



Research article

A revision of African *Psammoecus* (Coleoptera, Silvanidae) and descriptions of two new species from the collection of the Musée royal de l'Afrique centrale

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Abstract. A revision of the known African species of *Psammoecus* is given, including redescriptions and illustrations of diagnostic characters. Extensive material from the Musée royal de l'Afrique centrale (Tervuren) is studied. Two new species are described: *Psammoecus leleupi* sp. nov., and *Ps. lucti* sp. nov. Four specific names are synonymized: *Psammoecus excellens* Grouvelle, 1908 = *Ps. trimaculatus* Motschulsky, 1858; *Ps. alluaudi* Grouvelle, 1912 = *Ps. trimaculatus* Motschulsky, 1858; *Ps. longulus* Grouvelle, 1878 = *Ps. longicornis* Schauffuss, 1872; *Ps. nitescens* Grouvelle, 1914 = *Ps. laetulus* Grouvelle, 1914. A key to the African species is provided.

Key words. Coleoptera, Africa, *Psammoecus*, Silvanidae, taxonomy.

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Introduction

While examining extensive material of African *Psammoecus* Latreille, 1829 from the collection of the Musée royal de l'Afrique centrale (Tervuren, Belgium) it came clear that any attempt to determine the material at hand required studies of type material. Since the studies of Grouvelle (see references), no work was done on African species of this genus. The available papers, however, were found to be of little practical help, reflecting the taxonomic standards of the late 19th century. They frequently show a lack of detail in descriptions and diagnostic content.

The present paper gives redescriptions, illustrations, and diagnoses for the known African species of *Psammoecus*. Two species contained in the material from the Musée royal de l'Afrique centrale are new to science.

Material and Methods

Specific identification of *Psammoecus* is often possible by use of external characters, viz. general body shape, the pattern and form of pronotal teeth, and the puncturation of the body surface. The male genitalia provide diagnostic characters especially in the shape of the parameres. Determination of single female specimens was sometimes found impossible, since female genitalia were not found to provide useful characters. An overview considering the general structure of the genitalia of *Psammoecus* is given by Pal (1985).

Although the genital structures are small and delicate, preparation of the genitalia is not very difficult. The animal is softened by soaking it in water overnight. The abdomen is separated from the body by use of a very fine insect pin, and macerated in warm, 5% solution of caustic potash (KOH) for few minutes. After rinsing in water, the abdomen is dissected in a drop of 5% acetic acid to isolate the genitalia. It should never be attempted to pull the genitalia out of the abdomen, since this would involve a high risk of the structures, especially the setae, being destroyed. The isolated genitalia are embedded in a flat drop of embedding medium (either canada balsam or a water-soluble medium, e.g. as described by Franzen & Karner 1998) on a piece of transparent cellulose acetate film that is put on the specimen's insect pin.

Drawings were made by aid of microscopes and a camera lucida at magnifications of 50 times and 400 times, respectively. The microsculpture of the body surface was studied at a magnification of 80 times. The lateral teeth bordering the pronotum were numbered, using roman numerals, beginning anteriorly, behind the group of very small teeth that are located at the anterior angle of the pronotum.

Measurements were taken as follows: length, from apical margin of clypeus to apex of elytra; head width, across eyes; head length, from apical margin of clypeus to imaginary line between hind margins of eyes; eye length, from anterior to posterior margin; antennal length, from base of 1st antennomere to apex of 11th antennomere; pronotal width, across maximum width, excluding spines; pronotal length, from anterior to posterior margin; elytral width, across maximum joint width; elytral length, along suture including scutellum.

Material is listed according to the localities, sorted from north-east to south-west. All label data are given. The labels are cited beginning with the uppermost one, the respective lines are separated by '|'. If words or single characters could not be deciphered, the characters are represented by a corresponding number of '?' within squared brackets. Also, comments on label colors, label shapes, and other regarding the respective specimen are included in squared brackets.

Specimens from the following collections were studied:

BMNH	=	The Natural History Museum, London
I.R.S.A.C.	=	Institut pour la Recherche Scientifique en Afrique Centrale (the material studied here is stored in the collection of the Musée Royal de l'Afrique Centrale, Tervuren)
MHNAF	=	Museu de História Natural e Aquário, Funchal
MKF	=	Michael Karner, Frankfurt
MNHN	=	Muséum National d'Histoire Naturelle, Paris
MRAC	=	Musée Royal de l'Afrique Centrale, Tervuren
ZMHB	=	Museum für Naturkunde der Humboldt-Universität, Berlin

Results

Classis Hexapoda Blainville, 1816
 Ordo Coleoptera Linnaeus, 1758
 Superfamilia Cucujoidea Latreille, 1802
 Familia Silvanidae Kirby, 1837
 Subfamilia Brontinae Erichson, 1845
 Tribus Telephanini LeConte, 1861
 Genus *Psammoecus* Latreille, 1829

Psammoecus personatus Grouvelle, 1919

(Fig. 1)

Material examined

Holotype

♀: ‘Funchal | Madère’, ‘Type’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’, ‘*Psammoecus personatus* Grl.’ [not Grouvelle’s hand] (MNHN).

Other material

1♀ ‘MUSÉE DU CONGO | Haut-Uele: Moto | - 1923 | L. Burgeon’ (MRAC). 1♂ ‘Congo Belge: P.N.A. | 7-9-IV-1955 | P. Vanschuytbroeck | 12.743-58’, ‘Secteur Nord | riv. Mukandwe, | affl. Talya, 1.200 m’ (MRAC). 1♂ ‘MUSÉE DU CONGO | Mombassa (36 km S. | Lubero VIII-1932 | L. Burgeon’ (MRAC). 2 spms ‘COLL. MUS. CONGO | Uganda: 1400 m. | savane boisée | 5/8-VIII-1957’, ‘Mission Zoolog. I.R.S.A.C. | en Afrique orientale | P. Basilewsky et | N. Leleup’ (MRAC, MKF). 1♀ ‘MUSÉE DU CONGO | Haut-Uele: Abimva | -V- 1925 | L. Burgeon’ (MRAC). 3♀♀ ‘MUSÉE DU CONGO | Haut-Uele | Watsa, XI-1919 | L. Burgeon’ (MRAC). 1♂ ‘MUSÉE DU CONGO | Ruvenzori: Kalonge | (2050 m.) 9-VIII-1932 | L. Burgeon’ (MKF). 1♂ ‘COLL. MUS. CONGO | Kivu: Ibanda | 1952 | M. Vandelanoite’ (MRAC). 1♂ ‘I.R.S.A.C.-MUS.CONGO | Kivu: Uvira | XI-1949 | N. Leleup’ (MRAC). 1♀ ‘I.R.S.A.C.-MUS.CONGO | Kivu: Marais de la basse | Kalimabenge (Uvira) | N. Leleup XI – 1955’ (MRAC). 1♀ ‘I.R.S.A.C.-MUS.CONGO | Maniema: Kabambare | (à la lumière) 16/18-X-54 | N. Leleup’ (MRAC). 1♀ ‘MUSÉE DU CONGO | Ifuri: Adia | 1935 | 1.a | (R. Belot.)’ (MRAC). 1♀ ‘COLL. MUS. CONGO | Elisabethville II/IV-1949 | Ch. Seydel’, ‘A la lumière’ (MRAC). 1♂ ‘COLL. MUS. CONGO | Elisabethville, A la | lumière XI-50/VI-51 | Ch. Seydel’ (MRAC). 1♂ ‘Madeira 19-24.4.1978 | Garajau | Th. Palm’, ‘*Psammoecus personatus* | Grouvelle | det. G.Israelson’ (MHNAF).

Differential diagnosis

Ps. personatus differs from *Ps. marginicollis* Grouvelle, 1908, *Ps. parallelus* Grouvelle, 1919, *Ps. laetulus* Grouvelle, 1914 and *Ps. lucti* sp. nov. by the longer lateral teeth of the pronotum. It differs from *Ps. leleupi* sp. nov. by the narrower elytral striae, narrower bases of lateral teeth of pronotum, and slender parameres with shorter and fewer setae; from *Ps. hacquardi* Grouvelle, 1889 by the 1st antennomere being less than two times as long as 2nd; from *Ps. laetulus* by the maximum pronotal width being closer to the middle, narrower elytral striae, and less extensive dark elytral markings.

Redescription

BODY. Elongate oval, total length 2.50-3.00 mm (Fig. 1A). Surface yellowish brown. Elytra with round brown or blackish-brown maculae on disc and narrow macula on posterior part of suture; some specimens without elytral maculae. Antennae as in Fig. 1B, yellowish brown, 7th to 10th and apex of 6th antennomere brown or blackish brown, 11th antennomere lighter than basal antennomeres.

HEAD. Broad, temples rounded, immediately narrowed behind eyes; width 0.69-0.83 mm, length 0.36-0.45 mm, 1.71-1.90 times as wide as long. Eyes protuberant, 0.21-0.24 mm long, distance of inner margins 0.43-0.54 mm. Puncturation on vertex variable, moderate to very dense, distance between punctures irregular, slightly increasing anteriorly. Pubescence composed of long, semierect setae, directed anteriorly; microsculpture absent. Longitudinal impressions on vertex distinct, attaining anterior third of eyes. Antennae 1.23-1.43 mm long; antennomere proportions of holotype as follows: 2.5 : 1.4 : 1.4 : 1.6 : 1.6 : 1.4 : 1.1 : 1.1 : 1.0 : 2.3.

PRONOTUM. Broad, width 0.71-0.88 mm, length 0.48-0.60 mm, 1.35-1.50 times as wide as long. Anterior angles with distinct group of small, short teeth; lateral margins with five teeth, tooth I small, tooth II larger, tooth III the largest, tooth IV a little smaller than tooth II, tooth V very small. Posterior

