. 24).

Material examined. Holotype male. **South Africa**, **Eastern Cape Province**. Road between Molteno and Queenstown, route R56, 31°23′5″S, 26°40′23″E, 1788 m, 19.iv.2006, DVac roadside grass (SANC). Paratypes. 39♂, 31♀, 34 nymphs. **Eastern Cape Province**. 6♂, 13♀, 9 nymphs, *ibid.* holotype; 4♂, 4♀, Klipkraal farm portion 151, east Molteno, 31°22′55.1″S, 26°41′22.6″E, 1783 m, 17.i.2011, DVac, grass and forbs; 14♂, 8♀, Bamboeshoek farm portion 20, east Molteno, 31°18′09.3″S, 26°34′23.6″E, 1799 m, 17.i.2011, DVac, *Tetrachne dregei* (Poaceae); 6♂, 4♀, Morgenzon farm portion 23, east Molteno, 31°21′57.5″S, 26°34′13.9″E, 1854 m, 17.i.2011, DVac, grass and forbs; 9♂, 2♀, Leeuwe Fontein farm portion 24, east Molteno, 31°23′32.5″S, 26°35′46.5″E, 1849 m, 17.i.2011, DVac, *Themeda triandra* dominant, moderate grazing. All collected by M. Stiller. (BMNH, INHS, SANC).

Remarks. The coloration of this species is similar to *Pravistylus eductus* (Naudé), and *P. brachyplacus* Stiller. However the genitalia of *T. onychophallus* do not correspond to any species of *Pravistylus*, or any leafhopper associated with grasslands in Southern Africa. Many nymphs were examined, but their association with adults was difficult. They resembled nymphs of many species in genera such as *Pravistylus*, *Elginus*, *Vilargus* Theron and *Naudeus* Theron, that were also collected at these localities. According to the vegetation maps of Mucina & Rutherford (2006), the distribution of this leafhopper is in the Drakensberg Grassland Bioregion, and referred to as the Stormberg Plateau Grassland vegetation unit. Many other vegetation units in this bioregion and adjoining bioregions were also examined but none produced additional specimens of this species.

Teinopterus gen. n.

Type species: *Teinopterus microphallus* sp.n. (Figs 5–7, 29–45).

Diagnosis. Tegmina elongated, narrow and acuminate apically (Figs 5, 6, 38), hind wing reduced. Plate triangular (Fig. 34). Pygofer square (Fig. 36). Style with short apophysis (Fig. 33). Aedeagus small; in lateral view, shaft short, C-shaped (Fig. 31). Connective elongate, arms fused, articulated with aedeagus (Fig. 32).

Etymology. Greek, *teino*, extend, and *pteron*, wing, for the extended, posterior margin of the forewing. Gender masculine.

External features. **Male and female**. Length 4.0–4.4 mm. Vertex 1.2–1.6 times longer than length next to eye; head 1.2 times wider than pronotum. Antenna 1.3–1.5 mm in length. Vertex narrowly rounded to face, shagreened, disc of vertex smooth. Pronotum smooth. Face brown, invaded by pale horizontal arcs. Clypellus rectangular, lateral margins subparallel, posterior margin rounded. Gena slightly incised below eye; not extending beyond posterior margin of clypellus.

Chaetotaxy. Dorsal macrosetae of protibia 1+4. Profemur row AV very short, thick setae; intercalary row about three times longer than AV; AV1 slightly longer and thicker than intercalary setae. Mesotibial setal formula

4+4. Metafemoral setal formula 2+2+1, apical pair slightly shorter than preapical pair, preapical pair of different length and thickness, adlateral seta about ⅓ the length of ablateral seta.

Tegmina. Macropterous, four apical cells, 3rd apical cell about two times longer than 2nd and 4th apical cells, together forming elongate triangular extension in wing; three anteapical cells, with 1st anteapical cell reduced, 2nd anteapical cell elongate; appendix absent (Fig. 38). Hind wing reduced, narrowly triangular, about ½ as long as forewing. Male with forewing 1.5–1.9 times longer than length of hind wing, female with forewing 1.8–2.0 times longer than length of hind wing.

Abdominal apodemes. Anterior apodeme without medial lobes, with sclerotized lattice-like structure medially, arms bifurcate. Posterior apodeme with narrow lobes (Fig. 37).

Genitalia. **Male**. Aedeagus, in lateral view, C-shaped, shaft arising ventrally from preatrium (Fig. 29–31). Connective membranously fused to preatrium, arms fused, stem truncate, about ⅓ as long as length of arms (Fig. 32). Style with short, acute apophysis (Fig. 33). Plate acutely triangular (Fig. 34). Valve roughly equidistantly triangular, posterior margins straight (Fig. 34). Pygofer in lateral view about as long as plate, posterior margin truncate, set with short macrosetae (Fig. 36); anal tube shallowly incised into pygofer (Fig. 35).

Genitalia. **Female**. Sternite 7 with posterior margin produced triangularly (Fig. 39).

Relationships. This new genus is placed in the Paralimnini, based on definitions of the tribe according to Emeljanov (1962) and Webb & Heller (1990). The stretched forewing is unique in this genus with no closely related genus known from Southern Africa. In *Stymphalus* Stål (redescribed by Linnavuori, 1978) the posterior margin of the forewing is rectangular or truncated obtusely, but never as narrowly elongate as in *Teinopterus*. The forewing of an undescribed species in the Athysanini (Deltocephalinae) associated with Asteraceae in the Fynbos Biome, also has the apex of the tegmina narrowly extended, and as in many athysanines from this biome, it has the hind wing reduced.

Teinopterus microphallus sp. n.

(Figs 5–7, 29–45)

Diagnosis. Tegmina caudally in male and female narrowly elongated, extending beyond apex of abdomen (Figs 5, 6, 38), hind wing reduced, about ½ as long as tegmina. Aedeagus C-shaped, subapical lateral and ventral paired teeth, gonopore apical, incised into shaft (Figs 29, 30, 31). Plate acutely triangular, uniseriate row of macrosetae distally (Fig. 34). Pygofer square, with reduced lobe, macrosetae laterally (Fig. 36). Female with sternite 7 with posterior rounded ligula, and short, basal collar, fine pubescence medioposteriorly (Fig. 39).

Etymology. Greek, compound word, *mikro*, small and, *phallus*, for the small size of the aedeagus.

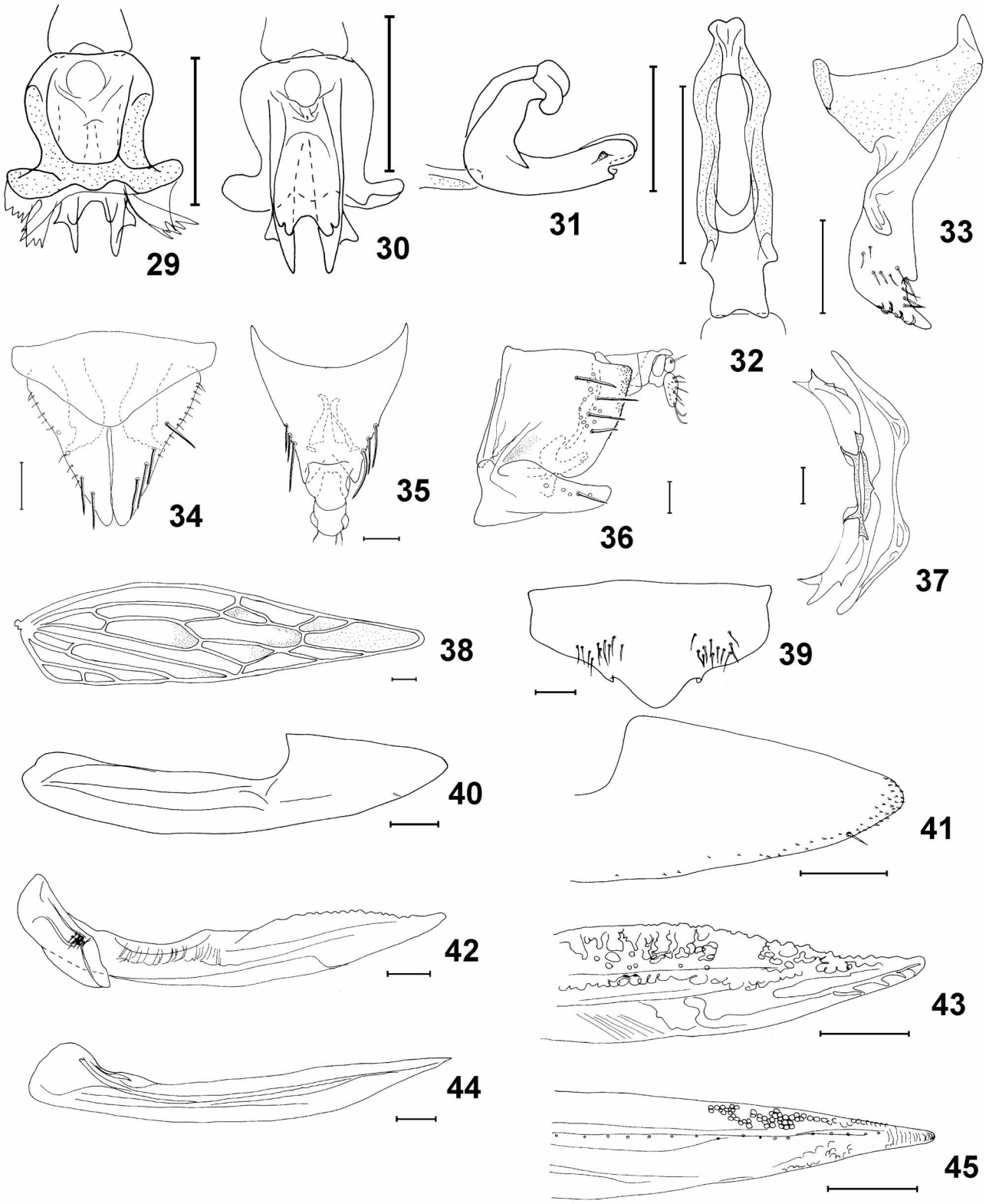
Colour. **Male**, **female and nymph**. Pale ochraceous. Vertex, pronotum and scutellum with small light and dark brown, paired fuscous markings. Tegmina with some cells with fuscous markings (Figs 5, 6). Nymph as in Fig. 7.

Male. **Dimensions**. (n=32) Length from apex of vertex to apex of tegmina 4.0–4.3 mm, length from apex of vertex to apex of abdomen 2.9–3.4 mm, length of hind wing 1.4–2.4 mm; length of forewing 2.7–3.7 mm; median length of vertex 0.4–0.5 mm, length of vertex next to eye 0.3 mm, length of pronotum 0.3–0.4 mm. Greatest width of head 1.0–1.1 mm, greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 27–28 µm, ocellocular distance 41–54 µm.

Genitalia. Aedeagus with shaft and dorsal apodeme C-shaped, shaft arising ventrally from preatrium; dorsal apodeme sclerotized, produced laterally, aedeagal shaft incised apically, ventrally with subapical recess, laterally with subapical triangular paired process; gonopore subapical, at base of incision (Figs 29–31). Style with anterior lateral and medial lobes broad basally, acute apically; apophysis short, acutely triangular, about 3 ventral teeth; preapical lobe rectangular, shallow (Fig. 33). Pygofer rectangular in lateral view; macrosetae short (Fig. 36).

Female. **Dimensions**. (n=19) Length from apex of vertex to apex of tegmina 4.0–4.4 mm, length from apex of vertex to apex of abdomen 3.1–3.5 mm, length of hind wing 1.6–1.9 mm; length of forewing 3.2–3.5 mm, median length of vertex 0.5 mm, length of vertex next to eye 0.3–0.4 mm, length of pronotum 0.4 mm. Greatest width of head 1.1 mm, greatest width of pronotum 0.9–1.0 mm. Ocellar diameter 28 µm, ocellocular distance 43–59 µm.

Genitalia. Sternite 7 with posterior margin medially produced into rounded, triangular ligula, base with short lip, fine setae near distal margin (Fig. 39). Valvula 1 lanceolate, microsculpture imbricate apically, maculose more basally (Figs 44, 45). Valvula 2 with uniform fine denticulation (Figs 42, 43). Valvula 3 (Fig. 40) with one or two macrosetae near apex, 19–24 µm in length (Fig. 41).



FIGURES 29–45. *Teinopterus microphallus* **gen. n. & sp. n.** Male and female genitalia, forewing and male abdominal apodemes. **29–38**, male; **29**, aedeagus, dorsally; **30**, aedeagus, ventrally; **31**, aedeagus, laterally; **32**, connective; **33**, style; **34**, plate; **35**, pygofer, dorsally; **36**, pygofer, laterally; **37**, abdominal apodemes; **38**, forewing; **39–45**, female; **39**, sternite 7; **40**, valvula 3; **41**, valvula 3, ultrastructure; **42**, valvula 2; **43**, valvula 2, ultrastructure; **44**, valvula 1; **45**, valvula 1, ultrastructure. Scale=0.1 mm.

