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AN ANNOTATED KEY TO THE GENERA  
OF AFROTROPICAL APOCLEINAE, WITH  
DESCRIPTIONS OF SIX NEW GENERA  
(DIPTERA: ASILIDAE)

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An annotated key to the genera of afrotropical Apocleinae is presented. Descriptions of six new monotypic genera are provided. These, together with the names of type species, are as follows: *Acasilus* (*A. tigrimontis* sp. n.), *Juxtasilus* (*Dysclytus capensis* Londt, 1979), *Labarus* (*L. ignota* sp. n.), *Millenarius* (*M. graminosus* sp. n.), *Torasilus* (*T. solus* sp. n.), and *Zelamyia* (*Z. alyctus* sp. n.). All are from South Africa except *Torasilus* which is from Namibia. A table provides an introduction to recent taxonomic literature.

Keywords. – Afrotropical, Asilidae, Apocleinae, new genera, new species, key.

A new key for afrotropical genera of Apocleinae is overdue. The most recent key is that of Oldroyd (1963) who included them in the tribe he called the Asilini, together with genera now considered to belong to the subfamily Asilinae. Oldroyd (1974) subsequently published a key to the Southern African genera of that tribe, including four genera not then recorded from the subcontinent, but considered possible inhabitants. Work on the taxonomy of Asilidae by Papavero (1973) and by Artigas & Papavero (1988) produced a different classification that has been well received internationally. Afrotropical taxa are now accepted as being arranged within ten subfamilies (see key in Londt 2002a). This development, together with advances in our knowledge of afrotropical apocleine taxa and the accumulation of a number of interesting and undescribed species, has prompted this paper.

The essential differences between the classification found in Oldroyd's (1980) catalogue and the arrangement of taxa according to Artigas & Papavero's (1988) concept of subfamilies were discussed by Londt (2002a) in relation to the Asilinae. Londt (2002a: 17) tabulated all the genera recorded in that catalogue, including those now considered belonging to the Apocleinae. These, together with the names of more recently described and reinstated genera, as well

as remarks and references to useful literature relating to the current state of our knowledge of the taxa, are listed in table 1. To this list of 14 valid genera (counting *Bactria* / *Promachus* as one), a further six are now added with the description of the new taxa in this paper, thus bringing to 20 the number of afrotropical apocleine genera requiring an identification key.

The seemingly unusual act of describing six new monotypic genera requires comment. Although taxonomic work on afrotropical Asilidae has taken great strides over the last thirty years, far more knowledge is required before the relationships between taxa can fully be understood. The Apocleinae, in particular, appear to have undergone remarkable speciation in southern Africa. This is especially true of taxa possessing triformed antennal styles, and numerous species have been described in recent years, these usually being defined mainly by characteristics of the male genitalia. Genera have been established using slightly different combinations of only a few reliable characters. Revisionary work undertaken on some of the more speciose genera, such as *Synolcus*, *Dasophrys*, and *Neolophonotus*, has assisted in clarifying generic characterisations that have allowed for the reinstatement of *Hippomachus* and has supported the establishment of new genera. Both *Gibbasilus* and *Robertomyia* were described as monotypic, and while the latter remains

so, additional species of *Gibbasilus* were subsequently added. The species described in this paper can not be easily accommodated in any of the genera currently available. This is partly the reason why some of them have not been described until now. While it may be argued that they could be provisionally placed in existing genera, this would merely serve to detract attention away from their obvious interest. With their description and a key to all the currently recognised genera of afrotropical Apocleinae, the stage may be set for a detailed cladistic analysis of the taxa. Such an analysis might allow the status of these new genera to be more adequately understood. However, as further fieldwork, especially in the poorly sampled arid areas of southern Africa, will certainly lead to the discovery of further taxa, classifications are likely to remain for some time somewhat unstable.

## MATERIAL AND METHODS

### Material

Listed specimens are housed in the Natal Museum (NMSA) unless otherwise indicated. Other institutions providing material were the Albany Museum, Grahamstown, South Africa (AMGS), Illinois Natural History Survey, Champaign, Illinois, U.S.A. (INHS) and the South African Museum, Cape Town, South Africa (SAMC). In all instances, specimens were dry-mounted on pins. Drawings were executed using a drawing tube attached to a Wild stereomicroscope, male terminalia being first removed and macerated in warm potassium hydroxide. Genitalia were stored temporarily in glass vials containing 70% ethanol until the completion of the study, when they were sealed in polyethylene genitalia vials containing a mixture of ethanol and glycerine, and attached to the specimen pins.

### Label data

In recording label data, a standard format is used where information on each label is demarcated by the use of single inverted commas, each line of data being separated by a spaced slash (/). The symbol ~ indicates that the following data are on the reverse of the label just documented, while square brackets are used to denote useful additional information or comments not found on labels. In this regard, co-ordinates are usually provided in square brackets when these, or a quarter-degree grid reference, do not appear on a label.

### Morphology

In descriptions of new taxa, the following characters were given special attention. Terminology and abbreviations used generally follow McAlpine (1981).

### Head

Antenna: Colour and setation of segments are described. All taxa have scape, pedicel, postpedicel and style. The style is composed of three 'elements': a short basal element, followed by a much longer second element which is tipped by a small seta-like sensory element. The relative sizes of these parts are given in an antennal formula where the length of the scape is taken as 1 and the 3 elements of style are given in brackets after its total length (i.e. order of measurements: scape : pedicel : postpedicel : style (: basal element : second element : seta-like sensory element)). Figures are rounded to the nearest tenth of a decimal point.

Face: The width, relative to the maximum width of the head (measured in anterior view), is given as a 'face : head width ratio'. Face width is measured at the level corresponding to maximum head width. In addition an indication of the shape of the face in lateral view is provided. The facial pruinosity and mystax are described.

Frons and vertex: A brief description is given, drawing attention to the ocellar tubercle and its setation.

Occiput: Pruinescence and setation are described. The length and curvature of the dorsal postocular setae are given special attention as these character states have proved important in previous studies.

Proboscis and palpi: Colour and setation are briefly described. The palpi are in all instances 2-segmented.

### Thorax

Mesonotum: A description of colour and pruinescence followed by details concerning setation of postpronotal and major macrosetae (abbreviations used are: *acr* = acrostichal setae, *dc* = dorsocentral setae, *npl* = notopleural setae, *spal* = supra-alar setae, *pal* = postalar setae). Dorsocentrals are variable with respect to their position relative to the transverse suture; they are usually much weaker anterior to this suture and consequently sometimes difficult to count accurately.

Scutellum: The number of marginal scutellar setae (*sctl*s) is recorded. In some instances these macrosetae may be rather weak and could be confused with better developed minor setae. Macrosetae are those with clearly discernable sockets. The setation of the scutellar disc is also described.

Wing: Length and breadth measurements are provided (length measured from humeral crossvein to tip, breadth through radial-medial (= discal) crossvein). Only a brief description is provided as illustrations of wings show details. Wings were not removed from specimens for photography.

Legs: As leg coloration and setation can be somewhat variable, descriptions of legs are brief and generalised. Of particular interest, however, is the number of lateral macrosetae on the metathoracic

coxae. This character has been used to classify species of *Neolophonotus* and is also useful in distinguishing genera. Care needs to be exercised when determining whether setae are macrosetae (those that are larger and with discernible sockets) or more minor setae.

### Abdomen

Genitalia: As features of the male and female genitalia are particularly important these are described and illustrated. For 'length : depth ratio' of ovipositor, length was measured from hind margin of T7 to tip of cercus, while depth is the maximum measurement. Illustrations do not always show setae as the shape of structures is considered more important than setal number or distribution. Illustrations of male genitalia may also exclude obscured features.

### TAXONOMY

#### Subfamily: Apocleinae Papavero, 1973

Subfamilial diagnosis. – Asilidae with the following combination of characters: Antennal stylus bare (i.e. not plumose). Palpus two-segmented. Anepisternum never with strong macroseta at supero-posterior angle. Katatergite with a vertical row of macrosetae. Prosternum usually dissociated from proepisternum. Anatergites asetose. Postmetacoxal area membranous (i.e. not sclerotised). Wing venation with  $R_{2+3}$  joining  $R_1$  proximal to end of  $R_1$ , cell  $r_1$  thus closed and separated from wing margin. Prothoracic tibia without an apical spur. Tergite 2 no more than four times longer than wide. Sternite 1 confined beneath T1 (i.e. not extending beneath T2 as in Leptogastrinae). Alula and pulvilli usually present.

#### Annotated key to afrotropical Apocleinae

This key is to genera, but as the dominant genus *Neolophonotus* has been subdivided into six species groups the key is extended to include these. No other subgenera or species groups relating to other genera are currently considered useful.

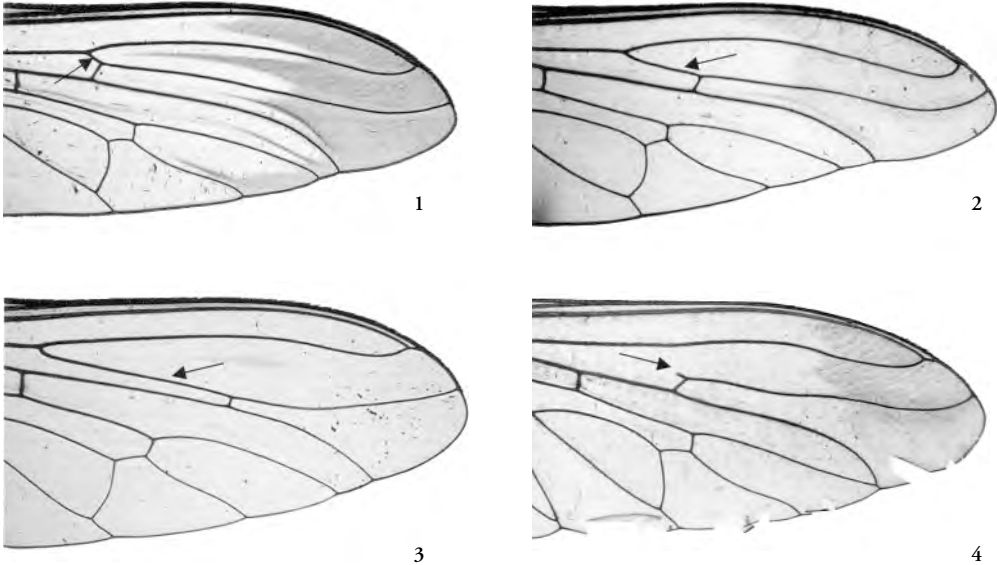
Annotations follow the key and correspond to bold superscripted numbers inserted within the key. Notes may relate to matters dealing with morphology or taxonomy.

Intact and associated males and females are required for the most satisfactory results.