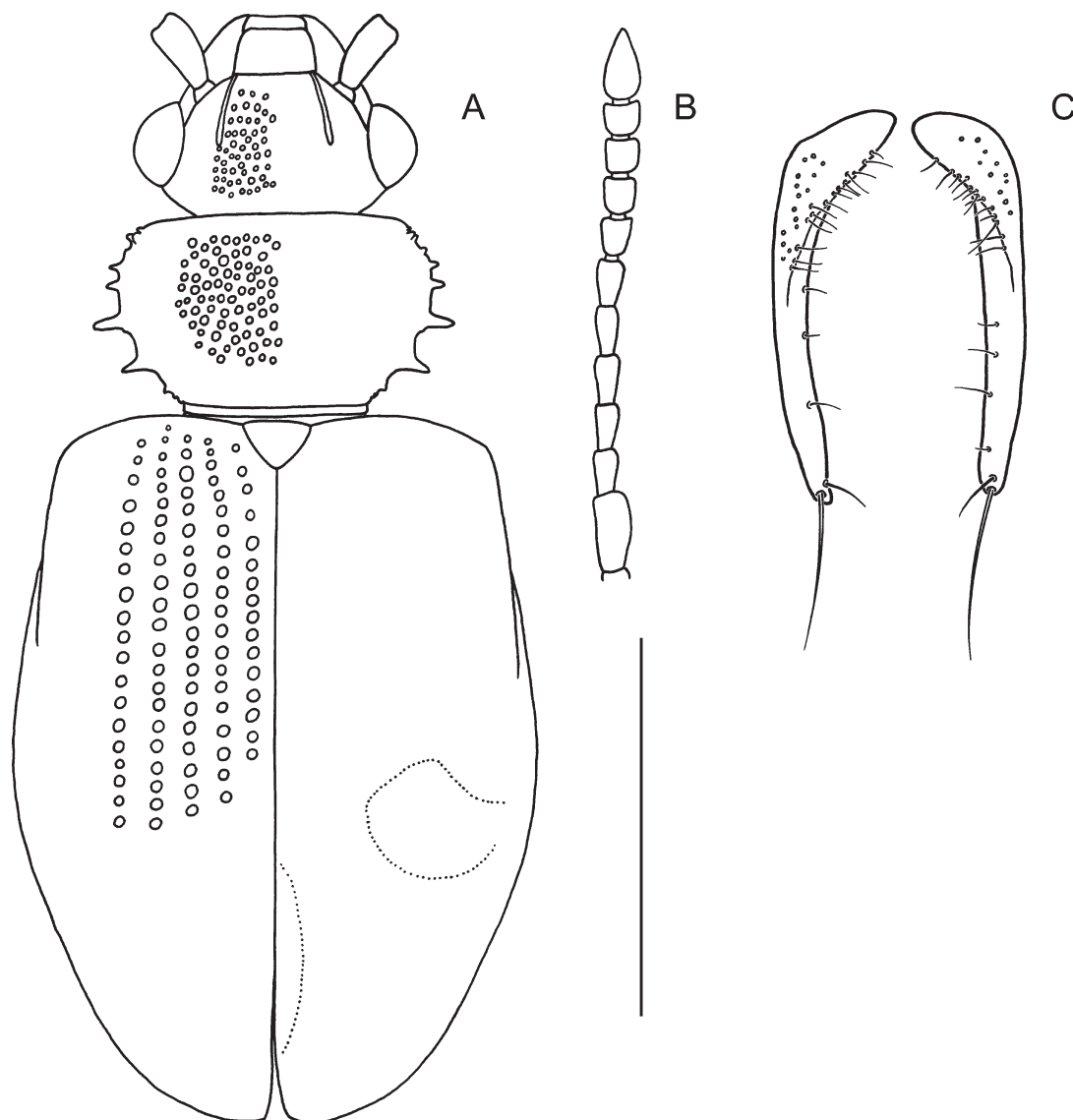


Fig. 1. *Psammoecus personatus* Grouvelle, 1919. **A.** Habitus of holotype. **B.** Left antenna of holotype. **C.** Parameres of specimen from Kivu, Ibanda. Scale line A, B: 1 mm; C: 0.2 mm.

angle diminutive. Punctuation on disc coarser than on vertex, punctures sometimes hardly separated. Pubescence as on vertex; microsculpture mostly not visible (holotypus), some specimens showing a very shallow reticulation.

ELYTRA. Oval, length 1.63-2.00 mm, combined width 1.08-1.38 mm, 1.35-1.56 times as long as combined width. Rows of punctures on disc somewhat narrower than interstices. Pubescence composed of long, semierect setae, directed posteriorly; microsculpture absent.

PARAMERES. Slender, curved basally, with small setae along the inner margins and single long seta at their apices (Fig. 1C).

Psammoecus hacquardi Grouvelle, 1889
(Fig. 2)

Psammoecus haequardi [sic.] Grouvelle, 1908b: 185.

Material examined

Lectotype

♀, by present designation: ‘Zanzibar | Raffray’ [blue label, Grouvelle’s hand], ‘Type’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’ [blue label], ‘Hacquardi | A. Grou’ [not Grouvelle’s hand] (MNHN).

Paralectotype

♀, by present designation, with identical data as Lectotype (MNHN).

Other material

2 spms ‘Tanzanie: Mts. Uluguru | Kiroka, for. héliophile | alt. 725 m sous écorces | 27-31/V/71’, ‘Coll. Mus. Tervuren | Mission Mts. Uluguru | L. Berger, N. Leleup | J. Debecker V/VIII/71’ (MRAC). 3 spms ‘Tanzanie: Mts. Uluguru | Kiroka, for. héliophile | alt. 600 m 24-30/VII/71 | dans arbres morts’, ‘Coll. Mus. Tervuren | Mission Mts. Uluguru | L. Berger, N. Leleup | J. Debecker V/VIII/71’ (MRAC, 1 spm MKF). 1 spm ‘Tanzanie: Mts. Uluguru | Kiroka, for. héliophile | alt. 600 m 24-30/VII/71’, ‘Coll. Mus. Tervuren | Mission Mts. Uluguru | L. Berger, N. Leleup | J. Debecker V/VIII/71’ (MRAC). 2 spms ‘A la lumière’ [blue label], ‘I.R.S.A.C.-MUS.CONGO | Kivu: Terr Masisi, 720 m. | Walikale (Rives Loa) IX-53 | N. Leleup’ (MRAC, MKF). 3 spms ‘Dans | humus | en forêt’ [blue rectangular label], ‘I.R.S.A.C.-MUS.CONGO | Kivu: Terr Masisi, 800 m. | Mutakato IX-53 | N. Leleup’, (MRAC). 1 ♀ ‘MUSÉE DU CONGO | Eala | XI-1934 | J. Ghesquiére’ (MRAC). 3 spms ‘MUSÉE DU CONGO | Eala | 10-VII-1936 | J. Ghesquiére | 2873’ (MRAC). 1 ♂ ‘MUSÉE DU CONGO | Eala | VII-1936 | J. Ghesquiére | 2875’, (MRAC). 1 ♀ ‘I.R.S.A.C.-MUS.CONGO | Bolobo (fleuve Congo | 5-X-1949 | N. Leleup’, (MRAC). 1 spm ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | XI. 1961 | J. Decelle’, (MRAC). 4 spms ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | VIII. 1962 | J. Decelle’ (MRAC, 1 spm MKF). 2 spms ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | IX. 1962 | J. Decelle’ (MRAC). 1 spms ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | X. 1962 | J. Decelle’, (MRAC). 1 spm ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | XI. 1962 | J. Decelle’ (MRAC). 1 spm ‘COLL. MUS. TERVUREN | Côte d’ivoire: Bingerville | IX. 1963 | J. Decelle’ (MRAC).

Differential diagnosis

Ps. hacquardi differs from *Ps. marginicollis* by the shape of the parameres and shorter antennae; from *Ps. personatus* by the 1st antennomere being more than two times longer as 2nd; from *Ps. leleupi* sp. nov. by the narrower elytral striae; from *Ps. laetulus* by the maximum pronotal width being closer to the middle; from *Ps. parallelus* by more extensive dark maculae on elytra, darkened elytral basis and slender shape

of parameres; from *Ps. luchtii* sp. nov. by narrow bases of lateral teeth of pronotum, narrower elytral striae and darkened elytral bases.

Redescription

BODY. Elongate-oval, total length 2.40-3.05 mm (Fig. 2A). Surface yellowish to reddish brown, elytra with variable patterns of maculae; the basic pattern consists of brown or blackish brown maculae at the elytral bases, sutures, lateral margins and apices. Specimens of lighter colour show no darker coloration on anterior half of elytral suture and posterior half of lateral margins; very dark specimens have dark elytra with light brown maculae on the anterior and posterior aspects of the disk. Antennae as in Fig. 2B, yellowish brown; 6th to 10th and apical half of 5th antennomere brown to blackish-brown, 11th antennomere yellowish brown, sometimes a little lighter than basal antennomeres.

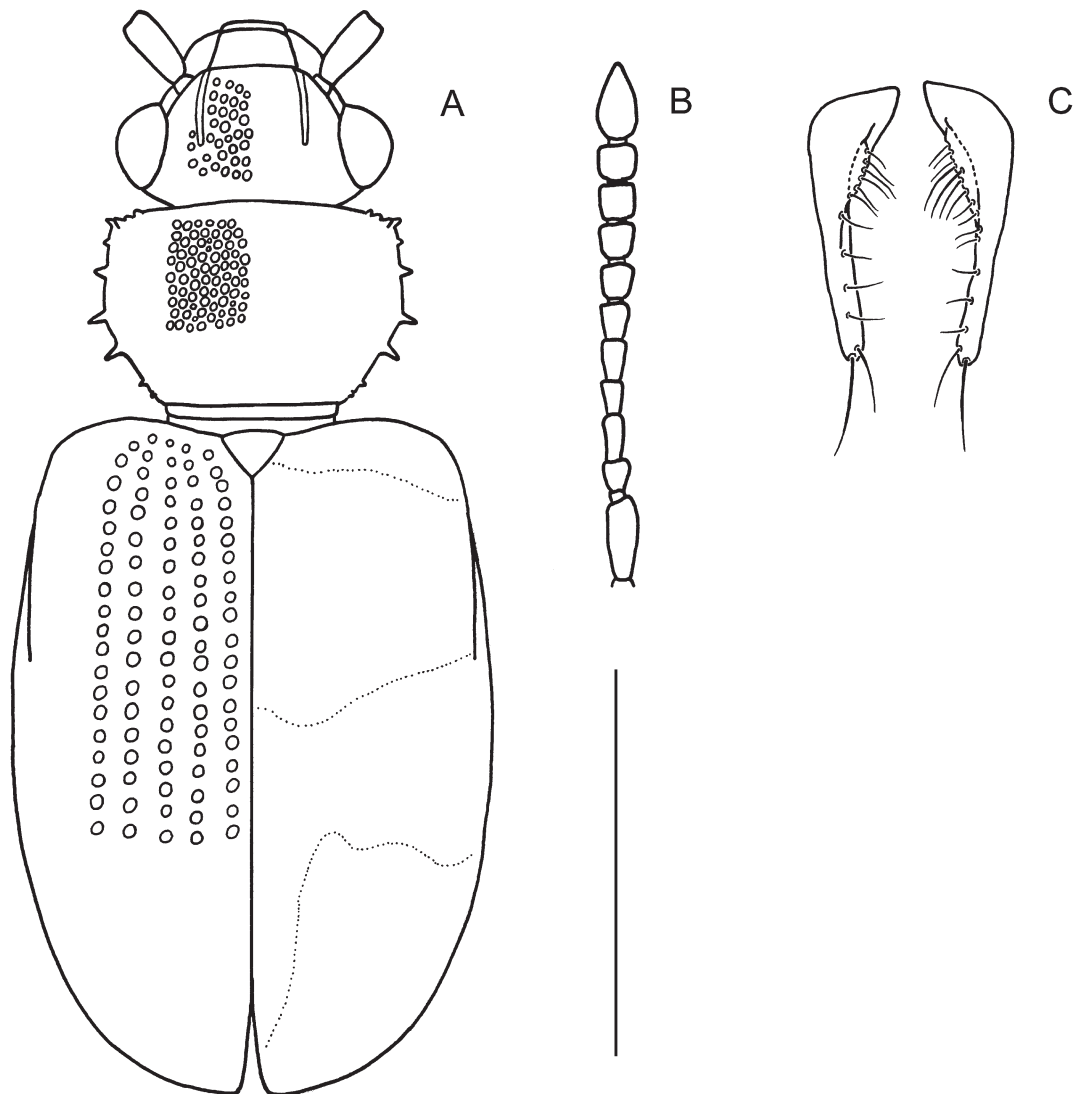


Fig. 2. *Psammoecus hacquardi* Grouvelle, 1889. **A.** Habitus of lectotype. **B.** Left antenna of lectotype. **C.** Parameres of specimen from Tanzania: Uluguru Mountains. Scale line A, B: 1 mm; C: 0.2 mm.