Material examined. Holotype male. **South Africa**. **Eastern Cape Province**. Steynsburg, 20 km east, 31°15′S, 25°59′E, 1646 m, 20.iv.2006, M. Stiller, DVac, *Merxmuellera* sp. (Poaceae) (SANC). Paratypes 100♂, 65♀, 8

nymphs. **Eastern Cape Province**. 1♂, Bergkwagga Park, 25°27′S, 32°15′E, 19.i.1984, J.G. Theron, sweeping; 1♂, 1♀, Bakenkop near Tarkastad, 32°16′S, 26°25′E, 1759 m, 19.iv.2006, DVac, roadside and grazed pasture; 6♂, 1♀, 2 nymphs, road between Molteno and Steynsburg, 31°15′S, 26°00′E, 1617 m, 20.iv.2006, DVac, dominant grass in grazed veld, *Merxmuellera* sp.; 21♂, 14♀, 2 nymphs, *ibid.* holotype; 10♂, 3♀, Loodsberg Pass, base, 31°49′S, 24°51′E, 1690 m, 20.iv.2006, DVac, *Merxmuellera* sp.; 2♂, 1♀, Wapadsberg Pass, Cradock, 31°57′S, 24°55′E, 1762 m, 20.iv.2006, DVac, also other grass species, *Merxmuellera* sp.; 7♂, 3♀, Loodsberg Pass, summit, 31°50′S, 24°51′E, 1791 m, 20.iv.2006, DVac, grassland including grass such as *Themeda triandra*, *Merxmuellera* sp.; 1♂, 1♀, Hougham, Port Elizabeth, 33°45′S, 25°41′E, 45 m, 21.iv.2006, DVac, dry grass near road construction site; 4♂, 1♀, The Ranges farm, 32°23′25″S, 23°50′12.7″E, 1746 m, 23.i.2011, sweep, grass; 12♂, 15♀, 3 nymphs, Swaershoek pass near summit, 32°17′28.8″S, 25°30′42.2″E, 1599 m, 27.i.2011, DVac, grazed pasture, *Merxmuellera* sp. dominant; 6♂, 5♀, 1 nymph, Wapadsberg Pass, below summit towards Graaf Reinet, 31°56′1.6″S, 24°52′16.2″E, 1597 m, 27.i.2011, DVac, grazed pasture, *Merxmuellera* sp. dominant; 9♂, 1♀, Swaershoek pass near Pearston junction, 32°24′53.1″S, 25°26′38.2″E, 1144 m, 26.i.2011, DVac, road side grassland, *Merxmuellera* sp. dominant; 5♂, 5♀, Rooihoogte between Wapadsberg Pass and Loodberg Pass, 31°47′50.4″S, 24°55′31.7″E, 1517 m, 27.i.2011, DVac, *Merxmuellera* sp. dominant grass; 3♂, 3♀, Rooihoogte near Wapadsberg Pass, 31°55′51.5″S, 24°57′27.6″E, 1538 m, 27.i.2011, DVac, *Merxmuellera* sp. dominant grass; 7♂, 8♀, Loodsberg Pass summit, 31°50′9.5″S, 24°51′38.7″E, 1807 m, 27.i.2011, DVac, grass and shrubs; 1♂, Klipkraal farm portion 151, east Molteno, 31°22′55.1″S, 26°41′22.6″E, 1783 m, DVac, grass and forbs; 1♀, Morgenzon farm portion 23, east Molteno, 31°21′57.5″S, 26°34′13.9″E, 1854 m, DVac, grass and forbs. **Northern Cape Province**. 8♂, 9♀, Oorlogspoort, 12.5 km east Noupoort, 31°12′24.7″S, 25°04′31.3″E, 1752 m, 27.i.2011, DVac, road margin and grazed pasture; 4♂, 1♀, 1 nymph, Oorlogspoort, 9.4 km east Noupoort, 31°12′05.17″S, 25°02′39.13″E, 1786 m, 27.i.2011, DVac, road reserve and grazed pasture. **Western Cape Province**. 4♂, 3♀, north west of Beaufort West, 32°04′24.1″S, 22°22′47.6″E, 1692 m, 2.v.2011, DVac *Merxmuellera* sp. dominant. All collected by M. Stiller. (BMNH, INHS, SANC).

Remarks. The most unique feature of this species is the acutely produced apex of the forewing (Figs 5, 6, 38). It is not known in any other macropterous or brachypterous Paralimnini in Southern Africa. According to vegetation units defined by Mucina & Rutherford (2006) all the records correspond with the Karoo Escarpment Grassland, with a likelihood that the host plant is *Merxmuellera disticha.* Parasitism was not noticed in any of the examined or dissected specimens.

Umeqi gen. n.

Type species: *Umeqi okhahlamba* sp.n. (Figs 8, 9, 46–59).

Diagnosis. Macropterous, length 3.4–3.9 mm. Male genitalia with plate short, posterior margin shallowly bilobed (Fig. 49). Aedeagus very short, shaft short, paired laterobasal spines (Figs 46, 47). Female with sternite 7 with wide, bilobed, rounded ligula (Fig. 52).

Etymology. The genus name is derived from isiZulu (Nguni language spoken in KwaZulu-Natal Province of South Africa) Umeqi [uˈme:!i] (the letter ‘q’ is a (post)alveolar click) “one who jumps”, refers to the jumping ability of this leafhopper. Gender feminine.

External features. **Male and female**. Vertex shagreen, disc smooth. Clypeus shagreen, brown, with ochraceous horizontal arcs. Clypellus with lateral margins convergent, posterior margin straight, shorter than margin of gena. Gena slightly incised below eye.

Chaetotaxy. Protibia 1+4. Profemur row AV short, relatively thick; row AM about three times longer than AV; AV1 slightly longer and thicker than intercalary setae. Mesotibial setal formula 4+4. Metafemoral setal formula 2+2+1, apical pair slightly shorter than subapical setae, medial pair of different length.

Abdominal apodemes. Membranous lobes on anterior and posterior apodemes short (dorsally about as wide as width of apodemes). Anterior view as in Fig. 53.

Genitalia. **Male**. Pygofer with anal tube incised slightly less than ½ way into pygofer (Fig. 50); tergite 10 produced anteroventrally into process articulating with dorsal apodeme of aedeagus (Fig. 51). Pygofer lobe rhomboid, slightly narrower than pygofer, lobe setous (Fig. 51). Aedeagus small; shaft very short, directed dorsally,

situated medially between paired, pointed spine, originating ventrolaterad from preatrium, curved slightly dorsoposteriad (Figs 46, 47); dorsal apodeme short, articulating with process of tergite 10, anteriorly membranously fused with connective (Fig. 46). Style with apophysis truncate, posterior margin serrate, wider than width across preapical lobe (Fig. 48); apophysis reaching posterior margin of plate (Fig. 49). Connective elongate, about three times longer than greatest length of aedeagus, stem absent, arms widest anteriorly, tapered posteriorly; articulated with aedeagus (Fig. 46). Plate short, 1.5–2.0 times as wide as long; lateral margin rounded; medial margin curved laterad; posterior margin sinuous; lateroposterior margin rounded, dorsad of medioposterior margin; medioposterior margin sclerotized, ventrad of lateroposterior margin; apices of posterior margin of variable relative length; 4–5 submarginal, uniseriate macrosetae (Fig. 49). Valve transverse, narrowly triangular (Fig. 49).

Genitalia. **Female**. Sternite 7 with wide V-shaped notch between rounded lobes, arising from wide ligula (Fig. 52).

Relationships. This genus is assigned to the Paralimnini due to the shape of the connective and its articulation with the aedeagus. The peculiar reduced structure of the aedeagus and plate separate this genus from other genera of Paralimnini. It shares some internal and external features with other genera such as *Elginus* Theron, *Lecacis*, *Nicolaus*, *Pravistylus* and *Vilargus*. It is most similar in colour and shape to *Elginus*, but not in internal male genitalia (see Table 1). The general plan of the aedeagus resembles that of *Nicolaus* Lindberg. It is however not included in *Nicolaus* due to the reduced preapical aedeagal process, and the shaft that is sclerotized and short, as described below in Table 1. The other south african paraliminine genera such as *Cedarotettix* Theron, *Coganus* Theron, *Hiltus*, *Jannius* Theron, *Naudeus*, *Platentomus* Theron, *Restiobia* Davies and *Samuara* Linnavuori have distinctly different size (length from apex of vertex to apex of abodomen or tegmina), color and complex or simple, elongate male genitalia.

***Umeqi okhahlamba* sp. n.**
(Figs 8, 9, 46–59)

Diagnosis. Male with very short, reduced aedeagus, shaft very short, sclerotized, flanked by laterobasal paired short spines (Figs 46, 47). Plate short, posterior margin bilobed, median lobe sclerotized (Fig. 49). Style with apophysis transverse, serrate (Fig. 48). Female sternite 7 with wide ligula, posterior margin bilobed, V-shaped notch medially (Fig. 52).

Etymology. The species name is derived from isiZulu (Nguni language spoken in KwaZulu-Natal Province of South Africa), oKhahlamba [ɔk^{h}a'ɬa:mba] meaning "from the Drakensberg", referring to the location where this leafhopper was found. Gender feminine.

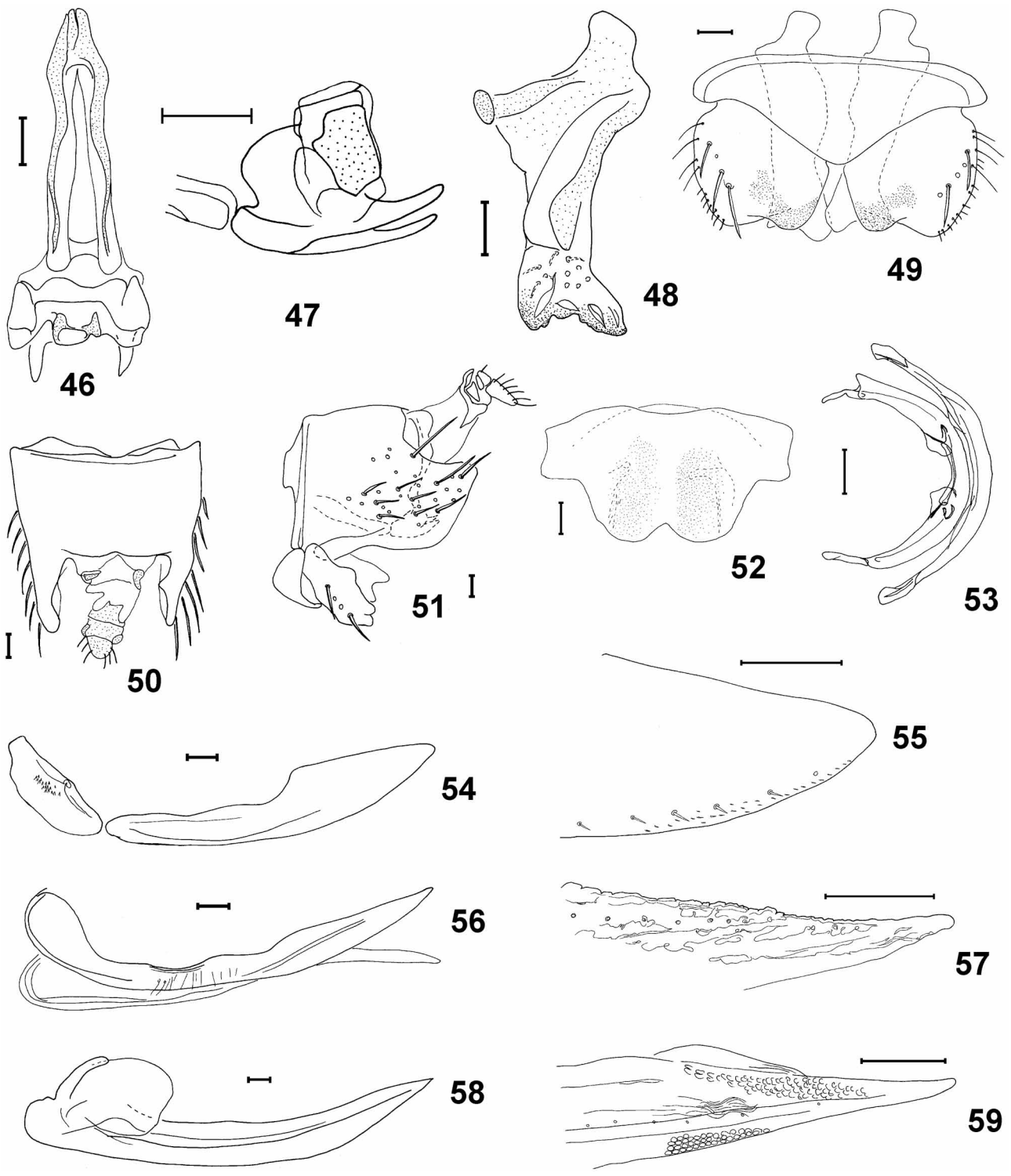
Colour. **Male and female**. Ochraceous, vertex with disc with triangular light brown marking, horizontal brown arc visible on lateral margin of vertex; pronotum with two narrow, paired, light brown longitudinal lines. Tegmina with most cells lined with light brown markings. Veins pale. Costal cell yellow. Commisural margin of claval cells usually with light brown markings (Figs 8, 9).

