

# Review of the South African species of *Pegylis* Erichson, 1847 (Coleoptera: Scarabaeidae: Melolonthinae) commonly known as large wattle chafers

J. du G. Harrison<sup>1,2,3</sup>

<sup>1</sup>Department of Zoology and Entomology, Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria, 0002 South Africa

<sup>2</sup>School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Private Bag 3, Johannesburg, 2050 South Africa\*

<sup>3</sup>Department of Invertebrates, Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, 0001 South Africa

A review of the three known species of *Pegylis* occurring in South Africa is provided, including a dichotomous key, illustrations of diagnostic features, distribution maps and notes on natural history. Lectotypes are designated for *Hypopholis sommeri* Burmeister, 1855, and *Pegylis pondoensis* Arrow, 1943. *Pegylis vittata atrata* Machatschke, 1955 syn. nov. is regarded here as conspecific with *Pegylis vittata*.

**Key words:** *Adoretopsis*, *Hypopholis*, *Pegylis*, *Pegylidius*, taxonomy, southern Africa, white grubs, chafers, sporadic pests.

## INTRODUCTION

*Pegylis* species, colloquially referred to as 'large wattle chafers' (after Prins 1965), are often among batches of scarab beetle pests requiring identification. Once identified to species, further questions on their diversity, distribution, biology and control are often requested.

The phylogenetic relationship between *Adoretopsis* Fairmaire, 1887, *Hypopholis* Erichson, 1847, *Pegylidius* Péringuey, 1904 and *Pegylis* Erichson, 1847, is provided in Harrison (2014, this volume). This resulted in the confirmation of Arrow's (1943) synonymy of *Pegylidius* with *Pegylis*, Lacroix's (2010) synonymy of *Adoretopsis* with *Pegylis* and the recent (Harrison 2014) synonymy of *Hypopholis* with *Pegylis*. Presently, *Pegylis* includes 35 species, of which three species are known from South Africa, with two of these species occurring into South Africa's neighbouring countries. The remaining 32 species of *Pegylis* occur further north up into tropical Africa (Lacroix 2010). Here all available information on the South African species of *Pegylis* is compiled with coverage of their identification, distribution, biology, pest status and known host plant range.

## Taxonomy

Erichson's *Naturgeschichte der Insekten Deutschlands* was published in six parts: I, II, pp. 1–320 in 1845; III, pp. 321–480 in 1846; IV, V, pp. 481–800

in 1847; VI, pp. 800–968 in 1848. His descriptions of *Coniopholis*, *Empecta*, *Hypopholis* and *Pegylis* are found on page 657, and is thus dated Erichson, 1847. Lacroix (2008a,b) erroneously attributed *Pegylis* to Erichson (1848), which is amended here to *Pegylis* Erichson, 1847 with the above publication dates as rationale for this action.

In two of his three '*Catalogue des Coléoptères de la Collection de M. le Comte Dejean*', Dejean (1833) listed *Leucopholis sommeri* Dejean from 'N...' (Natal), and updated this species occurrence to '*Cap. Bon. Sp*' in Dejean (1837). However, as no description accompanied his collection list, *Leucopholis sommeri* Dejean, 1833 and later *Leucopholis sommeri* Dejean, 1837 is an invalid authorship indication. Erichson (1847) described the genera *Hypopholis* and *Pegylis*, and transferred '*Leucopholis sommeri* Dejean' and *Leucopholis vittata* Boheman to *Hypopholis*; and *Melolontha morio* Koller *in litt.* to *Pegylis* (*Pegylis morio* was formally described by Blanchard in 1851).

Burmeister (1855) reviewed *Pegylis* and *Hypopholis*, but incorrectly attributed these species *Hypopholis sommeri* Erichson and *H. vittata* Boheman & Erichson, as indicated here. Lacordaire (1856) divided the Melolonthinae into tribes and subtribes and included *Hypopholis sommeri* in his group 'Melolonthides'. Fähræus in Boheman (1857) provided the first description for *Hypopholis vittata* based on specimens from KwaZulu-Natal,

\*Present address. E-mail: james.harrison@wits.ac.za

South Africa, followed by Boheman's (1857) description of *Hypopholis sulcicollis* from the Limpopo River. Gerstaecker (1867) synonymized *H. sulcicollis* with *H. sommeri* and noted the difference in tarsal claw morphology between *H. sommeri* and *H. vittata* as 'the shape of the tarsal claws in ... *H. sommeri* are in the middle very strongly dentate, [while] in *H. vittata* the posterior tibial claws are simple; the protibial claws with a simple inner [claw] and split external [claw].' Harold (1869) catalogued the described species of *Pegylis* and *Hypopholis*; including *H. sommeri* and *H. vittata* (with *H. sulcicollis* listed as a synonym of *H. sommeri*). Gerstaecker (1873) mentioned the differing tarsal claw morphology between *H. sommeri* and *H. vittata*. 'It is intriguing that [of] the three species that are known to date, all show distinctly / unusually shaped claws: (i) all claws apically deeply split: *H. conspurcata*; (ii) all claws medially strongly dentate [toothed]: *H. sommeri*; (iii) meso- and metatarsal claws simple [unmodified]; protarsal inner claw simple, outer claw split: *H. vittata* ...'. Péringuey (1904) grouped six genera (*Asthenopholis*, *Brachylepis*, *Eulepida*, *Hypopholis*, *Pegylidius* and *Pegylis*) into his group 'Leucopholides' and provided a generic key. *Hypopholis sommeri* is regarded as common in the eastern parts of South Africa, and *H. sulcicollis* and *H. vittata* are synonymous with it. Péringuey (1904) noted that 'In Natal it causes serious damage to plantations of wattle trees (*Acacia mollissima* W.).' Dalla Torre (1912) provided a catalogue of the known species of *Hypopholis* (one species; two synonyms herein); *Pegylidius* (one species) and *Pegylis* (14 species, including two species transferred from *Hypopholis*). Moser (1915) correctly removed *Hypopholis vittata* from synonymy with *H. sommeri*. Arrow (1943) described a new South African species (*P. pondoensis*) and synonymized *Pegylidius* with *Pegylis*. Arrow (1943) mentioned that neither the form of the tarsal claws, nor the number of antennal segments were valid generic characters in this particular instance. Ferreira (1963 [1966]) in her 'Catalogue of the beetles of Mozambique' included *Hypopholis sommeri*. Lacroix (2010) summarized the taxonomic history of *H. sommeri* and *H. vittata* including a key and diagrams of the male genitalia. Harrison (2013, 2014), based on a morphologically based phylogeny, synonymized *Hypopholis* with *Pegylis*.

Currently there are about 35 species names within the four genera reviewed for this study,

and although a revision of *Pegylis* is in progress, this review includes only the three South African species of *Pegylis*. It is the first step towards a complete revision of the genus *Pegylis*.

An abbreviated taxonomic history for the genera *Adoretopsis*, *Hypopholis*, *Pegylidius* and *Pegylis* is provided below. Apart from the generic type species only the three South African species (or their synonyms) covered in each paper are listed. Within the cited sources original species descriptions are indicated in bold, synonyms are underlined, and italics indicate valid species.

#### Genus *Pegylis* Erichson, 1847

*Adoretopsis* Fairmaire, 1887: 125–126 (*tenuitarsis*). Type species: *Adoretopsis tenuitarsis* Fairmaire, 1887 (monotypic). Lacroix 2010: 90, 118–119 (synonymized).

*Hypopholis* Erichson, 1847: 657. Type species: *Hypopholis sommeri* Burmeister, 1855. Erichson 1847: 657 (*sommeri* Dejean [sic] & *vittata* Boheman [sic]); Burmeister 1855: 282–283 (*sommeri* and *vittata* Boheman [sic]); Lacordaire 1856: 299 (*sommeri*); Boheman 1857: 91–93 (*sommeri*, *sulcicollis* and *vittata* Fåhraeus in Boheman 1857); Gerstaecker 1867: 42 (*sommeri*, *sulcicollis* and *vittata*); Harold 1869: 1161 (catalogue: *sommeri*, *sulcicollis* and *vittata*); Gerstaecker 1873: 112–113 (*sommeri*, *sulcicollis* and *vittata*); Péringuey 1904: 277 (key to genera), 278–280 (*sommeri*, *sulcicollis* and *vittata*); Dalla Torre 1912: 167 (catalogue: *sommeri*, *sulcicollis* and *vittata*); Moser 1915: 132 (correction to previous synonymy of *vittata* with *sommeri*); Burgeon 1946: 344–345 (*sommeri*); Machatschke 1955: 91–96 (*sommeri*, *sulcicollis*, *vittata* and *vittata atrata*); *vittata atrata* **syn. nov.** Ferreira 1963: 798 (catalogue: *sommeri*, *sulcicollis* and *vittata*); Lacroix 2010: 85–89 (*sommeri*, *sulcicollis*, *uelensis* and *vittata*); Harrison 2014: 738 (synonymized).

*Pegylidius* Péringuey, 1904: 279. Type species: *Pegylidius mashunus* Péringuey, 1904 (monotypic). Péringuey 1904: 277 (key to genera), 279–281 (*mashunus*); Arrow 1943: 773, 780–782 (discussion: *pondoensis*); 773, 781 (genus synonymized).

*Pegylis* Erichson, 1847: 657. Type species: *Pegylis morio* Blanchard, 1851. Erichson 1847: 657 (*morio* Koller in litt., *sommeri* Dejean [sic] & *vittata* Boheman [sic]); Arrow 1943: 773,

780–783 (discussion: *pandoensis*); 773, 781 (synonymy of *Pegylidius* with *Pegylis*); Lacroix 2010: 90–122, 114–115 (*pandoensis*).

### Generic diagnosis

Size 14–24 mm. Head. Antennae 10-segmented, antennal club three-segmented, as long as funiculus. Clypeus slightly elongated, anterior margin rounded, clypeo-frontal sulcus marked; penultimate segment of maxillary palps fusiform; labrum bilobed, elongate. Protibia bi- to tridentate; apical tooth short, slightly curved; protibial spur absent; tarsal claws variable between sexes intraspecifically and species interspecifically. Pronotum transverse, sides rounded or slightly curved apically; anterior angles prominent; anterior pronotal edge with distinct membrane; pronotal disc with median longitudinal groove (present or absent); pronotal punctation present and variable to species. Elytra with rounded sides, expanded before apex, raised upwards laterally; elytral costa absent; median punctation moderate, finely setose; humeral callus distinct; elytral apex rounded. Propygidium without a median longitudinal groove; pygidium wider than long with apex rounded or truncated; metepisternum wide, setose; metasternum moderately setose; mesosternal process varying from prominent to absent; sternites finely setose.

*Type species.* *Pegylis morio* Blanchard, 1851.

### Sexual dimorphism

Males and females are easily differentiated based on the shape of the antennal club (rounded in females; elongate in males); protarsal claw form; and presence of a median groove on the abdominal sternites in males (viewed ventrally), *versus* evenly rounded abdominal sternites in females.

### Natural history and pest status

Adults and larvae of *Pegylis* species are sporadic pests in agricultural crops as defoliators (adults) and root feeders (larvae). Adults have been observed feeding and mating during the day, but have also been collected from light traps at night. What is known about their biology and pest status is covered within the species sections below.

Oberholzer (1959a,b) described the third instar larvae of *P. sommeri*. In a paper where he described the first and second instars of *P. sommeri*, Prins (1965) coined the common name ‘wattle chafers’. Smith *et al.* (1995) redescribed the third instar (incorrectly identified as *Macrophylla ciliata* (Herbst,

1790)) as a pest of pineapple. Sweeney (1967) provided a description of the larvae of *P. vittata*, but confirmation of the species is confounded by lack of a voucher. These are the only species of *Pegylis* known to me that have larval descriptions.

### Parasites

In a study of sugarcane chafer beetles in Tanzania, Jepson (1956) recommended two flies, *Adapsilia latipennis* (Walker, 1849) (Pyrgotidae) and *Pexopsis pyrhaspis* Villeneuve, 1916 (Tachinidae), as known parasites of adult *P. sommeri* and as potential control agents for the Tanzanian chafer *Cochliotus melolonthoides* (Gerstaecker, 1867).

Prins (1965) provided an interesting overview of the natural enemies of chafers in general, and for *P. sommeri* mentioned flies from the families Bombyliidae, Pyrgotidae, Dexiidae and Tachinidae and wasps from the families Tiphidae and Scolidae. Prins’ (1965) experimental results showed that species of Pyrgotidae (*Adapsilia* sp.) and Tachinidae (*Pexopsis pyrhaspis*) caused the highest mortalities of *P. sommeri*. Following Korneyev (2006), *Adapsilia latipennis* (Walker, 1849) is now regarded as *Eupyrgota latipennis* (Walker, 1849).

### Chemical control

Carnegie (1974) conducted *in situ* insecticide trials in sugarcane and wattle plantations in KwaZulu-Natal against *P. sommeri* and *Schizonycha affinis* Boheman, 1857 (see Pope (1960) for more information on *S. affinis*) using the following chemicals: BHC; chlordane; chlorfenvinfos; DDT; dieldrin; *m*-(1-methylbutyl) phenyl methylcarbamate and *m*-(1-ethylpropyl) phenyl methylcarbamate (Bux); O-ethyl-S-phenyl-ethylphosphonodithioate (Dyfonate); and pirimiphos-ethyl. Dieldrin applied at planting provided the most satisfactory and lasting control measure against white grubs.

Following the ban of aldrin and dieldrin, Carnegie & Hardy (1986) investigated the use of the following chemicals against both larvae and adult chafers: aminofurocarb; azinphos methyl; carbofuran; carbosulfan; chlormephos; chlorpyrifos; dichlorvos; dieldrin; ethoprosfos; ethylene dibromide (EDB); fenamiphos; fenitrothion; fensulfothion;  $\gamma$ -BHC; isazofos; isofenphos; methomyl; oxamyl; phorate; and terbufos. Soil-surface applications did not result in any viable pest reductions. Subsoil application of EDB did reduce the numbers of *P. sommeri*. However, Carnegie &

Hardy (1986) did not recommend EDB to growers at that time, but suggested Telone II as a possible substitute (for dieldrin).

Carnegie (1988) reviewed the history of white grub damage (including *P. sommeri*) to sugarcane in South Africa and Swaziland and reported on trials involving the chemicals aldicarb (granular = GR); carbofuran (GR); carbosulfan (controlled release = CR); chlorpyrifos (CR); ethoprosfos (GR); isazofos (emulsifiable concentrate = EC); and oxamyl (EC and CR).

## MATERIAL AND METHODS

*Material examined* is in the following depositories; codens follow Evenhuis (2012); South Africa is abbreviated to SA; collection managers and curators are included in brackets. Student specimens are denoted as follows; UPSA and UNSA to TMSA, RUDZ to AMGS.

(AMGS) Albany Museum, Grahamstown, SA (F.W. Gess, A.H. Kirk-Spriggs); (BMNH) The Natural History Museum, London, United Kingdom (M. Kerley); (BMSA) Nasionale Museum, Bloemfontein, SA (L.N. Lotz, R. Scholtz); (DEIG) Deutsches Entomologisches Institut, Eberswalde, Germany (L. Zerche, D. Ahrens); (DMSA) Durban Natural Science Museum, Durban, SA (T. Crouch); (FABI) Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria; (ICFR) Institute for Commercial Forestry Research (housed at FABI); (ISNB) Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (M. Cludts, M. Peeters, D. Drugmand); (MKCP) Martin Krüger Collection, Pretoria, SA; (MMKZ) Alexander McGregor Memorial Museum, Kimberley, SA (housed at BMSA); (MNCN) Spain, Madrid, Museo Nacional de Ciencias Naturales; (MNHN) Muséum National d'Histoire Naturelle, Paris, France (Y. Cambefort, N. Berti); (MRAC) Musée Royal de l'Afrique Centrale, Tervuren, Belgium (M. De Meyer); (NHRS) Naturhistoriska Riksmuseet Stockholm, Sweden; (NMBZ) Natural History Museum of Zimbabwe, Bulawayo, Zimbabwe; (RUDZ) Rhodes University, Department of Zoology and Entomology, Grahamstown, SA (M. Villet); (SAMC) South African Museum, Cape Town, SA (M. Cochrane, S. van Noort); (SANCC) South African National Collection of Insects, Pretoria, SA (R. Stals); (SASRI) South African Sugar Research Institute, Mount Edgecombe, SA (D. Conlong, M. Way); (TMSA) Transvaal Museum, Pretoria, SA (R.

Müller); (UCT) University of Cape Town, Department of Zoology, Cape Town, SA (M. Picker); (UPSA) University of Pretoria, Department of Zoology and Entomology, Pretoria, SA; (USNM) National Museum of Natural History, Smithsonian Institution, Washington DC, USA (N.E. Adams (deceased), D.G. Furth); (USSA) University of Stellenbosch, Department of Entomology, Stellenbosch, SA; (ZMHB) Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (M. Uhlig, J. Frisch); (ZSMG) Zoologische Staatssammlung München, Germany (D. Ahrens).

The material and methods used here for light photography, scanning electron microscopy, geo-referencing, male dissection, measurements and phenology follows Harrison (2004, 2009, 2012).

*Species accounts and figure sequence.* The three South African species are treated in the figures and text in this non-alphabetical order: *P. sommeri*, *P. pondoensis* and *P. vittata*, as *P. pondoensis* has characters intermediate between *P. sommeri* and *P. vittata*, thus facilitating their comparison in the figures.

## KEY TO THE SOUTH AFRICAN SPECIES OF PEGYLIS ERICHSON, 1847

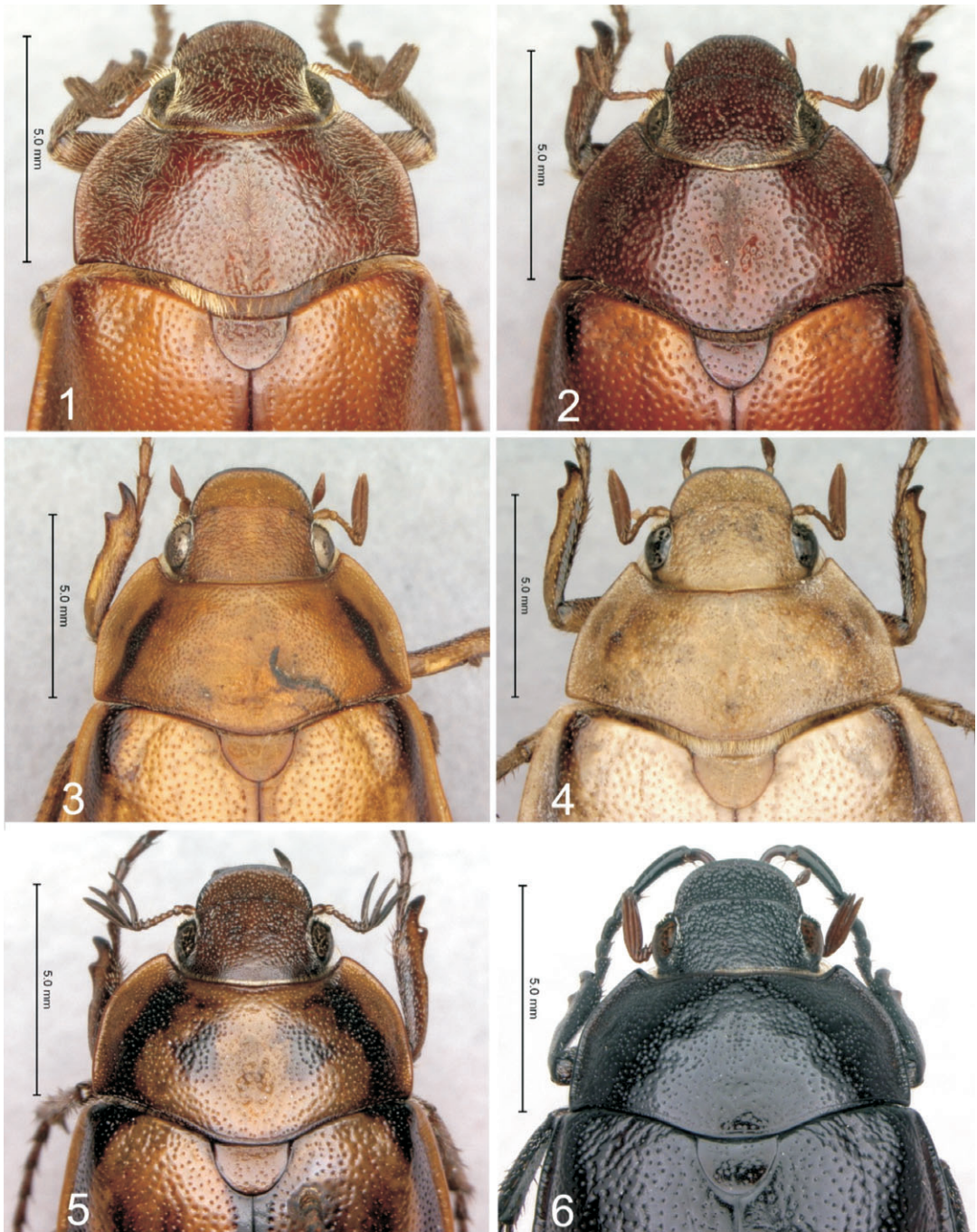
For information on differentiating males and females prior to using the key refer to the earlier subsection 'sexual dimorphism'.