HEAD. Broad, temples immediately narrowed behind eyes; width 0.65-0.74 mm, length 0.38-0.44 mm, 1.61-1.80 times as wide as long. Eyes moderately protuberant, 0.19-0.23 mm long, distance of inner margins 0.40-0.48 mm. Puncturation on vertex moderate, density of punctures in some specimens irregular, varying from sparse to very dense. Pubescence composed of long, semierect setae, directed anteriorly; microsculpture distinct, reticulate. Longitudinal impressions on vertex distinct, almost attaining the middle of the eyes. Antennae comparatively short, 1.30-1.43 mm long; antennomere proportions of lectotype as follows: 2.8 : 1.0 : 1.7 : 1.1 : 1.5 : 1.3 : 1.2 : 1.2 : 1.2 : 2.7.

PRONOTUM. Broad, some specimens with shallow impressions close to the apical margin; width 0.65-0.78 mm, length 0.50-0.60 mm, 1.27-1.33 times as wide as long. Anterior angles with distinct groups of small, short teeth; lateral margins with five teeth, tooth I very short and slender, tooth II longer and wider than tooth I, tooth III longer than tooth II, tooth IV a little shorter than tooth III, tooth V very small; posterior angle with a very small, almost obtuse tooth. Puncturation on disc denser than on vertex, punctures sometimes hardly separated. Pubescence as on vertex; microsculpture distinct, reticulate.

ELYTRA. Elongate-oval, length 1.50-1.90 mm, combined width 0.98-1.30 mm, 1.46-1.67 times as long as combined width. Rows of punctures on disc narrower than interstices. Pubescence composed of long, semierect setae; microsculpture absent.

PARAMERES. Slender, short, with dense rows of small setae at the inner margins of their bases and two larger setae at their apices. (Fig. 2C).

Remarks

The determination of single female specimens, especially if they are lightly colored or immature, can be difficult. Grouvelle (1908b) spells the name 'Haequardi', which is to be considered a misspelling.

Psammoecus laetulus Grouvelle, 1914

(Fig. 3)

Psammoecus nitescens Grouvelle, 1914: 149. **syn. nov.**

Material examined

Lectotype

♀, by present designation: '25' [hand written on specimen's mounting label], 'Type | H.T.' [round label with red border], 'Seychelle Islands. | Percy Sladen | Trust Expedition | 1913.-170', 'Psammoecus | laetulus Grouv. | TYPE | Figured Specimen' [not Grouvelle's hand; last line on reddish piece of paper glued to the label], 'Psammoecus | laetulus | TYPE Grouv.' [Grouvelle's hand, 'TYPE' printed on blue piece of paper glued on the label, mounted facing down], 'Silhouette, 1908. | Seychelles Exp.' [mounted facing down], 'SYN- | TYPE' [round label with blue border] (BMNH)

Other material

1 spm '25' [hand written on specimen's mounting label], 'Type | H.T.' [round label with red border], 'Seychelle Islands. | Percy Sladen | Trust Expedition | 1913.-170', 'Silhouette, 1908. | Seychelles Exp.' [mounted facing down], 'Psammoecus | nitescens | TYPE Grouv.' [Grouvelle's hand, 'TYPE' printed on blue piece of paper glued on the label], 'Psammoecus | nitescens | Grouvelle | TYPE Figured' [not Grouvelle's hand; 'Figured' printed on reddish piece of paper glued to the label, mounted facing down], 'SYN- | TYPE' [round label with blue border] (BMNH). This specimen is hereby designated to be the lectotypus of *Ps. nitescens*. 5 spms 'Seychelle Islands. | Percy Sladen Trust | Expedition | 1913.-170', 'Psammoecus | nitescens | A. Grouvelle | Paratype', 'Seychelle Islands. | Percy Sladen | Trust Expedition | 1913.-170', 'SYN- | TYPE' [round label with blue border] (BMNH). These specimens are

hereby designated to be paralectotypes of *Ps. nitescens*. 96 spms 'Iles Séchelles – Mahé | Centre: Morne Séch- | ellois, for. Endémique, | 750 m. 13/17.VII.1972', 'Coll. Mus. Tervuren | Miss. zool. belge aux | Séchelles – PLG Benoit | et. J. J. Van Mol' (MRAC, 4 spms in coll. MKF).

Differential diagnosis

Ps. laetulus differs from *Ps. hacquardi*, *Ps. personatus*, and *Ps. leleupi* sp. nov. by the maximum pronotal width being located in the anterior third. It differs from *Ps. personatus* also by shorter lateral teeth of pronotum, wider elytral striae, and more extensive dark elytral markings; from *Ps. leleupi* sp. nov. also by lateral margin of pronotum less curved, slender parameres with shorter setae; from *Ps. marginicollis*

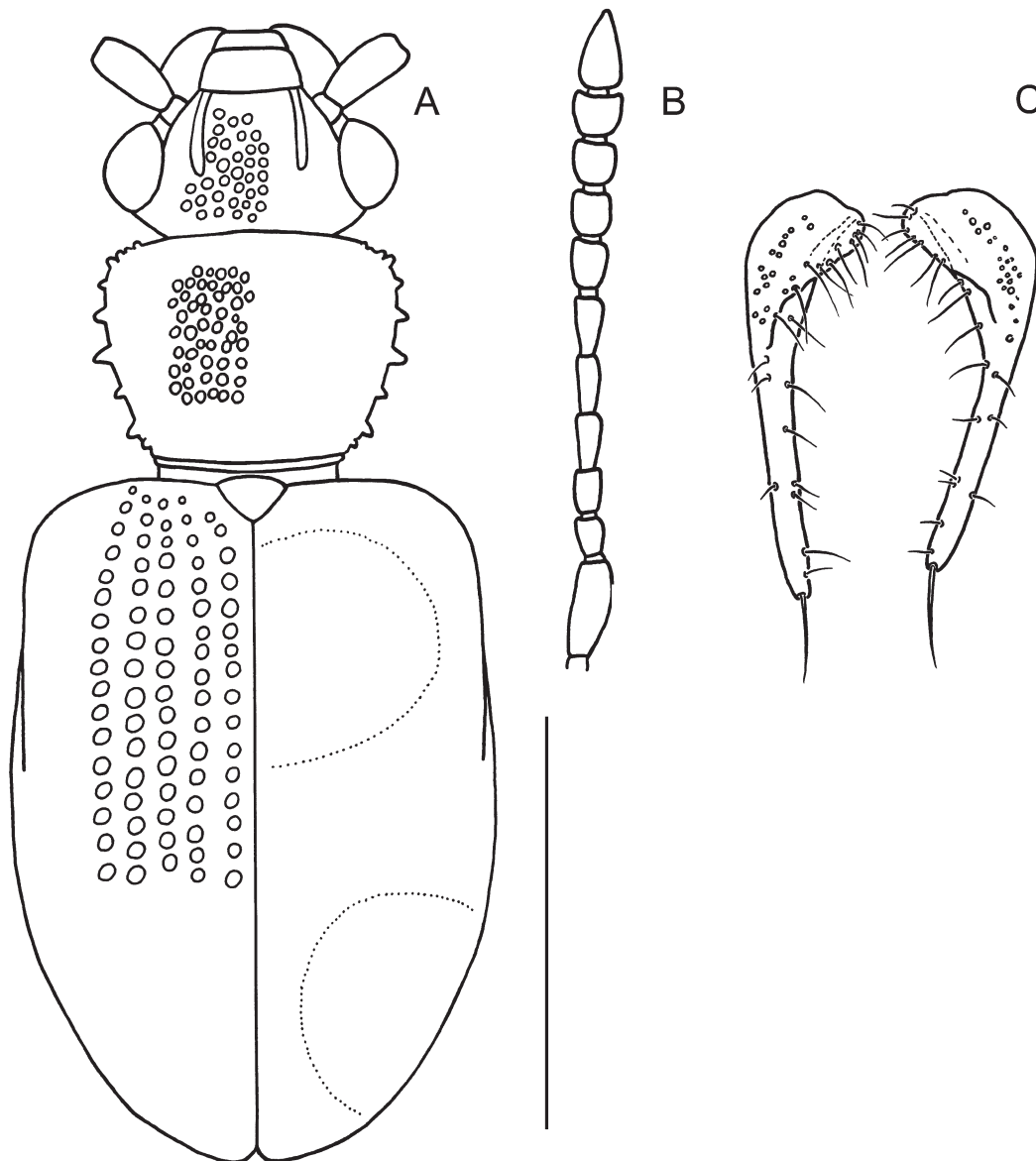


Fig. 3. *Psammoecus laetulus* Grouvelle, 1914, specimen from Mahé. **A.** Habitus. **B.** Left antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

by 1st antennomere being more than two times as long as 2nd; from *Ps. parallelus* by more extensive dark maculae on elytra, darkened elytral basis and slender shape of parameres; from *Ps. lucti* sp. nov. by less rounded lateral margin of pronotum, darkened elytral basis, and more slender parameres.

Redescription

BODY. Oval, total length 2.35-2.95 mm (Fig. 3A), head and pronotum blackish-brown with the head in most specimens somewhat brighter; elytra yellowish brown with darkened humeral area, dark lateral margin, a wide transversal band behind the middle and apex dark. In many specimens the darkened areas on the elytra are enlarged, leaving only bright maculae on the anterior and posterior portions of the elytra. Antennae as in Fig. 3B, bright reddish-brown, 7th to 10th antennomeres and apex of 6th antennomere blackish-brown, 11th antennomere bright, almost white.

HEAD. Transverse, 0.69-0.75 mm wide, 0.39-0.48 mm long, 1.53-1.77 times as wide as long. Eyes large, protuberant, 0.21-0.23 mm long, distance of inner margins 0.43-0.48 mm. Puncturation on vertex coarse, moderately dense; pubescence composed of long, semierect setae, directed anteriorly; microsculpture absent. Longitudinal impressions on vertex distinct, almost parallel, attaining middle of eyes. Antennae long and slender, 1.45-1.63 mm long, antennomere proportions as follows: 2.7 : 1.0 : 1.2 : 1.7 : 1.7 : 1.6 : 1.4 : 1.2 : 1.2 : 1.1 : 2.3.

PRONOTUM. Subquadrate, posterior margin with shallow impressions; 0.66-0.78 mm wide, 0.53-0.63 mm long, 1.15-1.33 times as wide as long. Anterior angles with small group of teeth; margins with five lateral teeth; tooth I small, only slightly bigger than teeth of anterior group; tooth II somewhat bigger, tooth III biggest, teeth IV and V small; posterior angle with very small tooth. Puncturation and pubescence on pronotal disc in most specimens as on vertex, sometimes a little coarser. Microsculpture variable, mostly absent, in few specimens shallow, reticulate.

ELYTRA. Oval, length 1.54-1.88 mm, combined width 1.10-1.18 mm, 1.40-1.52 times as long as their combined width. Rows of punctures on disc slightly narrower than interstices; pubescence composed of long, semi-erect setae, directed anteriorly; microsculpture absent.

PARAMERES. Slender, narrowing gradually towards apex; inner margins with numerous small setae, few setae on outer margins of apical struts; apex with single large seta (Fig. 3C).

