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A review of Afrotropical *Acnephalum* Macquart, 1838, including the reinstatement of *Sporadothrix* Hermann, 1907 and descriptions of two new genera (Diptera: Asilidae: Stenopogoninae)

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ABSTRACT

In revising the taxonomy of *Acnephalum* Macquart, 1838 it was discovered that the Afrotropical species are not congeneric when compared with the Palaearctic type species (*A. olivierii* Macquart, 1838 from Greece), which is congeneric with species of *Pycnopogon* Loew, 1847. As a consequence all Palaearctic *Pycnopogon* species are transferred to *Acnephalum* which takes precedence over *Pycnopogon*. In addition it was found that *Sporadothrix* Hermann, 1907, a genus previously synonymised with *Acnephalum*, is worthy of full generic reinstatement. The new genus *Acnephalomyia* is provided for Afrotropical species previously assigned to *Acnephalum*. The following taxonomic adjustments, innovations and decisions are introduced in this paper:

New combinations: Species transferred from *Pycnopogon* – *Acnephalum apicalis* (Matsumura, 1916), *Acnephalum apiformis* (Macquart, 1849), *Acnephalum denudatus* (Séguy, 1949), *Acnephalum fasciculatus* (Loew, 1847), *Acnephalum hirsutus* (Becker, 1913), *Acnephalum laniger* (Dufour, 1833), *Acnephalum leucostomus* (Engel, 1939), *Acnephalum melanostomus* (Loew, 1874), *Acnephalum mixtus* (Loew, 1847), *Acnephalum nikkoensis* (Matsumura, 1916), *Acnephalum pallidipennis* (Brullé, 1936). Species transferred from *Acnephalum* – *Acnephalomyia andrenoides* (Wiedemann, 1828); *Acnephalomyia dorsalis* (Macquart, 1838); *Acnephalomyia platygaster* (Loew, 1858); *Afroholopogon futilis* (Wulp, 1899).

New synonyms: *Dasypogon quadratus* Wiedemann, 1828, *Acnephalum punctipennis* Macquart, 1855, *Acnephalum cockerelli* Curran, 1934 and *Sisyrnodytes sericeus* Oldroyd, 1974 = *Acnephalomyia andrenoides* (Wiedemann, 1828); *Acnephalum cylindricum* Oldroyd, 1974 = *Sporadothrix gracilis* Hermann, 1907.

New genera: *Acnephalomyia* (Type species: *Dasypogon andrenoides* Wiedemann, 1828), *Astiptomyia* (Type species: *Astiptomyia bikos* sp. n.).

New species: *Acnephalomyia eremia* (Namibia), *Acnephalomyia iota* (Namibia, South Africa), *Acnephalomyia leukoros* (South Africa), *Acnephalomyia probolos* (South Africa), *Ammodaimon platythrix* (Namibia), *Astiptomyia bikos* (Namibia).

Lectotype designations: *Dasypogon andrenoides* Wiedemann, 1828; *Acnephalum dorsale* Macquart, 1838; *Acnephalum futile* Wulp, 1899.

Keys, tables and illustrations are provided for Afrotropical taxa as identification aids while distribution maps are included where appropriate.

KEY WORDS: Afrotropical, Asilidae, *Acnephalomyia*, *Acnephalum*, *Afroholopogon*, *Ammodaimon*, *Astiptomyia*, *Pycnopogon*, *Sporadothrix*, new genera, new species, new synonymy, new combinations, distribution.

INTRODUCTION

Acnephalum Macquart, 1838, a predominantly Afrotropical genus, has for many years been closely associated with *Sisyrnodytes* Loew, 1856 as these two genera are morphologically similar and, at least in parts of southern Africa, may be sympatrically distributed. Identifications at both generic and specific levels have proved problematic, with many, even by experienced asilidologists, being incorrect. A revision of Afrotropical *Sisyrnodytes* was recently published (Londt 2009), and some of the problems associated with these genera were discussed in that publication. It is now the turn of *Acnephalum*, and the following brief history of the genus serves to summarise what was known about it, and the species that have been assigned to it, at the commencement of this study (names are cited as originally provided by authors).

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Wiedemann (1828) – Described *Dasypogon andrenoides* and *D. quadratus* from 'Bom Kap' (i.e. The Cape of Good Hope – which included much of south-western South Africa).

Macquart (1838) – Described the genus '*Acnéphale*, *Acnephalum*' giving descriptions of three species, *A. olivierii* 'De l'ile de Naxos' (Greece), and *A. breve* and *A. dorsale* both 'Du Cap' (i.e. The Cape), but without designating a type species. He mentioned both *D. andrenoides* and *D. quadratus* as also belonging to *Acnephalum*.

Loew (1847) – Placed *Acnephalum olivieri* in its own 'group' within the genus *Dasypogon* Meigen, 1803. He also described another group which he called *Pycnopogon* that contained four new Palaearctic species (the relevance of this is made apparent below).

Rondani (1850) – Described *Acnephalum nilicola* from Egypt.

Macquart (1855) – Described *Acnephalum punctipennis* 'De l'Océanie, cap des Aiguilles'.

Loew (1858) – Described *Acnephalum platygaster* from 'Swakop' (Namibia).

Loew (1860) – Provided a generic diagnosis and elaborated on his description of *A. platygaster*. He also correctly listed *brevis* Macquart as a *Sisyrnodytes* species.

Röder (1882) – Even though misspelling names, designated *A. olivierii* as the type species of *Acnephalum* when he stated 'Die typische Art der Gattung ist *Acnecephalum Olivieri* Macq. (Diptères exotiques Tome premier 2. partie pag. 51)'.

Wulp (1899) – Described *Acnephalum futile* from Aden (South Yemen), reporting that the species was closely allied to *andrenoides*.

Becker *et al.* (1903) – Catalogued the single Palaearctic species (*Olivierii*), giving the distribution as 'Archipelagus'. He correctly listed *nilicola* as a *Sisyrnodytes* species.

Hermann (1907) – Recorded both *Acnephalum andrenoides* and *A. platygaster* from South Africa and described *Sporadothrix gracilis* from 'südlichen Kalahari' (Namibia).

Kertesz (1909) – Catalogued nine species of *Acnephalum* including six Afrotropical species (*andrenoides*, *decula*, *dorsale*, *futile*, *platygaster* and *quadratum*). His inclusion of two Walker species, *Dasypogon coon* Walker, 1854 ('*Patria ignota*') and *Dasypogon decula* Walker, 1855 ('Sierra Leone') being erroneous – see Oldroyd (1974) below. In addition he also included *A. punctipennis* from 'Australia'.

Engel (1929) – In reviewing the Palaearctic asilid fauna, discussed the genus, stating 'Genotype: *Olivieri* Macq.', and providing redescriptions of *A. futile* and *A. Olivieri*.

Curran (1934) – Described *Acnephalum cockerelli* from South Africa and provided a key to five 'Ethiopian' (= Afrotropical) species (*andrenoides*, *cockerelli*, *dorsale*, *platygaster*, *quadratum*).

Hull (1962) – Provided a full generic description and listed ten species in the world fauna: Palaearctic (*olivieri*). Ethiopian (= Afrotropical) (*andrenoides*, *cockerelli*, *decula*, *dorsale*, *futile*, *platygaster*, *quadratum*). Australian (*punctipenne*). Country unknown (*coon*).

Oldroyd (1974) – Discussed the genus and provided a key to six southern African species (*andrenoides*, *cockerelli*, *dorsale*, *platygaster*, *quadratum*, and the newly

described *cylindricum* from Namibia). He clarified the position of the two Walker species (*Dasypogon coon* and *D. decula*) catalogued as *Acnephalum* by Kertesz (1909), effectively removing them from the genus. He also described a specimen from Namibia that he assigned to *Sporadothrix gracilis* (classified as a member of his Stichopogonini), the relevance of which becomes clear below.

Londt (1979) – Discussed Oldroyd's (1974) comments relating to Hermann's *Sporadothrix gracilis*, and although agreeing that his illustration compared well with Hermann's description, suggested some affinity with *Anypodetus* Hermann, 1907.

Oldroyd (1980) – Catalogued Afrotropical *Acnephalum*, listing seven species (*andrenoides*, *cockerelli*, *cylindricum*, *dorsale*, *futile*, *platygaster* and *quadratum*), as well as the monotypic *Sporadothrix gracilis*.

Londt (1985) – Compared his new genus *Ammodaimon* with *Acnephalum*.

Lehr (1988) – Catalogued the Palaearctic species. He listed *A. futile*, an Afrotropical species from South Yemen, as possibly also occurring in Palaearctic Arabia, and *A. olivieri* (giving its distribution as Europe: Greece, ?USSR, South European Territory and ?North Africa).

Londt (1994) – Synonymised *Sporadothrix* with *Acnephalum*. This effectively brought *S. gracilis* into *Acnephalum*. In addition he suggested that Oldroyd's (1974) illustration of a Namibian fly, identified as *S. gracilis*, did not represent this species, and that it may be an undescribed *Ammodaimon*. A key to all known Afrotropical stenopogonine genera was provided.

Londt (1999) – Produced an updated key to Afrotropical stenopogonine genera that included *Acnephalum*.

Geller-Grimm (2004) – Included *Acnephalum* in a list of world genera, giving *Sporadothrix* as a synonym.

Dikow (2009*a*) – Revised the higher classification of Asilidae using morphological evidence. He erected the new subfamily Willistonininae, assigning a number of genera, including *Acnephalum*, to the group.

Londt (2009) – Revised Afrotropical *Sisyrnodytes*, transferring *S. sericeus* Oldroyd, 1974 to *Acnephalum*.

Dikow (2009*b*) – Combined morphological and DNA sequencing data derived from many asilid species representing a number of genera, including *Acnephalum*, in an attempt to elucidate the phylogeny of the Asilidae.

There were, therefore, at the commencement of this study, ten *Acnephalum* species – one Palaearctic (the type species, *olivierii* – frequently misspelled *olivieri*), eight Afrotropical (the seven catalogued by Oldroyd (1980) and *gracilis*, transferred from *Sporadothrix*), and one Australasian (*punctipennis*).

During this study it was discovered that the holotype of *A. olivierii*, the Palaearctic type species of *Acnephalum*, is actually congeneric with *Pycnopogon* Loew, 1847 (a genus confined to the Palaearctic Region) and that the Afrotropical species of *Acnephalum* are digeneric. With the revelation that the name *Acnephalum* takes precedence over *Pycnopogon*, it becomes necessary to transfer all currently known *Pycnopogon* species to *Acnephalum* and to provide a new genus for all the Afrotropical species currently assigned to *Acnephalum*. These taxonomic actions are given priority in this paper in order to formally establish the new generic name used throughout this review.

The single Australasian species, *A. punctipennis*, has, since its description by Macquart in 1855, been largely ignored by taxonomists. Apart from being listed by Kertesz (1909) in a catalogue and listed by Hull (1962) there has been no mention of the species in the literature, including the Australasian Diptera Catalogue (Daniels 1989), since its description. The type, preserved in the Oxford University Museum of Natural History, clearly represents a South African species.

MATERIAL AND METHODS

Specimens

Material used in this study is housed in the institutions listed below. The curators that kindly assisted me are named in brackets following the name of the respective institution.

AMGS – Albany Museum, Grahamstown, South Africa (A. Kirk-Spriggs).
AMNH – American Museum of Natural History, New York, USA (D. Grimaldi).
BMNH – The Natural History Museum, London, UK (E. McAlister).
MNHN – Museum National d'Histoire Naturelle, Paris, France (C. Daugeron).
MZLU – Zoological Museum, Dept. Zoology, Lund, Sweden (R. Danielsson).
NHMW – Naturhistorisches Museum Wien, Wien, Austria (P. Sehnal).
NHRS – Naturhistoriska Riksmuseet, Stockholm, Sweden (B. Viklund).
NMNW – State Museum, Windhoek, Namibia (A. Kirk-Spriggs).
NMSA – Natal Museum, Pietermaritzburg, South Africa (M. Mostovski).
OXUM – Oxford University Museum of Natural History, Oxford, UK (D. Mann).
SAMC – South African Museum, Cape Town, South Africa (M. Cochrane).
SANC – National Collection of Insects, Pretoria, South Africa (R. Urban).
SMNS – Staatliches Museum für Naturkunde Stuttgart, Stuttgart, Germany (H.-P. Tschorsnig).
ZMHB – Museum für Naturkunde, Humboldt Universität zu Berlin, Germany (J. Ziegler).
ZSMC – Zoologische Staatssammlung, München, Germany (B. Stock).

Label data

In recognition of the value of detailed lists of material examined (Dikow *et al.* 2009), standard formats have been employed when recording label information. When material is considered to have special interest (i.e. type specimens, or when material is not abundant), all label data are reproduced as appearing on labels. For multiple labels each label is demarcated by the use of single inverted commas while each line of data is separated by a spaced slash (/). Data that appear on the reverse side of a label are preceded by a '~' symbol. In some instances the colour of a label is provided in square brackets. Square brackets are also used when useful additional information, or comment, not found on labels, is provided. In this regard, coordinates are usually given when these, or a quarter-degree grid reference, do not appear on a label. Coordinates provided are usually for the populated place or geographic feature mentioned immediately before the added note, no attempt being made to estimate coordinates for places recorded as being a certain distance from a populated place. The use of question marks usually indicates unknown or questionable information. When material is abundant, the kind of detail mentioned above is not considered necessary.

Information for these specimens is restricted to locality, date of collection, collector(s) (initials excluded), altitude (when available) and any other potentially useful information available. Should more detail be required, it is available from the relevant institution. All specimens are arranged in geographical order according to latitude and within alphabetically ordered countries to facilitate mapping.

Descriptive passages

Brief generic diagnoses are usually provided. If fuller descriptions are required, those of Hull (1962) or other researchers mentioned in the text may be consulted. Species descriptions, although brief, focus chiefly on characteristics that are considered helpful in the separation of species. There is significant variation in coloration, setal number and size, and so information relating to these characters should not be given undue value.

It should be noted that in order to adequately view and study the normally retracted male genitalia, these need to be excised, softened through maceration in dilute KOH and physically extruded. Extrusion can be achieved by inserting a pin into the opening created after the terminalia have been excised. Genitalia are effectively exposed by carefully dragging the terminalia over the inserted pin. Unfortunately, this method of extrusion may cause some soft, macerated sclerites and associated membranes to buckle slightly. However, most of the organs providing good diagnostic characters (e.g. the hypandrium and gonocoxites) are usually not too adversely affected.

Final illustrations were prepared by hand from pencil drawings and do not commonly depict setae as these are not usually considered to have any great diagnostic value. The following measurements were taken. Antenna: The lengths of scape, pedicel, postpedicel, and the two-segmented style. When measuring the style, the terminal spine was excluded. The angle subtended by the eye margins at the level of frons/vertex was measured as shown in Fig. 12. Wing length is from humeral crossvein to tip, while breadth is measured at the broadest level. Standard terminology is used, chiefly in accordance with McAlpine (1981).

TAXONOMY

A study of the holotype of *Acnephalum olivierii*, type species of *Acnephalum* Macquart, 1838, revealed that the species is congeneric with *Pycnopogon* Loew, 1847. As *Acnephalum* has precedence over *Pycnopogon*, being described nine years earlier, it becomes necessary to transfer all known *Pycnopogon* species (i.e. those listed by Lehr 1988) to *Acnephalum*. The following are therefore all new combinations: *Acnephalum apicalis* (Matsumura, 1916), *Acnephalum apiformis* (Macquart, 1849), *Acnephalum denudatus* (Séguy, 1949), *Acnephalum fasciculatus* (Loew, 1847), *Acnephalum hirsutus* (Becker, 1913), *Acnephalum laniger* (Dufour, 1833), *Acnephalum leucostomus* (Engel, 1939), *Acnephalum melanostomus* (Loew, 1874), *Acnephalum mixtus* (Loew, 1847), *Acnephalum nikkoensis* (Matsumura, 1916), *Acnephalum pallidipennis* (Brullé, 1936).

As Afrotropical species currently assigned to *Acnephalum* are not congeneric it further necessary to provide a new genus for them (see below).

Evidence in support of my actions is embodied in the following redescription and notes relating to the *A. olivierii* holotype.

Acnephalum Macquart, 1838

Acnephalum: Macquart 1838: 51 [1839: 167]. Type species: *Acnephalum olivierii* Macquart, 1838, by designation of Röder (1882: 245) – not Engel (1929: 276).

Pycnopogon Loew, 1847: 526. Type species: *Dasypogon apiformis* Loew, 1847: 529 by original designation [= *pallidipennis* (Bruellé, 1836)]. **Syn. n.**

Designation of type species of *Acnephalum*: The designator of *A. olivierii* as type species has long been accepted to be Engel (1929) who, without explanation, merely states 'Genotype: *Olivieri* Macq.'. Röder (1882), however, although misspelling the generic name, clearly stated, under the heading 'Ueber *Acnecephalum* Macq.', that 'Die typische Art der Gattung ist *Acnecephalum Olivieri* Macq. (Diptères exotiques Tome premier 2. partie pag. 51)'. I believe this statement complies with requirements for a properly constituted type species designation, and that this was probably known to Engel as he makes reference to Röder's work.

Diagnosis: Stenopogonine asilids with the following combination of characters. *Head*: Antennal postpedicel elongate, slender; style composed of 3 elements (2 slender segments and terminal spine-like seta); head clearly wider than high in anterior view (not more-or-less circular); face slightly convex; mystax covering entire face; vertex distinctly excavated; angle of divergence of frons/vertex in anterior view >20°; palpi 2-segmented; proboscis straight. *Thorax*: Anatergites bare; metepisternal macrosetae present; postmetacoxal area membranous; pulvilli well developed; wing with cells r_1 and m_3 open at margin; costal vein extending around entire wing margin (although weakly around anal cell and alula); 'stump-vein' at base of R_4 absent. *Abdomen*: Segments clearly wider than long (i.e. moderately dorsoventrally flattened); terga more densely setose laterally.

Natal Museum specimens of *Acnephalum* studied:

A. fasciculatus (Loew, 1847) – 1♀ 'Graec. Peloponnes / Zachiorou, Kalavr. / J. Klimosch vii.63' (NMSA).

A. mixtus (Loew, 1847) – 1♂ 'Meiron / Israel / 30.v.1972 / leg. Kugler' (NMSA); 1♀ '5.iv.1957 / Bir Rekhnis, / Israel / Coll. Fishelsohn L.' (NMSA).

A. pallidipennis (Brullé, 1836) – 2♂ '6.vi.39. westl. Me- / galopolis; Græcia / leg. Erich Schmidt' (NMSA); 1♀ '4.vi.38. Umg. s. Me- / galopolis; Græcia / leg. Erich Schmidt' (NMSA).

Note: Of possible interest is the fact that the female of *A. pallidipennis* listed above does not appear to have acanthophorites. This may be of significance when a revision of *Acnephalum* is undertaken.

Acnephalum olivierii Macquart, 1838

Figs 6, 12, 13, 19

Acnephalum olivierii: Macquart 1838: 51; Lehr 1988: 232 (catalogue).

Acnecephalum Olivieri: Röder 1882: 245 (misspelling of generic name).

Acnephalum Olivierii: Becker *et al*. 1903: 128 (catalogue); Kertesz 1909: 88 (catalogue) (variant spelling).

Acnephalum Olivieri: Engel 1929: 277–279 (fig. 215 head and antenna (*Note*: fig. 216 *tar* – not *olivierii*)).

Macquart's (1838) description is brief and here replicated in full as a matter of convenience.

> 1. ACNEPHALUM OLIVIERII, *Nob.*
> *Atrum, albido hirsutum. Alis cellula submarginali secunda inappendiculata; postica quarta clausa.*
> Long. 4½ l.
> Moustache, barbe et poils des palpes blanchatres. Pieds moirs, à poils blancs Ailes jaunàtres; quatrieème cellule postérieure fermée au bord intérieur.
> De l'ile de Naxos. Olivier. Muséum.

Redescription (Based on holotype. Condition: Poor; mounted on a short pin (I have double mounted the specimen in order to prevent further damage caused by handling). Tip of left antennal style missing, right prothoracic leg broken off beyond halfway down *tib*, left prothoracic leg broken off from end of *tib*, right mesothoracic leg broken off beyond trochanter, left mesothoracic leg broken off halfway down *fem*, right metathoracic leg broken off near tip of *fem*, left metathoracic leg broken off beyond trochanter. There is a single, complete, but rather dirty, amputated *tar*, complete with claws and pulvilli, adhering to base of damaged abdomen, that I assume belongs to this specimen. Mesonotum is damaged where pin was inserted. Wings intact, but left wing is dirty (right one is clean and may have been cleaned in relatively recent times). Left haltere is broken off at mid length. Abdomen broken off beyond first segment. None of the missing parts have been preserved):

Head (Fig. 12): Mainly dark red-brown to black, white setose. Antenna (Fig. 14): Dark red-brown, tip of style yellowish. Segmental ratios 1.0:0.9:2.5:0.2:1.0 – scape and pedicel subequal in length, white setose, major setae of pedicel as long as postpedicel; postpedicel only a little longer than scape and pedicel combined; style 2-segmented, spine-tipped, equal in length to scape. Face dark red-brown to black, mystax white, covering entire face. Frons, vertex and postocular region dark red-brown to black, long white setose; angle subtended by eye margins at level of frons/vertex *c*. 25°. Proboscis dark red-brown, white setose. Palpus 2-segmented, dark red-brown, white setose.

Thorax: Dark red-brown to black, white setose. Pronotum and mesonotum longish white setose. Lateral macrosetae moderately well developed (some broken), partly hidden among general body setae (difficult to count). Pleura with long katatergals, metepisternals and dorsally situated anepisternals. Katepisternals short, sparse. Scutellum shiny black, apruinose, without transverse, subapical groove. 12 moderately developed translucent apical macrosetae; disc asetose. Legs: Dark red-brown, major setae pale yellowish, minor setae longish white. Ventral parts of *tar* partly black setose. Claws black, shorter than tarsomere 5; empodium yellow (tip missing); pulvillus well-developed (almost as long as claw) (Fig. 19). Haltere dark red-brown. Wing (Fig. 6): 8.8×3.6 mm. Veins orange-brown, membrane lacking microtrichiae. Membrane transparent, unstained. Vein R_4 lacking basal stump-vein.

Abdomen: Segment 1 dark red-brown to black. T1 with group of pale yellowish macrosetae laterally and tiny dark red-brown setulae medially. Genitalia missing.

Holotype: Sex unknown as terminalia are missing. GREECE: '701', '*Acnephalum / olivierii*' (NMHN). *Note*: According to Macquart (1838), the type locality is the Greek Island of Naxos (37°05'N:25°30'E).

Distribution: I have not seen any other material identified as *olivierii*. In cataloguing the species, Lehr (1988) reported it from Greece (presumably the type material) with queries for the then USSR and North Africa.

Remarks: Although the rather badly preserved type specimen strongly resembles Afrotropical species currently assigned to *Acnephalum*, it demonstrates features that clearly separate it from these species and align it with *Pycnopogon*. Features that I believe distinguish it (and other specimens of *Pycnopogon*, identified by Milan Hradsky listed above) from Afrotropical species covered by this review (i.e. those assigned to the new genus – see below) are shown in Table 1. Although a modern revision of *Acnephalum*

TABLE 1
Some characters separating the genera *Acnephalomyia* and *Acnephalum* (= *Pycnopogon*).

Character	Acnephalomyia	Acnephalum
Head: Angle of divergence of frons/vertex (in anterior view) (Figs 12, 13). *Note*: Can vary slightly with angle of view.	<20° (range *c*. 5–17°)	>20° (range *c*. 24–40°)
Thorax: Metepisternal macrosetae.	Absent.	Present.
Legs: Length of pulvilli relative to claws (Figs 19, 20).	Poorly developed. Claw *c*. 3× longer than pulvilli.	Well developed. Claw *c*. 1.5× longer than pulvilli.
Wing: Stump-vein at base of R_4 (Figs 6, 7).	Usually present, even if rudimentary.	Absent.
Wing: Costal vein (Figs 6, 7).	Terminates at A_1, entire margin of cell a_1 lacking bordering vein.	Continues past A_1, entire margin of cell a_1 with bordering vein (even if sometimes weak).

is required before the value of these characters will be known for certain, I believe they serve well to support the taxonomic decisions made here.

Genus **Acnephalomyia** gen. n.

Etymology: From *Acnephalum* and Greek *myia* (a fly). Feminine gender.

Type species: *Dasypogon andrenoides* Wiedemann, 1828, by present designation.

As mentioned earlier, with the discovery that the type species of *Acnephalum* (*A. olivierii*, a Palaearctic species) is not congeneric with Afrotropical species, it is necessary to describe a new genus for these species. As these species have had a long history of being called *Acnephalum* it was decided to retain at least part of the name in providing a new one, hence the choice of *Acnephalomyia*.

During this study it was further decided to re-establish *Sporadothrix* as a valid genus, and so species assigned to that taxon are handled separately below. In addition, it was discovered that *Acnephalum futile* is actually a species of *Afroholopogon* Londt, 1994, and so that species is also handled separately under this name. With these adjustments there were actually only six valid Afrotropical species requiring revision at the commencement of this study (i.e. *andrenoides*, *cockerelli*, *dorsale*, *platygaster*, *quadratus*, *sericeus*).

Diagnosis: Stenopogonine asilids with the following combination of characters. *Head*: Antennal postpedicel elongate, style composed of 3 elements (2 slender segments and terminal spine-like seta); head clearly wider than high in anterior view (not more or less circular); face slightly convex; mystax long, covering entire face; vertex distinctly excavated; angle of divergence of frons/vertex in anterior view < 20°; palpi 2-segmented, well-developed; proboscis straight. *Thorax*: Dorsocentrals undifferentiated; anatergites bare; metepisternal macrosetae absent; postmetacoxal area membranous; pulvilli present, but poorly developed (*c*. one-third length of claws); wing with cell m_3 open at margin; costal vein extends around wing margin, terminating at A_1 (i.e. anal cell and alula without bordering vein); stump-vein at base of R_4 commonly present, even if rudimentary. *Abdomen*: Segments clearly wider than long and dorsoventrally flattened;

terga commonly long setose laterally; segments 1–6 clearly visible, terminal segments much reduced and withdrawn (often almost hidden from view).