1. Antennal style composed of 2 elements (an attenuate segment-like element tipped with a seta-like sensory element); face with a slight gibbosity ventrally; postocular setae dorsally short, straight or only slightly curved forwards; dorsocentral

- macrosetae limited to mesonotal region posterior of transverse suture .....2
- Antennal style composed of 3 elements (2 segment-like elements tipped with a seta-like sensory element); face plane or gently convex; dorsal postocular setae commonly long and proclinate, but may be short and straight to slightly curved; dorsocentral macrosetae either extending anterior to transverse suture or confined to posterior region .....7
- 2. Wing with complete supernumerary crossvein present between  $R_{2+3}$  and  $R_4$  (see note and figs. 1-3)<sup>1</sup> .....3
- Wing with supernumerary crossvein  $R_{2+3}$ - $R_4$  absent or at most represented by a short spur at base of  $R_4$  (fig. 4) .....5
- 3. Supernumerary crossvein  $R_{2+3}$ - $R_4$  long and running parallel to  $R_{4+5}$  for a considerable distance before reaching the fork of  $R_4$  and  $R_5$  (fig. 3); cell  $r_4$  short and diverging rapidly near wing margin; hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane (fig. 5)<sup>2</sup>; Scutellum with 8 or more marginal macrosetae, disc with both setae and macrosetae .....3
- ..... *Bactria* Meigen, 1820 / *Promachus* Loew, 1848<sup>3</sup>
- Supernumerary crossvein  $R_{2+3}$ - $R_4$  shorter and at most running parallel to  $R_{4+5}$  for a short distance; cell  $r_4$  long and diverging gradually towards wing margin (figs. 1-2); hind margin of wing with a double row of microtrichia diverging from the plane of wing membrane (fig. 6); Scutellum with fewer than 8 marginal macrosetae, disc with setae only (no macrosetae) .....4
- 4. Supernumerary crossvein  $R_{2+3}$ - $R_4$  very short (about as long as section of  $R_4$  between fork of  $R_4$ + $R_5$  and point at which crossvein joins  $R_4$  (fig. 1) ..... *Alcimus* Loew, 1848
- Supernumerary crossvein  $R_{2+3}$ - $R_4$  not very short and somewhat intermediate between the conditions found in *Alcimus* and *Bactria*/*Promachus* (fig. 2) ..... *Philodicus* Loew, 1848
- 5. Supernumerary crossvein  $R_{2+3}$ - $R_4$  absent; ovipositor telescopic, involving segments proximal to S8 ..... *Lycoprosopa* Hull, 1962
- Supernumerary crossvein  $R_{2+3}$ - $R_4$  represented by a short spur vein at the base of  $R_4$  (fig. 4); ovipositor not telescopic in development and not involving segments proximal to S8 .....6
- 6. Scutellum with 2 marginal macrosetae; metathoracic coxae with 2-3 lateral macrosetae; wing with cell  $r_5$  closed at or before wing margin; ovipositor tubular, spinose ..... *Apoclea* Macquart, 1838
- Scutellum with 4-6 marginal macrosetae; metathoracic coxae with a single lateral macroseta; wing with cell  $r_5$  open at wing margin;

- ovipositor laterally compressed, aspinose.....  
*Erax* Scopoli, 1763
7. Dorsal postocular setae short to moderately long and at most weakly proclinate..... 8
    - Dorsal postocular setae long and markedly proclinate..... 12
  8. Antennal style clearly longer than postpedicel..... 9
    - Antennal style shorter or about the same length as postpedicel..... 10
  9. Postpronotal lobes with macrosetae as well as fine setae; metathoracic coxa with a single lateral macroseta; hind margin of wing with a double row of microtrichia diverging from the plane of wing membrane (fig. 6)<sup>2</sup>..... *Dyschytus* Loew, 1858
    - Postpronotal lobes with fine setae only; metathoracic coxa with 4-5 lateral macrosetae; hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane (fig. 5)..... *Torasilus* gen. n.
  10. Dorsocentral macrosetae limited to posterior of transverse suture; metathoracic coxa with 2 lateral macrosetae..... 11
    - Dorsocentral macrosetae extend anterior to transverse suture; metathoracic coxa with more than 2 lateral macrosetae..... *Zelamyia* gen. n.
  11. Female cercus with fine setae and dorsodistal spine-like projection (figs. 32-33)..... *Justasilus* gen. n.
    - Female cercus with fine setae only and lacking dorsodistal spine-like projection (figs. 24-25)..... *Acasilus* gen. n.
  12. Hind margin of wing with a double row of microtrichia diverging from the plane of wing membrane (fig. 6)<sup>2</sup>..... *Robertomyia* Londt, 1990
    - Hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane (fig. 5)..... 13
  13. Wing cell  $r_3$  closed well before wing margin..... *Megadrillus* Bigot, 1857
    - Wing cell  $r_3$  open at wing margin..... 14
  14. Ovipositor in lateral view at least twice as long as high..... 15
    - Ovipositor in lateral view less than twice as long as high..... 19
  15. Metathoracic coxa with at least one lateral macroseta together with fine setae..... 16
    - Metathoracic coxa with fine setae only and lacking macrosetae..... 18
  16. Discal cell of wing markedly constricted at midlength..... *Synolcus* Loew, 1858
    - Discal cell of wing not markedly constricted at midlength..... 17
  17. Face smoothly if only slightly convex in lateral aspect; antennal style slightly longer than postpedicel; mesonotum not markedly humped and lacking a mane (long, tightly-packed, fine setae arranged in a narrow strip middorsally)..... *Dasophrys* Loew, 1858
    - Face plane in lateral aspect; antennal style shorter than postpedicel; mesonotum markedly humped and with a well-developed mane..... *Gibbasilus* Londt, 1986
  18. Scutellum with 6 or fewer marginal macrosetae; mesonotal mane with clearly discernible acrostichal macrosetae..... *Labarus* gen. n.
    - Scutellum with more than 6 marginal macrosetae; mesonotal mane well-developed but lacking clearly discernible acrostichal macrosetae..... *Hippomachus* Engel, 1927
  19. Ovipositor laterally compressed and in lateral view clearly longer than high; female cerci smoothly rounded distally; male S8 with bifurcate medial process distally; aedeagus long, Z-shaped (fig. 48), each straight section being of similar length and general development..... *Millenarius* gen.n.
    - Ovipositor usually tubular in form but if somewhat laterally compressed never clearly longer than high in lateral view; male S8 usually lacking a medial process distally, when a process is present it is never bifurcate but knob-like or as a smoothly-rounded dorsoventrally flattened projection; aedeagus short to moderately long, usually fairly straight, but if somewhat Z-shaped, basal section always much more robust than other sections..... *Neolophonotus* Engel, 1925 (species groups as follows<sup>4</sup>) 20
  20. Metathoracic coxa bears at least one (often more) macroseta laterally in addition to fine setae; postpronotal lobe with or without setae..... 22
    - Metathoracic coxa with fine setae only; postpronotal lobe always with setae..... 21
  21. Mane well-developed, unicolorous black along entire length (may be bordered by smaller pale coloured setae); setae of mane longish and arranged loosely or as a tightly-packed row..... *N. suillus* group
    - Mane usually weakly developed or absent anteriorly, and with only weak, loosely arranged, usually pale coloured setae (rarely absent) in posterior part; if mane is well-developed it is also bicoloured (black anteriorly, pale yellow or white posteriorly)..... *N. angustibarbus* group
  22. Postpronotal lobes bear a number of setae..... 23
    - Postpronotal lobes bare (rarely possess 1-3 isolated, erect setae)..... 24
  23. Mane usually well-developed, black (may be bordered by pale setae; exceptions have white setae anteriorly and black setae posteriorly)..... *N. comatus* group
    - Mane weakly to moderately developed, black



Figs. 1-4. Wing venation in apocleinae genera possessing a supernumerary crossvein between  $R_{2+3}$  and  $R_4$ . - 1, *Alcimus*: showing a very short supernumerary crossvein; 2, *Philodicus*: showing a moderately long supernumerary crossvein; 3, *Bactria* / *Promachus*: showing a long supernumerary crossvein; 4, *Apoclea*: showing the remnants of a supernumerary crossvein and a closed  $r_5$  cell.

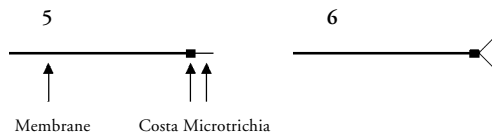
- setae anteriorly and white setae posteriorly).....  
.....*N. chionthrix* group
- 24. Mane black along entire length (often bordered by pale setae) along entire length (exceptions have white setae anteriorly and black setae posteriorly) .....*N. squamosus* group
- Mane bicoloured (black setae anteriorly and black or yellow-white setae posteriorly) or white along entire length .....*N. pellitus* group

Notes

1. I follow Oldroyd (1974: 143) in using the term 'supernumerary crossvein'. As some confusion may arise as a result of Oldroyd's failure to label his illustrations, a new set of illustrations is provided showing the varying form of this supernumerary crossvein (figs. 1-4). Care needs to be exercised when assessing the state of this character as Oldroyd mentions variation in *Apoclea* outside the afrotropics. My knowledge of afrotropical species suggests that uniformity exists in the regional fauna. I am also aware of specimens demonstrating a condition between those shown for *Alcimus* and *Philodicus*, that will need to be addressed when a much needed revision of *Alcimus* is undertaken.

2. While undertaking his unpublished study of afrotropical *Bactria/Promachus*, Blasdale (pers. com.) used the development of 'fringe microtrichia' bordering the wings to separate *Alcimus* and *Philodicus* from *Bactria/Promachus* and *Apoclea*. A careful study of these microtrichia under high magnification confirms two different character states: (1) A single row lying in the same plane as the wing membrane (fig. 5), and (2) a double row jutting out at an angle, dorsally and ventrally, relative to the plane of the wing membrane (fig. 6). These conditions are seen clearly only with respect to the hind margin of wings. While it is believed that these states are useful in separating genera, it must be pointed out that I have not checked all species of the large genera, and so some exceptions may exist. Although apparently always present, these microtrichia may be sparse and difficult to observe in species largely lacking microtrichia on wing membranes (e.g. *Torasilus solus*).

3. There is an unresolved problem relating to the use of the names *Bactria* and *Promachus*. Essentially, Hobby (1936: 182-183) satisfactorily established the validity of *Bactria* in terms of the ICZN then in force, and went on to describe more than twenty species using the name *Bactria*. Since



Figs. 5-6. Alternative costal microtrichial arrangements along hind margins of wings (schematic). – 5, A single row of microtrichia lying in the plane of the wing membrane; 6, A double row of microtrichia diverging at angles to the plane of the wing membrane.

that time, some workers have followed his lead while others have rejected the name without countering his arguments. A survey of Diptera catalogues shows *Promachus* to be a large and widely distributed genus (over 250 species, with representatives in all six major zoogeographical regions), while there are only three listed *Bactria*, all afrotropical. There is probably a good case to have the name *Bactria* suppressed. However, until resolution of the problem, I follow the *Catalogue of the Diptera of the Afrotropical Region* and use both names (e.g. *BactrialPromachus*). A revision of all the species involved might result in a valid separation of these taxa, but for the present I believe them to be synonymous and so key them out together.

4. Londt's (1988: 159-162) comments on completion of his revision of *Neolophonotus*, currently the most speciose asilid genus in the world, testify to the probability that the genus, as he treated it, is probably not monophyletic, and that future research is likely to result in its subdivision. While the species-groups established (Londt 1985b) were merely a convenient way of dividing this huge assemblage into manageable sections, Londt (1988) drew particular attention to the fact that females can be divided into two main groups on ovipositor type. Most representatives of the *N. suillus* group have a relatively short, laterally compressed ovipositor and the cerci lack distally upturned spine-like processes. Almost all species in other species-groups have more tubular ovipositors and characteristically upturned dorsodistal processes. These differences suggest different oviposition strategies (Londt 1994: 114) and may provide good evidence for the future erection of new genera. Unfortunately the taxonomy is based almost entirely on characters of the male postabdomen, and there are a number of species that can not be adequately identified using females alone, or for which females are unknown.

## DESCRIPTIONS OF NEW GENERA AND SPECIES

### *Acasilus* gen. n.

Type species: *Acasilus tigrimontis* sp. n. by present designation and monotypy.

### Diagnosis

Apocleine asilids with the following combination of characters: Antennal style composed of 3 elements; style about the same length as postpedicel; face gently convex; dorsal postocular setae short and at most weakly proclinate; dorsocentral macrosetae limited to posterior of transverse suture; metathoracic coxa with 2 lateral macrosetae; female cercus with fine setae only and lacking dorsodistal spine-like projection.

### Etymology

A combination of L. f. *acus* - a needle - and *asilus* - the type genus of Asilidae. Refers to the elusiveness of these flies, like the proverbial needle in a haystack.

### *Acasilus tigrimontis* sp. n.

(figs. 7, 13, 19-26)

Type material. – Holotype ♂: SOUTH AFRICA: 'South Africa: N Cape / Tierberg Nature Reserve / 28°43.012'S 020°59.805'E / 830m J Londt & T Dikow / 5.ii.2004 Rocky, sparsely / vegetated exposed hillside'. – Paratypes: SOUTH AFRICA: as holotype, 3♂, 7♀; 'Moutons Puts [2738S 2017E] / Gordonias Distr., C.P. / 18.II.1961 / L. Vári', 1♀; 'South Africa: N Cape / Spitzkop Nature Reserve / Spitzkop campsite. 870m / 28°22.200'S 021°10.084'E / 3.ii.2004 J Londt T Dikow / *Schmidtia Stipagrostis* grass', 1♂, 1♀; 'Lekkering [2859S 1706E] / N. Namaqualand' ~ 'Museum Staff / March 1935', 2♂, 1♀ (SAMC).

Type locality: South Africa, Northern Cape, Tierberg Nature Reserve (2843S 2059E).

### Description

Based on holotype ♂ unless otherwise stated.