1. Habitus illustrated in Figs 1, 2, 69. Prominent mesosternal process present (Fig. 7); male genitalia as illustrated in Figs 56–59; distribution in Fig. 16, known localities in gazetteer = \*  
 . . . . . *P. sommeri* (Burmeister, 1855)
- Mesosternal process absent . . . . . 2
2. Black macula near lateral edge of pronotum usually present (Figs 5, 70, 71); male genitalia as illustrated in Figs 64–67; distribution in Figs 20, 22, \*  
 . . . . . *P. vittata* (Fähræus in Boheman, 1857)
- Black macula near lateral edge of pronotum absent (Figs 3, 4); male genitalia illustrated in Figs 60–63; distribution in Fig. 18, \*  
 . . . . . *P. pondoensis* Arrow, 1943

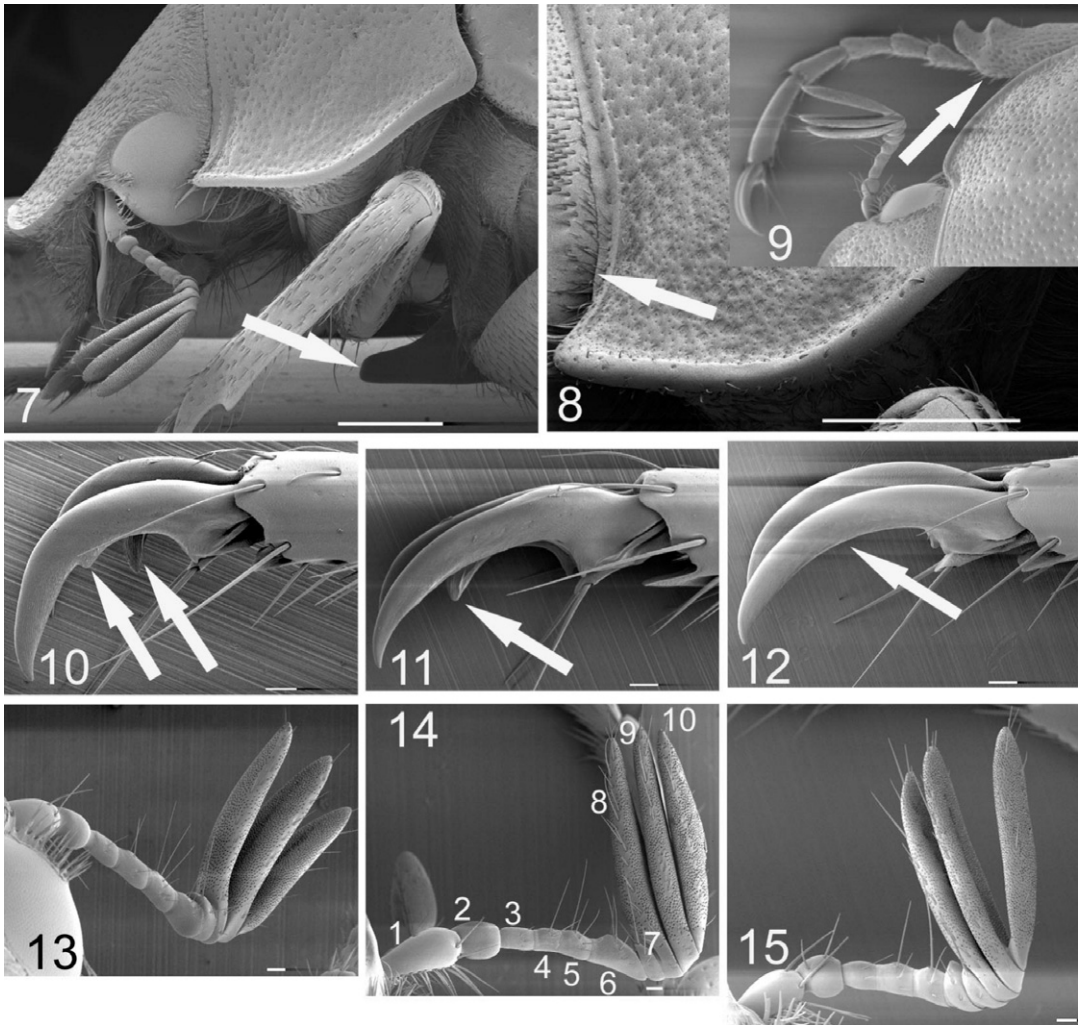
***Pegylis sommeri*** (Burmeister, 1855), Figs 1–2, 7, 10, 13, 16–17, 23–27, 38–39, 44–45, 50–51, 56–59

*Leucopholis sommeri* Dejean, 1833: 160; Dejean 1837: 177 (invalid description).





**Figs 1–6.** Habitus photographs of South African *Pegylis* species. 1–2, *Pegylis sommeri*; 3–4, *P. pondoensis*; 5–6, *P. vittata*. Males on left-hand side, females on right-hand side. Scale = 5 mm.



**Figs 7–15.** Morphological characteristics of *Pegylis* species. **7**, mesosternal protuberance of *P. sommeri*; **8**, anterior pronotal membranous margin in *P. pondoensis*; **9**, absence of protarsal claws in *P. vittata*; **10–12**, asymmetrical male protarsal claws in **10**, *P. sommeri*; **11**, *P. pondoensis*; **12**, *P. vittata*; **13–15**, 10-segmented antennae in **13**, *P. sommeri*; **14**, *P. pondoensis* (numbered 1–10); **15**, *P. vittata*. Scale bars (7–9) = 1 mm; (10–15) = 100  $\mu$ m.

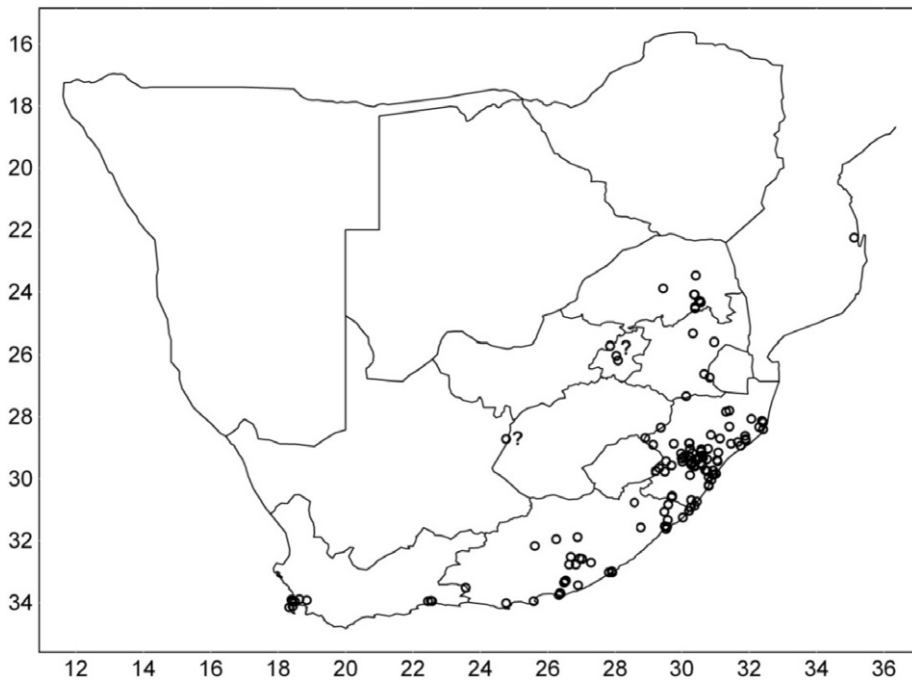
*Hypopholis sommeri* Burmeister, 1855: 283; Erichson 1847: 657; Gerstaecker 1867: 42 (*sommeri* = *sulcicollis*); Harold 1869: 1161; Gerstaecker 1873: 112–113; Péringuey 1904: 278 (length 17–22; width 9.5 mm); Oberholtzer 1959a,b (larval description); Ferreira 1963: 798; Prins 1965: (larval description); Smith *et al.* 1995: 165–166 (larval description, but as *Macrophylla ciliata* Herbst); Lacroix 2010: 87–88.

*Hypopholis sulcicollis* Boheman, 1857: 92; Harold 1869: 1161 (synonym); Gerstaecker 1867: 42

(synonym); Gerstaecker 1873: 112–113; Péringuey 1904: 278 (synonym).

**Diagnosis.** The most commonly encountered South African species (Figs 1–2). Prominent mesosternal protuberance in both sexes (Fig. 7). Posterior pronotal edge without a grooved rim (Figs 1–2, 23, 26–27). Laterally posterior pronotal edge smoothly pointed (Figs 38–39). Scutellum and setae as indicated in Figs 44–45. Elytra and microsculpture as indicated in Figs 50–51. Colour variable (see below).

**Brief description.** **Size.** Length: males ( $n = 5$ ), mean



**Fig. 16.** Known distribution of *Pegylis sommeri*. The Cape Town records are due to an accidental introduction (see text). Questionable localities indicated by (?).

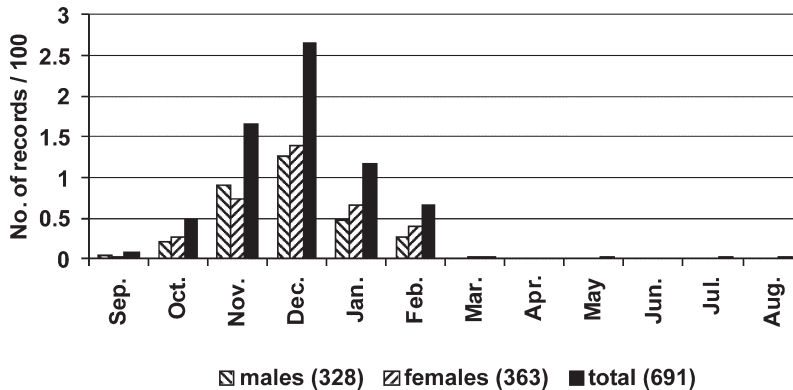
17.8 mm, (range 17.0–19.0 mm), females ( $n = 5$ ) 18.6 mm, (range 18.0–19.0 mm). Width: males ( $n = 5$ ), 9.8 mm, (range 9.0–11.0 mm), females ( $n = 5$ ) 10.6 mm, (range 10.0–11.0 mm). *Pronotum*. Ratio, greatest width: greatest mid length 2.16:1 ( $n = 5\delta$ ); 2.22:1 ( $n = 5\text{♀}$ ). *Colour*. Head, pronotum and scutellum brown (to almost metallic black), elytra lighter in colour, but with a dark brown or black band above outer lateral edge of each elytron. *Morphological variability*. Degree of melanization (entire cuticle) may vary within and between localities. *Male genitalia* illustrated in Figs 56–59. Parameres wide at base, moving to narrow apex (Fig. 57). Adeagus stouter, shorter (note 2.5 mm scale bar) than *P. pondoensis* and *P. vittata* (see Figs 58, 62, 66).

*Distribution*. Occurring on the eastern part of South Africa (Fig. 16), with two records from Mozambique. The Cape Town records are due to an accidental introduction from elsewhere in South Africa. Prins (1965) mentions that, '...A recent outbreak of *Hypopholis sommeri* was reported from Newlands in the Cape, in January, 1961. It probably reached the Cape in turf transported from the Northern Transvaal as the beetles [are] in association with a fungus (*Rhizoctonia* sp.), concentrated

on a cricket pitch, causing large bare areas.' The earliest records based on material examined here of *P. sommeri* in the Western Cape, are from Bellville (October 1948) and Stellenbosch (September 1949), 13 years prior to the outbreak mentioned by Prins (1965) above. All known Western Cape records are provided in the material examined. Molecular analysis of the Cape Town population and the South African/southern African populations would confirm the origin of the introduced Cape Town population.

Additional outlier records from Kimberley, Johannesburg and Pretoria (Fig. 16) may have resulted from similar accidental introductions or labelling errors. However, of the introduced populations, only the Cape Town introduction seems to have persisted (especially within the Kirstenbosch Botanic Gardens, pers. obs.). The three records from the Gauteng Province also require confirmation (or additional explanation). I have lived in the Johannesburg and Pretoria area most of my life and I have never observed the species there, but have easily seen them in KwaZulu-Natal. I communicated directly with the collector (S. van Noort of the SAMC) of the Gauteng specimens and include his response on the records. 'Yes, I do recall





**Fig. 17.** Estimate of the seasonal activity of *Pegylis sommeri* based on museum records listed here for 691 specimens (328 males and 363 females).

collecting the *P. sommeri* specimens at outside house lights. They were from two localities in different years Bryanston: 26°3.271'S 28°2.727'E, 1486 m; Paulshof: 26°2.028'S 28°2.633'E, 1474 m' (S. van Noort, pers. comm. 2012).

**Conservation status.** A southern African species (note records from Mozambique) that appears to be well adapted and takes advantage of agricultural systems (especially sugarcane and wattle in the KwaZulu-Natal Midlands). It is presently not of Conservation Concern. However, because the species is a southern African endemic, control measures must ensure that the species is protected. Recent developments (Goble *et al.* 2012) using *Beauveria brongniartii* (Saccardo) Petch fungi to control specifically *P. sommeri* in the Natal Midlands are a concern, especially with respect to the more restricted Karkloof population of *P. pondoensis*.

**Biology and pest status.** *Pegylis sommeri* has been collected by the following methods: UV light traps (15 records); beating in forest (eight records); hanging fruit traps (two records), and single collecting records from Malaise traps, under stones, dung baited pitfall traps and humus. I have collected feeding and mating adults hanging underneath *Acacia mearnsi* leaves in the lower forest canopy during the day. *Pegylis sommeri* has been collected from numerous plant species including *Acacia* spp., *Eucalyptus* spp. and sugarcane (Table 1).

**Remarks.** E.K. Hartwig of the South African National Collection of Insects (SANC) identified the adults of the pineapple white grub species submitted by G. Petty for identification (G.D. Petty, pers. comm. 2007). Representatives of this species from both those deposited in the SANC, and new material provided by Petty confirm that the species

referred to by Petty (1976, 1978, 1990, 2001) and Petty *et al.* (2002) as *Macrophylla ciliata* Herbst was incorrectly identified, and is actually *P. sommeri*. Considering that Hartwig worked on Thysanoptera (Hartwig 1967) and not Coleoptera this is an understandable misidentification to have made. Consequently, where Petty refers to *M. ciliata* in the above-mentioned literature, he actually means *P. sommeri*. This identification error also resulted in Smith *et al.* (1995) describing the larvae of *P. sommeri*, but unknowingly calling it *M. ciliata*.

**Type material examined** (*Hypopholis sommeri* Burmeister, 1855): lectotype (here designated): SOUTH AFRICA, [no locality data] / [blue paper square with ink cross drawn on front] / '*sommeri* Nob. Pr. b. sp. Thor. [written in black onto blue square drawer label] / MLU Halle, WB Zoologie, S.-Nr. 813113, T.-Nr. [label added by Dr. Karla Schneider in 2002 for loan purposes] / Lectotype ♂, *Hypopholis sommeri* Burmeister, 1855, des. J. du G. Harrison 2014' (1♂ MLUH); Paralectotype ♀, *Hypopholis sommeri* Burmeister, 1855, des. J. du G. Harrison 2014' (1♀ MLUH).

**Type material examined** (*Hypopholis sulcicollis* Boheman, 1857). Photographs (Figs 68–71) of the syntypes provided by Dirk Ahrens.

**Additional material examined** (812: 328♂; 426♀). **SOUTH AFRICA, Eastern Cape**, Alexandria, Woody Cape, 10–13.xii.1997, Ivo Jenis, (1♂ ZMHB); Alexandria For[est]. St[at]ion., 4.xii.1987, Endrödy-Younga, E-Y: 2551, beating indig. forest, (7♂, 4♀ TMSA); Alexandria Forest, 27.xi.1988, R.G. Oberprieler, (3♂, 2♀ SANC); Alice, i.[19]49, R. Koch, ♀ / *Hypopholis vittata* Fahr. [misidentification and male], (1♂ DEIG); Alice, 'Nutwoods', 12.i.1948, (1♀ TMSA); Alice, 'Nutwoods', i.1948, J.J. Steyn, (3♂, 1♀



- TMSA); Amatole, Pirie Forest, 8.xii.1987, Endrödy-Younga, E-Y: 2564, beating indig. forest, (2♂, 2♀ TMSA); Bizana, i.1932, K.H.L. Key, (1♂, 1♀ SAMC-A035839); Bizana, i.1920, G. Kobrow, (1♂ TMSA); Cradock, viii.1948, L. Moolman, (2♂ USSA); East London [hereafter abbreviated to E. Ldn], 21.x.39, A.H. Newton, Brit. Mus. 1948-322, (1♂, 1♀ BMNH); E. Ldn., Dr. Martin, (1♀ SANC); E. Ldn, x.1973, G.J. Petty, light trap, #20, (2♀ SANC); E. Ldn, 15.xi.1921, Ac.E.L.20, (1♂, 2♀ SANC); E. Ldn, Dr. Martin, (1♂ SAMC-A035893); E. Ldn, x.1912, Lightfoot, (1♀ SAMC-A035894); E. Ldn, 1915, Lightfoot, (1♂, 1♀ SAMC-A035895); E. Ldn, xii.[18]96, (1♂, 2♀ TMSA); E. Ldn, xii.1916, Dr. Brauns, (4♂, 6♀ TMSA); E. Ldn, ix.1915, R. Ellenberger, (2♂ MRAC); E. Ldn, Dr. Martin, (2♂, 1♀ ISNB); E. Ldn, ix.1915, R. Ellenberger, (2♂ MRAC); E. Ldn, xii.1916, Dr. Brauns, (2♂ USSA); E. Ldn, 27.vii.1911, Mr F. Wood, 1286, (1♂ AMGS); Emagushene [Emagusheni], i.1920, G. Kobrow, (1♀ TMSA); Faraway Farm, nr. Grahamstown, 23.xi.1988, N.C. Grobbelaar, (1♂ SANC); Flagstaff, i.1920, G. Kobrow, (1♂, 1♀ TMSA); Fort Beaufort, i.1942, C. Roberts, (1♀ SAMC-A035897); Grahamstown [hereafter abbreviated to Ght.], 28/10, C. LeDoux acc 67769, (2♀ USNM); Ght., 10.ii.[18]98, C. LeDoux acc 67769, (1♀ USNM); Ght., 20.x.[19]00, C. LeDoux acc 67769, (1♂ USNM); Ght., xi.[18]94, A.M. 7784, (1♂ AMGS); Ght., Mr Wilde, 48 / 253 / Coll. Alluaud / Moser det. / ♀ / *Hypopholis sommeri* Burm, det. Machatschke, 1954, (1♀ DEIG); Ght., 1870, E.Y. Western Coll., B.M. 1924-176, (1♂, 1♀ BMNH); Ght., October, K. Sturgeon, (1♀ SAMC-A035891); Ght., [18]85, Purch, (1♂ SAMC-A035892); Ght., [18]85, Purch, (1♂ SAMC-A035896); Ght., i.1979, V.C. Moran & T.R.E. Southwood, from *Erythrina caffra*, (1♀ SANC); Ght., C. LeDoux acc 67769, (1♂ USNM); Ght., C. LeDoux acc 67769, *Hypopholis sommeri* Burm., (2♂ USNM); Ght., 4.iv.1981, (1♀ USSA); Ght., [18]96, C. LeDoux, SAfrica, C. LeDoux acc 67769, (1♂ USNM); Ght., 28.x.[19]00, C. LeDoux, SAfrica, C. LeDoux acc 67769, (2♀ USNM); Ght., 1890, M. Wilde, *H. sommeri* Burm., det Machatschke, 1954 / 253 / Coll. Alluaud / Moser det., (1♀ DEIG); Ght., 10.ii.[18]98, C. LeDoux, SAfrica, C. LeDoux acc 67769, (1♀ USNM); Ght., 20.x.[19]00, C. LeDoux, SAfrica, C. LeDoux acc 67769, (1♂ USNM); Ght., 9.x.1963, C.B. Anderson [of RUDZ], (1♂ AMGS); Ght., 7.xi.1944 [of RUDZ], (3♂ AMGS); Ght., 20.ii.1992, J.R. Baars [of RUDZ], (1♀ AMGS); Ght., 3.xii.1990, S. Oosthuizen [of RUDZ], (1♀ AMGS); Ght., 10.i.1990, J. Chan [of RUDZ], (2♀ AMGS); Ght., 31.vii.1983, C.A. Kleinjan [of RUDZ], (1♀ AMGS); Ght., 22.x.1969, F.W. Gess, (1♂ AMGS); Ght., 6.i.1990, F.W. Gess, in garden, (1♀ AMGS); Ght., x.1941, O. Ortlepp, (1♀ AMGS); Ght., xi.[18]90, (1♂, 2♀ AMGS); Ght., xi.[18]91, A.M. 7784, (1♂ AMGS); Ght., xi.[18]91, (1♀ AMGS); Ght., 11.iii.1943, M.F. Todd, *H. sommeri* Burm., (1♀ AMGS); Ght., 12.xii.[18]96, Dr. Penther, A.M. 7784, (1♂, 1♀ AMGS); Ght., 21.x.1941, F.B. Avmitage, *H. sommeri* Burm., (1♂ AMGS); Ght., i.1966, C. Jacot-Guillarmod, (1♀ AMGS); Ght., 12.i.2004, C. Hepburn, altitude 629 m, (1♀ AMGS); Ght., African Street, 10.xii.1970, F.W. Gess, (1♂, 1♀ AMGS); Ght., Howison's Poort, 22-24.xi.1971, F.W. Gess, Malaise trap, (1♀ AMGS); Howison's Poort, 4.xi.1989, C. Zachariades, / F.sur 16, eating mature leaf // CZ95, (1♂ SANC). Griqualand, Coll. Ertl / R. Det. S 635 / *Hypopholis sommeri*, (1♀ MRAC); Hogsback, ii.1979, T.R.E. Southwood & V.C. Moran, 37, from *Betula pendula*, (2♂, 5♀ SANC); Hogsback, ii.1979, G.L. Prinsloo, light trap, (1♂, 1♀ SANC); Hogsback, 12.i.1991, P.E. Reavell, *Podocarpus* forest, (1♂ SANC); Hogsback, 20.ix.1960, D.M. Whishen [of RUDZ], (1♀ AMGS); Hogsback, ii.1942, M. Roden [of RUDZ], *H. sulcicollis* Boh. [= synonym of *H. sommeri*], (1♀ AMGS); Hogsback, 4.i.1970, J.G.H. Londt, *H. sommeri* Burm., det. A.V. Evans, 1985, (1♀ AMGS, ); Hogsback, nr Hobbiton, 6.iii.1983, D.C. Weeks [of RUDZ], (1♀ AMGS); Humansdorp, 27.xi.1983, G.L. Prinsloo & N.C. Grobbelaar, (1♂, 3♀ SANC); Katberg, xii.1932, 4000 ft. / R.E. Turner, Brit. Mus. 1933-69, (2♂ BMNH); Katberg, 24.i.1928, J. Hewitt, no. 5577, (1♀ AMGS); Kimb.[erley], (1♂ mmKZ); Kimberley, x.1958, A. Snyman, SN 4611, (2♂, 2♀ SANC); Kleinemonde, i.1944, J.O[mer].C[oooper]., (1♂ AMGS); Lusikisiki, i.1920, G. Kobrow, (1♂, 2♀ TMSA); Nkambati [Mkambati Stream], 26.x.1996, R. Perissinotto & L. Clennell, (1♂ TMSA); nr East London, 'The Hill', 23.x.1985, A.B. Ware [of RUDZ], (1♂ AMGS); Nthloyane, 6.xi.1971, (1♂ TMSA); Oudtshoorn, xii.1943, J.J. du Toit [of RUDZ], (1♂ AMGS); Port Elizabeth, 6.i.1977, Duke, (1♂, 1♀ TMSA); Port Elizabeth, 4.ii.1990, M. Crampton [of RUDZ], (1♂ AMGS); Port St Johns, 24-30.xi.1956, R.M. Martin, (2♂ TMSA); Port St Johns, Pondoland, x.1923, R.E. Turner, Brit. Mus. 1923-547, (1♀ BMNH); Port St Johns, Silaka, 29.xi.1987, Endrödy-Younga, E-Y: 2540, flowering *Acacia*, (1♂ TMSA); Port St Johns, Silaka, 23.xi.1987, Endrödy-Younga, E-Y: 2532, UV light collection, 6♂ TMSA); Port St Johns, Silaka, 29.xi.1987, Endrödy-Younga, E-Y: 2542,