Acnephalomyia andrenoides (Wiedemann, 1828) **comb. n.**

Figs 1, 7, 13, 15, 20, 24–34, 65

Dasypogon andrenoides: Wiedemann 1828: 403.
Dasypogon quadratus Wiedemann, 1828: 404. **Syn. n.**
Acnephalum punctipennis Macquart, 1855: 71; Kertesz 1909: 88 (catalogue); Hull 1962: 192. **Syn. n.**
Acnephalum andrenoides: Hermann 1907: 8; Kertesz 1909: 87 (catalogue); Curran 1934: 5–6; Hull 1962: 192, figs 140 (antenna), 524 (wing), 1032, 1044 (head); Oldroyd 1974: 27; 1981: 359 (catalogue).
Acnephalum quadratum: Kertesz 1909: 88 (catalogue); Curran 1934: 5–6; Hull 1962: 192, figs 1757–1759 (♂ terminalia); Oldroyd 1974: 27; 1981: 359 (catalogue).
Acnephalum cockerelli Curran, 1934: 5–6; Hull 1962: 192; Oldroyd 1974: 27; 1981: 359 (catalogue). **Syn. n.**
Sisyrnodytes sericeus Oldroyd, 1974: 72; 1981: 368. **Syn. n.**
Acnephalum sericeus: Londt 2009: 171.

Redescription (Based chiefly on lectotype. Condition: Good; slightly dusty, and has a circular hole in the centre of the mesonotum, probably made by a pin at the time of mounting):

Head (Fig. 13): Dark red-brown to black, white setose, slightly greasy (pruinescence not evident). Antenna (Fig. 15): Uniformly orange-brown. Ratios of antennal segments 1.0:0.8:3.3:0.1:1.4 – scape and pedicel subequal in length, white setose except for pale translucent yellowish macrosetae (ventrally on scape, dorsally and ventrally on pedicel); setae of pedicel as long or longer than postpedicel; postpedicel almost twice as long as scape and pedicel combined; style 2-segmented, tipped with spine, subequal in length to scape and pedicel combined. Face dark red-brown to black, mystax fine white, covering entire face. Frons, vertex and postocular region dark red-brown to black, mostly long white setose (some pale yellowish postocular macrosetae dorsally); angle subtended by eye margins at level of frons/vertex *c*. 8° (i.e. weakly divergent). Proboscis orange-brown to dark red-brown, white setose, slightly downturned distally. Palpus 2-segmented, white and yellowish setose, second segment terminating in short distal projection.

Thorax: Dark red-brown to black except for orange-brown postpronotal and postalar lobes. Pronotum mostly fine white setose, but with transverse row of long yellowish macrosetae. Mesonotum mostly white setose, but with clumps of dull yellowish setae, mostly anteriorly. Lateral macrosetae poorly developed, rather shorts, pale yellow, mostly hidden among longish general body setae. Pleura largely asetose except for numerous, long, terminally wavy, white katatergals and dorsally situated anepisternals. Katepisternum asetose. Scutellum shiny black apruinose with moderately developed transverse subapical groove. About 16 moderately developed, yellowish apical macrosetae accompanied by slightly shorter, fine white setae; disc asetose. Legs: Mostly brown-orange, but parts of *fem* dark red-brown dorsally. Major setae erect yellowish, minor setae recumbent white. Ventral parts of *tar* and terminal end of *tib* short black setose. Claws black, long (about as long as tarsomere 5); empodia slender yellow, about half length of claws; pulvilli small (about one-third length of claws). Haltere pale yellow, base slightly darker. Wing (Fig. 7): 7.3×3.0 mm. Veins brown-orange, membrane largely lacking microtrichiae (weakly present on cells bc, c, sc, iv, basally on r_1 and along anterior margin of br). Membrane pale

brown stained proximally, gradually becoming somewhat translucent distally. Vein C extends around wing margin, terminating at A_1, R_4 with well-developed basal stump-vein, cell m_3 open.

Abdomen: Terga clearly broader than long, mostly dark red-brown to black, but narrowly orange-brown laterally. Orange-brown colour extends along posterior margins of more distally situated terga, progressively increasing in extent (T6 being almost entirely orange-brown). Terga apruinose and entirely pitted by setal sockets. Entire abdomen fringed laterally with long (as long as length of individual terga), whitish setae. White setae extend along distal margins of terga gradually becoming shorter medially. Large areas of terga appear asetose, but are covered with tiny blackish setae. Sterna orange-brown, finely gold pruinose, sparsely long white setose. Terminalia largely withdrawn between T6 and S6 and somewhat obscured by setae. Genitalia (based on the paralectotype male; Figs 24, 25): *Epand* reduced (much shorter than *goncx*), broadly rounded distally (not incised medially to form distinct lobes). *Proc* somewhat swollen in appearance and jutting out well beyond level achieved by *epand* (lateral view). Exterior lobe of *goncx* broadly rounded proximally, tapering to acutely pointed tip distally; interior lobe longish, jutting out to about same level as achieved by *hypd*, slightly downturned distally. *Hypd* somewhat truncate basally, tapering to narrowly rounded point distally.

Lectotype: SOUTH AFRICA: ♂ 'Capland / Krebs S.' [blue], 'Type' [orange], 'Zool. Mus. / Berlin' [cream] (ZMHB).

Paralectotypes: 1♂ 1♀ similar data as lectotype, but ♀ has additional label '484' (ZMHB).

Notes: Wiedemann did not designate a holotype so his specimens are considered syntypes. For taxonomic stability I here designate a lectotype and two paralectotypes. Wiedemann (1828) gave scant information regarding the provenance of his type specimens and merely states 'Bom Kap' (probably Von Kap = from Cape). He also indicates that the specimens are in the Berlin Museum and his collection. There are 5♀ specimens labelled as *andrenoides* types in NHMW which are simply labelled 'Cap b. sp'. Although much of Wiedemann's material ended up in NHMW I have no means of knowing whether these were available to Wiedemann and so I prefer to consider them as being without the type status.

Notes on synonymies: The following four species are considered nominal taxa.

Dasypogon quadratus Wiedemann, 1828

Wiedemann's material (Fig. 1), in good condition, was studied and compared with the *andrenoides* lectotype. The lectotype is almost identical, and only the slight differences recorded below were noted. There is no doubt that *quadratus* is a synonym of *andrenoides* (as suspected by Oldroyd in 1974).

Head: Antenna: Segmental ratios 1.0:0.9:3.1:0.2:1.4. Ocellar setae mostly yellowish. *Thorax*: Pronotal macrosetae brownish yellow. Mesonotal setae mostly mixed white and brown-yellow except for some uniformly coloured whitish clumps anteriorly. Scutellum with *c*. 20 yellowish apical macrosetae. Wing: 7.6×3.5 mm. Membrane fairly extensively orange-brown stained. Only central parts of cells bordering wing margin distally unstained. Vein R_4 with short basal stump-vein. *Abdomen*: Terga fringed laterally with pale yellow setae extending along distal margins of terga for a short distance only. Genitalia dissected and studied (not illustrated as they are similar to those in Figs 24, 25).

Variation: Paralectotypes similar, but one is somewhat smaller than the other specimens, having a wing length of 5.1 mm.

Lectotype: SOUTH AFRICA: ♂ 'Capland / Krebs S.' [blue], 'Type' [orange], 'Zool. Mus. / Berlin' [cream] (ZMHB).

Paralectotypes: 2♂ similarly labelled, 1♂ has an additional label '483' (ZMHB).

Notes: Wiedemann did not designate a holotype so his specimens are considered syntypes. For reasons of taxonomic stability I here recognise and designate a lectotype and two paralectotypes. There are 6♂ 1♀ specimens labelled as *quadratus* types in NHMW which are (like the specimens mentioned above under *andrenoides*) simply labelled 'Cap b. sp'. There is also 1♂ without a type label, but with exactly the same 'Cap b. sp' label, in ZSMC. As in the case of the *andrenoides* material mentioned above, I have no means of knowing whether these were available to Wiedemann, and so I prefer to consider them as having no type status. I have also seen the following specimen, assumed to be from South Africa: 1♂ '93', 'W', '*Dasypogon* / *quadratus* Wied / CGH. Dr Klug' (OXUM). The specimen carries a note reading 'This could be a / syntype, exchanged / with Mus. Berlin / A. C. Pont det. / 1998'. As confirmation of this suggestion cannot be provided, I also consider this specimen to have no type status.

Remark: Although *D. andrenoides* and *D. quadratus* were described in the same publication, as first reviser I elect to synonymise *quadratus* with *andrenoides* as the latter was described first.

Acnephalum punctipennis Macquart, 1855

Macquart's holotype, in good condition (antennae broken off beyond pedicels; scutellar macrosetae damaged), was studied and compared with the *andrenoides* lectotype. Despite being a female it is very similar, and only the differences recorded below were noted. There is no doubt that *punctipennis* is a synonym of *andrenoides*.

Head: Antenna: Scape and pedicel uniform red-brown. *Thorax*: Entirely dark red-brown. Scutellar disc with a few white setae laterally. Legs: Mostly orange-brown. Wing: 8.4×3.6 mm. Membrane mostly transparent, but with some basal staining that extends over costal region. All vein junctions are orange stained giving wings a spotted appearance. *Abdomen*: Generally strongly white setose, bordering fringe not well-developed (as is normal for females).

Holotype: SOUTH AFRICA: ♀ 'Holo- / type' [circular, red-rimmed], '*Acnephalum* / *punctipennis* / Macq. / 184 in / Coll. / Bigot.', 'Coll. Bigot / abt. 1845-93. / Pres 1913 by / J.E. Collin.', '*A. punctipen* / = *nis*. / 184 / ♀. Macq. n. s. / Pron. del Aiguillu [somewhat illegible] (D. Eu.) [somewhat illegible]' [A large label made of two pieces of paper glued together, one upon the other. Probably originally placed below the specimen in a drawer], 'Type Dip.: 155 / *Acnephalum* / *punctipennis* / Macquart / Hope Dept. Oxford' (OXUM).

Notes: Macquart (1855) gives specimen information as 'De l'Océanie, cap des Aiguilles. M. Bigot.' which somehow established the belief that the species was Australian. There is little doubt that the specimen comes from South Africa as it closely resembles other specimens from the region. While the precise provenance remains a mystery, the locality information appearing on the large label cited above, which is poorly hand written with a fine pen, and is somewhat illegible, may in fact pertain to Cape Agulhas. It is of interest that this species was entirely and inexplicably, although correctly, overlooked during the preparation of the Diptera catalogue of the Australasian and Oceanian regions.

Acnephalum cockerelli Curran, 1934

Curran's holotype, in excellent condition, was studied and compared with the *andrenoides* lectotype. It is almost identical, and only the slight differences recorded below were noted. There is no doubt that *cockerelli* is a synonym of *andrenoides*.

Head: Antenna: Scape, pedicel and distal half of style orange-brown, postpedicel and proximal half of style dark red-brown. Segmental ratios 1.0 : 0.9 : 3.1 : 0.2 : 1.2. Frons silver pruinose. *Thorax*: Only parts of postpronotal and postalar lobes orange-brown. Pronotal macrosetae pale brownish. Mesonotal setae white with clumps of dull brownish setae. Scutellum with *c*. 12 apical macrosetae (some may be missing).

Legs: Mostly orange-brown. Wing: 7.9×3.3 mm. Vein R_4 with long basal stump-vein. *Abdomen*: Genitalia (Figs 26, 27) as they show slight variation. *Epand* reduced (much shorter than *goncx*), distally broadly but slightly incised (not clearly bilobed). *Proc* somewhat swollen in appearance, jutting out well beyond level achieved by *epand* (lateral view). Exterior lobe of *goncx* broadly rounded proximally, tapering to acutely pointed, slightly upturned tip distally; interior lobe longish, jutting out to about same level achieved by *hypd*, slightly downturned distally. *Hypd* somewhat truncate basally, tapering to narrowly rounded point distally.

Holotype: SOUTH AFRICA: ♂ 'Nieuwoudtville [31°23'S:19°06'E] C.P. / Nov. 20 CKLL [Cockerell]', '*Acnephalum* / *cockerelli* / Curran ♂ / Holotype' (AMNH).

Note: Although not stated on a label, Curran (1934) says that the holotype was collected by T.D.A. Cockerell.

Sisyrnodytes sericeus Oldroyd, 1974

In reviewing the Afrotropical *Sisyrnodytes* species, Londt (2009) transferred *sericeus* to *Acnephalum*. During the present study it became evident that Oldroyd's species is synonymous with *andrenoides*. Oldroyd's holotype, in excellent condition, was studied and compared with the *andrenoides* lectotype. Although smaller, it is almost identical, and only the slight differences recorded below were noted.

Head: Antenna: Scape, pedicel and distal half of style orange-brown, postpedicel and proximal half of style dark red-brown. Segmental ratios 1.0:0.9:3.0:0.2:1.5. *Thorax*: Scutellum with *c*. 8 apical macrosetae. Legs: Ventral parts of *tib* dark red-brown. Haltere brown-yellow. Wing: 5.2×2.2 mm. Veins orange, staining of membrane confined to proximal half. Vein R_4 with quite short basal stump-vein. *Abdomen*: Genitalia not dissected (but sufficiently exposed to allow shape of *hypd* to be adequately appreciated).

Holotype: SOUTH AFRICA: ♂ 'Gamtoos Valley Bush / Hankey [33°50'S:24°53'E] area / 5.12.67 3324DA / B&P Stuckenberg', '*Sisyrnodytes* / *sericeus* sp. n. / det. H. Oldroyd 1971 / Holotype' [white] (NMSA).

Variation and sexual dimorphism: *A. andrenoides* is a highly variable species that also displays some sexual dimorphism. There is, for example, a considerable range in size, and, although all specimens were not measured, males ranged in wing length between 4.3–10.4 mm while females had a similar range of between 4.3–10.3 mm. Both sexes show variation in setal and wing membrane coloration. While most specimens are predominantly white setose, specimens may range in colour to the extent that some are predominantly black setose. Males frequently have well developed abdominal fringes (long laterally situated tergal setae), but there are examples with relatively poorly developed fringes. Although the wings of males are generally more darkly stained than those of females, the extent of staining is variable in both sexes. Male wing membranes may range from being entirely dark brown stained to being pale brown stained proximally and largely unstained distally. Females never have entirely brown-stained wings, but resemble males with predominantly unstained wings.

Type locality: The type specimens of *A. andrenoides* are merely labelled 'Capland Krebs S.' and it is not known exactly where Krebs collected them. Now that the distribution of the species is well understood I designate an area 18 km N Sutherland (32°15'S:20°43'E) as type locality. This area is where the road between Sutherland and Williston crosses the Renoster River. This place is selected for two reasons –

specimens similar to the types have been collected there, and the locality is central with respect to the known range.

Additional material examined: NAMIBIA: 4♂ 3♀ 8 km N Lüderitz: Agate Beach, 2615CA, 31.viii.1983, Stuckenberg & Londt, arid vegetated dunes (NMSA); 4♂ 6♀ 3 km E Lüderitz: Golf Club, 2615CA, 31.viii.1983, Londt & Stuckenberg, arid rocky slopes (NMSA); 2♂ 3♀ 10 km W Aus, 2616CA, 30. viii.1983, Londt & Stuckenberg, sparse grassland small woody plants (NMSA); 1♂ 5 km E of Aus, 2616CB, 30.viii.1983, Londt & Stuckenberg, open veld with low green grass & shrubs (NMSA); 1♂ 1♀ Lüderitz, Grossebucht, 26°43'S:15°07'E, 7.ix.2005, Gess (AMGS); 1♂ 1♀ 72 km S Aus, 2716AB, 1.ix.1983, Stuckenberg & Londt, broken veld in dry river bed open area (NMSA); 1♂ 1♀ Klinghardt Mts [27°20'S: 15°45'E], 26.x.1977, Whitehead (SAMC); 1♂ Klinghartsberge, 5.ix.1980, Whitehead (SAMC); 2♂ 5♀ Chamnaub, 27°43'S:16°05'E, 28.viii.2002, Gess, on ground (AMGS). SOUTH AFRICA: 1♂ Rustenburg [25°40'S:27°15'E], 4.x.69 (BMNH); 1♂ Vryburg [26°57'S:24°44'E], Griqualand West, x.1939, Mus. Staff (SAMC); 5♂ 15♀ 40 km S Ochta Mine, Richtersveld, 2816BD, 2.ix.1983, Londt & Stuckenberg, mixed Karoo bush with few flowers (NMSA); 1♀ Richtersveld, 1 km E Grootderm, 2816DA, 2.ix.1983, Londt & Stuckenberg, Foot of small hill (NMSA); 1♂ 3♀ Richtersveld N Park, 1.5 km from Helskloof gate, 28°18'S:16°57'E, 8.ix.1996, Gess (AMGS); 2♀ 16 km S Senderlingsdrif, 28°18'53"S:16°56'06"E, 27. viii.2002, Londt, 390 m, rocky hillside (NMSA); 1♂ 1♀ 25 km S Senderlingsdrif, 28°22'27"S:16°54'58"E, 27.viii.2002, Londt, 210 m, sandy drainage (NMSA); 1♂ 1 km N Kuboes, Richtersveld, 28°25'30"S: 16°59'30"E, 1.ix.1989, Londt, Stuckenberg & Croeser, 200 m, rocky E slope *Euphorbia* scrub (NMSA); 2♂ 6 km W Kuboes, Richtersveld, 28°27'00"S:16°58'30"E, 1.ix.1989, Stuckenberg, Londt & Croeser, sandy area with succulents (NMSA); 1♀ Kimberley [28°44'S:24°46'E], x.1913, Power (SAMC); 1♀ Bushmanld [Bushmanland] Jackals Water [29°03'S:17°54'E], x.1911, Lightfoot (BMNH); 1♀ 9 km S Lekkersing, Richtersveld, 29°03'30"S:17°07'30"E, 2.ix.1989, Londt, Stuckenberg & Croeser, 300 m, Karragab kloof rocky area (NMSA); 1♂ 2♀ 18 km S Lekkersing, Richtersveld, 29°07'00"S:17°08'00"E, 2.ix.1989, Londt, Stuckenberg & Croeser, 200 m, arid scrub succulents (NMSA); 1♂ Klipfontein [29°13'S: 17°40'E], Peringuey (SAMC); 1♂ nr Klipfontein, 28.x.1967, Jacot-Guillarmod (AMGS); 1♂ Steinkop, Anenous Flats [29°14'S:17°37'E], 14.ix.1992, Manning (NMSA); 2♂ 8♀ 50 km NE Grootderm, Richtersveld, 29°19'00"S:16°55'00"E, 3.ix.1989, Londt & Stuckenberg, 350 m, sandy valley below a rocky hillside (NMSA); 1♂ Kenhart [29°21'S:21°09'E] area, x.1939, Mus. Staff (SAMC); 2♂ 2♀ O'okiep [29°36'S: 17°52'E], 4.x.1885 (2♀), 18.xi.1885 (1♂), 19.xi.1886 (1♂] LP [Peringuey] (SAMC); 1♀ O'okiep, ix.1890, Lightfoot (ZSMC); 1♀ P Maritzburg [Pietermaritzburg, 29°37'S:30°23'E], i.1940, Lawrence (SAMC); 1♀ 'Springbok [29°40'S:17°53'E], x.1951 (NMSA); 2♀ Naib or Bushmanland, Btw [between] Springbok [29°40'S:17°53'E] & Pella, x.1939, Mus. Staff (SAMC); 2♂ Hester Malan N R [now Goegap Nat. Res., 29°40'S:18°00'E], 26.ix & 14.x.1987 1987, Stuck (SAMC); 1♂ 1?, Spectakel [29°42'S:17°38'E], 12. xi.1885 (SAMC); 1♂ 11 mi [*c*. 18 km] NNE Hondeklipbaai, 3017AB, 8.ix.1972, Irwin, 200 ft [*c*. 60 m], reddish sand shrubs (NMSA); 1♀ Hondeklipbaai, 3017AD, 8.ix.1972, Irwin, coastal dunes (NMSA); 2♂ 12 km W Soutfontein, 3017DA, 4.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 1♂ 1♀ Garies, 3017DB, 9.ix.1972, Irwin, 640 ft [*c*. 195 m] (NMSA); 1♂ 2♀ 10 km E Garies, 3017DB, 3.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 1♂ 4♀ 10 km W Garies, 3018CA, 3.ix.1981, Londt, Schoeman & Stuckenberg, Broken veld (NMSA); 2♀ Bowesdorp [30°09'S:17°18'E], xi.1931, Museum Staff (SAMC); 3♂ 2♀ Kamieskroon [30°12'S:17°56'E], ix.1936 (1♂ 1♀), xi.1936 (2♂ 1♀), Museum Staff (SAMC); 2♀ Btw Kamieskroon & Springbok, x.1939, Mus. Staff (SAMC); 1♂ Smithfield [30°13'S:26°32'E], 1909, Kannemeyer (SAMC); 3♂ 4♀ Wallekraal [30°24'S:17°31'E], Namaqualand, x.1950, Mus. Expd. (SAMC); 1♂ 50 km NE Colesberg, 30°31'S:25°33'E, 28.x.1991, Londt, 1400 m, grass rocky outcrops (NMSA); 1♂ Garies [30°33'S:17°59'E], 28.xii.1885, LP [Peringuey] (SAMC); 4♂ 3♀ 9 km S Garies [30°33'S:17°59'E], x.1967, Gess (SAMC); 20♂ 5♀ Klip Vlei, Garies [30°33'S:17°59'E], xi.1931, Museum Staff (SAMC); 1♂ Outiep, Garies [30°33'S:17°59'E], ix.1935, du Toit (SAMC); 5♂ 1♀ Norval's Pont [Norvalspont, 30°38'S:25°27'E], 16.ix.1959, Greathead (BMNH); 1♂ 1♀ Caledon R. Bet. [between] Bethulie-Aliwal North [30°42'S:26°42'E], x.1935, Mus. Staff (SAMC); 11♂ 9♀ Colesberg [30°44'S:25°06'E], x.1935 (1♂ 1♀), xi.1939, Mus. Staff (SAMC); 5♂ 13♀ 1?, Venterstad [30°47'S:25°48'E] Region, x.1935 (4♂ 12♀), xi.1935 (1♀ 1?], Mus. Staff (SAMC); 11♂ 9♀ 1?, Van Schalkwyks Kraal [30°52'S:25°52'E], Venterstad Div [Division], x.1935, Mus. Staff (SAMC); 1♂ 30 km S Colesberg, 30°53'S:24°50'E, 28.x.1991, Londt, 1400 m, open area flowers (NMSA); 1♂ 2♀ 17 m [miles, *c*. 27 km] S Loeriesfontein [30°58'S:19°27'E], ix.1961, S.A.M. (SAMC); 5♂ 1♀ 1?, Dreunberg [30°58'S: 26°23'E], Burghersdorp, Albert Dist., xi.1939, Mus. Staff (SAMC); 8♂ 9♀ Burghersdorp [30°59'S:26°19'E], xi.1939, Mus. Staff (SAMC); 1♀ Burghersdorp [30°59'S:26°19'E], Albert Dist., x.1935, Mus. Staff (SAMC); 11♂ 7♀ Albert Dist., Btw [between] Burghersdorp [30°59'S:26°19'E] & Nooitgedacht, x.1935, Mus. Staff (SAMC); 1♂ 3♀ 45 km N Vanrhynsdorp, 3118BA, 4.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 1♂ 5♀ Knersvlakte, 3118BC, 2.ix.1981, Londt & Stuckenberg, rocky hillside veget Succulent Karoo (NMSA); 1♂ 3♀ 7 mi [*c*. 11 km] N Vanrhynsdorp, 3118BC, 10.ix.1972, Irwin, 400