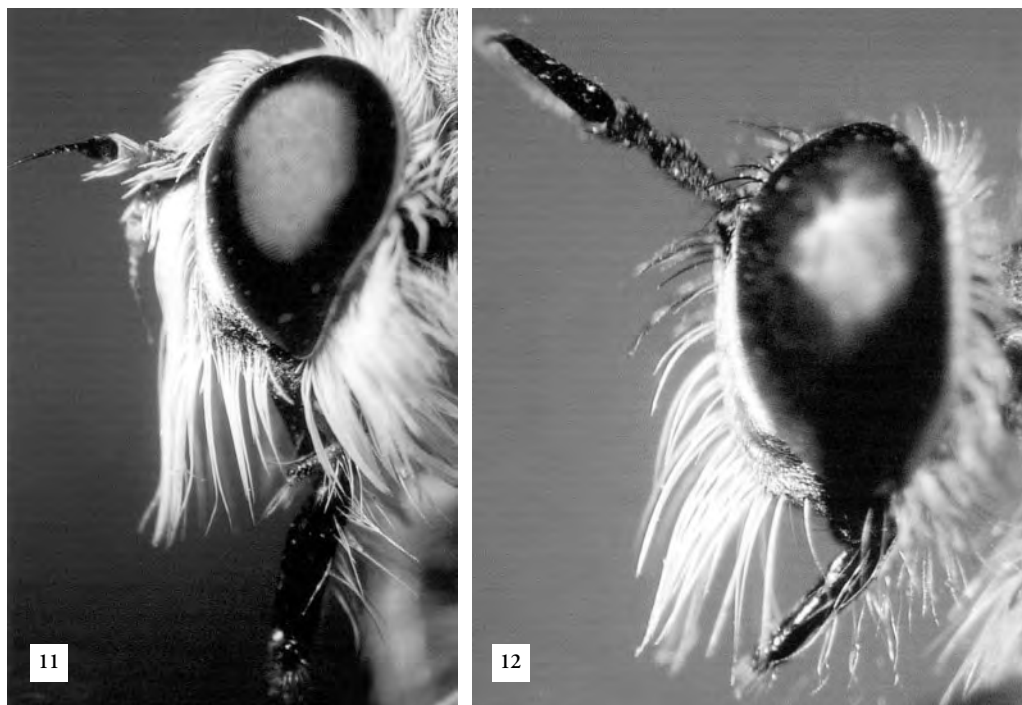
Head (fig. 7). – Dark red-brown to black. Antenna (fig. 26): Blackish, fine silver pruinose, scape and pedicel white setose, postpedicel with few tiny setae mid-dorsally. Antennal formula: 1 : 0.7 : 1.4 : 1.5 (: 0.3 : 1.1 : 0.1); pedicel shorter than scape, postpedicel about 1.5 times length of scape, style 1.5 times longer than scape and fractionally longer than postpedicel, second element longer than scape. Face of moderate width (face : head width ratio 1 : 4.6), gently convex in lateral view, strongly silver pruinose (including area between mystacial setae), mystax uniformly white, extending from antennal bases to epistomal margin. Frons and vertex fine gold-silver pruinose,



Figs. 7-10. Head in lateral view. – 7, *Acasilus tigrimontis*; 8, *Juxtasilus capensis*; 9, *Labarus ignota*; 10, *Millenarius graminosus*.

white setose. Vertex strongly depressed between eyes, ocellarium black setose (1 white seta). Occiput uniformly silver pruinose, dorsal macrosetae white, short, weakly proclinate, fine setae white. Proboscis dark red-brown to black, ventral setae white. Palpi black, 2-segmented, white setose.

Thorax. – Dark red-brown to black. Mesonotum: Fine silver and gold-red pruinose such that a patterned appearance is seen that changes depending on angle of view. Postpronotal lobes with few longish white setae. Macrosetae: Cream with orange bases, 2 *npl*, 2 *spal*, 1 *pal*, *acr*, if present, not differentiated



Figs. 11-12. Head in lateral view. – 11, *Torasilus solus*; 12, *Zelamyia alyctus*.

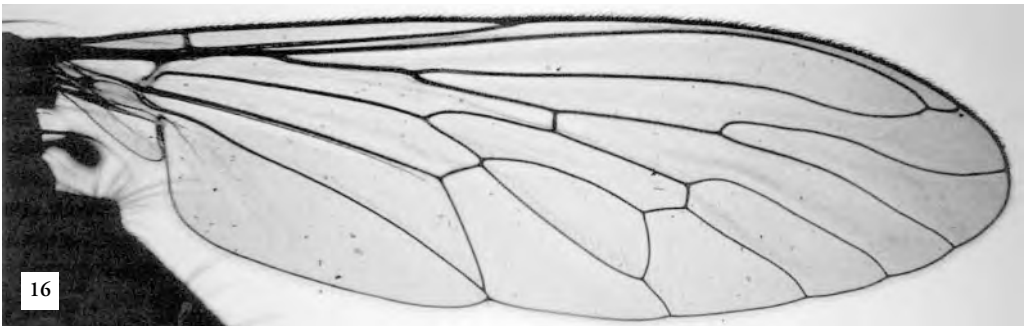
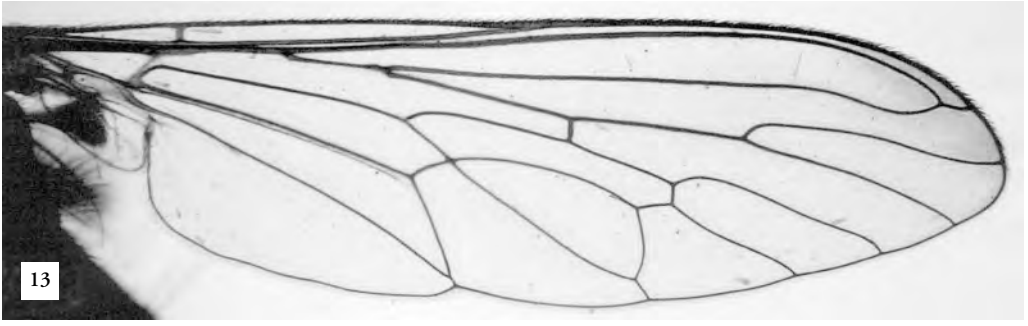
from tiny setae covering most of mesonotum. Two rows of about 4 black (anteriorly) and white (posteriorly) *dc* confined to area posterior of transverse suture. Scutellum: 2 white *scstl* accompanied by a few much smaller setae, disc with fine white setae. Anatergites asetose. Pleura: Uniformly silver pruinescence, setae white. Katatergal and metepisternal setal groups composed of moderately strong setae. Postmetacoxal area membranous. Legs: Uniform dark red-brown to black. Coxae and trochanters silver pruinose, white setose. Metathoracic coxae laterally with 2 moderately well-developed white macrosetae accompanied by a few long slightly weaker setae. Femora moderately robust, dark red-brown to black with orange-brown distal ends, shiny due to absence of pruinescence, white setose. Tibiae dark red-brown with orange-brown dorsal parts, white setose. Tarsi dark red-brown with mixed black and white setae. Claws black with orange-brown bases, pulvilli well-developed, yellowish, empodium brown, about two-thirds length of pulvilli. Wing (fig. 13): 6.0 x 2.2 mm, membrane transparent, unstained, almost without microtrichia (a small area anterodistally only). Venation black, cells  $r_1$ ,  $m_3$  and cup closed before wing margin. Halter pale brown-yellow, knob pinkish.

Abdomen. – Dark red-brown to black, white

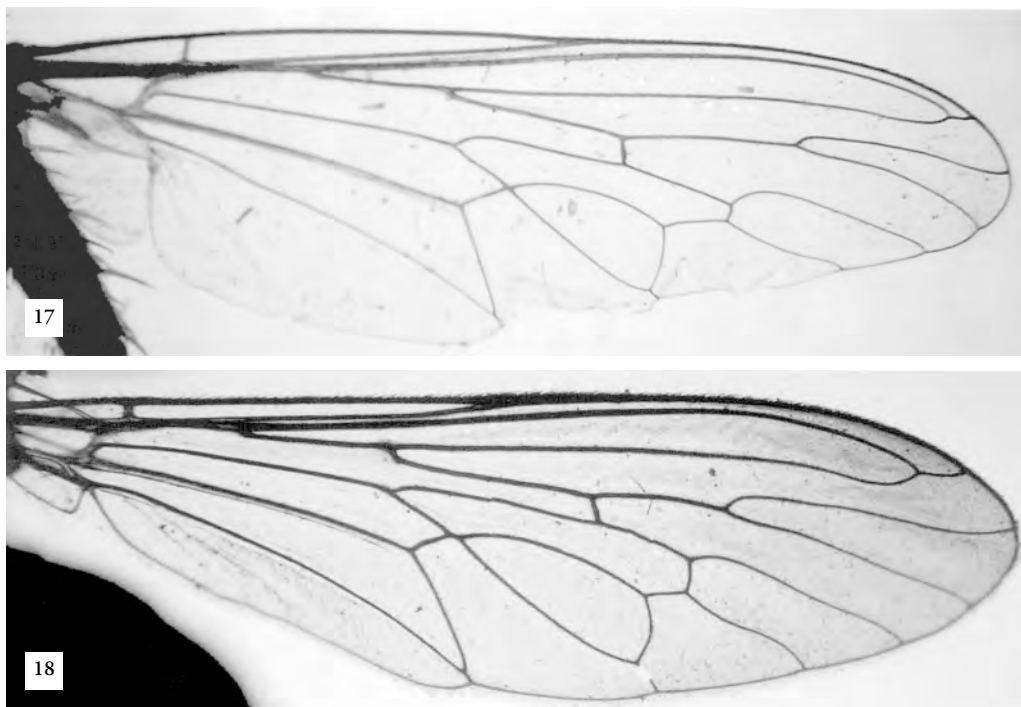
setose, uniform gold-silver pruinose such that changing patterns are visible depending on angle of view. T1-8 with long pale yellow-white marginal macrosetae and sparsely distributed white setae. Sternites similar to tergites but with loosely arranged longish white setae only. S8 distally with lateral and medial projections and tufts of long dark red-brown and white setae. Epandrium and gonocoxites partly apruinose. Male terminalia (figs. 19-23): S8 with trifurcate hind margin equipped with long, tightly packed setae making visibility of underlying structures difficult. Epandrial lobes long (more than twice as long as broad in lateral view) and somewhat laterally compressed. Lobes with long setae distally and 4 strong setae proximolaterally. S9 like a narrow strap at base of gonocoxites. Gonocoxite with strongly upturned bifurcate distal process. Gonostylus rather robust with a pick-like distal head. Aedeagus with tiny proximal apodeme and elongate shaft. Shaft with elongate heavily-built distal third. Terminal filament short and S-shaped.

Female (based on paratypes) (figs. 24-25). – Agrees well with ♂. Seventh abdominal segment tapering suddenly to laterally compressed ovipositor. Segment 8 and beyond shiny apruinose. Ovipositor: Length : depth ratio 2.3 : 1; no major setae evident. Epigynium, hypogynium laterally compressed, valves of hypogynium held





Figs. 13-16. Wing venation. – 13, *Acasilus tigrimontis*; 14, *Juxtasilus capensis*; 15, *Labarus ignota*; 16, *Millenarius graminosus*.



Figs. 17-18. Wing venation. – 17, *Torasilus solus*; 18, *Zelamyia alyctus*.

tightly together distally and appearing blade-like. Cerci held closely together, laterally compressed, distally rounded and finely setose.

Variation. – Little individual variation. Number and colour of mesonotal macrosetae demonstrate slight variation (some specimens have only 1 *spal* and dorsocentrals may be black or white). Size range small, i.e. wing length 5.4-8.1 mm.

#### Distribution, phenology and biology

Known only from four localities in the Northern Cape Province of South Africa (fig. 70). Material has been collected in February and March (Table 2). Individuals were found resting on woody shrubs in rocky areas and were difficult to capture without the net getting snagged. There is a single Natal Museum prey record from the type-locality: a ♀ captured with a small bug (Homoptera: Cicadellidae).

#### Similarities

Superficially *A. tigrimontis* might be confused with some species of *Synolcus* or *Dasophrys*. However, the discal cell is not constricted as in *Synolcus*, and although the face is gently curved and reminiscent of *Dasophrys*, the dorsal postocular setae are short and

the dorsocentral setae are confined to the posterior part of the mesonotum.