Remarks

Both *Ps. laetulus* and *Ps. nitescens* are described in the same paper by Grouvelle (1914). Due to the name *Ps. laetulus* preceding in the original article, it is considered to be the valid name for this taxon, with *Ps. nitescens* being a synonym.

Psammoecus parallelus Grouvelle, 1919

(Fig. 4)

Material examined

Holotype

♀: ‘Salisbury | Mashonaland | Aug. 1900 | GaKM’ [on backside of mounting label], ‘Type’ [round label with orange border], ‘Salisbury, | Mashonaland. | Marshall. | 1902-245’, ‘Psammoecus | parallelus | typ | Grouv’ [Grouvelle’s hand] (BMNH).

Other material

1 spm ‘COLL. MUS. CONGO | Kasenyi | 19-VIII-1937 | H.J. Brédo’ (MRAC). 1 ♀ ‘Dans marais | roselier’, ‘I.R.S.A.C. – MUS. CONGO | Kibali-Ituri: Blukwa (Tsa) | 1820 m. I-1954 | N.Leleup’ (MRAC).

1♀ 'I.R.S.A.C. - MUS. CONGO | Bendera, terr. Albertville | 1000 m. (à la lumière) | N. Leleup X-1958' (MRAC). 1♂ 'I.R.S.A.C. - MUS. CONGO | Bendera, terr. Albertville | riv. Kiymbi 1000 m. | B. 18 N, Leleup VII-1958', 'Biot. No 18 | dans détritit | et humus' (MRAC). 1♂ 'COLL. MUS. CONGO | Urundi: Bugesera, rives | lac Tshohoha YX-1957 | N. Leleup' (MKF). 1 spm 'MUSÉE DU CONGO | Haut-Uelè: Watsa | - 1922 | L. Burgeon' (MRAC). 1♀ 'Récolté dans | panicule de | riz', 'COLL. MUS. CONGO | 15 kn E. Yangambi | 21 1952 | J. Decelle' (MRAC). 2 spms 'COLL. MUS. CONGO | Kivu: Sanghe, Pl. Ruzizi | (à la lumière) XII-1951 | H. Bomans' (MRAC). 1♀ 'I.R.S.A.C. - MUS. CONGO | Kivu: Lemera, terr. Uvira | 1600 m. XII-1956 | N. Leleup' (MRAC). 2♀♀ 'Biot. No 25 | racines de | plantes basses', 'I.R.S.A.C. - MUS. CONGO | Mont Kabobo, terr. Albert- | ville, Hte Kiymbi 1700 m. | B.25 N. Leleup IX-1958' (MRAC). 1 spm 'COLL. MUS. CONGO | Nioka | VII-1937 | J. Ghesquière' (MRAC). 1 spm 'COLL. MUS. CONGO | Sankuru: Gandajika | V-1955 | J. Decelle' (MRAC). 1 spm

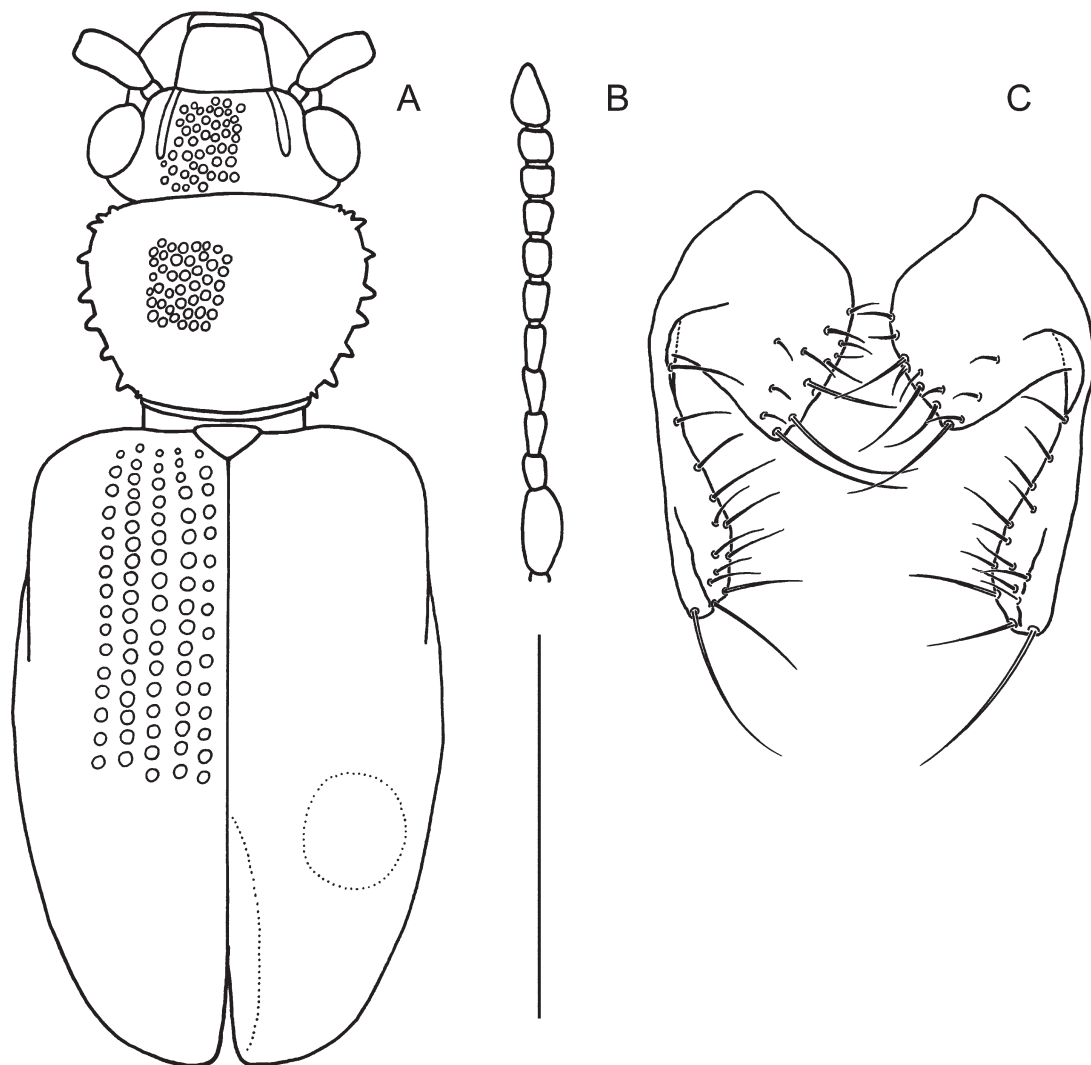


Fig. 4. *Psammoecus parallelus* Grouvelle, 1919. **A.** Habitus of holotype. **B.** Left antenna of holotype. **C.** Parameres of specimen from Bendera. Scale line A, B: 1 mm; C: 0.2 mm.

‘COLL. MUS. CONGO | Tanganika: Musosa, 980 m. | (à la lumière) XI-1953 | H. Bomans’ (MRAC). 1♀ ‘COLL. MUS. CONGO | Elisabethville (A la | lumière) x-1959 | Ch. Seydel’ (MKF). 1♂ ‘I.R.S.A.C. - MUS. CONGO | Bas-Congo: Rives de | La N’Tadi 9-IX-1949 | N. Leleup’ (MRAC). 1 spm ‘MUSÉE DU CONGO | Kisantu | -1932 | R.P. Vanderyst’ (MRAC). 1♀ ‘COLL. MUS. CONGO | Bas Congo: Thysville | 1-2/XII-1952 | P. Basilewsky’ (MRAC). 1 spm ‘COLL. MUS. CONGO | Côte d’Ivoire: Adiopo- | doumé 1957 | P. Dessart’ (MRAC).

Differential diagnosis

Differs from *Ps. personatus* and *Ps. leleupi* sp. nov. by the shorter lateral teeth of pronotum; from *Ps. leleupi* sp. nov. also by narrower elytral striae, round dark maculae in posterior third of elytra, darkened suture near elytral apex, and the absence of a darkened area at bases of elytra; from *Ps. hacquardi* and *Ps. laetulus* by round dark maculae in posterior third of elytra, darkened suture near elytral apex, the absence of a darkened area at bases of elytra and very wide bases and club-shaped extensions of parameres; from *Ps. marginicollis* by 1st antennomere being almost three times as long as 2nd and from *Ps. marginicollis* and *Ps. lucti* sp. nov. by very wide bases and club-shaped extensions of parameres.

Redescription

BODY. Slender, total length 2.85-3.30 mm (Fig. 4A), surface yellowish-brown, elytra with round dark maculae at beginning of posterior third near lateral margins, suture darkened along posterior third. Antennae yellowish brown, 7th-10th and apex of 6th antennomere brown, 11th antennomere lighter reddish-brown, but somewhat darker than basis of antennae.

HEAD. Wide, temples curved; width 0.48-0.78 mm, length 0.40-0.45 mm, 1.41-1.82 times as wide as long. Eyes protuberant, 0.21-0.23 mm long, distance of inner margins 0.48-0.53 mm. Puncturation on vertex coarse, dense, density of punctures variable. Pubescence composed of long, semierect setae, directed anteriorly; microsculpture visible only in few specimens, very shallow, reticulate. Longitudinal impressions on vertex distinct, extending slightly behind middle of eyes. Antennae as in Fig. 4B, slender, 1.35-1.63 mm long; antennomere proportions of holotype as follows: 2.9 : 1.2 : 1.4 : 1.5 : 1.5 : 1.3 : 1.2 : 1.1 : 1.0 : 1.0 : 2.2.

PRONOTUM. Subquadrate, 0.73-0.81 mm wide, 0.60-0.68 mm long, 1.19-1.26 times as wide as long. Anterior angles with distinct group of small teeth; lateral margins with five teeth, tooth I small, teeth II and III larger, of similar size, teeth IV and V as big as tooth I; posterior angles with small tooth. Puncturation and pubescence on disc as on vertex, microsculpture absent.

ELYTRA. Oval, length 1.80-2.10 mm, combined width 1.03-1.25 mm, 1.67-1.76 times as long as their combined width. Rows of punctures on disc slightly wider than interstices; pubescence composed of long, semierect setae, directed posteriorly; microsculpture absent.

PARAMERES. With very large base and club-shaped apical extension. Inner margins of base and apical extension with numerous setae of variable size, apex with one large seta (Fig. 4C).

Psammoecus leleupi sp. nov.

(Fig. 5)

Etymology

The name is dedicated to Narcisse Leleup (1912-2001), who collected many of the *Psammoecus* stored in the the Musée royal de l’Afrique Centrale.

Material examined

Holotype

♂: 'COLL. MUS. CONGO | Kivu: T. Lubero, Mt Kibat- | siro, Visiki, 2080 m. XII-54 | R.P.M.J. Célis', 'dans | terreau, au | Berlese', 'I.R.S.A.C. – Mus. Congo | N. Rhodesia: Mpika | (Muchinga Mts.) 1700m. | VII.1960 N. Leleup', 'Dans | l'humus' [blue label], 'HOLOTYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC).

