

Taxonomic revision of the genus *Lasiocnemus* (Loew, 1851) (Diptera: Asilidae: Leptogastrinae)

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The Afrotropical Asilidae genus *Lasiocnemus* (Loew, 1851) is revised. Seven species are recognized (*La. fascipennis* Engel & Cuthbertson, 1939; *La. griseicinctipes* Speiser, 1913; *La. hermanni* Janssens, 1952; *La. hyalipennis* Janssens, 1952; *La. lugens* Loew, 1858; and *La. obscuripennis* (Loew, 1851)), one of which is newly described from Kenya, Somalia, South Africa, and Tanzania, *La. londti* sp. n. *La. anthracinus* Janssens, 1952, is synonymized with *La. griseicinctipes* Speiser, 1913. Redescriptions and descriptions of the genus and all species as well as an identification key to species are provided. Distribution, occurrence in biodiversity hotspots, seasonal incidence, and biology are discussed.

Key words: *Lasiocnemus*, Leptogastrinae, Asilidae, Afrotropical Region, biodiversity hotspots.

INTRODUCTION

Many species of leptogastrine Asilidae are rather uniform in colour and without any remarkable characteristics. An exception is the genus *Lasiocnemus* (Loew 1851), species of which are generally black in coloration, with brown-and-white spotted wings and expanded metathoracic femora and tibiae that bear erect setae. This small genus of Leptogastrinae with seven recognized species is strictly Afrotropical in distribution and has been reviewed by Janssens (1952). The study of many specimens of Leptogastrinae from a number of museum collections revealed that a new *Lasiocnemus* species was awaiting description. All known species are dealt with in this publication, summarizing our knowledge of taxonomy, diversity, biology and distribution of these beautiful flies and providing diagnoses, descriptions and an identification key.

Species of *Lasiocnemus* are morphologically homogeneous and are separated mainly by the extent of pruinosity on the scutum, presence or absence of microtrichia in certain wing cells, and coloration of setae on the metathoracic legs. The variation in the extent of the light and dark coloration of the wings is considerable and therefore these characteristics were generally not used for species identification. The wing of *Lasiocnemus hermanni* Janssens, 1952 (Fig. 13), for example, is generally entirely dark brown, but a single speci-

men has been examined that has a light transverse band in the distal part of the wing similar to *La. griseicinctipes* Speiser, 1913 (Fig. 12). The wing of *La. fascipennis* Engel & Cuthbertson, 1939 can be relatively dark as in Fig. 11, but a number of specimens were found to be much lighter in colour, similar to *La. hyalipennis* Janssens, 1952 (Fig. 14). The male terminalia of *Lasiocnemus* are very uniform among species in contrast to representatives of other genera of Leptogastrinae, e.g. *Euscelidia* Westwood, 1850 (Dikow 2003) and *Lobus* Martin, 1972 (Martin 1972). The shape of the surstylus, hypandrium, or aedeagus is very useful for species identification and these structures are consistently variable. Because of the slight differences in male terminalia, no specific descriptions of the structures are given and the reader is only referred to the generic description and illustrations provided.

Initially, a phylogenetic analysis of relationships of species of *Lasiocnemus* was planned in addition to a species revision, but the few distinguishing morphological characters and the lack of DNA sequence data for every species made such an analysis impossible.

Loew (1851) described *Lasiocnemus obscuripennis* from Inhambane, Mozambique, and erected the subgenus *Lasiocnemus* within *Leptogaster* Meigen, 1803. The new subgenus was compared to

Euscelidia and *Leptogaster*. He described *La. lugens* from 'Caffraria', South Africa, and provided a redescription of *obscuripennis* (Loew 1858). In 1860, Loew compared the genera *Euscelidia*, *Lasiocnemus* and *Leptogaster* and redescribed the two known species *lugens* and *obscuripennis*.

Bigot (1878) described *La. calceolata* from the Amazon of Brazil and Speiser (1913) described *La. griseicinctipes* from Douala, Cameroon. Poulton (1917) reported an unknown species 'which was evidently near *L. lugens*, Lw.' from Itigi, Tanzania. Hermann (1926) provided a diagnosis of the genus and listed the following species of *Lasiocnemus*: *albipila*, *affinis*, *griseicinctipes*, *fascipennis*, *lugens*, *obscuripennis* and *violacea*. He did not provide a description, definition, or indication for *albipila*, *affinis*, *fascipennis* and *violacea* and therefore these names are *nomina nuda* and are unavailable under the ICZN (Article 12). In describing the Neotropical genus *Systellogaster*, Hermann transferred *La. calceolata* to that new genus.

Curran (1927) described *La. pilipes* from Kwamouth, Democratic Republic of Congo (DRC) and in 1928, he provided a key to three species of *Lasiocnemus* – *lugens*, *obscuripennis* and *pilipes*. Engel & Cuthbertson (1934) recorded *lugens* from Mashonaland, Zimbabwe, describing its flight behaviour and morphological characteristics. He later described *La. fascipennis* from north-western Tanzania, providing illustrations of a wing and a metathoracic leg (Engel & Cuthbertson 1939). The description was based on the same specimens available to Hermann (1926).

Janssens (1952) reviewed the genus, provided an identification key, and described *La. anthracinus* from Eala, DRC, *La. hermanni* from Malawi, and *La. hyalipennis* from Jadotville, Kipiri, DRC. He also provided illustrations of wings for all new species. Hull (1962) redescribed the genus and provided illustrations of an antenna, wing, head (in lateral and frontal views), metathoracic leg, distal female abdomen (ventral, dorsal and lateral views), and male terminalia (dorsal and lateral views), of different species of *Lasiocnemus*. He listed the following species from the Afrotropical Region: *affinis*, *albipila*, *anthracinus*, *fascipennis*, *griseicinctipes*, *hermanni*, *hyalipennis*, *lugens*, *obscuripennis*, *pilipes* and *violacea*. Oldroyd (1974) provided an identification key to southern African species including *fascipennis*, *hyalipennis*, *hermanni*, *lugens* and *obscuripennis* and discussed distinguishing characters to other genera. In 1980, Oldroyd catalogued

the following Afrotropical species: *anthracinus*, *fascipennis*, *griseicinctipes*, *hermanni*, *hyalipennis*, *lugens* and *obscuripennis*. He synonymized *pilipes* with *Euscelidia rapax* Westwood, 1850. Londt (1994) discussed the behaviour and ecology of *Lasiocnemus* species and Nagatomi *et al.* (2002) summarized the published information on *Lasiocnemus*.

MATERIAL AND METHODS

Morphological terminology mainly follows that recommended by McAlpine (1981) although terminology relating to the antennae follows Stuckenberg (1999) and Dikow & Londt (2000). Abdominal tergites and sternites are abbreviated in the descriptions by a capital 'T' and 'S', respectively. Other terms used herein refer to *The Torre-Bueno Glossary of Entomology* (Nichols 1989). The term pruinosity (adjective 'pruinose') is used here for the very short, fine cuticular microtrichia that densely cover certain body parts of flies.

The species descriptions are generally composite and not based solely on holotypes. In all instances, specimens were dry-mounted on pins. The female and male terminalia were excised and macerated in hot 10 % potassium hydroxide, temporarily stored in 75 % ethanol for examination and illustration and eventually sealed in 100 % glycerine in polyethylene genitalia vials and attached to the specimen's pin. Morphological features were drawn using a 10 × 10 ocular grid on an Olympus SZ60 stereo-microscope and later digitally redrawn using Adobe Illustrator software. The vestiture on male terminalia is not shown. The wings were temporarily slide-mounted in glycerol and photographed with a Microptics digital macro unit and later attached to the specimen's pin on a piece of cardboard. Wing length was measured from humeral crossvein to distal tip of wing. In recording label data for type specimens a standard format is used, where information on each label is demarcated by a slash (/). Square brackets are used to explain label data (e.g. abbreviations). If the label data are not printed in black ink on a white rectangular label, information relating to these is added in parentheses. When recording data for other specimens, information is also given, where available, in a standard manner (locality, coordinates, date of collection (month indicated in Roman numerals where hyphens indicate missing entries for date or month)). The 'material examined' list is organized alphabetically with respect to country

and localities within each country. Localities for which no coordinates could be found are arranged at the end of each country's listing. The depositories are given at the end of each material list. The distribution is illustrated in distribution maps with all localities plotted, for which coordinates were available, and the type locality is plotted with an open symbol. The shape-files of the biodiversity hotspots were obtained from Conservation International (2005).

Abbreviations used in figures are as follows: aed, aedeagus; aed apod, aedeagal apodeme; cerc, cercus; d aed shea, dorsal aedeagal sheath; goncx, gonocoxite; gonst, gonostyli; hypd, hypandrium; lat, lateral; lat apod, lateral apodeme; lat pr gonst, lateral process/es of gonostyli; med, median; pr epand, proximal part of epandrium; sur, surstylus; v aed shea, ventral aedeagal sheath.

The majority of specimens studied are housed in the Natal Museum, Pietermaritzburg (NMSA) and the Natural History Museum, London (BMNH). Institutions providing additional specimens are listed below, together with the abbreviations used in the text when citing depositories, and the people who kindly assisted: American Museum of Natural History, New York City, U.S.A., D. Grimaldi (AMNH), Natural History Museum, London, United Kingdom, D. Notton (BMNH), California Academy of Sciences, San Francisco, U.S.A., C. Griswold (CAS), California State Collection of Arthropods, Sacramento, U.S.A., E. Fisher (CSCA), Florida State Collection of Arthropods, University of Florida, Gainesville, U.S.A., G. Steck (FSCA), Institut royal des Sciences naturelles de Belgique, Brussels, Belgium, P. Grootaert (ISNB), Los Angeles County Museum, Los Angeles, U.S.A., B. Brown (LAMC), Musee royal de l'Afrique Centrale, Tervuren, Belgium, E. De Coninck (MRAC), Zoological Museum, University of Helsinki, Finland, P. Sihvonen (MZHF), Naturhistoriska Riksmuseet, Stockholm, Sweden, T. Pape (NHRS), Natal Museum, Pietermaritzburg, South Africa, J. Londt (NMSA), South African Museum, Cape Town, South Africa, M. Cochrane (SAMC), South African National Collection of Insects, Pretoria, South Africa, R. Urban (SANC), United States National Museum, Smithsonian Institution, Washington, D.C., U.S.A., F.C. Thompson (USNM), Museum für Naturkunde, Humboldt Universität, Berlin, Germany, J. Ziegler, J. Pohl (ZMHB), Zoologische Staatssammlung, Munich, Germany, W. Schacht, M. Kotrba (ZSMC).