#### Etymology

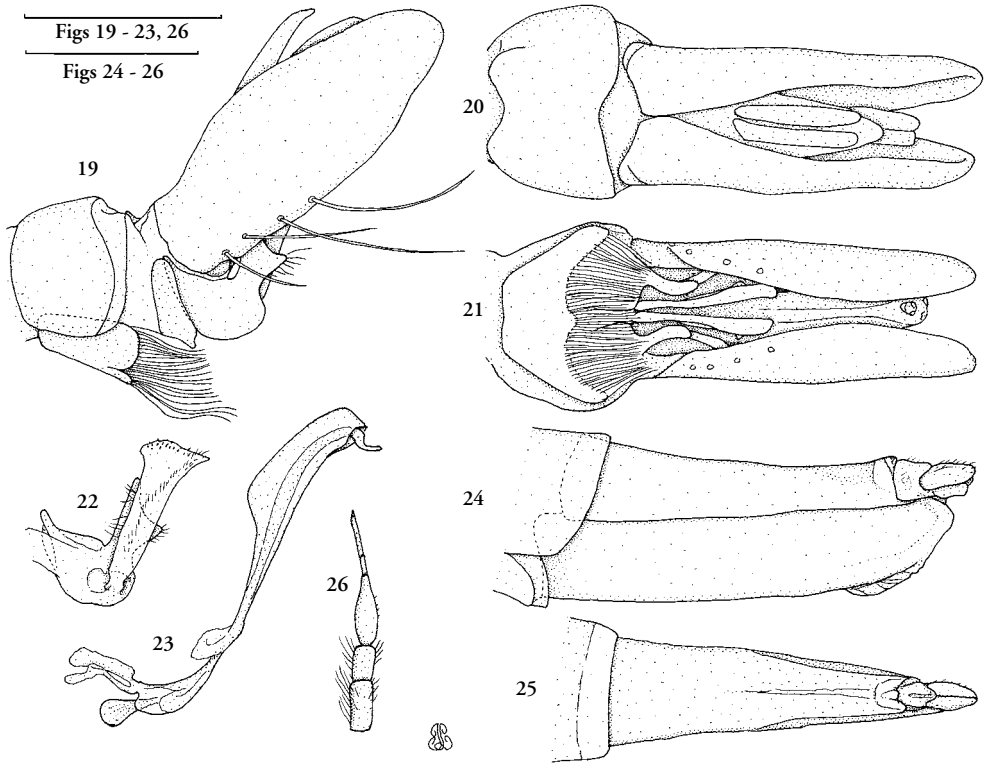
A combination of *L. tigris* - a tiger - and *montis* - a mountain. Named after the type locality of Tierberg (an Afrikaans word meaning Tiger Mountain. The word tier comes from a Dutch word originally applied incorrectly to leopards rather than tigers).

#### *Justasilus* gen. n.

Type species: *Dysclytus capensis* Londt, 1979 by present designation and monotypy.

#### Diagnosis

Apocleine asilids with the following combination of characters: Antennal style composed of 3 elements, style shorter than postpedicel; face plane in lateral view; dorsal postocular setae short and weakly proclinate; dorsocentral macrosetae confined to region posterior of transverse suture; metathoracic coxa with 2 lateral macrosetae; female cercus with fine setae and dorsodistal spine-like projection.



Figs. 19-26. *Acasilus tigrimontis*. – 19-23. Male genitalia. 19, lateral view; 20, dorsal view; 21, ventral view; 22, gonocoxite and gonostylus (right) inner view; 23, aedeagus; 24-25. Female genitalia. 24, lateral view; 25, dorsal view; 26, Antenna (left) outer view. Scale 1 mm.

### Etymology

A combination of *L. Juxta* - near, close, next to, nigh - and *asilus* - the type genus of Asilidae. Refers to the possible close relationship that this taxon may have with *Dyschlytus*.

*Juxtasilus capensis* (Londt, 1979) comb. n.  
(figs. 8, 14, 27-35)

*Dyschlytus capensis* Londt, 1979: 217. Figs. 1-9 (entire ♂, antenna, head, ♂ and ♀ terminalia).

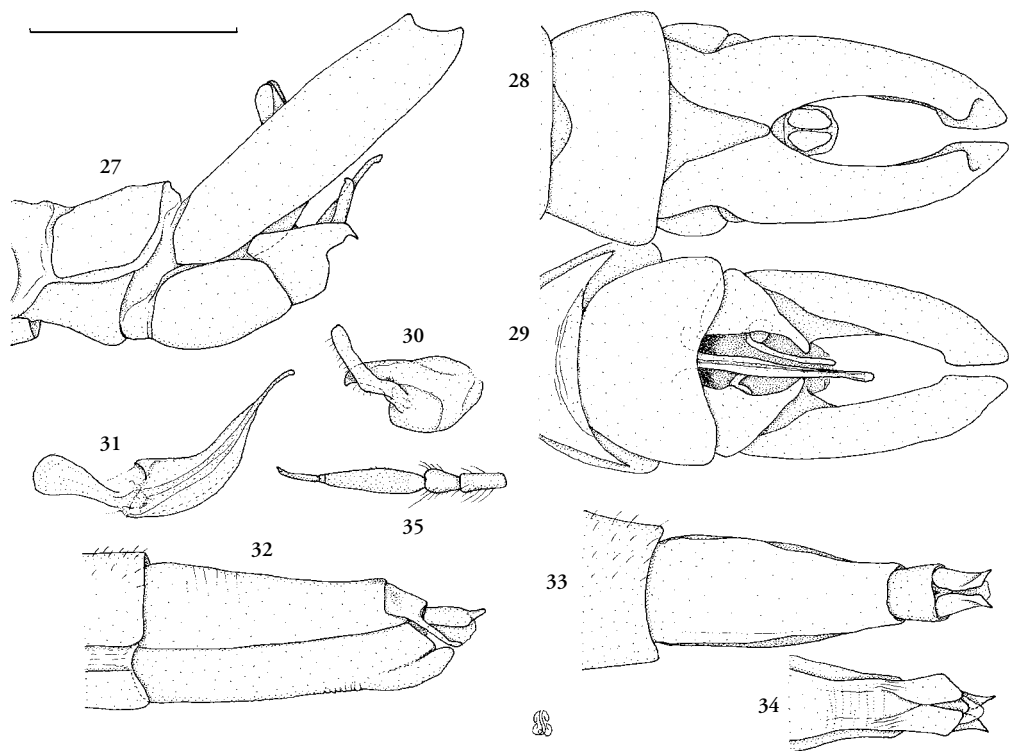
### Redescription

Based on NMSA paratypes.

Head (fig. 8). – Dark red-brown. Antenna (fig. 35): Dark red-brown except for orange proximal end of postpedicel, silver pruinose, scape and pedicel with short dark red-brown and pale yellow setae, postpedicel with a few tiny whitish setae mid-dorsally. Antennal formula: 1 : 0.7 : 2.2 : 1.1 (: 0.1 : 0.9 : 0.2); pedicel shorter than scape, postpedicel more than twice

length of scape, style slightly longer than scape, basal element of style very short. Face of moderate width (face : head width ratio 1 : 5.2), plane in lateral view, strongly gold-silver pruinose (including spaces between mystacial setae), mystax confined to lower half of face, white, central setae along epistomal margin much better developed than those placed dorsally and laterally. Frons and vertex strong red-gold pruinose, white setose. Vertex strongly depressed between eyes, ocellarium with tiny black setae. Occiput uniformly gold-silver pruinose, white setose except for about 5 dark red-brown dorsal macrosetae (on either side), dorsal setae short and weakly proclinate. Proboscis dark red-brown, ventral setae white. Palpus dark red-brown, 2-segmented, white setose.

Thorax. – Dark red-brown, uniformly pruinose (i.e. no shiny bare areas). Mesonotum: Strongly red-gold pruinose. Postpronotal lobes with short fine pale yellow and red-brown setae. Macrosetae: Dark red-brown, 2 *npl*, 1 *spal*, 1 *pal*, *acr* not differentiated, 4 *dc* posterior of transverse suture. Scutellum: 2 *sctl*s which



Figs. 27-35. *Juxtasilus capensis*. – 27-31. Male genitalia. 27, lateral view; 28, dorsal view; 29, ventral view; 30, gonocoxite and gonostylus (left) inner view; 31, aedeagus; 32-34. Female genitalia. 32, lateral view; 33, dorsal view; 34, ventral view; 35, Antenna (left) outer view. Scale 1 mm.

are either dark red-brown or pale yellow-white accompanied by tiny dark red-brown setae, disc with only tiny fine dark red-brown and pale yellow-white setae. Anatergites asetose. Pleura: Uniformly strongly gold pruinose, white setose, setal groups composed of weak setae except for about 4 moderately well-developed katatergals. Postmetacoxal area membranous. Legs: Orange brown, femora dark red-brown anteriorly, setae dark red-brown and pale yellow-white mixed. Coxae and trochanters gold pruinose, white setose. Metathoracic coxae with 2 white lateral macrosetae. Femora moderately robust, gold pruinose. Claws black with orange-brown bases, pulvilli well-developed, yellowish, empodium red-brown, about as long as pulvilli. Wing (fig. 14): 6.0 x 1.9 mm (Boesmans River ♂ paratype measured), membrane transparent, unstained, extensively covered with microtrichia except parts of central cells. Venation orange-brown, cells  $r_1$ ,  $m_3$  and cup closed before wing margin. Halter pale brown-yellow.

Abdomen. – Dark red-brown, uniform red-gold pruinose. T1-6 with pale yellow-white marginal

macrosetae as well as short weak dark red-brown and white setae. Sternites similar to terga but without macrosetae and with fine setae mainly fine white. Epandrium and gonocoxites mostly red-gold pruinose. Male terminalia (figs. 27-31): S8 with more or less straight hind margin. Epandrial lobes long (about four times as long as broad in lateral view) and covered with short setae (macrosetae absent). S9 longer than deep in lateral view, hind margin slightly indented medially. Gonocoxite with dorsodistal process ending in a sharply pointed down-turned apex. Gonostylus rather erect, slender and finger-like, with small fine setae along hind margin. Aedeagus of moderate length. Apodeme moderately developed, shaft fairly thick and tapering fairly quickly to a slightly down-curved terminal filament.

Female (figs. 32-34). – Agrees well with ♂. Ovipositor: Length : depth ratio 2.4 : 1; no major setae evident. Epigynium and hypogynium somewhat laterally compressed, valves of hypogynium diverging slightly distally and not particularly blade-like.

Cerci not markedly laterally compressed. Cercus with a dorsodistal, slightly upturned spine-like process giving ovipositor, in dorsal view, a bifurcate apex.

Variation. – Little individual variation. Number and colour of macrosetae demonstrate slight variation. Size range small, i.e. wing length ranges from 4.8–6.7 mm.

Material examined. – SOUTH AFRICA: Fort Beaufort [3247S 2638E] / ‘Umdala’ / E. Cape’ - ‘S. A. Museum / March, 1954’, 1♂ 3♀ paratypes, 4♂, 4♀ (SAMC, contrary to Londt (1979) NMSA does not have any of these types); ‘South Africa / Stellenbosch [3356S 1851E] / 25-3-1927 / Ac. US.’, 2♂ paratypes; ‘South Africa / Stellenbosch / 26 March 1927 / Ac. US.’, 1♂ paratype; ‘South Africa / Stellenbosch / 29 March 1927 / Ac. US.’, 1♂ paratype; ‘South Africa / Stellenbosch / 1-4-1927 / Ac. US.’, 2♂ 1♀ paratypes; ‘South Africa / Stellenbosch / 8-4-1927 / Ac. US.’ 2♂ 1♀ paratypes; ‘South Africa / Stellenbosch / 9-4-1927 / Ac. US.’, 1♀ paratype; ‘South Africa / Stellenbosch / 18.3.1938 / Ac. US.’, 1♀ paratype; ‘South Africa / Stellenbosch / 29/3/1942 / Ac. US. / J. J. du Toit’, 1♀ paratype; ‘South Africa / Stellenbosch / 8.3.1944 / Ac. US. J le R’, 1♂ paratype; ‘South Africa / St-bosch / March 1957 / W-Zin [poorly written], 2♂ paratypes; ‘Moordenaars / Karoo / Laingsburg [3312S 2051E] Div.’ - ‘Mus. Staff / March 1937’, 1♂ (SAMC); ‘Constable [3316S 2018E] / C. P. 2/1958’, 1♂ paratype (SAMC); ‘Bo Kouga [3340S 2328E] / Uniondale Distr., / C. P.’ - ‘S.A. Museum / March 1954’, 1♀ paratype (SAMC); ‘Papiestfontein [3358S 2459E] / Gamtoos Mth [mouth]’ - ‘S.A.M. / 1:60 [i.1960]’, 1♂ paratype (SAMC); ‘Loerie [3352S 2502E] / ECP [Eastern Cape Province]’ - ‘S.A.M. / 1:60’, 2♂ 1♀ paratypes, 1♂, 1♀ (SAMC); ‘Cape Province / Grahamstown [3318S 2632E] / March 1971 / J. G. H. Londt’, 1♂, 1♀; ‘Resolution / Grahamstown [3318S 2632E]’ - ‘Miss Walton / Jan.–Apr. 1928’, 2♂ paratypes, 1♂, 1♀ (SAMC); ‘Boesmans Riv. [3342S 2640E] / nr. Grahamstown / E. Cape’, - ‘S. A. Museum / March., 1954’, ♂ holotype, 27♂ 16♀ paratypes (all SAMC but 1♂ 1♀ NMSA); ‘Somerset West [3405S 1851E] / C.P. - ‘J.A. Hesse / Mar. 1930’, 1♂ 1♀ paratypes (SAMC); ‘So. Africa: SW.Cape, 7km / S. Swellendam 3420Ab / Bontebok National Pk. / March 1979 L. Braack / Malaise trap, nr. river’, 1♂, 5♀; ‘Onrust [= Onrus 3424S 1911E] Riv. / Hermanus / March 1938 / Mus. Staff, 1♂ (SAMC).