ft [*c*. 120 m], red dunes (NMSA); 4♀ Hantamsberg summit, 3119BD, 15.xi.1986, Quickelberge & Londt, 1600 m, rocky macchia (NMSA); 1♀ 17 km NW Touwsrivier, 3319BD, 20.xi.1986, Londt & Quickelberge, 900 m, sand and tall bush military area (NMSA); 1♀ Hantamsberg, 3119BD, 23.x.1986, Schoeman (NMSA); 1♀ Worcester, 3319CB, 11.ix.1981, Londt, Schoeman & Stuckenberg, near dam Karroid Broken Veld (NMSA); 1♂ Top of Botterkloof Pass, 3119CD, 13.ix.1972, Irwin, 2230 ft [*c*. 680 m], white sand dune assoc (NMSA); 1♀ 10 km W Williston, 3120BD, 15.xi.1986, Londt & Quickelberge, 1060 m, sand Acacias (NMSA); 1♂ 40 km SE Calvinia, Middelpod Rd, 3120CA, 17.xi.1986, Londt & Quickelberge, 1240 m, dry woody scrubland (NMSA); 2♂ 3♀ 56 km N Beaufort West (Loxton Rd), 3122CD, 13.xi.1986, Londt & Quickelberge, 1520 m, flat Karoo scrubland (NMSA); 2♂ 1♀ Bitterf [Bitterfontein, 31°02'S: 18°16'E], x.1885 (SAMC); 1♂ 33 km NE Nieuwoudtville, 1 km W Gannabos [31°14'S:19°15'E], 17. ix.2002, Barkemeyer (NMSA); 2♂ Knersvlakte [31°15'S:18°45'E], x.1939, Mus. Staff (SAMC); 4♂ 3♀ Knersvlakte, ix.1941, Mus. Staff (SAMC); 1♂ 4♀ Knersvlakte, x.1950, Mus Expd (SAMC); 1♂ Nieuwoudtville, Brandkop [31°15'S:19°11'E], ix.1941, Mus. Staff (SAMC); 1♂ 5 km N Nuwerus, 31°06'S: 18°20'E, 28.viii.1995, Londt, 390 m, rocky hilltop vegetation (NMSA); 1♂ 4♀ Knersvlakte [31°15'S: 18°45'E] North of Van Rhynsdorp, 6–9.x.1964, Stuckenberg (NMSA); 7♂ 7♀ Steynsburg [31°20'S:25°50'E] Div., x.1935, Mus. Staff (SAMC); 1♂ 2♀ Hantamsberg summit, 31°20'27"S:19°48'55"E, 6.xi.2002, Londt, 1500 m, thick montane veget on pass to mast (NMSA); 1♀ Hantamsberg summit, 31°20'57"S:19°48'17"E, 6.xi.2002, Londt, 1590 m, Karoo scrub nr dams rocky area (NMSA); 1♂ 2♀ Van Rhyn's pass [31°23'S: 19°00'E], 4–5.xi.1933, van Son (NMSA); 1♂ Top of Van Rhyns Pass, 19.xi, JO [Ogilvie] (AMNH); 1♀ Foot of Van Rhyns Pass, 21.xi, WPC [Cockerell] (AMNH); 1♀ Nieuwoudtville [31°23'S:19°06'E], 19.xi, Macgregor (AMNH); 1♀ Nieuwoudtville, 19.xi, LO [Ogilvie] (AMNH); 2♂ 2♀ Melton Wold, Nieuweveld, Victoria W [Victoria West, 31°24'S:23°07'E], x.1935, Museum Staff (SAMC); 3♂ 2♀ Victoria West, 14.x.1966, SAM (SAMC); 2♂ 4♀ Richmond Dist. [31°25'S:23°56'E], xi.1939, Mus. Staff (SAMC); 5♂ 3♀ Olifants River [31°27'S:18°32'E] bet. [between] Citrusdal & Clanwilliam (SAMC); 1♀ Olifants River [31°27'S:18°32'E] betw [between] Klawer & Clanwilliam (SAMC); 1♂ Middelburg [31°29'S:25°01'E], xii.1959, Kruger (BMNH); 1♂ 1♀ Middelburg, 20.xi.1959, Greathead (BMNH); 3♂ 4♀ Middelburg Div, x.1935 (1♂), xi.1935, Mus. Staff (SAMC); 1♀ Namaqualand, Dutoitsbaai [31°30'S:18°03'E], 27.xi.1976, Whitehead (SAMC); 2♂ 2♀ Van Rhyn'sdorp [Vanrhynsdorp, 31°37'S:18°44'E], 6–8.xi.1933, van Son (NMSA); 5♀ v. Rhynsdorp [Vanrhynsdorp], viii.1927, Brauns (NMSA); 1♂ v Rhynsdorp [Vanrhynsdorp], vii–viii.1927, van Son (NMSA); 3♂ 1♀ Augusfontein (Calvinia) [Augustfontein, 31°37'S:19°22'E], ix.1947, Mus Exp (SAMC); 5♂ 3♀ 14 km N Strandfontein, 31°38'S:18°15'E, 29.viii.1995, Londt, 120 m, red ground flowers (NMSA); 7♂ 7♀ 27 km S Calvinia, Kieskieberge, 31°40.00'S:19°48.84'E, 15.xi.2008, Londt, 1270 m, rocky area tall fynbos near stream (NMSA); 1♀ Kruidfontein, 40 km S Williston, 31°40'06"S:20°51'30"E, 11.xi.1998, Londt, 1110 m, Leendertsrivier area (NMSA); 1♀ 23 km N Middelpos, 31°44'S:20°14'E, 29.xi.1990, Whittington & Londt, 1170 m, at Kookfontein River (NMSA); 1♂ 1♀ 1 km S Strandfontein, 31°46'00"S:18°14'00"E, 5.ix.1989, Londt, Stuckenberg & Croeser, shallow valley scrub succulents & macchia (NMSA); 1♀ Gifberg Pass 21 km S Vanrhynsdorp, 31°46'12"S:18°45'59"E, 8. xi.2002, Londt, 540 m, montane macchia (NMSA); 1♂ Gifberg 23 km S Vanrhynsdorp, 31°47'S:18°46'E, 2–4.xi.1991, Londt, 600 m, flat summit (NMSA); 1♀ 5 km S Doringbaai, 31°51'S:18°16'E, 29.viii.1995, Londt, 90 m, red ground flowers (NMSA); 2♀ Nieu Bethesda village, 31°52'S:24°33'E, 11.x.1996, Londt, 1290 m, bush along dry river (NMSA); 3♂ 1♀ Longhill Nature Res, 5 km N Queenstown, 31°52'S:26°53'E, 3.xii.1989, Londt, 1350 m, *Acacia* savannah (NMSA); 1♀ Queenstown, [31°54'S:26°53'E], 20.viii.1962, Busse (AMGS); 2♂ Clanwilliam Nardouw [31°55'S:18°45'E], ix.1941, Mus. Staff (SAMC); 1♀ 2 km SW Middelpos, 31°55'25"S:20°13'11"E, 4.xi.2002, Londt, 1200 m, Karoo scrub (NMSA); 1♀ Mw [?] Kloof, Fraserburg [31°55'S:21°31'E], xi.1935, Mus. Staff (SAMC); 1♂ 3♀ Graaff-Reinet, Wapadsberg Pass [31°56'S:24°55'E], 23.xii.1973, Whitehead, 4200' [*c*. 1280 m] (SAMC); 4♂ 11♀ Murraysburg [31°57'S: 23°46'E] Dist., xi.1935, Mus. Staff (SAMC); 1♂ 4.5 mi [*c*. 7 km] S Elandsbaai, 3218AD, 17.ix.1972, Irwin, 50 ft [*c*. 15 m], coastal sand plain (NMSA); 2♂ 2.5 mi [*c*. 4 km] S Elandsbaai, 3218AD, 16.ix.1972, Irwin, 30 ft [*c*. 9 m], coastal sand dunes (NMSA); 1♂ 2♀ 32 km NE Clanwilliam, Brandewyn R., 3219AA, 2–3.x.1977, Miller (NMSA); 2♂ 2 mi [*c*. 3 km] NNE Pakhuis Farm, Pakhuis Mts, 3219AA, 14.ix.1972, Irwin, 1800 ft [*c*. 550 m] (NMSA); 1♂ 1♀ Swartkop 31 km NW Sutherland, 3220BA, 18–19.xi.1986, Londt & Quickelberge, 1600 m, rocks woody macchia (NMSA); 1♂ 1♀ 10 km S Sutherland, Swaarweerberg, 3220BC, 19.xi.1986, Londt & Quickelberge, 1600 m, rocks woody macchia (NMSA); 8♂ 11♀ Moordenaars Karoo, Swanepoel [3220DD], x.1952, Mus Expd (SAMC); 1♂ 2♀ Molteno Pass 35 km NW Beaufort West, 3222AB, 11.xi.1986, Londt & Quickelberge, 1500 m, low hilltop macchia (NMSA); 1♂ Karoo National Park, 15 km N Beaufort West, 3222AB, 12.xi.1986, Londt & Quickelberge, dry *Acacia* woodland (NMSA); 1♂ 4♀ Klein-Vis Riv, 32 km NW Somerset East, 3225CB, 28.x.1978, Miller & Londt, river bank (NMSA); 1♀ Kommandodrifdam, 45 km E Cradock, 3226AA, 28.x.1978, Miller & Londt, river below dam wall (NMSA); 1♂ 1♀ Roggeveld between Sutherland–Middelpos, 32°S 20°E, 14.xi.1987, Stuckenberg (NMSA); 9♂ 9♀ Bulhoek [32°01'S:18°47'E], Klaver–Clanw [between Klawer & Clanwilliam]., x.1950, Mus. Expd. (SAMC); 1♀ Bulshoek [Bulhoek] Clw [Clanwilliam], xii.1956, SAM (SAMC); 1♂ 1♀ 23 km

SE Middelpos, 32°01'S:20°25'E, 5.xi.1991, Londt, 1100 m, Visrivier Brandekraal (NMSA); 1♂ 3♀ 63 km N Sutherland, 32°01'12"S:20°22'50"E, 9.xi.1998, Londt, 1080 m, dry rocky valley (NMSA); 2♂ 5♀ Doornplaats farm 35 km NW Graaff-Reinet, 32°02'33"S:24°17'38"E, 27.x.2004, Londt, 1285 m, rocks & *Acacia* (NMSA); 1♀ Cederberg Mts, Travelers Rest, 21.5 km ENE Clanwilliam, 32°04'45'S:19°05'00"E, 14.xi.1996, Irwin, 400 m, Branywine River bed (NMSA); 2♂ 1♀ Biedouw Valley, 32°06'S:19°14'E, 1–12. ii.1991, Picker, 350 m, Succulent Karoo (NMSA); 1♂ Biedouw valley Clanwilliam District, 32°06'S:19°19'E, 22.xii.1987, Picker (NMSA); 2♂ Biedou Valley, 32°06'00"S:19°19'00"E, 6.ix.1989, Londt, Stuckenberg & Croeser, 300 m, rocky gentle N slope scrub & wild flowers (NMSA); 2♀ Onder-vis-rivier 50 km N Sutherland, 32°06'59"S:20°23'02"E, 9.xi.1998, Londt, 1320 m, dry river valley (NMSA); 3♂ 2♀ Tankwa Karoo, Renoster Riv [32°07'S:20°07'E], xi.1952, Mus. Expd. (SAMC); 1♂ 1♀ Jakkals R [River 32°08'S: 18°30'E], 5.x.1967, Gess, Strandveld (SAMC); 3♂ 1♀ Pakhuis Pass [32°08'S:19°00'E], 17–19.x.1964, Stuckenberg, 950 m (NMSA); 2♂ 2♀ Clanwilliam Dist Biedouw Valley, 32°08'S:19°14'E, 5–7.ix.1987, Mansell (SANC); 1♂ 1♀ Biedouw Valley [32°08'S:19°14'E], 24.ix.1989, Picker & Leon (NMSA); 1♀ Graafwater [32°09'S:18°36'E], x.1947, Mus. Exp. (SAMC); 1♂ 1♀ Pakhuis Pass [32°09'S:19°02'E], Clanwilliam, ix.1942, Mus. Staff (SAMC); 1♀ Pakhuis Pass [32°09'S:19°02'E], xi.1961, SAM (SAMC); 1♂ 1♀ East of Pakhuis Pass [32°09'S:19°02'E], ix.1947, Mus Exp (SAMC); 1♂ 4♀ Thee Kloof [Teekloof 32°10'S:21°37'E], Fraserburg Div., xi.1935, Mus. Staff (SAMC); 1♂ 1♀ Nieuwveldt [32°10'S:22°20'E], Beaufort W [West] Dist, xi.1935, Museum Staff (SAMC); 1♂ 7♀ 3 km E Cradock, 32°10'02"S:25°40'09"E, 29.x.2004, Londt, 956 m, *Acacia* scrubland with many wild flowers (NMSA); 3♂ 2♀ Clan William [Clanwilliam, 32°11'S:18°54'E], ix.1928, Brauns (NMSA); 2♂ 3♀ 31 km N Sutherland, 32°11'S:20°36'E, 6.xi.1991, Londt, 1600 m, Besemgoedkop and area (NMSA); 3♂ 3♀ Cradock [32°11'S:25°37'E], 18. ix.1959, Greathead (BMNH); 4♂ 4♀ Klipkraal, Cradock Dist. [32°11'S:25°37'E], x.1935, Mus. Staff (SAMC); 6♂ Besemgoedkop 31 km N Sutherland, 32°11.34'S:20°36.08'E, 19.xi.2008, Londt, 1600 m, Karoo scrub stony ground (NMSA); 1♂ 5♀ Excelsior farm Graaff-Reinet district, 32°11'16"S:24°49'01"E, 28.x.2004, Londt, 1408 m, rocky slope *Rhus* sp (NMSA); 5♂ 4♀ Besemgoedkop 31 km N Sutherland, 32°11'21"S:20°36'03"E, 8.xi.1998, Londt, 1670 m, rocky ridge Macchia (NMSA); 1♀ Molteno Pass nr Beaufort West, 32°12'S:22°33'E, 14.xii.1988, Eardley (SANC); 4♂ 8♀ Klipdrift farm 35 km SW Graaff-Reinet, 32°12'27"S:24°20'27"E, 27.x.2004, Londt, 900 m, *Acacia* pastureland (NMSA); 4♀ Leipoldville [32°13'S:18°29'E], Eland's Bay, xi.1948, Mus. Exp. (SAMC); 1♀ Karoo Nature Reserve West of Graaff-Reinet, 32°13'S:24°29'E, Londt, 850 m, 8.xii.1989, Scrub Winterhoek Rd (NMSA); 2♀ Graaff-Reinet, Karoo Nature Reserve, 32°14'43"S:24°29'28"E, 26.x.2004, Londt, 1040 m, rocky *Acacia* slopes (NMSA); 2♂ 8♀ Renoster River area 18 km N Sutherland, 32°15'S:20°43'E, 5.xi.1991, Londt, 1300 m (NMSA); 4♀ same area, 32°15'10"S:20°41'39"E, 7.xi.1998, Londt, 1290 m, Karoo macchia (NMSA); 1♂ same area, 32°15.21'S:20°41.67'E, 19–20.xi.2008, Londt, 1320 m, rocky ridge stream edge (NMSA); 1♂ 1♀ same area, 32°16'S:20°41'E, 26.xi.1990, Londt & Whittington, 1350 m (NMSA); 1♂ Graaff-Reinet Urquhart Caravan Park, 32°14'16"S:24°31'42"E, 26–28.x.2004, Londt, 760 m, succulent rocky slopes (NMSA); 1♂ 2♀ same locality, 32°15'S:24°33'E, 4–6.xii.1988, Londt, riverine veget sandy ground (NMSA); 2♀ 7 km N Beaufort West, 32°16'S:22°34'E, 28.x.1991, Londt, 1000 m, Bottom Molteno Pass (NMSA); 1♀ [now defective], Graaf-Reinet [32°17'S:24°28'E], 24–27.x.1931, Ogilvie (BMNH); 5♂ Graaf-Reinet, 19.xi.1959, Greathead (BMNH); 1♀ Clanwilliam District, 32°20'20"S:18°40'E, 8–13.x.1987, Gess (AMGS); 1♂ Beaufort West [32°21'S:22°35'E], Karoo Nat Prk [National Park], 24.xi.1985, Whitehead (SAMC); 3♂ 1♀ 15 km E Sutherland, 32°23'S:20°48'E, 26.xi.1990, Whittington & Londt, 1600 m, valley nr Observatory (NMSA); 4♂ 9♀ Touws R., Ouberg Pass [32°24'S:20°20'E], xii.1962, SAM (SAMC); 1♂ Bottom Ouberg Pass, 54 km SE Sutherland, 32°24.07'S:20°17.63'E, 21.xi.2008, Londt, 640 m, succulents low bushes (NMSA); 1♂ 1♀ Top Ouberg Pass, 46 km SE Sutherland, 32°24.56'S:20°21.39'E, 21.xi.2008, Londt, 1380 m, rocky ridge Karoo scrub (NMSA); 17♂ 16♀ Paleisheuvel [32°28'S:18°43'E], xi.1948, Mus Exp (SAMC); 2♂ Aberdeen [32°29'S:24°05'E], xi.1935, Mus. Staff (SAMC); 1♂ 1♀ Tankwa Karoo [*c*. 32°30'S: 19°45'E], i.1948 (1♀), i.1949 (1♂], Zinn & Hesse (SAMC); 1♂ Tankwa Karoo, Kleinbrak, xi.1952, Mus Expd (SAMC); 2♂ Mitchell's Pass [32°33'S:26°53'E], nr Ceres, 100 mi [*c*. 160 km] from Cape Town, 1–5. xii.1930, Simmonds (BMNH); 3♂ Bushmans Riv, Letjiesbosch [32°34'S:22°16'E], xi.1935, Mus. Staff (SAMC); 2♂ 8 mi [*c*. 13 km] N Citrusdal [32°35'S:19°01'E], ix.1961, SAM (SAMC); 9♂ 10♀ Citrusdal Dist., xi.1948, Mus Exp (SAMC); 3♂ 4 miles [*c*. 6 km] E Citrusdal, x.1969, SA Museum Expedition (SAMC); 6♂ 4♀ Tankwa Karoo, Waterval [32°35'S:20°18'E], xi.1952, Mus Expd (SAMC); 3♂ 2♀ Het Kruis [32°36'S:18°45'E], x.1947, Mus Exp (SAMC); 1♂ Koornplanskloof, 10 km S Citrusdal, 32°40'S: 19°01'E, 4–8.x.1994, Danielssen, 200–270 m (MZLU); 1♂ Merweville [32°40'S:21°31'E] dist, ii.1941, Zinn (SAMC); 3♂ 1♀ Bosberg Nature Res 3 km N Somerset East, 32°42'S:26°33'E, 5.xii.1989, Londt, 850 m, mixed woodland (NMSA); 1♂ 4♀ Somerset East [32°43'S:25°35'E], x.1930 (1♀), xi.1930 (1♂ 2♀), 25–30.xi.1930 (1♀), Turner (BMNH); 2♂ 1♀ Klein Visrivier, *c*. 10 km W Somerset East, 32°44'S:25°30'E, 6.xii.1989, Londt, 800 m, rocky ridge & stream (NMSA); 10♂ 7♀ Lammerskraal [32°49'S:22°15'E], Prince Albert Dist., ix.1947, Mus Exp (SAMC); 1♀ *c*. 30 km S Kagga Kamma, Nature Reserve, 32°52.91'S: 19°44.29'E, 21.xi.2008, Londt, 570 m, Acacias Aloes streambed (NMSA); 36♂ 33♀ Dikbome [32°54'S:

21°22'E], Merweville, x.1952, Mus Expd (SAMC); 8♂ 17♀ Moordenaars Karoo, Lammerfontein [32°58'S: 20°49'E], x.1952, Mus Expd (SAMC); 1♂ 1♀ 14 mi [*c*. 22 km] SE Langebaan, 3318AA, 18.ix.1972, Irwin, 200 ft [*c*. 60 m], coastal dunes sandy plain (NMSA); 7♂ 6♀ Gydo Myn 24 km NE P Alfred Ham [Prince Alfred Hamlet], 3319AB, 21.xi.1986, Londt & Quickelberge, 1150 m, rocky area Proteas (NMSA); 1♀ 5 km W Robertson, 3319DD, 26.ix.1979, Londt, stony slopes with woody veget (NMSA); 1♀ 18 km NE Touwsrivier, Jan de Boers, 3320AC, 20.xi.1986, Londt & Quickelberge, 1000 m, rocky area nr fields (NMSA); 6♂ 6♀ 20 km SE Ashton, 3320CC, 25.ix.1979, Londt, stony hillside with woody vegetation (NMSA); 4♂ 6♀ Montagu, hillside SE of town, 3320CC, 25.ix.1979, Londt (NMSA); 1♂ 1♀ Swartberg Pass Gamka Rd, 3321BD, 10.xi.1986, Quickelberge & Londt, N slope rocky area (NMSA); 1♂ 6 km S Prince Albert, 3322AA, 10.xi.1986, Londt & Quickelberge, 780 m, sand Acacias (NMSA); 1♀ Swartberg Pass, 3322AC, 10.xi.1986, Londt & Quickelberge, 1250 m, N slope Proteas (NMSA); 1♂ 15 km SE Oudtshoorn, 3322CB, 9.xi.1986, Londt & Quickelberge, macchia/rocky hill (NMSA); 15♂ 15♀ 9 km SW Willowmore, 3323AD, 30–31.x.1978, Londt & Miller, open Karoo scrub (NMSA); 1♂ 1 km NE Uniondale, 3323CA, 31.x.1978, Miller & Londt, rocky hillside scrub (NMSA); 1♀ Gamtoos Valley Bush, Hankey area, 3324DA, 5.xii.1967, Stuckenberg (NMSA); 4♂ 2♀ Elandsberg Mts South Cockscomb Peak, Patensie area, 3424DB [actually 3324DB], 1.xii.1967, Stuckenberg (NMSA); 1♀ Otterford Forerstry Reserve, Hankey area, 3325CC, 1–10.xii.1967, Stuckenberg (NMSA); 14♂ 7♀ 15 km SE Kirkwood, 3325DA, 4.xi.1978, Miller & Londt, open bushveld scrub (NMSA); 4♂ Louterwater, 3323DC, 13.xii.1979, Londt & Stuckenberg, grass & hillside macchia (NMSA); 3♀ Willowmore [33°17'S:23°29'E], Brauns (ZSMC); 23♂ 10♀ Koop Siding, Laingsburg [33°00'S:21°00'E], x.1952, Mus Expd (SAMC); 5♂ 6♀ Hopefield [33°04'S:18°21'E], ix.1960, SAM (SAMC); 1♂ Double Drift, Andres Oslo Kudu Res, 33°06'S: 26°47'E, 14.xii.1988, Weaving (AMGS); 2♂ Koop Siding [33°07'S:21°16'E], xi.1939, Mus. Staff (SAMC); 17♂ 22♀ Grahamstown, Vacate [33°09'S:26°19'E], 21.x (4♂ 3♀), 16.xi (3♂ 4♀), 22.xi (7♂ 14♀), 27.xi (1♂ 1♀), 30.xi.1981 (2♂), Gess (AMGS); 1♀ Prince Albert Dist., Tier berg (Study site), 33°10'S:22°16'24"E, 26.xi.–5.xii.1987, Gess (AMGS); 1♂ 1♀ De Ere 10 km NE Gydo Pass, 33°10'S:19°23'E, 21.xi.1984, Eardley (SANC); 3♂ 4♀ Resolution [33°10'S:25°37'E], 17.x.1927 (1♂ 1♀), 21.x.1927 (1♀), 22.x.1927 (1♂), 26.x.1927 (1♀), 7.xi.1927 (1♂), 12.xi.1927 (1♀), 17.xi.1928 (1♀), Walton (NMSA); 2♂ Resolution [33°10'S:25°37'E], x–xi.1928, Walton (SAMC); 1♀ 2 km E Alicedale, 33°19'07"S:26°06'12"E, 23.x.2004, Londt, 310 m, dry rocky hillside with succulent vegetation (NMSA); 3♂ 2♀ 6 km E Alicedale, 33°10'S: 26°07'E, 21.xi.1990, Whittington & Londt, 600 m, New Years Dam area (NMSA); 1♂ Grahamstown, Hell Port [Heliport, 33°11'S:26°21'E], 13.xi.1958, Jacot-Guillarmod (AMGS); 1♂ Laingsburg [33°12'S:20°51'E], xi.1910, Lightfoot (SAMC); 7♀ 15 km NW Grahamstown, 33°12'S:26°24'E, 20.xi.1990, Whittington & Londt, 500 m, Clifton farm hillside (NMSA); 2♂ 4♀ Matjesfontein [Matjiesfontein, 33°13'S:20°35'E], 6–15.x.1928 (1♂), 16–21.x.1928 (1♀), 1–6.xi.1928 (1♀), 1–18.xii.1928 (1♂ 1♀), 19–31.xii.1928 (1♀), Turner (BMNH); 11♂ 10♀ 7–10 mi [*c*. 14 km] SW Matjiesfontein, 15.x.1966, SAM (SAMC); 4♂ Prince Albert Rd [33°13'S:22°03'E], xi.1931, Turner (BMNH); 1♀ Prince Albert, 26.ix.1927, AcUS [?] (NMSA); 2♂ Prince Albert Rd Stn [Station, 33°13'S:22°03'E], vii.1945, Hesse (SAMC); 1♀ Swartebergen, Prince Albert Div [33°13'S:22°03'E], xi.1935, Mus. Staff (SAMC); 2♂ 1♀ 1?, Zwartberg Pass, P Albert Div, xi.1929, Barnard, 5000–6000 ft (SAMC); 4♂ 8♀ Klaarstroom, Prince Albert, x.1952, Mus Expd (SAMC); 1♂ Lammerskraal, Prince Albert Distr., ix.1947, Mus. Exp (SAMC); 2♂ 1♀ Ecca Pass Nature Res, 20 km NE Grahamstown, 33°13'07"S:26°37'38"E, 21.x.2004, Londt, 475 m, N slope thicket (NMSA); 1♂ 5 km S Laingsburg, 33°14'S:20°52'E, 25.xi.1990, Londt & Whittington, 700 m, banks Buffels River (NMSA); 1♂ nr Grahamstown, Penrock [Penn Rock, 33°14'S:26°34'E], 1.xi.1924, Whitworth (AMGS); 2♂ 1♀ Klein Winterhoekberge 43 km SE Jansenville, 33°14'38"S:24°50'15"E, 25.x.2004, Londt, 724 m, dry rocky hillside (NMSA); 1♀ 32 km E Willowmore, 33°15'S:23°48'E, 22.xi.1990, Whittington & Londt, 650 m, dry scrub road margin (NMSA); 2♀ Grahamstown, Hilton, [33°15'S:26°21'E], 6.xii.1964 (1♀) 29.xi.1966 (1♀), Jacot-Guillarmod (AMGS); 2♂ 1♀ Grahamstown, Hilton, 6.xii.1964 (1♂), 22.x.1967 (1♂ 1♀), Brothers (AMGS); 2♂ Grahamstown, Hilton, 22–31.xii.1979, Gess, Malaise (AMGS); 6♂ 9♀ Grahamstown, Hilton, 5.xi (2♂ 4♀), 19.xi (1♀), 9.xii.1969 (1♀), 9.x.1972 (1♀), 9.xii.1977 (1♀), 2.i.1978 (1♂), 6.xi.1981 (2♂), 6.xii.1985 (1♂ 1♀), Gess (AMGS); 1♀ Constable [33°16'S:20°18'E], xii.1962, SAM (SAMC); 2♂ 1♀ 70 km W Laingsburg, 33°16'33"S:20°07'25"E, 7.xi.1998, Londt, 900 m, macchia vegetation (NMSA); 1♀ Tulbagh [33°17'S:19°09'E], 17.xii.1962, Theron (NMSA); 11♂ 2♀ Willowmore [33°17'S:23°29'E], 1.xii.1908 (1♂), 5.xi.1909 (1♂), 10 xi.1909 (1♂), xi.1910 (1♂), 15.x.1911 (1♂), 15.xi.1911 (1♂), 10.x.1916 (2♂), 15.x.1916 (1♂), 5.xi.1916 (1♂), xii.1922 (1♀), x.1923 (1♀), 20.xii.1923 (1♂), Brauns (NMSA); 2♂ 1♀ Willowmore [33°17'S:23°29'E] Vondeling, x.1952, Mus Expd (SAMC); 1♀ Willowmore, 5.x.1971, Jacot-Guillarmod (AMGS); 3♀ Slypsteen, Towerwaterkloof, Willowmore [33°17'S:23°29'E] Dist., x.1938, Mus. Staff (SAMC); 2♂ 2♀ Grahamstown, Burntkraal [33°17'S:26°29'E], 4.xii.1967 (1♂), 23.i (1♀), 1.x (1♂), 4.xii.1969 (1♂), Gess (AMGS); 6♂ 6♀ Grahamstown, Somerset Heights area, 33°17'52"S:26°30'44"E, 24.x.2004, Londt, 643 m, rocky *Acacia* grassland (NMSA); 1♀ 4 km NE Steytlerville, Noorspoort, 33°18'S: 24°23'E, 22.xi.1990, Londt & Whittington, 600 m, hillside (NMSA); 3♂ Grahamstown, Strowan, [33°18'S: 26°28'E], 27.xi (1♂), 11.xii.1968 (1♂), 12.xi.1969 (1♂), Gess (AMGS); 4♂ 4♀ Grahamstown [33°18'S:

26°32'E], 19.xii.1971, Greathead (BMNH); 1♀ Grahamstw [Grahamstown], xi.1940, Marley (SAMC); 2♂ Grahamstown, 29.xi.1964, Brothers (AMGS); 1♂ 2♀ Grahamstown, xii.1954 (1♀), xi.1956 (1♂ 1♀), Martin (AMGS); 1♂ Gamkas Poort [33°19'S:21°43'E], x.1937 (SAMC); 1♂ 3♀ Witzenberg Vall [Valley 33°20'S:19°30'E], Ceres District, 21–23.xii.1920, Turner, 3500 ft [*c*. 1065 m] (BMNH); 1♀ Witzenberg Vall, 19.i.1921, Turner, 3000 ft [*c*. 920 m] (BMNH); 1♂ 13 mi [*c*. 21 km] NE Touws River [33°20'S:20°02'E], 26.x.1928, Turner (BMNH); 1♂ 1♀ Touws R. [33°20'S:20°02'E], 16.x.1966, SAM (SAMC); 2♀ 8 mi [*c*. 13 km] NE Touws R. [River, 33°20'S:20°02'E], xii.1962, S.A.M. (SAMC); 2♀ National Road 22 mi [*c*. 35 km] from Touws River [33°20'S:20°02'E], 3.x.1964, Stuckenberg (NMSA); 1♂ Bloutoring Sta [Station 33°20'S:20°19'E], 30 mi [*c*. 48 km] E Touws R., xii.1962, SAM (SAMC); 1♀ Rooinek Pass [33°20'S:20°55'E], x.1952, Mus Exp (SAMC); 1♂ Bosluis Pass [33°21'S:21°30'E], x.1952, Mus Expd (SAMC); 2♂ 4♀ Ceres [33°22'S:19°19'E], xii.1920, Turner, 1500 ft [*c*. 457 m] (BMNH); 8♂ 9♀ Ceres, xi.1920, Turner (BMNH); 33♂ 52♀ Upper Sources Olifants River, Ceres [33°22'S:19°19'E], xii.1949, Mus Exp (SAMC); 1♂ Junction of Calvinia–Sutherland Rd nr Inverdoorn, Ceres [33°22'S:19°19'E], 2–3.x.1959, Stuckenberg (NMSA); 2♂ 7♀ Matroosberg [33°23'S:19°40'E] Sta [station], xii.1962, SAM (SAMC); 1♀ Ceres Div Matroosberg, i.1917, Lightfoot, 3500 ft (SAMC); 2♀ Ghwarriepoort River, 18 km SW Willowmore, 33°23'S:23°23'E, 22.xi.1990, Londt & Whittington, 900 m (NMSA); 1♂ Meirings Poort [Meiringspoort, 33°24'S:22°34'E], x.1937, Mus. Staff (SAMC); 1♀ Suurvlakte Kluitjieswan/FR [illegible] Wolseley [33°25'S:19°12'E], 23. xi.1972, Geertsema (SANC); 1♀ Malmesbury [33°27'S:18°44'E], 5.xii.1926, Brauns (NMSA); 1♂ 2♀ Schoemans Poort [Schoemanspoort, 33°27'S:22°15'E], x.1938, Mus. Staff (SAMC); 1♂ nr Addo [33°27'S: 25°45'E], 15.x.1959, Greathead (BMNH); 2♂ Modder R. [33°28'S:18°21'E], xi.1939, Mus. Staff (SAMC); 1♂ Ladismith [33°29'S:21°16'E], ix.1948, Jacot-Guillarmod (AMGS); 1♂ Addo Elephant Park, Spekboom Trail, 33°31'05"S:25°45'43"E, 4.xi.1998, Leftwich 125 m, (NMSA); 3♂ 3♀ Oudtshoorn Dist [33°35'S: 22°12'E], x.1952, Mus Expd (SAMC); 1♀ Oudtshoorn [33°35'S:22°12'E], 1.ix.1909, Brauns (NMSA); 1♂ Rust en Vrede, Oudtshoorn Dist [33°35'S:22°12'E], x.1951, Mus Expd (SAMC); 3♂ 2♀ Worcester [33°36'S:19°34'E], ix.1928 (2♂), 3–4.x.1928 (1♂), xii.1933 (2♀), Turner (BMNH); 1♂ Worcester [33°36'S: 19°34'E], ix.1928, Turner (NMSA); 3♂ Worcester, x.1923 (1♂), xi.1951 (2♂) (NMSA); 2♂ Worcester, 33°37'S:19°25'E, 5.x. (1♂), 6.x.2000 (1♂), Gess (AMGS); 7♂ 9♀ Karoo Botanic Garden, Worcester, 33°37'S:19°27'E, 5.x.1993, Londt, 210 m, macchia (NMSA); 2♀ 18 mi [*c*. 29 km] E Touws R to Hondewater [33°39'S:20°46'E], xii.1962, SAM (SAMC);11♂ 1♀ Uniondale Dist. [33°39'S:23°08'E], x.1952, Mus Expd (SAMC); 1♂ Hex Riv [33°41'S:19°27'E] (SAMC); 1♂ Hex R., 2.i.1883 (SAMC); 3♂ 1♀ Van Wyks Dorp [33°44'S:21°28'E], x.1957 (SAMC); 1♀ Haarlem [33°44'S:23°19'E], Langekloof, xi.1953, Stuckenberg (NMSA); 13♂ 26♀ Oudtshoorn, Zebra [Siding, 33°45'S:22°19'E], x.1951, Mus Expd (SAMC); 1♂ Patiente [Patensie, 33°46'S:24°49'E], Humansdorp, x.1938, Mus. Staff (SAMC); 2♂ 4♀ Groendal, Uitenhage [33°46'S:25°24'E], x.1938, Mus. Staff (SAMC); 1♂ 2♀ 1?, Montagu [33°47'S:20°07'E], x.1919, Barnard (SAMC, 1♀ BMNH); 1♀ Montagu, x–xi.1919 (BMNH); 2♂ 1♀ Montagu, 1–21.x.1924, Turner (BMNH); 5♂ 3♀ Montagu Nature Garden, 33°47'33"S:20°07'51"E, 19.x.2005, Londt, 240 m, Succulent Karoo garden on hot N slope (NMSA); 1♂ 2♀ Robertson [33°48'S:19°53'E], 25.x.1942, Anderssen (NMSA); 2♂ 1♀ Oudtshoorn district, Moeras River Farm (209), 33°48'S:22°03'E, ix.2007, Davies, 525 m, dry Karoo scrub with flowers (NMSA); 1♀ Algoa Bay [33°50'S:25°50'E], 27.xi.1895, Brauns (ZSMC); 2♂ 1♀ P [Port] Elizabeth, Swartkops [33°52'S:25°36'E], 21.xii.1922, Brauns (NMSA); 1♂ 2♀ Vrolijkheid Nature Reserve, 33°54'55"S:19°53'37"E, 20.x.2005, Londt, 234 m, dry succulent rocky hillside, Rooikat trail (NMSA); 2♂ 1♀ French Hoek [Franschhoek, 33°55'S:19°07'E] 40 mi [*c*. 64 km] from Cape Town, xi–xii.1930, Simmonds (BMNH); 8♂ 3♀ Vrolijkheid Nature Reserve, 33°55'20"S:19°53'00"E, 20.x.2005, Londt, 143 m, *Acacia*, *Rhus* scrubland on Heron trail (NMSA); 1♀ Cloetes Pass [33°57'S:21°47'E], x.1937 (SAMC); 1♂ George [33°58'S:22°27'E] Dist., x.1931, Thorne (SAMC); 1♀ Van Stadens Riv Mouth, 33°58'S:25°14'E, 22.xii.1986, Mansell (SANC); 1♂ Somerset Strand [suburb of Port Elizabeth, 33°58'S: 25°35'E], 1.xi.1915, Brauns (NMSA); 5♂ 3♀ Good Hope Farm *c*. 35 km SW Robertson, 33°59'13"S: 19°36'00"E, 21–23.x.2005, Londt, 380 m, *Protea*, *Dodonaea* fynbos (NMSA); 1♀ 10 km NE Muizenberg, 3418AB, 28.xi.1981, Stuckenberg, coastal macchia (NMSA); 1♂ 2♀ Strandfontein, Groot-Sandleegte, 3418BA, 10–12.x.1977, Miller (NMSA); 1♂ 2♀ 5 km SW Swellendam, 3420AB, 24.ix.1979, Londt, rocky slope above Breede River (NMSA); 1♂ 1♀ Faure [34°01'S:18°44'E], 13.xi.1971, Bayliss (AMGS); 1♀ Tradouw Pass, Swellendam Dist. [34°02'S:20°26'E], xi.1925, Mus. Exped. (SAMC); 1♂ 20 km SW Stellenbosch, 34°04'S:18°43'E, 30.x.1991, Londt, 0 m, coast near Swartklip (NMSA); 8♂ 9♀ Strandfontein [34°05'S:18°33'E], False Bay, 1.xi.1960 (SAMC); 1♂ R Sonder End, Oudebosch [34°05'S:19°47'E], xi–xii.1928, Barnard, 1500 ft (SAMC); 3♂ Mossel B [Bay, 34°11'S:22°08'E], 1896, Overbeek (SAMC); 1♂ Bot River [34°13'S:19°12'E], 11.xi.1933, Ogilvie (BMNH); 1♂ 1♀ 15 km N Agulhas, 34°43'S:20°01'E, 16.xi.1982, Eardley (SANC); 1♂ Cap [unknown locality], 1837, Ludwig (SMNS).

Distribution, phenology (Table 3) and biology: The species is widely distributed (Fig. 65), ranging from southern Namibia, down the west coast of South Africa (Northern and Western Cape Provinces) and eastwards through to the Eastern Cape Province. There

are a few records that appear improbable (e.g. Rustenburg in North West Province and Pietermaritzburg in KwaZulu-Natal!) and these specimens may have been mislabelled. In addition there are a few localities from which only female specimens are known. Difficulties in separating the females of *andrenoides* and *platygaster* means that some distribution points provided for *andrenoides* could actually belong to *platygaster* (and vice versa). The species is active in the adult stage during late winter, spring and summer (July–February) although the majority of collections were made between September and December. Some specimens have been pinned together with prey items. The 20 records available to me are as follows (sex of asilid bracketed): Coleoptera: Buprestidae (♀), Coccinellidae (♀), Dermestidae (♂), Melyridae (♀), Scarabaeidae (3♂ 3♀); Diptera: Muscidae (♂); Hemiptera: Lygaeidae (♂), Pentatomidae (♂); Isoptera: Hodotermitidae (3♂ 2♀); Orthoptera: Tridactylidae (2♂). Although Scarabaeidae and Hodotermitidae dominate the sample, it is probable that *andrenoides*, like many other asilids, is a generalist.

Similar species: *A. andrenoides* can be confused with *platygaster* and, in a few instances, large specimens of *dorsalis* – especially when female specimens are involved. Although male hypandria are largely withdrawn, it is usually possible to separate the males of these species using the appearance of the distal parts of this organ.

Acnephalomyia dorsalis (Macquart, 1838) **comb. n.**

Figs 35–37, 66

Acnephalum dorsale: Macquart 1838: 52 (fig. 4 whole fly) [1839: 168]; Kertesz 1909: 88 (catalogue); Curran 1934: 5; Hull 1962: 192; Oldroyd 1974: 27; 1981: 359 (catalogue).

Redescription (Based on lectotype. Condition: Good; dirty and covered with some fungal strands. Anterior pleurites of left side somewhat damaged (probably by a dermestid) and the right mesothoracic leg stuck into position with glue. The specimen is double mounted with tip of abdomen touching card.):

Head: Dark red-brown to black, white setose, silver pruinose (evident mainly on frons). Antenna: Scape and pedicel brown-orange, postpedicel and style dark red-brown. Segmental ratios 1.0:1.2:4.4:0.4:1.8 (dirt makes measurements difficult) – scape and pedicel subequal in length, white setose; setae of pedicel as long or longer than postpedicel; postpedicel twice as long as scape and pedicel combined; style 2- segmented, tipped with spine, subequal in length to scape and pedicel combined. Face dark red-brown to black, mystax fine white, covering entire face. Frons, vertex and postocular region dark red-brown to black, long white setose; angle subtended by eye margins at level of frons/vertex *c*. 12°. Proboscis orange-brown to dark red-brown, white setose, slightly downturned distally. Palpus 2-segmented, white setose.

Thorax: Dark red-brown to black. Pronotum mostly fine white setose, but with transverse row of long, pale yellowish macrosetae. Mesonotum white setose. Lateral macrosetae moderately well developed, translucent white (5 or 6 *npl*, *c*. 5 *spal*, *c*. 5 *pal*). Pleura largely asetose except for numerous, long, white katatergals and dorsally situated anepisternals. Katepisternum asetose. Scutellum shiny black apruinose with moderately developed transverse, subapical groove. About 8 moderately developed, whitish apical macrosetae accompanied by slightly shorter, fine, white setae; disc white setose. Legs: Mostly brown-orange, but parts of *fem* dark red-brown dorsally.

Major setae erect, minor setae recumbent, white. Ventral parts of *tar* and terminal end of *tib* have short, black setae. Claws black, empodia slender, yellowish, about three-quarters length of claws; pulvilli tiny (about one-quarter length of claws). Haltere pale yellow, base slightly darker. Wing: 5.7×2.4 mm. Veins brown, membrane lacking microtrichiae. Membrane transparent, slightly orange stained proximally. Vein C extends around wing margin, terminating at A_1, R_4 with small basal stump-vein, cell m_3 open.

Abdomen: Terga clearly broader than long, mostly dark red-brown to black, but orange-brown laterally. Orange-brown colour extends a short distance along posterior margins of terga. Terga apruinose, entire abdomen covered with longish white setae (weakly so anteromedially). Sterna red-brown, white setose. Terminalia largely withdrawn between T6 and S6 and obscured by setae. Genitalia (male from Knersvlakte, north of Vanrhynsdorp, Figs 35–37): *Epand* reduced (much shorter than *goncx*), distally broadly rounded (not incised medially to form distinct lobes). *Proc* juts out well beyond level achieved by *epand* (lateral view). Exterior lobe of *goncx* suboval (lateral view), distally pointed; interior lobe longish, slightly downturned distally. *Hypd* broadly rounded basally, somewhat incised mid-laterally and with long medial, finger-like distal lobe.

Lectotype: SOUTH AFRICA: ♂ 'Syn- / type' [circular blue-rimmed label], '*Acnephalum* / *dorsale* / 185 in / Coll. / Bigot.', 'Coll. Bigot. / abt. 1845–93. / Pres. 1913 by / J.E. Collin.' (OXUM).

Paralectotype: 1 [sex unknown] 'Syn- / type', '185 in / Coll. / Bigot.', 'Coll. Bigot. / abt. 1845–93. / Pres. 1913 by / J.E. Collin.' (OXUM). Note: The paralectotype is in poor condition: left prothoracic leg missing terminal four tarsomeres; abdomen and posterior part of thorax, including metathoracic legs, entirely missing (apparently consumed by dermestids); wings intact, but tip of left wing slightly damaged. The remaining parts suggest that the specimen was similar to the lectotype.

Notes: Macquart indicated that his description was based on a female. Of the two types, one is a male and the other lacks an abdomen. These carry modern syntype labels, and as it is reasonable to believe that Macquart saw both specimens, probably believing them to be female (many mistakes have been made in determining sex of these flies – even when using modern optics). For taxonomic stability I here designate the intact male as lectotype and the other specimen as paralectotype. Although the specimens do not carry locality data, Macquart records the following for his material 'Du Cap. Collection de M. Serville' and a large drawer label accompanies the material which reads '185 *A. Dorsale*. / C. B. Speil. [Cap Bone Spei = Cape of Good Hope] / (Coll. Serville) Macq. D. Eu.'. Although Oldroyd (1974) states 'Type in Paris', and so probably never consulted the types, he was able to correctly identify some specimens as *dorsale*, probably using the rather unreliable pattern of white abdominal setae as a key character.

Type locality: It is not known exactly where the types were collected. I designate Olifants River [31°27'S:18°32'E] between Citrusdal and Clanwilliam as type locality as a good series has been collected there and the locality is central to the known range.

Other material examined: SOUTH AFRICA: 1♂ Aninaus Pass, 15 km W Steinkopf, 2917BA, 4.ix.1983, Londt & Stuckenberg, rocky hillside & dry river (NMSA); 2♂ 2♀ 10 km E Port Nolloth, 29°17'S:16°58'E, 26.viii.1995, Londt, 120 m, white sand Succulents (NMSA); 2♀ 11 km N Komaggas, 29°43'S:17°31'E, 24.viii.1995, Londt, 360 m, rocky slope flowers (NMSA); 1♂ 2♀ 12 km W Soutfontein, 3017DA, 4.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 3♂ 10 km E Garies, 3017DB, 3.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 1♀ Studers Pass 22 km NE Garies, 3018AC, 6.ix.1983, Londt & Stuckenberg, stream edge & rocky slopes (NMSA); 1♀ Wolfhok, 3018AC, 24.x.1986, Schoeman (NMSA); 1♀ Bowesdorp [30°09'S:17°56'E], xi.1931, Museum Staff (SAMC); 1♀ Kamieskroon [30°12'S:17°56'E], xi.1936, Museum Staff (SAMC); 1♂ 1♀ Btw Kamieskroon [30°12'S:17°56'E] & Springbok, x.1939, Mus. Staff (SAMC); 1♂ Kamieskroon, Bakleikraal, 30°13'S:18°03'E, 9–10.x.1994, Gess (AMGS); 3♂ Farm Arkoep, 6 km N Kamieskroon, 30°19'S:17°56'E, 1–2.x.1990, Eardley (SANC); 1♂ 2♀ Wallekraal [30°24'S:17°31'E] Namaqualand, x.1950, Mus Expd (SAMC); 1♀ Klip Vlei, Garies [30°33'S:17°59'E], xi.1931, Mus. Staff (SAMC); 3♀ 20 km N Bitterfontein, 30°53'S:18°11'E, 28.viii.1995, Londt, 180 m, roadside woody shrubs (NMSA); 1♂ 17 mi [c. 27 km] N Vanrhynsdorp at fork Geelsbek & Sout rivers, 3118BC, 10.xi.1972, Irwin, 280 ft [*c*. 85 m] (NMSA); 2♂ 7 mi [*c*. 11 km] N Vanrhysdorp, 3118BC, 10.ix.1972, 400 ft [*c*. 120 m], red dunes (NMSA); 1♂ 1♀ 10 km N Vanrhynsdorp, 3118DA,

2.ix.1981, Londt, Schoeman & Stuckenberg, Succulent Karoo (NMSA); 1♂ 34.5 km S Soetwater, 3119CD, 29.ix –1.x.1977, Miller, 500 m, Malaise (NMSA); 7♂ 12♀ Top Botterkloof Pass, 3119CD, 13.ix.1972, Irwin, 2230 ft [*c*. 680 m], white sand dune assoc. (NMSA); 2♂ 2♀ Knersvlakte, North Van Rhynsdorp [31°15'S:18°45'E], 6–9.x.1964, Stuckenberg (NMSA); 1♂ 4♀ Knersvlakte [31°15'S:18°45'E], x.1948, Mus. Staff (SAMC); 1♂ Nieuwoudtville, Skuinshoogte Pass, 31°16'S:19°08'E, 23–30.ix.1994, Gess, dry river bed (AMGS); 1♂ 1♀ Akkerendam Nat. Res., 31°21'02"S:19°46'22"E, 5.xi.2002, Londt, 1020 m, Karoo bushes, reddish sand in valley (NMSA); 2♂ 3♀ Akkerendam Nat. Res., 31°26'54"S:19°46'27"E, 5–6.xi.2002, Londt, 1050 m, Karoo bushes, W slope of small hill (NMSA); 4♀ Akkerendam Nature Res., 1 km N Calvinia, 31°26'56"S:19°46'27"E, 10.x.2005, Londt, 1041 m, stony slope short vegetation (NMSA); 1♀ Akkerendam Nat. Res. 1 km N Calvinia, 31°26'55"S:19°46'22"E, 9–10.xi.1998, Londt, 1260 m, Karoo vegetation (NMSA); 6♂ 11♀ Olifants River [31°27'S:18°32'E] between Citrusdal & Clanwilliam, x–xi.1931, Museum Staff (SAMC); 6♂ 11♀ Papendorp, Olifants River [31°27'S:18°32'E], x.1950, Mus Expd (SAMC); 3♂ 4♀ Kareedam Nat. Reserve, 1 km N Calvinia, 31°27'S:19°47'E, 4–5. xi.1991, Londt, 1000 m (NMSA); 1♂ 1♀ 12 km S Calvinia, 31°34'10"S:19°43'56"E, 7.xi.2002, Londt, 1080 m, sandy roadside (NMSA); 7♂ 8♀ 8 km E Lutzville, 31°36'S:18°24'E, 29.viii.1995, Londt, 60 m, sandy slope flowers (NMSA); 1♂ 2♀ 10 km North Vanrhynsdorp on N7 [31°37'S:18°44'E], 15.ix.1992, Manning (NMSA); 1♀ Doringbaai [31°49'S:18°14'E], xi.1956, SAM (SAMC); 1♂ 1♀ 5 km S Doringbaai, 31°51'S:18°16'E, 29.viii.1995, Londt, 90 m, red ground flowers (NMSA); 1♂ 1♀ 0.7 km S Skurfkop Stn [31°57'S:18°36'E], 25.x.1978, Whitehead (SAMC); 3♂ 2♀ 5 km E Lambert's Bay, 3218AB, 31.viii.1981, Londt, Schoeman & Stuckenberg, westcoast strandveld (NMSA); 4♂ 1♀ 2.5 mi [*c*. 4 km] S Elandsbaai, 3218AD, 16.ix1972, Irwin, 30 ft [*c*. 9 m], coastal sand dunes (NMSA); 3♂ 2♀ 4.5 mi [*c*. 7 km] S Elandsbaai, 3218AD, 17.ix.1972, Irwin, 50 ft [*c*. 15 m], coastal sand plain (NMSA); 2♂ 1♀ 13 mi [*c*. 21 km] W Clanwilliam, 3218BA, 15.ix.1972, Irwin, 1625 ft [*c*. 450 m], hillside with flowers (NMSA); 1♂ 32 km NE Clanwilliam, Brandewyn R., 3219AA, 2–3.x.1977, Miller (NMSA); 1♀ Bulhoek [32°01'S:18°47'E], Klaver–Clanw [between Klawer & Clanwilliam], x.1950, Mus. Exp. (SAMC); 1♂ 2♀ Biedou Valley, 32°06'00"S:19°19'00"E, 6.ix.1989, Londt, Stuckenberg & Croeser, 300 m, rocky gentle N slope scrub & wild flowers (NMSA); 3♂ 3♀ Biedouw Valley, 32°06'S:19°14'E, 1–12. ii.1991, Picker, 350 m, Succulent Karoo (NMSA); 1♂ 1♀ Graafwater [32°09'S:18°36'E], x.1947, Mus. Exp (SAMC); 2♂ 11 km W Clanwilliam on road to Graafwater, 2–8.x.1990, Gess (AMGS); 2♂ 5 km W Clanwilliam, road to Graafwater, 12.x.1987, Gess (AMGS); 4♂ 4♀ 1?, Het Kruis [32°09'S:19°02'E], x.1947, Mus. Exp. (SAMC); 3♂ 1♀ East of Pakhuis Pass [32°09'S:19°02'E], ix.1947, Mus. Exp. (SAMC); 1♂ 'Clan William [Clanwilliam, 32°11'S:18°54'E], ix.1928, Brauns (NMSA); 1♂ 4 m S Clanwilliam [32°11'S:18°54'E], ix.1961, SAM (SAMC); 4♂ 3♀ Leipoldtville [32°13'S:18°29'E], Eland's Bay, x.1947, Mus. Exp. (SAMC); 1♂ 2♀ Elands bay, Baboon Point [32°19'S:18°19'E], 26.ix.1978, Whitehead (SAMC); 1♀ Clanwilliam District, Klein Alexandershoek, 32°20'20"S:18°46'E, 6.x.1988, Gess (AMGS); 1♂ Ouberg Pass [32°24'S:20°20'E] (SE Touws R.), xii.1962, SAM (SAMC); 1♂ Paleisheuvel [32°28'S:18°43'E], xi.1948, Mus Exp (SAMC); 1♂ Cedarberg, 32°30'S:19°15'E, 15.xi.1984, Prinsloo (SANC); 2♂ 3♀ Tankwa Karoo [*c*. 32°30'S:19°45'E], Waterval [32°35'S:20°18'E], xi.1952, Mus Expd (SAMC); 7♂ 11♀ 14 km NNW Citrusdal, 32°31'S:18°58'E, 1.xi.1991, Londt, 300 m, woody plants sandy (NMSA); 1♀ Nieuveld Escarpment, Rietvlei [32°33'S:21°16'E], i.1949, Zinn–Hesse (SAMC); 1♂ 8 m N Citrusdal [32°35'S:19°01'E], ix.1961, SAM (SAMC); 1♂ Citrusdal, 2.xi.1966, Rozen (AMNH); 3♂ 3♀ Koornplanskloof, 10 km S Citrusdal, 32°40'S:19°01'E, 4–8.x.1994, Danielsson, 200–270 m (MZLU); 2♂ 3♀ Kagga Kamma Nat. Res. Swartruggens Mtn, 32°44'39"S:19°33'12"E, 13.x.2005, Londt, 1027 m, sandy rocky tall fynbos (NMSA); 5♂ 5♀ Kagga Kamma Nat. Res. Swartruggens Mtn, 32°45'16"S:19°34'18"E, 10–12.x.2005, Londt, 1082 m, rocky sandy fynbos area (NMSA); 3♂ 3♀ Knolfontein Farm c. 10 km S Kagga Kamma Nat. Res., 32°49'47"S:19°37'32"E, 13.x.2005, Londt, 1264 m, sandy stony fynbos area (NMSA); 1♀ Gonnemanskraal N Jacobsbaai, 32°57'14"S:17°53'07"E, 9–10.xi.2002, Londt, 0–10 m, dune vegetation and rocks (NMSA); 1♀ Saldanah, 3317BB, 8–9.x.1977, Miller (NMSA); 1♂ 1♀ 14 mi [*c*. 22 km] SE Langebaan, 3318AA, 18.ix.1972, Irwin, 2000 ft [*c*. 610 m], coastal dunes and sandy plain (NMSA); 1♂ 3♀ Saldanha Bay [33°03'S:18°00'E], ix.1960, SAM (SAMC); 16♂ 17♀ Hopefield [33°04'S:18°21'E], ix.1960, SAM (SAMC); 1♂ Konstable [Constable], 33°15'S:20°18'E, xii.1962, SA Museum Expedition (SAMC); 1♀ Ysterfontein [Yserfontein, 33°20'S:18°09'E], 20.x.1964, Stuckenberg (NMSA); 2♂ 5♀ Malmesbury [33°27'S:18°44'E], 5.xii.1926, Brauns (1♂ 3♀ NMSA, 1♂ 2♀ BMNH); 1♀ Melkboschstrand [33°43'S:18°26'E], 13.x.1948, Munro (SANC); 1♀ Milnerton [33°52'S:18°29'E], 3.xi.1931, Munro (NMSA); 1♂ 4♀ Blackheath [33°57'S:18°42'E], 9.x.1964, Gess (SAMC); 6♂ 6♀ Strandfontein, 3418BA, 10–12.x.1977, Miller, Groot-Sandleegte (NMSA).