Male. **Dimensions**. (n=14) Length from apex of vertex to apex of tegmina 3.5–3.6 mm; length from apex of vertex to apex of abdomen 2.8–3.1 mm; median length of vertex 0.5–0.6 mm; vertex length next to eye 0.3–0.4 mm; median length of pronotum 0.4 mm. Greatest width of head across eyes 1.0–1.1 mm; greatest width of pronotum 0.9–1.0 mm. Ocellar diameter 25–38 µm, ocellocular distance 41–54 µm.

Genitalia. Pygofer with anal tube incised slightly less than ½ way into pygofer (Fig. 50); tergite 10 produced ventrally into process articulating with dorsal apodeme of aedeagus (Fig. 51). Aedeagus small; shaft very short, directed dorsally, situated medially between paired, pointed spines, arising ventrolaterally from preatrium, slightly curved dorsally (Figs 46, 47). Style with apophysis truncate, posterior margin serrate, wider than width across preapical lobe (Fig. 48); apophysis reaching posterior margin of plate (Fig. 49). Connective elongate, about three times longer than greatest length of aedeagus dorsally, stem absent, arms widest anteriorly, tapered posteriorly; articulated with aedeagus (Fig. 46). Plate short, 1.5–2.0 times as wide as long; lateral margin rounded; medial margin convex; posterior margin sinuate; lateroposterior margin rounded, dorsad of medioposterior margin; medioposterior margin sclerotized, ventrad of lateroposterior margin; apices of posterior margin of variable relative length; 4–5 submarginal, uniseriate macrosetae (Fig. 49).

TABLE 1. Differences between male and female genital features of leafhopper genera *Elginus*, *Lecacis*, *Umeqi*, *Nicolaus*, *Pravistylus* and *Vilargus* (Cicadellidae).

	Male pygofer	Male aedeagus	Male style	Male plate	Female sternite 7
Elginus sensu Stiller, 2009 (25 spp)	Lobe contiguous with pygofer, rounded or angulate, never modified.	Shaft prominent, elongate, rarely with basal or apical processes, usually asymmetrical.	Apophysis usually elongate, longi-tudinal, usually with ventral row of teeth.	Usually longer than greatest width, rarely shorter, posterior margin usually round-ed, sometimes acute.	Variable. With or without ligula; notch wide, narrow or absent.
Lecacis (3 spp), described below.	Lobe broadly rounded, attached slightly ventrad on pygofer.	Shaft depressed, with or without teeth on margin, only asym-metrical in shaft apex or spinal arrangement.	Apophysis trans-verse, posterior mar-gin serrate, wider than width across preapical lobe.	Tapered, narrowly rounded, or medial margin strongly sinuous.	V-shaped or narrow notch flanked by triangular lobes.
Nicolaus sensu Stiller, 1998 (24 spp)	Lobe usually with process and spines, shape variable.	Shaft membranous, or short and weakly scle-rotized, situated be-tween complex, paired sclerotized processes.	Apophysis usually short, longitudinal, rarely transverse.	Usually with apex with dorsal marginal or submarginal row of teeth or sclerotized region.	Variable. Usually with variable notch on broadly rounded margin. Ligula rare.
Pravistylus sensu Stiller, 2010a (30 spp)	Lobe with wide or narrow base, triangular or rounded, rarely with spine, tooth or serration ventrally.	Shaft sclerotized, thick or thin, tubular, C- or U-shaped in lateral view, symmetrical.	Apophysis narrower than width across preapical lobe, distal and basal parts weakly connected, anterior medial lobe usually elongate.	Apex usually modified, sometimes lateral or medial margin modified.	Variable. With or without ligula.
Umeqi (1 sp.)	Lobe rhomboid.	Aedeagus small, shaft short, tubular, laterally sclerotized; flanked by paired teeth, directed posteriorly, symmetrical.	Apophysis trans-verse, posterior mar-gin serrate, wider than width across preapical lobe; distal part wide, anterior lobes short.	Shorter than greatest width, posterior mar-gin bilobed, medial lobe sclerotized, ventrad of lateral lobe, lobes of variable relative length.	Ligula with V-shaped notch flanked by rounded lobes, ligula slightly narrow than base.
Vilargus, *sensu* Stiller, 2010b (9 spp)	Lobe short, triangular or reduced, sometimes ventral margin sclerotized.	With symmetrical or asymmetric lateral or ventral paraphysis, or paraphysis fused with shaft.	Apophysis longi-tudinal, narrower than width across preapical lobe, distal and basal part weakly joined.	Rounded, truncate or triangular.	Notch on rounded margin or short narrow ligula.



FIGURES 46–59. *Umeqi okhahlamba* **gen. n. & sp.n.** Male and female genitalia. **46–51**, **53**, male; **46**, aedeagus, dorsally; **47**, aedeagus, laterally; **48**, style; **49**, plate; **50**, pygofer, dorsally; **51**, pygofer, laterally; **52**, **54–57**, female; **52**, sternite 7; **53**, abdominal apodemes, anteriorly; **54**, valvula 3 and valvifer; **55**, valvula 3 ultrastructure; **56**, valvula 2; **57**, valvula 2, ultrastructure; **58**, valvula 1; **59**, valvula 1 ultrastructure. Scale=0.1 mm.

Female. **Dimensions**. (n=12) Length from apex of vertex to apex of tegmina 3.2–4.1 mm; length from apex of vertex to apex of abdomen 3.2–4.0 mm; median length of vertex 0.5–0.6 mm; vertex length next to eye 0.4 mm; median length of pronotum 0.4 mm. Greatest width of head across eyes 1.0–1.2 mm; greatest width of pronotum 0.8–1.1 mm. Ocellar diameter 24–38 µm, ocellocular distance 40–58 µm.

Genitalia. Sternite 7 basally transverely rectangular, distally with wide V-shaped notch between rounded lobes, arising from wide ligula, about ¾ as wide as greatest width basally (Fig. 52). Valvula 3 with 5–6 larger apical setae, 8–25 µm long, otherwise sparsely covered with microtrichia (Figs 54, 55). Valvula 2 finely denticulate (Figs 56, 57). Valvula 1 lanceolate, imbricate sculpture (Figs 58, 59).

Material examined. Holotype male. **South Africa**, **KwaZulu-Natal Province**. Dlamini's Kraal, Mnweni Valley, 28°48′S, 29°05′40″E, 1550 m, 27.iv.2004, M. Stiller, sweeping wet grass and forbs (SANC). Paratypes 16♂, 8 ♀. **Lesotho**. 6♂, 4♀, Sehlabathebe Nature Reserve, 29°53′S, 29°04′E, 1.iv.1994, sweeping grass. **South Africa**, **KwaZulu-Natal Province**. 1♂, 1♀, Royal Natal National Park, 28°40′S, 28°56′E, 19.i.1981, J.G. Theron, sweeping; 3♂, Sani Pass, 29°35′55″S, 28°18′19″E, 2520 m, 20.iv.2002, M. Stiller, E. Breytenbach, one specimen swept off *Aristida monticola* (Poaceae), the others by sweeping and DVac grass and forbs; 1♀, Sani Pass, 29°37′21″S, 28°23′8″E, 1840 m, 20.iv.2002, M. Stiller, E. Breytenbach, sweeping grass and forbs; 1♀, at junction to Mbundini and Fangs Passes, 28°52′S, 28°58′E, 2000 m, 25.iv.2004, sweeping grass, *Diheteropogon amplectans* (Poaceae) dominant; 3♂, 3♀, *ibid*. holotype. **Eastern Cape Province**. 1♀, Tele Falls catchment, 30°39′19″S, 27°50′9″E, 2440 m, 29.iii.2005, sweeping two *Merxmuellera* spp, (Poaceae). All collected by M. Stiller, except where stated otherwise. (BMNH, INHS, SANC).

Remarks. *Umeqi okhahlamba* shares features such as colour and shape with species of *Elginus*, *Nicolaus*, *Pravistylus* and *Lecacis*. The most important morphological differences are tabulated in Table 1. There is a slight resemblance in shape and colour and male genitalia to *N. tenax* Stiller. It is more similar in colour and shape to species of *Elginus*, but not in internal male genitalia. Female genitalia correspond to a greater degree. For example the female sternite 7 in *E. cultellus* Stiller and *E. denticulatus* Stiller and to a lesser extent in *E. unispinus* Stiller and *E. vulgaris* Stiller bear some resemblance to the corresponding sternite of *U. okhahlamba*. Identification of females is complicated further by the overlapping distributions of *E. malotiensis, E. vulgaris* and *U. okhahlamba* at Dlamini's Kraal, Sani Pass and Sehlabathebe. There are no significant differences between measurements of males or females of these three species. Furthermore specimens of *U. okhahlamba* are uncommon. For instance at Sani Pass three males and one female were *U. okhahlamba* and 57 males and 35 females were *E. malotiensis.*

The style of *Tytthuspilus onychophallus* corresponds with that of *U. okhahlamba*. The small aedeagus in *Teinopterus mikrophallus* and *Ochromelanus brachyphallus* coincides with the aedeagus of *U. okhahlamba*, although these species share no other similarities.

Ochromelanus gen. n.

(Figs 10–13, 60–76)

Type species: *Ochromelanus brachyphallus* sp.n. (Figs 10–13, 60–76).

Diagnosis. Aedeagus fused to connective (Fig. 61). Aedeagus reduced. Plate with lateral margins concave (Fig. 64). Valve triangular. Pygofer lobe broadly rounded (Fig. 67), with medially recurved, spinulate process (Fig. 66). Anal tube triangular, recessed about half way into pygofer (Fig. 65). Brachypterous, yellowish anteriorly, fuscous posteriorly, macrosetae of pygofer distally fuscous and proximally whitish (Figs 10, 11, 13).

Etymology. Described for the distinct yellow and black colour pattern, Greek, *ochros*, yellow, *melanos*, black. Gender masculine.

External features. **Male**, **female and nymph**. Brachypterous, length from apex of vertex to apex of tegmina about ½ as long as length from apex of vertex to apex of abdomen. Vertex medial length two times longer than length next to eye. Head 1.1 times wider than width across pronotum. Ocellar diameter 0.6–0.8 times larger than ocellocular distance. Vertex rounded to face, shagreened, disc of vertex shagreened, rounded. Pronotum with fine transverse striations. Face unmarked. Clypellus rectangular, lateral margins subparallel. Gena extending slightly beyond posterior margin of clypellus, slightly incised below eye.

Chaetotaxy. Protibia 1+4. Profemur setal row AV short, relatively thick, intercalary row about three times longer than AV setae, AV1 slightly longer and thicker than intercalary setae. Mesotibial setal formula 4+4. Metafemoral setal formula 2+2+1, apical pair slightly shorter than subapical setae, medial pair of different length and thickness. Tegmina very short, reaching tergite 4, venation reduced (Figs 10, 11, 13). Nymph as in Fig. 12.

Abdominal apodemes. As in Figs 68, 69. Anterior apodeme narrow with short, medial lobes; posterior apodeme broad, with basal, contiguous, unsclerotized lobes, not reaching beyond posterior margin of tergite 1.

Genitalia. **Male**. Aedeagus with reduced shaft and dorsal apodeme; laterally with paired, rounded sclerotized

lobes, shaft membranous, opening at base of lobes (Figs 60, 61). Connective (Fig. 62) fused with aedeagus at preatrium (Fig. 61). Plate with lateral margin concave, uniseriate macrosetae (Fig. 64). Valve large, triangular, with lateral margins straight, anterior margin convex (Fig. 64). Pygofer, in lateral view, broadly rounded (Fig. 67), distal macrosetae dark brown, proximal macrosetae whitish; in dorsal view with interior, subapical, spinulate lobe (Figs 65, 66). Anal tube recessed more than ½ way into pygofer, tergite 10 broadly triangular (Fig. 65).

Genitalia. **Female**. Sternite 7 rectangular with wide, rounded notch (Fig. 70).

Relationships. This genus is assigned to the tribe Deltocephalini, based on the connective that is fused to the aedeagus, as defined by Webb & Viraktamath (2009). Additional features listed by Webb & Viraktamath include a linear connective, fully membranous tergite 10 (well sclerotized in *Ochromelanus*) and the style usually with a long anterior arm articulating with the connective. They state that a similar connective is found in Paralimnini and Chiasmini but is more loop-shaped and that is not fused to the aedeagus. The poorly defined gonoduct and gonopore of *Ochromelanus* is striking in this genus, but its significance in the tribe requires further investigation. There appears to be little or no resemblance with other genera in Deltocephalini from the Afrotropical Region, such as *Tetramelasma* Stiller 2011, *Heidinus* Theron, *Maiestas* Distant, *Paramesodes* Ishihara and *Theronus* Stiller. Some species of *Maiestas* have a similar arrangement in the abdominal apodemes (as depicted by Webb & Viraktamath, 2009) to that of *Ochromelanus*.

Ochromelanus shares some superficial features with Chiasmini, as defined by Zahniser (2008).