TAXONOMY

Lasiocnemus (Loew, 1851)

- Leptogaster* subgenus *Lasiocnemus* Loew, 1851:
2. Type species *Leptogaster (Lasiocnemus) obscuripennis* Loew, 1851, by original designation.

Diagnosis

Lasiocnemus is distinguished from other genera of Leptogastrinae by the swollen metathoracic tibiae, closed cell cup, vein R_{2+3} angled anteriorly distally, at least two long ventrally-angled setae on ventral surface of metathoracic tibiae, generally brown-and-white coloured wings, and a distribution restricted to the Afrotropical Region.

Redescription

Head. Face pruinose, facial swelling indistinct with only the lower facial margin slightly protruding; mystax consisting of 4–15 macrosetae generally arranged in a single row on lower facial margin; occiput pruinose and covered with erect setae. Antennae, scape short, with setae ventrally; pedicel longer than scape, with setae dorsally and ventrally; postpedicel cylindrical, longer than scape and pedicel combined; stylus with two elements (narrow, cylindrical, long proximal segment and apical 'seta-like' sensory element), apical 'seta-like' sensory element hyaline or brown; stylus and postpedicel about equal length.

Thorax. Pronotum and postpronotum entirely pruinose; prosternum fused laterally to proepisternum; scutum either entirely covered with pruinosity or predominantly apruinose (pruinosity restricted to anterior, lateral and posterior margins), short or long setae scattered on surface. Macrosetae, one notopleural seta, one supralar seta, and sometimes one postalar seta; posterior scutum with erect setae; scutellum with long discal scutellar and scutellar setae; katatergite with long erect setae; episterna and epimera covered with dense pruinosity, anepisternum and anepimeron different colour to katepisternum and katepimeron, long more or less erect setae on anepisternum, katepisternum, and katepimeron; postmetacoxal area sclerotized with suture medially. Legs, generally dark brown to black; coxa pruinose; prothoracic and mesothoracic femora with erect setae dorsally and anteriorly, metathoracic femora with erect setae on all surfaces, metathoracic femora expanded, clubbed; tibiae

generally coloured evenly and with erect setae, sometimes with dorsal pale yellow stripe and short setae only; mesothoracic tibiae with three long setae on posteroventral surface distally, metathoracic tibiae generally with erect setae on all surfaces sometimes only proximally, expanded and broadest medially, metathoracic tibiae with at least two long ventrad-angled setae on ventral surface; first tarsomere about same length as second and third combined, tarsomeres with stout black setae ventrally except for fourth and fifth; claw black, long, pointed; empodium from about half length of claw to nearly length of a claw. Wings (Figs 11–16), length = 4.5–15.0 mm; microtrichia generally on anterior and posterior margin and distally, entirely hyaline or opaque with pattern of brown and white-coloured spots/stripes, veins brown; pterostigma distinct brown; cell cup closed and stalked, all other marginal cells open, cell d terminating in M_2 and M_3 with M_1 situated proximally at about half length of cell d, R_{2+3} distally angled anteriorly; haltere light brown to brown.

Abdomen. T entirely brown and grey pruinose, T2 in proximal half with erect setae laterally, remaining T with short setae; S pruinose and setose, S2 pruinose or apruinose in proximal half.

Male terminalia (Figs 5–10): surstylus with rounded distal tip, ventral lobe well-developed, surstylus setose; hypandrium triangular-shaped (ventral view), lateral margin expanded to form protruding carinae distally; gonocoxite fused to hypandrium with visible suture, gonocoxite fused to proximal epandrium, gonostyli and lateral processes of gonostyli of equal size, situated distally on gonocoxite. **Aedeagus.** Only seen in dorsal view as a block between the aedeagal apodeme and dorsal aedeagal sheath; dorsal aedeagal sheath comprising single pointed tube; ventral aedeagal sheath plate-like, triangular; lateral apodeme cylindrical; aedeagal apodeme rounded, varying diameter.

Female terminalia (Figs 17–22): unspecialized ovipositor; S8 invaginated medio-distally with short macrosetae; furca (S9) U-shaped, sclerotized throughout; bursa copulatrix cylindrical, expanded and angled 180° medially; three spermathecae present with median spermatheca larger than lateral ones, spermathecal ducts tubular with a distinct smoothly angled banana-shaped part medially; spermathecal reservoirs sac-shaped, longer than wide, broadest proximally.

Distribution. Species of *Lasiocnemus* are restricted to the Afrotropical Region ranging from the Ivory Coast in the northwest to Somalia in the east and South Africa in the south. Every species except *La. hyalipennis* occurs in at least one biodiversity hotspot (Figs 23–24; Myers *et al.* 2000, Conservation International 2005), but none are endemic to any particular hotspot (see Type locality, distribution, and Biodiversity hotspot under each species).

Etymology. *Lasios* (Greek) = hairy, woolly; *cne-* (derived from Greek *kneme*) = leg, shin. Refers to the setose metathoracic tibiae that represent an autapomorphy for *Lasiocnemus*.

***Lasiocnemus fascipennis* Engel &**

Cuthbertson, 1939, Figs 1, 11, 17, 24

Lasiocnemus fascipennis Engel & Cuthbertson, 1939: 185; Janssens, 1952: 5; Hull 1962: 309; Oldroyd 1980: 357.

Lasiocnemus fascipennis Hermann, 1926: 149 *in litteris* – *nomen nudum*

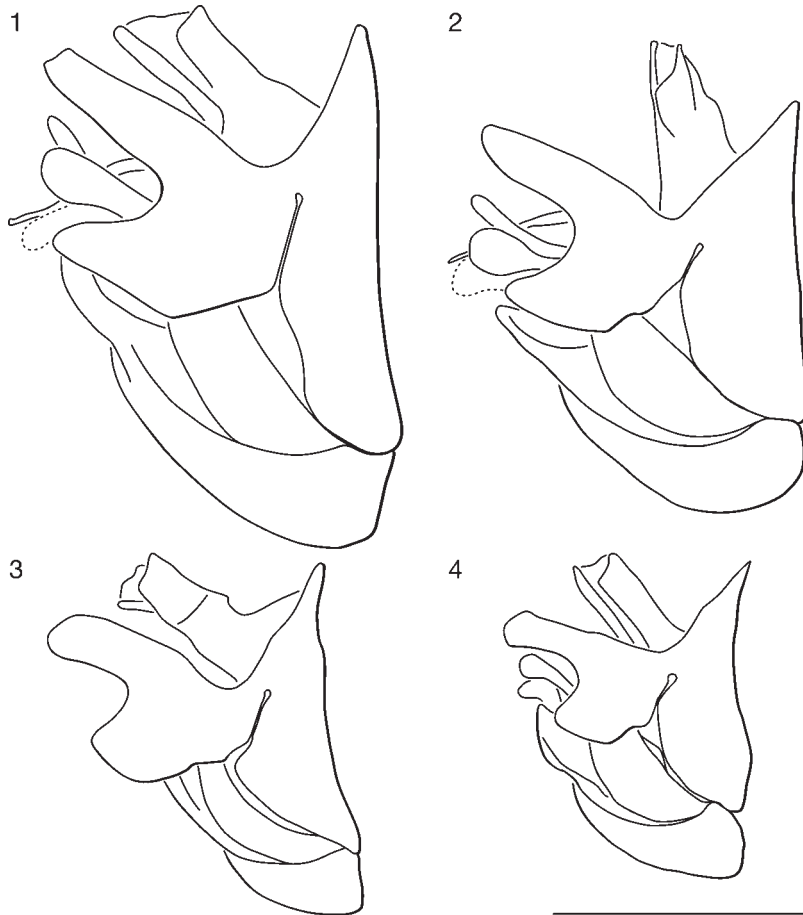
Diagnosis

The species is distinguished from congeners by its large body size, the yellow longitudinal stripe on the prothoracic tibiae, the few microtrichia in the discal cell, the wing coloration, and the presence of only short setae on the dorsal surface of the metathoracic tibiae.

Description

Head. Black; face brown pruinose, facial swelling indistinct, mystax black with a few white setae laterally, 8–15 macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, setae yellow and brown. Antennae, scape brown, black setae ventrally, apruinose; pedicel brown, brown setae dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, slightly shorter than postpedicel; apical 'seta-like' sensory element brown.

Thorax. Orange to brown, anepisternum and dorsal half of katapisternum and anepimeron grey pruinose, remaining parts brown pruinose, anepisternum setae black and katapisternum setae black or white; scutum black, red anterolaterally and anteromedially, predominantly apruinose, margins grey pruinose, surface covered with white setae, white and black setae on pruinose part; macrosetae: black, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, black.



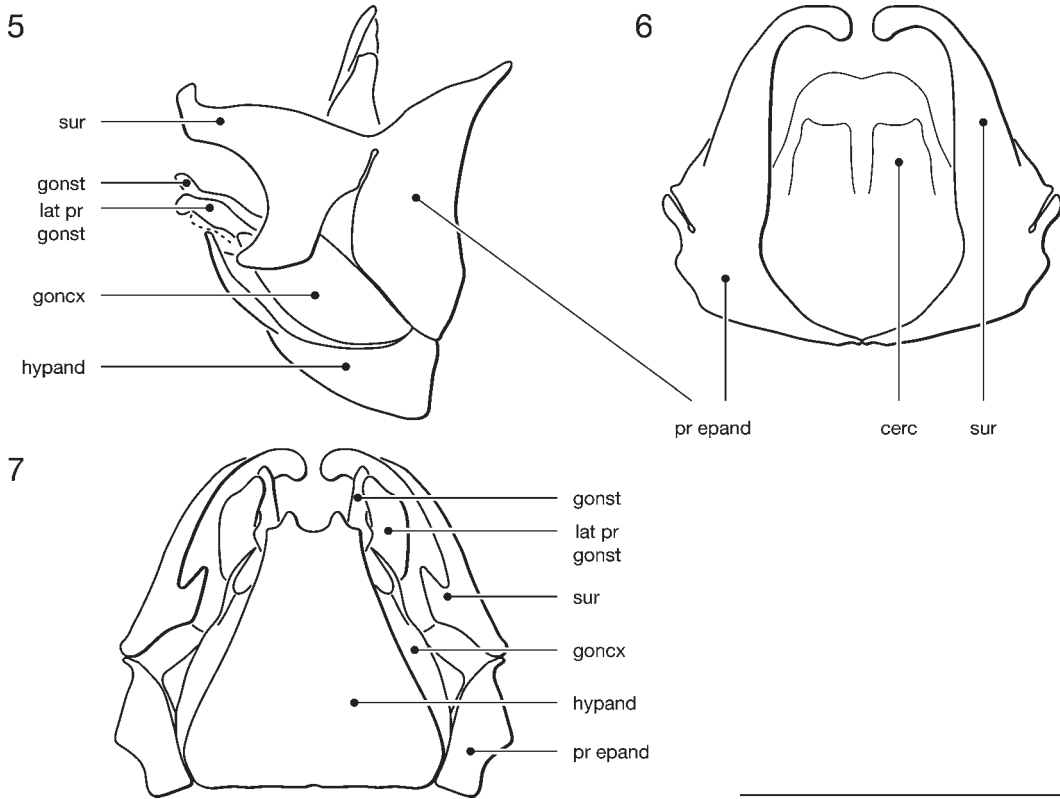
Figs 1–4. Male terminalia of species of *Lasiocnemus* in lateral view. 1, *La. fascipennis*; 2, *La. hermanni*; 3, *La. hyalipennis*; 4, *La. obscuripennis*. Scale bar = 1.0 mm.