Distribution, phenology (Table 3) and biology: The species is found mainly in the western parts of South Africa (Fig. 66) with records coming from the Western Cape and Northern Cape provinces. Adults are active during spring and summer (August–February) although most collections were made in October and November.

Similar species: Although the male genitalia are similar to those of *eremia*, *leukoros*, *probolos* and *platygaster*, in that the hypandria are elongate, males can be relatively easily separated using the key provided. Females are more difficult to identify, but the pale yellowish basal segments of the antennae usually associated with *dorsalis* is a fairly reliable character.

Acnephalomyia eremia sp. n.

Figs 38–40, 66

Etymology: From Greek *eremia* (desert, wilderness); noun in apposition. Refers to the arid conditions under which the species has been found.

Description (Condition of holotype fair; antennae broken off beyond pedicels; right prothoracic and left meso- and metathoracic legs missing.):

Head: Dark red-brown to black, white setose, mostly apruinose. Antenna (broken off beyond pedicel): Scape and pedicel brown-orange. Segmental ratios 1.0:0.8:?:?:? – scape and pedicel subequal in length, pale whitish setose (most macrosetae missing, but single macroseta on dorsal aspect of right pedicel suggests that these would be as long or longer than postpedicel). Face dark red-brown to black, apruinose except for narrow strips adjacent to eye margins, mystax white, covering entire face, but weakly dorsally (some setae appear to have been rubbed off). Frons, vertex and postocular region dark red-brown to black, apruinose except for central part of postocular region, white setose; angle subtended by eye margins at level of frons/vertex *c*. 17°. Proboscis red-brown, white setose. Palpus dark red-brown, 2-segmented, white setose.

Thorax: Dark red-brown to black, apruinose, mostly white setose. Pronotum mostly white setose, but with group of yellowish macrosetae medially. Mesonotum mostly white setose (a few pale yellowish setae posteromedially). Lateral macrosetae moderately developed, white (4 *npl*, 5 or 6 *spal*, 5 or 6 *pal*). Pleura largely asetose except for numerous, long, somewhat wavy, white katatergals, dorsally situated anepisternals and katepisternals. Scutellum shiny dark red-brown apruinose with poorly-developed transverse, subapical groove. About 26 moderately developed white apical macrosetae accompanied by slightly shorter, fine, white setae; disc sparsely white setose. Legs: Mostly dark red-brown, but *fem* orange-brown ventrally. Major setae erect, translucent whitish, minor setae recumbent, white. Ventral parts of *tar* black setose. Claws black, longish (but shorter than tarsomere 5); empodia slender, yellow, about half length of claws; pulvilli tiny (about one-third length of empodium). Haltere brown-yellow, base slightly darker. Wing: 6.2×2.4 mm. Veins brown, membrane lacking microtrichiae; entirely transparent, unstained. Vein R_4 with well-developed basal stump-vein.

Abdomen: Terga broader than long, mostly dark red-brown to black, but somewhat orange-brown laterally. Terga apruinose, but entirely pitted by setal sockets. Terga with long, recumbent white setae laterally. White setae extend along distal margins of terga gradually becoming shorter medially. Large areas of terga appear asetose, but are covered with tiny reddish-brown setae. Sterna dark red-brown, apruinose, longish white setose. Terminalia largely withdrawn between T6 and S6, distal parts somewhat obscured by setae. Genitalia (Figs 38–40): *Epand* moderately well-developed, jutting out to almost same level as achieved by outer lobe of *goncx*, distally broadly rounded

and shallowly incised. *Proc* somewhat swollen in appearance and jutting out slightly beyond level achieved by *epand* (lateral view). Exterior lobe of *goncx* broadly rounded proximally, tapering distally to a broadly rounded, somewhat truncate, distal end; interior lobe rather long, jutting out to about same level as achieved by *hypd*, slightly downturned distally. *Hypd* somewhat truncate basally, tapering to long finger-like, distally projecting medial lobe.

Holotype: ♂ NAMIBIA: 'Namib Desert SWA / Praetorius 8 Aug 82', ~ 'Dune 15km / NW of The Far East [23°46'S:15°47'E] / I.1650' (NMSA).

Distribution and phenology (Table 3): Known only from the type locality (Fig. 66) where it was collected in August.

Similar species: Male genitalia superficially similar to *dorsalis*, *leukoros*, *probolos* and *platygaster*, but shape of gonostylus in lateral view, and especially the distal extremity of outer lobe, is unique as is the shape of the hypandrium.

Acnephalomyia iota sp. n.

Figs 41–43, 68

Etymology: From Greek *iota* (ninth letter of Greek alphabet, anything very small); noun in apposition. The name refers to the small size of the species.

Description (Based on holotype. Condition: Excellent):

Head: Dark red-brown to black, white setose, partly silver pruinose. Antenna: Uniformly dark red-brown, white setose. Segmental ratios 1.0:1.2:4.2:0.2:1.2 – scape slightly shorter than pedicel; macrosetae of pedicel clearly shorter than postpedicel; postpedicel almost twice as long as scape and pedicel combined; style 2-segmented and tipped with spine, clearly shorter than scape and pedicel combined. Face dark red-brown to black, mystax fine white, covering entire face. Frons, vertex and postocular region dark red-brown to black. Frons extensively silver pruinose, white setose (including ocellar tubercle); postocular setae mostly brown (some postocular setae white); angle subtended by eye margins at level of frons/vertex *c*. 15°. Proboscis short, dark red-brown, brown setose. Palpus 2-segmented, dark red-brown, brown setose.

Thorax: Dark red-brown to black, apruinose. Pronotum mostly brown setose (few white). Mesonotum white setose. Lateral macrosetae well developed, pale translucent white (2 *npl*, 1 *spal*, 1 *pal*). Pleura apruinose, largely asetose except for some, long, white katatergals and dorsally situated anepisternals. Katepisternum asetose. Scutellum shiny dark red-brown apruinose with poorly developed transverse, subapical groove. Four white apical macrosetae accompanied by 2 slightly shorter white setae; disc sparsely white setose. Legs: Red-brown, *fem* slightly darker. Major setae erect, yellowish, minor setae sparse, recumbent, white. Ventral parts of *tar* and terminal end of *tib* short, black setose. Claws black, moderately long (shorter than tarsomere 5); empodia slender, yellow, about half length of claws; pulvilli moderately developed (about length of empodium). Haltere pale yellow, base slightly darker. Wing: 2.7×1.2 mm. Veins brown, membrane sparsely microtrichose, transparent, unstained. Vein R_4 with weakly-developed basal stump-vein.

Abdomen: Dark red-brown, apruinose, mostly brown setose. Terga broader than long, entirely pitted by setal sockets. T1 with 5 pale translucent white lateral macrosetae, other terga lacking macrosetae, but with a few recumbent white setulae laterally. Sterna

sparsely long, white setose. Terminalia withdrawn between T6 and S6. Genitalia (Figs 41–43): *Epand* reduced, less than half length of outer lobe of *goncx*, medially deeply incised to form two lobes. *Proc* somewhat swollen in appearance and jutting out well beyond level achieved by *epand* (lateral view). Exterior lobe of *goncx* broadly rounded proximally, tapering distally to a narrowly rounded tip; interior lobe longish, jutting out to about same level as achieved by *hypd*. *Hypd* broadly rounded basally, tapering rapidly to moderately long, finger-like, distally projecting, medial lobe.

Variation: ♂ paratype almost identical to holotype but slightly bigger (wing length 2.9 mm). Paratype ♀ similar to holotype except for: Face entirely silver pruinose, mystax entirely white. Frons, ocellarium and postocular region entirely white setose. Mesonotum with silver pruinose margins. Scutellum with 6 apical macrosetae, disc asetose. Legs entirely dark red-brown. Wings 3.3×1.3 mm; R_4 lacking stump-vein. Except for T1, with 4 lateral macrosetae, abdomen entirely fine brown setose.

Holotype: SOUTH AFRICA: ♂ 'South Africa, Cape Prov. / 2mi. [*c*. 3 km] SW. Brandkop [31°15'S:19°11'E] 1300ft / Sept. 12, 1972, 3119Ac / ME&BJ. Irwin, Stream bed' (NMSA).

Paratypes: NAMIBIA: 1♀ 'nr. Vogelfederberg [23°06'S:14°55'E] / Namib Desert / Namibia 13-11-1986 / C. A. Kleinjan', 'Plant-Insect Proj- / Gravel plains 1986 / Site 5 Ar. 12 / D-138' (NMSA). SOUTH AFRICA: 1♂ 'Cape Province / 15km N of Nieuwoudtville [31°23'S:19°06'E] / on road to Loeries- / fontein, 3–8.x.1989 / F.W. & S.K. Gess' (AMGS).

Distribution, phenology (Table 3) and biology: Known only from the three type specimens collected in Namibia and South Africa (Fig. 68). The two known localities are fairly widely separated and further collecting in the intervening area is therefore desirable. Collected in September, October and November. Found on gravel plains and sandy river beds.

Similar species: A tiny black species not to be confused with any other.

Acnephalomyia leukoros sp. n.

Figs 44–46, 67

Etymology: From Greek *leukos* (white) and *oros* (mountain); noun in apposition. The name refers to the type locality of Witteberge, Afrikaans for 'white mountains'.

Description (Based mainly on holotype. Condition: Good; slightly greasy, pruinescence not visible):

Head: Dark red-brown to black, white setose. Antenna: Orange-brown, distal tip of style yellow; white setose. Segmental ratios 1.0:1.3:4.4:0.3:1.7 – scape shorter than pedicel; setae of pedicel as long or longer than postpedicel; postpedicel almost twice as long as scape and pedicel combined; style 2-segmented and tipped with spine, almost equal in length to scape and pedicel combined. Face dark red-brown to black, mystax fine white, covering entire face. Frons, vertex and postocular region dark red-brown to black, white setose; angle subtended by eye margins at level of frons/vertex *c*. 7°. Proboscis dark red-brown, white setose, slightly downturned distally. Palpus 2-segmented, white setose, second segment pointed distally.

Thorax: Dark red-brown to black, mostly white setose. Pronotum mostly fine white setose, but with transverse row of long translucent, white macrosetae. Mesonotum mostly white setose. Lateral macrosetae moderately well developed, mostly white (pale yellow anteriorly) 5 *npl*, 2 *spal*, 4–5 *pal*. Pleura largely asetose except for numerous, long, ter-

minally wavy, pale yellow katatergals, dorsally situated anepisternals and a few tiny white katepisternals. Scutellum shiny dark red-brown to black, apruinose, with weakly developed transverse, subapical groove. 12 moderately developed translucent white apical macrosetae accompanied by some slightly shorter, fine, white setae; disc fine white setose. Legs: Mostly brown-orange, but parts of *fem* and *tib* dark red-brown dorsally. Major setae erect, yellowish, minor setae recumbent, white. Ventral parts of *tar* and terminal end of *tib* short, black setose. Claws black, longish (but shorter than tarsomere 5); empodia slender, yellow, about half length of claws; pulvilli small (about half length of empodium). Haltere pale yellow, base darker. Wing: 4.9×2.1 mm. Veins orange-brown, membrane lacking microtrichiae, transparent (unstained); vein R_4 with weakly developed basal stump-vein.

Abdomen: Dark red-brown to black, mostly white setose. Terga apruinose but entirely pitted by setal sockets. Terga with mostly white (a few dark red-brown) setae laterally. White setae extend along distal margins of terga gradually becoming shorter medially; each tergum with small group of white setae anteromedially. Large areas of terga appear asetose, but are covered with tiny dark red-brown setae. Sterna dark red-brown, sparsely long, white setose. Terminalia largely withdrawn between T6 and S6, distal parts somewhat obscured by setae. Genitalia (topotypic paratype male, Figs 44–46): *Epand* reduced, less than half length of outer lobe of *goncx*, distally broadly rounded and shallowly incised. *Proc* somewhat straight, jutting out well beyond *epand* (lateral view) and to similar level attained by outer lobe of *goncx*. Exterior lobe of *goncx* suboval in shape, tapering distally to a small pointed, finger-like projection; interior lobe of characteristic shape, longish, terminally dorsoventrally flattened (i.e. broad in dorsal view), jutting out to similar level as achieved by *hypd*. *Hypd* somewhat truncate basally, greatly constricted laterally before midlength, tapering to long, distally clavate medial lobe.

Variation: Paratype males are similar to the holotype. Female paratypes range in size with wing lengths of 4.0–6.0 mm (mean 5.0 mm). Females are similar except for the following features: Antennal postpedicel and proximal half of style dark red-brown; dorsal face, entire frons and vertex (not ocellarium) and most of postocular region silver pruinose; mesonotum with clumps of brown setae; mesonotal macrosetae brown-yellow; scutellum with 9–14 (mean 11) apical macrosetae ranging in colour (pale white to light brown); wing may be weakly yellow to pale brown stained basally and at crossveins.

Holotype: SOUTH AFRICA: ♂ 'S Africa: W Cape #38 / Witteberge ca. 7 km / W of Constable 870m / 33°17'54"S:20°19'24"E / 12.xi.1998 J.G.H. Londt / Sandy soil/Succulents' (NMSA).

Paratypes: 2♂ 2♀ 'Bulhoek [32°01'S:18°47'E] / Klaver–Clanw [between Klawer & Clanwilliam].' ~ 'Mus. Expd. / Oct. 1950' (SAMC); 2♀ 'South Africa: W Cape / Kagga Kamma Nat. Res. / 32°45.15'S:19°34.21'E / 22-23.xi.2008 J & A Londt / 1075m Sandy area with / tall fynbos near houses' (NMSA); 1♂ 1♀ 'Constable [33°16'S:20°18'E]' ~ '12.1962, / S.A.M.' (SAMC); 1♂ 3♀ same data as holotype (NMSA); 3♂ 1♀ 'Verkeerde Vlei [Verkeerdevlei, 33°20'S:19°52'E]' ~ '12.1962, / S.A.M.' (SAMC); 1♂ 'Matroosberg Sta. [33°25'S:19°50'E]' ~ '12.1962, / S.A.M.' (SAMC); 1♂ 'Bloutoring [33°30'S:20°14'E] Sta. / (30 m. E. of / Touws R.)' ~ '12.1962, / S.A.M.' (SAMC); 1♂ 'Swept from / manure heap / Elsenberg [33°50'S:18°50'E] / 24.2.15' (SANC).

Distribution, phenology (Table 3) and biology: Known from eight localities in the Western Cape of South Africa (Fig. 67). Adults have been collected in October, November and December and are therefore summer active. Specimens were found resting on sandy ground.

Similar species: Male genitalia similar to *dorsalis*, *eremia*, *probolos* and *platygaster* but the highly distinctive flanged, interior lobes of the gonocoxites easily separate *leukoros* from these species. Females, unless associated with males, are difficult to separate from those of other species.

Acnephalomyia platygaster (Loew, 1858) **comb. n.**

Figs 8, 47–49, 67

Acnephalum platygaster: Loew 1858: 338 [1860: 170]; Hermann 1907: 8; Kertesz 1909: 88 (catalogue); Curran 1934: 5–6; Oldroyd 1974: 26; 1981: 359 (catalogue).

Redescription (Based on ♂ holotype. Condition: Excellent; antennae broken off beyond pedicels; some minor mesonotal setulae have been rubbed off in the region of where the pin was inserted.):

Head: Dark red-brown to black, mainly white setose, extensively silver pruinose. Antenna: Scape and pedicel uniformly orange-brown. Segmental ratios 1.0:0.9:?:?:? – scape and pedicel subequal in length, white setose (ventral macrosetae broken off). Face dark red-brown to black, mostly apruinose except for lateral margins which are silver pruinose, mystax fine white, covering entire face (weakly centrally). Frons, vertex and postocular region dark red-brown to black, silver pruinose except for ocellar tubercle, mostly long white setose (some pale yellowish postocular macrosetae dorsally); angle subtended by eye margins at level of frons/vertex *c*. 1° (i.e. hardly divergent). Proboscis orange-brown to dark red-brown, white setose, straight. Palpus 2-segmented, white setose, second segment terminating in long distal projection.

Thorax: Dark red-brown to black. Pronotum mostly fine white setose, but with transverse rows of long brownish macrosetae. Mesonotum mixed white and brown setose, but with clumps of uniformly white setae, mostly anteriorly. Lateral macrosetae moderately well developed, pale yellowish (6 *npl*, 7–9 *spal*, 5 or 6 *pal*). Pleura largely asetose except for numerous, long white katatergals and dorsally situated anepisternals. Katepisternum dorsally white setose. Scutellum shiny black apruinose with moderately developed transverse subapical groove. About 14 moderately developed, yellowish apical macrosetae accompanied by slightly shorter, weaker white setae; disc weakly white setose laterally. Legs: Mostly orange-brown, parts of *fem* darker red-brown dorsally. Major setae erect yellowish, minor setae recumbent white. Ventral parts of *tar* and terminal end of *tib* short black setose. Claws black, long (shorter than tarsomere 5); empodia slender yellow, about half length of claws; pulvilli minute (hardly discernible). Haltere yellow, base slightly darker. Wing: 9.9×4.2 mm. Veins brown-orange, membrane largely lacking microtrichiae. Membrane brown-orange stained proximally, becoming translucent distally. Vein C extends around wing margin, terminating at A_1, R_4 with short basal stump-vein, cell m_3 open.

Abdomen: Terga clearly broader than long, mostly dark red-brown to black, but narrowly orange-brown laterally. Orange-brown colour extends along posterior margins of more distal terga, progressively increasing in extent. Terga apruinose and entirely pitted by setal sockets. Entire abdomen fringed laterally with erect white setae. Posterolateral parts of terga white setose, these not extending onto medial parts. Large areas of terga appear asetose, but are covered with tiny blackish setae. Sterna orange-brown, finely gold pruinose, uniformly long white setose. Terminalia largely withdrawn between

T7 and S7 and somewhat obscured by setae. Genitalia of holotype not dissected, but exposed parts of hypandrium resembling those of a dissected ♂ from 60 km S Aus (Figs 47–49): *Epand* reduced (half length of *goncx*), distally incised medially to form two distinct lobes in dorsal view. *Proc* moderately well developed, jutting out to almost level achieved by inner lobe of *goncx*. Exterior lobe of *goncx* broadly rounded proximally, tapering to an acutely pointed tip distally; interior lobe longish, fairly broad, jutting out to beyond level achieved by *hypd*. *Hypd* somewhat truncate basally, tapering rapidly toward midlength before extending to somewhat clavate distal lobe.

Variation and sexual dimorphism: There is considerable size variation in both sexes. For example males and females from 5 km SW Pofadder range in wing length as follows: ♂ 6.8–9.5 mm, ♀ 6.8–9.0 mm. The smallest ♂ measured had a wing length of only 4.3 mm while the largest measured 10.9 mm. A similar range was evident in females (4.9–9.5 mm). In general appearance males resemble females although males have more darkly stained wings and the extent of white setation along the posterior margins of the terga is greater in females. Antennal ratios of an intact ♂ specimen are as follows 1:0.8:3.1:0.2:1.5.

Holotype: NAMIBIA: ♂ 'Svakop / Africæ.', 'J. Wahlb', '10.', '258.', '*Acnephalum* / *platygaster'* [white, typed] (NHRS – not ZMHB as indicated by Oldroyd (1974)). *Notes*: The specimen is not a female as stated by Loew and the pin does not carry a type label. I have attached a pink type label and my identification label accordingly. Wahlberg's precise place of collection is not known. I presume he visited Swakopmund (22°40'S:14°31'E) situated near the mouth of the Swakop River and so suggest that this could be considered the type locality.

Specimens examined: NAMIBIA: 1♀ Gobabeb [23°33'S:15°02'E], ii.1984, Marsh, feeding on pollen of ♀ *Welwitschia* (SANC); 1♀ Outskirts of Aus overlooking town, 2616CA, 30.viii.1983, Stuckenberg & Londt, rocky area/shrubs (NMSA); 6♂ 5♀ 60 km S. Aus, 2716AB, 1.ix.1983, Londt & Stuckenberg, broken veld at base of small hill (NMSA); 2♂ 30 km N Rosh Pinah, 2716DA, 1.ix.1983, Londt & B Stuckenberg, green bushes & flowers (NMSA); 2♂ 7♀ 30 km NW Karasburg, 2718DA, Karasberg Mts, 28.viii.1983, Londt & Stuckenberg (NMSA); 4♂ 2♀ 50 km NW Karasburg, 2718DA, Karasberg Mts, 28.viii.1983, Londt & Stuckenberg (NMSA); 1♂ Klinghardt Mts, 27°19'S:15°46'E, 11.ix.2005, Gess (AMGS); 1♀ Heioab, 27°24.41'S:16°00.21'E, 17.ix.2003, Gess (AMGS); 1♀ Aurus [27°38'S:16°13'E] Mts, 25.x.1979, Whitehead (SAMC); 1♂ Aurus Mts, 26.x.1977, Whitehead (SAMC); 1♂ 2♀ Namaskluft, 27°52.00'S:16°52.03'E, 26.ix.2003, Gess (AMGS); 1♂ 1♀ 25 km W Ariamsvlei, 2819BA, 27.viii.1983, Londt & Stuckenberg, very arid broken veld (NMSA); 6♂ 3♀ 15 km E Karasburg, 2818BB, 27.viii.1983, Londt & Stuckenberg, arid roadside vegetation (NMSA); 3♀ Gt. Karas Mts. [nr Karasburg, 28°01'S:18°45'E], xi.1936, Mus. Staff (SAMC); 1♀ Obib [28°05'S:16°45'E], 29.x.1977 (SAMC); 1♀ Obib, 28.x.1977, Whitehead (SAMC); 1♀ E Oranjemund, foot of Skilpad, 28°28'S:16°40'E, 23.ix.1997, Gess (AMGS); SOUTH AFRICA: 1♀ 10 km E Kakamas, 2820DA, 6.ix.1982, Schoeman (NMSA); 1♂ Richtersveld N. Park, Pootjiespram, 28°05'S:16°57'E, 16.ix.1995, Gess (AMGS); 3♀ 26 mi [*c*. 42 km] North Postmasburg [28°19'S:23°04'E], x.1939, Mus. Staff (SAMC); 1♂ 1♀ Bushmanld. [Bushmanland], Henkries [28°55'S:18°07'E], x.1911, Lightfoot (SAMC); 1♀ Brakf [Brakfontein, 28°56'S:17°05'E], Richtersveld, 18.xi.1933, van Son (NMSA); 2♂ 1♀ 80 mi [*c*. 130 km] W Pofadder, 2918BC, 5.ix.1972, Irwin, 2980 ft [*c*. 910 m], roadside flowers (NMSA); 2♂ 1♀ 20 km NE Springbok, 2918CA, 7.ix.1983, Londt & Stuckenberg, rocky hillside & dry watercourse veget (NMSA); 4♂ 3♀ 5 km SW Pofadder, 2919AB, 7.ix.1983, Londt & Stuckenberg, dry riverbed trees (NMSA); 1♂ 2♀ Bushmanld., Jackals Water [29°03'S:17°54'E], x.1911, Lightfoot (SAMC); 1♂ 10 km E Pofadder, 29°06'05"S:19°30'26"E, 29.viii.2002, Londt, 930 m, sandy area & rocky hillside slope (NMSA); 1♂ 3♀ Putsonderwater [29°14'S:21°53'E], x.1939, Mus. Staff (SAMC); 3♂ 3♀ Near Prieska, 29°40'S:22°45'E, ix.1994, Stuckenberg, 1000 m, roadside grass (NMSA); 1♀ 2 mi [*c*. 3 km] SW Brandkop, 3119AC, 12.ix.1972, Irwin, 1300 ft [*c*. 395 m], stream bed (NMSA); 1♀ Visrivier 50 km E Calvinia on Williston Rd, 990 m, 31°26'15"S:20°16'48"E, 10.xi.1998, Londt, river edge vegetation (NMSA); 1♀ Lamberts Bay Rd N Elands Bay [32°18'S:18°21'E], 26.ix.1978, Whitehead (SAMC); 6♂ 32♀ Willowmore [33°17'S:23°29'E], undated (1♂ 3♀), 1.xii.1908 (1♀), 5.xi.1909 (3♀), 10.xi.1909 (1♀), xi 1910 (1♀), 15.x.1911 (1♂), 25.x.1911 (1♀), 1.xi.1912 (1♀), xi.1914 (1♀), ix.1915 (1♂), 10.x.1916 (3♀), 20.xi.1916 (1♀), x.1917 (3♀), x.1919 (1♀), 4.x.1919 (1♂ 1♀), 10.x.1919 (2♀), 10.x.1920 (1♂), 15.x.1920 (1♀), 18.x.1920 (1♂ 5♀), 27.x.1920 (1♀), 10.xi.1920 (1♀), 1.xi.1921 (1♀), Brauns (NMSA).