- UV light collection, 7♂ TMSA); Queenstown, 3126Dd, 1.ii.1990, S.A. Prior [of RUDZ], (1♂ AMGS); Silaka For. Reserve, 2.xii.1988, Endrödy-Younga, E-Y: 2597, beating mesic forest, (1 TMSA); Silaka For. Reserve, 28.xi.1987, Endrödy-Younga, E-Y: 2539, beating indig. forest, (3 TMSA); Stutterheim, i.1959, J.A. Nagle, (1♀ TMSA); Stutterheim, xii.1958, J.A. Nagle, (3♀ TMSA); Tarkastad, 17.i.1934, (1♀ USSA); Truppes Valley, Bathurst Dist., 1925, H. Cartwright, (1♂ TMSA); Umtata, 2.i.1989, N. Duke, (1♀ TMSA); Umtiza, East London Coast Reserves, 25.xi.1988, B. Grobbelaar, (1♂, 1♀ SANC); Waterloo, xi.1943, J. O[mer].-C[oooper] [of RUDZ], *H. sommeri* Burm., (2♂ AMGS).
- Gauteng**, Johannesburg, 28.xi.[18]97, under a stone, (1♂ TMSA); Johannesburg, Bryanston, 14.xii.1987, S. van Noort, (1♀ SAMC); Johannesburg, Bryanston, xii.1986, S. van Noort, (1♂ SAMC); Pretoria, 25.xi.[19]13, Ac.P 1049, (1♂, 1♀ SANC); Rustenberg, 17.xi.1964, P. Paliatseas, (1♂, 1♀ SANC).
- KwaZulu-Natal**, Amanzimtoti, 16.x.1931, Prof. T.D.A. Cockerell, Pres. By Imp. Inst. Ent. B.M. 1933-363, (1♂ BMNH); Balgowan, 3.xii.1941, G. van Son (8♂, 7♀ TMSA); Balgowan, ii.1970, Cl. Besnard II-70, (3♂, 8♀ MRAC); Balgowan, xi.[19]70, Cl. Besnard, (3♂, 5♀ MRAC); Bellair N[orth]., 10.x.[19]43, Marley, (1♂, 1♀ DMSA); Bulwer, 19.i.1955, A.W.P. Coleby [of UNSA], / A82; A83, (2♂ TMSA); Cathedral Peak, 24.xi.2003, M. Burger & R. Müller, E-Y: 3570; light trap, (1♂, 3♀ TMSA); Cathedral Peak, i.1964, A.L. Capener, (2♀ SANC); Cathedral Peak, Drakensberg, i.1990, S. Vokes [of RUDZ], (1♂ AMGS); Cedara, IB14 Entomologist Ac.S., (1♂ SANC); Cedara (Agricultural College), 24.xi.1926, F.G.C. Tooke, AcP.3581, (1♂ SANC); Cedara College, 24.ii.1957, A.J. Prins, Ac Ca 448, (1♂, 1♀ SANC); Chaka's Kraal, x.1983, P. Atkinson, 28 m a.s.l., at light, (1♂ SANC); Clan Synd., 25.i.[19]13, C.B. Hardenberg, (1♂, 2♀ TMSA); Clan Synd., 25.i.[19]13, C.B. Hardenberg, (1♂, 1♀ SANC); Clan. Synd., C.B. Hardenberg, on wattle, (1♀ USSA); Clanstal, 10.x.[19]79, (1♀ DMSA); Cobham Nat. Res., 14.xii.1998, R. Perissinotto & L. Clennell, (1♂, 1♀ TMSA); Cramond, 12.i.1943, Ac. US., (1♀ USSA); Cramond, 1.xii.[19]13, Hardenberg, W278 / on wattle, (2♂, 2♀ SANC); Cramond [Plantation], 18.xi.[19]14, Hardenberg, (3♂ SANC); D' Urban, i.[18]88, Bowker, (1♂ SANC); D' Urban, (1♂, 2♀ SAMC-A035840); D' Urban, i.[18]88, Bowker, (1♀ SAMC-A035841); D' Urban, i.[18]88, Bowker, (1♂ SAMC-A035886); D' Urban, 1893, C.N. Barker, #39 (1♂ SAMC-A035887); D' Urban, 1893, C.N. Barker, (2♂, 1♀ SAMC-A035888); Dalton, 16.i.1971, H.D. Catling, AcP.7622, (1♂, 3♀ SANC); Doreen Clark Nat. Res., 8.xii.1989, Endrödy & Klimaszew, E-Y: 2752, hanging fruit traps, (1♂ TMSA); Doreen Clark Nat. Res., 11.xii.1989, Endrödy & Klimaszew, E-Y: 2760, beating in forest, (7♂, 10♀ TMSA); Drakensberg Garden, 10.iv.1990, R. Stals, (1♀ SANC); Drummond, 16.xi.[19]14, C.B. Hardenberg, W.531 / on wattle, (1♂ SANC); Drummond, 16.xi.[19]14, C.B. Hardenberg, W.531 / on wattle, (1♂ TMSA); Drummond, xii.1921, C.C.Kent, SN. 2833 / on wattle / AcN.1036 / Imp. Inst. Ent. Coll. No. 10690, (1♀ SANC); Dukuduku, 18.i.1963, H. Geertsema, (1♀ TMSA); Durban, (2♀ USNM); Durban, R. Ley coll. Et det. Le Moul't vendit, (1♀ ISNB); Durban, H.W. Bell-Marley, 1903-108, (1♂ BMNH); Durban, i.1953, (1♂ TMSA); Durban, i.1954, (1♂ TMSA); Durban, xi.1907, G.F. Leigh, (1♀ TMSA); Durban, xii.[18]97, (1♂ DMSA); East London, 'The Hill' near to, 22.xi.1985, A.B. Ware, (1♀ AMGS); Empangeni, 9.xi.1980, R.G. Oberprieler, (3♂, 1♀ SANC); Empangeni Univ., 15.xi.1975, P.E. Reavell, (1♂, 1♀ SANC); Eshowe, i.1957, N. Krauss, B.M. 1957-4, (2♀ BMNH); Eshowe, xii.[19]43, Marley, ex. PMB Mus. Coll., (1♂ DMSA); Eshowe, i.[19]18, Hogarth, (1♀ DMSA); Eshowe, 6.xi.1983, P. Reavell, 470m, (1♀ SANC); Eshowe, 12.[19]16, Marley, ex. PMB Mus. Coll., (1♀ TMSA); Eshowe, Dlinza Forest, xi.[19]43, Marley, (1♂ DMSA); Frere, / 1892, A. Marshall, det. L. Per., (1♀ SAMC-A035889); Glennifer, Kei Road St., Ranger, *H. sommeri* Burm., det G. van Son, (1♂, 3♀ TMSA); Greytown, 17.xii.2000, B.H. Catherine [of UPSA], (1♂ SANC); Greytown, 12.xii.1981, Endrödy-Younga, at light, (1♀ TMSA); Greytown, 21.xii.1953, Natal A.R.I., ex UNSA, (1♂, 2♀ TMSA); Harden Heights, 1.xii.1953, (2♂ TMSA); Harding, 12.xii.2000, J. du G. Harrison, (1♂ TMSA); Hermannsburg, 9.i.[19]13, C.B. Hardenberg, (1♀ TMSA); Highmoor Forest, 15.i.2006, MDTP 8562, 1795m, site F58, active ground searching, quad 2 × 8m, (1♂ TMSA); Highmoor Forest, 15.i.2006, MDTP 9866, 1697m, site F59, general collecting, (1♂ TMSA); Hill Crest, 12.xi.[19]13, C.B. Hardenberg, W238, (1♂, 2♀ SANC); Hillcrest, 12.xi.1913, C.B. Hardenberg, on wattle / W238, (1♀ USSA); Hillcrest, 12.i.1912, A.J.T. Janse, (2♂, 3♀ TMSA); Hillcrest, Durban County Wattle Co., 7.xi.1968, G.A. Hepburn, (2♀ ICFR); Hilton nr. Pietermaritzburg, 1962, O. Bourquin, (2♂ DMSA); Hilton Road, 17.xi.year, damaging fruit trees, (1♂, 1♀ TMSA); Hilton Road, 20-22.xii.[19]09, G. Heigh,

- (2♀ TMSA); Himeville, Farm Meander [Brookland], xii.1988, S. McLean, (1♀ TMSA); Hluhluwe Game Res., 20.xi.1992, Endrödy-Younga, E-Y: 2841, light coll. at camp, (2♂, 2♀ TMSA); Indaleni, Rev. W. Hunt, Coll. Mus. Congo, ex coll. Breuning / *Hypopholis sommeri* Burm., det. J. Decelle, 1961, (1♂, 1♀ MRAC); Indaleni, Dist. Richmond, x-xii.[19]54, Coll. Mus. Congo, ex coll. Breuning / *Hypopholis sommeri* Burm., det. J. Decelle, 1961, (1♂, 3♀ MRAC); Indaleni, Dist. Richmond, 7.xi.[19]56, Coll. Mus. Congo, ex coll. Breuning / *Hypopholis sommeri* Burm., det. J. Decelle, 1961, (1♂, 1♀ MRAC); Indaleni, Richmond Distr., 1.xi.[19]56, ex coll. Breuning / *H. sommeri* Burm. det. J. Decelle, 1961, (1♂ MRAC); Indaleni, Richmond Distr., x-xii.[19]54, ex coll. Breuning / *H. sommeri* Burm. det. J. Decelle, 1961, (1♂, 3♀ MRAC); Indaleni, Richmond Distr., 17.i.[19]56, ex coll. Breuning / *H. sommeri* Burm. det. J. Decelle, 1961, (1♀ MRAC); Indaleni, Richmond Distr., ex coll. Breuning / *H. sommeri* Burm. det. J. Decelle, 1961, (1♂, 1♀ MRAC); Karkloof, 12.xii.1998, Perissinotto & Clennell, (1♂ TMSA); Karkloof, i.[19]18, H.W. Bell-Marley, (2♂ TMSA); Karkloof forest, 2.xii.1989, Endrödy & Klimaszew, E-Y: 2731, 1300m, general collecting, (1♂ TMSA); Karkloof forest, 2.xii.1989, Endrödy & Klimaszew, E-Y: 2733, beating in forest, (2♂ TMSA); Karkloof forest, 2.xii.1989, Endrödy & Klimaszew, E-Y: 2738, UV light collection, (1♂ TMSA); Karkloof forest, 4.xii.1989, Endrödy & Klimaszew, E-Y: 2739, beating in forest, (1♂ TMSA); Karkloof forest, 11.xii.1989, Endrödy & Klimaszew, E-Y: 2763, 1300 m, UV light in forest, (1♂ TMSA); Karkloof forest, 13.xii.1989, Endrödy & Klimaszew, E-Y: 2772, 1300m, UV light in forest, (1♂, 1♀ TMSA); Karkloof grassland, 2.xii.1989, Endrödy & Klimaszew, E-Y: 2735, groundtraps with faeces bait, 10 days, (1♀ TMSA); Karkloof grassland, 4.xii.1989, Endrödy & Klimaszew, E-Y: 2740, grassland with river, (1♂ TMSA); Karkloof grassland, 7.xii.1989, Endrödy & Klimaszew, E-Y: 2747, grassland with river, (1♂ TMSA); Karkloof grassland, 7.xii.1989, Endrödy & Klimaszew, E-Y: 2748, grassland bushes, (8♂, 12♀ TMSA); Karkloof grassland, 10.xii.1989, Endrödy & Klimaszew, E-Y: 2758, grassland with river, 1(4♂, 15♀ TMSA); Kiff's Farm [not traced], 27.xi.1953, A.J. Prins, Ac Ca 448, (2 SANC); Lidgetton, 2930Ac, 2.xii.1979, Miller & Stabbins [of UNSA], 1 (8♀ TMSA); Loteni Valley, xii.1976, P.E. Reavell, (3♂, 3♀ TMSA); Malvern, 9.x.[18]97, 10, (1♀ TMSA); Malvern, (3♂ DMSA); Malvern, J.P. Cregoe, BMNH 1904-46, (1♂, 3♀ BMNH); Malvern, Durban, x.1897, G.A.K. Marshall, 700-800 ft, Marshall Coll. 1912-95, (2♂, 3♀ BMNH); Mapelane dune forest, 30.ix.1976, P.E. Reavell, (1♀ TMSA); Mapumulo, 2-3.iii.1989, R. Oberprieler, collected at light, (1♂ SANC); Pietermaritzburg, (1♀ SANC); Pietermaritzburg, [19]08, J.B. Paulus, (1♀ SANC); Pietermaritzburg, xi.1909, Cl. Fuller Coll. (Dec.1912), on wattle, (3♂, 1♀ TMSA); Pietermaritzburg, 12.xi.[19]08, (1♂ TMSA); Pietermaritzburg, 5.xi.[19]03, E. Waner [?], ex. PMB Mus. Coll., (1♀ TMSA); Pietermaritzburg, 12.xi.1908, Paulus, (1♀ TMSA); Pietermaritzburg, [19]00, C. Fuller, (1♂, 1♀ SAMC-A035842/3); Pietermaritzburg, 3.xii.1908, (2♀ TMSA); Mooi River, 2.i.1922, Ento. Dept. Pretoria, (1♂, 1♀ TMSA); Mooi River, 26.xi.1990, P.S. Carr [of RUDZ], (1♀ AMGS); Mpenjati, 18.x.1998, R. Perissinotto & L. Clennell, (1♀ TMSA); Mtunzini, 20.xi.1980, R. Oberprieler, (1♀ SANC); New Hanover, 6.xi.[19]54, C.N. Smithers, Wattle Res. Inst. Natal, Coll. No. 5, (2♂ ICFR); New Hanover, xii.1954, Natal A.R.I., ex UNSA, (1♂ TMSA); New Hanover, 16.xi.1974, C.B. Hardenberg, (3♂, 1♀ ISNB); Ngome Forest Station, nr Louwsburg, 20-24.i.1983, D.H. Jacobs, (1♀ TMSA); Ngome State Forest, 12-17.xi.1995, Krüger & Dombrowsky, inland tropical forest, to UV light, (1♂, 4♀ MKCP); Ngome State Forest, 5-8.ii.1996, M. Stiller, 1100m, (1♀ SANC); Ngome State Forest, 5-8.ii.1996, R. Stals, 1100m, (1♂, 1♀ SANC); Ngome State Forest, 12-17.xi.1995, Dombrowsky & Krüger, 1150m, UV light, (7♂, 3♀ TMSA); Ngoye, xi.1965, W.J. Lawson, (1♀ DMSA); Nkandhla Forest, 8.xii.1963, A.H. Newton, Brit. Mus. 1984-169, (2♀ BMNH); Nkandhla Forest, i.1937, R.F. Lawrence, (1♂ SAMC-A035860); Noodsberg, 4.ii.1913, C.B. Hardenberg, (1♀ USSA); Noodsberg, 4.ii.1913, C.B. Hardenberg, ex UNSA, (1♂ TMSA); Noodsberg, 4.ii.[19]13, C.B. Hardenberg, (1♀ SANC); Northington, 12.xii.1989, Endrödy & Klimaszew, E-Y: 2765, 1420m, general collecting, (8♂, 5♀ TMSA); Nottingham Road, 17.xii.[19]51, A.H. Newton, (1♂, 1♀ DMSA); nr Maphelana [Mapelane], 10.xii.1980, D.H. Jacobs, (1♀ TMSA); Nyalazi [Statet Forest], 24.xi.[19]26, H.W. B-M., (1♀ TMSA); Oribi, x.1961, A. Holden, Natal, A.R.I., ex UNSA, (1♀ TMSA); Oribi Gorge, 25.x.1998, R. Perissinotto & L. Clennell, (1♂, 1♀ TMSA); Oribi Gorge, x.1961, N. Leleup, humus, Z.A. 79, (1♂, 1♀ TMSA); Oribi Gorge, 28.xi.1989, Endrödy & Klimaszew, E-Y: 2726, general collecting, (3♀ TMSA); Oudeni [Qudeni], 18.i.[19]55, ex coll. Breuning / *H. sommeri*