Legs, brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect black setae, metathoracic femora with erect black setae on all surfaces, clubbed and widest sub-distally; tibiae with erect black setae on all surfaces, metathoracic tibiae with these setae longest in proximal half ventrally, prothoracic tibiae with yellow cleaning setae in distal half ventrally, metathoracic tibiae with yellow setae in distal half ventrally, prothoracic and mesothoracic tibiae with yellow stripe dorsally; tarsomeres with black setae, first metathoracic tarsomere with yellow setae postero-ventrally; empodium two-thirds length of claw. Wings, length = 11.7–15.0 mm; cell d with only few microtrichia, wing pattern as in Fig. 11; haltere brown.

Abdomen. Black; T2–5 brown pruinose anteriorly and grey pruinose posteriorly, T6–8 bluish-grey

pruinose, T2 in proximal half with long brown setae laterally, remaining T with short white setae, S2 in proximal half apruinose and in distal half brown pruinose, S3–4 brown pruinose, S5–8 black or bluish-grey pruinose. Male terminalia (Fig. 1): ventral lobe on surstylus pointed. Female terminalia as in Fig. 17.

Type material. The male holotype is labelled 'Sammlung F. Hermann/HoloType von *Lasiocnemus fascipennis* H.i.l. (handwritten except for 'Type von'; red label)/C in cop with D (handwritten; circular label) 1 ♂ (on reverse side)/Brit. O. Africa [British East Africa = Kenya] *Lasiocnemus fascipennis* Type Herm (handwritten; red label with black submarginal border)/*Lasiocnemus fascipennis* Herm. i. litt. (handwritten; blue label)/*Lasiocnemus Fascipennis* Herm. i. litt. ♂ det. E.O. Engel (handwritten except for 'det. E.O. Engel';



Figs 5–7. Male terminalia of *Lasiocnemus londti*. **5**, Lateral view; **6**, dorsal view; **7**, ventral view. Scale bar = 1.0 mm.

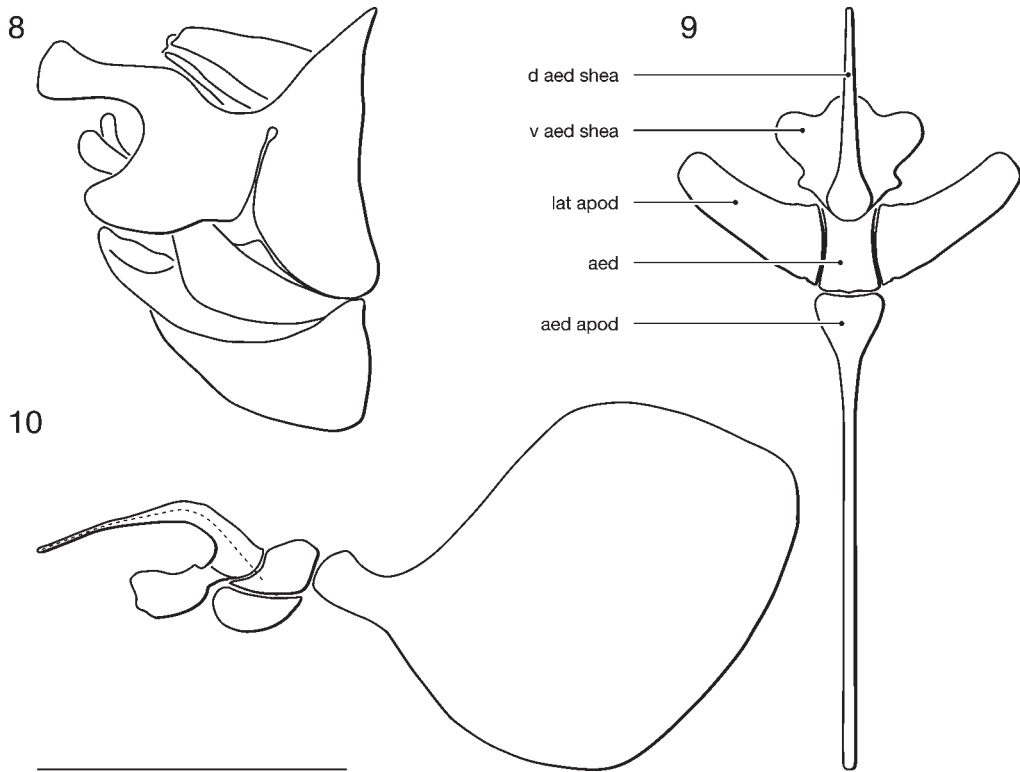
black submarginal border)/*Lasiocnemus fascipennis* ♂ Eng. & Cuthb. (handwritten)'. The specimen is directly mounted and in very good condition (left mesothoracic and metathoracic legs broken), (ZSMC).

The female paratype is labelled 'N.W. Tanganika [possibly present-day Tanzania] Grauer. 1910/Sammlung F. Hermann/Type von *Lasiocnemus fascipennis* (species name handwritten; red label)/*Lasiocnemus Fascipennis* ♀ det. E.O. Engel (handwritten except for 'det. E.O. Engel'; black submarginal border)/*Lasiocnemus fascipennis* ♀ Eng. & Cuthb. (handwritten)'. The specimen is directly mounted and in good condition (thorax cracked), (ZSMC).

Additional material examined. DRC: 1♀ Lake Albert, 01°40'N 31°00'E, –.ix.1935; KENYA: 1♂ British East Africa (holotype); 1♂ Teso, near Bugonda, 00°32'N 34°15'E, 25.vi.1963; 1♀ Kuja Valley, S Kavirondo, 00°48'S 34°34'E, 30.iv.–1.v.1911, 1219 m; 1? no exact locality, –.–.1912–1913, 1219 m; MALAWI: 4♀ 2♂ Mangochi 25 km N, 14°20'S 35°16'E, 11.iii.1987; 1♀ 1? Chiromo, 16°33'S 35°08'E,

–.iv.1919, 61 m; 1♀ Monkey Bay, 14°05'S 34°55'E, 3.iii.1944, 488 m; Nigeria: 2♀ Baro, 08°36'N 06°25'E, 14–16.x.1918; SOMALIA: 1♀ Baidoa, 03°04'N 43°48'E, 28.xi.1983; SOUTH AFRICA: 1? no locality, 25°00'S 31°00'E, 1.x.1980; 1? Maboki, near Lydenburg, 25°06'S 30°27'E, –.–.1917; 1♂ Skukuza Kruger National Park, 24°59'S 31°36'E, 9–12.iv.1985; TANZANIA: 1♀ N.W. Tanganika (paratype); 1♂ Tarangire National Park, 03°50'S 36°10'E, –.xii.1994; 1♀ Mkomazi Game Reserve, Ibaya Camp, 03°58'S 37°48'E, 14.iv.–3.v.1996; 3♀ Old Shinyanga, 03°33'S 33°24'E, 16.iii.1956, 22.iii.1956; 1? Old Shinyanga, 27.iv.1956; 1♀ Shinyanga, 03°40'S 33°26'E, 30.iii.1958; 1♂ Morogoro, 06°50'S 37°45'E, 1.vi.1917; 1? no exact locality; ZIMBABWE: 1♀ Harare, 17°49'S 31°02'E, 23.ii.1902. Depositories: AMNH, BMNH, FSCA, MRAC, NMSA, SAMC, ZSMC.

Remarks. This species was apparently first mentioned when Hermann (1926: 149) provided a list of species of *Lasiocnemus*. Because Hermann did not provide a description, definition, or indication for it, the name is originally a *nomen nudum*



Figs 8–10. Male terminalia and aedeagus of *Lasiocnemus lugens*. **8**, Terminalia lateral view; **9**, aedeagus dorsal view; **10**, aedeagus lateral. Scale bar = 1.0 mm.

and is unavailable under the ICZN (Article 12). Engel & Cuthbertson (1939: 185) provided a description and illustrations using the same specimen that Hermann had studied from Kenya and made this specific name available. Engel & Cuthbertson (1939: 186) mentioned that the male holotype and female paratype were collected in copula, but this is not evident from the locality labels. The female specimen, in contrast to the male specimen, does not have a label with information about the association that would substantiate this observation.

Type locality, distribution and biodiversity hotspots (Fig. 24). The original type locality is Kenya. Following recommendation 76A.1.4. of the ICZN a new type locality is selected from within the range of the species. I hereby designate Mkomazi Game Reserve, Tanzania, 03°58'S 37°48'E, in which the species has been recently collected, as type locality. DRC, Kenya, Malawi, Nigeria, Somalia, South Africa, Tanzania, Zimbabwe. Eastern Afromontane, Horn of Africa, Maputaland–Pondoland–Albany.

Lasiocnemus griseicinctipes Speiser, 1913, Figs 12, 18, 23

Lasiocnemus griseicinctipes Speiser, 1913: 141; Janssens 1952: 5; Hull 1962: 309; Oldroyd 1980: 357.