Other unusual features in *Ochromelanus*, are found in the abdominal apodemes and the pygofer lobe. *Ochromelanus* has the posterior abdominal apodeme with expanded, paired lobes, reaching into tergite 3 and the anterior apodeme without lobes. The pygofer lobe is recurved medially and is spinose. Superficial resemblance in shape, colour or genitalia with some chiasmine genera listed by Zahniser (2008). Examples include *Aconurella* (e.g. brachypterous species, *A. brevala* Theron) and *Pratura* (e.g. brachypterous species, *P. graminea* Theron). In *Aconurella* the pygofer lobe bears a caudad, serrate sclerotization.

***Ochromelanus brachyphallus* sp. n.**
(Figs 10–13, 60–76)

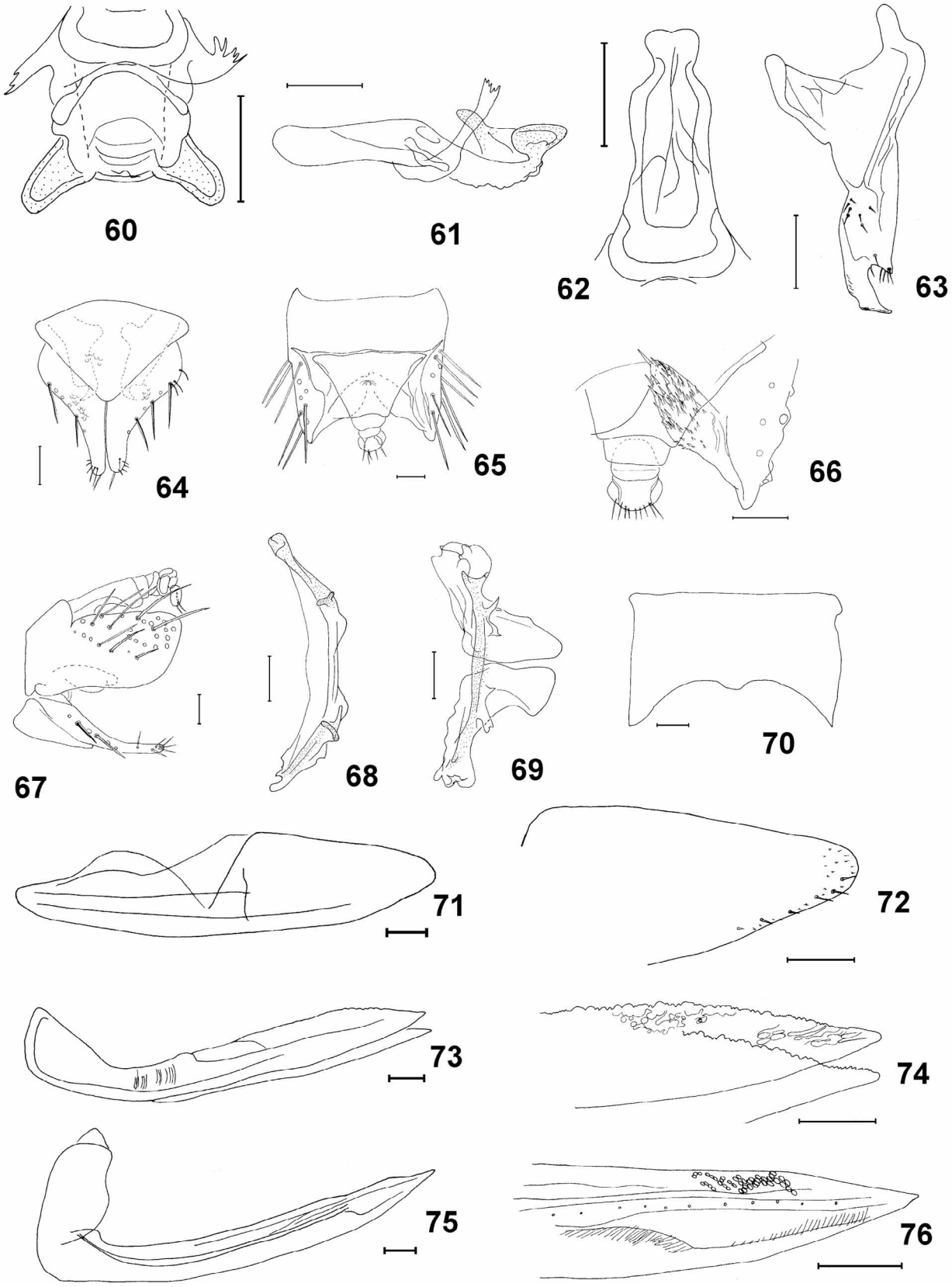
Diagnosis. Apex of vertex to abdominal segment 6 pale yellow; abdominal segment 7 to apex of pygofer fuscous (Figs 10, 11, 13). Male genitalia with reduced aedeagus (Figs 60, 61), laterally with paired, rounded tooth, dorsal apodeme short, shaft reduced, gonopore posteriad, obscure. Pygofer lobe with subapical, medially recurved lobular process, heavily set with microtrichia (Figs 65, 66). Plate with concave lateral margin, marginal macrosetae (Fig. 64). Valve large, triangular (Fig. 64). Anal tube large, triangular, deeply incised into pygofer (Fig. 65). Female genital sternite 7 with wide, rounded notch (Fig. 70).

Etymology. Greek, compound word, *brachys*, short, and *phallos*, aedeagus, referring to the short aedeagus.

Colour. **Male**, **female and nymph**. Bicoloured. Head, pronotum, tegmina and abdominal segments 1–7 yellowish to ochraceous (Figs 10, 11, 13). Abdominal segments 7–9 dark brown to black. Macrosetae on pygofer distinctly bicoloured: dark brown apically, whitish distally (Figs 10, 11, 13). Nymph ochraceous, with striate and transverse dark longitudinal markings dorsally, as in Fig. 12.

Male. **Dimensions**. (n=8) Length from apex of vertex to apex of tegmina 1.6 mm, length from apex of vertex to apex of abdomen 2.8–2.9 mm; median length of vertex 0.4 mm, length of vertex next to eye 0.3 mm, length of pronotum 0.3 mm. Greatest width of head 0.9 mm, greatest width of pronotum 0.8 mm. Ocellar diameter 25–30 µm, ocellocular distance 28–43 µm.

Genitalia. Aedeagus reduced, in lateral view with dorsal apodeme short, directed anteriad; in dorsal view with preatrium produced into rounded, sclerotized lobes; aedeagal shaft membranous, not produced beyond posterior margin between lobes, gonopore posterior, obscure (Figs 60, 61) Connective fused to preatrium (Fig. 61). Style basally with short, lateral and medial lobes; distally parallel-sided, apophysis short, narrower than width across preapical lobe, apex acute; preapical lobe acute, preapical angle rounded (Fig. 63). Pygofer, in dorsal view, with interior, lobular process arising subapically from caudal margin, directed medioanteriorly, heavily set with large microtrichia (Figs 65, 66).



FIGURES 60–76. *Ochromelanus brachyphallus* **gen. n. & sp. n.** Male and female genitalia and male abdominal apodemes. **60–69**, male; **60**, aedeagus, dorsally; **61**, aedeagus, laterally; **62**, connective; **63**, style; **64**, plate; **65**, pygofer, dorsally; **66**, pygofer process, dorsally; **67**, pygofer, laterally; **68**, anterior abdominal apodeme, dorsally; **69**, posterior abdominal apodeme, dorsally; **70–76**, female; **70**, sternite 7; **71**, valvula 3; **72**, valvula 3, ultrastructure; **73**, valvula 2; **74**, valvula 2, ultrastructure; **75**, valvula 1; **76**, valvula 1, ultrastructure. Scale=0.1 mm.

Female. **Dimensions**. (n=5) Length from apex of vertex to apex of tegmina 1.8–1.9 mm, length from apex of vertex to apex of abdomen 3.6–3.8 mm, median length of vertex 0.5 mm, length of vertex next to eye 0.3 mm, length of pronotum 0.3–0.4 mm. Greatest width of head 1.0–1.1 mm, greatest width of pronotum 0.9–1.0 mm. Ocellar diameter 28 µm, ocellocular distance 25–37 µm.

Genitalia. Sternite 7 rectangular, posterior margin notched as wide as greatest width of sternite, notch medially with small, rounded ligula (Fig. 70). Valvula 1 lanceolate (Fig. 75), with maculose dorsal microsculpture and becoming more imbricate ventrally (Fig. 76). Valvula 2 with uniform, fine denticulation (Figs 73, 74). Valvula 3 (Fig. 71) with short, fine setae (Fig. 72).

Material examined. Holotype male. South Africa. **Western Cape Province**. Pakhuis Pass, east Clanwilliam, 32°9′4.17″S, 19°1′47.81″E, 900 m, 6.v.2011, DVac grass. (SANC). Paratypes. 14♂, 8♀, 14 nymphs. **Eastern Cape Province**. 1♀, 1 nymph, road between Molteno and Steynsburg, 31°15′S, 26°00′E, 1617 m, 20.iv.2006, DVac *Merxmuellera* sp. in grazed pasture; 3♂, 1♀, 2 nymphs, Swaershoek pass near Pearston junction, 32°24′53.1″S, 25°26′38.2″E, 1144 m, 26.i.2011, DVac, road side grassland, *Merxmuellera* sp. dominant; 1♂, 9 nymphs, Swaershoek pass near summit, 32°17′28.8″S, 25°30′42.2″E, 1599 m, 27.i.2011, DVac, grazed pasture, *Merxmuellera* sp. dominant; 1♂, 1 nymphs, Rooihoogte near Wapadsberg Pass, 31°55′51.5″S, 24°57′27.6″E, 1538 m, 27.i.2011, DVac, *Merxmuellera* sp. dominant grass. **Northern Cape Province**. 1♀, 1 nymph, Oorlogspoort, 12.5 km east Noupoort, 31°12′24.7″S, 25°04′31.3″E, 1752 m, 27.i.2011, DVac, road margin and grazed pasture. **Western Cape Province**. 2♂, Jonkershoek, 33°56′S, 18°52′E, 15.iii.1972, J.G. Theron; 5♂, 4♀, *ibid*. holotype. All collected by M. Stiller, except where stated otherwise. (BMNH, INHS, SANC).

Remarks. *Ochromelanus brachyphallus* is known from two disjunct localities from the Fynbos and Grassland Biomes. For instance the two records from the Western Cape Province are 200 km apart and 600 km west of some of the collection localities in the Eastern Cape Province. Even these localities in the Eastern Cape are not in close proximity of each other. Other disjunct distributions based on long series of specimens is found in *Pravistylus deltoplacus* Stiller, 2010 and *Vilargus pumilicans* Stiller, 2010, and tentatively in *Elginus furcillatus* Stiller *and E. theroni* Stiller, 2009. No other known Southern African leafhopper resembles *O. brachyphallus*, and it appears that the Deltocephalini are poorly represented in this region. None of the specimens depicted internal or external signs of parasitism.

Lecacis Theron, 1982

Type species: *Lecacis platypennis* Theron, by original designation.