- Burm. det. J. Decelle, 1961, (1♂, 3♀ MRAC); Oudeni [Qudeni], Zululand, 18.i.[18]55, Coll. Mus. Congo, ex coll. Breuning / *Hypopholis sommeri* Burm., det. J. Decelle, 1961, (1♂, 3♀ MRAC); Pietermaritzburg [hereafter abbreviated as PMB], 12.xi.[19]60, Acx 1179 / light trap, (1♂ SANC); PMB, 24.xii.1993, K.R. Cradock, (1♀ SANC); PMB, 'Up the Creek' Cottage, 27–28.xi.2002, D.H. Jacobs, (1♂ TMSA); PMB, 3.xii.[19]08, (2♀ TMSA); PMB, 30.xi.[19]03, 196, (1♀ TMSA); PMB, 12.xi.[19]08, (2♀ TMSA); PMB, 8.viii.1979, D. Noel [of UNSA] / on trees, (1♀ TMSA); PMB, Scottsville, 10.viii.1988, J. Moore [of UNSA] / on ground, sunny day, (1♀ TMSA); Pirie Bush, 98–191, (1♂ BMNH); Port Edward, xii.1981, I. Piccione, (2♀ TMSA); Port Edward, xi.1993, M. Vogt, (1♀ SANC); Port Natal [= Durban] / 49, 29, (1♀ BMNH); Pt. Natal, [black ink on green card = ? ZMHB coll label], *sommeri*, Dej., Pt. Nat., (1♀ ZMHB); Pt. Natal, 45/86, (1♀ BMNH); Pt. Natal / 50, 1, *sommeri* Erichs., Dej. / so named in Reiche's collection. C.W., (1♂ BMNH); Port Shepstone, 21.xi.1982, J.E. New-Boisen [of RUDZ], (1♀ AMGS); Port Shepstone, xii.1956, G. Kliem, (1♀ TMSA); Qudeni, 19.i.[19]51, A.H. Newton, (2♂, 1♀ DMSA); Qudeni [Forest], 18.i.[19]51, A.H. Newton, (3♂, 4♀ DMSA); Richmond, 2.xii.1960, J.A. Nagle, (1♂, 1♀ TMSA); Richmond, 4.xii.[19]54, C.N. Smithers, Wattle Res. Inst. Natal, Coll. No. 5, on *Acacia mollissima*, (4♂, 4♀ ICFR); Richmond, 22.xi.[19]41, L. Bevis, (1♂, 5♀ DMSA); Richmond, 4.i.1938, L.P. Regnard, Imp. Inst. Ent. Coll. No. 10690 / SN 2869, (2♂, 1♀ SANC); Richmond, 4.i.1938, L.P. Regnard, Imp. Inst. Ent. Coll. No. 10690 / SN 2867 / Pres. by Comm. Inst. Ent. B.M. 1981-315, (1♂ BMNH); Richmond, 7.xii.[19]04, Nichlson, (1♂ DMSA); Richmond, 29.xi.[19]54, S. Breuning vendit, (2♂, 3♀ ISNB); Royal Natal National Park, 6.ii.1970, J.G.H. Londt, (1♂ AMGS); Royal Natal National Park, 12.xii.1965, B. Dombrowsky, (1♀ TMSA); Royal Natal Park, 3–8.xii.1983, J. Irish, (1♀ TMSA); St. Bernard's Peak 109, 16.i.2007, MDTP 94162, 1858m, grassland, general collecting, (1♀ TMSA); Twinstreams, Mtunzini, 15.xii.1963, Lawson Bourquin, (1♂ DMSA); Tygerskloof, 28.x.2002, TMSA staff, E-Y: 3562; general collecting in forest, (1♀ TMSA); Ulundi, Marshall Coll. 1912-95, (1♂, 2♀ BMNH); Umgeni Poort, 19.i.[19]36, R.F. Lawrence, (1♂ TMSA); Umkomaas River, 18.xii.55, ex coll. Breuning / *H. sommeri* Burm., det. J. Decelle, 1961, (1♀ MRAC); Umkomaas River, Dist. Richmond, 18.xii.[19]55, Coll. Mus. Congo, ex coll. Breuning / *Hypopholis sommeri* Burm., det. J. Decelle, 1961, (1♀ MRAC); Umvoti, H. Fry, (1♂ SANC); Umvoti, H. Fry, (2♂, 1♀ SAMC-A035890); Umvoti [Vlei Nature Reserve], H. Fry, (1♀ TMSA); Underberg, 24.xi.[19]41, L. Bevis, (1 DMSA); Univ. of Zululand, 29.x.1979, R.G. Oberprieler, (1♂, 2♀ TMSA); Univ. of Zululand, 1.xi.1979, R.G. Oberprieler, (1♂, 2♀ TMSA); University of Zululand, 29.x.1979, R. Oberprieler, (1♀ TMSA); Upper Tongaat, 5.ix.2000, P. Reavell, (1♀ SANC); Uvongo, xi.1981, J.A. Brits, (1♂ TMSA); van Reenen, Drakensberg, xii.1926, R.E. Turner, Brit. Mus. 1927-25, (1♂, 3♀ BMNH); Weza, 24.i.1948, P.J. Smuts, (3♀ USSA); Weza Forest Station, nr Kokstad, 28–30.xi.1981, D.H. Jacobs, (1♀ TMSA); Weza, Impetyene forest, 21.xi.1989, Endrödy & Klimaszew, E-Y: 2710, UV light collection, (2♂ TMSA); Weza, lower Stinkwood forest, 20.xi.1989, Endrödy & Klimaszew, E-Y: 2701, beating in forest, (1♂ TMSA); Weza, lower Stinkwood forest, 22.xi.1989, Endrödy & Klimaszew, E-Y: 2713, hanging fruit traps, (1♂ TMSA); Windy Hill, 4.ii.[19]15, C.B. Hardenberg, W.667, (3♂, 1♀ SANC); Yellowwood, Balgowan Dist., ii.1960, G. van Son, 8♂, 11♀ TMSA); Yellowwoods, Balgowan, 18–28.ii.1960, G. van Son, (1♀ TMSA); Yellowwoods, Balgowan, 18.i.1961, G. van Son, (3♂, 7♀ TMSA). **Limpopo**, Pietersburg, Transvaal, J.P. Cregoe 1904–46, ex BMNH, (1♂ ISNB). **Mpumalanga**, Blairmore nr. Amsterdam, 15.xii.1989, J. Delpont, (3♂ SANC); Hlelo Sappi Forest, nr. Piet Retief, 23.vii.2000, J. du G. Harrison, collected dead, near *Eucalyptus* plantation, (1♀ TMSA); Kibler Park, ii.1993, J.S. Crous [of RUDZ], (1♀ AMGS); Wakkerstroom, i.1922, A[ustin]. Rob[erts] & G. v[an] Dam, (1♀ TMSA). **North-West**, Hartebeespoort, N.W., 24.ii.1996, D. Wellmann (ex UPSA), (1♂ TMSA). **Western Cape**, Belville, x.1948, J.A. Vosloo (1♀ USSA); Cape Colony, J.A., (1♂, 2♀ SAMC-A035899); Cape Peninsula, xii.1969, (1♀ SAMC); Cape Town, 5.xii.1960, C. Gow, (1♀ SAMC); Cape Town, 30.xii.1999, P.E. Reavell, (1♂ TMSA); Cape Town, Kirstenbosch, 20.xi.1999, U. Göllner, (1♀ ZMHB); Cape Town, Kirstenbosch, 11.xii.1993, P.E. Reavell, (1♀ SANC); Cape Town, Kirstenbosch Bot. Gardens, 26.xii.1999, J. du G. Harrison, public toilet lights, (2♀ TMSA); Cape Town, Kirstenbosch Bot. Gardens, 22–24.xi.1982, R.G. Oberprieler, (3♂ SANC); Cape Town, Kirstenbosch Botanical Gardens, ii.1993, J.S. Donaldson, Ex *Encephalartos friderici-guilielmi*. Eating leaves of mature plant / NBG 473, (4♂, 1♀ SANC); Cape Town, Tamboerskloof, 3.xii.1993, P.E. Reavell, (1♀ SANC); Fish Hoek Mountain, 25.x.1959, / C. Thorne, (1♀

SAMC-A036105); Claremont, 10.xii.1997, Charles Griffiths (2 UCT); George, 10.xi.1993, S. Basson, on roots of hops plants *Humulus* sp., (2♂, 1♀ SANC); George, 26.xii.1996, forest, Mike Picker (1 UCT); Saasveld, ii.1960, H. Geertsema, (1♀ TMSA); Saasveld, George, 14.i.1976, M. Ofsowitz, Ref. 015, (1♂, 1♀ SANC); Silwer River, E of George, 27.xii.1996, R. Stals, habitat: indigenous forest, (4♂, 5♀ SANC); Stellenbosch, ix.1949, M. Schweppenhauser (2♂ USSA); Stellenbosch, x.2001, W.B. Erasmus (1♂ USSA); Stellenbosch, x.2000, B. Adendorff (2♂, 1♀ USSA); SW Cape, Dec. 1997, Charles Griffiths (1 UCT); Winterskloof, 27.xi.1978, ex UPSA, (1♂ TMSA); Worcester, xii.1969, (1♂ MRAC); Worcester, Besnard, Coll. Mus. Tervuren, ex coll. Breuning, (1♂ MRAC). **MOZAMBIQUE**, Delagoa, H.-A. Junod, (2♂ AMGS); Mapinhane, P[ortuguese], E[ast], A[africa], v.1966, (2♂, 2♀ DMSA). **ZAMBIA**, Lusaka, 1.xii.1940, T.B. Armitage [of RUDZ], [incorrectly labelled student material?], (1♀ AMGS). **ZIMBABWE**, Harare, 1831Cc, 17.vi.1991, J. Fluck [of RUDZ], [incorrectly labelled student material?], (1♂ AMGS).

***Pegylis pondoensis*** Arrow, 1943, Figs 3–4, 8, 11, 14, 18–19, 28–32, 40–41, 46–47, 52–53, 60–63

*Pegylis pondoensis* Arrow, 1943: 781–782; Lacroix 2010: 114–115.

**Diagnosis.** Laterally, black band running from the junction of eye and pronotum and to the posterior humeral callus (Figs 3–4). Posterior pronotal marginal bead, absent (Figs 28, 31–32). Posterior pronotal edge rounded laterally (Figs 40–41). Scutellum and setae as indicated in Figs 46–47. Elytra and microsculpture as indicated in Figs 52–53. Overall body colouration lighter than *P. sommeri* and *P. vittata*. Known mainly from indigenous forest in South Africa (Fig. 18; Gazetteer), and thus uncommon in collections.

**Brief description.** *Size.* Length: males ( $n = 5$ ), mean 18.0 mm, (range 17.0–19.0 mm), females ( $n = 5$ ) 18.8 mm, (range 18.0–19.0 mm). Width: males ( $n = 5$ ), 10.6 mm, (range 10.0–11.0 mm), females ( $n = 5$ ) 11.4 mm, (range 11.0–12.0 mm). *Pronotum.* Ratio, greatest width: greatest mid length 2.18:1 ( $n = 5♂$ ); 2.24:1 ( $n = 5♀$ ). *Colour.* Generally light brown (darker brown and slightly mottled individuals can occur within populations). *Morphological variability.* Light brown, to slightly mottled to dark brown (perhaps even black, but unlike *P. vittata* no black specimens have been examined).

*Male genitalia* illustrated in Figs 60–63, parameres slender, long and simple.

**Distribution.** Isolated South African endemic. Specimens known from near Haenertsburg in the Limpopo Province to Port St. John's in the Eastern Cape, but as three definable indigenous forest centred populations: *i.e.* (i) Limpopo and Mpumalanga, (ii) Drakensberg, and (iii) the coastal Eastern Cape (Fig. 18).

**Conservation status.** Conserved within the Mariepskop, Karkloof and Umtamvuma Nature Reserves. Potentially threatened by biological control methods implemented against *P. sommeri* (see Goble *et al.* 2012).

**Biology and pest status.** Here follows a unique observation by D. Williams and P. Hardy (of Nelspruit) on the aggregation and feeding of *P. pondoensis* at the Mashonamin Campsite (25°32'323"S 30°29'579"E) in Mpumalanga SAPPI forests from 27 October to 5 November 2008. Between the 27th to the 29th of October 2008, D. Williams went to ring birds (class Aves); this was his fifth annual visit to the area that always takes place in late October or early November. The weather was cool with light showers and mist the previous days with the soil being damp. On the evening of 27 October, from 18:30 onwards (just before dark) he heard an unusual sound and realized that it was thousands of beetles flying into specific trees at the campsite, by 19:15 the noise had stopped. On closing his nets that evening he found many beetles stuck in the nets and collected some for identification. Early the next morning the ground under the trees in which the beetles had fed were covered with beetle frass. SAPPI staff members visited him that morning and identified the trees in which the beetles were feeding as *Celtis africana* Burm. f. (white stinkwood). That evening, from 18:30 the beetles again started flying towards the *C. africana* trees, and from 18:35 they could be audibly heard. They settled on both sides of the leaves in the upper branches of the same *C. africana* trees in their thousands. He was not aware of them feeding in any other species of tree; by 19:00 it was silent again (it was a misty/rainy/cold evening). That evening he took his white mattress bag and laid it on the ground under a tree and in the morning it was covered with beetle frass. From 05:00 the beetles started taking off and by 05:15 all had dispersed. On his return to Nelspruit and having received a reply from myself (J.duG.H.) he returned late on Tuesday night (4 November), now a

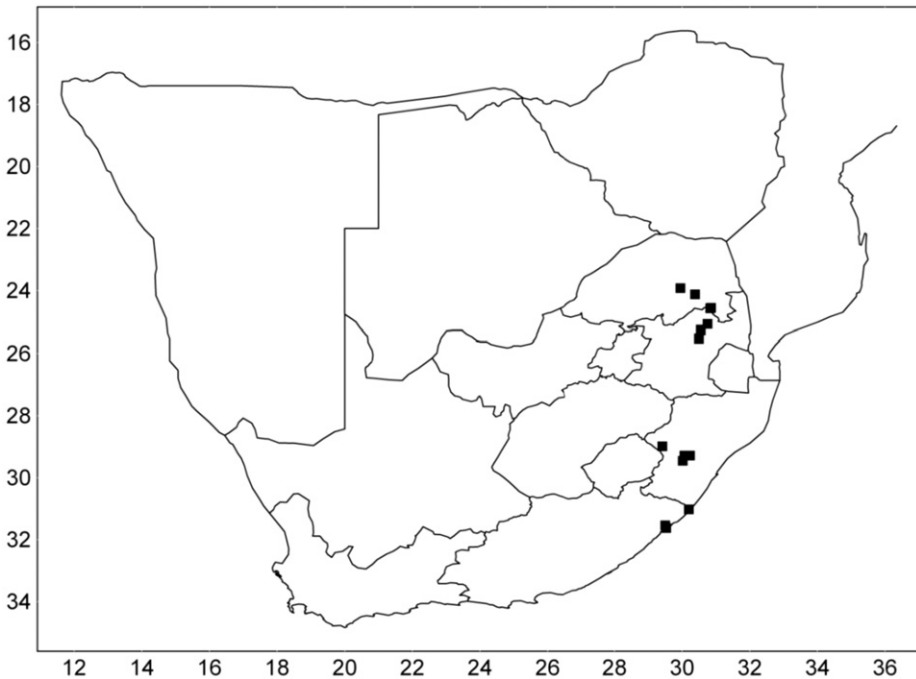


Fig. 18. Known distribution of *Pegylis pondoensis* in South Africa.

week later and discovered the beetles were still in the *C. africana* trees but in much lower numbers than before. By 05:15 the next morning they had flown from their feeding site. On looking up at the trees he noticed how heavily *P. pondoensis* had fed on the crowns of the *C. africana* trees. The sparse crown leaves were quite visible from the ground, indicating that these leaves had been a source of food for the beetles. In the dark and using a torch, he noticed other trees that had leaves that looked as if something had been feeding on the edges of the leaves or forming holes through the leaves, and then he realized that these other trees were all in close proximity to the *C. africana*, but this was not the case with the same tree species further from the *C. africana* trees. Using Schmidt *et al.* (2002), J. Onderstall identified the second tree as *Brachylaena transvaalensis* E. Philips & Schweick (forest silver-oak). What struck D. Williams was that only *B. transvaalensis* trees adjacent to the *C. africana* seemed to have been utilized as a food source, but he could not confirm this as the beetles had moved off (condensed by J.duG.H. from a report written by D. Williams for SAPPI).

Larvae are undescribed; they have not been recorded as pests. The seasonal activity of the species is provided in Fig. 19.

*Type material examined.* Lectotype *Pegylis pondoensis* Arrow, 1943 designated here. 'Type [black ink on white circle, with red border] / Port St. John, Pondoland., Sept. 1923/S. Africa, R.E. Turner, Brit. Mus., 1923-510. / *Pegylis pondoensis*, type Arrow [Arrow's hand] // 13. Lebanon, East [reused card] / Lectotype ♂, *Pegylis pondoensis* Arrow, 1943. des. J. du G. Harrison, 2014' [condition of type: 1st three LHS protarsal segments missing, 'S-shaped' crack on rear of pronotum] (1♂ BMNH); ♀ [symbol on white card] / Port St. John, Pondoland., Oct. 1923/S. Africa, R. E. Turner, Brit. Mus., 1923-547. / *Pegylis pondoensis*, co-type Arrow [Arrow's hand] // Mr. Gilbert [reused card] / Paralectotype ♀, *Pegylis pondoensis* Arrow, 1943. des. J. du G. Harrison, 2014' (1♀ BMNH); [card mounted] ♂ genitalia / Port St. John, Pondoland., Oct. 1923/S. Africa, R.E. Turner, Brit. Mus., 1923-547. / Paralectotype ♂, *Pegylis pondoensis* Arrow, 1943. des. J. du G. Harrison, 2014' (1♂ BMNH); 'Port St. John, Pondoland., Sept. 1923/S. Africa, R.E. Turner, Brit. Mus., 1923-510. / Paralectotype ♂, *Pegylis pondoensis* Arrow, 1943. des. J. du G. Harrison, 2014' (1♂ BMNH).

*Additional material examined* (69: 46♂, 23♀). **SOUTH AFRICA, Eastern Cape;** Port St. John, Silaka, 19.xi.1987, Endrödy-Younga, E-Y:2540,



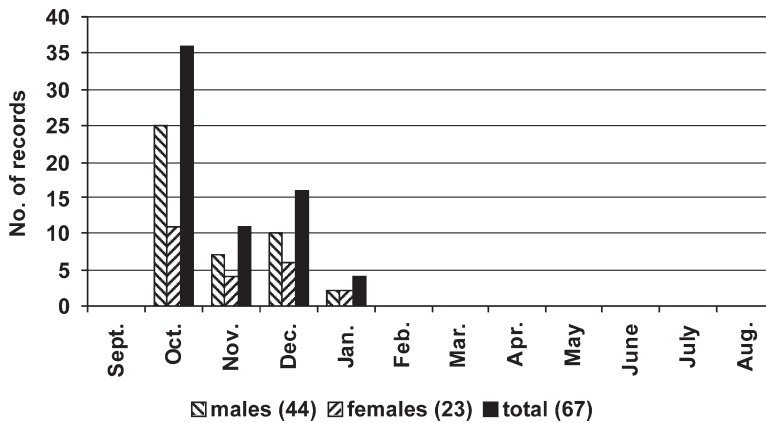


Fig. 19. Estimate of the seasonal activity of *Pegylis pondoensis* based on museum records listed here for 67 specimens (44 males and 23 females).

flowering *Acacia*, (1♂, 1♀ TMSA); Port St. Johns, 1–31.x.1969, E. & W. Gess, (1♀ AMGS); Port St. Johns, 24–30.xi.1956, v[an]. Son & Martin, (1♀ TMSA); St. John's River, *Hypopholis sommeri* Burm. [Péringuey's hand], (3♂ SAMC-A035851); **KwaZulu-Natal**; Cathkin Park, 1.i.[19]47, Nat. Museum S. Rhodesia, *Hypopholis sommeri* Burm. A.J.H[esse]., (1♀ NMBZ); Karkloof, Jan.[19]18, H. Bell-Marley, *Hypopholis* sp. nova? / *Hypopholis* sp not in BM det. G.E. Bryant, (1♂ TMSA); Karkloof forest, 13.xii.1989, Endrödy & Klimaszew, E-Y: 2771, general collecting, 1440m, (1♀ TMSA); Karkloof forest, 13.xii.1989, Endrödy & Klimaszew, E-Y:2772, UV light in forest, 1300m, (1♀ TMSA); Karkloof forest, 2.xii.1989, Endrödy & Klimaszew, E-Y:2733, beating in forest, 1300m, (1♂, 1♀ TMSA); Karkloof forest, 2.xii.1989, Endrödy & Klimaszew, E-Y:2734, hanging fruit traps, 1300m, (1♂ TMSA); Karkloof forest, 10.xii.1989, Endrödy & Klimaszew, E-Y:2756, beating in forest, 1300m, (1♂, 1♀ TMSA); Karkloof N[ature]. Reserve, 17–18.i.1988, D. Bourquin, on baited traps in forest 12–30' above ground level, (1♂ TMSA); Northington, 12.xii.1989, Endrödy & Klimaszew, E-Y:2765, general collecting, 1420m, (1♀ TMSA); Umtamvuma, 3.I.1989, L. Holm (ex UPSA), (1♀ TMSA). **Mpumalanga**; Mariepskop, 10.xi.1996, M. Kruger, at light [?], (1♂, 1♀ TMSA); Mariepskop Mt. Forest, 8–10.xi.1996, M. Kruger, 1600 m [no mention of at light], (3♂, 1♀ MKCP); Mashonamin Campsite, 27.x–5.xi.2008, D. Williams, ex *Celtis africana* trees in indigenous forest, (22♂, 9♀ TMSA); Sabie, Bridal Veil Forest, xii.1982, R. Oberprieler, (1♂ SANC); Uitsoek, Waterfall area, 12.xii.1986, Endrödy-Younga, E-Y:2380, beating

bush road, (1♀ TMSA); Uitsoek, Waterfall area, 13.xii.1986, Endrödy-Younga, E-Y:2385, UV light collection, (7♂, 1♀ TMSA); Welgevonden Forest Station, nr Mariepskop, xi.1987, G.L. Prinsloo, (1♂ SANC). **Limpopo**; 2 m E. Houtbosdorp nr. Haenertsburg, 19.xi.1970, L. Prozesky & A. Strydom, (2♂ TMSA); Shilouvane [Shiluwane], Transvaal, 1906–1907, H.A. Junod, ex Coll. R. Oberthur / *Hypopholis vittata* Fahrs, det. A. Monsarrat, 1986, (1♂ MNHN). **General locality data.** S. Africa, 1890, D. Sharp, Ex Musaeo D. Sharp 1890, (1♀ MNHN).