Type locality: South Africa, Eastern Cape Province, Boesmans (Bushman’s) River (3342S 2640E) near Grahamstown.

### Distribution, phenology and biology

Distributed between Stellenbosch in the Western Cape Province and Grahamstown in the Eastern Cape Province (fig. 70). Collected from January to April (i.e. mid to late summer) (Table 2). Although found in the winter-rainfall region of South Africa, most records indicate that the species is found mainly in more arid places that also experience some summer rainfall. Label data do not record habitat information.

### Similarities

Londt (1979) described this species in *Dyschlytus* noting a number of important ways in which it differs from *D. firmatus*, now the only known species in the genus. Greater familiarity with the apocleina taxa has convinced me that *capensis* is digeneric (i.e. not congeneric). Although the ovipositor is rather blade-like, the female cerci resemble those found in ground inhabiting *Neolophonotus* species, and so it is possible that *J. capensis* may also oviposit directly into the ground by digging shallow scrapes.

### *Labarus* gen. n.

Type species: *Labarus ignota* sp. n. by present designation and monotypy.

### Diagnosis

Apocleina asilids with the following combination of characters: Antennal style composed of 3 elements; face gently convex; dorsal postocular setae long and markedly proclinate; mesonotal mane with clearly discernible acrostichal macrosetae; dorsocentral macrosetae extend anterior to transverse suture; scutellum with fewer than 6 marginal macrosetae; metathoracic coxa lacking macrosetae and with fine setae only; hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane; wing cell  $r_1$  open at wing margin; ovipositor in lateral view at least twice as long as high.

### Etymology

From L. n. *labarum* - a Roman imperial standard (flag). Refers to the male genitalia that are large and held aloft like a flag.

### *Labarus ignota* sp. n. (figs. 9, 15, 36–43)

Type material. – Holotype ♂: ‘South Africa, W. Cape / Prov., Cedarberg Mts. / 19km ENE Clanwilliam / 14-xi.1996, S. D. Gaimari / sandstone hillside 400–500m / 32°05’54”S. 19°03’56”E’, ‘Schlinger Foundation South / Africa & Namibia Expedition / Oct.–Dec, 1996’. – Paratypes: SOUTH AFRICA: ‘S Africa: Cape ♀71 / 1km N of Calvinia [Akkerendam Nature Reserve] / 31°27’S 19°47’E 1000m / Date: 4-5.xi.1991 / Coll: J. G. H. Londt / Kareedam Nat. Reserve’, 1♂; ‘South Africa, W. Cape / Prov., Cedarberg Mts. / 19km ENE Clanwilliam / 16-xi-1996, Malaise trap / sandstone hillside 400–500m / 32°05’54”S. 19°03’56”E’, ‘Schlinger Foundation South / Africa & Namibia Expedition / ME Irwin, EI Schlinger, DW Webb / DK Yeates, BM Wiegmann, SD Gaimari, MA Metz, KC Holston’, 2♀; ‘INHS / Insect Collection / 33,972’, ‘South

Africa, W. Cape Prov. / Cedarberg Mts., 19km ENE / Clanwilliam; 14-xi-1996 / Malaise sandstone hillside / 32°05'54"S. 19°03'56"E / 400-500m', 'Schlinger Foundation South / Africa & Namibia Expedition / ME Irwin, EI Schlinger, DW Webb / DK Yeates, BM Wiegmann, SD Gaimari, MA Metz, KC Holston', 1♂ (NMSA) 1♂ (INHS); 'INHS / Insect Collection / 33,548', 'South Africa, W. Cape / Prov., 19km NE Clanwilliam / E.I. Schlinger, 400-500m / shrubby hillside; 16 Nov 1996 / 32°04'45"S., 19°03'29"E', 'Schlinger Foundation South / Africa & Namibia Expedition / Oct.-Dec., 1996', 1♂; '89/90/227', 'On flowers of / *Euclea* sp. / (Ebenaceae)', 'Cape Province / 43km ENE of Ceres [approx. 3312S 1944E] on / road to Sutherland / 2-3.xii.1989 / F.W. & S.K. Gess' 2♂ (AMGS).

Type locality: South Africa, Western Cape Province, Cedarberg Mountains, 19 km ENE Clanwilliam (3205S 1903E).

### Description

Based on holotype ♂ unless otherwise stated.

Head (fig. 9). – Dark red-brown to black. Antenna (fig. 43): Blackish, fine silver pruinose, scape and pedicel with long black setae (a few white dorsally on scape). Antennal formula: 1 : 1.0 : 2.1 : 1.7 ( : 0.4 : 1.1 : 0.2); scape and pedicel of equal length, post-pedicel twice length of scape, style 1.7 times length of scape, basal element of style twice length of setal-like sensory element. Face of moderate width (face : head width ratio 1 : 4.4), gently convex in lateral view, strongly silver pruinose (adjacent to mystax), mystax long and predominantly white, black in dorsal part (these setae becoming progressively shorter ventrally) and extending from antennal bases to epistomal margin. Frons and vertex fine silver pruinose, black setose. Vertex strongly depressed between eyes, ocellarium black setose. Occiput uniformly silver pruinose, dorsal macrosetae mostly white (some are black), strongly proclinate, fine setae white. Proboscis dark red-brown to black, ventral setae white. Palpi black, 2-segmented, white setose.

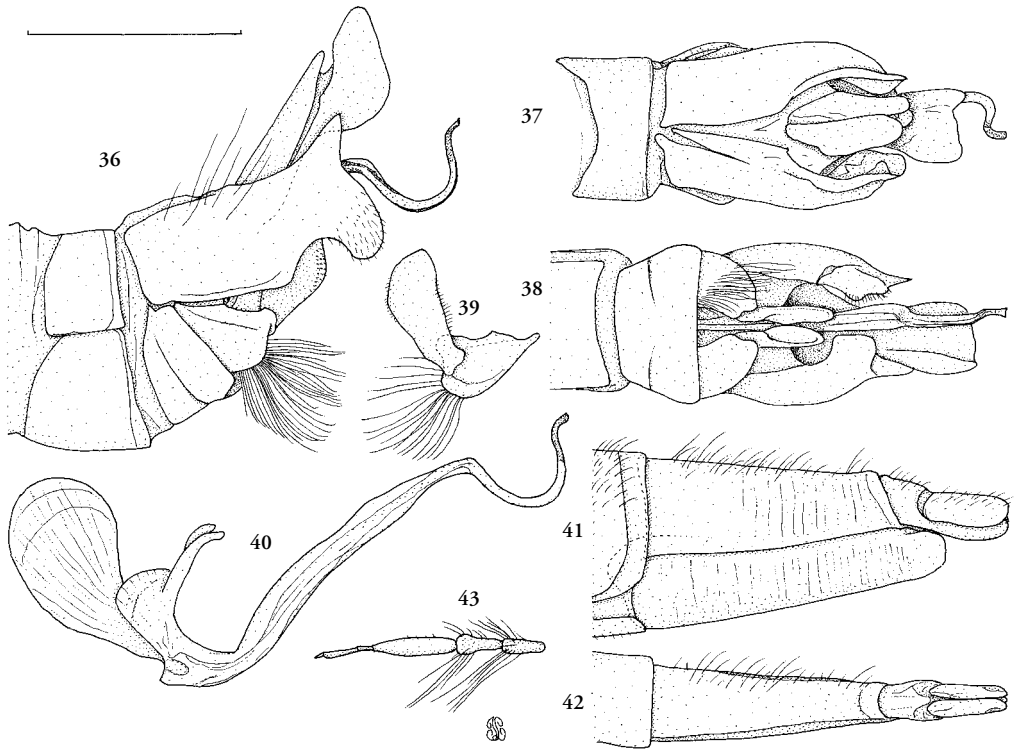
Thorax. – Dark red-brown to black, uniformly pruinose (i.e. no shiny bare areas). Mesonotum: Fine silver and gold-red pruinose patches. Postpronotal lobes with longish white setae. Macrosetae: White, 2 *npl*, 1-2 *spal*, 1 *pal*, *acr* limited to a single row of about 10 black setae anterior to transverse suture, two rows of about 6 black (posterior pair white) *dc* straddling transverse suture. Scutellum: 2 white *scsl*s accompanied by other slightly smaller setae, disc with long fine white setae. Anatergites asetose. Pleura: Uniformly silver pruinose, setae white. Setal groups not composed of strong setae. Postmetacoxal area membranous. Legs: Uniform dark red-brown to

black. Coxae and trochanters silver pruinose, white setose. Metathoracic coxae with fine white lateral setae (no obvious macrosetae). Femora moderately robust, somewhat shiny due to weak pruinescence, white setose except for a few black setae dorsally on prothoracic legs. Tibiae and tarsi with mixed black and white setae. Claws black with orange-brown bases, pulvilli well-developed, yellowish, empodium brown, about half length of pulvilli. Wing (fig. 15): 3.8 x 1.3 mm, membrane transparent, unstained, extensively covered with microtrichia except adjacent to major veins. Venation black, cells  $r_1$ ,  $m_3$  and cup closed before wing margin. Halter pale brown-yellow.

Abdomen. – Dark red-brown to black, uniform silver pruinose, white setose. T1-5 with pale yellow-white marginal macrosetae as well as long, strong, dense clusters of white setae. Sternites with loosely arranged white setae only. Epandrium and gonocoxites partly apruinose. Male terminalia (figs. 36-40): S8 not differing much from preceding sternites. Epandrial lobes of moderate length (approximately twice as long as deep in lateral view). Lobes of complicated form and terminating in two processes, a dorsal fin-like, rather weakly sclerotised acutely pointed process, and a broad, gently downward-curved ventral lobe with broadly rounded apex. Setae vary from being long (dorsomedially) to tiny (on distal processes). Proctiger with long upper lamellae (longer than epandrial lobes) and even longer, laterally expanded, lower lamellae jutting out dorsodistally. S9 moderately well-developed and with straight hind margin. Gonocoxite small with broad ventrodiscal setose lobe. Gonostylus rather robust, broader distally than proximally and with tiny setae both dorsally and ventrally. Aedeagus with well-developed proximal apodeme and elongate shaft ending in a U-shaped terminal filament (in lateral view).

Female (based on paratypes) (figs. 41-42). – Agrees well with ♂ except for mystax which has yellowish setae instead of white ones. T1-5 lack clusters of white setae. Distal abdominal segments progressively compressed laterally to form ovipositor. Segments 5-8 with apruinose areas. Ovipositor: Length : depth ratio 2.1 : 1; longish setose along dorsal ridge, laterally with a somewhat corrugated appearance. Epigynium and hypogynium laterally compressed, terminal valves of hypogynium closely associated and forming blade-like apex. Cerci laterally compressed finely setose.

Variation. – Little individual variation. Number and colour of macrosetae slightly variable. Mesonotal macrosetae may be black or white. Size range small, i.e. wing length ranges from 3.8-4.4 mm.



Figs. 36-43. *Labarus ignota*. – 36-40. Male genitalia. 36, lateral view; 37, dorsal view; 38, ventral view; 39, gonocoxite and gonostylus (left) inner view; 40, aedeagus; 41-42. Female genitalia. 41, lateral view; 42, dorsal view; 43. Antenna (left) outer view. Scale 1 mm.

#### Distribution, phenology and biology

*L. ignota* is known from three localities in the Western Cape Province of South Africa (Fig. 70). Material was collected during November and December (Table 2). Although most of the specimens were collected in Malaise traps, labels suggest that the species inhabits shrubby, rocky hillsides. The male from Calvinia was found resting on the ground.