Paratypes

1♂ 'Coll. Mus. Tervuren | Uganda: Distr. Busonga | env. Jinja, I/III.1968 | J-J. Rwabuneza', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1 spm '19 km sud | Tapili', 'à la lampe | IV-1956', 'Collection | J.G. Pantos', '622', 'COLL. MUS. CONGO | 622 | ex coll. J. Pantos', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'MUSÉE DU CONGO | Kivu: Mabuita | XII.1935 | Boutakoff', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'MUSÉE DU CONGO | Rutshuru | IV-1937 | J. Ghesquière', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1 spm 'COLL. MUS. CONGO | Ruanda: Kayove, | 2000 m. terr. Kisenyi, | P. Basilewsky 14/II-53', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'I.R.S.A.C.-MUS. CONGO | Kivu: Terr. Masisi, 700 m. | Walikale IX-1953 | N. Leleup', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'COLL. MUS. TERVUREN | Burindi: Mugeru | VI/VII.1965 | J.J. Rwabuneza', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'MUSÉE DU CONGO | K. 300. de Kindu | 16-IV-1911 | L. Burgeon', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'MUSÉE DU CONGO | MANYEMA 1918 | Katangar. Kasa | Dr. Gérard', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'I.R.S.A.C.-MUS. CONGO | Maniema: T. Kasongo, | Mwana-Kussu | N. Leleup 21/22-X-54', 'A la lumière', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'MUSÉE DU CONGO | Lulouga: Befale | -IX-1927 | L. [sic!] Ghesquière', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♂ 'I.R.S.A.C.-MUS. CONGO | Kwango: terr. De Feshi, | rive g. Kwenge II-1959 | B.64 Mme. J. Leleup', 'Biot. No 64 | Ilôt de forêt | marécag. inondée', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MKF). 1♂ 'I.R.S.A.C.-MUS. CONGO | Kwango: Kianza, terr. De | Feshi, riv. Sengi III-1959 | B.76 Mme J. Leleup', 'Biot. No 76 | Tête de source | humus en forêt', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC). 1♀ 'I.R.S.A.C.-MUS. CONGO | Thysville: Grotte | B 15 d. 22-VII-1949 | N. Leleup', 'PARATYPUS | Psammoecus | leleupi | des. Karner' [red label] (MRAC).

Diagnosis

Maximum pronotal width closely behind anterior third; margin of pronotum rounded, bearing four triangular lateral teeth with wide bases. Elytra with dark brown to blackish maculae at base, on the disc and with a dark apex. The large maculae on the disc often form a transverse band, connected to the apical maculae by the darkened suture; striae on elytral disc wider than interstices. Parameres with wide bases and club-shaped extensions, bearing numerous long setae.

Differential diagnosis

Ps. leleupi sp. nov. differs from *Ps. hacquardi*, *Ps. parallelus*, *Ps. marginicollis*, and *Ps. personatus* by wider elytral striae; from *Ps. personatus* also by wider bases of lateral teeth of pronotum, and broad parameres with numerous long setae. It differs from *Ps. laetulus* by maximum pronotal width being closer to middle, lateral margin of pronotum more curved, parameres with wide basis, club-shaped extensions, and longer setae; from *Ps. marginicollis* by longer lateral teeth of pronotum, and by parameres with wide basis and club-shaped extensions; from *Ps. parallelus* by longer lateral teeth of pronotum, and extensive dark maculae on elytra with darkened area at elytral basis; from *Ps. lucti* sp. nov. by darkened elytral bases and parameres with wide basis, club-shaped extensions, and numerous longer setae.

Description

BODY. Elongate oval, total length 2.80-3.20 mm (Fig. 5A). Elytra with dark brown to blackish maculae at base, on the disc and with a dark apex. The large maculae on the disc often form a transverse band, connected to the apical maculae by the darkened suture. Head and pronotum darker than the bright areas of elytra, mostly even darker than the elytral maculae. Antennal coloration variable, 7th to 9th and basis of 6th antennomere darkened, 10th and 11th antennomere very bright, often almost white. Some specimens with darkened 10th antennomere.

HEAD. With large, protuberant eyes, temples narrowed immediately behind eyes; head width 0.76-0.85 mm, length 0.44-0.48 mm, 1.61-1.79 times as wide as long. Punctuation on vertex dense, coarse; pubescence composed of long, semierect setae, directed anteriorly; microsculpture absent. Longitudinal impressions on vertex distinct, slightly curved, attaining middle of eyes. Eyes protuberant, 0.23-0.25 mm long, distance of inner margins 0.48-0.53 mm. Antennae as in Fig. 5B, comparatively robust, 1.38-1.53 mm long; antennomere proportions of holotypus as follows: 2.5 : 1.5 : 1.5 : 1.6 : 1.6 : 1.5 : 1.4 : 1.2 : 1.0 : 1.0 : 2.2.

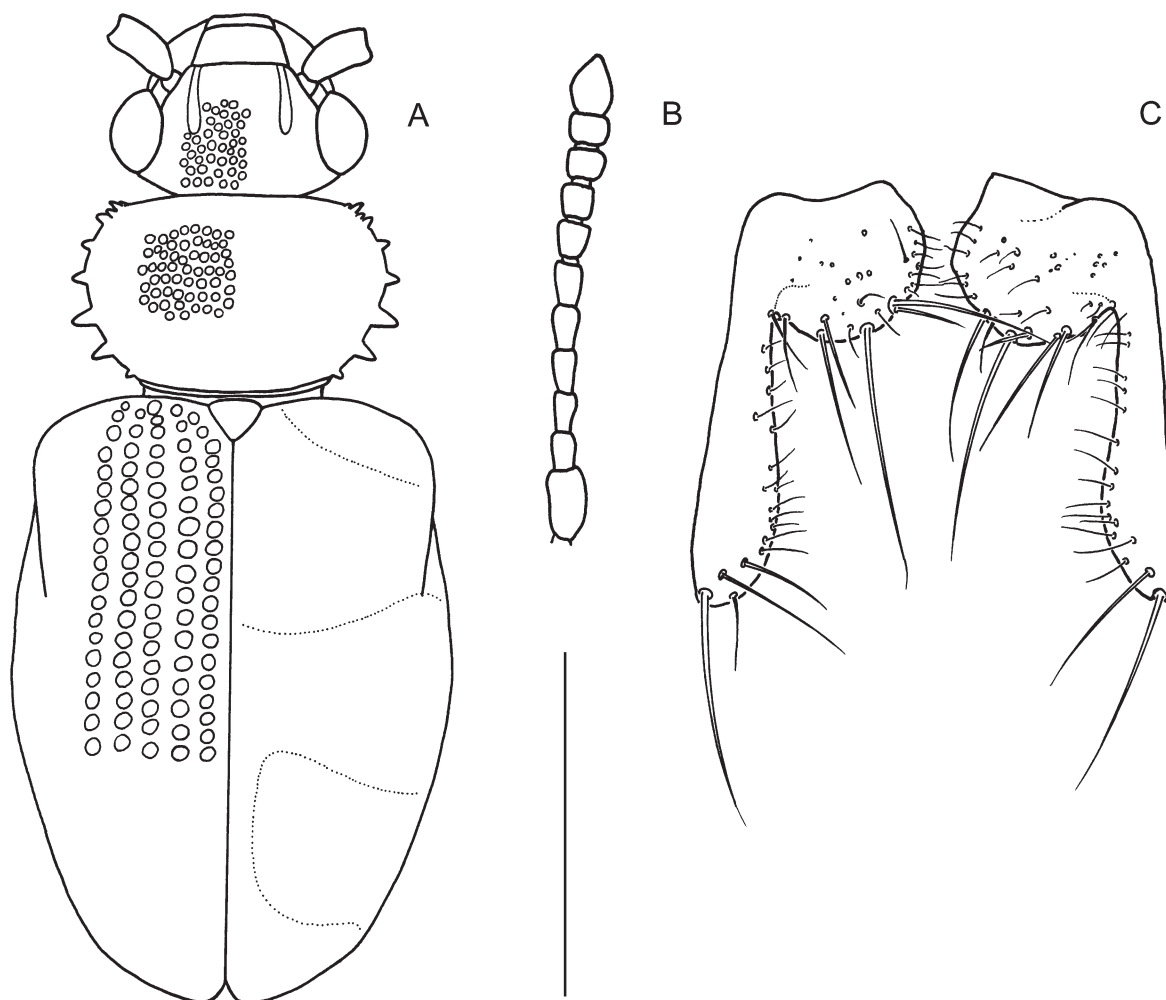


Fig. 5. *Psammoecus leleupi* sp. nov., holotype. **A.** Habitus. **B.** Left antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

PRONOTUM. Broad, near apical margin and apical angles with shallow impressions; width 0.83-0.91 mm, length 0.59-0.66 mm, 1.33-1.51 times as wide as long. Anterior angles with distinct group of comparatively big teeth, lateral margins with four distinct triangular teeth; tooth I short, tooth II somewhat longer, tooth III the longest, tooth IV a bit shorter than tooth III, but longer than tooth II; posterior angle with distinct angular tooth. Puncturation and pubescence on pronotal disc as on vertex. Microsculpture absent.

ELYTRA. Oval, length 1.88-2.13 mm, combined width 1.20-1.43 mm, 1.39-1.58 times as long as combined width. Rows of punctures on disc wider than interstices; pubescence composed of long, semierect setae; microsculpture absent.

PARAMERES. With wide, stout base and club-shaped apical extension. Inner margin of base with 3-4 longer and numerous short setae; inner margin of extension with numerous small setae, apical portion of extension with 2-3 long setae (Fig. 5C).

Psammoecus luchtii sp. nov.

(Fig. 6)

Etymology

The name is dedicated to Wilhelm Lucht (1922-2000), who provided the author with much helpful advice in the course of his first steps into entomology.

Material examined

Holotype

♂: 'I.R.S.A.C. – Mus. Congo | N. Rhodesia: Mpika | (Muchinga Mts.) 1700 m. | VII.1960 N. Leleup', 'Dans | l'humus' [blue label], 'HOLOTYPUS | Psammoecus | luchtii | des. Karner' [red label] (MRAC).

Paratypes

1♂ 'COLL. MUS. TERVUREN | Kivu: Butembo | alt. 1740 m. III.1965 | M.J. Celis et collab.', 'sous | Dendrocalamus', 'PARATYPUS | Psammoecus | luchtii | des. Karner' [red label] (MKF). 1♂ 'COLL. MUS. CONGO | Katanga: gal. forest. | de la Kisanga IX- | N. Leleup 1948 | (Env. d' Elisabethville)', 'Récolté dans | humus' [blue label], 'PARATYPUS | Psammoecus | luchtii | des. Karner' [red label] (MKF). 1 spm 'I.R.S.A.C. – Mus. Congo | N. Rhodesia: Abercorn, | 1800m. | VII.1960 N. Leleup', 'Galerie forestière | de la Mwengo, | dans l'humus', 'PARATYPUS | Psammoecus | luchtii | des. Karner' [red label] (MRAC). 1 spm 'I.R.S.A.C. – Mus. Congo | N. Rhodesia: Danger Hill | à 45 km. N. de Mpika | VII.1960 N. Leleup', 'Humus | de galerie | forestière' [blue label], 'PARATYPUS | Psammoecus | luchtii | des. Karner' [red label] (MRAC). 3 spms 'I.R.S.A.C. – Mus. Congo | N. Rhodesia: Mpika | (Muchinga Mts.) 1700 m. | VII.1960 N. Leleup', 'Dans | l'humus' [blue label], 'PARATYPUS | Psammoecus | luchtii | des. Karner' [red label] (MRAC).