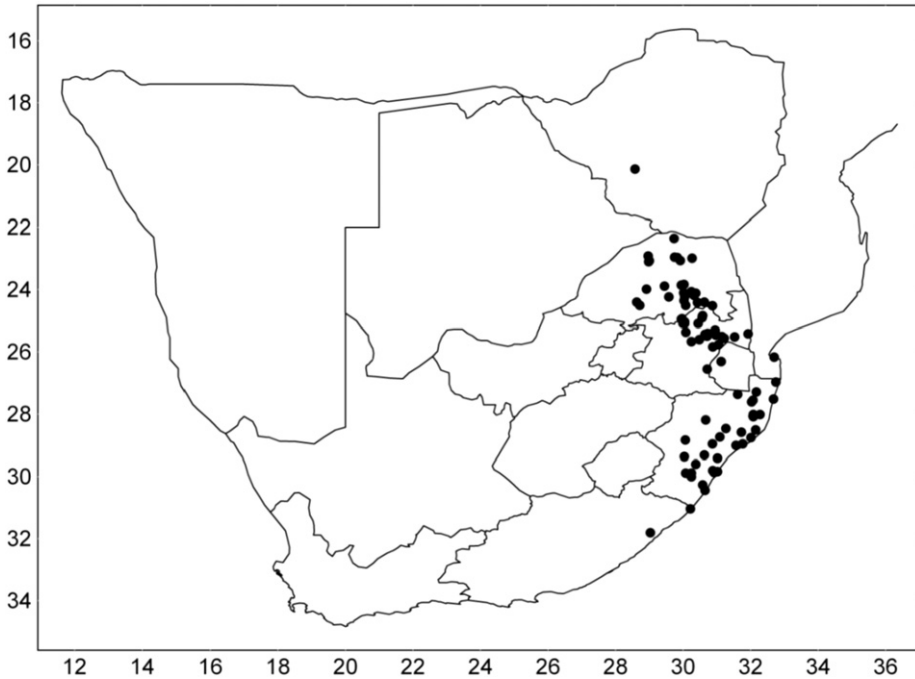
***Pegylis vittata*** (Fähræus in Boheman, 1857), Figs 5–6, 9, 12, 15, 20–22, 33–37, 42–43, 48–49, 54–55, 64–67, 70–71

*Hypopholis vittata* Boheman, 1857. Erichson 1847: 657; Burmeister 1855: 283; Gerstaecker 1867: 42; Gerstaecker 1873: 113.

*Hypopholis vittata* Fähræus in Boheman, 1857. Fähræus in Boheman 1857: 91–92 (description); Harold 1869: 1161; Péringuey 1904: 278 (synonym of *sommeri*). Dalla Torre 1912: 167 (synonym of *sommeri*); Moser 1915: 132 (valid species). Ferreira 1963: 798 (catalogue); Lacroix 2010: 87, 89.

*Hypopholis vittata atrata* Machatschke, 1955. Machatschke 1955: 91–96. **Syn. nov.**

**Diagnosis.** Posterior pronotal margin unpigmented rim (Figs 33, 36). Lateral pronotal margin weakly acute, intermediate between *P. sommeri* and *P. pondoensis* (compare Figs 38–43). Mesosternal protuberance not produced beyond mesocoxae. Body more rounded in shape than *P. sommeri*.

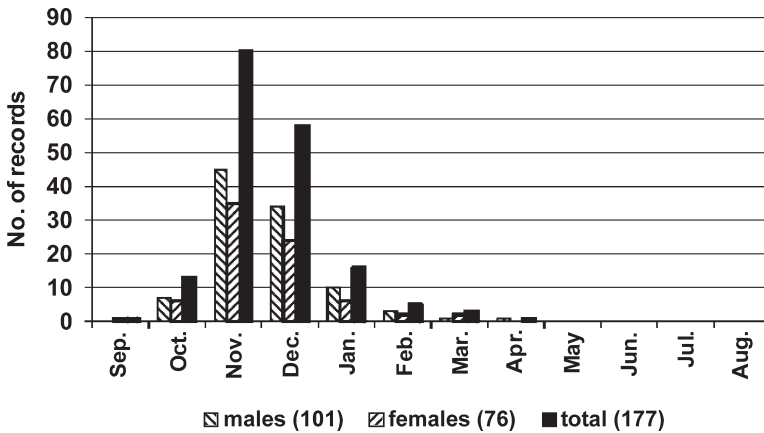


**Fig. 20.** Known distribution of *Pegylis vittata* in southern Africa.

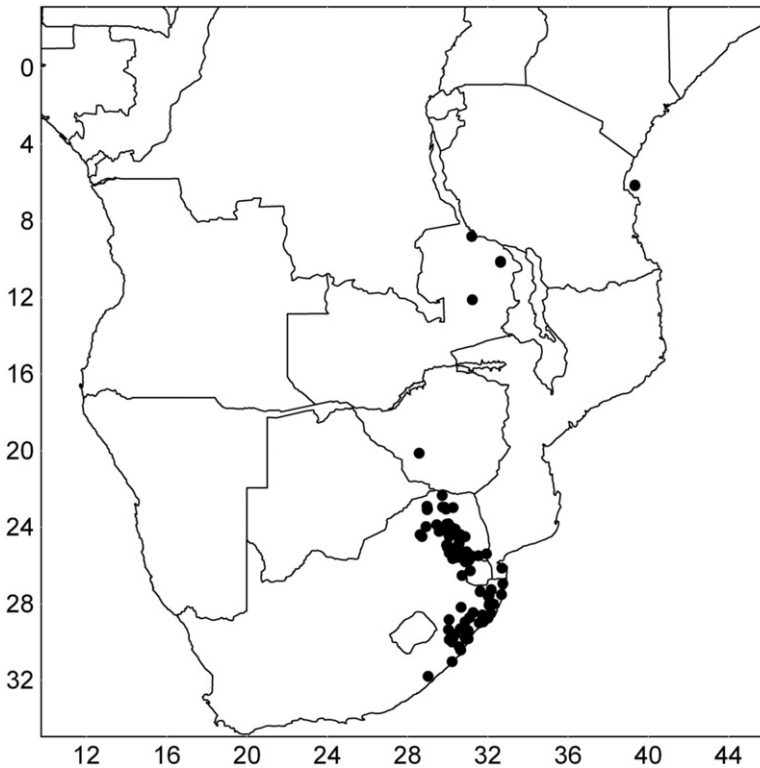
*Brief description.* *Size.* Length: males ( $n = 5$ ), mean 16.4 mm, (range 16.0–18.0 mm), females ( $n = 5$ ) 16.4 mm, (range 16.0–17.0 mm). Width: males ( $n = 5$ ), 9.6 mm, (range 9.0–10.0 mm), females ( $n = 5$ ) 10.4 mm, (range 10.0–11.0 mm). *Pronotum.* Ratio, greatest width: greatest mid length 1.99:1 ( $n = 5♂$ ); 2.03:1 ( $n = 5♀$ ). *Colour.* Pronotum with four black bands, two broad medially, one narrower laterally on each side. Elytra pale brown to striped with three black bands per elytron, merging to

completely black in dark individuals (Fig. 6). *Male genitalia* illustrated in Figs 64–67. Parameres long and slender, more curved laterally than *P. pondoensis* (compare Fig. 62 with 66) with apex narrowing near the base (Fig. 65). *Morphological variability.* Pigmentation of pronotum and elytra varying from pale brown to black (see colour above for markings).

*Distribution.* Recorded on the eastern side of the continent from Bulawayo in Zimbabwe to Hlluleka



**Fig. 21.** Estimate of the seasonal activity of *Pegylis vittata* based on museum records listed here for 177 specimens (101 males and 76 females).



**Fig. 22.** Known distribution of *Pegylis vittata* in Africa, with records from South Africa, Swaziland, Mozambique, Zimbabwe, Zambia and Tanzania.

in the Eastern Cape of South Africa (Figs 20, 22). The Namibian Gobabis locality record, based on a single pair, are probably incorrectly labelled.

*Conservation status.* Widely distributed in southern Africa and known from these Nature Reserves: Lagalameetse, Pullen, Sodwana, Mkuzi, Hluhluwe and Vernon Crookes (refer to the Gazetteer for a complete list of known localities).

*Biology and pest status.* *Pegylis vittata* is primarily diurnal (of the 292 specimens examined, three are labelled as being collected at light traps). Their known phenology is indicated in Fig. 21, and host records summarized in Table 1.

*Remarks.* Based on the examination of 74 males and 71 females of *H. vittata* from 'Rhodesia, Bulawayo', Machatschke (1955) selected dark black specimens (13 males and 23 females) from the series and described these as *Hypopholis vittata atrata*. He deposited the holotype and allotype in the Frey Collection, München. I examined the holotype, five male and three female paratypes of the type series, and 26 non-types (but from the same locality and collecting series) from the DEIG

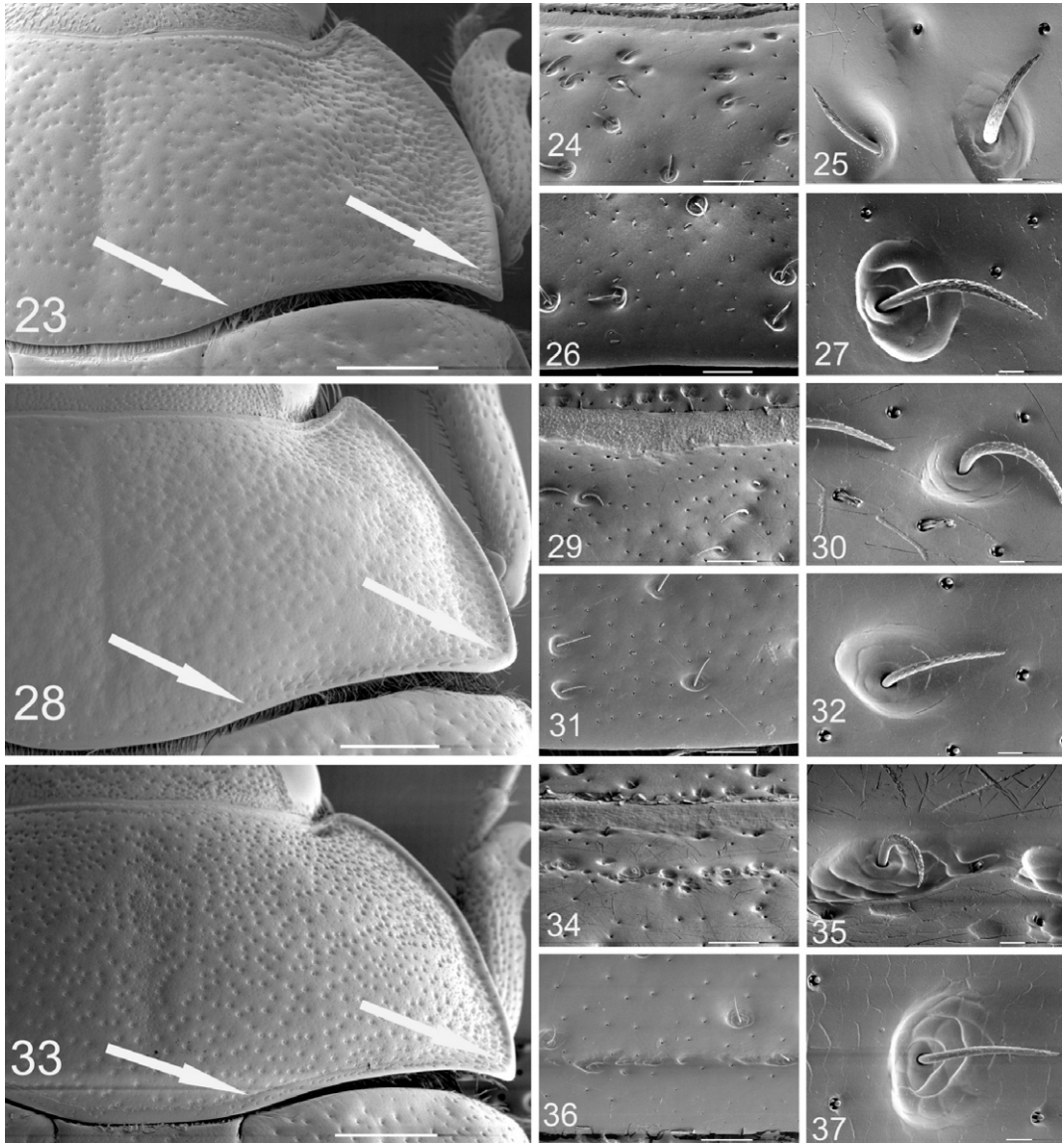
Collection. I regard *P. vittata atrata* as synonymous with *P. vittata*, because specimens attributed to *P. vittata atrata* only represent the black form of a species that varies in colour from light brown to completely black.

*Type material examined* *Hypopholis vittata* Boheman, 1857. Photographs (Figs 68–71) of the syntypes (NHRS) provided by D. Ahrens.

*Type material examined* *Hypopholis vittata atrata* Machatschke, 1955. ZIMBABWE, Bulawayo, (6♂, 3♀ DEIG).

*Additional material examined* for *P. vittata* (247: 140♂, 107♀). **SOUTH AFRICA, Eastern Cape;** Hluleka, 29.x.1996, Marius Burger, (2♂, 1♀ TMSA); **KwaZulu-Natal;** Bloemendal, Pietermaritzburg, 22.xi.[19]56, J.A. Hunt, Coll. No. 218 Wattle Res. Inst. / 49 / C.I.E. Coll. No. 18086, (3♂, 3♀ ICFR); Broedershoek, [Krantz kop], 20–30.xii.1921, (1♀ SANC); Cramond, 1.xii.[19]13, C.B. Hardenberg, on wattle, W303, (1♀ SANC); Cramond, 1.xii.[19]13, C.B. Hardenberg, on wattle / W303 & W280 / Ac Ca 448, (3♀ ICFR); Dalton, 22.xi.1904, ?417, (1♂ TMSA); Durban, / xii.[18]89, J.H.Bowker, *Hypopholis*

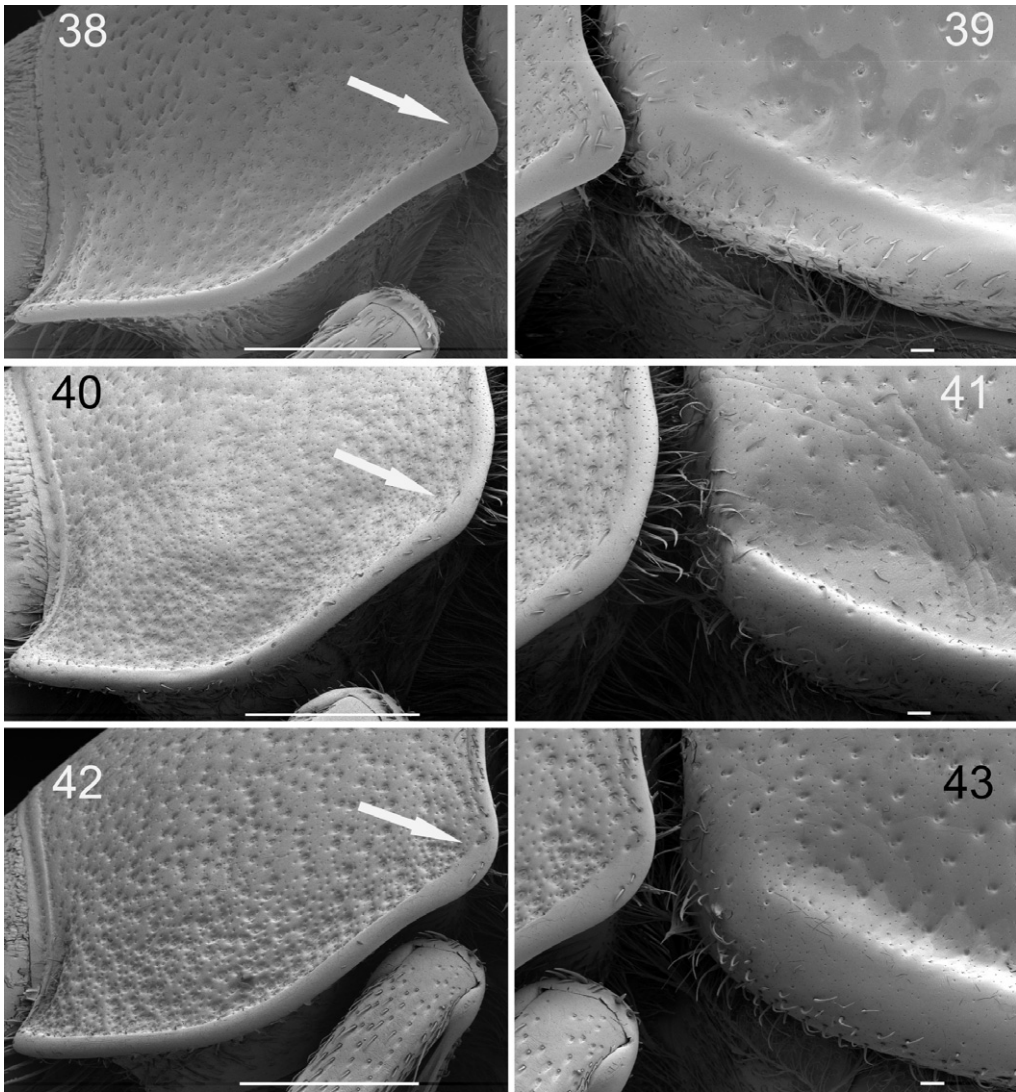




**Figs 23–37.** Pronota of *Pegylis* species; **23–27**, *P. sommeri*; **28–32**, *P. pondoensis*; **33–37**, *P. vittata*. Anterior pronotal edge (APE) (**24**, **29**, **34**) including setae on the APE (**25**, **30**, **35**). Posterior pronotal edge (PPE) (**26**, **31**, **36**) including setae on the PPE (**27**, **32**, **37**). Scale bars (23, 28, 33) = 1 mm; (24, 26, 29, 31, 34, 36) = 100  $\mu$ m; (25, 27, 30, 32, 35, 37) = 10  $\mu$ m. 1st column  $\times 20$ , 2nd  $\times 100$ , 3rd  $\times 1000$ .

*sommeri* Burm., (1 $\delta$  SAMC-A035900); Durban, (1 $\varphi$  SAMC-A035903); Durban, 10.iii.[18]98, SAfrica, C. LeDoux acc67769 / *Hypopholis*, (1 $\varphi$  USNM); Durban West, 21.x.1999, Perissinotto & Clennell, (1 $\delta$  TMSA); P.' Natal [= Durban], *vittata* Boh. Ins. Caffr., (1 $\delta$  MNHN); Port Natal, Staudgr., Coll. Gerstaecker, (2 $\delta$  EMAU); Port Natal / 49, 29, // Determined from description G.J.A. [= G.J. Arrow],

(1 $\delta$ , 1 $\varphi$  BMNH); Empangeni, xi.1922, Ent. SN. 2832, Ac.-N. 1039, Imp. Inst. Ent. Coll. No. 10690, (2 $\delta$ , 2 $\varphi$  SANC); Empangeni, ix.1976, P.E. Reavell, (1 $\varphi$  TMSA); Empangeni, xii.1978, R. Oberprieler, (1 $\delta$ , 1 $\varphi$  TMSA); Eteza, Zululand, 11.xi.[19]55, Coll. Mus. Congo ex coll. Breuning / *Hypopholis vittata* Fahr., det. J. Decelle, 1961, (2 $\delta$ , 3 $\varphi$  MRAC); Eteza, Zululand, 18.xi.[19]53, S. Breuning, (2 $\varphi$  ISNB);

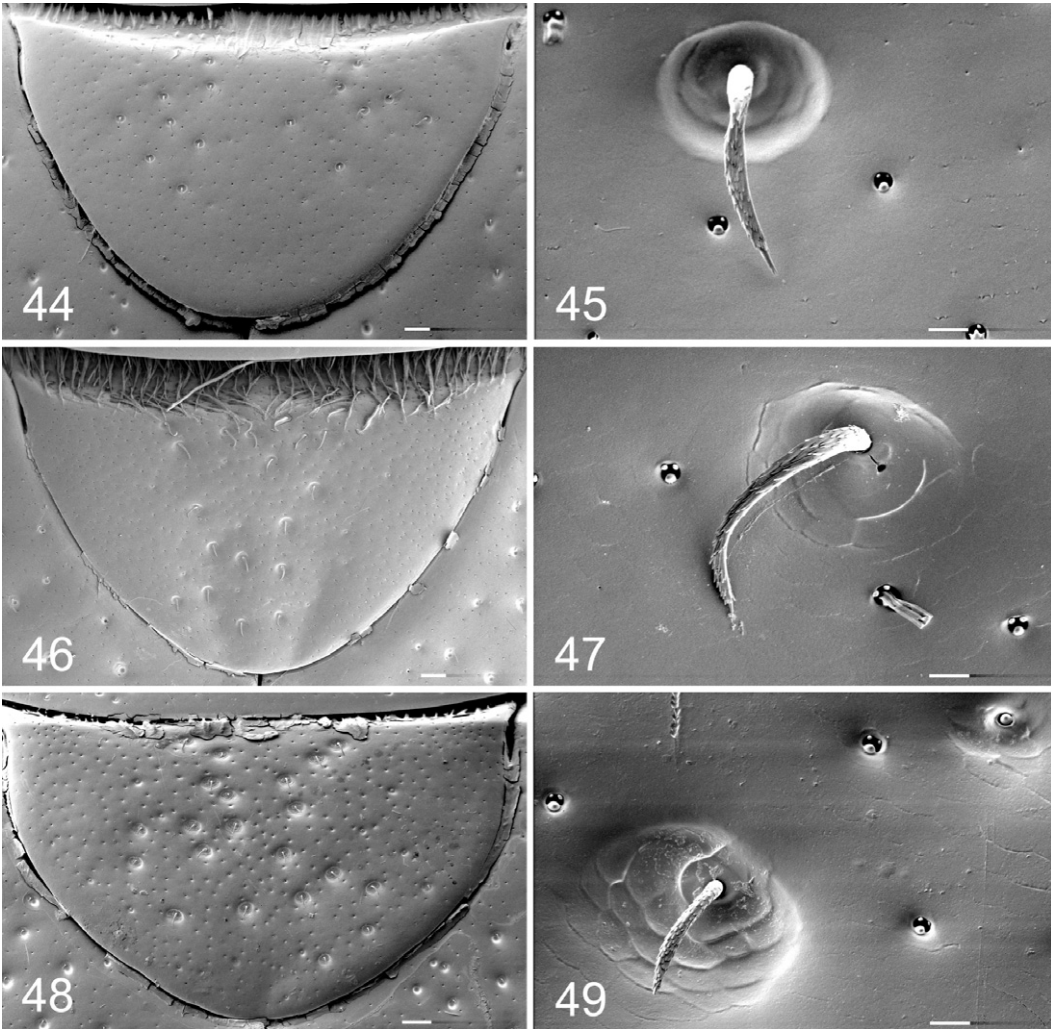


**Figs 38–43.** Lateral pronota (38, 40, 42) and elytra (39, 41, 43) of *Pegylis* species. 38–39, *P. sommeri*; 40–41, *P. pondoensis*; 42–43, *P. vittata*. Scale bars (38, 40, 42) = 1 mm; (39, 41, 43) = 100  $\mu$ m. 1st column  $\times$ 37, 2nd  $\times$ 50.