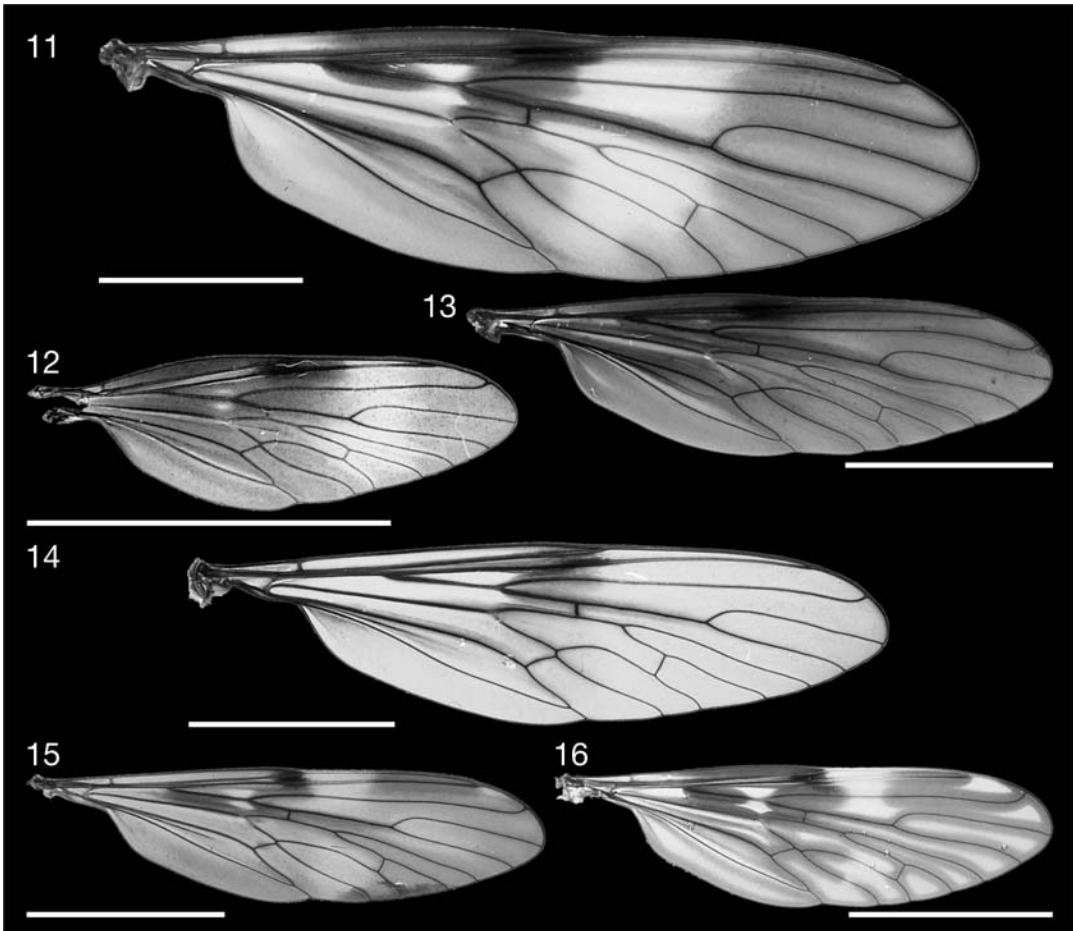
Lasiocnemus anthracinus Janssens, 1952: 5, 9; Hull 1962: 309; Oldroyd 1980: 357, **syn. n.**

Diagnosis

The species is distinguished from congeners by the bluish-black, predominantly apruinose mesonotum, the white transverse band in the distal part of the wing, the entirely long, predominantly black setae on the femora and tibiae, and its distribution in western Africa.

Description

Head. Black; face silver pruinose, facial swelling indistinct, mystax black, four macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, setae black in dorsal half and white in ventral half. Antennae, scape brown, brown setae ventrally, apruinose; pedicel brown, brown setae



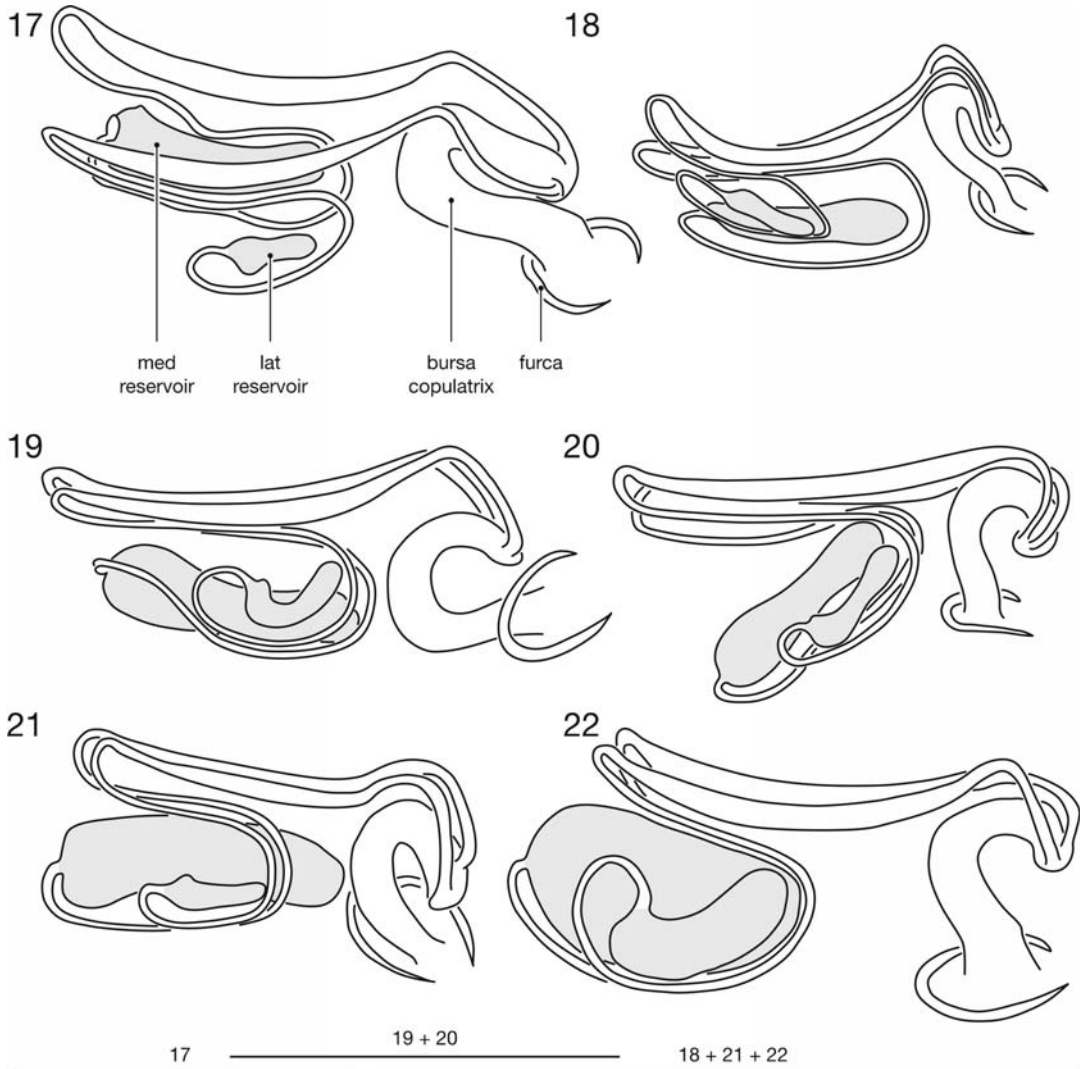
Figs 11–16. Wings of species of *Lasiocnemus*. **11,** *La. fascipennis*; **12,** *La. griseicinctipes*; **13,** *La. hermanni*; **14,** *La. hyalipennis*; **15,** *La. londti*; **16,** *La. lugens*. Scale bars = 4.0 mm.

dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, stylus and postpedicel about equal length; apical 'seta-like' sensory element brown.

Thorax. Black, anepisternum and dorsal half of katepisternum and anepimeron grey pruinose, remaining parts brown pruinose, anepisternum setae black and katepisternum setae white; scutum bluish-black, predominantly apruinose, margins grey pruinose, surface covered with black setae, black setae on pruinose part; macrosetae: black, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, brown. Legs, dark brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect black setae anteriorly and dorsally, metathoracic femora with erect black

setae on all surfaces, clubbed and widest sub-distally; tibiae with erect black setae on all surfaces, prothoracic tibiae with brown cleaning setae in distal half ventrally, metathoracic tibiae with black setae, a few white setae proximally and distally; tarsomeres with black setae, first metathoracic tarsomere with brown setae posteroventrally; empodium about half length of claw. Wings, length = 4.5–8.0 mm; cell d with only few microtrichia, wing pattern as in Fig. 12; haltere brown.

Abdomen. Black; T in proximal two-thirds brown pruinose and in distal one-third grey pruinose, T2 in proximal half with long black setae laterally, remaining T with short brown setae on brown pruinose area and white setae on grey pruinose area, S2 apruinose medially remaining part brown



Figs 17–22. Female spermathecae of species of *Lasiocnemus* in lateral view. **17**, *La. fascipennis*; **18**, *La. griseicinctipes*; **19**, *La. hermanni*; **20**, *La. hyalipennis*; **21**, *La. londti*; **22**, *La. lugens*. Note: second lateral spermathecal duct and reservoir, in lateral view situated ventral to median reservoir, omitted. Scale bars = 1.0 mm.

pruinose, S3–4 apruinose proximally and brown pruinose distally, S5–8 brown pruinose with grey pruinose distal corners. Male terminalia unknown. Female terminalia as in Fig. 18.

Type material. The female lectotype, here designated to preserve taxonomic stability and make more universal the use of this name, is labelled 'Kamerun Duala –VII.1912 v. Rothkirch coll. (blue label)/*Lasiocnemus griseicinctipes* p. Speiser det. ? type (handwritten except for 'P. Speiser det.)/Spec. typ. no. (red label)/LECTOTYPE *Lasiocnemus*

griseicinctipes Speiser, 1913 by T. Dikow 2005 (red label). The specimen is directly mounted and in good condition, (MZHF).