#### Similarities

A remarkable species not to be confused with any other. The mystacial form resembles *Hippomachus* in that the dorsal region is particularly well-developed.

#### Etymology

From *L. ignota* - unknown or strange. Refers to the generally remarkable appearance of this species.

#### *Millenarius* gen. n.

Type species: *Millenarius graminosus* sp. n. by present designation and monotypy.

#### Diagnosis

Apocleinae asilids with the following combination of characters: Antennal style composed of 3 elements; face gently convex; dorsal postocular setae long and markedly proclinate; dorsocentral macrosetae extend anterior to transverse suture; hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane; wing cell  $r_5$  open at wing margin; ovipositor laterally compressed and less than twice as long as high in lateral view; female cerci smoothly rounded distally; male S8 with bifurcate medial process distally; aedeagus long, Z-shaped, each straight section being of similar length and general development.

### Etymology

From *L. millenarius* - of a thousand. Refers to the discovery of the species on the eve of the present millennium.

### *Millenarius graminosus* sp. n.

(figs. 10, 16, 44-55)

Type material. – Holotype ♂: 'S Africa: KwaZulu-Natal / Queen Elizabeth Park / 29°34'00"S:30°19'14"E / 900m 1.i.2000 / J.G.H. Londt Grassland'. – Paratypes: SOUTH AFRICA: same data as holotype, 2♂, 6♀; same data but 8.i.2000, 5♂, 8♀; same data but 11.i.2000, 2♂, 2♀, same data but 19.i.2000 p.m., 4♂, 4♀; 'Sth Africa: KZ-Natal / Queen Elizabeth Park / 29°34'00"S:30°19'14"E / JGH. Londt Grassland / Date: 22.i.2000 a.m., 2♂, 2♀; same data but 30.i.2000 p.m., 4♂, 4♀; same data but 5.ii.2000 a.m., 4♂, 2♀; same data but 12.ii.2000 p.m., 2♂, 3♀; same data but 20.ii.2000, 2♂, 2♀; same data but 6.iii.2000 a.m., 2♂, 2♀; 'Sth Africa: KZ-Natal / Queen Elizabeth Park / 29°34'00"S:30°19'14"E / JGH. Londt Grassland / 900m 11.iii.2000 a.m., 2♂, 2♀; same data but 19.iii.2000 a.m., 2♀; same data but 22.iv.2000 a.m., 1♀; same data but 30.xii.2000 a.m., 3♂, 1♀; same data but 7.i.2001 p.m., 2♀.

Other material studied. – SOUTH AFRICA: Natal, Kube Yini Game Reserve, 27°48'S:32°14'E, 360m, 10-14.i.1994, Natal Musm Expedition, 1♀; KwaZulu-Natal, Rensburgs Spruit, c. 15km E of Estcourt, 28°56'34"S 029°58'09"E, 1210m, Acacia savanna area with *Barleria greenii*?, 21.ii.2004, J. G. H. Londt, 1♀; KwaZulu-Natal, c. 10km East of Estcourt, 28°56'S 29°58'E, 1210 m, Acacia woodland, J. Londt & K. Cradock, 13.xii.1995, 1♀; Owen Sitole AG College, 2840S 3138E, In *Themeda*, 16.iii.1999, [P. Reavell], 1♂; KwaZulu-Natal, Uni of Zululand, 28°45'S:31°45'E, 75m, Ngongoni [= *Aristida*] valley grassland, 30.[ii or xi].2001, P. E. Reavell, 1♂; Natal, Mhlopheni Nature Reserve, 29 00'S:30 25'E, 8-9.ii.1991, R. M. Miller, 2♀.

Type locality: South Africa, KwaZulu-Natal, Pietermaritzburg, Queen Elizabeth Park, (2934S 3019E).

### Description

Based on holotype ♂ and other type material where noted.

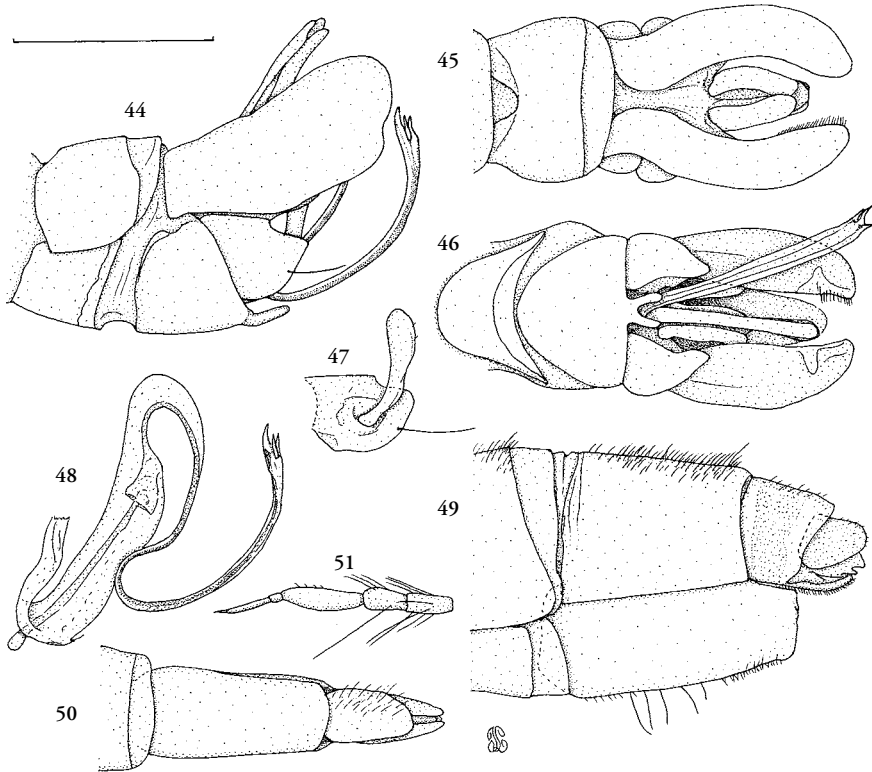
Head (fig. 10). – Dark red-brown to black. Antenna (fig. 51): Blackish, fine gold pruinose, scape and pedicel black setose. Antennal formula: 1 : 1.0 : 1.9 : 1.4 (: 0.2 : 1.1 : 0.1); scape and pedicel of equal length, postpedicel almost as long as scape and pedicel combined, style a little shorter than postpedicel,

second element longer than either scape or pedicel. Face of moderate width (face : head width ratio 1 : 4.8), gently convex in lateral view, strongly gold pruinose, mystax black on dorsal third yellow on ventral two-thirds extending from antennal bases to epistomal margin. Frons and vertex fine gold pruinose, black setose. Vertex strongly depressed between eyes, ocellarium black setose. Occiput uniformly silver pruinose, dorsal macrosetae black, strongly proclinate, fine setae white. Proboscis dark red-brown to black, ventral setae pale yellowish. Palpi black, 2-segmented, black setose.

Thorax. – Dark red-brown to black, uniformly pruinose (i.e. no shiny bare areas). Mesonotum: Gold pruinose with darker pattern made up of dorsomedial band (from anterior margin to transverse suture) and two lateral patches, being the result of sparser pruinose. Postpronotal lobes with longish white setae. Macrosetae: black unless otherwise stated, 2 *npl* (1 yellow), 2 *spal*, 1-2 *pal*, *acr* limited to a single row of about 6 setae anterior to transverse suture, two rows of about 8 *dc* extending along entire length of mesonotum. Scutellum: 2 black *sc1* s, disc with fine white setae (a few black). Anatergites asetose. Pleura: With patchy appearance caused by areas of gold or silver pruinose or reflective qualities of pruinose, setae yellow or white. Macrosetae limited to a row of about 6 yellow katatergals. Postmetacoxal area membranous. Legs: Dark red-brown to black except for proximal parts of tibiae which are orange. Coxae and trochanters silver-gold pruinose, white setose. Metathoracic coxae with 1 white lateral macroseta. Femora moderately robust, somewhat shiny due to weak pruinose, pale yellow setose except for 1-2 black setae apically. Tibiae and tarsi with mixed black and yellow-white setae. Claws black, pulvilli well-developed, yellow, empodium dark red-brown, shorter than pulvilli. Wing (fig. 16): 5.6 x 2.2 mm, membrane transparent, unstained, almost entirely covered with microtrichia (giving a gray appearance). Venation black except for *Sc* and proximal parts of major veins which are brownish, cells *r*<sub>1</sub>, *m*<sub>3</sub> and cup closed before wing margin. Halter pale yellow-brown.

Abdomen. – Dark red-brown to black, uniform gold pruinose, predominantly pale yellow setose (terga fine black setose posterodorsally). Macrosetae: pale yellowish, good cluster on T1, T2-T3 with few medially, all terga with some along distal margins (getting progressively smaller distally). Epandrium and gonocoxites mostly glossy black apruinose. Male terminalia (figs. 44-48): S8 similar in appearance to preceding sternites. Epandrial lobes of moderate length (approximately twice as long as broad in lateral view) and finely setose. S9 moderately well-developed and with a straight hind margin except for a small U-shaped median projection (that may serve as a





Figs. 44-51. *Millenarius graminosus*. – 44-48. Male genitalia. 44, lateral view; 45, dorsal view; 46, ventral view; 47, gonocoxite and gonostylus (right) inner view; 48, aedeagus; 49-50. Female genitalia. 49, lateral view; 50, dorsal view; 51. Antenna (left) outer view. Scale 1 mm.

'penis-guide'). Gonocoxite simple in structure with fine setae (there is a single stronger, longer seta amongst the smaller ones). Gonostylus rather clavate and held in a vertical position. Aedeagus with long, narrow proximal apodeme. Sheath and terminal filament with highly characteristic S-shape. Apex trifurcate with short processes.

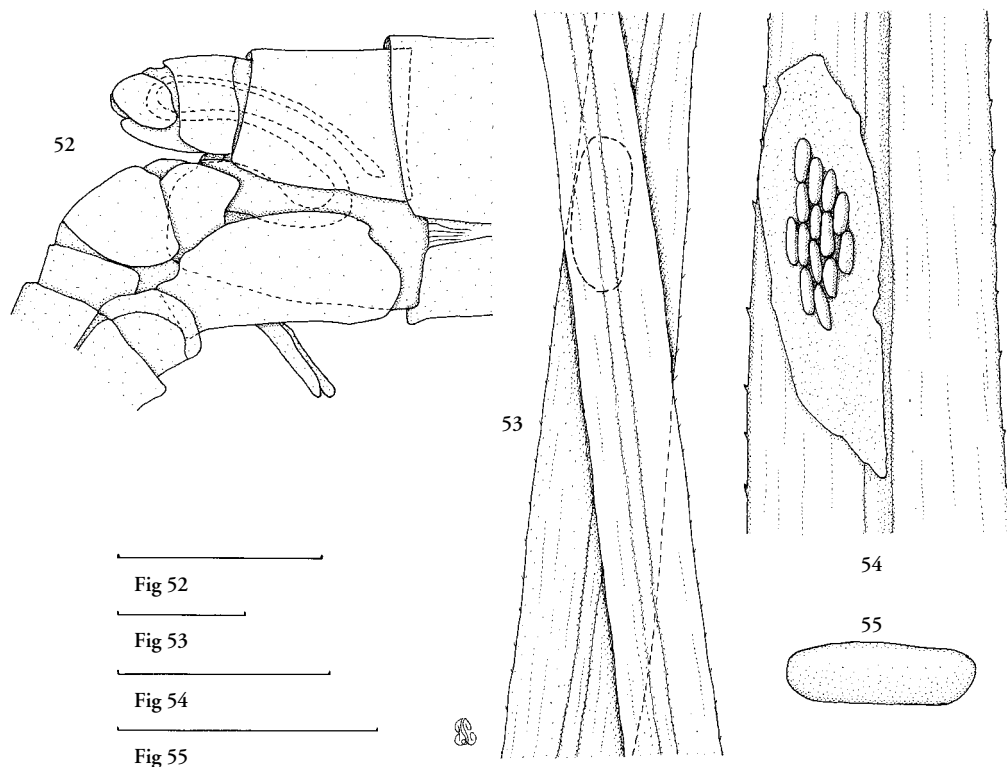
Female (based on paratypes) (figs. 49-50). – Agrees well with ♂ except for mystax which is predominantly black (some yellow setae occupy ventral half of face but these bordered by black setae which extend down entire depth of mystax). Distal abdominal segments progressively laterally compressed to form ovipositor. Segment 6 with black apruinose lateral hind margins, segment 7 more extensively black apruinose, segments 8-9 almost entirely black apruinose. Ovipositor: Length : depth ratio 1.2 : 1; epigynum with moderately well-developed setae dorsally, hypogynium with a few long setae midventrally. Terminal

valves of hypogynium closely associated, forming a broad somewhat truncated apex. Cerci laterally compressed, fine setose and broadly rounded distally.