Gingindlovu, x–xi.2000, P.E. Reavell, 24 m a.s.l., (1 $\delta$  SANC); Gingindlovu, xii.1979, R.Oberprieler, (1 $\delta$  TMSA); Hela-Hela, Richmond Dist., 2.i.[19]55, ex coll. Breuning, (1 $\delta$  MRAC); Hluhluwe, xii.1960, van Son, (2 $\delta$ , 1 $\varphi$  TMSA); Hluhluwe, 21.x.1976, P.E. Reavell, (1 $\varphi$  TMSA); Hluhluwe Game Res., 5.xii.1995, F. Koch, (1 $\varphi$  ZMHB); Hluhluwe Game Reserve, 18.xi.1992, Endrödy-Younga, E-Y:2831, ground and logs, (1 $\delta$  TMSA); Hluhluwe Game Reserve, 26–29.xi.1992, M. Krüger, (1 $\varphi$  MKCP); Hluhluwe N[ational] P[ark], Hilltop Camp, 16–17.xi.1996, B.Uhlig, (1 $\delta$  ZMHB); Ifafa Mouth,

xi.[19]02, (1 $\delta$  DMSA); Indaleni, Richmond Dist., 16.i.[19]55, Coll. Mus. Congo ex coll. Breuning / *Hypopholis vittata* Fahr., det. J. Decelle, 1961, (1 $\delta$  MRAC), *idem* but 10.xii.[19]54, (1 $\varphi$  MRAC); Krantzkop, xi.1917, K.H. Barnard, (1 $\delta$  SAMC-A035902); Malvern, J.P. Cregoe, 1904–46, (1 $\delta$  BMNH); Malvern, (1 $\delta$ , 2 $\varphi$  DMSA); Malvern, Natal, Ex Museo Dr Ch. H-Martin / *Pleophyla*?spec, (1 $\delta$ , 1 $\varphi$  MNHN); Maputa, Zululand, 1–10.xi.[19]56, ex coll. Breuning, (1 $\delta$ , 2 $\varphi$  MRAC); Mfongosi, /xii.1914, W.E. Jones, (1 $\varphi$  SAMC-A035850); Mkuiei, [Mkuze], Zululand, Rev. J.W. Hunt, Coll. Mus. Congo



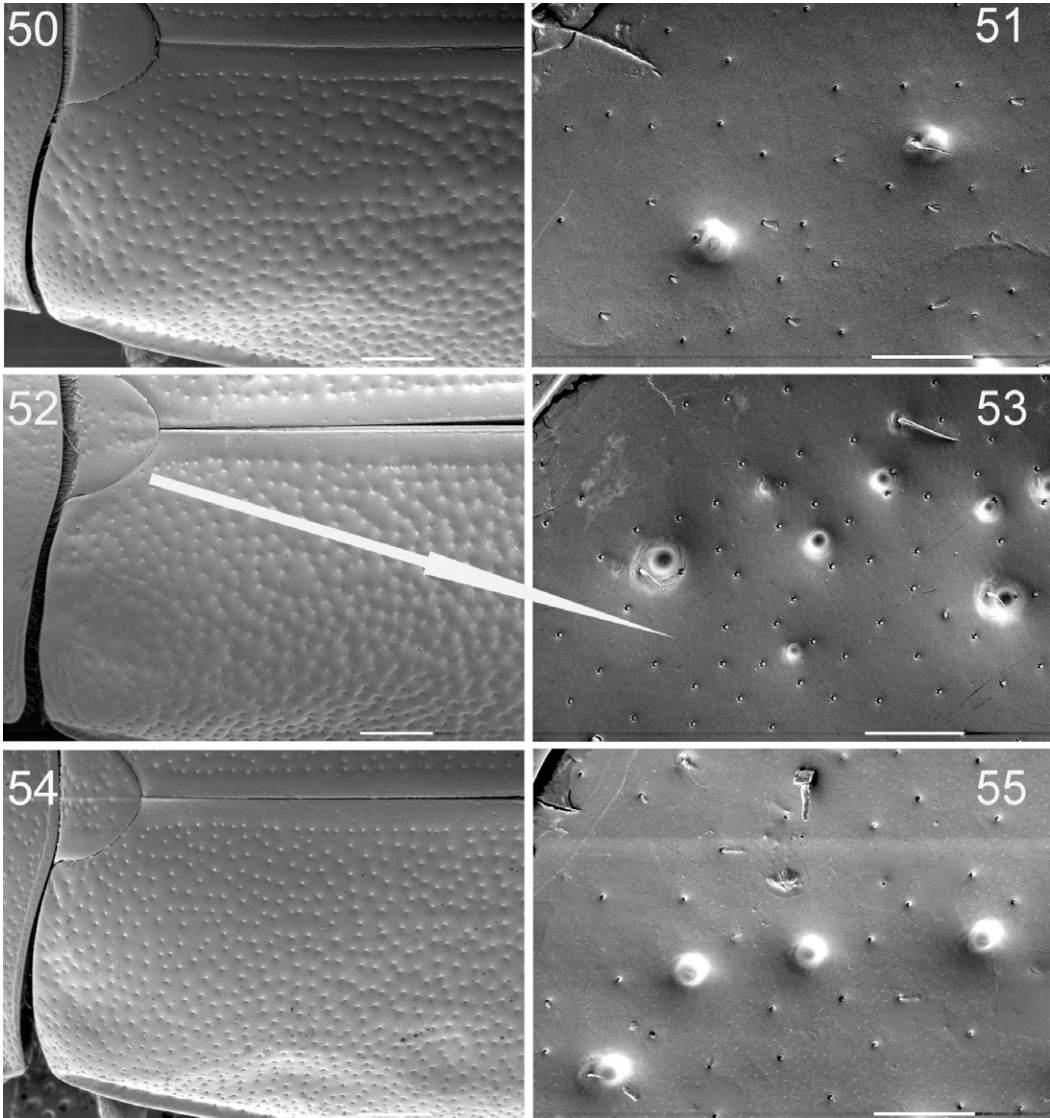


**Figs 44–49.** Scutella of *Pegylis* species. **44–45.** *P. sommeri*; **46–47.** *P. pondoensis*; **48–49.** *P. vittata*. Scale bars (44, 46, 48) = 100  $\mu$ m; (45, 47, 49) = 10  $\mu$ m. 1st column  $\times$ 50, 2nd  $\times$ 800.

ex coll. Breuning, (1 $\delta$  MRAC); Mtunzini, III.1976, P.E. Reavell, (1 $\delta$ , 1 $\text{f}$  SANC); Nqutu, 26.I.[19]57, A.H. Newton, (1 $\delta$  DMSA); Ntambanana, 6.xi.1922, G.A.H. Bedford, SN 3221, Imp. Inst. Ent. Coll. No. 10917, (1 $\delta$ , 1 $\text{f}$  SANC); Ntambanana, x.1921, R.H. Harris, SN. 2834, on thorn tree, Ac.Z.86, Imp. Inst. Ent. Coll. No. 10690, (1 $\delta$ , 1 $\text{f}$  SANC); Pietermaritzburg, Bloemendal, 22.xi.[19]57, J.A. Hunt, C.I.E. Coll. No. 16086, (1 $\delta$ , 1 $\text{f}$  FABI); Pongola, 19.x.[19]66, E. Bornman, (1 $\text{f}$  SANC); Port Edward, xi.1943, R.F. Lawrence, (1 $\text{f}$  TMSA); Richard's Bay, 5.xi.1993, P.E. Reavell, 30 m a.s.l., on grass, (1 $\delta$ , 1 $\text{f}$  SANC); S[outh]. of Cowies Hill, Durban to Pietermaritzburg, xii.1959, C.G.C. Dickson, (1 $\text{f}$  TMSA); Sodwana,

10.xii.1988, R.I. Mansfield, (1 $\delta$ , 1 $\text{f}$  TMSA); Ubombo, Zululand, *Hypopholis vittata* Fahr.  $\delta$  Machatschke det. 1954, (1 $\delta$  DEIG); Umkomaas River Valley, Dist. Richmond, 1.xii.[19]56, Coll. Mus. Congo ex coll. Breuning / *Hypopholis vittata* Fahr., det. J. Decelle, 1961, (9 $\delta$ , 1 $\text{f}$  MRAC); *idem* but 15.xii.[19]55, (1 $\delta$  MRAC); Upper Tongaat, xi.1919, C.N. Barker, 2479, (1 $\delta$ , 1 $\text{f}$  DMSA); Vernon Crookes, 6.xii.1998, Perissinotto & Clennell, (1 $\delta$ , 1 $\text{f}$  TMSA); *idem* but 20.x.1998, (1 $\delta$ , 1 $\text{f}$  TMSA); Weenen, [illegible], (1 $\delta$  TMSA). **Mpumalanga**, Barberton, ii.[19]19, H. Edwards, (1 $\delta$  SAMC-A035846); Barberton, xii.1911, H. Edwards, (1 $\delta$  SAMC-A035845); Barberton, xii.1965, L. Schulze, (1 $\delta$ , 1 $\text{f}$  TMSA); Barberton, Levetzow,

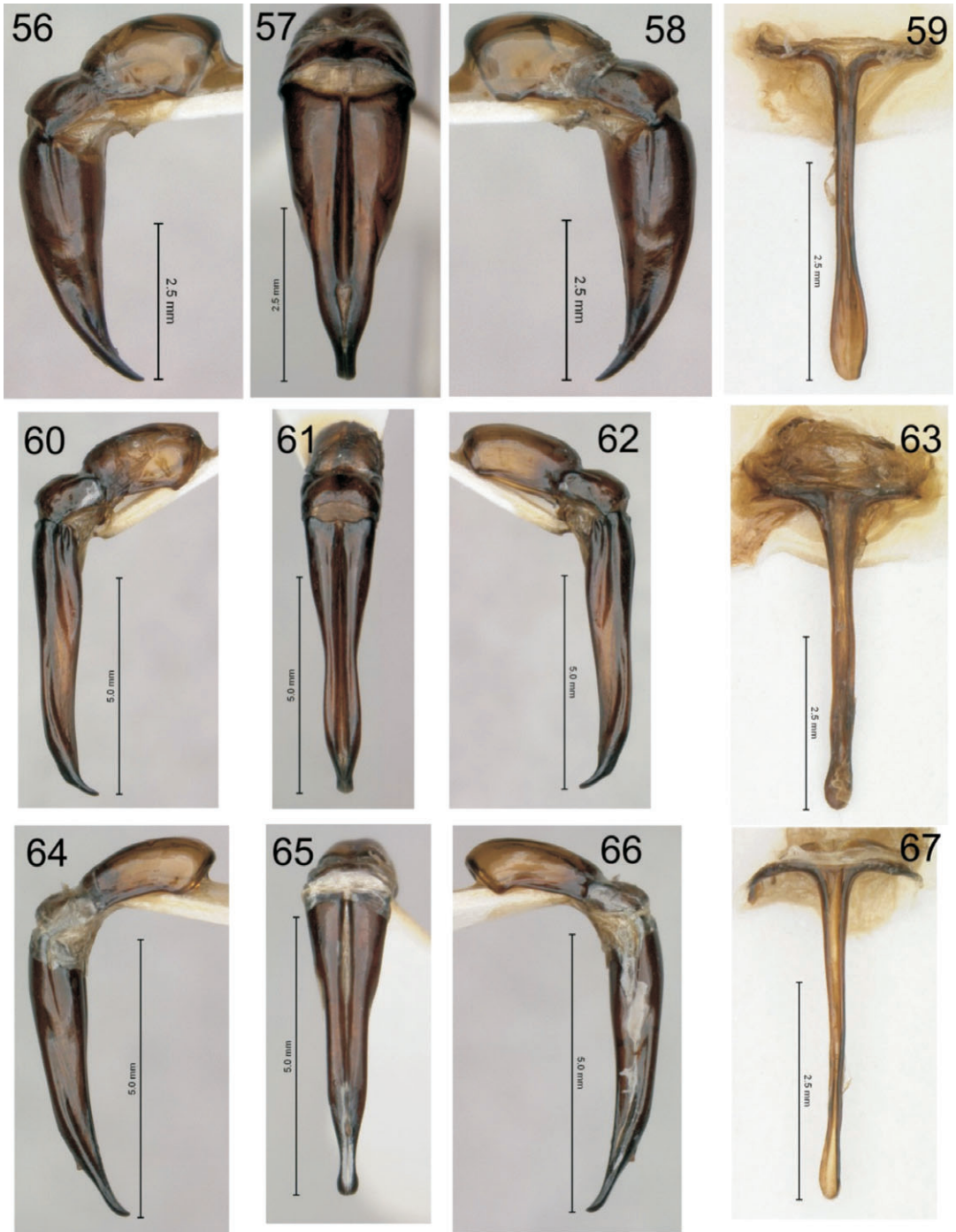




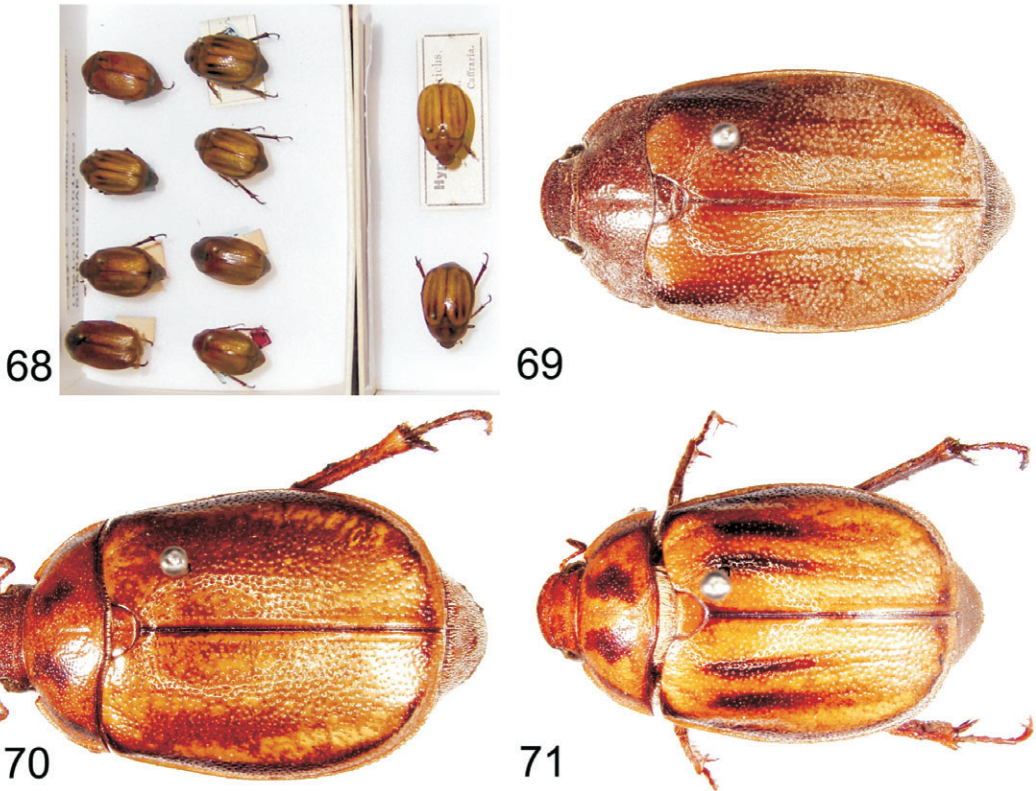
**Figs 50–55.** Elytra of *Pegylis* species. **50–51**, *P. sommeri*; **52–53**, *P. pondoensis*; **54–55**, *P. vittata*. Scale bars (50, 52, 54) = 1 mm; (51, 53, 55) = 100 µm. 1st column  $\times 15$ , 2nd  $\times 200$ .

(1♂, 2♀, T MSA); Barberton, 1892, [illegible], (1♂ SAMC-A035847); Barberton, i.1898, [illegible], (1♂ MNHN); Barberton, xi.–xii.1908, Miss L. C. de Beer, (1♂, 1♀ MNHN); Barberton, 1897, [illegible], (1♀ MNHN); Brton, [Barberton], ii.[19]03, Gould, (1♀ TMSA); Barberton, Transvaal, Caffraria, (1♂, 1♀ BMNH); Barvale, 28 km W.[est] of Nelspruit, 6.xi.1994, Stals, Joubert & Vogt, on *Acacia*, (1♂, 1♀ SANC); Crocodile R[iver]. Bridge, 7 miles from Komatipoort, x.[19]26, H. Lang, (1♀ TMSA); De Hoop 203 JU, Nelspruit Dist., 20–21.xi.1972, A.

Strydom, (1♀ TMSA); Dwars River, xi–xii.2006, R.D. Stephen, (1♀ TMSA); Elandshoek, A. Capener, (1♂ TMSA); Gustav Klingbiel N.R. nr Lydenburg, 17.i.1989, V.M. Uys, (2♂ SANC); Krokodilpoort Mts., 28 km S.E. of Nelspruit, Pullen Farm, 2–11.xi.1992, Kruger & Dombrowsky, 1000 m a.s.l., (2♂ MKCP); Krokodilpoort Mts., 28 km S.E. of Nelspruit, Pullen Farm, 2–11.xi.1992, Kruger & Dombrowsky, 1000 m a.s.l., (2♂, 1♀ TMSA); Lydenburg Distr., 1896, P.A. Krantz, (1♂, 4♀ TMSA); Machadodorp, xii.1965, L.Schulze, (1♂



**Figs 56–67.** Genitalia of South African *Pegylis* species. **56–59,** *P. sommeri*; **60–63,** *P. pondoensis*; **64–67,** *P. vittata* in left, anterior and right lateral views, including the spiculum gastrale (59, 63, 67) of each species. Scales indicated on each figure.



**Figs 68–71.** Syntypes of *Hypopholis* species. **68**, *Hypopholis* species in the Boheman collection (NHRS); **69**, *Hypopholis sulcicollis* Boheman, 1857; **70–71**, *Hypopholis vittata* Fähræus in Boheman, 1857. (Photographs courtesy of D. Ahrens).

TMSA); Montrose Falls, 17–19.x.1990, M. Stiller, sweeping grass, (1♂ SANC); Nelshoogte Gallery Forest, below station, 4.xii.1986, Endrödy-Younga, E-Y:2354, UV light collection, (1♀, TMSA); Nelspruit, xi.1921, (1♂ SANC); Nelspruit nr Barberton, i.1939, R.F. Lawrence, (1♀ SAMC-A035848); Rustplaats 522, Lydenburg Dist., 7.xi.1975, G. Mansvelt, (2♂ TMSA); Rustplaats 522, Lydenburg Dist., 22.xi.1977, G. Mansvelt, (1♀, TMSA); Stenor Estates, 3 km E. Kaapmuiden, 5–6.xii.1984, C.H. Scholtz, *Hypopholis vittata* / *sommeri* sensu Tvl. Mus. det. B.C. Ratcliffe, 1996, (1♀ UNSM); Swadini nr Blyde River Nat. Res., 7–15.xii.1998, M. Kruger, (1♀ MKCP); Veraaiers Nek Pass, 7.xii.1988, Van Viegen & Newbery, V-V: 360, (2♂, 1♀ TMSA); Welgevonden nr Mariepskop, xii.1987, V.M. Uys, (1♂, 1♀ SANC). **Limpopo**, Ballon Forest nr Tzaneen, 6–9.xi.1980, D.H. Jacobs, *Pegylis* det. A.V. Evans '86, (1♂ TMSA); B'berg, [Blouberg], 15.xi.[19]58, (1♂, 1♀ DMSA); Entabeni Forest Res., xi.1978, G.L. Prinsloo, (2♂ SANC); F.