The female holotype of *Lasiocnemus anthracinus* is labelled 'Congo – belge Eala – vii – 1936 J. Ghesquière/R. Mus. Hist. Nat. Belg. I.G. 10.482/(label with gender symbol)/E. Janssens det., 1951 *Lasiocnemus anthracinus* E. Janssens (year and species name + author handwritten)/Type (red label with black submarginal border)/cf. *Bull. Inst. Sc. Nat. Belg.* XXVIII, 1952 no 24, p. 9, Fig. 4'. The

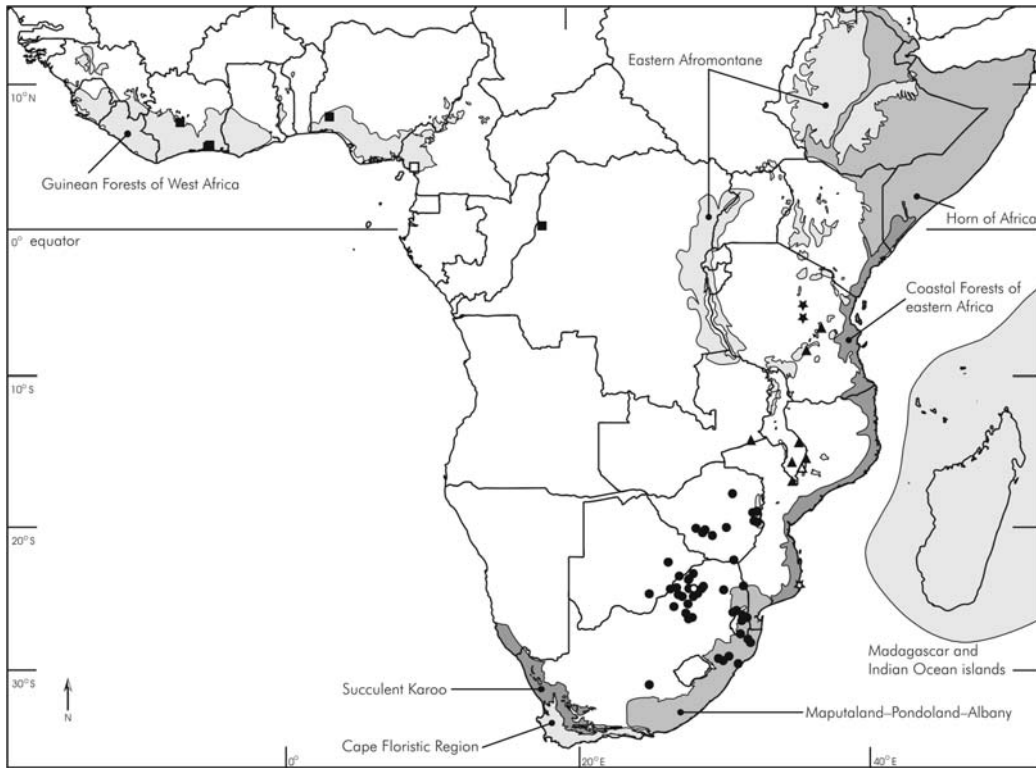


Fig. 23. Map of sub-Saharan Africa with biodiversity hotspots, shaded in grey, showing distribution of *Lasiocnemus griseicinctipes* (■), *L. hermanni* (▲), *L. lugens* (●) and *L. obscuripennis* (★). Type localities with open symbols.

specimen is double-mounted (minuten in block of foam) and is in relatively good condition (right wing, right mesothoracic leg, and metathoracic legs broken), (ISNB).

The female paratype of *Lasiocnemus anthracinus* is labelled 'Congo – belge Eala – iv – 1936 J. Ghesquière/R. Mus. Hist. Nat. Belg. I.G. 10.482/ (label with gender symbol)/E. Janssens det., 1951 *Lasiocnemus anthracinus* E. Janssens (year and species name + author handwritten)/Paratype (red label with black submarginal border)/cf. *Bull. Inst. Sc. Nat. Belg.* XXVIII, 1952 no. 24, p. 9, Fig. 4 (issue, year, page and figure number handwritten). The specimen is double-mounted (minuten in block of foam) and is in good condition (right wing damaged, right postpedicel broken), (ISNB).

Additional material examined. CAMEROON: 1♀ Douala, 04°02'N 009°42'E, –.vii.19121 (lectotype); DRC: 1♀ Eala, 00°04'N 018°17'E, –.vii.1936, Eala; 1♀ Eala, –.iv.1936; IVORY COAST: 1♂ Abidjan, 17 km NW, 05°26'N 004°08'W, 2–8.xi.1971; 1? Maraoué National Park, 28 km W Bouaflé, 06°59'N 005°54'W,

19.iv.1989; 1♀ Banco National Park, N Abidjan, 05°22'N 004°03'W, 23–27.iv.1989; NIGERIA: 1? Olokemeji, 07°20'N 004°03'E. Depositories: CSCA, ISNB, MZHF, NMSA, USNM.

Remarks. Speiser (1913: 141) described this species from four specimens (3♀, 1♂), but only a single female syntype, here designated as the lectotype, could be found in the many museum collections studied.

Type locality, distribution and biodiversity hotspot (Fig. 23): Cameroon, Douala, 04°02'N 009°42'E. Cameroon, DRC, Ivory Coast, Nigeria. Guinean Forests of West Africa.

Lasiocnemus hermanni Janssens, 1952,
Figs 2, 13, 19, 23

Lasiocnemus hermanni Janssens, 1952: 5, 7; Hull 1962: 309; Oldroyd 1980: 357.

Diagnosis

The species is distinguished from congeners by the entirely brown-stained wing, the few micro-

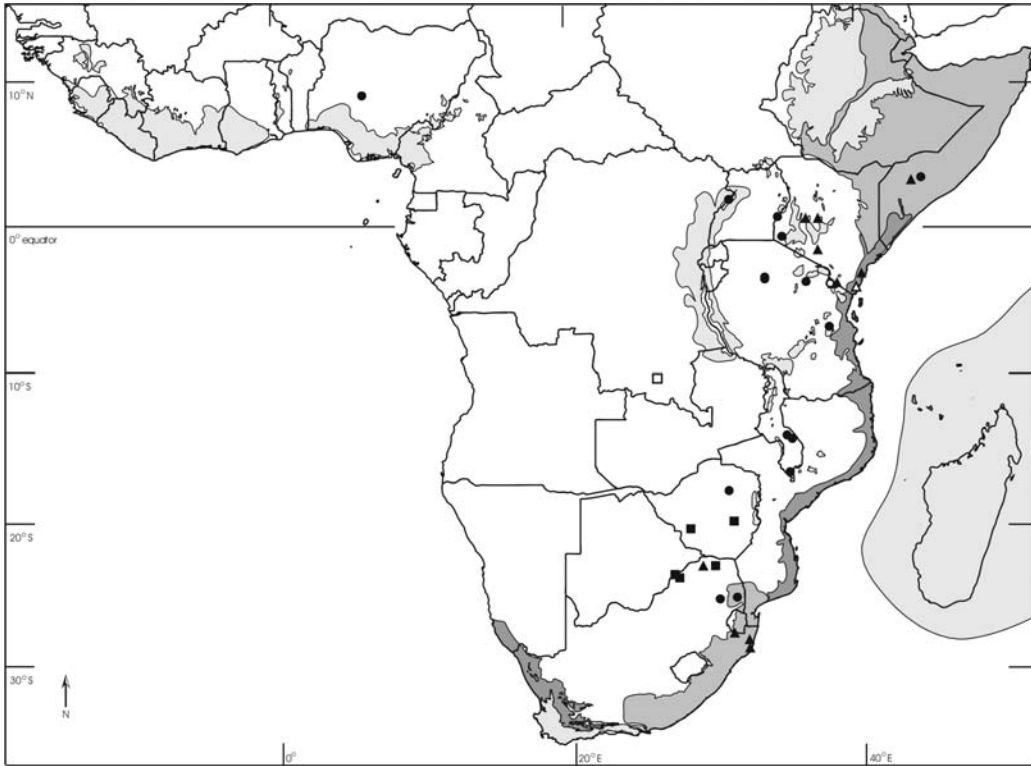


Fig. 24. Map of sub-Saharan Africa with biodiversity hotspots, shaded in grey, showing distribution of *Lasiocnemus fascipennis* (●), *La. hyalipennis* (■), *La. londti* (▲), and the unidentified female specimen deposited in the SAMC (★). Type localities with open symbols.

trichia in the discal cell, the entirely black setae on the metathoracic femora and tibiae, and the presence of only short setae on the dorsal surface of the metathoracic tibiae.

Description

Head. Black; face brown pruinose, facial swelling indistinct, mystax black with few white setae laterally, 8–12 macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, setae black; Antennae, scape brown, black setae dorsally and ventrally, apruinose; pedicel brown, brown setae dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, about two-thirds length of postpedicel; apical 'seta-like' sensory element brown.

Thorax. Black, anepisternum and dorsal half of katepisternum and anepimeron grey pruinose, remaining parts brown pruinose, anepisternum and katepisternum setae brown; scutum black, red anterolaterally and anteromedially, predominantly apruinose, margins grey pruinose, surface

covered with white setae, white and black setae on pruinose part; macrosetae: black, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, black. Legs, brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect black setae anteriorly and dorsally, metathoracic femora with erect black setae on all surfaces which are longest posteriorly, clubbed and widest sub-distally; tibiae with erect black setae on all surfaces, prothoracic and mesothoracic tibiae with fewer setae dorsally, metathoracic tibiae with these setae longest in proximal two-thirds ventrally, setae short dorsally, prothoracic tibiae with yellow cleaning setae in distal half ventrally, metathoracic tibiae with yellow setae distally; tarsomeres with black setae, first metathoracic tarsomere with yellow setae posteroventrally; empodium three-quarters length of claw. Wings, length = 9.5–10.5 mm; cell d with only few microtrichia, wing nearly uniformly brown stained, wing pattern Fig. 13; haltere brown.

Abdomen. Black; T2–5 brown pruinose anteriorly and grey pruinose posteriorly, T6–8 bluish-grey pruinose, T2 in proximal half with only few brown setae laterally, remaining T with short white setae, S2 in proximal half apruinose and in distal half brown pruinose, S3–4 brown pruinose, S5–8 black or bluish-grey pruinose. Male terminalia as in Fig. 2. Female terminalia as in Fig. 19.

Type material. The male lectotype, here designated to preserve taxonomic stability, is labelled 'Ruo V [Ruo Valley] Nyasaland 5.III.1913 S.A. Neave (handwritten except for 'Nyasaland', '191', and 'S.A.Neave')/Sammlung F. Hermann/1/E. Janssens det. 1951 *Lasiocnemus Hermannii* ♂ E. Janssens (handwritten except for 'E. Janssens det. 19')/LECTOTYPE *Lasiocnemus hermannii* Janssens, 1952 by T. Dikow 2004 (red label)'. The specimen is directly mounted and in good condition (right wing broken, thorax cracked), (ZSMC).