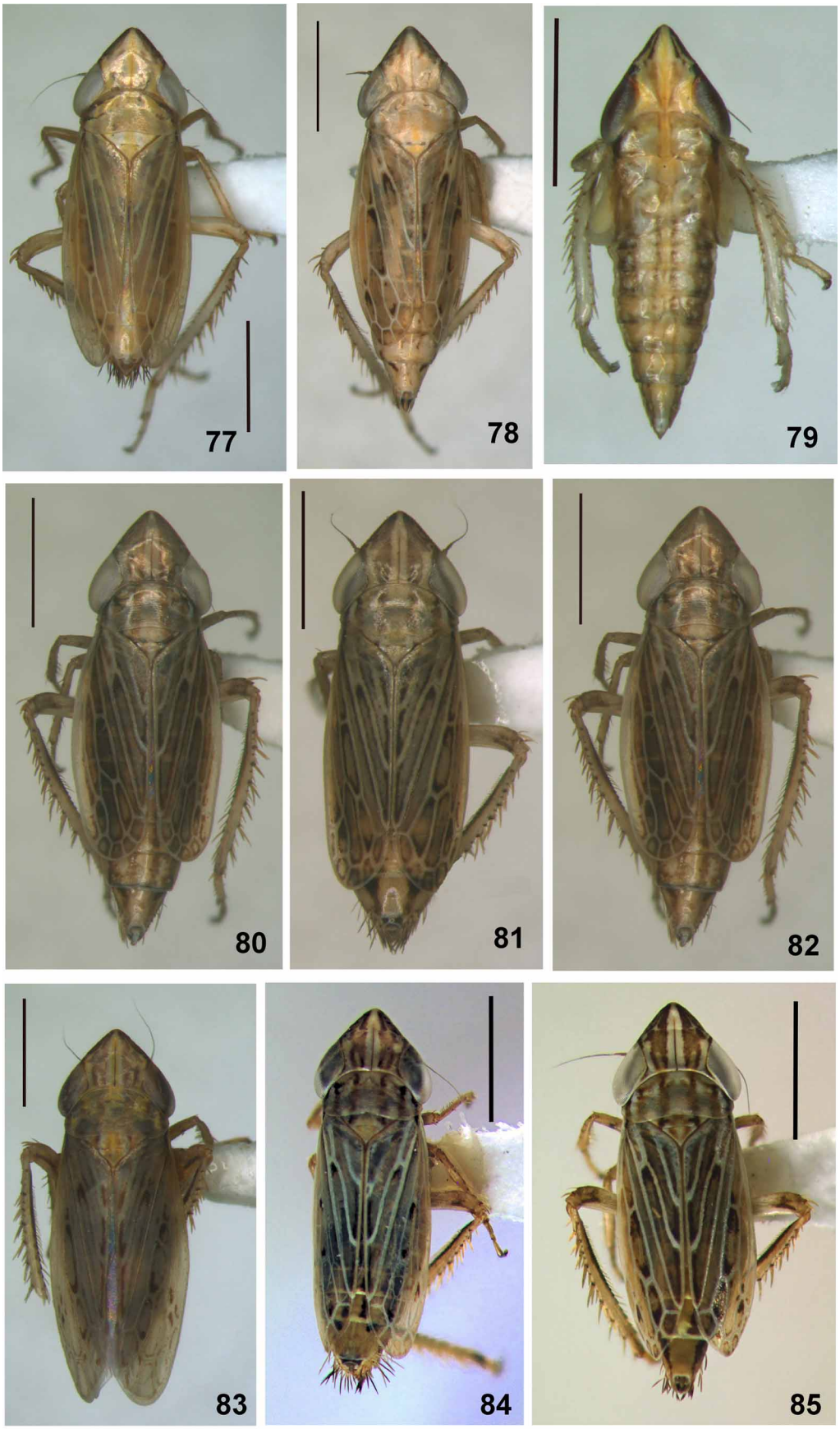
Redescription. **Diagnosis**. Aedeagus with shaft short and lateral margins depressed (Figs 86, 87, 102, 103, 104, 119–124), sometimes with marginal teeth or unpaired, ventral spine near gonopore; asymmetrical. Style apophysis heavily denticulate, transverse or longitudinal (Figs 89, 106, 126). Pygofer lobe short, uniformly rounded, slightly expanded ventrally (Figs 92, 109, 128). Female sternite 7 rectangular or reniform with paired, triangular medial lobes (Figs 97, 114, 134–136).

Wings. Tegmina submacropterous (usually reaching tergite 9, rarely tergite 6 or 7) or macropterous (tegmina reaching apex of abdomen or beyond); three anteapical cells, 4–5 reduced apical cells (Figs 110, 112, 130, 132); appendix very narrow (Figs 110, 112, 132), or absent (Fig. 130). Hind wing in both forms with well developed alary lobe (Figs 111, 113, 131, 133).

Dimensions and external morphology. **Male and female**. Males 2.5–3.4 mm and females 2.5–3.5 mm in length, measured from apex of vertex to apex of abdomen or apex of tegmina. Head wider than pronotum. Vertex triangular; discal region smooth, frontal region and face shagreened. Ocellus dorsomarginal, close to eye, separated from adjacent eye by distance of about twice its diameter. Coronal suture long, more than ¾ as long as length of vertex. Frontoclypeus narrowly wedge-shaped; anteclypeus narrowing apically. Gena deeply notched below eye. Ocellocular region as wide as gena below lorum. Lateral margin of pronotum short, non-carinate.

Chaetotaxy. Forefemur row AV short, thick, intercalary row long, delicate, AV1 slightly longer, AM1 close to AV1, thicker, darker than AM1. Foretibiae 1+4. Hind femoral setal formula 2+2+1.

Colour. **Male and female**. Ochraceous ground colour (Figs 77–85). Longitudinal brown to dark brown markings on vertex, pronotum and scutellum; some cells of tegmina with fuscous lining or marking, otherwise translucent. Pygofer dorsally with anterolateral marking (e.g. Figs 78, 80, 81). Costal cell and veins yellowish. Frontoclypeus with horizontal arcs, arcs sometimes visible on dorsal margin of vertex.



FIGURES 77–85. *Lecacis* species, dorsal habitus. **77–79**, *Lecacis mucropennis* **sp. n.; 77**, male; **78**, female; **79**, nymph; **80–82**, *L. platypennis* **sp. n.; 80**, male; **81**, female; **82**, female. **83–85**, *L. incupennis* **sp. n.**; **83**, male, Venterstad, collected 1986; **84**, male, Bethulie vicinity, collected 2011; **85**, female, Springfontein, collected 2011. Scale=1 mm.

Male. **Abdominal apodemes**. With small, membranous rounded lobes (Figs 93–95), similar in all known species.

Genitalia. Pygofer incised dorsally for about ⅓ its length by short anal tube (Figs 91, 108, 127); tergite 10 short, well sclerotized, articulating ventrally with dorsal apodeme of aedeagus. Pygofer lobe setose, broadly rounded caudally and ventrally, extended ventrally beyond anteroventral margin of pygofer (Figs 92, 109, 128). Plate variable:

1. Medial margin distally sinuous, exposing part of apophysis of style; apex narrowly digitate (Fig. 107).
2. Medial and lateral margin generally straight, triangular, apex truncated or rounded (Figs 90, 129).

Uniseriate macrosetae, 4–10, commonly 6–8 on both plates, sometimes irregular rows. Aedeagus compressed, ovoid in dorsal or ventral view (Figs 86, 102, 103, 119, 120), dorsal margin asymmetric, with paired or unpaired long (Figs 102, 103) or short teeth (Figs 86, 87) or without teeth (Figs 119, 120); shaft fused (Figs 86, 102, 103) or apex free (Figs 119–124), straight or curved laterally off midline; dorsal apodeme articulating with tergite 10; preatrium articulating with connective (Figs 104, 121, 122). Connective with basal arms fused, elongate; stem very short (Figs 88, 105, 125). Style with apophysis linear (Fig. 89) or transverse (Figs 106, 126), wider or narrower than width across preapical lobe, heavily sclerotized, denticulate; basal part transverse, medial and lateral lobes short, robust.

Female. **Genitalia**. Valvula 3 with variable number of weakly sclerotized, fine setae near apex (Figs 96, 98, 115, 137, 138). Valvula 2 with fine serration or without marked serration; medially with reniform, sclerotized region (Figs 99, 100, 116, 141, 142). Valvula 1 lanceolate (Figs 118, 143), with imbricate microsculpture (Figs 101, 117, 144, 145). Sternite 7 transversely rectangular or reniform (Figs 97, 114, 134–136). Medially with paired, triangular sclerotized process, medially with notch wide (Fig. 114) or narrow (Figs 97, 134–136).

Remarks. The colour and shape of *Lecacis* resembles that of *Elginus*, *Nicolaus*, *Pravistylus* and *Umeqi*. However, internal male and to a lesser extent female genitalia of these latter four genera are sufficiently distinctive to allow their recognition (Table 1). *Lecacis* has the aedeagus depressed with symmetric or asymmetric spines along the distal margin, and the style apophysis robust and caudally serrate. In *Elginus* the aedeagus has a long, tubular, asymmetrical shaft, rarely symmetrical, and the style apophysis elongate and usually ventrally serrate. *Nicolaus* has a reduced, membranous aedeagal shaft with paired lateral sclerotized paraphyses and generally a short, digitate style apophysis. *Pravistylus* has the aedeagus unmodified, symmetrical and with the shaft elongate and the style apophysis acute and elongate. The plate in *Pravistylus* is modified, and in some species resembles that of *Lecasis* (e.g. *P. bidentidiscus* Stiller and *P. scolophallus* Stiller). *Umeqi* has a shortened plate with a short mediocaudal, sclerotized lobe. The aedeagus of *Umeqi* is reduced with short shaft and short paired ventral digitate spines.

Lecacis mucropennis sp. n.

(Figs 77–79, 86–101)

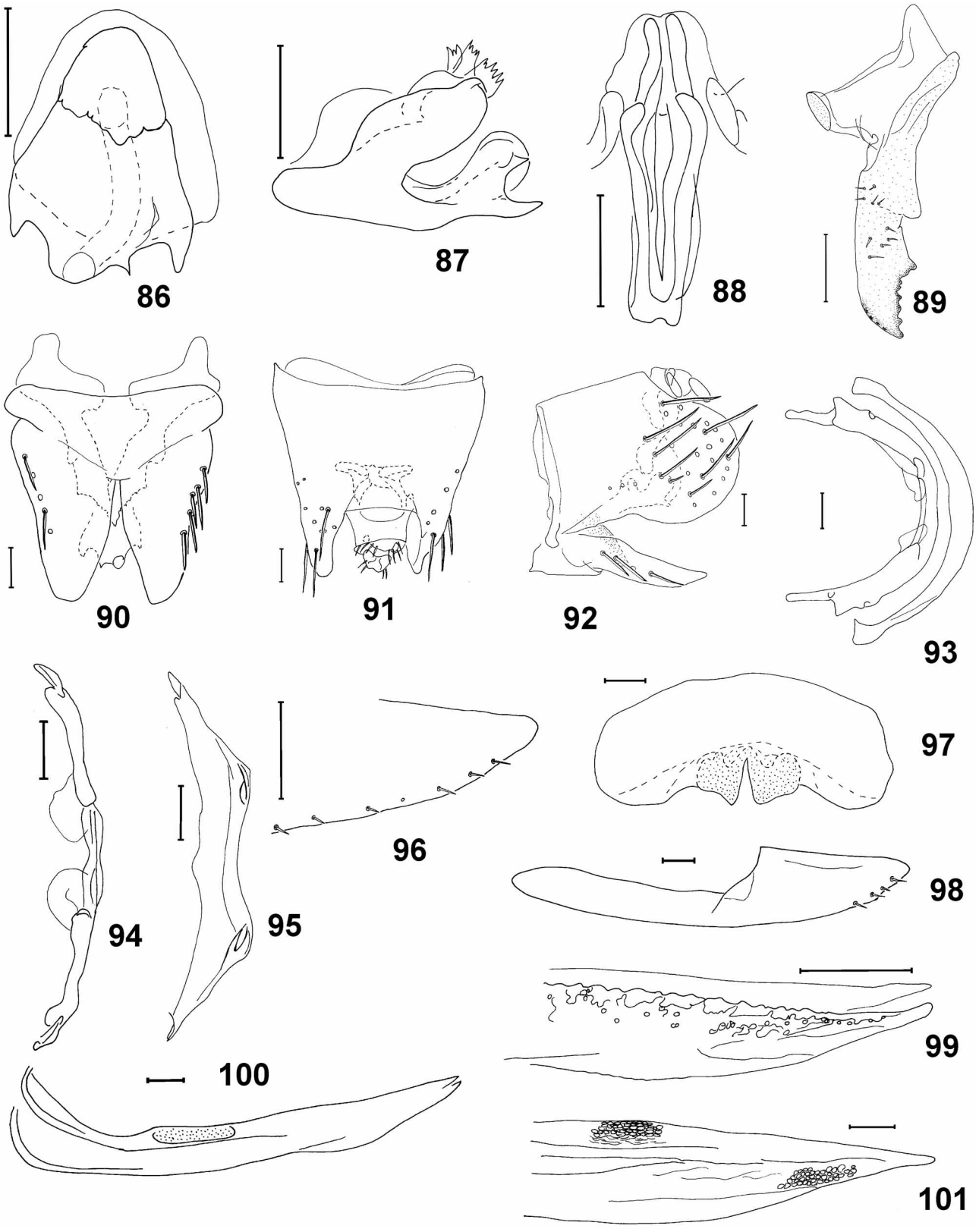
Diagnosis. Aedeagus with near-symmetrical paired teeth along distal margin, and small single spine subapically near gonopore, gonopore marginal, ventral (Figs 86, 87). Plate narrowly triangular, apex rounded (Fig. 90). Style apophysis linear, slightly narrower than width across preapical lobe (Fig. 89). Sternite 7 reniform, with posterior margin sclerotized medially, with deep, narrow notch (Fig. 97).

Etymology. Compound word in Latin, *mucro*, sharp point, *pennis*, penis, to depict the ventral, toothed margin of the aedeagus. Gender masculine.

Colour. Ochraceous, with fuscous markings dorsally on vertex and tegmina. Male from Knopjeslaagte (Fig. 77). Female (Fig. 78) and nymph (Fig. 79) from Vygenhoek.

Male. **Dimensions**. (n=56) Length from apex of vertex to apex of tegmina 2.9–3.1 mm, length from apex of vertex to apex of abdomen 3.0–3.5 mm, median length of vertex 0.3–0.5 mm, vertex length next to eye 0.3 mm; medial length of pronotum 0.3–0.4 mm. Greatest width of head 0.9–1.1 mm; greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 26–31 µm; ocelocular distance 40–54 µm.