Diagnosis

Lateral margins of pronotum rounded, bearing five distinct teeth with wide bases. Elytra elongate-oval, bright reddish-brown with dark, transverse band at beginning of posterior portion, sometimes with darkened suture near elytral apex; striae on elytral disc slightly wider than interstices. Parameres small, elongate, spatula-shaped.

Differential diagnosis

Ps. luchtii sp. nov. differs from *Ps. simoni* Grouvelle, 1892 by the elytral striae being only slightly wider than the interstices, elytra being more elongate, elytral basis not darkened. It differs from *Ps. hacquardi* and *Ps. marginicollis* by wider bases of lateral teeth of pronotum; from *Ps. hacquardi* also by wider

elytral striae and elytral basis not darkened; from *Ps. marginicollis*, *Ps. parallelus*, *Ps. leleupi* sp. nov., *Ps. simoni*, and *Ps. laetulus* by spatula-shaped parameres. It further differs from *Ps. leleupi* sp. nov. and *Ps. laetulus* by elytral basis not darkened; from *Ps. personatus* by shorter lateral teeth of pronotum with wider bases; and from *Ps. laetulus* by more rounded lateral margin of pronotum.

Description

BODY. Elongate oval, total length 2.80-3.19 mm (Fig. 6A). Bright reddish-brown, elytra with dark, transverse band at beginning of posterior portion, some specimens also with darkened suture near elytral

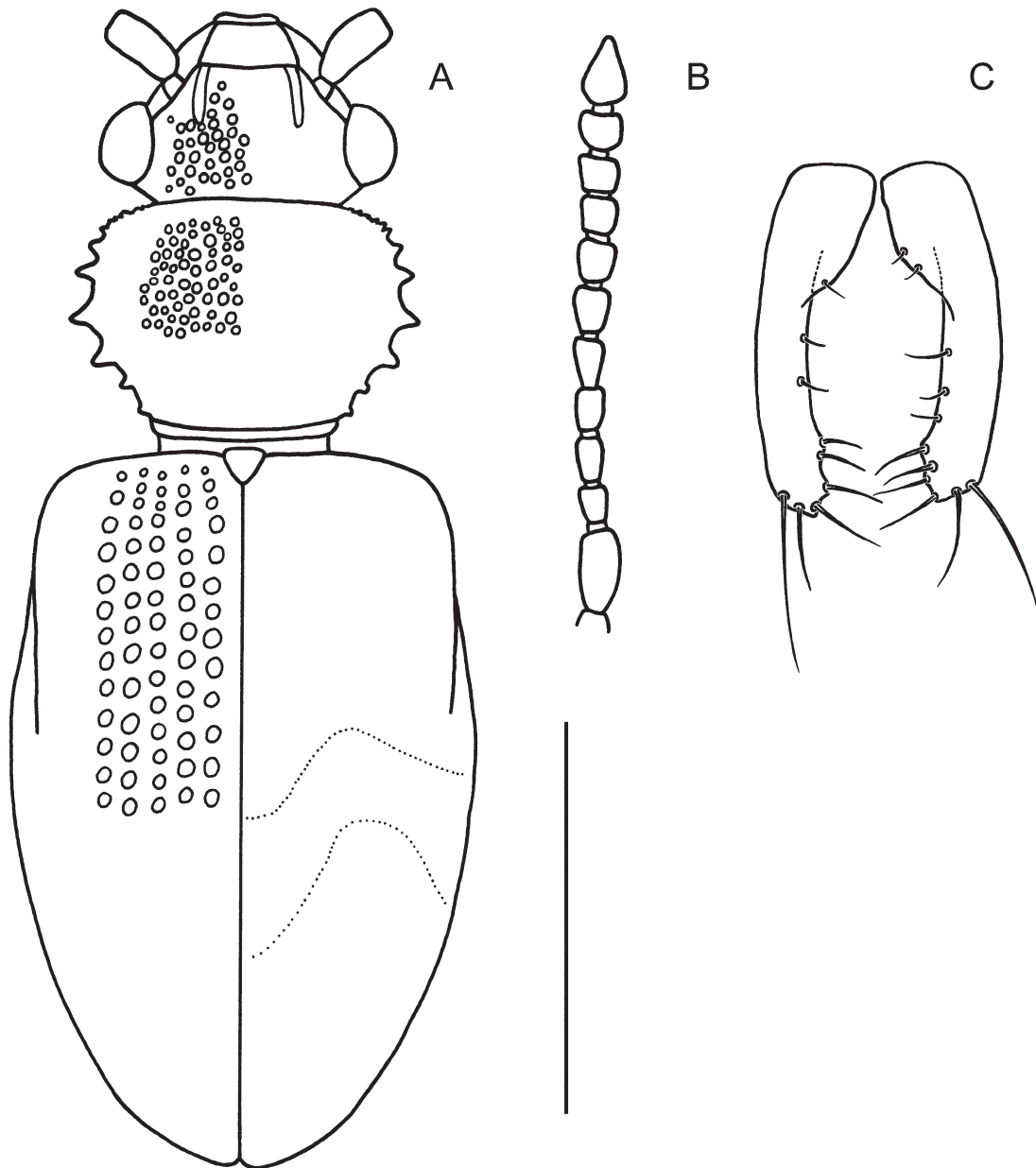


Fig. 6. *Psammoecus lucti* sp. nov., holotype. **A.** Habitus. **B.** Left antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

apex. Antennae with 7th-10th antennomere blackish brown, some specimens with darkened apex of 6th antennomere. 11th antennomere, sometimes also 10th antennomere, bright yellowish brown, brighter than basal antennomeres.

HEAD. Very wide, with large, protuberant eyes, temples narrowed immediately behind eyes. Head width 0.79-0.88 mm, length 0.44-0.48 mm, 1.75-1.96 times as wide as long. Eyes 0.20-0.23 mm long, distance of inner margins 0.50-0.60 mm. Punctuation on vertex coarse, relatively dense, distance between punctures irregular; pubescence composed of long erect setae, directed anteriorly; microsculpture absent. Longitudinal impressions on vertex distinct, short, attaining second third of eyes. Antennae as in Fig. 6B, long and slender, 1.45-1.55 mm long, antennomere proportions of holotype as follows: 2.6 : 1.1 : 1.4 : 1.3 : 1.5 : 1.4 : 1.3 : 1.1 : 1.0 : 1.1 : 2.1.

PRONOTUM. Broad, shallowly impressed near apical margin and apical angles, width 0.80-0.96 mm, length 0.60-0.73 mm, 1.28-1.40 times as wide as long. Anterior angles with group of very small teeth, lateral margins with five distinct, triangular teeth; tooth I small, tooth II larger, tooth III largest, tooth IV slightly smaller than tooth III, tooth V smallest; posterior angle with very small angular tooth. Punctuation and pubescence on disc as on vertex; microsculpture absent.

ELYTRA. Elongate oval, length 1.85-2.05 mm, combined width 1.15-1.40 mm, 1.44-1.65 times as long as their combined width. Rows of punctures on disc slightly wider than interstices, pubescence composed of semierect setae that are somewhat shorter as on head and pronotum; microsculpture absent.

PARAMERES. Small, elongate; base less than 2 times as wide as apical extension, inner margins with few short setae, inner portion of apex with four longer setae, outer portion with one shorter and one longer seta (Fig 6C).

Psammoecus grandis Grouvelle, 1908
(Fig. 7)

Material examined

Holotype

♀: 'Af. or. All. | Kwai. Weise' [blue label, Grouvelle's hand], 'Type' [Grouvelle's hand], 'Type' [red label, printed], 'MUSEUM PARIS | 1917 | Coll. GROUVELLE' [blue label], 'Psammoecus | grandis | G. Grouv' [Grouvelle's hand] (MNHN).

Other material

1 spm 'COLL. MUS. CONGO | Ruanda: Gitarama, | 1850 m. terr. Nyanza, | P. Basilewsky I-1953' (MRAC). 1 ♂ 'I.R.S.A.C.-Mus. Congo | Kivu: Terr. Lubero | 2.200 m. 2-XII-1951 | N. Leleup | (for mont. avec bamb.)', 'Récolté dans l'humus' [blue label] (MRAC). 1 spm 'COLL. MUS. CONGO | Urundi: Kitega 1600- | 1700 m. 3/4-III-1953 | P. Basilewsky' (MKF). 4 spms 'COLL. MUS. CONGO | Urundi: Bururi, 1800 - | 2000 m. 5/12-III-1953 | P. Basilewsky' (MRAC).

Differential diagnosis

Ps. grandis resembles *Ps. longicornis* Schaufuss, 1872 and *Ps. lateralis* (Grouvelle, 1899), but differs by the presence of small lateral teeth of pronotum. It differs from *Ps. longicornis* also by the very large and curved parameres with very short extensions.

Redescription

BODY. Slender, narrow, total length 3.4-4.2 mm (Fig. 7A), surface yellowish-brown, elytra with dark maculae of variable shape; some immature specimens only with a darkish macula in the posterior half

of elytra, other specimens with posterior half of elytral suture and elytral maculae blackish-brown. 7th to 10th antennomere and apex of 6th antennomere darkened, 11th antennomere brighter than basis of antennae.

HEAD. With comparatively small eyes and broad, curved temples; width 0.80-0.89 mm, length 0.45-0.48 mm; 1.71-1.85 times as wide as long. Eye length 0.23-0.25 mm, distance of inner margins 0.48-0.56 mm. Punctuation on vertex irregular, pubescence composed of short, recumbent setae, directed anteriorly; microsculpture well defined, reticulate. Longitudinal impressions on vertex short, curved, almost attaining the anterior third of eyes. Antennae as in Fig. 7B, short, length 1.58-2.00 mm, 1st antennomere very long and slender. Antennomere proportions of holotype as follows: 3.33 : 1 : 1.17 : 1.5 : 1.2 : 1.7 : 1 : 1 : 1.8 : 1 : 2.17.