The male paralectotype is labelled '[same data as holotype except for '4. III 1913']/E. Janssens det. 1952 ♂ *Lasiocnemus Hermannii* Jans (handwritten except for 'E. Janssens det. 19')/PARALECTOTYPE *Lasiocnemus hermannii* Janssens, 1952 by T. Dikow 2004 (yellow label)'. The specimen is directly mounted and in good condition (abdomen broken, but attached to specimens pin on a piece of cardboard; male terminalia attached in genitalia vials), (ZSMC).

A female paralectotype is labelled '[same data as male paralectotype]/(red rectangular label)/Brit. O. Africa *Lasiocnemus affinis* Type Herm (handwritten; pink label)/*Lasiocnemus affinis* Hrm. ♀ det. E.O. Engel (handwritten except for 'det. E.O. Engel'; black submarginal border)/PARALECTOTYPE *Lasiocnemus hermannii* Janssens, 1952 by T. Dikow 2004 (yellow label)'. The specimen is directly mounted and in good condition (left prothoracic and mesothoracic legs broken), (ZSMC).

Another female paralectotype is labelled 'Mlanje Nyasaland 28.II.1913 S.A. Neave (handwritten except for 'Nyasaland', '191' and 'S.A.Neave')/Sammlung F. Hermann/(red rectangular label)/Brit. O. Africa *Lasiocnemus violacea* Type Herm (handwritten; pink label)/*Lasiocnemus violacea* Hrm. ♀ det. E.O. Engel (handwritten except for 'det. E.O. Engel'; black submarginal border)/PARALECTOTYPE *Lasiocnemus hermannii* Janssens, 1952 by T. Dikow 2004 (yellow label)'. The specimen is directly mounted and in good condition (metathoracic tarsi broken), (ZSMC).

Additional material examined. MALAWI: 1? between Fort MANGOCHÉ and Chikala Boma, 14°27'S 35°29'E, 20–25.iii.1910, 1219 m; 1? Blantyre, 15°47'S 35°00'E, --.1914; 2♂ 2? Mount Mulanje, 15°57'S 35°37'E, 28.ii.1913; 1? Mount Mulanje, 20.ii.1914; 1♀ Mount Mulanje, 28.ii.1913 (paralectotype); 1♂ Ruo Valley, 15°53'59"S 35°39'00"E, 5.iii.1913 (lectotype); 1♂ Ruo Valley, 4.iii.1913 (paralectotype); 1♀ Ruo Valley, 4.iii.1913 (paralectotype); 1? Ruo Valley, 6.iii.1913; 1♀ 2♂ 1? Ruo Valley, 4.iii.1913; 1♀ 1? Ruo Valley, 5.iii.1913; 1♀ 1♂ Ruo Valley, 7.iii.1913, 671 m; 1♂ Lingadje, 2.iii.1915; 1♀ 1♂ 4? no exact locality, 10–18.iii.1913; 1♂ no exact locality, 14.ii.1913; MOZAMBIQUE: 1? Kola Valley, 17°02'S 35°11'E, 6.iv.1913; TANZANIA: 1♂ Kilossa, 06°49'S 36°58'E, 4.v.1966; 1♂ Unzungwa National Park, 08°20'S 35°58'E, 20.vi.1995; ZAMBIA: 1♀ Chipata (= Ft. Jameson), 62 km SW, 14°18'S 32°15'E, 1.iii.1958, 1150 m. Depositories: AMNH, BMNH, CAS, MRAC, NMSA, ZSMC.

Type locality, distribution and biodiversity hotspot (Fig. 23): Malawi, Ruo Valley, 15°53'S 35°39'E. Malawi, Mozambique, Tanzania, Zambia. Eastern Afromontane.

***Lasiocnemus hyalipennis* Janssens, 1952,**
Figs 3, 4, 14, 20, 24

Lasiocnemus hyalipennis Janssens, 1952: 5, 6;
Hull 1962: 309; Oldroyd 1980: 357.

Diagnosis

The species is distinguished from congeners by the predominantly hyaline wings (only darkened medially), the yellow longitudinal stripe on the prothoracic tibiae, the few microtrichia in the discal cell, and the white and black setae on the metathoracic femora and tibiae (white setae proximally and distally, black setae medially).

Description

Head. Black; face silver pruinose, facial swelling indistinct, mystax white, many macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, setae white. Antennae, scape brown, brown setae dorsally and ventrally, apruinose; pedicel brown, brown setae dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, stylus shorter than postpedicel; apical 'seta-like' sensory element brown.

Thorax. Orange to brown, grey pruinose, anepisternum and katepisternum setae white;

scutum black, orange to brown anterolaterally and medially, predominantly apruinose, margins grey pruinose, surface covered with white setae, white setae on pruinose part; macrosetae: white, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, white. Legs, brown; coxa grey pruinose; prothoracic and mesothoracic femora with erect predominantly white setae anteriorly and black setae dorsally, metathoracic femora with erect white setae proximally and distally and brown setae medially, setae on all surfaces, clubbed and widest sub-distally; tibiae with erect white setae on all surfaces, prothoracic tibiae with white cleaning setae in distal half ventrally, metathoracic tibiae with white setae proximally and distally and brown setae medially, prothoracic and mesothoracic tibiae with yellow stripe dorsally; tarsomeres with white setae and black macrosetae, first metathoracic tarsomere with yellow setae posteroventrally; empodium about half length of claw. Wings, length = 8.3–11.4 mm; cell d with only few microtrichia, wing predominantly hyaline, only lightly stained, wing pattern Fig. 14; haltere brown.

Abdomen. Brown; T2–4 light brown pruinose dorsally and grey pruinose laterally, T5–6 brown pruinose, T7–8 grey pruinose, T2 in proximal half with long white setae laterally, remaining T predominantly with short white setae, S2 apruinose medially remaining part grey pruinose, S3–8 predominantly grey apruinose. Male terminalia as in Fig. 3. Female terminalia as in Fig. 20.

Type material. The male holotype is labelled 'MUSÉE DU CONGO Kipiri IX-1912 Miss. Agric/*Lasiocnemus pilipes* Curran Det. S.W. Bromley 19 (species name and author handwritten)/R. Det. 5409 i ('i' handwritten)/E. Janssens det., 1951 *Lasiocnemus hyalipennis* E. Janssens (handwritten except 'E. Janssens det., 19')/2 (handwritten)'. The specimen is directly mounted and in good condition (right wing broken, male terminalia attached to specimen pin in genitalia vials), (MRAC).

Additional material examined. DRC: 1♂ Kipiri, 10°18'S 026°10'E, -ix.1912 (holotype); SOUTH AFRICA: 3♂ Louis Trichardt, 13 km N, 22°56'S 029°54'E, 27.xii.1990; 1♂ D'Nyala Nature Reserve, 23°27'S 27°29'E, 8–12.xii.1989; 1♀ Mogol Nature Reserve, 23°35'S 27°27'E, 19–23.xi.1979; ZIMBABWE: 1♂ Matopos, 20°25'S 28°29'E, 4.xii.1911; 1♀ Matopos, 6.xii.1990; 1♀ Vumba, 19°53'S 31°22'E, 14.xii.1965. Depositories: BMNH, FSCA, MRAC,

NMSA, SANC.

Type locality, distribution and biodiversity hotspot (Fig. 24): DRC, Kipiri, 10°18'S 26°10'E. DRC, South Africa, Zimbabwe. Does not occur in any biodiversity hotspot.

***Lasiocnemus londti* sp. n.**, Figs 5–7, 15, 21, 24

Diagnosis

The species is distinguished from congeners by the entirely pruinose scutum, the few microtrichia in the discal cell, and the white and black setae on the metathoracic femora and tibiae (white setae proximally and distally, black setae medially).

Description

Head. Black; face grey pruinose, facial swelling indistinct, mystax black, sometimes with lateral setae yellow or even entirely yellow, 4–6 macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, medio-dorsally brown pruinose, setae light brown to white. Antennae, scape brown, brown setae ventrally, apruinose; pedicel light brown to red, brown setae dorsally and ventrally, grey pruinose; postpedicel light brown, grey pruinose; stylus brown, slightly longer than postpedicel; apical 'seta-like' sensory element brown.

Thorax. Brown to black, anepisternum and dorsal half of katepisternum and anepimeron grey pruinose, remaining parts brown pruinose, anepisternum setae and katepisternum setae white; scutum black, brown anterolaterally, entirely pruinose, predominantly grey pruinose, median longitudinal stripe originating anteriorly but not reaching posterior margin and two lateral longitudinal stripes originating subanteriorly and reaching posterior margin brown pruinose, surface covered with long black setae, often setae on grey pruinose area white; macrosetae: black, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, brown or white. Legs, brown to dark brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect black setae on all surfaces, metathoracic femora with erect black setae posteriorly, proximal two-thirds and distal one-quarter with white erect setae anteriorly, dorsally, and ventrally, band of entirely black erect setae sub-distally, clubbed and widest sub-distally; prothoracic and mesothoracic tibiae with erect black and white setae on all surfaces,

metathoracic tibiae with white setae in proximal and distal thirds, black setae medially, prothoracic tibiae with yellow cleaning setae in distal two-thirds ventrally, metathoracic tibiae with yellow setae at distal margin ventrally; tarsomeres with black setae, first metathoracic tarsomere with yellow setae posteroventrally; empodium half length of claw. Wings, length = 6.5–8.5 mm; cell d with very few microtrichia, especially in specimens from Kenya and Tanzania anterior half covered with microtrichia, wing pattern as in Fig. 15; halter brown.

Abdomen. Black; T brown pruinose anteriorly and grey pruinose posteriorly, T2 in proximal half with long yellow setae laterally, remaining T with short yellow or brown setae, S brown and grey pruinose. Male terminalia as in Figs 5–7. Female terminalia as in Fig. 21.

Etymology. The specific name *londti* is the genitive case of the personal name Londt. The species is named after Jason Londt in recognition of his extensive work on the Afrotropical Asilidae fauna.

Type material. The male holotype is labelled 'KENYA: Muhaka Forest South of Mombassa 04°14'S: 39°25'E Date: 23.ix.1992 Coll. I.M. Abu-Zinid/12 (handwritten)/*Lasiocnemus obscuripennis* ♂ (Loew, 1851) Det. J.G.H. Londt (handwritten except for 'Det. J.G.H. Londt')/HOLOTYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (red label). The specimen is directly mounted and in good condition (right metathoracic leg broken; male terminalia attached to specimens pin in genitalia vials), (NMSA).