Notes: Curran (1934) records 'Female, foot of Van Rhyn's Pass, Cape Province, November 21 (Mrs. Cockerell)'. I have seen this specimen (1♀ 'Foot of Van / Rhyns Pass C.P. / Nov. 21 W.P.C.', '*Acnephalum*

/ *platygaster*' (AMNH)) and can report that it was misidentified and should be referred to *andrenoides*. Females are difficult to identify because of similarity to *andrenoides* and so some mistakes may have been made when there were no associated males.

Distribution, phenology (Table 3) and biology: Most of the records are from southern Namibia and the Northern Cape Province of South Africa (Fig. 67). Adults have been collected in August through to and including December. Although a specimen has been recorded as 'feeding on pollen of ♀ Welwitscha' (see list above) such behaviour is clearly highly unlikely. Asilids may, however, perch on flowers visited by potential insect prey and so could confuse some collectors.

Similar species: A large species with male genitalia similar to *dorsalis*, *eremia*, *leukoros*, and *probolos*. Apart from the distinctive shape of the hypandrium, many males have wings that are darkly stained proximally. Females not associated with males may be confused with those of *andrenoides* and so a few records may, for that reason, be misplaced.

Acnephalomyia probolos sp. n.

Figs 50, 51, 68

Etymology: From Greek *probolos* (any protruding or jutting object or prominence); noun in apposition. The name refers to the long, projecting hypandrium.

Description (Based on holotype. Condition: Good; double mounted, right prothoracic leg missing terminal four tarsomeres, left mesothoracic leg broken off and glued to mounting strip.):

Head: Dark red-brown to black, white setose, weakly silver pruinose. Antenna: Dark red-brown except for tip of style which is pale yellow. Segmental ratios 1.0:0.9:3.0:0.2:1.2, scape and pedicel subequal in length, pale whitish setose, macroseta on ventral aspect of pedicel longer than postpedicel. Face dark red-brown to black, apruinose except for narrow strips adjacent to eye margins, mystax white, covering entire face. Frons, vertex and postocular region dark red-brown to black, apruinose except for central part of postocular region, mainly white setose (some dorsal setae yellowish); angle subtended by eye margins at level of frons/vertex *c*. 17°. Proboscis red-brown, white setose. Palpus dark red-brown, 2-segmented, pale yellowish setose.

Thorax: Dark red-brown to black, apruinose, mostly white setose. Pronotum mostly white setose, but with group of pale yellowish macrosetae medially. Mesonotum mostly white setose interspersed with some yellow and dark red-brown ones. Lateral macrosetae moderately well developed, yellow (3 *npl*, 3 *spal*, 5 or 6 *pal*). Pleura largely asetose except for numerous, long, somewhat wavy, white katatergals, dorsally situated anepisternals and katepisternals. Scutellum shiny dark red-brown apruinose with poorly-developed transverse, subapical groove. About 10 moderately developed yellowish apical macrosetae accompanied by slightly shorter, fine, white setae; disc sparsely white setose. Legs: Mostly dark red-brown, but *fem* orange-brown ventrally. Major setae erect, whitish, minor setae white. Ventral parts of *tar* and distoventral tip of *tib* black setose. Claws black, longish (but shorter than tarsomere 5); empodia slender, yellow, about two-thirds length of claws; pulvilli tiny (about one-third length of empodium). Haltere yellow, base yellow-brown. Wing: 3.7×1.5 mm. Veins brown, membrane lacking microtrichiae; entirely transparent, unstained. Vein R_4 with only a trace of a basal stump-vein.

Abdomen: Terga broader than long, dark red-brown to black. Terga apruinose, but entirely pitted by setal sockets. Terga with longish white setae laterally. White setae extend for a short distance along distal margins of terga, becoming shorter medially. Large areas of terga appear asetose, but are covered with tiny reddish brown setae. Sterna dark red-brown, apruinose, longish white setose (wavy anteriorly). Terminalia largely withdrawn between T6 and S6, distal parts somewhat obscured by setae. Genitalia (Figs 50, 51): *Epand* highly reduced. *Proc* in lateral view longer than *epand*. Exterior lobe of *goncx* tapering to a fairly acute tip; interior lobe longish, finger-like and jutting out to about same level as achieved by aedeagal tip. *Gonst* small. *Hypd* in ventral view somewhat truncate basally, tapering rapidly to long finger-like, distally projecting medial lobe. *Hypd* basodorsally with a disc-like projection that lies between gonocoxites.

Variation: The female paratype agrees well with the holotype, but is slightly bigger (wing length 4.7 mm) and stump-veins are moderately well developed.

Holotype: ♂ SOUTH ARICA: ' Sth Africa Cape Prov / Richtersveld 2816BD / 40km S of Ochta Mine / Londt & Stuckenberg / 2.ix.1983. Mixed Karoo / bush with few flowers' (NMSA).

Paratype: 1♀ same data as holotype (NMSA).

Distribution and phenology (Table 3): Known only from the type locality (Fig. 68) and collected only in September.

Similar species: Male genitalia are similar to those of *dorsalis*, *eremia*, *leukoros*, and *platygaster*, but the form of the epandrium and hypandrium is distinctive. Identification of females of these species is sometimes problematic as they so closely resemble each other.

Key to species of *Acnephalomyia*

The following key is useful only for male specimens, and, because it makes use of male genital characters, it may be necessary to excise and macerate terminalia. If this is impractical, identifications may be achieved by comparing visible structures of the hypandrium with illustrations provided in this paper.

1 Small flies with wing length (from humeral crossvein to tip) less than 3.5 mm; ♂ genitalia as in Figs 41–43 ..... **iota** sp. n.
– Bigger flies with wings greater than 4 mm in length 2

2 Hypandrium (Figs 24, 25) in ventral view more or less triangular in shape, and not markedly constricted at midlength; medial lobe broadly rounded..... ..... **andrenoides** (Wiedemann, 1828)
– Hypandrium in ventral view not triangular in shape, markedly constricted at or before midlength; medial lobe finger-like with narrowly rounded or slightly clavate tip 3

3 Distal ends of inner lobes of gonocoxites (Figs 45, 46) broadly expanded in dorsal view ..... **leukoros** sp. n.
– Distal ends of inner lobes of gonocoxites narrow with moderately rounded distal end in dorsal view 4

4 Epandrium well-developed, about as long as broad; distal end of outer lobe of gonocoxite fairly broad and somewhat truncate (Figs 38–40) ..... **eremia** sp. n.

– Epandrium reduced, shorter than broad; distal tip of outer lobe of gonocoxite fairly acutely pointed 5

5 Hypandrium very long, with greatest length:greatest breadth ratio >1.5; base of hypandrium with dorsal plate-like flange dorsally (Figs 50, 51) .... **probolos** sp. n.

– Hypandrium long, but greatest length:greatest breadth ratio <1.5; base of hypandrium without dorsal plate-like flange dorsally 6

6 Scape and pedicel usually yellowish, contrasting with dark red-brown postpedicel; male abdomen with fine silky white setae laterally; hypandrium suddenly becoming constricted at about midlength (Figs 36, 37)..... **dorsalis** (Macquart, 1838)

– Antennae uniformly dark red-brown postpedicel; male abdomen with course white recumbent setae laterally; hypandrium gradually becoming constricted at about midlength (Figs 48, 49)..... **platygaster** (Loew, 1858)

Afroholopogon Londt, 1994

Afroholopogon: Londt 1994: 64. Type species: *Holopogon vumba* Oldroyd, 1974, by original designation.
Holopogon Loew, 1847: 473 (as subgenus of *Dasypogon*). Type species: *Dasypogon nigripennis* Meigen, 1820, by designation of Coquillett (1910: 522). Afrotropical species only.
Heteropogon Loew, 1847: 488 (as subgenus of *Dasypogon*). Type species: *Dasypogon manicatus* Meigen, 1820, by designation of Back (1909: 318). Afrotropical species only.
Cyrtopogon Loew, 1847: 516. Type species: *Asilus ruficornis* Fabricius, 1794, by designation of Rondani (1856: 157). Afrotropical species only.

Afroholopogon futilis (Wulp, 1899) **comb. n.**

Figs 2, 52–54

Acnephalum futile: Wulp 1899: 87 (pl. II, fig. 11 wing venation); Kertesz 1909: 88 (catalogue); Engel 1929: 277; Hull 1962: 192; Oldroyd 1981: 359 (catalogue); Lehr 1988: 232 (catalogue).

On receipt of the type material it was immediately apparent that *futilis* should not have been described in *Acnephalum* as the specimens fail to display the diagnostic characteristics of the genus. Indeed, it is doubtful that any researcher has consulted the types since their original description. The species is fully congeneric with *Afroholopogon* and is therefore unhesitatingly transferred to that genus.

Redescription (Format follows that of Londt (2005). Based on lectotype (Fig. 2). Condition: Excellent; right antenna broken off beyond pedicel.):

Head: Antenna: Dark red-brown, fine silver pruinose, white setose; segmental formula 1.0:1.1:3.3:0.3:1.3. Face black, entirely silver pruinose, mystax white, extending to antennal sockets, with vertical asetose strip medially. Face width:head width ratio 1.0:4.4. Frons and vertex black, frons apruinose except for silver lateral areas and a central spot. Vertex apruinose, fine white setose. Occiput dark red-brown to black, entirely silver pruinose, white setose. Proboscis and palpi dark red-brown, white setose.

Thorax: Mesonotum black, silver pruinose except for extensive apruinose spots and stripes, setae short, white (absent on some apruinose areas). Setation: *ac* – short white setulae; *dc* – short white; *npl* – 2 pale yellow-white; *spal* – absent; *pal* – 1 white. Scutellum black, entirely apruinose, disc asetose, margin with 7, white, medially directed, quite short apical macrosetae arranged in a single row. Pleura black, extensively silver pruinose, white setose. Wing 3.6×1.5 mm, transparent, membrane entirely micro-

trichose, basal angle of cell r_4 19°. Haltere with pale yellow knob and light brown stalk. Legs: *cx* dark red-brown, silver pruinose, white setose; trochanters dark red-brown; *fem* red-brown with brown-orange distal end, pale yellow and white setose; *tib* orange-brown, pale yellowish setose (few black ventrodistally); *tar* orange-brown, pale yellowish (dorsally) and dark red-brown (ventrally) setose.

Abdomen: Terga dark red-brown, shiny apruinose except for silver areas posterolaterally (that extend medially to almost centre of tergum, but not along posterior margin), white setose. Sterna dark red-brown. silver pruinose, short white setose. Genitalia (Figs 52–54): Hypopygium unrotated; *epand* (in dorsal view) quite short (about as long as *proc*), shallowly incised to form short distolateral lobes; *goncx* externally distally bilobed and projecting (in lateral view) to a level beyond that reached by *epand*; *hypd* (laterally) of moderate length (longer than external lobe of *goncx*) and (ventrally) broadly rounded distally.

Variation: Paralectotype slightly smaller (wing 3.4 mm long), otherwise similar to lectotype.

Lectotype: ♂ SOUTH YEMEN: lectotype, 'S. W. Arabia, / Aden. [12°46'N:45°01'E] / Capt. Feb. 13.95 / & pres. 1899 by / J. W. Yerbury' glued to 'A. / capt. in / cop. with / B.', 'Type. / v.d.Wulp, *Trans. Ent. Soc*., / 1899, page 87, / pl. ii, fig. 11.', '*Acnephalum* / *futile* n. s.', '1899 / 7704', '4', 'Type Dip: 154 1/2 / *Acnephalum* / *futile* / v.d. Wulp / Hope Dept. Oxford' (OXUM).

Paralectotype: ♀ SOUTH YEMEN: 'S. W. Arabia, / Aden. / Capt. Feb. 13.95 / & pres. 1899 by / J. W. Yerbury' glued to 'B. / capt. in / cop. with / A.', 'Type. / v.d.Wulp, *Trans. Ent. Soc*., / 1899, page 87, / pl. ii, fig. 11.', '*Acnephalum* / *futile* n. s.', '1899 / 7703', 'Type Dip: 154 2/2 / *Acnephalum* / *futile* / v.d. Wulp / Hope Dept. Oxford' (OXUM).

Lectotype designation: Wulp described the species on 'a pair in coitu, from Aden'. As he did not designate a holotype, the specimens are considered syntypes. For reasons of taxonomic stability I hereby designate the male as lectotype and the female as paralectotype.

Distribution, phenology and biology: The species is only known from the type locality. Specimens were collected in February. Nothing is known of its biology.

Similar species: Wulp (1899) stated that *futile* was 'closely allied to *Dasypogon* (*Acnephalum*) *andrenoides*', a comment echoed by Engel (1929). The similarity is, however, minimal and it is surprising that Engel did not suspect a misallocation.

Afroholopogon was fully revised by Londt (2005), who gave an historical account together with redescriptions and descriptions of 17 species, most of which are southern African. Using Londt's key to species reveals that *futilis* keys out at the end of the key together with three other species – *dasys* Londt, 2005, *pardosoros* Londt, 2005 and *uranopia* Londt, 2005. Two of these are known only from South Africa (*pardosoros* from the Tierberg Nature Reserve, and *uranopia* from the Graaff-Reinet area) while *dasys* is known from three specimens from Eritrea, Oman, and the Yemenese island of Abd al Kuri. Besides the characters provided in the key below there are obvious differences to be observed in male genital form.

A. futilis can easily be incorporated into Londt's (2005) key by making the following small modifications to the final couplets:

15 Mesonotal pruinescence entirely gold; apical scutellar setal number >40 .... **dasys** Londt, 2005

– Mesonotal pruinescence silver (*uranopia* female has silver laterally and gold medially); apical scutellar setal number <30 16

16 Eye anteromedially flattened, especially in male; male with facial area occupied by mystax shiny apruinose; scutellum with *c*. 20 apical macrosetae..... .....**uranopia** Londt, 2005
– Eye not anteromedially flattened; male with facial area occupied by mystax entirely silver pruinose 17

17 Face broarder in relation to head (1:<5); supra-alar macrosetae absent; scutellum with <10 apical macrosetae; wing with basal angle of r_4 <20°; known only from South Yemen .....**futilis** (Wulp, 1899)
– Face narrower in relation to head (1:>5); 1 supra-alar macroseta present; scutellum with >20 apical macrosetae; wing with basal angle of r_4 >25°; known only from South Africa ..... **pardosoros** Londt, 2005

Sporadothrix Hermann, 1907 **stat. rev.**

Sporadothrix: Hermann 1907: 8 [1908: 165]. Type species: *Sporadothrix gracilis* Hermann, 1907, by original designation; Hull 1962: 347; Oldroyd 1974: 81–82 (fig. 77 entire ♀ [not congeneric]); Londt 1994: 76.

Londt (1994: 76), after studying the holotype of *S. gracilis*, and noting its obvious similarity to *Acnephalum cylindricum* Oldroyd, 1974, synonymised *Sporadothrix* with *Acnephalum*. Now that a revision of *Acnephalum* (as *Acnephalomyia*) has been completed, I have come to a different conclusion. Not only is *gracilis* similar to *cylindricum*, I now believe them to be conspecific. As the older name takes precedence, *cylindricum* must fall as a synonym of *gracilis*. In addition, this species shows a number of marked differences when compared to all other species previously placed in *Acnephalum* and so I reverse my 1994 decision and here reinstate *Sporadothrix*, which, as a result of the synonymy of *cylindricum*, remains monotypic.

Some of the characteristics considered diagnostic, and supporting the separation of *Sporadothrix* from *Acnephalomyia* are listed in Table 2.

Sporadothrix gracilis Hermann, 1907 **comb. rev.**

Figs 3, 9, 16, 21, 55–57, 68

Sporadothrix gracilis: Hermann 1907: 10; Hull 1062: 347; Oldroyd 1974: 83; 1981: 370 (catalogue).
Acnephalum cylindricum Oldroyd, 1974: 26; 1981: 359 (catalogue). **Syn. n.**
Acnephalum gracilis: Londt 1994: 76.

Redescription (Based on unique holotype. Condition: Fair; both eyes deformed through contractions (may have been mounted from alcohol); tips of antennal styles broken (terminal spines missing); wings badly damaged (right wing broken off beyond where Sc meets C, left wing broken off beyond where R_1 meets C), posterior margins mostly missing.):

Head: Dark red-brown, pale yellowish white setose, slightly greasy (pruinescence not evident). Antenna: Uniformly red-brown. Segmental ratios 1.0:1.3:3.3:1.0:2.5 (tip missing) – scape slightly shorter than pedicel, both segments with short whitish macrosetae (far shorter than postpedicel); postpedicel less than twice length of scape and pedicel combined; proximal element of 2-segmented style as long as scape; distal element of style as long or longer than scape and pedicel combined. Face red-brown, entirely silver pruinose. Mystax whitish, covering entire face. Frons, vertex and postocular region red-brown, whitish setose; angle subtended by eye margins at

TABLE 2

Some characters separating the genera *Acnephalomyia* and *Sporadothrix*.

Character	*Acnephalomyia*	*Sporadothrix*
Antenna: Length of style (all elements) relative to lengths of scape and pedicel combined.	Style clearly shorter than scape and pedicel combined.	Style clearly longer than scape and pedicel combined.
Head: Extent of pruinescence.	Head fairly extensively apruinose.	Head entirely pruinose.
Thorax (pronotum, mesonotum, scutellum, pleura and coxae): Extent of pruinescence.	Thorax fairly extensively apruinose.	Thorax entirely pruinose.
Thorax: Shape of mesonotum in dorsal view (maximum length to maximum breadth ratio).	Mesonotal length equal to or shorter than breadth (i.e. almost circular in appearance).	Mesonotum clearly longer than wide (*c*. 1.3 times as long as broad).
Thorax: Development of katepisternal setae.	Katepisternal setae absent to poorly developed (few and short).	Katepisternal setae well developed (many and long).
Legs: Development of pulvilli.	Present, but poorly developed (*c*. one-third the length of claws).	Absent (or so minute as to be considered absent).
Abdomen: General shape (defined by length and breadth of terga).	Dorsoventrally compressed (T3 much wider than long).	Cylindrical (T3 longer than wide).
Abdomen: General development (defined by number of clearly visible terga and sterna).	Segments 1–6 well-developed and clearly visible. Segments 7–8 and terminalia much reduced, withdrawn and largely hidden from view.	Segments 1–8 well-developed and clearly seen. Terminalia not greatly reduced and hidden from view.
Hypopygium: Development of epandrium.	Epandrium poorly developed, slightly indented distomedially to form weakly developed lobes.	Epandrium well developed, almost completely incised medially, forming a pair of well-developed lobes.

level of frons/vertex *c*. 12°. Proboscis orange-brown to dark red-brown, whitish setose. Palpus 2-segmented, whitish setose.

Thorax: Uniformly dark red-brown. Pronotum white setose. Mesonotum whitish setose. Lateral macrosetae moderately developed, pale yellowish white. Pleura largely asetose except for some long, straight, white katatergals and dorsally situated anepisternals. Katepisternum long white setose. Scutellum dark red-brown, gold-silver pruinose, with poorly developed transverse, subapical groove. Eight well developed pale yellowish apical macrosetae, unaccompanied by shorter setae; disc asetose. Legs: Dark red brown, distal ends of femora and proximal parts of femora and *tib* yellowish. Setae yellowish white. Ventral parts of *tar* and terminal end of *tib* with short, black setae. Claws black, long (about as long as tarsomere 5); empodia slender, yellowish, less than half length of claws; pulvilli absent. Haltere pale yellow-white, base slightly darker. Wing (damaged, usual measurements impossible): Distance between humeral crossvein and tip of R_1 3.9 mm. Veins brown-yellow, membrane entirely lacking microtrichiae. Membrane entirely transparent and unstained. Vein R_4 with shortish basal stump-vein.

Abdomen: Uniformly dark red-brown to black; pale yellow-white. Eight terga clearly discernable, T2–6 longer than wide. Terga apruinose, sterna finely goldish pruinose.

Genitalia exposed (not withdrawn between terminal terga and sterna) (Figs 55–57): *Epand* medially incised to form two clearly defined lobes; lobes project to a similar extent as external parts of *goncx*. *Proc* juts out to about same level achieved by *hypd* (lateral view). External lobe of *goncx* suboval in lateral view, interior lobe slender, slightly down-curved distally. *Hypd* broadly rounded basally, tapering distally to narrowly rounded apex which has a small medial lobe.

Note: As the antennae and wings of the holotype are damaged, the following measurements are those of the *cylindricum* holotype, which is larger than the *gracilis* type (distance between humeral crossvein and tip of R_1 being 7.4 mm). Antennal ratios: 1:1.2:3.5:1.1:2.2. Wing: 8.6×3.4 mm. Illustrations of an entire specimen (Fig. 3), antenna (Fig. 16), wing (Fig. 9) and tar 5 (Fig. 21) are those of other specimens.

Variation: Previously known only from the two type specimens listed below, I can now list further 31 specimens. This is a remarkably consistent species showing no variation of significance. There is a little variation in size, males (wing length 6.2–8.8 mm) being slightly smaller than females (wing length 6.3–10.9 mm).

Type specimens examined: Holotype (*Sporadothrix gracilis*): NAMIBIA: ♂ 'Brit. S.W: Afrika / Kalahari [19°05'S:14°35'E] / L. Schultze S.', 'Holotypus' [red], '*Sporadothrix* / *gracilis* / Type Hr / Kalahari / Nr 968.2 / Det. / Dr. F. Hermann [last 2 lines sideways]' (ZMHB). Holotype (*Acnephalum cylindricum*): ♀ '80 mls S. of / Gobabis [22°27'S:18°58'E] S.W.A. / 1 Jan. 1961 / W. D. Haacke.', 'Collection . Transvaal / Museum' [pale green], '*Acnephalum* ♀ / *cylindricum* sp. n. / det. H. Oldroyd 1971 / Holotype' [white] (NMSA).

Type locality: The precise provenance of the *gracilis* type specimen is not known. I therefore designate the type locality as 80 km S of Gobabis, where the *cylindricum* holotype was collected.

Other specimens studied: BOTSWANA: 1♂ 'nr. [illegible] / Bechuanaland / 20.xii.57' (BMNH). NAMIBIA: 1♂ 'S W Africa: / Satansplatz [24°51'S:17°31'E] / 1300m / 17-18.xii.1933 / K Jordan' (BMNH); 2♀ 'Swartbaas West 276 / Keetmanshoop / SE 2619Dc / 19-22 Apr. 1972', 'H7800' (NMNW). SOUTH AFRICA: 4♂ 3♀ 'Sth Africa Cape Prov / ca. 65km SE Noenieput / 2720DC 20.iii.1982 / J. Londt & L. Schoeman / Kloof/ green shrubs' (NMSA); 1♂ 1♀ 'South Africa: N Cape / 39km WNW of Upington / 28°21.219'S:020°54.319'E / 955m J Londt & T Dikow / 2.ii.2004 Dry road verge / *Stipogrostis Eragrostis* area' (NMSA); 1♂ 'South Africa: N Cape / Witsand Nature Reserve / ca. 28°32'15"S:22°30'30"E / 1200m 6.iii.2001 / J.G.H. Londt Red sand. / *Acacia*/*Grewia* grassland' (NMSA); 1♀ 'South Africa: N Cape / Witsand Nature Reserve / 28°33'37"S:22°29'05"E / 1200m 5–8.iii.2001 / J.G.H. Londt White sand. / Low vegetation, few trees' (NMSA); 2♂ 3♀ 'South Africa: N Cape / Witsand Nature Reserve / 28°33.615'S:022°29.105'E / 1160m J Londt & T Dikow / 31.i.–1.ii.2004 *Acacia* / savannah & white dune area' (NMSA, 1♀ Coll TD); 3♂ 5♀ 'South Africa: N Cape / Witsand Nature Reserve / 28°33.673'S:022°29.656'E / 1200m J Londt & T Dikow / 30.i.–2.ii.2004 *Acacia* / savannah. Red sandy ridge' (NMSA, 2♂ 1♀ Coll TD); 1♂ 'S. Afr. Cape Prov. / Boksputs Farm / 28°35'S:20°54'E. / Ca. 20km N. Keimoes / 5.ii.1979 / B. Lamoral' (NMSA); 8♂ 6♀ 'South Africa: N Cape / Ca. 22km E Keimoes 635m / 28°44.910'S:020°46.191'E / 4.ii.2004 J Londt T Dikow / Vegetated red Kalahari sand / dune. *Acacia* savannah' (NMSA, 3♂ 3♀ Coll TD); 1♀ 4 km NW Hotazel, 29°13'44"S:22°55'24"E, Almeida, 17.i.2004, 1030 m (Coll TD).

Note: I have not personally studied a few of the specimens currently housed in Dr Torsten Dikow's collection (listed as Coll TD above) but had input into their identification.

Distribution, phenology (Table 3) and biology: The species appears to be fairly widely distributed being recorded from four places in Namibia and eight in the Northern Cape Province of South Africa (four being within the Witsand Nature Reserve) (Fig. 68), as well as from one unknown locality in Botswana. Adults are active in summer and have been collected in December–April. Specimens have been taken from grass in dry, sandy, *Acacia* savannah habitats.