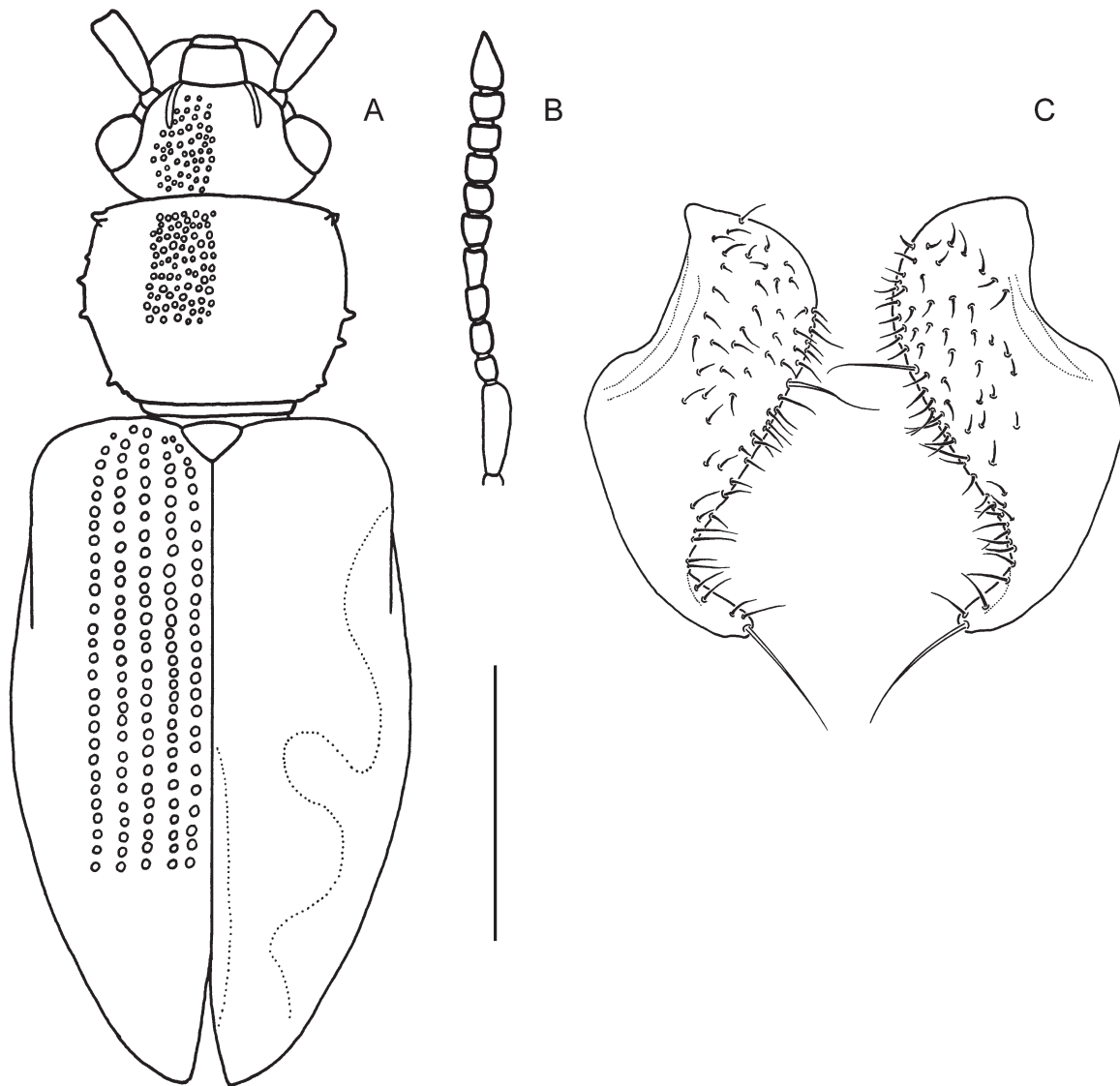


Fig. 7. *Psammoecus grandis* Grouvelle, 1908. **A.** Habitus of holotype. **B.** Left antenna of holotype. **C.** parameres of specimen from Kivu. Scale line A, B: 1 mm; C: 0.2 mm.

PRONOTUM. Subquadrate, width 0.89-1.03 mm, length 0.75-0.90 mm, 1.14-1.23 times as wide as long. Surface uneven with flat impressions near the posterior margin close to the posterior angles as well as in the middle of the posterior margin. Less distinct impressions also close to the anterior margin, in some specimens also in the middle of the pronotal disc. Posterior angle with a very small group of teeth, lateral margins with four to five very short lateral teeth, posterior angle almost rudimentary. The holotype shows an asymmetrical tooth pattern with different numbers and location of lateral teeth on the two sides of the pronotum. Puncturation slightly coarser and denser than on vertex, pubescence as on vertex; microsculpture well defined, reticulate.

ELYTRA. Narrow, slender, length 2.10-2.67 mm, combined width 1.35-1.60 mm, 1.50-1.81 times as long as their combined width. Rows of punctures on the disc a little narrower than interstices. Pubescence rather flat, consisting of long setae. Microsculpture visible only in few specimens, very weak, reticulate.

PARAMERES. with broad base, narrowing and curving inwards toward apex (Fig. 7C).

Psammoecus marginicollis Grouvelle, 1908

(Fig. 8)

Material examined

Holotype

♂: 'Af or. all | Kwai Weise' [blue label, Grouvelle's hand], 'Type' [Grouvelle's hand], 'Type' [red label], 'MUSEUM PARIS | 1917 | Coll. GROUVELLE' [blue label], *Psammoecus* | *marginicollis* | G. Grouv' [Grouvelle's hand]; (MNHN).

Other material

1♂ 'MUS. ROY. AFR. CENTR. | Tanganyika: Kilimandjaro | vers. O. (Buchberger) | ex. coll. Dr Breuning' (MRAC). 1 spm 'MUSÉE DU CONGO | Haut-Uele: Yebo Moto | VI-1926 | L. Burgeon' (MRAC). 1 spm 'MUSÉE DU CONGO | Ituri: Medje | fin VIII-1925 | Dr H. Schouteden' (MRAC). 3 spms 'Coll.Mus.Tervuren | Congo: Dorsale de Lubero | Mt. Muleke, VI/VII.1963 | M.J. Celis' (MRAC). 1♂ 'A la lumière' [blue label], 'I.R.S.A.C.-MUS.CONGO | Kivu: Terr. Masisi, 720 m. | Walikale (Rives Loa) IX-53 | N. Leleup' (MKF). 1♂ 'COLL. MUS. CONGO | Kivu: Kalonge | 15-XII-1938 | Hendrickx' (MKF). 1 spm 'Forêt | transition' [blue label], 'I.R.S.A.C. – Mus. Congo | Kivu: Riv. Nyakagera, terr. | Kabare 1600/1700 m. | N. Leleup XI-1955' (MRAC). 1 spm 'MUSÉE DU CONGO | Kivu: Burunga | 9-XII-1925 | Dr H.Schouteden' (MRAC). 1 spm 'MUSÉE DU CONGO | Vuhovi | - VII-1925 | H. J. Bredo' (MRAC). 3 spms 'MUSÉE DU CONGO | Mombassa (36 km.S. | Lubero) VIII-1932 | L. Burgeon'(MRAC). 1 spm 'MUSÉE DU CONGO | Aruwimi: Panga | 9/10-IX-1925 | Dr H. Schoudeten' (MRAC). 1 spm 'COLL. MUS. TERVUREN | Côte d'ivoire: Bingerville | VI. 1962 | J. Decelle' (MRAC). 1 spm 'COLL. MUS. TERVUREN | Côte d'ivoire: Bingerville | VII. 1962 | J. Decelle' (MRAC). 2 spms 'COLL. MUS. TERVUREN | Côte d'Ivoire: Bingerville | V.1964 | J. Decelle' (MKF)

Differential diagnosis

Ps. marginicollis differs from *Ps. personatus* and *Ps. leleupi* sp. nov. by the shorter lateral teeth of pronotum; from *Ps. laetulus* and *Ps. parallelus* by 1st antennomere being two times as long as 2nd; from *Ps. hacquardi* by wider, less elongate parameres and longer antennae; from *Ps. leleupi* sp. nov. by narrower elytral striae and parameres without club-shaped extension; from *Ps. parallelus* by wide parameres without club-shaped extension; from *Ps. lucti* sp. nov. by narrower bases of lateral teeth of pronotum and wider, less elongate parameres.

Redescription

BODY. Elongate oval, total length 2.50-3.50 mm (Fig. 8A). Surface yellowish to reddish brown, some specimens considerably darker with lateral margins of pronotum blackish brown. Elytra with variable pattern of dark maculae; darker specimens with wide, horizontal maculae in the middle of the elytra and dark apical portion of elytral suture; the basal portion of the elytral suture not darkened. Specimens of lighter colour with reduced maculae on the elytral discs and only slightly darkened or light apical portion of elytral suture. Few specimens without elytral maculae. Antennae yellowish or reddish brown, 7th to 10th antennomere dark brown or black, 11th antennomere yellowish brown, lighter than basal antennomeres.

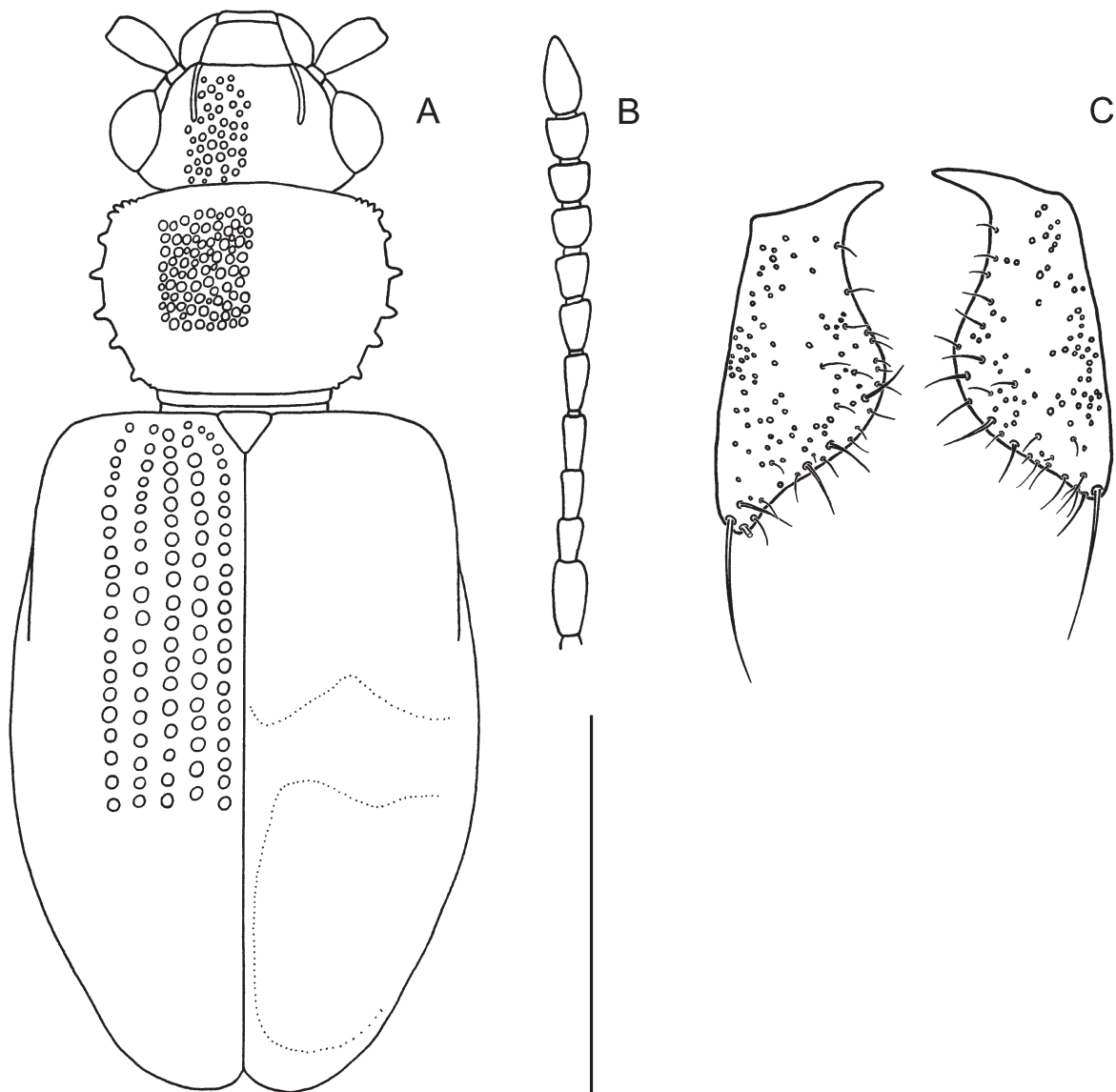


Fig. 8. *Psammoecus marginicollis* Grouvelle, 1908, holotype. **A.** Habitus. **B.** Right antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

HEAD. Broad, temples rounded; width 0.65-0.76 mm, length 0.40-0.46 mm, 1.58-1.83 times as wide as long. Eyes moderately prominent, 0.20-0.23 mm long, distance of inner margins 0.43-0.53 mm. Punctuation on vertex variable, moderately dense, sometimes very dense. Pubescence composed of long, semierect setae, directed anteriorly; microsculpture hardly visible, very shallow, reticulate. Longitudinal impressions on vertex deep, attaining the anterior third of eyes. Antennae as in Fig. 8B, 1.58-1.70 mm long. Antennomere proportions of holotype as follows: 2.0 : 1.1 : 1.3 : 1.4 : 1.5 : 1.2 : 1.1 : 1.0 : 1.0 : 1.1 : 2.1.