Oldreive's Outlook Est., Louis Trichardt, 4.xii.1978, Falc. Coll. Exp (Nat. Mus), Zoutpansberg 1415 m a.s.l., (1♂ NMBZ); Fourteen [14 Streams], [nr Barberton], xi.1967, Schultze & Goode, (1♂ TMSA); Lagalameetse Nature Reserve, 3–8.i.1996, M. Kruger, inland tropical forest, (2♂, 3♀ MKCP); Lekgalameetse Nat. Res., 21.xii.1995, F. Koch, (2♂, 1♀ ZMBH); Lekgalameetse Nat. Res., 19.xi.1996, R.G. Oberprieler, (5♂ SANC); Louis Trichardt, 6–8 miles north of, xii.1965, L. Schulze, (3♂ TMSA); Magoeba's Kloof, xii.1965, L. Schulze, (2♂ TMSA); Magoebaskloof, 20.i.1963, A.L. Capener, (1♀, SANC); Marieps Mnt., i.1926, G. van Son, (1♂ TMSA); Naboomspruit, 9 miles west of, 15.xi.1966, N. van Rensburg, (2♂, 1♀ SANC); Oog [Die Oog], 10.iv.1988, C.J. Klok, (1♂ TMSA); Penge, Lydenburg Dist., 13–17.xi.1972, A. Strydom, (1♂, 1♀ TMSA); Pietersburg, [19]03, Janse, (1♀ SAMC-A035844); Pietersburg, xii.[19]09, (1♀, TMSA); Pietersburg, xii.1909, (1♂ TMSA); Shilouvane, xii.[19]05–i.[19]06, Rev. Junod, (1♀, TMSA);



**Table 1.** Feeding records of *Pegylis sommeri*, *P. pondoensis* and *P. vittata*. For additional details refer to the material examined under the respective species.

Crop / Plant	som	pon	vitt	Reference/s
<i>Acacia mearnsii</i> De Wild. (black wattle)	X			Prins 1965; Carnegie <i>et al.</i> 1974; Annecke & Moran 1982; Swain & Prinsloo 1986; Material examined
<i>Acacia mollissima</i> De Wild.	X			Material examined
<i>Acacia</i> spp. (wattle plantations)	X	X	X	Material examined
<i>Ananas comosus</i> (L.) Merr. (pineapples)	X			Oberholzer 1959a,b; Petty 1976, 1978, 1990, 2001; Petty <i>et al.</i> 2002; Annecke & Moran 1982
<i>Betula pendula</i> Roth (European silver birch)	X			Material examined
<i>Brachylaena transvaalensis</i> E. Philips & Schweick (forest silver-oak)		X		D. Williams, pers.comm.
<i>Celtis africana</i> Burm.f. (white stinkwood)		X		D. Williams, pers.comm.
<i>Encephalartos friderici-guillielmi</i> Lehm.	X			Material examined
<i>Erythrina caffra</i> Thunb.	X			Material examined
<i>Eucalyptus camaldulensis</i> Dehnh.	X			Swain & Prinsloo 1986
<i>Eucalyptus globulus</i> Labill.	X			Swain & Prinsloo 1986
<i>Eucalyptus</i> spp.	X			Swain & Prinsloo 1986
<i>Eucalyptus viminalis</i> Labill.	X			Swain & Prinsloo 1986
Fruit trees (damaging fruit trees)	X			Prins, 1965; Carnegie 1974; Material examined
<i>Humulus</i> L. sp. 'on roots of hops plants'	X			Material examined
<i>Pinus patula</i> Schltld. & Cham.	X			Annecke & Moran 1982; Swain & Prinsloo 1986; Material examined
<i>Podocarpus</i> forest	X			Material examined
<i>Quercus</i> sp. (oak tree)	X			Harrison (field observation)
<i>Rosa</i> L. (ornamental garden roses)	?	?	?	Annecke & Moran 1982
<i>Saccharum officinarum</i> L. (sugarcane)	X		X	Sweeney 1967; Carnegie 1974; Carnegie & Hardy 1986; Leslie 1996; Annecke & Moran 1982, Carnegie 1988, Way 1997
<i>Solanum</i> L. spp. (potatoes)	X			Harrison (unpubl. data) from South Africa, KwaZulu-Natal. Larvae feeding on tubers
<i>Vitis</i> L. (grapevines)	X			Ormerod & Janson 1889

Following Klopper *et al.* (2006) *Acacia mollissima* auct. is a synonym of *A. mearnsii*.



Shilouvane, 1.ii.1906, Rev. Junod, (2♂, 1♀ TMSA); Steelpoort, 12.xi.2002, C. Malherbe, (6♂, 2♀ TMSA); Strijdom Tunnel, 24–25.xi.1981, R.G. Oberprieler, light trap, (1♀ SANC); Thabaphaswa, 14.xii.2003, R. Müller, E-Y: 3597, light trap, (1♂ TMSA); Warmberg b. Pietersbg, A.J.T. Janse, *Hypopholis vittata* Fahr. det Machatschke, 1954, (1♂, 1♀ DEIG); Zoutpansberg, xi.1924, H.J. Heske, (1♂, 1♀ TMSA). **Same locality** in various South African provinces. Heidelberg, xii.1957, (1♀ TMSA); Johannesburg, (1♀ MNHN). **SWAZILAND**, Malagwane Hill, Mbabane, Dec. 1990, N.J. Duke, (1♂ MKCP); Mbabane, Mantenga Ranch, 15–19.xi.1956, v. Son & Martin, (1♀, TMSA); Swazie[land], xi.[18]90, *Hypopholis sommeri* [Péringuey's hand], (1♀ SAMC-A035849). **TANZANIA**, Sansibar, [Zanzibar], Prof. J. Fischer, (1♀ ZMHB). **ZAMBIA**, Northern Province; Isoka, 22.xi.[19]56, Coll. Mus. Congo

## REFERENCES

- ANNECKE, D.P. & MORAN, V.C. 1982. *Insects and Mites of Cultivated Plants in South Africa*. Butterworths & Co., Pretoria, South Africa.
- ARROW, G.J. 1902. XIX. On rutelid and melolonthid beetles from Mashonaland and East Africa. *Annals and Magazine of Natural History Series 7*, 9: 89–101.
- ARROW, G.J. 1943. LXVI. Systematic notes on the melolonthine beetles belonging to the genus *Lepidiota* and some related genera. *Annals and Magazine of Natural History Series 11*, 10: 773–785.
- BLANCHARD, C.É. 1851. *Ordre des Coléoptères*. In: Milne-Edwards, H., Blanchard, C.É. & Lucas, P.H. (Eds) *Muséum d'Histoire Naturelle de Paris: Catalogue de la Collection Entomologique. Classe des Insectes. Tome 1, Deuxième livraison*. 129–240. Gide & Baudry, Paris.<sup>1</sup>
- BOHEMAN, C.H. 1857. *Insecta Caffrariae annis 1838–1845 a J.A. Wahlberg collecta, Coleoptera, Holmiae*. 2: 1–395 + 1 plate.
- BURGEON, L. 1946. Melolonthini et Pachydemini du Congo belge (suite) (Coleopt. Scarab. Melolonthinae). *Revue de Zoologie et de Botanique africains, Bruxelles* 39(4): 339–366.
- BURMEISTER, H. 1855. *Handbuch der Entomologie*, Berlin. 4(2): 1–569.
- CARNEGIE, A.J.M. 1974. Sugarcane white grubs (Scarabaeoidea) and their control in South Africa. *Proceedings of International Society of Sugar Cane Technologists* 15: 498–512.
- CARNEGIE, A.J.M. 1988. White grubs (Scarabaeoidea) continue to cause sporadic damage to sugarcane in South Africa and Swaziland. *Proceedings of the South African Sugar Technologists' Association* (June): 161–163.
- CARNEGIE, A.J.M., DICK, J. & HARRIS, R.H.G. 1974. Insects and nematodes of South African sugarcane. ex coll. Breuning / *Hypopholis vittata* Fahr., J. Decelle det., 1961, (1♀ MRAC); Isoka, 22.xi.[19]56, Rev. W. Hunt, ex coll. Breuning, (1♀ ISNB). **ZIMBABWE**, Bulawayo (15♂, 11♀ DEIG). **Incorrect locality**, Namibia, Gobabis, D.S.W. Afrika, F. Schneider (1♂, 1♀ ISNB).

## ACKNOWLEDGEMENTS

I am grateful to and thank all of the following: curators and the museums listed in the materials and methods for access to specimens; M.J. Wingfield and C.H. Scholtz (both UP) provided NRF and Mellon Foundation funding respectively; P. Schoolmeesters for literature; K. Balkwill (Wits) for writing time at Wits' Pullen Nature Reserve; and three anonymous reviewers whose comments improved the paper.

- Entomology Memoirs of the Department of Agriculture Technical Services, Pretoria, South Africa* 39: 1–19.
- CARNEGIE, A.J.M. & HARRIS, R.H.G. 1986. Chemical control of whitegrub. *South African Sugar Association Experiment Station Report*: 1–10.
- DALLA TORRE VON, K.W. 1912. Scarabaeidae: Melolonthinae III. Melolonthini, Pars 49, pp. 135–290. In: S. Schenkling (Ed.) *Coleopterorum Catalogus*, W. Junk, Berlin, Germany, 450 pp.
- DEJEAN, P.F.M.A. 1833. *Catalogue des Coléoptères de la Collection de M. le Comte Dejean, Fascicules 1–2*. Méquignon-Marvis Père et Fils, Paris, France. 1–443.
- DEJEAN, P.F.M.A. 1837. *Catalogue des Coléoptères de la Collection de M. le Comte Dejean. Troisième édition, Revue, Corrigée et Augmentée, Fascicules 1–4*. Méquignon-Marvis Père et Fils, Paris, France. 1–503.
- ERICHSON, W.F. 1847. *Naturgeschichte des Insecten Deutschland. I. Coleoptera, Scarabaeides*. Nicolaische Buchhandlung, Berlin, Germany. 1(3) parts 4–5: 481–800.
- EVENHUIS, N.L. 2012. The insect and spider collections of the world website, based on Arnett, R.H., Samuelson, G.A. & Nishida, G.M. 1993. The Insect and Spider Collections of the World, 2nd edn, with substantial additions and corrections. Online at: <http://hbs.bishopmuseum.org/codens/> (last update: 20 November 2012) (accessed 10 June 2014).
- FÄHRÆUS in BOHEMAN, C.H. 1857. *Insecta Caffrariae annis 1838–1845 a J.A. Wahlberg collecta, Coleoptera, Holmiae*. 2: 1–395 + 1 plate.
- FAIRMAIRE, L. 1887. Coléoptères des voyages de M.G. Revoil chez les Somâlis et dans l'intérieur du Zanguebar. *Annales de la Société Entomologique de France* 7(6): 102–134.
- FERREIRA, M.C. 1963 [1966] Subfamília Melolonthinae, (pp. 791–803). In: *Catalogo dos Coleópteros de Mozambique. Revista de Entomologia de Mozambique* 6(2): 533–1008.

<sup>1</sup>Blanchard's *Ordre des Coléoptères* was published in two parts (pp. 1–128 in 1850, and pp. 129–240 in 1851) as indicated by Smith (2003: p. 9), which justifies the 1851 date used here.

- GERSTAECKER, C.E.A. 1867. Beitrag zur Insekten-fauna von Zanzibar, nach dem während der Expedition des Baron v.d. Decken gesammelten Material zusammengestellt. *Archiv für Naturgeschichte, Berlin* 33(1): 1–49.
- GERSTAECKER, C.E.A. 1873. *Die Gliedertier-Fauna des Sansibar-Gebietes* Decken C.C. Baron Carl Claus von der Decken's Reisen in Ost Afrikas, Berlin, Germany. 1–542.
- GOBLE, T.A., COSTET, L., ROBENE, I., NIBOUCHE, S., RUTHERFORD, R.S., CONLONG, D.E. & HILL, M.P. 2012. *Beauveria brongniartii* on white grubs attacking sugarcane in South Africa. *Journal of Invertebrate Pathology* 111: 225–236.
- HAROLD, E. von 1869. Scarabaeidae. In: Gemminger, M. & Harold, E. von (Eds) *Catalogus Coleopterorum Hucusque Descriptorum Synonymicus et Systematicus*. Vol. IV. E.H. Gummi, München, Germany. pp. 979–1346.
- HARRISON, J. du G. 2004. Revision of the endemic southern African genus *Rhabdopholis* Burmeister, 1855 (Coleoptera: Scarabaeidae: Melolonthinae). *African Entomology* 12(1): 39–54.
- HARRISON, J. du G. 2009. A taxonomic revision of the African leaf chafer genus *Asthenopholis* Brenske, 1898 (Coleoptera: Scarabaeidae: Melolonthinae): a SEM study. *Zootaxa* 2225: 1–48.
- HARRISON, J. du G. 2012. Cleaning and preparing adult beetles (Coleoptera) for light and scanning electron microscopy. *African Entomology* 20(2): 395–401.
- HARRISON, J. du G. 2013. Phylogeny of the *Pegylina* and taxonomy of selected southern African Leucopholina (Coleoptera: Scarabaeidae: Melolonthinae): with an emphasis on genera of agricultural concern. Ph.D. thesis, University of Pretoria, South Africa. 1–228.
- HARRISON, J. du G. 2014. A morphological analysis of the subtribe *Pegylina* Lacroix, 1989 (Scarabaeidae: Melolonthinae: Melolonthini) reconstitutes its generic composition. *African Entomology* 22: 726–741.
- HARTWIG, E.K. 1967. Termitophilous Thysanoptera from South Africa. *Journal of the Entomological Society of Southern Africa* 29: 44–47.
- JEPSON, W.F. 1956. The biology and control of the sugar-cane chafer beetles in Tanganyika. *Bulletin of Entomological Research* 47: 377–397.
- KLOPPER, R.R., CHATELAIN, C., BÄNNINGER, V., HABASHI, C., STEYN, H.M., DeWET, B.C., ARNOLD, T.H., GAUTIER, L., SMITH, G.F. & SPICHTER, R. 2006. Checklist of the flowering plants of sub-Saharan Africa. An index of accepted names and synonyms. *Southern African Botanical Diversity Network Report No. 42*, SABONET, Pretoria, 1–894.
- KORNEYEV, V.A. 2006. A revision of the Afrotropical species of the *Eupyrgota* (Diptera, Pyrgotidae): the *spinifemur* group and *latipennis* subgroup of species. *Vestnik Zoologii* 40(1): 3–25.
- LACORDAIRE, J.T. 1856. *Histoire naturelle des insectes. Genera des Coléoptères ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes*. Tome troisième contenant les familles des pectinicornes et lamellicornes. Roret, Paris. 3: 1–594 + Atlas 1–16 + 40 plates.
- LACROIX, M. 2008a. Contribution à la connaissance des Melolonthidae africains, III. Nouvelles espèces de *Pegylis* Erichson, 1848 [sic] (Coleoptera, Melolonthidae) *Coléoptères* 14(12): 133–147, 66 figs.
- LACROIX, M. 2008b. Nouvelles espèces de *Pegylis* Erichson, 1848 [sic], d'Afrique orientale (Coleoptera, Melolonthidae) *Coléoptères* 14(16): 163–186, 74 figs.
- LACROIX, M. 2010. *Melolonthinae afrotropicaux (Scarabaeoidea, Melolonthinae) Genera et catalogue commenté*. Collection Hannetons, Lacroix, Paris, France. 1–277 + 192 plates.
- LESLIE, G.W. 1996. Report on a visit to the Australian sugar industry 1–14 November 1996. *SASEX Report*. 1–15.
- MACHATSCHKE, J.W. 1955. Ein Beitrag zur Kenntnis der Arten des genus *Hypopholis* Erichson (Coleoptera: Scarabaeidae, Melolonthinae). *Beiträge zur Entomologie* 5(1/2): 91–96, 6 figs.
- MOSER, J. 1915. Beitrag zur Kenntnis der Melolonthiden (Col.) IV. *Deutsche Entomologische Zeitschrift, Berlin* 1915: 113–151.
- NIMA, 2010–2014. 'National Imagery and Mapping Agency (NIMA) GEONET Names Server'. Online at: <http://egsc.usgs.gov/nimamaps/> (last update 8 April 2008) (accessed 10 June 2014)
- OBERHOLZER, J.J. 1959a. A morphological study of some South African Lamellicorn larvae. I. Descriptions of the third instar larvae. *South African Journal of Agricultural Science* 2(1): 41–74.
- OBERHOLZER, J.J. 1959b. A morphological study of some South African Lamellicorn larvae. II. Comparative morphology. *South African Journal of Agricultural Science* 2(1): 75–88.
- ORMEROD, E.A. & JANSON, O.E. 1889. *Notes and Descriptions of a Few Injurious Farm and Fruit Insects of South Africa*. Simpkin, Marshall and Co., Stationer's Hall Court, London, U.K. 1–116.
- PÉRINGUEY, L. 1904. Descriptive catalogue of the Coleoptera of South Africa (Lucanidae and Scarabaeidae). *Transactions of the South African Philosophical Society* 13: 1–293 + 4 plates.
- PETTY, G.J. 1976. The bionomics and control of pineapple white grubs Coleoptera: Scarabaeoidea) in the eastern Cape. *Crop Production* 5: 55–59.<sup>2</sup>
- PETTY, G.J. 1978. White grubs in pineapples. *Farming in South Africa, Handbook* 12: 1–4.<sup>2</sup>
- PETTY, G.J. 1990. White grubs in pineapples. *Farming in South Africa, Handbook* 12: 1–2.<sup>2</sup>
- PETTY, G.J. 2001. Order Coleoptera: family Scarabaeidae: white grubs. In: van den Berg, M.A., de Villiers, E.A. & Joubert, P.H. (Eds) *Pests and Beneficial Arthropods of Tropical and Non-Citrus Subtropical Crops in South Africa*. 247–257. Agricultural Research Institute.<sup>2</sup>
- PETTY, G.J., STIRLING, G.R. & BARTHOLOMEW, D.P. 2002. Pests of pineapple. In: Peña, J.E., Sharp, J.L. & Wysoki, M. (Eds) *Tropical Fruit Pests and Pollinators: Biology, Economic Importance, Natural Enemies and Control*. 157–189. CABI Publishing, Walingford, U.K.<sup>2</sup>
- POPE, R.D. 1960. A revision of the species of *Schizonycha* Dejean (Col.: Melolonthidae) from Southern Africa. *Bulletin of the British Museum (Natural History) Entomology* 9(2): 63–219 + 14 plates.

<sup>2</sup>*Macrophylla ciliata* Herbst in this paper refers to *Pegylis sommeri* (Burmeister, 1855).

- PRINS, A.J. 1965. Notes on the biology and morphology of the wattle chafers *Monochelus calcaratus* Burm. (Melolonthidae), *Hypopholis sommeri* Burm. (Melolonthidae), and *Adoretus ictericus* Burm. (Rutelidae) with some references to natural enemies (Coleoptera: Lamellicornia). *Entomology Memoirs of the Department of Agriculture Technical Services, Pretoria, South Africa* 9: 1–55.
- SCHMIDT, E., LÖTTER, M. & McCLELAND, W. 2002. *Trees and Shrubs of Mpumalanga and Kruger National Park*. Jacana, Johannesburg, South Africa.
- SMITH, A.B.T. 2003. A monographic revision of the genus *Platycoelia* Dejean (Coleoptera: Scarabaeidae: Rutelinae: Anoplognathini). *Bulletin of the University of Nebraska State Museum* 15: 1–202.
- SMITH, T.J., PETTY, G.J. & VILLET, M.H. 1995. Description and identification of white grubs (Coleoptera: Scarabaeidae) that attack pineapple crops in South Africa. *African Entomology* 3(2): 153–166.<sup>2</sup>
- SWAIN, V.M. & PRINSLOO, G.L. 1986. A list of the phytophagous insects and mites on forest trees and shrubs in South Africa. *Entomology Memoirs of the Department of Agriculture Technical Services, Pretoria, South Africa* 66: 1–91.
- SWEENEY, C. 1967. The Scarabaeoidea associated with sugar-cane in Swaziland; an account of preliminary investigations into the bionomics and control, August 1965–June 1967. *Swaziland Ministry of Agriculture Research Bulletin* 16: 1–163.
- WAY, M.J. 1997. Results from the 1997 white grub surveys in the South African Sugarcane Industry. Technical Report, South African Sugar Association Experiment Station, Mount Edgecombe, South Africa: 1–27.