Remarks: Oldroyd (1974: 83), who had not seen the holotype, records, for *gracilis*, 'Type in ? Munich. Type-locality: Kalahari Desert. Distribution. I have seen one male

that I assign to this species, from S.W. AFRICA: Noachabeb, 43 km N.N.E. Grunan [Grünau], 10–12.i.1972 (B. M. S Afr. Exped., 1972).' Firstly, the type is not in Munich, but in the ZMHB collection. Secondly, I have studied the Noachabeb male (identified as *gracilis* by Oldroyd (1974) and commented upon by Londt (1994)) and, as suspected, it has proved to be a new species of *Ammodaimon* Londt, 1985, which is described below.

Oldroyd (1974: 26) characterised *cylindricum* in a key, providing a description of fewer than forty words and no illustrations. His statement regarding the material used is equally brief: 'Holotype ♂ in Pretoria. Type locality: S. W. AFRICA, 128 km S. of Gobabis, January (W. D. Haacke).' The unique holotype, is actually a female, now in the NMSA, and is labelled 80 miles S of Gobabis, in present day Namibia.

Ammodaimon Londt, 1985

Ammodaimon: Londt 1985: 497. Type species: *Ammodaimon acares* Londt, 1985, by original designation and monotypy.

With the discovery that a specimen illustrated by Oldroyd (1974) as *Sporadothrix gracilis*, discussed by Londt (1979, 1994) is actually an undescribed species of *Ammodaimon* the following description is required.

Diagnosis: Stenopogonine asilids with the following combination of characters. *Head*: Antenna: Set low on head (below an imaginary line drawn across maximum width of head in anterior view). Face gently convex; mystax covering entire face. Proboscis short, straight; palpi small, 1-segmented. *Thorax*: Mesonotum with well developed, long macrosetae (*dc*, *ppn*, *npl*, *spal*, *pal*). Scutellar disc asetose. Postmetacoxal area membranous. Legs: Tarsi elongate (as long or longer than tibiae); claws long, straight; empodia and pulvilli entirely wanting. Wing: Membrane lacking microtrichiae, transparent. Vein C continues around wing to level of A_1 (anal cell and alula without bordering vein), all distal cells bordering wing margin open; R_4 without basal stump-vein. *Abdomen*: Cylindrical (not obviously dorsoventrally flattened); eight segments clearly discernable. Genitalia exposed to view and rotated through 90°.

Ammodaimon platythrix sp. n.

Figs 4, 10, 17, 22, 58–60, 68

Sporadothrix gracilis: Oldroyd 1974: 81–83 (fig. 77 – entire specimen). Misidentification.

Etymology: From Greek *platys* (broad, wide, flat) and *thrix* (hair); noun in apposition. The name refers to the many dorsoventrally compressed, scale-like setae characteristic of this species.

Description (Based on holotype (Fig. 4). Condition: Excellent. The specimen is double-mounted and pinned laterally with a minuten pin.):

Head: Dark red-brown, white setose, silver and golden pruinose. Antenna (Fig. 17): Set low on head (below an imaginary line drawn across maximum width of head in anterior view); scape and pedicel yellowish, postpedicel dark red-brown, style dark red-brown except for yellowish tip. Segmental ratios 1.0:1.2:2.2:0.4:1.6 – scape slightly shorter than pedicel, both segments white setose (macrosetae do not jut out to level achieved by postpedicel); postpedicel about twice length of scape and pedicel combined; style

subequal in length to postpedicel. Face gently convex, entirely silver pruinose. Mystax shiny white, covers entire face (there is a narrow asetose strip below antennal sockets) setae dorsoventrally flattened and scale-like. Frons and vertex white setose, entirely silver pruinose; postocular region white setose, silver-gold pruinose; angle subtended by eye margins at level of frons/vertex *c*. 11°. Proboscis short, straight, dark red-brown, weakly whitish setose. Palpus small 1-segmented.

Thorax: Uniformly dark red-brown, white setose (long setae regular, short setae scale-like), entirely silver and gold pruinose. Pronotum white setose. Mesonotum white setose. Lateral macrosetae well developed, long, pale translucent white (4 or 5 *dc*, 2 *ppn*, 3 *npl*, 2 *spal*, 1 *pal*). Pleura largely asetose except for some long, straight, white katatergals and a few scale-like setae ventrally on anepisternum and dorsally on katepisternum. Scutellum dark red-brown, silver-gold pruinose (except for hind margin), with poorly developed transverse, subapical groove. 12 well developed, long, white apical macrosetae, unaccompanied by shorter setae; disc asetose. Postmetacoxal area membranous. Legs: Dark red brown, *cox* silver pruinose, white setose (scale-like setae); *fem tib* and *tar* 1 with long translucent macrosetae and small scale-like white setae; *tar* 2–5 with short, white, regular setae. Pro- and mesothoracic *tar* longer than *tib*, metathoracic *tar* subequal in length to *tib*. Claws black, long (about as long as tarsomere 5), fairly straight; empodia and pulvilli absent (Fig. 22). Haltere pale yellow-white, base brownish. Wing (Fig. 10): 3.1×1.2 mm. Veins pale brownish; membrane lacking microtrichiae, transparent except for brown-stained distal end; C continues around wing to A_1 (anal cell and alula without bordering vein); R_4 lacking basal stump-vein.

Abdomen: Cylindrical, uniformly dark red-brown to black, mostly white setose (some pale yellowish on distal terga). Discal setae long, erect, normal, translucent white; minor setae scale-like, white, recumbent. Eight segments discernable, genitalia rotated through 90°, not withdrawn between subterminal terga and sterna. Terga apruinose, except for narrow silver pruinose lateral strips; sterna entirely fine silver pruinose, virtually all setae short, white, scale-like and recumbent. Genitalia (Figs 55–57) slightly clockwise rotated (<90°): *Epand* medially deeply incised to form two defined lobes fused proximally; lobes falling short of distance achieved by external parts of *goncx*. *Proc* juts out to about same level achieved by *hypd* (lateral view). External lobe of *goncx* in lateral view rounded basally, interior lobe slender, projecting beyond levels reached by either *proc* or *hypd*; interior lobe fairly broad in lateral view with slightly downturned (lateral view), bifurcate (dorsal & ventral views) tip. *Gonst* small, normally hidden from view except in ventral view, slightly curved with two relatively well-developed ventral setae distally. *Aed* short with simple tip. *Hypd* somewhat truncate basally, gradually tapering distally to finger-like medial lobe (ventral view); in lateral view *hypd* had a dorsally projecting subapical flange.

Holotype: ♂ NAMIBIA: 'S. W. AFRICA (3) / Noachabeb [27°26'S:18°31'E] 27 mls. [*c*. 43 km] / NNE. Grunau / 10–12.i.1972', 'Southern / African Exp. / B.M. 1972-1', '*Sporadothrix* / *gracilis* Hermann / det. H. Oldroyd 1973' (BMNH).

Note: This is the specimen identified and described as *Sporadothrix gracilis* by Oldroyd (1974). Although he correctly stated in his text that it was a male, the caption for his useful illustration gives the sex as female.

Distribution (Fig. 68), phenology (Table 3) and biology: The species is known only from the holotype collected in January (*A. acares* being collected in September). The

species probably has a similar behaviour to *A. acares* which rests on the ground in open, fairly arid situations (Londt 1985).

Similar species: *A. platythrix* is similar to *A. acares*, but can be easily separated by the following brief key.

1 Wing with brown-stained tip; mesonotum and scutellar disc entirely pruinose; antennal scape and pedicel yellowish, postpedicel dark red-brown ..... **platythrix** sp. n.

– Wing uniformly transparent; mesonotum pruinose centrally only, margins and scutellar disc shiny apruinose; antennae uniformly dark red-brown ..... **acares** Londt, 1985

Astiptomyia gen. n.

Etymology: From Greek *astiptos* (untrodden, desert, solitary, off the road) and *myia* (fly). Refers to the arid habitat in which this fly was found. Feminine gender.

Type species: *Astiptomyia bikos* sp. n., by present designation.

Diagnosis: Stenopogonine asilids with the following combination of characters. *Head*: Antennal postpedicel elongate, style composed of 3 elements (2 slender segments and terminal spine-like seta); head clearly wider than high in anterior view (not more or less circular); face slightly convex; mystax long, covering entire face; vertex distinctly excavated; angle of divergence of frons/vertex in anterior view <20°; palpi 2-segmented, well-developed; proboscis straight. *Thorax*: Dorsocentrals undifferentiated; anatergites asetose; metepisternal macrosetae absent; postmetacoxal area membranous; pulvilli present, but minute; wing with cell m_3 open at margin; costal vein extends around wing margin, terminating at A_1 (anal cell and alula without bordering vein); cell m_3 closed and stalked; stump-vein at base of R_4 absent. *Abdomen*: Segments wider than long and somewhat dorsoventrally flattened; segments 1–7 clearly visible, terminal segments somewhat reduced and withdrawn.

Remark: The description of this new genus follows the discovery of a few specimens (placed with *Acnephalomyia* material in the NMSA collection), that, although superficially similar to *Acnephalomyia*, are clearly digeneric.

Astiptomyia bikos sp. n.

Figs 5, 11, 18, 23, 61–63, 68

Etymology: From Greek *bikos* (a cup); noun in apposition. The name refers to the cup-shaped hypandrium possessed by this species.

Description (Based primarily on holotype. Condition: Excellent.):

Head: Dark red-brown to black, mainly white setose, some silver pruinescence on face and frons. Antenna (Fig. 18): Orange-brown except for dark brown proximal part of style. Segmental ratios 1.0:1.2:3.3:0.3:1.8 – scape and pedicel subequal in length, macrosetae of pedicel pale translucent yellowish, longer than postpedicel; postpedicel almost twice as long as scape and pedicel combined; style 2-segmented, tipped with spine, subequal in length to scape and pedicel combined. Face dark red-

brown to black, mystax ventrally dense white, dorsally sparse yellowish (narrow asetose strip below antennae). Frons, vertex and postocular region dark red-brown to black, short white setose; angle subtended by eye margins at level of frons/vertex *c*. 12°. Proboscis orange-brown white setose. Palpus 2-segmented, brown-orange, white setose.

Thorax: Dark red-brown to black. Pronotum white setose. Mesonotum fairly sparsely white setose except for four longitudinal asetose strips posteriorly. Lateral macrosetae well developed (3 *npl*, 2 *spal*, 2 *pal*), white. Pleura shiny apruinose, largely asetose except for white katatergals and dorsally situated anepisternals (there are 2 large macrosetae posteriorly). Katepisternum white setose. Scutellum shiny black apruinose with poorly developed transverse, subapical groove. About 28 quite short white apical macrosetae, disc asetose. Legs: Mostly orange-brown, femora dark red-brown dorsally, white setose, major setae erect, minor setae longish, recumbent. Ventral parts of *tar* and terminal end of *tib* short, black setose. Claws long black (about as long as tarsomere 5); empodia slender, yellow, about half length of claws; pulvilli minute (Fig. 23). Haltere brown-orange. Wing (Fig. 11): 3.3×1.5 mm. Veins orange-brown, entirely lacking microtrichiae. Membrane transparent, unstained. Vein R_4 without basal stump-vein.

Abdomen: Terga broader than long, T1 mostly dark red-brown to black, T2–T6 orange-brown. Terga apruinose but entirely pitted by setal sockets. Terga with recumbent white setae laterally, these extending for a short distance along distal margins of terga. Large areas of terga appear asetose, but are covered with tiny blackish setae. Sterna brown-orange, finely gold pruinose, sparsely short, white setose. Terminalia largely withdrawn between T6 and S6. Genitalia (Figs 61–63): *Epand* moderately well-developed, slightly longer than half length of *goncx*, distally somewhat truncate and hardly if at all incised medially. *Proc* fairly short (about half length of *epand*), jutting out to about level achieved by *goncx* (lateral view). Exterior lobe of *goncx* broadly rounded proximally, tapering distally to finger-like distal projection; interior lobe shortish (juts out to about same level as external lobe). *Hypd* rather short, cup shaped, broadly rounded basally, tapering rapidly to short, pointed, upwardly directed distal end.

Variation: Paratypes agree well with holotype but are slightly larger (mean wing length 4.2 mm). Mystax of ♀ denser and whiter in dorsal part. Coloration of thorax and abdomen generally more orange. Most of the paratypes have more apical scutellar macrosetae (mean number 30). Entire ♀ as in Fig. 5.

Holotype: ♂ NAMIBIA: 'South West Africa 2315Db / S.E. corner of Namib Desert / Park, nr. Knamhoek farm, 860m / 15-II-1974, ME. Irwin / vegetated, moving dunes' (NMSA).

Paratypes: 5♀ same data as holotype (NMSA).

Distribution, phenology (Table 3) and biology: Known only from the type locality (Fig. 68) and collected only in February. Nothing is known of the biology of this species.

DISCUSSION

Taxonomy

While the taxonomic position of *Afroholopogon* appears fairly stable, the situation with respect to the other genera reviewed in this paper, and *Sisyrnodytes*, is somewhat controversial. As alluded to in my review of *Sisyrnodytes* (Londt 2009), Dikow (2009*a*) placed *Sisyrnodytes* and *Acnephalum*, as well as *Trichoura* Londt, 1994, together with

two Nearctic genera (*Willistonina* Back, 1908 and *Ablautus* Loew, 1866) in a new subfamily named Willistonininae. Although Dikow (2009*b*) has provided further evidence, derived from a DNA sequencing analysis, I remain unconvinced and so refrain from adopting Dikow's arrangement until he is able to extend his analysis to include a greater number of the species covered in this and my previous work on *Sisyrnodytes*. As previously stated (Londt 2009), Dikow used *cylindricum* to represent *Acnephalum*. This study shows this species to be distinctive and meritorious of its own generic position (i.e. *Sporadothrix*), and I would venture to suggest that *Sporadothrix* has more in common with *Ammodaimon* than it does with *Acnephalum*, *Acnephalomyia* or *Sisyrnodytes*. At present, I believe *Trichoura* to be a rather distinctive genus, easily separated from *Acnephalomyia* and *Sisyrnodytes*, as well as the other genera reviewed in this paper. So, while I have the greatest admiration for Dikow's work, I prefer to await further developments before adopting his subfamily Willistonininae.

Generic identifications

In retaining the Stenopogoninae (*sensu* Londt 1999), I effectively confirm the value inherent in my key to the genera (Londt 1999). After separating out a group of some seven taxa possessing setose anatergites (to this number *Ontomyia* Dikow & Londt, 2000 must now be added – as was done in a revised key to these genera published by Dikow & Londt in 2000), the 1999 key then divides the remaining genera into two groups on the basis of costal vein characteristics – those with a complete costa, and those having a costa that fails to border the anal cell and alula. The latter group, with reduced costal veins, was then split into two groups using the extent of development of the pulvilli – those with normally developed pulvilli and those with reduced or no pulvilli. It was into the group with reduced pulvilli that *Acnephalum*, *Ammodaimon* and *Sisyrnodytes* fell. It is now necessary to update the 1999 key through the incorporation of *Sporadothrix* and *Astiptomyia*. The following key picks up from couplet 9 of the 1999 key and allows for the separation of the five genera with reduced pulvilli.

Key to genera of Stenopogoninae without, or with poorly developed, pulvilli

1 Abdomen broad and dorsoventrally compressed (width : length ratio of T2 >2)...2
– Abdomen cylindrical, not obviously dorsoventrally compressed (width : length ratio of T2 <1.5) 4

2 Costal vein extending around wing tip, terminating at a point where CuA_2 and A_1 reach wing margin; cells r_5 and m_3 open at wing margin.....3
– Costal vein falling short of juncture of CuA_2 and A_1; cells r_5 and m_3 stalked, the stalks frequently failing to reach the wing margin..... **Sisyrnodytes** Loew, 1856

3 Cell m_3 open; vein R_4 usually with basal stump-vein; pulvilli poorly developed, but clearly discernable; hypandrium somewhat flat or only gently concave .... **Acnephalomyia** gen. n.
– Cell m_3 closed and stalked; vein R_4 lacking basal stump-vein; pulvilli minute and difficult to detect; hypandrium distinctively cup-shaped..... **Astiptomyia** gen. n.

4 Small flies (wing length <3.5 mm); empodia apparently absent; vein R_4 lacking basal stump-vein; macrosetae of mesonotum greatly developed, many times longer than accompanying setae ..... **Ammodaimon** Londt, 1985

– Larger flies (wing length >6.0 mm); empodia well developed; vein R_4 with basal stump-vein; macrosetae of mesonotum moderately developed, not many times longer than accompanying setae ..... **Sporadothrix** Hermann, 1907

Distribution

All the genera covered in this review, except for *Afroholopogon*, are southern African endemics that are largely restricted to rather arid biomes (i.e. Desert, Fynbos, Nama-Karoo and Succulent Karoo) as is shown for *Acnephalomyia* species (Fig. 64). This means that populations are found mainly in the south-western parts of southern Africa – including parts of southern Namibia, the western parts of the Northern Cape and Western Cape Provinces, and the western parts of the Eastern Cape Province of South Africa. Species occur both in the winter rainfall and summer rainfall areas of the subcontinent.

Biology

Table 3 indicates that adult *Acnephalomyia* fly mainly during spring and summer, most species being found resting on the ground during October and November. *Sporadothrix*, *Ammodaimon* and *Astiptomyia* apparently fly later in the year, having probable peaks during the summer months of January and February. *Sporadothrix*, however, may also be found during the autumn month of April. While little is known of the habits of *Astiptomyia*, and *Ammodaimon*, like *Acnephalomyia*, species appears to frequent the ground, while *Sporadothrix* has been found both on the ground and perching in vegetation. The few prey records that are available suggest that *Acnephalomyia* is a generalist, feeding on anything of an appropriate size that it gains access to.

TABLE 3

Phenology of species of *Acnephalomyia*, *Sporadothrix*, *Ammodaimon* and *Astiptomyia* reviewed in this paper. Months start with July so as to centre the data for these mainly summer-active species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Acnephalomyia												
andrenoides	●	●	●	●	●	●	●	●	–	–	–	–
dorsalis	–	●	●	●	●	●	●	●	–	–	–	–
eremia	–	●	–	–	–	–	–	–	–	–	–	–
iota	–	–	●	●	●	–	–	–	–	–	–	–
leukoros	–	–	–	●	●	●	–	●	–	–	–	–
platygaster	–	●	●	●	●	●	–	–	–	–	–	–
probolos	–	–	●	–	–	–	–	–	–	–	–	–
Sporadothrix												
gracilis	–	–	–	–	–	●	●	●	●	●	–	–
Ammodaimon												
platythrix	–	–	–	–	–	–	●	–	–	–	–	–
Astiptomyia												
bikos	–	–	–	–	–	–	–	●	–	–	–	–

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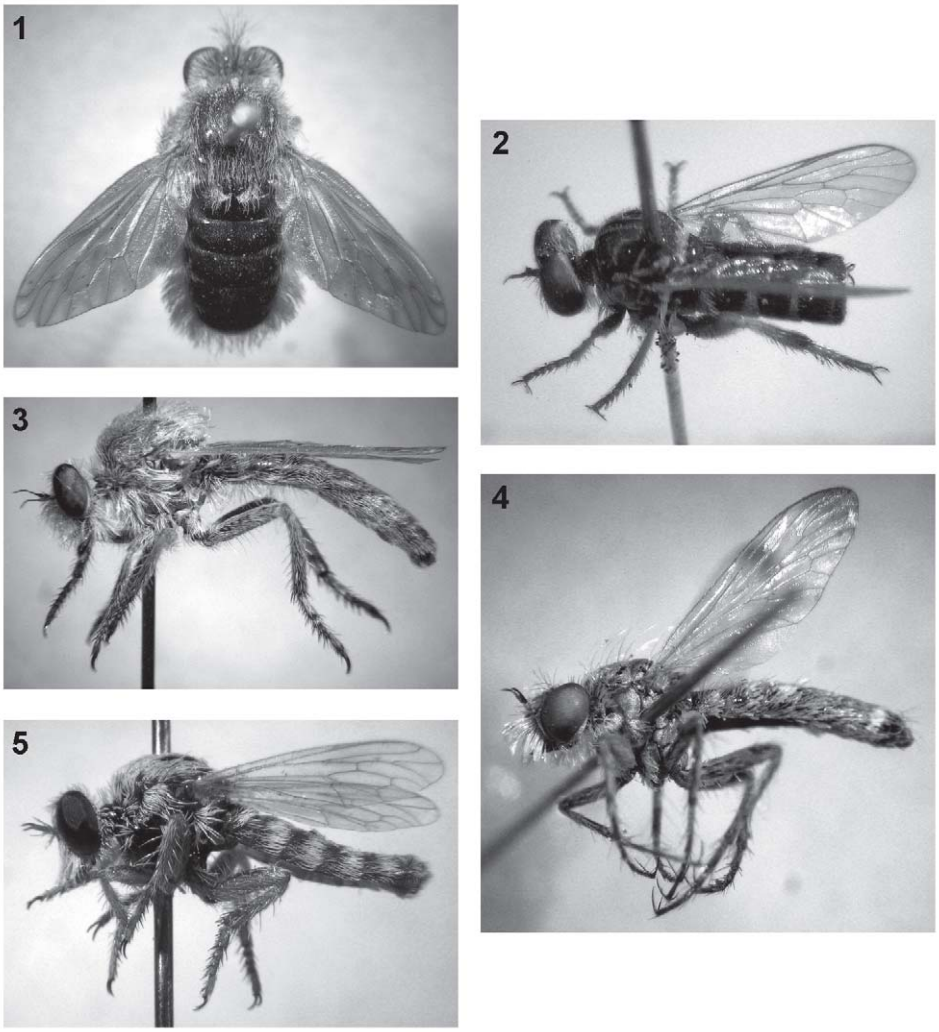
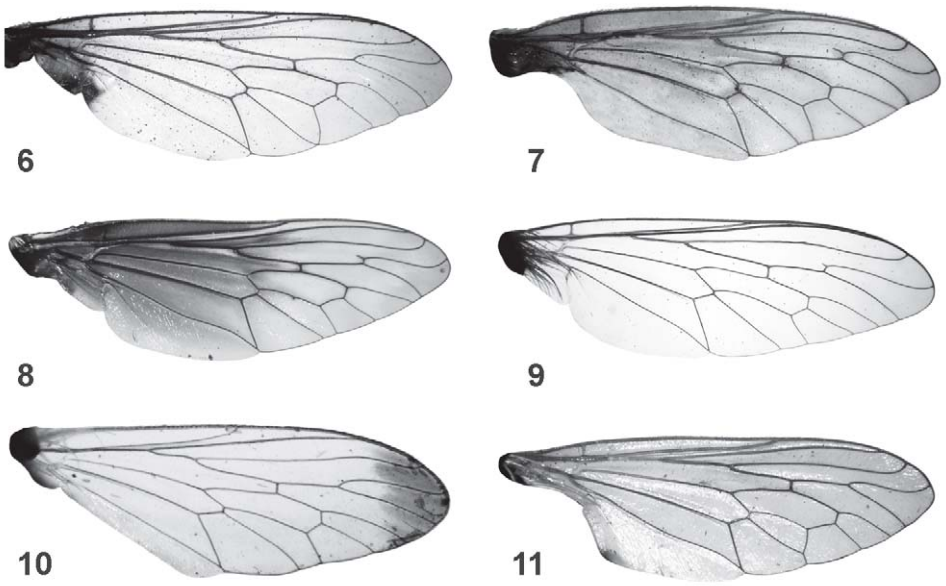
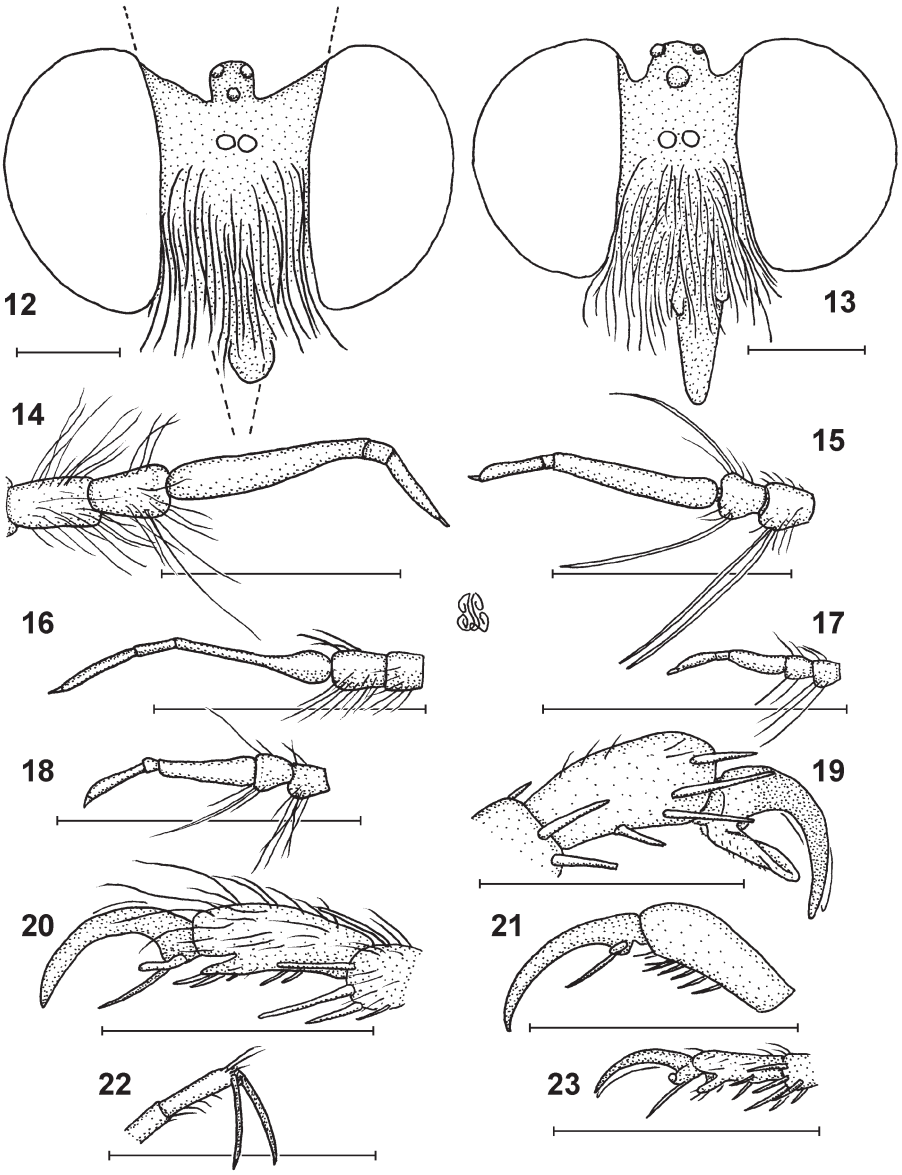