Variation. – Little individual variation. Number and colour of bristles and setae demonstrate slight variation when compared with holotype. Size range small, e.g. wing length ranges from 5.0-6.5 mm.

#### Distribution, phenology and biology

Known from a number of localities in KwaZulu-Natal Province of South Africa (fig. 70). The phenology and basic biology have been described by Londt (2002b) under the name 'Species X'. The species occurs between December and April (i.e. mid to late summer) in grassland situations (Table 2). A copulating pair were killed in alcohol and the alignment of their macerated genitalia is depicted in fig. 52. The aedeagus could be seen within the bursa copulatrix, and it is interesting to note that the S-shaped organ was not extended, but remained in



Figs. 52-55. *Millenarius graminosus*.— 52, Positions of male and female genitalia during copulation; 53, Oviposition site between two overlapping grass leaves (position of eggs indicated by a broken line); 54, Egg mass stuck to grass leaf by a foamy secretion; 55, Egg. Scale lines 1 mm.

the S-shaped configuration seen in non-copulating males. During field work a female was encountered in the act of oviposition, at 09:00 on 11 January 2000. The female was perched head downward, about 25 cm above the ground, clutching a pair of overlapping grass leaves (fig. 53) between her legs. Her ovipositor was inserted between the leaves and moved slowly up and down. When the female had completed her task and flown off, the leaves were taken to the laboratory and carefully parted in order to expose the eggs. Fourteen elongate white eggs were found deposited within a whitish foamy secretion and arranged in five rows of 2, 3, 4, 4, and 1 (fig. 54). Each egg measured about  $1 \times 0.25$  mm (fig. 55). The eggs were kept in a glass vial, but desiccated and failed to hatch. It is probable that the foam serves to protect the eggs from desiccation, and that on hatching larvae fall to the ground, in a manner similar to those of *Neolophonotus dichaeus* Hull, 1987 (Londt & Harris 1987).

### Similarities

When first encountered, I was unable to decide if this species should be placed in *Dasophrys* or *Neolophonotus*. While it shares some features of both these genera, the species does not fit comfortably in either. The short laterally compressed ovipositor is similar to those found in the *Neolophonotus suillus* species group, and oviposition behaviour resembles that described for *N. dichaeus* by Londt & Harris (1987), a species placed in the *comatus* species-group even though the ovipositor is atypical of most of the species in that group. *Millenarius* has a gently convex face in lateral view, thus resembling species of *Dasophrys*. The ovipositor, however, is far too short to fit into the range displayed by *Dasophrys* species (see Londt 1981), while the male genitalia have a suit of unique characteristics not found in either *Neolophonotus* or *Dasophrys*, including the relatively short gonostyli and remarkably convoluted aedeagus. Current concepts of these genera strongly suggest that *graminosus* is best placed in a separate taxon.

**Etymology**

From *L. graminosus* - of grass. Refers to the habitat frequented by the species.

***Torasilus* gen. n.**

Type species: *Torasilus solus* sp. n. by present designation and monotypy.

**Diagnosis.** – Apocleine asilids with the following combination of characters: Antennal style composed of 3 elements, style clearly longer than postpedicel; face plane in lateral view; dorsal postocular setae moderately long and weakly proclinate; postpronotal lobes with fine setae only; dorsocentral macrosetae extend anterior to transverse suture; hind margin of wing with a single row of microtrichia lying in the same plane as wing membrane; metathoracic coxa with 4-5 lateral macrosetae.

**Etymology.** – A combination of *L. torridus* - dry, parched - and *asilus* - the type genus of Asilidae. Refers to the dry habitat occupied by this fly.

***Torasilus solus* sp. n.**

(figs. 11, 17, 56-61)

Type material: Holotype ♂: NAMIBIA: 'Gobabeb [2315CA], S.W.A. / Game Reserve No. 3 / 12-17.IV.1967 / J.H. Potgieter'.

Type locality: Namibia, Gobabeb (2315CA), Game Reserve No. 3.

**Description**

Based on unique holotype ♂.

Head (fig. 11). – Dark red-brown to black. Antenna (fig. 61): Scape red-brown, pedicel orange, postpedicel and style dark red-brown. Fine silver-gold pruinose. Scape and pedicel with white setae, postpedicel with a few tiny setae mid-dorsally. Antennal formula: 1 : 0.7 : 1.1 : 1.7 (: 0.2 : 1.4 : 0.1); pedicel shorter than scape, postpedicel short and only slightly longer than scape, style as long as scape and pedicel combined, second element of style longer than postpedicel. Face of moderate width (face : head width ratio 1 : 4.1), plane in lateral view, strongly gold-silver pruinose (including area between mystacial setae), mystax long white, prone dorsally and extending from antennal bases to epistomal margin. Frons and vertex fine silver pruinose, strongly white setose. Vertex strongly depressed between eyes, ocellarium strongly white setose. Occiput uniformly silver pruinose, dorsal macrosetae white, of moderate length, slightly proclinate, fine white setose. Proboscis red-brown, ventral setae white. Palpi black, 2-segmented, white setose.

Thorax. – Dark red-brown. Mesonotum: Silver pruinose except for a pair of black apruinose dorsal longitudinal stripes (corresponding to the areas between acrostichal and dorsocentral setae when present anteriorly). Postpronotal lobes with short white setae. Macrosetae: White, 2 *npl*, 2-3 *spal*, 2 *pal*, *acr* undifferentiated, two rows of about 9 white *dc* (many missing) only just straddling transverse suture. Scutellum: 3 white *sctl*s accompanied by other slightly smaller setae, disc with long white setae. Anatergites asetose. Pleura: Silver pruinose except for apruinose areas on anepisternum and katepisternum. Setal groups composed of strong white setae. Postmetacoxal area membranous. Legs: Coxae dark red-brown, orange distally, silver pruinose. Trochanters shiny apruinose with few small white setae. Metathoracic coxae with row of 5 strong white macrosetae. Femora moderately robust, red-brown, brown-orange distally, white setose (major setae short and robust). Tibiae and tarsi with mixed orange, predominantly white setose (few black setae ventrally on tarsi). Claws dark red-brown with orange bases, pulvilli well-developed, yellowish, empodium brown, about two-thirds length of pulvilli. Wing (fig. 17): 10.1 x 3.2 mm, membrane transparent, unstained, entirely lacking microtrichia. Venation brown-orange, cells  $r_1$ ,  $m_3$  and cup closed before wing margin. Halter pale brown-yellow.

Abdomen. – Dark red-brown to black, uniform silver pruinose, white setose. Tergites and sternites with white marginal and discal macrosetae as well as many minor white setae. Male terminalia (figs. 56-60): S8 with similar appearance to preceding sternites. Epanthial lobes long (about two and a half times as long as broad in lateral view), finely setose. S9 moderately well-developed. Gonocoxite fairly long (longer than deep in lateral view), tapering distally to fairly acutely rounded apex. Gonostylus of moderate development with slightly clavate upturned distal end. Aedeagus with weakly sclerotised proximal apodeme. Shaft broad basally. But tapering to terminal down-curved distal region. Shaft broad basally with inverted U-shaped ventral groove.

Female. – Unknown.

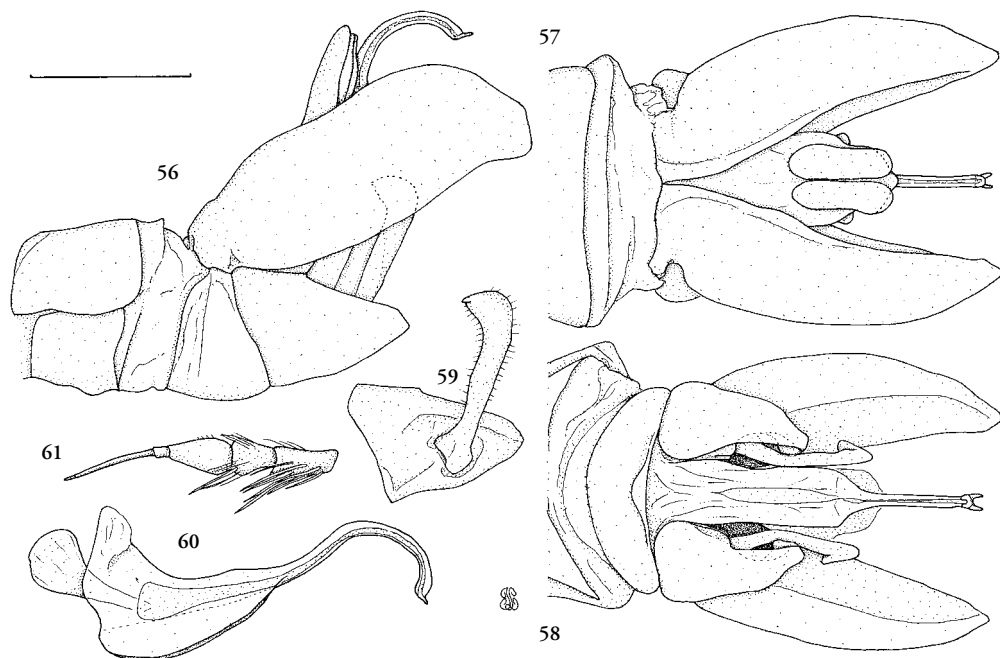
Variation. – Unknown.

**Distribution, phenology and biology**

The holotype is from Gobabeb in the Namib desert (fig. 70) and was collected in April (Table 2). Nothing more is known about this rather unique species.

**Similarities**

The specimen is labelled '♂ *Dysclytus* sp. 1 det. H. Oldroyd 1973'. Londt (1979) mentioned having seen this specimen when revising *Dysclytus*, and suggested that it may belong to *Neolophonotus*



Figs. 56-61. *Torasilus solus*. – 56-60. Male genitalia. 56, lateral view; 57, dorsal view; 58, ventral view; 59, gonocoxite and gonostylus (right) inner view; 60, aedeagus; 61. Antenna (left) outer view. Scale 1 mm.

(*Lophopeltis*), but that was incorrect and speculative ahead of extensive work on *Neolophonotus*. *Torasilus solus* is distinctive and does not appear to share many characteristics with other members of the afro-tropical Apocleinae. It is a pity that no females are available as they might throw more light on possible relationships with other taxa.

**Etymology**

From *L. solus* - alone. Refers to there being only a single specimen.

***Zelamyia* gen. n.**

Type species: *Zelamyia alyctus* sp.n. by present designation and monotypy.

**Diagnosis**

Apocleinae asilids with the following combination of characters: Antennal style composed of 3 elements; face plane in lateral view, style shorter than postpedicel; dorsal postocular setae short and weakly proclinate; dorsocentral macrosetae extend anterior to transverse suture; metathoracic coxa with 3-4 lateral macrosetae.

**Etymology**

A combination of Gr. n. *zela* - a Thracian word for wine - and *myia* - a fly. Refers to the presence of these flies in the Franschhoek area where much wine is produced.