Genitalia. Plate with lateral and medial margins converging, more or less straight, apex rounded; macrosetae uniseriate, paired 5 or 6, rarely 7 (Fig. 90). Aedeagus, in ventral view (Fig. 86), on either side of gonopore,



FIGURES 86–101. *Lecacis mucropennis* **sp. n.**, male and female genitalia and male abdominal apodemes. **86–95**, male; **86**, aedeagus, dorsally; **87**, aedeagus, laterally; **88**, connective; **89**, style; **90**, plate, ventrally; **91**, pygofer, dorsally; **92**, pygofer, laterally; **93–95**, abdominal apodemes; **93**, posteriorly; **94**, posterior apodeme, dorsally; **95**, anterior apodeme, dorsally; **96–101**, female; **96**, valvula 3, ultrastructure; **97**, sternite 7; **98**, valvula 3; **99**, valvula 2, ultrastructure; **100**, valvula 2; **101**, valvula 1, ultrastructure. Scale=0.1 mm.

with subapical lateral, near-symmetrical, curved tooth; additional, small single tooth on one side near gonopore; shaft curved laterad, gonopore apical, ventral. Aedeagus, in lateral view (Fig. 87), dorsal apodeme prominent, acutely angled to shaft, about as long as length of shaft. Style with apophysis elongate (about twice as long as wide), about ¾ as wide as width across preapical lobe; medioapical margin serrate, basal tooth sometimes enlarged; caudoventral margin serrate (Fig. 89); apophysis reaching about half way into plate (Fig. 90).

Female. **Dimensions**. (n=25) Length from apex of vertex to apex of tegmina 2.9–3.2 mm, length from apex of vertex to apex of abdomen 3.2–3.7 mm, median length of vertex 0.6 mm, vertex length next to eye 0.3–0.4 mm, medial length of pronotum 0.3–0.4 mm. Greatest width of head 1.0–1.1 mm, greatest width of pronotum 0.9–1.0 mm. Ocellar diameter 26–31 µm, ocelocular distance 42–56 µm.

Genitalia. Sternite 7 reniform (Fig. 97). Sternite 8 with paired triangular, heavily sclerotized plates, medially with narrow V-shaped gap, about half or less the width of gap in *L. platypennis* (Fig. 114); sclerotized portion protruding about half-way beyond margin of sternite 7. Valvula 1 lanceolate, sculpture imbricate (Fig. 101). Valvula 2 (Fig. 100) serration medially small, irregular, absent apically (Fig. 99). Valvula 3 (Fig. 98) with 1–6 longer setae marginally, about 3 times longer than microtrichia (Fig. 96).

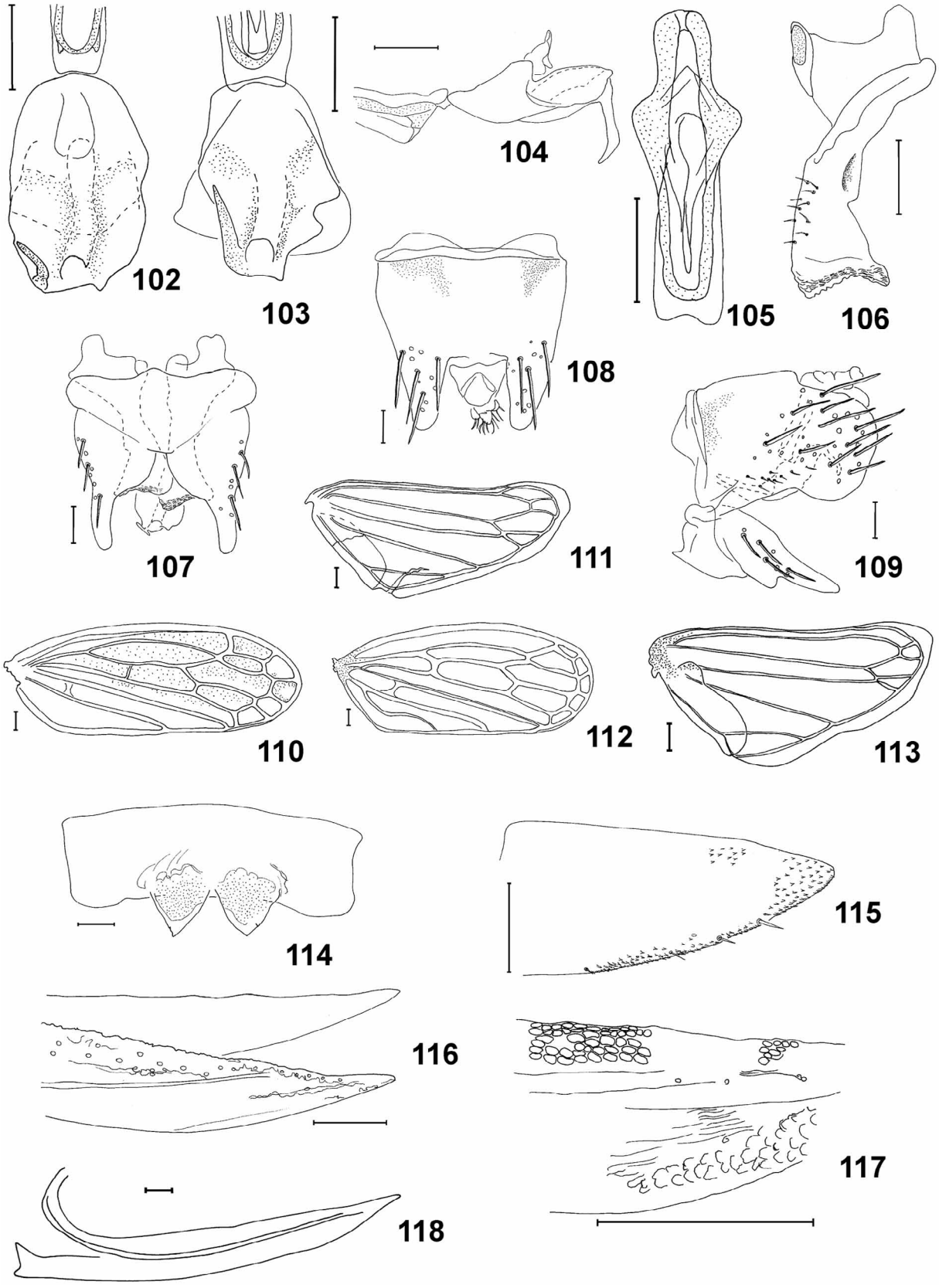
Material examined. Holotype male. **South Africa**, **Mpumalanga Province**. Vygenhoek farm 10JT, 25°2′29.08″S, 30°9′8.03″E, 1466 m, 13/01/2008, P. Hawkes, J. Fisher, sweeping. Paratypes. 78♂, 43♀, 2 nymphs. **Free State Province**. 3♂, 1♀, Viljoenskroon - Vredefort road, 27°6′S, 27°3′E, 1345 m, 9.iii.2005, DVac, grass; 4♂, 2♀, hilltop near Glen, north of Bloemfontein, 28°57′1.22″S, 26°23′17.12″E, 1407 m, 16.i.2011, DVac, grassland and shrubs; 14♂, 9♀, base of hill near Glen, north of Bloemfontein, 28°57′4.10″S, 26°23′25.58″E, 1339 m, 16.i.2011, DVac, grassland and shrubs; 3♀, 20 km before Philippolis from Colesburg, 30°24′39.53″S, 25°14′13.27″E, 1257 m, 27.i.2011, DVac, grazed pasture. **Gauteng Province**. 1♂, Faerie Glen Nature Reserve, Pretoria, 25°46′S, 28°17′E, 19.iii.1998, DVac, grassland, dominant grass *Aristida* and *Trachypogon* spp; 1♂, Zandspruit farm 191 IQ, Krugersdorp, 26°0′47.81″S, 27°55′39.68″E, 1008 m, 22.i.2002, H. Roux, sweeping; 3♂, 2♀, Zandspruit farm 191 IQ, Krugersdorp, 26°0′48.82″S, 27°55′40.01″E, 1428 m, 22.i.2002, H. Roux, sweeping; 1♂, Tweefontein farm north of Kromdraai Conservancy, 25°52′51.90″S, 27°48′12.00″E, 1513 m, 8.iii.2007, DVac, grass; 3♂, Knopjeslaagte farm, near Hekpoort, 25°51′36.00″S, 28°1′16.32″E, 1429 m, 3.xii.2008, DVac, grass and forbs. **Mpumalanga**. 3♂, 1♀, Sterkfontein farm 52JT, Everest Platinum Mine, 25°8′51.32″S, 30°7′48.54″E, 1469 m, 24.i.2007, P. Hawkes, J. Fisher, sweeping; 29♂, 13♀, *ibid.*, holotype; 2♂, Vygenhoek farm 10JT, 25°2′28.46″S, 30°9′58.72″E, 1455 m, 8.xii.2008, P. Hawkes, J. Fisher, sweeping; 6♂, 4♀, 2 nymphs, Vygenhoek farm 10JT, 25°2′11.58″S, 30°9′25.38″E, 1364 m, 8.xii.2008, P. Hawkes, J. Fisher, sweeping; 1♂, Greylingstad, 8.5 km north, 26°40′19.78″S, 28°47′47.69″E, 1600 m, 29.iii.2010, sweeping; 1♂, Perdekop, 23 km south west, 27°19′26.90″S, 29°32′45.10″E, 1780 m, 8.iv.2010, sweeping. **Northern Cape Province**. 1♀, Kuruman - Reivilo road, 27°35′S, 23°50′E, 1502 m, 8.iii.2005, sweeping, grazed grass and forbs. **North-West Province**. 5♂, 8♀, Vredefort Dome, summit of hill, 26°52′14.59″S, 27°19′41.27″E, 1437 m, 10.iii.2005, sweeping, grass and forbs. All collected by M. Stiller, except where stated otherwise. (BMNH, INHS, SANC).

Remarks. *Lecacis mucropennis* is characterized by the paired, near-symmetrical tooth-like spines on the margin of the expanded edge of the aedeagus. This configuration differs from that of *L. platypennis* which has asymmetrical teeth and a long asymmetrical free spine near the gonopore. More striking is the sinuous medial margin of the plate of *L. platypennis*, with exposed apophysis of the style. In *L. mucropennis*, as well as in *L. incupennis*, the medial margin of the plate is straight, and the entire plate is triangular with a blunt apex. The similarity to *E. levilobus* Stiller (2009) is discussed in the remarks under *L. platypennis*.

***Lecacis platypennis* Theron**
(Figs 80–82, 102–118)

L. platypennis Theron, 1982, 23–24.

Diagnosis. Aedeagus with single, long, narrow, tubular spine subapically near gonopore, gonopore submarginal, ventral (Figs 102–104). Plate with distal half of medial margin emarginate, exposing style apophysis (Fig. 107). Style apophysis transverse, caudal margin concave, serrate, wider than width across preapical lobe (Fig. 106). Sternite 7 rectangular with medial, sclerotized M-shaped posterior margin (Fig. 114).



FIGURES 102–117. *Lecacis platypennis* **sp. n.** Male and female genitalia, tegmina and hind wing. **102–111**, male; **102**, aedeagus, dorsally; **103**, aedeagus, ventrally; **104**, aedeagus, laterally; **105**, connective; **106**, style; **107**, plate; **108**, pygofer, dorsally; **109**, pygofer, laterally; **110**, tegmina; **111**, hind wing; **112–118**, female; **112**, tegmina; **113**, hind wing; **114**, sternite 7; **115**, valvula 3, ultrastructure; **116**, valvula 2, ultrastructure; **117**, valvula 1, ultrastructure; **118**, valvula 1. Scale=0.1 mm.

Colour. Ochraceous, longitudinal fuscous markings dorsally on vertex, pronotum and scutellum, markings in some cells of tegmina. Male, pale specimen from Klipkop (Fig. 80), male, dark specimen from Klipkop (Fig. 81). Female from Ezemvelo (Fig. 82).

Male. **Dimensions**. (n=27) Length from apex of vertex to apex of tegmina 2.6–2.8 mm, length from apex of vertex to apex of abdomen 2.8–3.1 mm, median length of vertex 0.5 mm, vertex length next to eye 0.3 mm, medial length of pronotum 0.3 mm. Greatest width of head 0.9 mm, greatest width of pronotum 0.8 mm. Ocellar diameter 27–30 µm; ocelocular distance 39–51 µm.

Genital. Pygofer, dorsally heavily set with macrosetae, anal tube incised by ⅓ into pygofer (Fig. 108); laterally with lobe uniformy rounded caudally and ventrally (Fig. 109). Plate with lateral margin produced into elongate process, with apex narrow, rounded, about as long as or shorter than basal length; medial margin emarginate (Fig. 107). Aedeagus, in ventral view (Fig. 102) margin commonly ovoid with 1–2 blunt points, rarely with margin with 1–3 unsclerotized protrusions (Fig. 103) on one side of gonopore and sometimes single protrusion on opposite side of gonopore. Aedeagus with long, unpaired ventroapical spine near gonopore, apex variable, either truncate or pointed or apex angled ventrad (Fig. 104), apex sometimes broken; dorsal apodeme reduced (Fig. 104). Aedeagal shaft straight or sometimes slightly curved laterad, gonopore subapical, ventral (Figs 102, 103). Style with apophysis truncate, posterior margin serrate, wider than width across preapical lobe (Fig. 106); apophysis exposed by sinuous medioposterior margin of plate (Fig. 107). Connective elongate, arms and stem of similar width, point of attachment of style widened (Fig. 105).