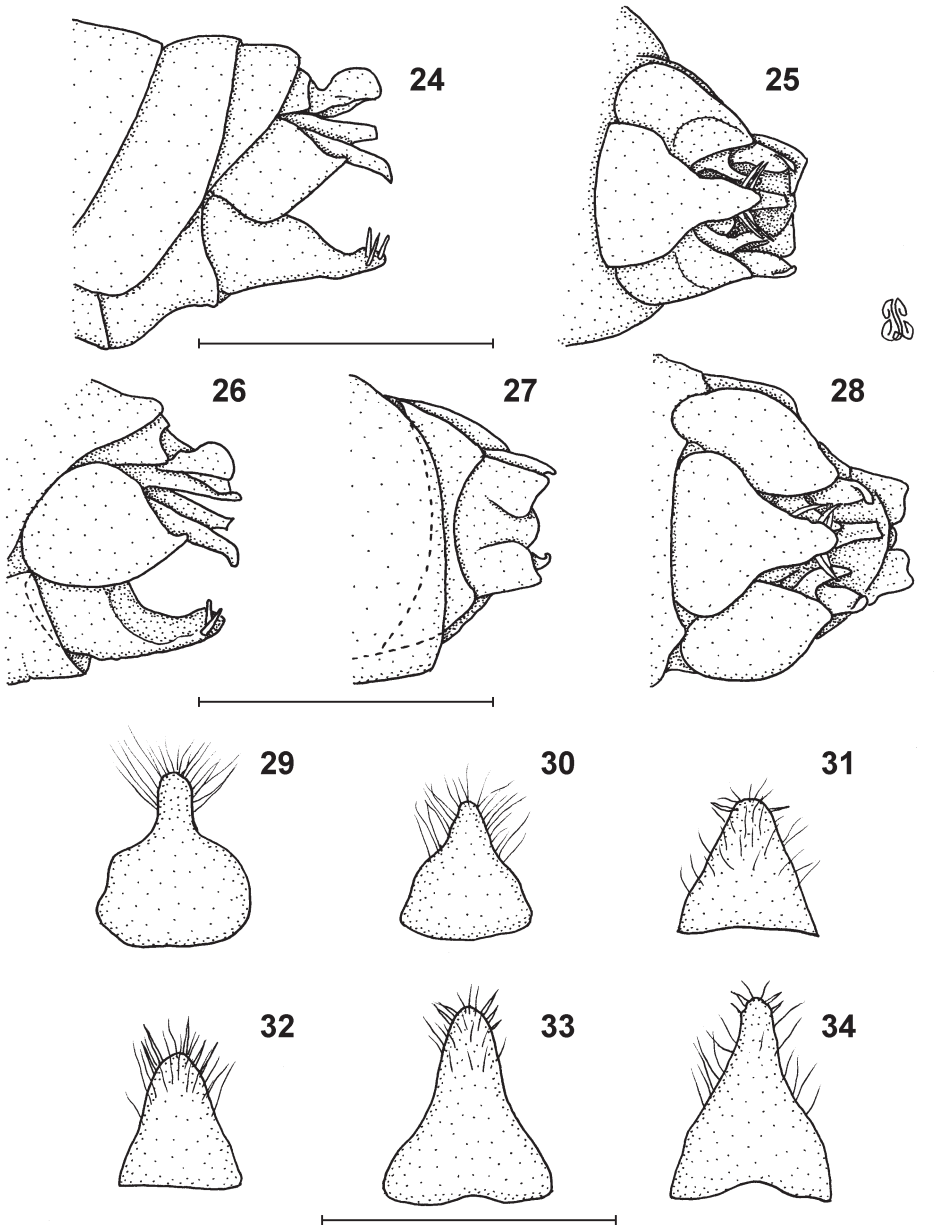
Figs 1–5. Appearance of entire specimens: (1) *Acnephalomyia andrenoides* (Wiedemann, 1828) [lectotype ♂ *Dasypogon quadratus* Wiedemann, 1828]; (2) *Afroholopogon futilis* (Wulp, 1899) [lectotype ♂ *Acnephalum futilis* Wulp, 1899]; (3) *Sporadothrix gracilis* Hermann, 1907, ♂ from 65 km SE Noenieput; (4) *Ammodaimon platythrix* sp. n., holotype ♂; (5) *Astiptomyia bikos* sp. n., paratype ♀.



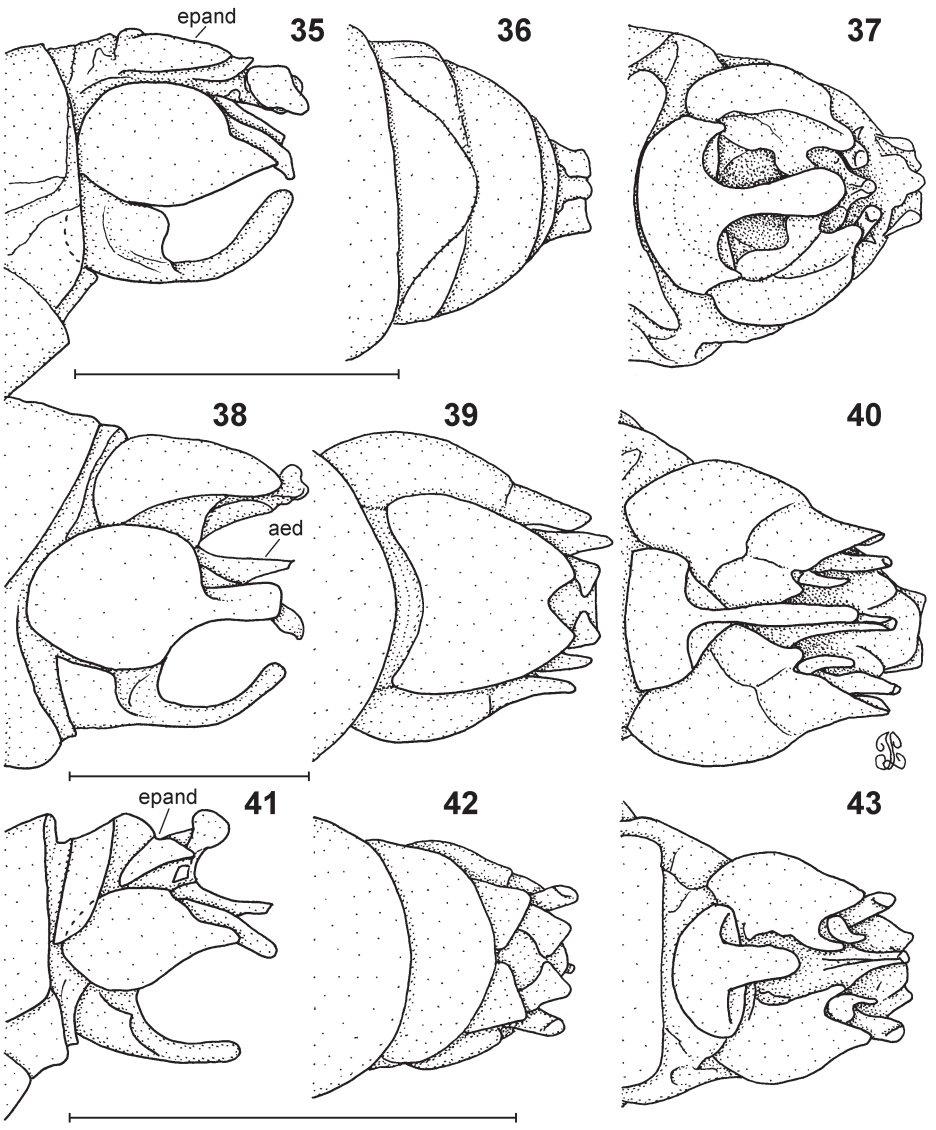
Figs 6–11. Wing venation (none removed from specimens): (6) *Acnephalum olivierii* Macquart, 1838, holotype; (7) *Acnephalomyia andrenoides* (Wiedemann, 1828), lectotype ♂ *Dasypogon andrenoides* Wiedemann, 1828 (the shadow in the region of the anal cell is a leg situated below the wing); (8) *Acnephalomyia platygaster* (Loew, 1858), ♂ from 60 km S Aus; (9) *Sporadothrix gracilis* Hermann, 1907, ♂ from 39 km WNW of Upington; (10) *Ammodaimon platythrix* sp. n., holotype ♂; (11) *Astiptomyia bikos* sp. n., paratype ♀.



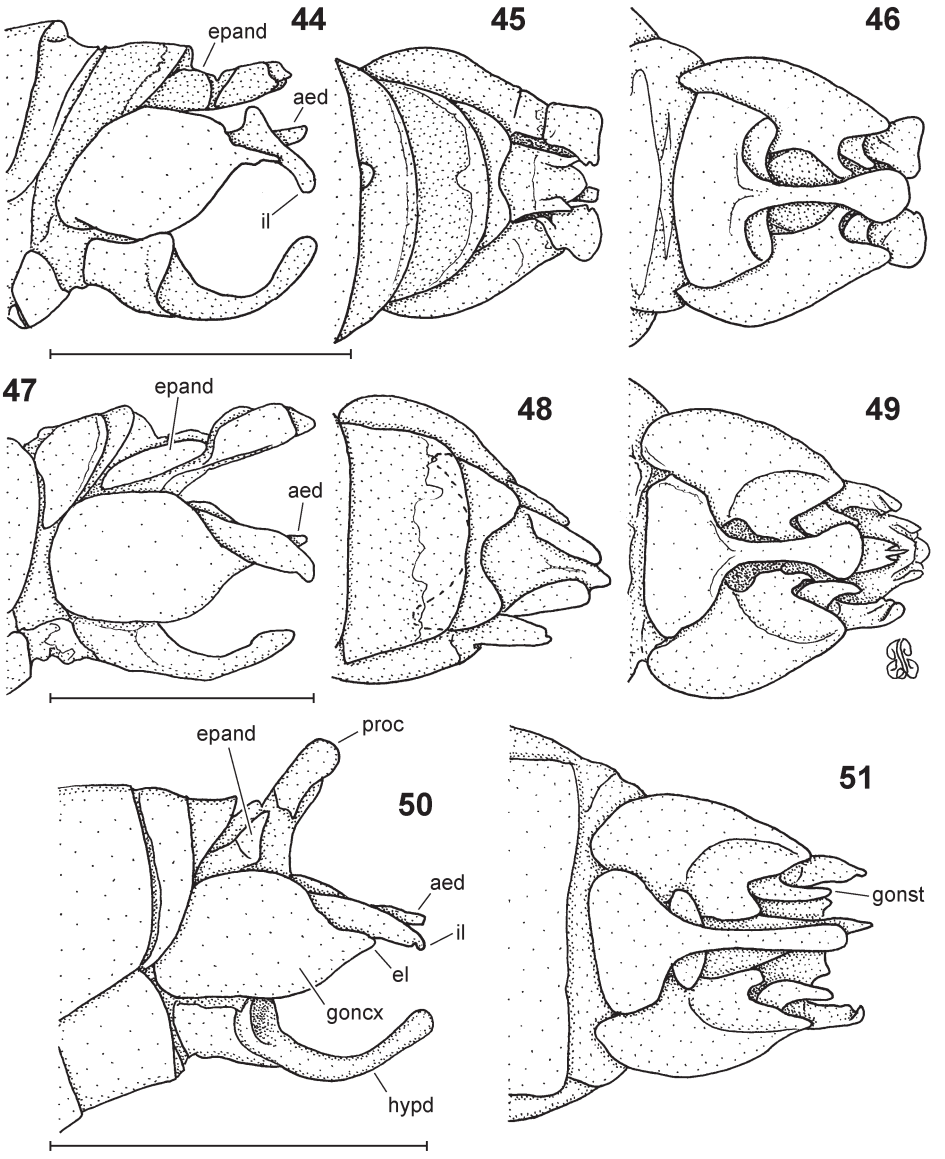
Figs 12–23. (12, 13) Head in anterior view: (12) *Acnephalum olivierii* Macquart, 1838, holotype (dotted lines show angle subtended by frons/vertex); (13) *Acnephalomyia andrenoides* (Wiedemann, 1828), lectotype; (14–18) Antennae, lateral view: (14) *A. olivierii* holotype; (15) *A. andrenoides* lectotype; (16) *Sporadothrix gracilis* Hermann, 1907, *ca* 65 km SE Noenieput ♂; (17) *Ammodaimon platythrix* sp. n., holotype ♂; (18) *Astiptomyia bikos* sp. n., holotype; (19–23) Tarsomere 5 and associated structures: (19) *A. olivierii* holotype; (20) *A. andrenoides* lectotype; (21) *Sporadothrix gracilis* Hermann, 1907, *ca* 65 km SE Noenieput ♂; (22) *Ammodaimon platythrix* sp. n., holotype ♂; (23) *Astiptomyia bikos* sp. n., holotype. Scale lines = 1 mm.



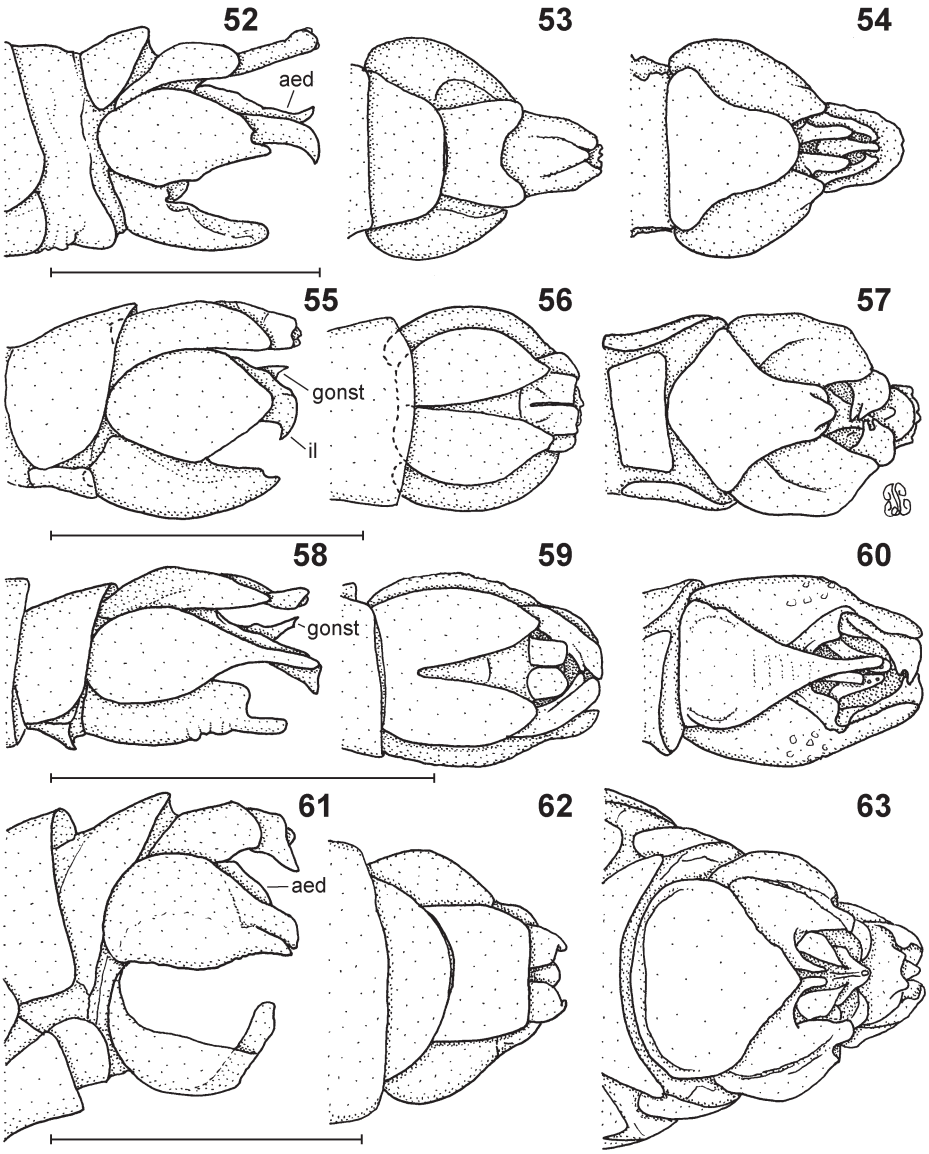
Figs 24–34. *Acnephalomyia andrenoides* (Wiedemann, 1828) male terminalia: (24, 25) Paralectotype, lateral and ventral; (26–28) *Acnephalum cockerelli* Curran, 1934 holotype, lateral and ventral; (29–34) Hypandrial variation, (29) 56 km N Beaufort West, (30) Besemgoedkop 31 km N Sutherland, (31) 9 km SW Millowmore, (32) Grahamstown, (33) 5 km E Aus, (34) 72 km S Aus. Scale lines = 1 mm.



Figs 35–43. *Acnephalomyia* male terminalia: (35–37) *A. dorsalis* (Macquart, 1838) Knersvlakte, North of Vanrhynsdorp, lateral, dorsal and ventral; (38–40) *A. eremia* sp. n. holotype, lateral, dorsal and ventral; (41–43) *A. iota* sp. n. holotype, lateral, dorsal and ventral. Scale lines = 1 mm.



Figs 44–51. *Acnephalomyia* male terminalia: (44–46) *A. leukoros* sp. n. paratype, lateral, dorsal and ventral; (47–49) *A. platygaster* (Loew, 1858) topotypic ♂ lateral, dorsal and ventral; (50, 51) *A. probolos* sp. n. paratype, lateral and ventral. Scale lines = 1 mm.



Figs 52–63. Male terminalia: (52–54) *Afroholopogon futilis* (Wulp, 1899) lectotype, lateral, dorsal and ventral; (55–57) *Sporadothrix gracilis* Hermann, 1907, holotype, lateral, dorsal and ventral; (58–60) *Ammodaimon platythrix* sp. n. holotype, lateral, dorsal and ventral; (61–63) *Astiptomyia bikos* sp. n. holotype lateral, dorsal and ventral. Scale lines = 1 mm.

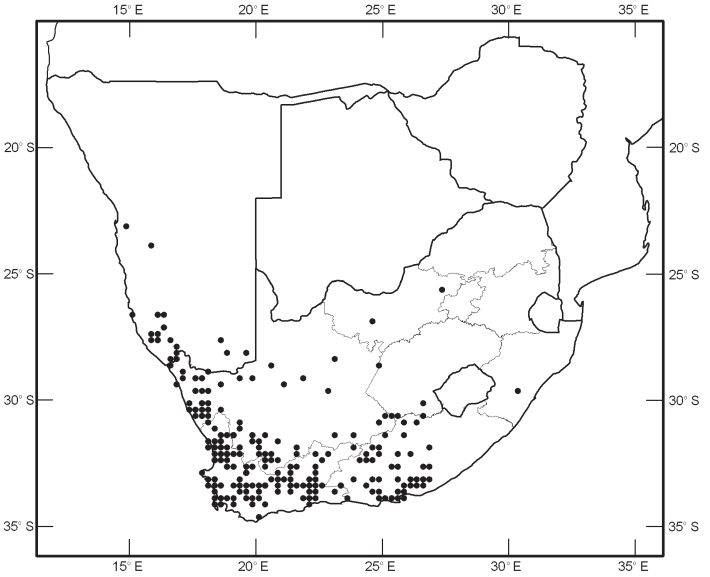


Fig. 64. Distribution of *Acnephalomyia* gen. n. species.

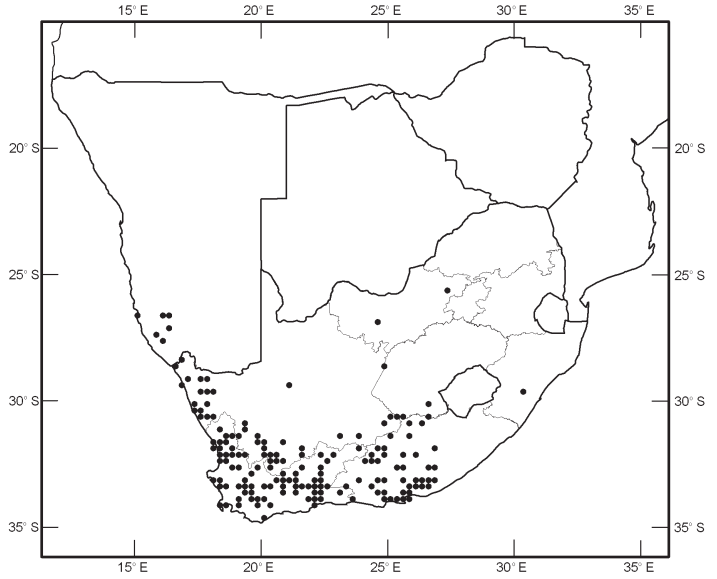


Fig. 65. Distribution of *Acnephalomyia andrenoides* (Wiedemann, 1828).

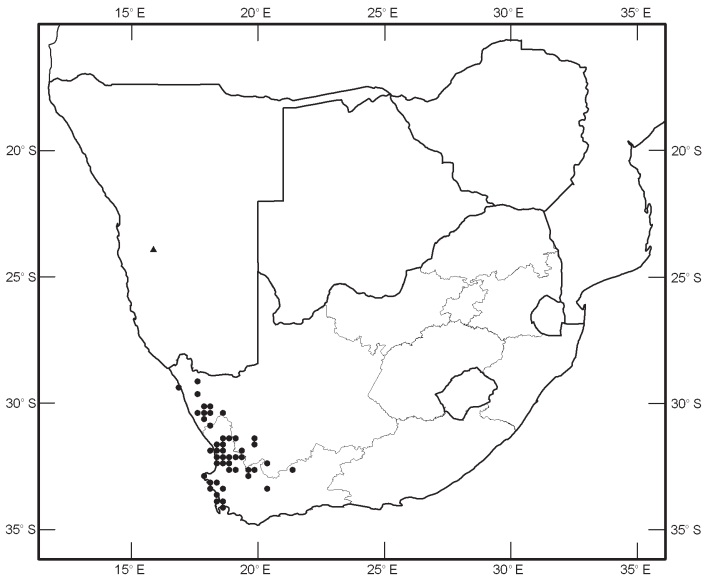


Fig. 66. Distribution of *Acnephalomyia* species: *A. dorsalis* (Macquart, 1838) – circles; *A. eremia* sp. n. – triangle.

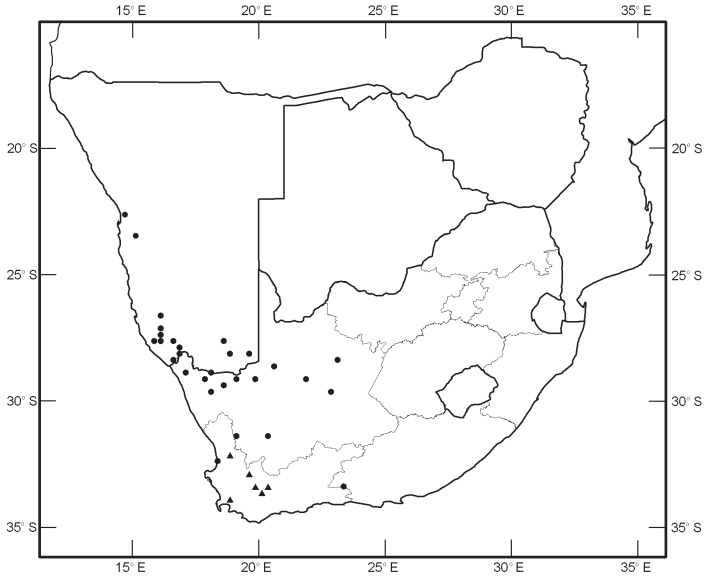


Fig. 67. Distribution of *Acnephalomyia* species: *A. leukoros* sp. n. – triangles; *A. platygaster* (Loew, 1858) – circles.

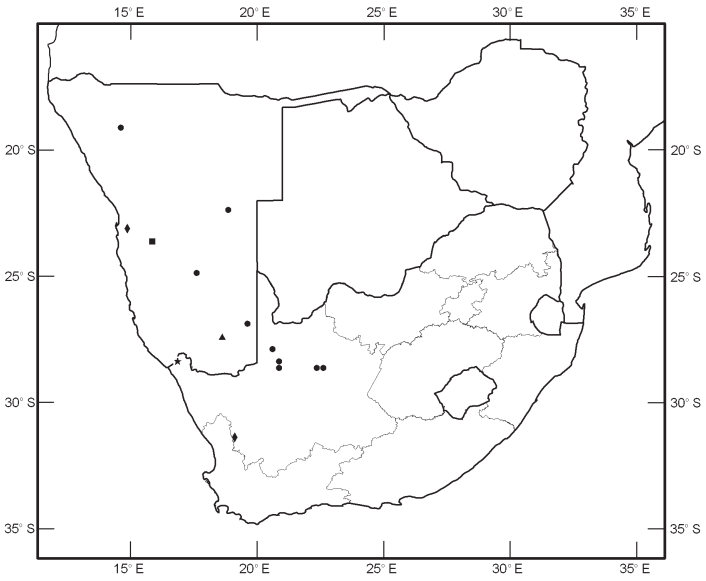


Fig. 68. Distribution of species: *Acnephalomyia iota* sp. n. – diamonds; *A. probolos* sp. n. – star; *Sporadothrix gracilis* Hermann, 1907 – circles; *Ammodaimon platythrix* sp. n. – triangle; *Astiptomyia bikos* sp. n. – square.

INDEX

This is an index to the generic and specific names (in an Afrotropical context) given taxonomic attention in this publication. Names cited only in discussions or references are not listed. Names in bold face are considered currently valid in an Afrotropical context.