Two female paratypes are labelled 'KENYA: Kajiado Dist. Nguruman area 700 m 01°50'S: 36°56'E Coll: I. Abu-Zinid Date: 26.VI.1990 (date handwritten)/H (handwritten)/*Lasiocnemus hyalipennis* Janssens ♀ Det. J.G.H. Londt (handwritten except for 'Det. J.G.H. Londt')/PARATYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (yellow label). The specimens are directly mounted and in good condition (one specimen with right prothoracic leg broken and female genitalia attached to specimens pin in genitalia vials), (NMSA). A male paratype is labelled 'STH AFRICA: Transvaal 6km N of Vivo 2229CC 23–24.ii.1980 Londt & Schoeman Bushveld veget. & old lands/*Lasiocnemus hyalipennis* Jans. det. J.G.H. Londt, 1980 (handwritten except for 'det. J.G.H. Londt, 19')/PARATYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (yellow label). The specimen is double-mounted (minuten in piece of foam) and in excellent condi-

tion, (NMSA). A male paratype is labelled 'RSA: KZ-Natal #08 St. Lucia Game Park 28°21'S:32°26'E 45 m Date: 12.iii.1995 Coll: J.G.H. Londt open mixed grassland/PARATYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (yellow label). The specimen is directly mounted and in good condition (head missing), (NMSA). A female paratype is labelled 'S. AFRICA: Natal #96 Itala Game Reserve Graig Adam Dam 27°28'S:31°25'E i.1991 R.M. Miller Malaise trap/PARATYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (yellow label). The specimen is directly mounted and in very good condition, (NMSA). A female paratype is labelled 'KENYA: Baringo #63 Lake Bogoria Nat. Res. 00°15'N:36°05'E 1100 m West bank 21.xi.1992 A Whittington & J Londt Open thornveld and sand/PARATYPE *Lasiocnemus londti* sp. nov. det. T. Dikow 2005 (yellow label). The specimen is directly mounted and in very good condition, (NMSA).

Additional material examined. KENYA: 1♀ Laikipia, Mpala Research Centre, 00°14'N 36°54'E, 23.i.2001; 1♀ Lake Bogoria Nature Reserve, 00°15'N 36°05'E, 21.xi.1992, 1100 m (paratype); 1♂ Muhaka Forest, 04°14'S 39°25'E, 23.ix.1992 (holotype); 2♀ Nguruman area, 01°50'S 36°56'E, 26.vi.1990, 700 m (paratypes); 1♂ Sokoke Forest, 03°29'S 39°50'E, 16.v.1963; SOMALIA: 1♀ Awdiinle, 03°11'N 43°24'E, 7.i.1986; SOUTH AFRICA: 1♀ Itala Game Reserve, Graig Adam Dam, 27°28'S 31°25'E, –i.1991 (paratype); 1♀ Mfongosi, 28°42'S 30°48'E, –iv.1916; 1♀ Mfongosi, –xii.1916; 1♀ Mkuzi, 27°59'S 32°23'E, 23.i.2005; 1♂ St. Lucia Game Park, 28°21'S 32°26'E, 12.iii.1995, 45 m (paratype); 1♂ Vivo, 6 km N, 23°00'S 029°17'E, 23–24.ii.1980 (paratype); TANZANIA: 1♂ Mkomazi Game Reserve, Kikolo Plot, 04°07'S 38°01'E, 16.iv.–2.v.1996; 2♂ Mkomazi Game Reserve, Kisima Plot, 04°06'S 38°06'E, 16.iv.–2.v.1996. Depositories: BMNH, LAMC, NMSA, SAMC.

Remarks. This species is disjunctly distributed in Eastern Africa (Kenya, Somalia, Tanzania) and South Africa. Although there are some morphological differences among specimens, e.g. length of setae on metathoracic tibiae and coloration of pruinosity on scutum, I regard all specimens as belonging to a single species.

Type locality, distribution and biodiversity hotspots (Fig. 24): Kenya, Muhaka Forest, 04°14'S 39°25'E. Kenya, Somalia, South Africa, Tanzania. Coastal Forests of Eastern Africa, Eastern Afromontane, Maputaland–Pondoland–Albany.

Lasiocnemus lugens Loew, 1858, Figs 4, 8–10, 16, 22, 23

Lasiocnemus lugens Loew, 1858: 353; Loew 1860: 106; Curran, 1928: 329; Engel & Cuthbertson 1934: 36; Janssens 1952: 5; Hull 1962: 309; Oldroyd 1980: 357.

Diagnosis

The species is distinguished from congeners by the overall black coloration, the predominantly black setae, and the densely arranged microtrichia in the discal cell.

Description

Head. Black; face brown pruinose, facial swelling indistinct, mystax black with a few white setae laterally, more than 10 macrosetae; proboscis and palpi black, setae black; occiput brown pruinose laterally and grey pruinose medially, setae black. Antennae, scape black, black setae ventrally, apruinose; pedicel black, brown setae dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, as long as postpedicel; apical 'seta-like' sensory element hyaline or brown.

Thorax. Black, brown pruinose except for scutum and scutellum, anepisternum and katapisternum setae black; scutum black, sometimes red anterolaterally and anteromedially, predominantly apruinose, margins grey pruinose, surface covered with long white setae, white and brown setae on pruinose part; macrosetae: brown, one or two supra-alar setae; scutellum grey pruinose, discal scutellar and scutellar setae long, brown. Legs, dark brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect black setae anteriorly and dorsally, metathoracic femora with erect black setae on all surfaces, clubbed and widest sub-distally; tibiae erect black setae on all surfaces, prothoracic tibiae with yellow cleaning setae in distal two-thirds ventrally, metathoracic tibiae with yellow setae disto-ventrally; tarsomeres with black setae, first metathoracic tarsomere with yellow setae posteroventrally; empodium two-thirds to nearly length of claw. Wings, length = 7.3–10.0 mm; cell d densely covered with microtrichia, wing pattern Fig. 16; halter brown.

Abdomen. Black; T brown pruinose anteriorly and grey pruinose posteriorly, T2 in proximal half with long brown setae laterally, remaining T with short white setae, S2 in proximal half apruinose and in distal half grey pruinose, S3–4 grey

pruinose, S5–8 brown pruinose. Male terminalia as in Figs 8–10. Female terminalia as in Fig. 22.

Type material. The male holotype is labelled '96. (handwritten)/266. (handwritten)/*Lasiocnemus lugens*/HOLOTYPE *Lasiocnemus lugens* Loew, 1858 by T. Dikow 2004 (red label)'. The specimen is directly mounted and in relatively poor condition (legs and parts thereof broken, attached to cardboard piece on specimens pin), (NHRS).

Additional material examined. BOTSWANA: 2♂ Metsimaklaba, 24°32'S 25°29'E, 7–12.iii.1930; 1♀ Serowe, 22°25'S 26°44'E, –.x.1989; MOZAMBIQUE: 2♀ 1♂ Goba (several such localities), 13.iv.1980; SOUTH AFRICA: 1♂ Barberton, 25°47'S 31°03'E, 6.iv.1928; 1?, Barberton, 19–26.iii.1920; 1?, Barberton, 29.iv.1920; 1♂ Caffraria (holotype); 2♀ Crocodile Marico River junction, 24°12'S 026°52'E, –.ii.1918; 1♂ Doorndraai Dam Nature Reserve, 24°11'S 28°26'E, 18.i.1980; 1♀ 1♂ Doorndraai Dam Nature Reserve, 16.ii.2005, 1182 m; 1♀ Dunstable Hoedspruit Farm, 24°16'S 30°27'E, 18–20.i.1990; 4♀ 2♂ 1? Harold Johnson Nature Reserve, 29°12'S 31°25'E, 29.iv.1988; 2♀ Harold Johnson Nature Reserve, 27.i.1987; 1♀ 2♂ Harold Johnson Nature Reserve, 14.i.1994; 3♀ 4♂ Melville Koppies Reserve, 26°11'S 28°01'E, 15–30.iii.1987; 1♀ Johannesburg, [Raedene], 26°12'S 28°05'E, 14.ii.1967; 1♀ 2? Kube Yini Game Reserve, 27°48'S 32°14'E, 10–14.i.1994; 1♀ Louwscreek, 25°39'S 31°18'E, –.iii.1920; 1♀ 1♂ Matlabas, 35 km N Thabazimbi, 24°08'S 027°18'E, 18.i.1983; 1♀ Mfongosi, 28°42'S 30°48'E, –.iii.–iv.1935; 1♂ Mfongosi, –.iv.–v.1934; 1♀, 2♂, 1?, Mfongosi, –.ii.–iii.1917; 1♀ Mfongosi; 1? Mfongosi, –.iv.1916; 1♀ Mfongosi, 20.iii.1923; 1♀ Mhlopheni Nature Reserve, 29°01'S 30°24'E, 15.iii.2000; 1♂ Mhlopheni Nature Reserve, 8–9.ii.1991; 1♀ N aboomspruit, 24°30'S 28°43'E, 5.iii.2000; 1♀ Norvalspont, 30°38'S 25°27'E, 16.iv.1934; 1♀ Nylstroom, 24°42'S 28°24'E, 17.i.1981; 2♀ Olifants Camp Kruger National Park, 24°00'S 31°45'E, 23–25.iv.1969; 1♂ Pafuri, Kruger National Park, 22°16'S 31°07'E, 20–24.i.1985; 3♀ 1♂ Percy Five Nature Reserve, 24°02'S 29°05'E, 10–12.iii.1980; 1♂ Pongolapoort Nature Reserve, 27°12'S 31°34'E, 7.ii.1990; 1♂ Potgietersrus, 10 km N, 24°10'S 28°58'E, 28.i.1978; 1♂ Pretoria, 25°13'S 28°04'E, 14.ii.1996; 1♂ Pretoria, Renosterkop, 25°50'S 27°55'E, 11.ii.1986, 1400–1480 m; 1♀ 1♂ Rooiberg (10 km NW), 24°42'S 27°40'E, 1.ii.1978; 1♂ Rustenburg Nature Reserve, 25°24'S 27°07'E, 23–26.ii.1981; 1♀ Schoongelegen, 23°20'S 27°29'E, –.i.1988; 1♂ Thaba Zimbi, 24°35'S 27°24'E,