Accepted 27 June 2014

## GAZETTEER

Gazetteer of localities for *Pegylis sommeri*, *P. pondoensis* and *P. vittata* in southern Africa (species indicated by the first three letters of their name). Additions to label data in square brackets; nr = near; ? = questionable species localities. Unless indicated otherwise all localities are for 'populated places', with the grid reference taken from NIMA (2010). Although this paper focusses on the South African species of *Pegylis*, where their ranges extend into neighbouring countries these localities are also included.

## SOUTH AFRICA

**Northern Cape**Kimberley ?<sup>som</sup> [requires confirmation for sp.]

28°44'S 24°46'E

**Eastern Cape**Alexandria For[est] St[at]ion<sup>som</sup>

33°43'S 26°23'E

Alexandria Forest<sup>som</sup>

33°42'S 26°22'E

Alexandria, Woody Cape<sup>som</sup>

33°46'S 26°20'E

Alice [pp]<sup>som</sup>

32°47'S 26°50'E

Bizana<sup>som</sup>

31°34'S 29°34'E

Cradock<sup>som</sup>

32°11'S 25°37'E

East London<sup>som</sup>

33°02'S 27°55'E

Emagusheni, [pp]<sup>som</sup>

30°51'S 29°36'E

Faraway Farm, nr Grahamstown<sup>som</sup>

33°19'S 26°32'E

Flagstaff<sup>som</sup>

31°05'S 29°29'E

Fort Beaufort<sup>som</sup>

32°47'S 26°38'E

Grahamstown<sup>som</sup>

33°18'S 26°32'E

Grahamstown, Howison's Poort<sup>som</sup>

33°20'S 26°30'E

Hluleka [pp]<sup>vit</sup>

31°49'S 29°18'E

Hogsback [Mountain]<sup>som</sup>

32°36'S 27°01'E

Hogsback [pp]<sup>som</sup>

32°35'S 26°57'E

Howison's Poort<sup>som</sup>

33°22'S 26°29'E

Humansdorp<sup>som</sup>

34°02'S 24°46'E

Katberg [Railway Station]<sup>som</sup>

32°32'S 26°41'E

Kleinemonde<sup>som</sup>

33°33'S 27°03'E

Lusikisiki<sup>som</sup>

31°21'S 29°35'E

Nkambati, [Mkambati Stream]<sup>som</sup>

31°16'S 30°02'E

nr East London, 'The Hill'<sup>som</sup>

33°00'S 27°54'E

Nthloyane<sup>som</sup>

29°58'S 30°48'E

Pirie Bush / Forest<sup>som</sup>

32°43'S 27°17'E

Port Elizabeth [pp]<sup>som</sup>

33°58'S 25°35'E

Port Saint John's<sup>pon, som</sup>

31°38'S 29°32'E

Port Saint John's, Silaka<sup>pon, som</sup>

31°33'S 29°30'E

Pretoria [pp]<sup>som</sup>

30°47'S 28°35'E

Queenstown<sup>som</sup>

31°54'S 26°53'E

Silaka For. Reserve<sup>som</sup>

31°33'S 29°30'E

St John's River<sup>pon</sup>

31°38'S 29°32'E

Stutterheim<sup>som</sup>

32°34'S 27°25'E

Tarkastad [pp]<sup>som</sup>

31°58'S 26°15'E

Trappe's Valley [Railway Station]<sup>som</sup>

33°27'S 26°54'E

Umtata<sup>som</sup>

31°35'S 28°47'E

Umtiza, East London Coast Reserve<sup>som</sup>

33°02'S 27°49'E

Waterloo [farm]<sup>som</sup>

31°51'S 26°36'E

**Gauteng**Bryanston ?<sup>som</sup> [requires confirmation for sp.]

26°03'S 28°02'E

Johannesburg ?<sup>som</sup> [requires confirmation for sp.]

26°12'S 28°05'E

**KwaZulu-Natal**Amanzimtoti<sup>som</sup>

30°03'S 30°53'E

Balgowan<sup>som</sup>

29°22'S 30°01'E

Bellair N[orth]<sup>som</sup>

29°53'S 30°57'E

Broedershoek, [nr Krantzkop]<sup>vit</sup>

28°29'S 31°16'E

Bulwer<sup>som</sup>

29°48'S 29°45'E

Cathedral Peak [pp]<sup>som</sup>

28°55'S 29°09'E

Cathkin Park<sup>pon</sup>

29°00'S 29°25'E

Cedara (Agricultural College)<sup>som</sup>

29°32'S 30°16'E

Chakas Kraal<sup>som</sup>

29°27'S 31°04'E

Clan Synd<sup>som</sup>

29°23'S 30°29'E

Clansthal [pp]<sup>som</sup>

30°15'S 30°48'E

Cobham Nat. Res. [State Forest]<sup>som</sup>

29°40'S 29°20'E

Cramond (Plantation)<sup>som, vit</sup>

29°23'S 30°24'E

Dalton<sup>som, vit</sup>

29°20'S 30°38'E

Dlinza Forest [Nat. Res.]<sup>som</sup>

28°53'S 31°26'E

Doreen Clark Nat. Res.<sup>som</sup>

29°34'S 30°17'E

Drakensberg Garden<sup>som</sup>

29°46'S 29°14'E

Drummond<sup>som</sup>

29°45'S 30°42'E

Dukuduku [Forest Reserve]<sup>som</sup>

28°21'S 32°18'E

Durban<sup>som, vit</sup>

29°51'S 31°01'E

[on] Durban- [to] Pietermaritzburg [road]

29°51'S 31°01'E

D'Urban<sup>som</sup>

28°44'S 31°54'E

Empangeni<sup>som, vit</sup>

28°46'S 31°54'E

Empangeni Univ.<sup>som</sup>

28°53'S 31°28'E

Eshowe [pp]<sup>som</sup>

28°31'S 32°09'E

Eteza [Railway Station], Zululand<sup>vit</sup>

28°53'S 29°46'E

Frere<sup>som</sup>

29°01'S 31°34'E

Gingindlovu<sup>vit</sup>

29°01'S 31°34'E

Greytown [pp] <sup>som</sup>	29°04'S	30°35'E	Umvoti <sup>som</sup>	29°11'S	30°19'E
Harden Heights [pp] <sup>som</sup>	29°16'S	30°37'E	Umvoti [Vlei Nat. Res.] <sup>som</sup>	29°08'S	30°34'E
Harding <sup>som</sup>	30°35'S	29°53'E	Underberg <sup>som</sup>	29°47'S	29°30'E
Heidelberg <sup>vit</sup>	26°31'S	28°12'E	Univ. of Zululand <sup>som</sup>	28°38'S	31°53'E
Hela-Hela [Game Ranch] <sup>vit</sup>	29°54'S	30°05'E	Upper Tongaat <sup>som</sup>	29°25'S	31°03'E
Hermansburg [farmstead] <sup>som</sup>	29°03'S	30°47'E	Upper Tongaat <sup>vit</sup>	29°26'S	31°01'E
Highmoor Forest <sup>som</sup>	29°21'S	29°37'E	Uvongo <sup>som</sup>	30°53'S	30°23'E
Hill Crest <sup>som</sup>	29°46'S	30°46'E	Van Reenen, Drakensberg <sup>som</sup>	28°22'S	29°23'E
Hilton nr Pietermaritzburg <sup>som</sup>	29°29'S	30°18'E	Vernon Crookes [Nat. Res.] <sup>vit</sup>	30°17'S	30°35'E
Hilton Road <sup>som</sup>	29°33'S	30°18'E	Weenen <sup>vit</sup>	28°51'S	30°04'E
Himeville, Farm Meander (Brookland) <sup>som</sup>	29°35'S	29°42'E	Weza [pp] <sup>som</sup>	30°36'S	29°43'E
Hluhluwe [pp] <sup>vit</sup>	28°02'S	32°17'E	Weza, Impetyene forest <sup>som</sup>	30°37'S	29°42'E
Hluhluwe Game Reserve <sup>som, vit</sup>	28°05'S	32°04'E	Weza, lower Stinkwood forest <sup>som</sup>	30°34'S	29°43'E
Hluhluwe N.P., Hilltop Camp <sup>vit</sup>	28°02'S	32°05'E	Windy Hill <sup>som</sup>	29°31'S	30°33'E
Ifafa Mouth [Ifafa River] <sup>vit</sup>	30°27'S	30°39'E	Yellowwood <sup>som</sup>	29°03'S	30°15'E
Indaleni [Mission] <sup>som, vit</sup>	29°54'S	30°15'E	<b>Limpopo</b>		
Karkloof <sup>pon, som</sup>	29°18'S	30°04'E	Balloon Forest, nr Tzaneen <sup>vit</sup>	24°11'S	30°20'E
Karkloof Forest <sup>pon, som</sup>	29°18'S	30°13'E	Blouberg [Mountain] <sup>vit</sup>	23°05'S	29°00'E
Karkloof grassland <sup>som</sup>	29°19'S	30°15'E	Blouberg [pp] <sup>vit</sup>	23°07'S	28°59'E
Karkloof Nat. Res. <sup>pon</sup>	29°18'S	30°13'E	Entabeni Forest Res. <sup>vit</sup>	23°00'S	30°16'E
Krantzkop <sup>vit</sup>	28°58'S	30°52'E	Heidelberg <sup>vit</sup>	22°22'S	29°44'E
Lidgetton <sup>som</sup>	29°27'S	30°06'E	Johannesburg <sup>vit</sup>	22°56'S	28°58'E
Loteni [Nat. Res.] Valley <sup>som</sup>	29°27'S	29°32'E	Lagalameetse Nat. Res. <sup>vit</sup>	24°07'S	30°12'E
Malvern <sup>vit</sup>	29°53'S	30°55'E	Lekgalameetse Nat. Res. <sup>vit</sup>	24°05'S	30°15'E
Malvern [pp], Durban <sup>som</sup>	29°53'S	30°55'E	Lekgalameetse Nat. Res. <sup>vit</sup>	24°12'S	30°20'E
Mapelane [pp] dune forest <sup>som</sup>	28°25'S	32°25'E	Louis Trichardt, (F Oldreive's <sup>vit</sup>	22°59'S	29°50'E
Mapumulo <sup>som</sup>	29°10'S	31°05'E	Outlook Est)		
Maputa, Zululand <sup>vit</sup>	26°59'S	32°45'E	Louis Trichardt, (6 - 8 miles N. of) <sup>vit</sup>	23°05'S	29°55'E
Maritzburg [Pietermaritzburg] <sup>som</sup>	29°37'S	30°23'E	Magoeba's Kloof <sup>vit</sup>	23°52'S	29°57'E
Mfongosi <sup>vit</sup>	27°18'S	32°10'E	Magoebaskloof [Pass] <sup>vit</sup>	23°51'S	30°02'E
Mkuei, [Mkuzi], Zululand <sup>vit</sup>	27°37'S	32°02'E	Marieps Mnt. <sup>vit</sup>	24°32'S	30°52'E
Mooi River <sup>som</sup>	29°12'S	29°59'E	Naboomspruit, (9 miles W. of) <sup>vit</sup>	c. 24°31'S	28°43'E
Mpenjati [pp] <sup>som</sup>	30°56'S	30°16'E	nr Haenertsburg, 2 miles E. of	23°56'S	29°57'E
Mtunzini [pp] <sup>som, vit</sup>	28°57'S	31°45'E	Houtbosdorp <sup>pon</sup>		
New Hanover (Place) <sup>som</sup>	29°21'S	30°32'E	Oog [Die Oog] <sup>vit</sup>	24°25'S	28°38'E
Ngome State Forest <sup>som</sup>	27°49'S	31°25'E	Penge, Lydenburg Dist. <sup>vit</sup>	24°22'S	30°18'E
Ngoye <sup>som</sup>	28°50'S	31°40'E	Pietersburg <sup>vit</sup>	23°54'S	29°27'E
Nkandhla Forest <sup>som</sup>	28°43'S	31°08'E	Pietersburg [p.p.], Transvaal <sup>som</sup>	23°54'S	29°27'E
Noodsberg <sup>som</sup>	29°23'S	30°45'E	Pretoria [Farm] <sup>som</sup>	24°06'S	30°23'E
Northington <sup>pon, som</sup>	29°28'S	30°01'E	Pretoria [Farm] <sup>som</sup>	24°31'S	30°24'E
Nottingham Road <sup>som</sup>	29°21'S	30°00'E	Pretoria [Farmstead] <sup>som</sup>	24°06'S	30°22'E
Nqutu <sup>vit</sup>	28°12'S	30°40'E	Pretoria [Farmstead] <sup>som</sup>	24°30'S	30°24'E
Ntambanana <sup>vit</sup>	28°36'S	31°44'E	Pretoria [Mountain] <sup>som</sup>	24°33'S	30°24'E
Nyalazi (Staatsbos) <sup>som</sup>	28°09'S	32°23'E	Shilouvane [Shiluwane Mission] <sup>pon, vit</sup>	24°08'S	30°23'E
Oribi Gorge <sup>som</sup>	30°42'S	30°17'E	Steelpoort [Mine] <sup>vit</sup>	24°26'S	30°26'E
Pietermaritzburg <sup>som</sup>	29°36'S	30°22'E	Strijdom Tunnel <sup>vit</sup>	24°25'S	30°38'E
Pietermaritzburg, Bloemendal <sup>vit</sup>	29°37'S	30°23'E	Swadini nr Blyde River Nat. Res. <sup>vit</sup>	24°31'S	30°48'E
Pongola <sup>vit</sup>	27°23'S	31°37'E	Thabaphaswa <sup>vit</sup>	c. 24°00'S	28°55'E
Port Edward <sup>som, vit</sup>	31°03'S	30°13'E	Warmberg Pietersbg [Farm] <sup>vit</sup>	24°15'S	29°35'E
Port Natal [= Durban] <sup>som, vit</sup>	29°51'S	31°01'E	Worcester [Farm] <sup>som</sup>	23°29'S	30°25'E
Port Shepstone <sup>som</sup>	30°45'S	30°27'E	Worcester [Farm] <sup>som</sup>	24°19'S	30°33'E
Pretoria [Farmstead] <sup>som</sup>	28°52'S	30°13'E	Worcester [pp] <sup>som</sup>	24°18'S	30°31'E
Pretoria [Mission] <sup>som</sup>	28°52'S	30°14'E	Worcester [pp] <sup>som</sup>	24°21'S	30°34'E
Qudeni [pp] <sup>som</sup>	28°36'S	30°52'E	Zoutpansberg <sup>vit</sup>	22°58'S	29°45'E
Ranger, [pp], Glennifer, Kei Road St. <sup>som</sup>	28°12'S	32°25'E	<b>Mpumalanga</b>		
Richard's Bay <sup>vit</sup>	28°46'S	32°06'E	Barberton <sup>vit</sup>	25°47'S	31°03'E
Richmond <sup>som</sup>	29°45'S	30°56'E	Barvale, 28 km W. of Nelspruit <sup>vit</sup>	25°25'S	30°44'E
Royal Natal Park <sup>som</sup>	28°42'S	28°55'E	Blairmore, nr Amsterdam <sup>som</sup>	26°38'S	30°40'E
S. of Cowies Hill, Durban- <sup>vit</sup>	c. 29°49'S	30°53'E	Crocodile R. Bridge, <sup>vit</sup>	c. 25°26'S	31°56'E
Sodwana <sup>vit</sup>	27°32'S	32°41'E	(7 miles from Komatipoort)		
Tygerskloof <sup>som</sup>	27°51'S	31°19'E	de Hoop <sup>vit</sup>	24°57'S	29°58'E
Ubombo [Village / Bush / Mission] <sup>vit</sup>	27°34'S	32°04'E	de Hoop <sup>vit</sup>	24°58'S	29°57'E
Ulundi <sup>som</sup>	28°20'S	31°25'E	de Hoop <sup>vit</sup>	25°31'S	31°09'E
Umgeni Poort <sup>som</sup>	29°35'S	30°37'E	de Hoop <sup>vit</sup>	26°34'S	30°43'E
Umkomaas River [Town] <sup>som</sup>	30°13'S	30°48'E	de Hoop 203 JU, (Nelspruit Dist.) <sup>vit</sup>	c. 24°54'S	28°42'E
Umkomaas River Valley <sup>vit</sup>	30°01'S	30°15'E	Dwars River <sup>vit</sup>	25°03'S	30°03'E
Umtamvuma [Nat. Res.] <sup>pon</sup>	31°02'S	30°12'E	Elandshoek <sup>vit</sup>	25°23'S	30°05'E



Elandshoek <sup>vit</sup>	25°27'S	30°39'E	<b>Western Cape</b>		
Elandshoek <sup>vit</sup>	25°30'S	30°42'E	Belville <sup>som</sup>	33°54'S	18°38'E
Elandshoek <sup>vit</sup>	25°30'S	30°43'E	Cape Peninsula <sup>som</sup>	34°10'S	18°20'E
Elandshoek <sup>vit</sup>	25°37'S	30°29'E	Cape Town <sup>som</sup>	33°55'S	18°25'E
Fourteen Streams [pp] <sup>vit</sup>	25°47'S	31°03'E	Cape Town, Rondebosch <sup>som</sup>	33°59'S	18°30'E
Gustav Klingbiel N.R. (nr Lydenburg) <sup>vit</sup>	25°06'S	30°00'E	Cape Town, Tamboerskloof <sup>som</sup>	33°55'S	18°24'E
Heidelberg <sup>vit</sup>	25°19'S	30°57'E	Fishhoek [pp] Mountain <sup>som</sup>	34°08'S	18°26'E
Heidelberg <sup>vit</sup>	25°21'S	30°57'E	George <sup>som</sup>	33°58'S	22°27'E
Hlelo Sappi Forest nr Piet Retief <sup>som</sup>	26°45'S	30°50'E	Kirstenbosch Botanic Gardens <sup>som</sup>	33°59'S	18°26'E
Johannesburg <sup>vit</sup>	25°06'S	30°03'E	Kirstenbosch Botanic Gardens <sup>som</sup>	33°55'S	18°25'E
Legalameetse <sup>vit</sup>	24°15'S	30°30'E	Oudtshoorn [p.p.] <sup>som</sup>	33°35'S	22°12'E
Lydenburg Dist. <sup>vit</sup>	25°06'S	30°27'E	Saasveld <sup>som</sup>	33°57'S	22°32'E
Machadodorp <sup>vit</sup>	25°41'S	30°15'E	Silwer River [Silwerrivier] <sup>som</sup>	33°58'S	22°33'E
Mariepskop <sup>pon</sup>	24°35'S	30°50'E	Stellenbosch [pp] <sup>som</sup>	33°56'S	18°51'E
Mariepskop Mnt. Forest <sup>pon</sup>	24°34'S	30°51'E	Winterskloof <sup>som</sup>	33°32'S	23°34'E
Mashonamin Campsite <sup>pon</sup>	25°32'S	30°29'E	<b>MOZAMBIQUE</b>		
Montrose Falls <sup>vit</sup>	25°25'S	30°44'E	Delagoa [Bay, Maputo] <sup>som</sup>	26°00'S	32°40'E
Nelshoogte Gallery Forest, below Station <sup>vit</sup>	25°51'S	30°53'E	Mapinhane [p.p.] <sup>som</sup>	22°16'S	35°07'E
Nelspruit <sup>vit</sup>	25°28'S	30°58'E	<b>SWAZILAND</b>		
Pullen Farm, S.E. of Nelspruit <sup>vit</sup>	25°34'S	31°13'E	Malagwane Hill [Mbabane] <sup>vit</sup>	26°19'S	31°08'E
Rustenberg [burg], [Farmstead] <sup>som</sup>	25°21'S	30°20'E	Mbabane, Mantenga Ranch <sup>vit</sup>	26°19'S	31°08'E
Rustplaats 522, Lydenburg Dist. <sup>vit</sup>	24°51'S	30°35'E	<b>TANZANIA</b>		
Sabie, Bridal Veil Forest <sup>pon</sup>	25°05'S	30°45'E	Sansibar, [Zanzibar Island] <sup>vit</sup>	06°10'S	39°20'E
Stenor Estates, 3 km E. Kaapmuiden <sup>vit</sup>	25°32'S	31°32'E	<b>ZAMBIA</b>		
Uitsoek, Waterfall area <sup>pon</sup>	25°16'S	30°33'E	Isoka [plain(s)] <sup>vit</sup>	08°50'S	31°12'E
Uitsoek, Waterfall area <sup>pon</sup>	25°17'S	30°33'E	Isoka [p.p.] <sup>vit</sup>	10°08'S	32°38'E
Veraaiers Nek Pass <sup>vit</sup>	24°55'S	30°34'E	Isoka [stream] <sup>vit</sup>	10°11'S	32°38'E
Wakkerstroom <sup>som</sup>	27°21'S	30°08'E	<b>ZIMBABWE</b>		
Welgevonden nr Mariepskop <sup>pon</sup>	24°52'S	30°34'E	Bulawayo <sup>vit</sup>	20°09'S	28°35'E
Worcester [Farmstead] <sup>som</sup>	25°37'S	30°58'E	Kimberley [mine] <sup>? som [cf. other in Northern Cape]</sup>	17°18'S	31°21'E
<b>North-West</b>					
Hartebeespoort <sup>som</sup>	25°44'S	27°51'E			