Female. **Dimensions**. (n=35) Length from apex of vertex to apex of tegmina 2.7–3.1 mm, length from apex of vertex to apex of abdomen 3.0–3.5 mm, median length of vertex 0.5–0.6 mm, vertex length next to eye 0.3 mm, medial length of pronotum 0.3–0.4 mm. Greatest width of head 0.9–1.0 mm, greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 28 µm, ocellocular distance 42–60 µm.

Genitalia. Sternite 7 transversely rectangular. Dorsally sternite 8 medially with heavily sclerotized, M-shaped plates, protruding well beyond posterior margin of sternite 7, membranously fused to medial section of symmetrical triangular points (Fig. 114). Valvula 1 (Fig. 118) lanceolate, sculpture imbricate (Fig. 117). Valvula 2 serration irregular, small medially, absent apically (Fig. 116). Valvula 3 with 1–6 longer setae, about 4 times longer than microtrichia (Fig. 115).

Type material examined. Holotype male. **South Africa**. **KwaZulu-Natal Province**. Ladismith [28°33′S, 29°47′E], 19.xii.1978, J.G. Theron (SANC).

Additional material examined. 100♂, 48♀, 2 nymphs. **South Africa**. **Eastern Cape Province**. 1♀, Groene Vallei 226, 32 km W Cradock, 32°3′28.51″S, 25°17′6.36″E, 1268 m, 27.i.2011, DVac, grass and shrubs on small hill and base of hill. **Free State Province**. 3♂, 1♀, Swartlaagte farm, Boshoff - Herzogville road, 28°19′3.36″S, 25°22′41.64″E, 1316 m, 9.iii.2005, DVac, *Schmidtia pappophoroides* Steud; 2♂, 1♀, Witfonten farm near Bloemfontein, 28°56′S, 26°25′E, 1307 m, 18.iv.2006, DVac, grass in road reserve; 1♂, 1♀, Sandveld Nature Reserve, 27°37′58.01″S, 25°41′30.98″E, 1237 m, 18.xii.2008, sweeping, grass and forbs; 3♂, 3♀, Geneva farm south of Kroonstad, 27°50′27.20″S, 27°11′16.01″E, 1450 m, 15.i.2011, DVac; 1♂, base of hill near Glen, north of Bloemfontein, 28°57′4.10″S, 26°23′25.58″E, 1339 m, 16.i.2011, DVac, grassland and shrubs on hillside; 1♀, Windburg vicinity west, 28°30′11.12″S, 27°1′28.88″E, 1468 m, 16.i.2011, DVac, grazed pasture, short grass and shrubs; 4♂, 4♀, Windburg vicinity east, 28°29′42.68″S, 26°59′44.34″E, 1472 m, 16.i.2011, DVac, grassland regrowth after fire; 1♂, 1♀, Philippolis - Fauresmith road, 30°13′10.92″S, 25°17′40.13″E, 1453 m, 27.i.2011, DVac, grass and shrubs; 1♂, 2♀, 20 km before Philippolis from Colesburg, 30°24′39.53″S, 25°14′13.27″E, 1257 m, 27.i.2011, DVac, grazed pasture; 12♂, 5♀, Rietfontein farm, north east of Bloemfontein, 29°03′22.8″S, 26°37′18.4″E, 1384 m, 1.v.2011, DVac roadside grass and forbs. **Gauteng Province**. 1♂, 1♀, Wonderboom Nature Reserve, 25°45′S, 28°12′E, 10.ii.1993, sweeping, grass; 5♂, 3♀, Wonderboom Aerodrome, 25°39′S, 28°13′E, 1200 m, 19.xii.2001, DVac, mowed grass, 16h00, *Aristida, Brachiaria, Bothriochloa, Eragrostis, Melinis* spp., 1♀, *ibid.*, above, DVac off uncut grass, 16H00 dominant *Themeda triandra*; 12♂, 5♀, Ezemvelo, small dam, 25°43′5.62″S, 28°58′42.75″E, 1320 m, 4.iv.2005, DVac, moribund grass; 1♂, 1♀, Ezemvelo, 25°42′21.18″S, 28°56′23.28″E, 1336 m, 14.xii.2005, DVac, moribund grass; 1♂, 1♀, Ezemvelo, small dam, 25°43′5.62″S, 28°58′42.75″E, 1320 m, 4.iv.2006, DVac, wetland; 1♂, 4♀, Ezemvelo, family huts, 25°39′41.88″S, 28°57′58.96″E, 1345 m, 4.iv.2006, DVac, grass and forbs on rocky outcrop; 5♂, 3♀, Knopjeslaagte farm, northern site, 25°51′36.00″S, 28°1′16.32″E, 1429 m, 3.xii.2008, DVac, grass under Senegalia trees;1♂, 2♀, Klipkop Conservancy, 25°53′58.52″S, 28°29′20.36″E, 1461 m, 27.v.2010, DVac grassland. **KwaZulu-Natal**. 2♀, Durban, 29°53′S, 31°0′E, 7.i.1971, R.L.

Kluge, sweeping; 1♂, Glencoe, 28°12′S, 30°7′E, 21.i.1981, J.G. Theron, sweeping; Ntinini Nature Reserve, near Babanango: 1♀, mountain summit, site 2, 28°18′0.40″S, 30°56′36.82″E, 1275 m, 15.xi.2010, sweeping, moribund grass; 1♂, 1♀, mountain summit, site 3, 28°17′39.52″S, 30°57′13.21″E, 1310 m, 15.xi.2010, sweeping, moribund grass; 2♂, 1♀, mountain summit, site 4, 28°17′48.98″S, 30°57′22.79″E, 1308 m, 15.xi.2010, sweeping, moribund grass; 2♂, 1♀, near fence, site 1, 28°16′22.01″S, 30°56′28.03″E, 1049 m, 15.xi.2010, DVac, moribund grass; 7♂, 3♀, near fence, site 2, 28°16′27.30″S, 30°56′37.43″E, 1055 m, 15.xi.2010, DVac, moribund grass. **Limpopo Province**. 2♂, Beitbridge vicinity, 22°14′S, 29°59′E, 6.iii.1990, sweeping; 1♂, Rochdale farm, 22°53′S, 29°42′E, 31.xii.1999, sweeping, grass in valley on moutain; 4♂, Groenkom farm near Potgietersrus, 24°3′S, 29°2′E, 21.ii.2001, sweeping, various habitats: grass and forbs, long ungrazed grass, grass on mountain summit, short grazed grass. **Mpumalanga**. 1♂, Paardeplaats, 25°6′S, 30°34′E, 22.xi.1997, sweeping, *Eragrostis curvula*; 2♂, Paardeplaats, 25°6′S, 30°34′E, 22.xi.1997, sweeping, sweeping short grass and forbs, 1–2 years after burn; 1♂, 1♀, Swartkoppies farm, 25°23′S, 29°54′E, 28.xi.1999, sweeping grass; 3♂, 1♀, Vygenhoek farm 10JT, 25°2′28.46″S, 30°9′58.72″E, 1455 m, 8.xii.2008, P. Hawkes, J. Fisher, sweeping; 2♂, 4♀, Vygenhoek farm 10JT, 25°4′38.14″S, 30°11′17.88″E, 1751 m, 8.xii.2008, P. Hawkes, J. Fisher, sweeping. **Northern Cape Province**. 1♀, Kuruman, NW, 27°22′49.15″S, 23°17′58.38″E, 1301 m, 7.iii.2005, DVac, grass and forbs at base of rock outcrop; 1♀, Warrenton, 10 km E, 28°10′S, 27°56′E, 1225 m, 8.iii.2005, DVac, grass and forbs; 2♀, Hoopstad, 5 km NE Bothastad, 27°47′S, 25°58′E, 1279 m, 9.iii.2005, DVac, grassland with *Themeda triandra* dominant. **North-West Province**. 1♂, Vredefort Dome near Parys, 26°48′S, 27°22′E, 26.xii.2000, sweeping grass and forbs; 1♂, Goedgevonden, NW Ventersdorp, 26°10′56.16″S, 26°45′18.12″E, 1536 m, 5.iii.2005, DVac, long grass and forbs. **Swaziland**. Mlawula Nature Reserve; 1♀, near Magadzavane lodge, 26°19′8.04″S, 31°59′46.61″E, 573 m, 1.xii.2009, DVac; 1♂, 1♀, Siphiso road, 26°14′14.35″S, 31°59′33.94″E, 166 m, 1.xii.2009, DVac; 1♂, 1♀, west Siphiso camp, 26°12′30.89″S, 31°59′34.84″E, 189 m, 1.xii.2009, DVac; 3♂, 2♀, Siteki road, 26°21′26.64″S, 31°57′42.84″E, 646 m, 1.xii.2009, DVac; 3♂, 2♀, SARA camp, 26°11′43.30″S, 31°59′25.40″E, 200 m, 1.xii.2009, sweeping. All collected by M. Stiller, except where stated otherwise. (BMNH, INHS, SANC).

Remarks. The most distinct difference between *L. platypennis* and *L. mucropennis* is in the shape of the plate. In *L. mucropennis* the medial and lateral plate margins are uniform, and in *L. platypennis* the medial marign is distinctly emarginate. The aedeagus of *L. platypennis* and *L. mucropennis* is somewhat similar, except that the latter does not have a long ventral spine. All examined specimens of *L. platypennis* have a ventral elongate spine, that is more or less angled ventrad, and sometimes that has the apex damaged. The positions of the marginal teeth are consistent, that is one side with one tooth and the opposite side with 1–3 of different and variable size. More commonly these marginal teeth are poorly developed. Further differences are found in the style of *L. mucropennis* and *L. platypennis*. The apophysis in *L. mucropennis* is longitudinal, narrower than the base and has the lateral margin serrate. In *L. platypennis* it is transverse, broader than the base and has the ventroapical margin serrate.

The sternite 7 of females of *L. platypennis* and *L. mucropennis* are usually distinct, with some exceptions observed. In *L. platypennis* the posterior margin has paired triangular lobes, forming a wide, medial V-shaped notch, with the exceptions having the notch much narrower, and then of similar appearance to that of *L. mucropennis*. In *L. mucropennis* the paired lobes are rounded and contiguous forming a narrow, parallel-sided, deep notch. No differences can be found in valvulae or the valvifers of these two species.

Lecacis platypennis closely resembles *Elginus levilobus* in colour and external characteristics of male and female genitalia, as well as having overlapping distributions. However, internally, male genitalia differ distinctly. In *E. levilobus* the style apophysis is elongate, immaculate and about as long as the plate. In *L. mucropennis* the style apophysis is short, about half as long as the plate, serrate. These features are visible in undissected specimens when there is a gap between the plate and pygofer. However the aedeagus differs distinctly between these two species.

Lecacis incupennis sp. n.

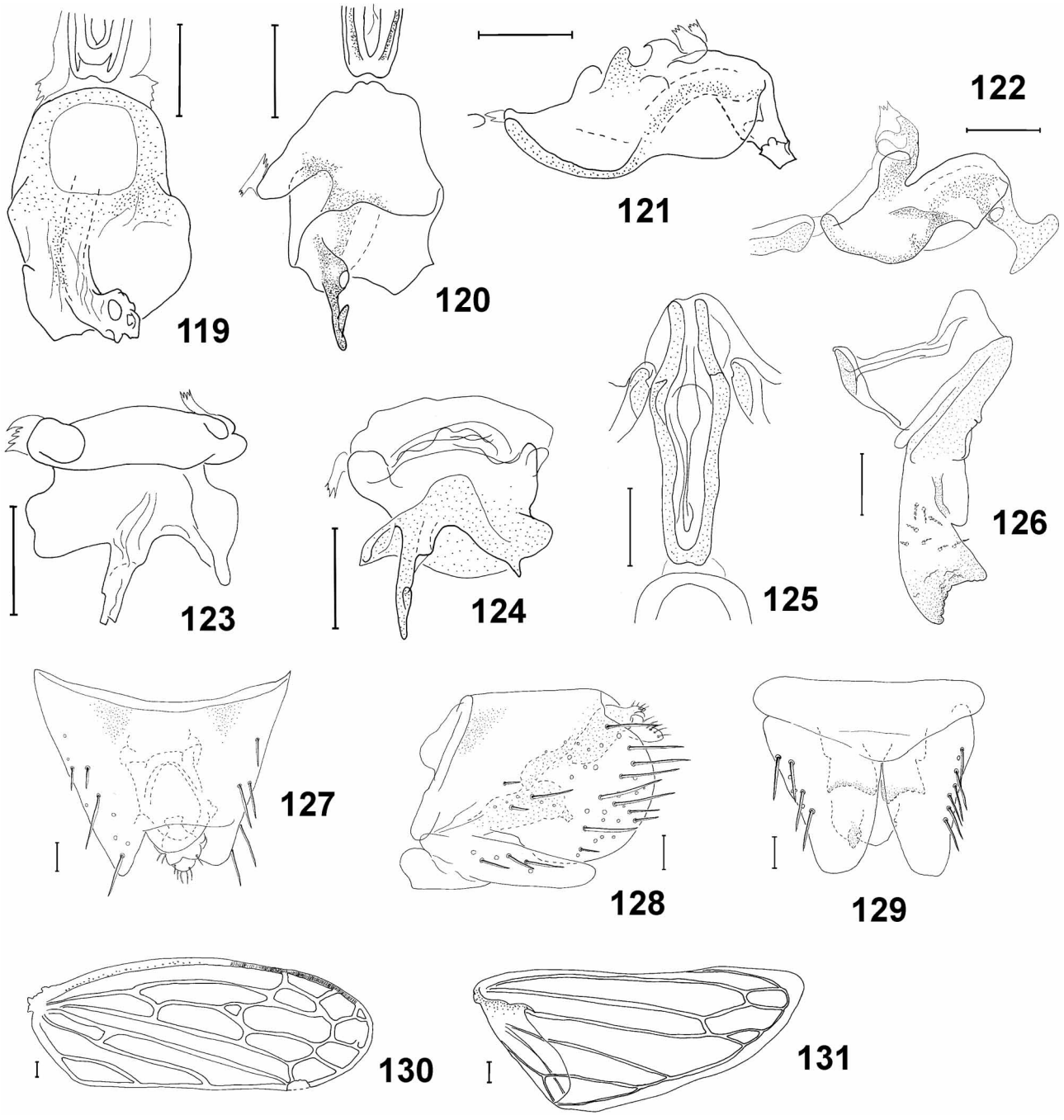
(Figs 83–85, 119–145)

Diagnosis. Aedeagus with ventral, longitudinal T-shaped spine, lateral basal margins compressed, curved ventrad, asymmetrical. Aedeagal shaft elongate, gonopore ventral, extending half-way into spine (Figs 120, 122, 124); apex prone to damage (Figs 119, 121, 123). Plate triangular, apex variable, narrowly rounded or angulate (Fig. 129).