23.iii.1985; 1♀ Ubombo Jozini turnoff, 27°34'S 32°04'E, 11.v.1981; 1♀ Vaalwater, 24°10'S 28°06'E, 2.iii.1980; 2♂ Vila Nora, 23°35'S 28°05'E, 31.i.1978; 6♀ 1♂ Villa Nora, 23°32'S 28°07'E, 31.i.1978; 1♀ 3♂ 1♀ Weenen, 28°51'S 30°05'E, -.ii.1925; 1♀ Weenen, 28°51'S 30°05'E, -.iii.1924; 1♀ Weenen, 28°51'S 30°05'E, -.iii-iv.1924; 1♀ Weenen, 28°51'S 30°05'E, -.i.1925; 1♀ Zoutpan, 23°10'S 28°25'E, 4-10.ii.1929; 1♂ Zoutpan, 23°10'S 28°25'E, 7.iv.1950; SWAZI-LAND: 8♀ 4♂ Mbuluzi Nature Reserve, 26°08'S 32°00'E, 25.iv.1991; 1♀ Mbuluzi Nature Reserve, 25.iv.1991, 200 m; 3♀ Ngogolo, 13 km N, 26°19'S 31°38'E, 22-24.iv.1991; 2♀ 3♂ Sand River Reservoir, 25°59'S 31°42'E, 26.iv.1991; ZIMBABWE: 1♀ Balla Balla, 20°27'S 29°03'E, -.iii.1931; 1♂ Balla Balla, 3 km NW, 20°26'S 29°02'E, 22.iii.1958, 1100 m; 2♀ Bazely Bridge, 19°00'S 32°40'E, 29.iv.1966; 1♀ 2♂ 2♀ Bulawayo, 20°09'S 28°35'E, 9.iii. (1♂) 17.iii. (1♀) 20.iii. (1♀) 22.iii. (1♂) 23.iii.1923 (1♀); 1♀ 2♂ 2♀ Bulawayo, 20°09'S 28°35'E, 7.iii.1925; 1♀ Bulawayo, 20°09'S 28°35'E, 14.iii.1920; 1♂ Hot Springs, 19°39'S 32°28'E, 19.iv.1965; 1♀, 2♂ Mapembi, 19°05'S 32°22'E, 22.iii.1964; 1♀ Masvingo, 22 km W, 20°05'S 30°38'E, 21.iii.1958, 1050 m; 2♀ 2♂ 2♀ Matopos Hills, 20°25'S 028°29'E, -.iv.1932; 1♂ Matopos National Park, 20°33'S 28°33'E, 1-2.iv.1968; 1♂ Harare district, 17°49'S 31°02'E, 21.ii.1943; 2♀ 1♀ Umtali, 86 km S, 19°44'S 32°40'E, 18.iii.1958, 560 m. Depositories: BMNH, CAS, CSCA, FSCA, NHRS, NMSA, SAMC, SANC, USNM, ZSMC.

Type locality, distribution and biodiversity hotspots (Fig. 23). The original type locality is Cafferria, South Africa. The type specimens were collected by Wahlberg, who travelled primarily in eastern South Africa and northern Botswana (Usher 1972). Following recommendation 76A.1.4. of the ICZN a new type locality is selected from within the range of the species. I hereby designate Doordrai Dam Nature Reserve, Limpopo Province, South Africa, 24°11'S 028°26'E, which is close to Wahlberg's route and in which the species has been recently collected, as type locality. Botswana, South Africa, Swaziland, Zimbabwe. Eastern Afromontane, Maputaland-Pondoland-Albany.

***Lasiocnemus obscuripennis* (Loew, 1851),**

Figs 4, 23

Leptogaster (Lasiocnemus) obscuripennis Loew, 1851: 2.

Lasiocnemus obscuripennis Loew 1858: 354; Loew 1860: 106; Curran, 1928: 329; Janssens 1952: 5; Hull 1962: 308, 309; Oldroyd 1980: 357.

Diagnosis

The species is distinguished from congeners by densely arranged microtrichia in the discal cell, the yellow longitudinal stripe on the prothoracic tibiae, and the predominantly yellow setae on head and thorax.

Description

Head. Black; face silver pruinose, facial swelling indistinct, mystax white, many macrosetae; proboscis and palpi black, setae black; occiput grey pruinose, setae white or yellow. Antennae, scape brown, brown setae ventrally, apruinose; pedicel brown, brown setae dorsally and ventrally, grey pruinose; postpedicel brown, grey pruinose; stylus brown, slightly longer than postpedicel; apical 'seta-like' sensory element brown.

Thorax. Black, anepisternum and dorsal half of katepisternum and anepimeron grey pruinose, remaining parts brown pruinose, anepisternum and katepisternum setae yellow; scutum black, predominantly apruinose, margins grey pruinose, surface covered with yellow setae, yellow setae on pruinose part laterally and yellow and brown setae posteriorly; macrosetae: black, one notopleural seta, one supra-alar seta; scutellum grey pruinose, discal scutellar and scutellar setae long, brown. Legs, brown; coxa brown pruinose; prothoracic and mesothoracic femora with erect yellow setae anteriorly and dorsally, metathoracic femora with erect brown setae on all surfaces but yellow proximo-anteriorly and proximo-dorsally, clubbed and widest sub-distally; tibiae with erect yellow setae on all surfaces, prothoracic tibiae with yellow cleaning setae in distal half ventrally, metathoracic tibiae with brown setae proximally and dorsally, yellow setae distally; tarsomeres with black setae, first metathoracic tarsomere with yellow setae postero-ventrally; empodium three-quarters to nearly length of claw. Wings, length = 7.7-9.0 mm; cell d densely covered with microtrichia, wing pattern similar to *lugens* (Fig. 16), but only cell r1 with white spot in distal part of wing; halter brown.

Abdomen. Black; T only narrowly brown pruinose anteriorly and grey pruinose posteriorly, T2 in proximal half with long white setae laterally, remaining T with short white setae, S2 in proximal half apruinose and in distal half grey pruinose, S3-4 brown pruinose. Male terminalia as in Fig. 4. Female terminalia unknown.

Type material. The male holotype is labelled

Mozambique Inhambana Peters S. (blue label)/*Lasiocten. obscuripennis*/9976/(small violet square)/Coll. H. Loew/Holotypus (red label). The specimen is directly mounted and in good condition (male terminalia attached to specimens pin in genitalia vials), (ZMHB).

Additional material examined. MOZAMBIQUE: 1♂ Inhambane, 23°51'S 35°29'E (holotype); TANZANIA: 1♀ 2♂ Dodoma, 112 km N, 05°11'S 35°45'E, 2.v.1966; 1♀ Dodoma, 13 km N, 06°04'S 35°45'E, 8.v.1966. Depositories: BMNH, ZMHB.

Remarks. *La. obscuripennis* is the type species of *Lasioctenemus* and, unfortunately, is only known from a few specimens disjunctly distributed in Mozambique and Tanzania.

Type locality, distribution and biodiversity hotspot (Fig. 23). Mozambique, Inhambane, 23°51'S 35°29'E, Mozambique, Tanzania. Coastal Forests of Eastern Africa.

Identification key to *Lasioctenemus* species

1. Mesonotal pruinosity restricted to lateral and posterior margins (centre of scutum apruinose); metathoracic empodium longer than half length of claw 2
 - Scutum entirely grey and brown pruinose; metathoracic empodium shorter than half length of claw *La. londti*
2. Cell d densely covered with microtrichia ... 6
 - Cell d with only a few microtrichia 3
3. Setae on metathoracic tibiae long and erect on all surfaces; metathoracic tibiae with white setae proximally 5
 - Setae on metathoracic tibiae only long and erect on ventral surface, dorsally setae only short and not as densely arranged; metathoracic tibiae with black setae proximally (rarely setae white) 4
4. Wing with a pattern of brown staining and white spots (Fig. 11); prothoracic tibiae with yellow stripe dorsally; occiput with white and black setae; metathoracic tibiae with relatively long erect setae dorsally; metathoracic tibiae with white setae ventrally occupying nearly distal half of tibiae *La. fascipennis*
 - Wing more or less evenly brown coloured (Fig. 13); prothoracic tibiae without yellow stripe dorsally; occiput with black setae only; metathoracic tibiae with very short erect setae dorsally; metathoracic tibiae

- with white setae ventrally occupying only distal one-quarter of tibiae *La. hermanni*
- 5. Mystax consists of four black macrosetae; wings brown coloured except for transverse white stripe in distal half (Fig. 12); scutum metallic bluish-black; empodium less than half length of claw; prothoracic tibiae entirely black *La. griseicinctipes*
 - Mystax consists of ten or more white macrosetae; wings predominantly hyaline, only pterostigma light brown coloured (Fig. 14); scutum brown (sometimes red) anteriorly and black posteriorly; empodium longer than half length of claw; prothoracic tibiae with distinct yellow anterior longitudinal stripe *La. hyalipennis*
- 6. Mesonotal and anepisternal setae yellow; face and mystax white; dorsal surface of prothoracic tibiae with white/yellow longitudinal stripe; setae distally on metathoracic tibiae extensively yellow ... *La. obscuripennis*
 - Mesonotal setae white or brown and anepisternal setae brown to black; face brown pruinose; mystax black; dorsal surface of prothoracic tibiae without any pale stripe; setae on metathoracic tibiae predominantly black except distal tip which is yellow anteriorly *La. lugens*

A single female specimen from Bulawayo (Zimbabwe, 10.ix.1923, R. Stevenson, SAMC) previously identified as *La. obscuripennis* was studied that could not be identified to any of the species above. It resembles *La. obscuripennis*, i.e. mesonotal and anepisternal setae yellow, face and mystax white, dorsal surface of prothoracic tibiae with yellow longitudinal stripe, but differs by having a densely pruinose scutum, like *La. londti*, and setae on the metathoracic femora and tibiae are short and the microtrichia very loosely arranged in cell d as in *La. fascipennis*.

Biology and seasonal incidence: Londt (1994) summarized the habitat preferences of representatives of *Lasioctenemus* and concluded that they frequent tips of grasses and use them as perches. *Lasioctenemus lugens* was observed to prey on orb-weaver spiders (Chelicerata: Araneae: Oxyopidae) in a mixed woodland area in the Mbuluzi Nature Reserve and the Sand River Reservoir, Swaziland (Londt 2006). This observation substantiates the hypothesis that certain Leptogastrinae species feed on resting prey that they find by hovering

flight in their grassland habitat. Additional prey records are available for *La. hermanni*: Diptera: Phoridae, Sciomyzidae, Tachinidae; Coleoptera: Curculionidae, Staphylinidae; Isoptera; Chelicerata: Araneae.

Species of *Lasiocnemus* have been collected in the following months: *La. fascipennis*: February–June and September–December; *La. grigseicinctipes*: April, July and November; *La. hermanni*: February–June; *La. hyalipennis*: September and November–December; *La. londti*: January–June, September and November–December; *La. lugens*: January–May and October; *La. obscuripennis*: May.

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