***Zelamyia alyctus* sp. n.**

(figs. 12, 18, 62-69)

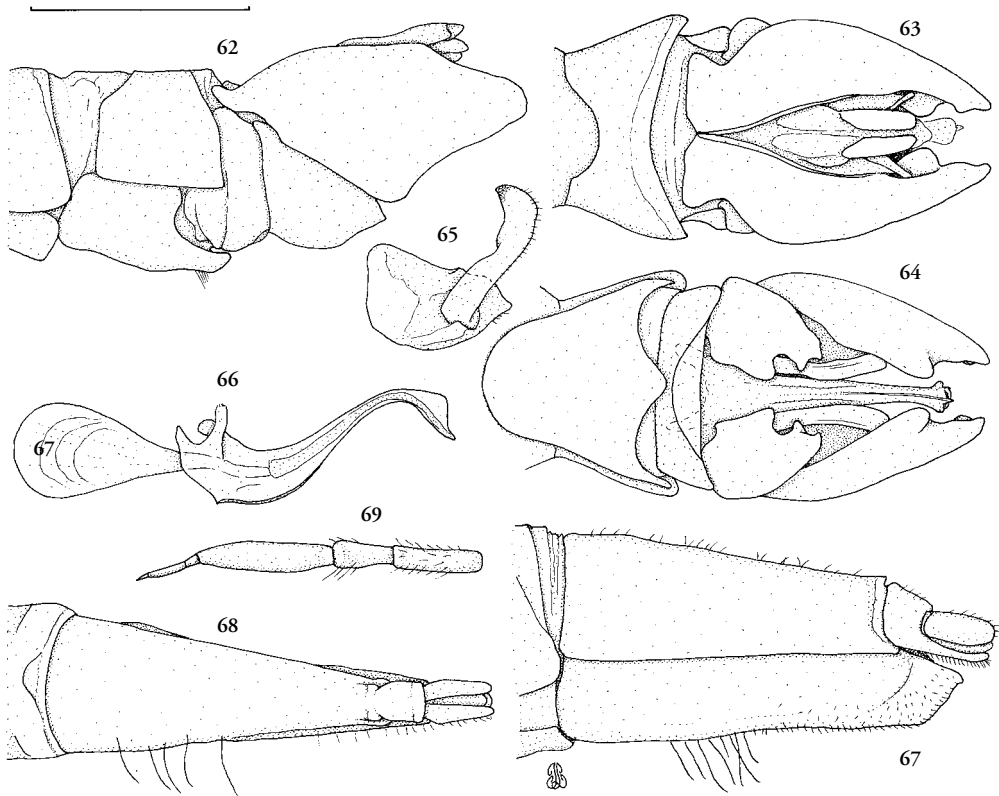
Type material. – Holotype ♂: 'S Africa: W Cape ♀2 / 11 km SE Franschhoek / 10.i.1983 3419Cc [sic 3319CC] / P. Stabbins & R. Miller / DuToits River bridge'. – Paratypes: SOUTH AFRICA: 'South Africa, Jonkershoek [3358S 1856E], Stellenbosch / 10.12.1980 / G. A. Giliomee, 1 ♂'; 'Wit River Valley [3335S 1908E] / Bains Kloof / C.P.' - 'Mus. Exp. / Dec. 1949', 1 ♂ (SAMC); as holotype, 1 ♀.

Type locality: South Africa, Western Cape Province, 11 km SE Franschhoek (3319CC).

**Description**

Based on holotype ♂ unless otherwise stated.

Head (fig. 12). – Dark red-brown to black. Antenna (fig. 69): Blackish, fine silver pruinose, scape and pedicel fine black setose, Antennal formula: 1 : 0.7 : 1.9 :



Figs. 62-69. *Zelamyia alyctus*. – 62-66. Male genitalia. 62, lateral view; 63, dorsal view; 64, ventral view; 65, gonocoxite and gonostylus (right) inner view; 66, aedeagus. – 67-68. Female genitalia. 67, lateral view; 68, dorsal view. – 69. Antenna (left) outer view. Scale 1 mm.

0.7 ( : 0.1 : 0.5 : 0.1); pedicel shorter than scape, postpedicel a little longer than scape and pedicel combined, style as long as pedicel, second element of style half as long as scape. Face of moderate width (face : head width ratio 1 : 5.0), plane in lateral view, strongly silver-gold pruinose (slightly bulbous area adjacent to antennal sockets apruinose), mystax composed of loosely arranged erect white (ventral two-thirds) and black (dorsal one-third) setae (those dorsally being somewhat shorter than those ventrally), extending from antennal bases to epistomal margin. Frons and vertex strongly gold-silver pruinose except for apruinose central part of frons, black setose. Vertex strongly depressed between eyes, ocellarium weakly pruinose, black setose. Occiput uniformly silver pruinose, dorsal macrosetae short white weakly proclinate, fine setae white. Proboscis dark red-brown to black, ventral setae white. Palpi black, 2-segmented, white setose.

Thorax. – Dark red-brown to black. Mesonotum: Red-gold pruinose, but with broad medial and lateral bands caused by absence of strong pruinescence.

Postpronotal lobes with few longish pale white setae. Macrosetae: 2 black (1 of the 4 is white) *npl*, 2 white *spal*, 1 white *pal*, *acr* undifferentiated, two rows of about 8 black (anterior to transverse suture) and white (posterior of transverse suture) *dc* straddling transverse suture. Scutellum: 2 pale white *setl s* accompanied by few smaller setae, disc with fine pale white setae. Anatergites asetose. Pleura: Gold-silver pruinose except anterior parts of katepisternum and anepisternum, posterior part of meron, and a small spot almost in centre of anepimeron. Setal groups composed of weak white setae except for row of 5-7 moderately strong katatergals. Postmetacoxal area membranous. Legs: Largely orange with dark red-brown parts. Coxae black, silver-gold pruinose, white setose. Metathoracic coxae with 3-4 moderately developed white lateral macrosetae. Trochanters blackish, shiny apruinose, equipped with few small white setae. Femora moderately robust, orange with large anterodorsal dark red-brown area, somewhat shiny due to weak pruinescence, pale white setose.

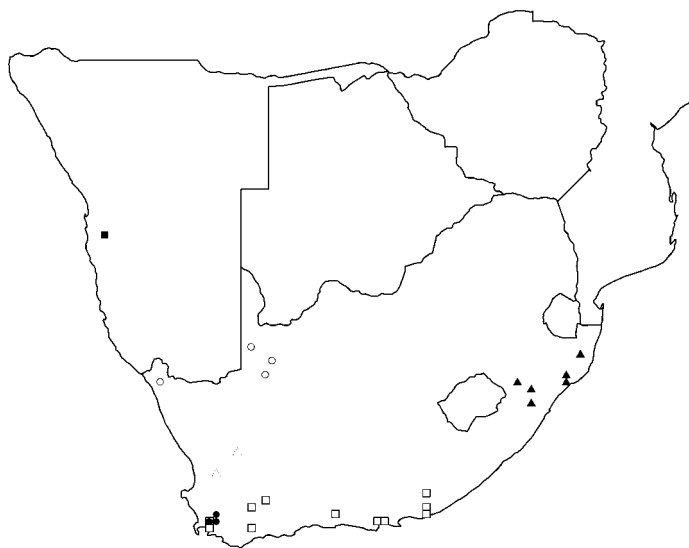


Fig. 70.  
Distribution of new apocleine genera in Southern Africa. *Acasilus tigrimontis* – open circles; *Juxtasilus capensis* – open squares; *Labarus ignota* – open triangles; *Millenarius graminosus* – closed triangles; *Torasilus solus* – closed square; *Zelamyia alyctus* – closed circles.

Tibiae and tarsi orange (distal end of hind pair and tarsi red-brown) with mixed white and black (few) setae. Claws dark red-brown with orange-brown bases, pulvilli well-developed, yellowish, empodium red-brown, about two-thirds length of pulvilli. Wing (fig. 18): 4.0 x 2.4 mm, membrane transparent, unstained, extensively covered with microtrichia except for some basal cells and adjacent to major veins. Venation dark red-brown (orange-brown basally), cells  $r_1$ ,  $m_3$  and cup closed before wing margin. Halter brown-yellow.

Abdomen. – Dark red-brown to black, strongly gold-silver pruinose laterally, otherwise very weakly pruinose (and appearing much darker than lateral parts), white setose. Tergites with pale yellow-white marginal, but otherwise with scattered thin weak pale white and black setae. Sternites largely shiny apruinose except for lateral parts, with few scattered fine pale white setae. Segment 8, epandrium and gonocoxites mostly apruinose. Male terminalia (figs. 62-66): S8 with trifurcate hind margin, medial process spur-like and overlapping S9. Epandrial lobes short (less than twice as long as broad in lateral view), almost triangular in lateral view (i.e. deepest at midlength). Lobes long, fine setose. S9 fairly narrow with straight hind margin although medially somewhat membranous in texture. Gonocoxite with short pointed apex. Gonostylus well-developed with an up-turned distal end. Aedeagus with well-developed proximal apodeme. Shaft of moderate length, fairly broad basally, gently down-curved distally, and with subapical dilated region.

Female (based on single paratype) (figs. 67-68). – Agrees well with ♂ but is somewhat greasy. Distal abdominal segments progressively laterally compressed forming ovipositor. Most of segment 7 and entire segment 8 and beyond apruinose. Ovipositor: Length : depth ratio 2.1 : 1; epigynium with tiny setae dorsally, long fine setae laterally, hypogynium with a few long setae midventrally. Terminal valves of hypogynium closely associated, forming a blade-like structure. Cerci laterally compressed, fine setose and broadly rounded distally.

Variation. – Very little individual variation. Colour of macrosetae show some variation i.e. mesonotal macrosetae may either be black or white. Size range not significant, e.g. wing length ranges from 4.8-5.7 mm (♀ is largest specimen which may suggest some sexual dimorphism).

#### Distribution, phenology and biology

Recorded from three mountainous sites in the Western Cape Province of South Africa (fig. 70). Although this is a winter rainfall area, the species flies during the mid summer months of December and January (Table 2) when it is generally hot and dry. This could explain why so few specimens are available, as collectors focus their attentions on the area during August and September when insect activity is generally at a peak. Label data provide no biological information, but the blade-like ovipositor suggests that these flies may inhabit woody vegetation, ovipositing in plant crevices.

Table 1. Information regarding the genera of afrotropical Apocleinae.

Oldroyd's (1980) catalogued genera of Asilinae here treated as Apocleinae, including more recently described taxa and taxonomic adjustments	Currently accepted generic name	Remarks relating to our knowledge of the genus
<i>Alcimus</i> Loew, 1848	No change	18 species - requires revision and identification key
<i>Antilophonotus</i> Lindner, 1955	Synonym of <i>Neolophonotus</i>	see <i>Neolophonotus</i>
<i>Apoclea</i> Macquart, 1838	No change	3 species - requires revision together with Palaearctic taxa
<i>Bactria</i> Meigen, 1820	No change	3 species - requires revision and comparison with <i>Promachus</i>
<i>Dasophrys</i> Loew, 1858	No change	32 species - revised by Londt (1981 1985a), key available
<i>Dysclytus</i> Loew, 1858	No change	1 species: redescribed by Londt (1979); another species here transferred to a new genus
<i>Erax</i> Scopoli, 1763	No change	3 species: requires revision together with Palaearctic taxa
<i>Gibbasilus</i> Londt, 1986	Described since catalogue	3 species: revised by Londt (1986a 1990b), key available
<i>Hippomachus</i> Engel, 1927	Treated as a synonym of <i>Neolophonotus</i> by Oldroyd (1980) but reinstated by Londt (1983)	8 species: revised by Londt (1983 1985a), key available
<i>Hobbyus</i> Bromley, 1933	Synonym of <i>Dasophrys</i>	see <i>Dasophrys</i>
<i>Lycoprosope</i> Hull, 1962	No change	1 species: well described by Hull (1962)
<i>Megadrillus</i> Bigot, 1857	Londt (1985b) listed it in the synonymy of <i>Neolophonotus</i> but later reinstated it (Londt 2004)	2 species: covered by Londt (1987) with <i>Neolophonotus</i> , but genus reinstated by Londt (2004)
<i>Neolophonotus</i> Engel, 1838	No change	251 species: revised by Londt (1985b 1986b 1987 1988 1990a) keys available
<i>Philodicus</i> Loew, 1848	No change	23 species: revised by Blasdale (1957); South African species covered by Londt (1978), keys available
<i>Promachus</i> Loew, 1848	No change	88 species: requires revision. Hobby's (1936) review and key now outdated
<i>Robertomyia</i> Londt, 1990	Described since catalogue	1 species: covered by Londt (1990a)
<i>Synolcus</i> Loew, 1858	No change	10 species: revised by Londt (1980 1990b), key available

Table 2. Phenology of species placed in six new monotypic apocleine genera.

	J	A	S	O	N	D	J	F	M	A	M	J
<i>Acasilus tigrimontis</i>	-	-	-	-	-	-	-	•	•	-	-	-
<i>Juxtasilus capensis</i>	-	-	-	-	-	-	•	•	•	•	-	-
<i>Labarus ignota</i>	-	-	-	-	•	•	-	-	-	-	-	-
<i>Millenarius graminosus</i>	-	-	-	-	•	•	•	•	•	-	-	-
<i>Torasilus solus</i>	-	-	-	-	-	-	-	-	-	•	-	-
<i>Zelamyia abyctus</i>	-	-	-	-	-	•	•	-	-	-	-	-

### Similarities

My attention was first drawn to this species while sorting material preliminarily identified as *Neolophonotus* on account of similarities with species of that genus. Close inspection revealed the species to be generally distinctive.

### Etymology

From Gr. *alyktos* - to be shunned. Refers to the elusiveness of this species in an apparently well-collected area.

### ACKNOWLEDGEMENTS

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