Style apophysis transverse, caudal margin concave, serrate, width across apex wider than width across preapical lobe (Fig. 126). Sternite 7 rectangular, posterior margin with paired, rounded lobes and narrow notch (Figs 134–136).

Etymology. Compound word in Latin, *incus*, anvil, *pennis*, penis, for the anvil-shaped apex of the spine on the aedeagal shaft. Gender masculine.

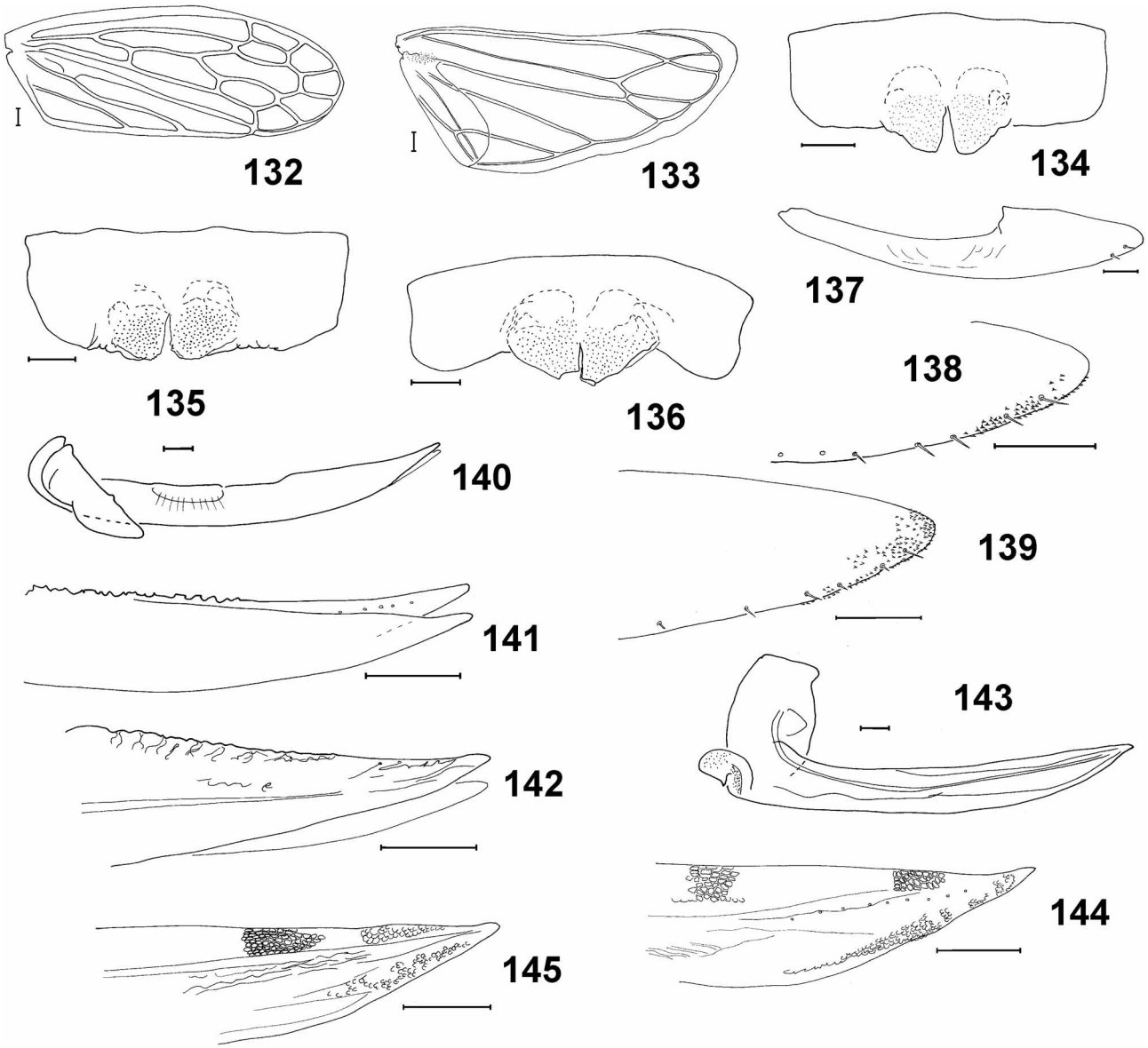
Colour. **Male and female**. Ochraceous with few fuscous longitudinal markings dorsally. Macropterous male from Venterstad as in Fig. 83. Submacropterous male from Bethulie as in Fig. 84. Submacropterous female from Springfield as in Fig. 85.



FIGURES 119–131. *Lecacis incupennis* **sp. n.** Male genitalia, tegmina and hind wings. **119**, aedeagus, ventrally, damaged; **120**, aedeagus, ventrally, whole; **121**, aedeagus, laterally, damaged; **122**, aedeagus, laterally, whole; **123**, aedeagus, caudally, damaged; **124**, aedeagus, caudally, whole; **125**, connective; **126**, style; **127**, pygofer, dorsally; **128**, pygofer, laterally; **129**, plate; **130**, tegmina; **131**, hind wing. Scale=0.1 mm.

Male. **Dimensions**. (n=10) Length from apex of vertex to apex of tegmina 2.6–3.3 mm, length from apex of vertex to apex of abdomen 2.9–3.2 mm, median length of vertex 0.5 mm, vertex length next to eye 0.3 mm, medial length of pronotum 0.3–0.4 mm. Greatest width of head 0.9–1.0 mm, greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 28 µm, ocellocular distance 42–56 µm.

Genitalia. Pygofer dorsally with anal tube incised slightly less than ⅓ into pygofer, laterally set with macrosetae (Fig. 127); lobe laterally broadly rounded caudally and ventrallyt (Fig. 128). Plate triangular, apex variable, angulately truncated or rounded; 6–10 uniseriate macrosetae (Fig. 129). Aedeagus, in ventral view (Figs 119, 120), compressed, asymmetrical, margin edentate, aedeagal shaft extended caudally beyond expanded margin, curved lateroposeriad, apex T-shaped, longitudinal; gonopore subapical, on lateral side of shaft (Figs 120, 122, 124); dorsal apodeme reduced (Figs 121, 122). Aedeagal shaft prone to damage (Figs 119, 121, 123). Style apophysis transverse, similar length and width, caudal margin concave, serrate ventrally, width across apex greater than width across preapical lobe (Fig. 126); apophysis reaching about half way into plate (Fig. 129). Connective narrowly elongate, as in Fig. 125.



FIGURES 132–145. *Lecacis incupennis* **sp. n.** Female genitalia, tegmina and hind wings. **132**, tegmina; **133**, hind wing; **134**, sternite 7, Venterstad, collected 1986; **135**, sternite 7, recessed ligula; **136**, sternite 7, protruding ligula; **137**, valvula 3; **138**, valvula 3, ultrastructure, Venterstad, collected 1986; **139**, valvula 3, ultrastructure, Springfontein, collected 2011; **140**, valvula 2; **141**, valvula 2, ultrastructure, Venterstad, collected 1986; **142**, valvula 2, ultrastructure, Springfontein, collected 2011; **143**, valvula 1; **144**, valvula 1, ultrastructure, Venterstad, collected 1986; **145**, valvula 1, ultrastructure, Springfontein, collected 2011. Scale=0.1 mm.

Female. **Dimensions**. (n=6) Length from apex of vertex to apex of tegmina 2.6–3.2 mm, length from apex of vertex to apex of abdomen 3.1–3.6 mm, median length of vertex 0.5–0.6 mm, vertex length next to eye 0.3–0.4 mm, medial length of pronotum 0.3–0.4 mm. Greatest width of head 1.0–1.1 mm, greatest width of pronotum 0.8–0.9 mm. Ocellar diameter 28 µm, ocelocular distance 43–57 µm.

Genitalia. Sternite 7 transversely rectangular (Fig. 134, Venterstad specimen, Figs 135–136, Springfontein specimen), notch narrow; sclerotized portion of sternite 8 rounded, usually more recessed into sternite 7 (Fig. 135), sometimes protruding (Figs 134, 136). Valvula 1 (Fig. 143) lanceolate, sculpture imbricate (Fig. 144, Venterstad, Fig. 145, Springfontein). Valvula 2 (Fig. 140, Springfontein) serration medially small, irregular, absent apically (Fig. 141, Venterstad) or reduced (Fig. 142, Springfontein); valvifer as in Fig. 140. Valvula 3 (Fig. 137) with 1–6 longer setae marginally, about 5 times longer than microtrichia (Fig. 138, Venterstad, Fig. 139, Springfontein).

Material examined. Holotype male. **South Africa**. **Free State Province**. Bethulie vicinity, route R390, 30°31′27.70″S, 26°1′29.46″E, 1306 m, 16.i.2011, DVac, overgrazed veld with few grass species, many karroid shrubs. Paratypes. 11♂, 7♀. **Eastern Cape Province**. 5♂, 1♀, Venterstad, 30°47′S, 25°48′E, 13.i.1986, J.G. Theron, sweeping; 1♀, Venterstad vicinity, 30°40′56.71″S, 25°49′32.77″E, 1338 m, 16.i.2011, DVac, road reserve and grazed pasture; 3♂, 1♀, west of Venterstad, 30°46′32.9″S, 25°44′55.6″E, 1344 m, 1.v.2011, DVac roadside grass and forbs. **Free State Province**. 2♂, *ibid.*, holotype; 1♂, 4♀, Springfontein vicinity, 30°17′34.51″S, 25°42′14.87″E, 1505 m, 16.i.2011, DVac, grass and forbs in grazed pasture; 2♂, 3♀, south of Bethulie, 30°33′52.3″S, 26°00′51.2″E, 1285 m, 1.v.2011, DVac grass and forbs. All collected by M. Stiller, except where stated otherwise. (BMNH, INHS, SANC).

Remarks. The plates of males of *L. incupennis* and *L. mucropennis* are almost identical. It appears that the plate apex of *L. mucropennis* is more uniformly rounded, and in *L. incupennis* the apex appears more angulate. However there are distinct differences in the aedeagus and style between these two species. In *L. incupennis* the expanded margin of the aedeagus is devoid of teeth and has the shaft extending beyond the expanded margin and produced into a longitudinal T-shaped apex. The apex of style apophysis is transverse. *Lecacis mucropennis* has the aedeagus with an expanded margin with 2–3 distinct teeth on the expanded margin and the shaft and gonopore are flush with the expanded margin. The apex of the style apophysis is longitudinal. In *L. platypennis* the aedeagus bears a hooked ventral spine that is not fused to the aedeagal shaft, with the shaft gonopore flush with the expanded aedeagal margin. However, the shape of the plate *L. platypennis* does not resemble that of *L. incupennis*. It is noteworthy that all five males from Venterstad collected in 1986 have the anvil-shaped apex broken off. Seven dissected males collected during 2011 have a complete aedeagal shaft apex.

The sternite 7 of females of *L. incupennis* and *L. mucropennis* appear identical. No differences in colour of these leafhoppers or in their dimensions could be found. Possibly the best feature is the extent of protrusion and the width of the gap in the posterior margin of the sternite 7. In *L. incupennis* it appears more recessed and narrower, and in *L. mucropennis* it protrudes more and is wider. Examinations of the valvulae provided no significant differentiating features. Valvula 2 of *L. incupennis* has slightly smaller and fewer teeth than in *L. mucropennis*. The arrangement and number of larger setae on valvula 3 are not species specific.

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