PRONOTUM. Subquadrate, width 0.70-0.85 mm, length 0.56-0.70 mm, 1.16-1.42 times as wide as long. Surface even. Anterior angle with distinct group of small teeth. Lateral margin with five distinct, short teeth; tooth I short with wide base, tooth II a little larger, teeth III and IV still a little larger, triangular with wide bases, tooth V about as big as tooth II. Posterior angle with very small tooth. Punctuation on pronotal disc coarser and denser as on vertex, pubescence as on vertex. Microsculpture variable, in most specimens well defined, reticulate, in some specimens hardly visible or absent.

ELYTRA. Elongate oval, length 1.63-2.30 mm, width 1.13-1.50 mm, 1.32-1.71 times as long as their combined width. Rows of punctures on the disc a little narrower than interstices. Pubescence composed of long, semierect setae; microsculpture absent.

PARAMERES. Short, broadest in the middle, with one large apical seta (Fig. 8C).

Remarks

The shape of the parameres was found to vary to a small degree. So far, the material at hand was not sufficient to decide whether this variability has specific importance, hence all specimens mentioned here were determined to be conspecific with *Ps. marginicollis*.

Psammoecus lateralis (Grouvelle, 1899) (Fig. 9)

Cryptamorpha lateralis Grouvelle, 1899: 179.

Psammoecus lateralis Grouvelle, 1919: 46.

Material examined

Holotype

♀: 'Andrangoloaka | 1600 m. O. S. O. de | Tananarive.', 'Type' [red label], 'MUSEUM PARIS | 1917 | Coll. GROUVELLE', 'Cryptamorpha | lateralis | G. Grouv' [Grouvelle's hand] (MNHN).

Differential diagnosis

Ps. lateralis resembles *Ps. longicornis*, but differs by the smaller and less dense punctuation on head, pronotum, and elytral discs, and by the longer antennae.

It differs from *Ps. grandis* by absence of lateral teeth of pronotum.

Redescription

BODY. Elongate-oval, total length 3.60 mm (Fig. 9A). Surface yellowish brown with elytral margin and a round macula on posterior third of elytra dark brown.

HEAD. With long, slightly rounded temples; width 0.79 mm, length 0.48 mm, 1.65 times as wide as long. Eyes moderately protuberant, 0.4 mm long, distance of inner margins 0.53 mm. Punctuation on vertex of moderate density, punctures small, distance between punctures variable. Pubescence composed of short

semierect setae, directed anteriorly; microsculpture very distinct, reticulate. Longitudinal impressions on vertex short, distinct, attaining the anterior quarter of the eyes. Antennae as in Fig. 9B, antennal length 1.78 mm; antennomere proportions of holotype as follows: 2.6 : 1.3 : 1.2 : 1.1 : 1.4 : 1.6 : 1.4 : 1.1 : 1.1 : 1.0 : 1.9.

PRONOTUM. Subquadrate, width 0.86 mm, length 0.75 mm, 1.15 times as wide as long. Anterior and posterior angles with distinct groups of small teeth, lateral teeth absent. Punctuation on pronotal disc sparser as on vertex, punctures of same size as on vertex. Pubescence shorter and less erect as on vertex; microsculpture distinct, reticulate.

ELYTRA. Elongate, length 2.35 mm, width 1.28 mm, 1.84 times as long as combined width. Rows of punctures on disc distinctly narrower than interstices. Pubescence composed of only slightly erect setae; microsculpture hardly visible, very shallow, reticulate.

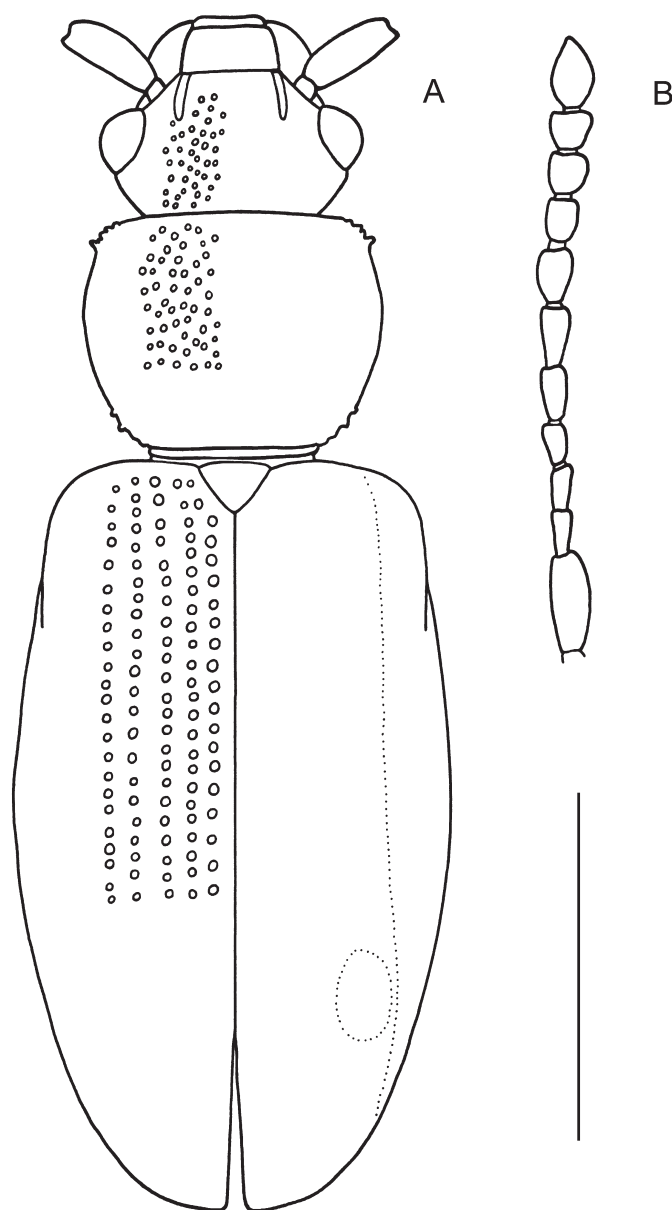


Fig. 9. *Psammoecus lateralis* (Grouvelle, 1899), holotype. **A.** Habitus. **B.** Left antenna. Scale line: 1 mm.

Psammoecus longicornis Schaufuss, 1872
(Fig. 10)

Psammoecus longulus Grouvelle, 1878: 265. **syn. nov.**

Material examined

Holotype

‘Type’, ‘Coll. L. W. | Schaufuß’, ‘Type’ [red label], ‘longicornis | Schauf | N.Germany | Caffr’, ‘longicornis | Schauf | Caffraria.’ (ZMHB).

Other material

2♀♀, mounted on single card label ‘Port natal | H. Deysolle’ [Grouvelle’s hand; second line hardly readable], ‘Type’, ‘TYPE’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’ [blue label], ‘identique au | longicornis | Sch. | comp. au ty.’ [Grouvelle’s hand], ‘Psammoecus | longulus | Grouv’ [Grouvelle’s hand] (MNHN). The specimen that is mounted on the right side is hereby designated to be the lectotype of *Ps longulus*. 1 spm ‘Coll. Mus. Congo | Urundi: Kitega 1600- | 1700 m. 3/4-III-1953 | P. Basilewsky’ (MRAC). 1 spm ‘Recolté dans | l’humus’ [blue label], ‘I.R.S.A.C.-Mus. Congo | Kivu : Terr. Kalehe | Contr. S. du Kahuzi, | 2200 m. 27-VII-51 | N. Leleup’ (MRAC). 1 spm ‘Coll. Mus. Congo | Kivu: Ibanda | 1952 | M. Vandelannoite’ (MRAC). 1 spm ‘I.R.S.A.C.-Mus. Congo | Kivu: Lemera, terr. Uvira | 1600 m. XII-1956 | N. Leleup’ (MRAC). 1 spm ‘Recolté sous | détritus | végétaux’ [blue label], ‘I.R.S.A.C.-Mus. Congo | Kivu : Terr. Uvira, | Mulenge 1950 m. | (Mavaisroselier) 4-IX-51 | N. Leleup’, (MRAC). 1♂ ‘I.R.S.A.C.-Mus. Congo | Kivu : Terr. Uvira, Mu- | lenge 1880-2010 m. | (Vert. For. Ombroph.) V-1951 | N. Leleup’, ‘Recolté dans | l’humus’ [blue label] (MRAC). 1 spm ‘Recolté dans | racines | (plantes basses)’ [blue label], ‘I.R.S.A.C.-Mus. Congo | Kivu : Mwenga, | S.-O. Itombwe, Luiko | 1900 m (Sav.herb.) I-1952 | N. Leleup’ (MRAC). 2 spms ‘Coll. Mus. Congo | Elisabethville | II-1940 | H. J. Bredo’ (MKF).

Differential diagnosis

Ps. longicornis resembles *Ps. lateralis*, but differs by coarser puncturation of head, pronotum, and elytral discs and by the shorter antennae. It differs from *Ps. grandis* by absence of lateral teeth of pronotum and by parameres with wide bases and distinct, slender extension.

Redescription

BODY. Elongate oval, total length 2.60-3.40 mm (Fig. 10A). Surface bright yellowish or reddish brown, elytra with dark brown maculae at the beginning of posterior half, near margin; the elytral suture and margins in apical third often darkened; some specimens lacking elytral maculae. Antennae yellowish brown; 8th to 10th antennomeres slightly to moderately darkened, in some specimens also the 7th antennomere darkened; 11th antennomere of same color as basal antennomeres or only slightly brighter.

HEAD. Broad, temples curved, head width 0.65-0.75 mm, length 0.38-0.45 mm, 1.67-1.83 times as wide as long. Eyes only moderately protuberant, 0.18-0.20 mm long, distance of inner margins 0.44-0.53 mm. Puncturation on vertex dense and coarse. Pubescence composed of short, recumbent setae, directed anteriorly; microsculpture well defined, reticulate. Longitudinal impressions on vertex distinct, attaining second fourth of eyes. Antennae as in Fig. 10B, 1.30-1.50 mm long. Antennae of holotype missing; antennomere proportions of lectotype of *Ps. longulus* as follows: 2.5 : 1.2 : 1.5 : 1.5 : 1.2 : 1.2 : 1.1 : 1.1 : 1.0 : 1.2 : 2.3.

PRONOTUM. Almost as long as wide; width 0.64-0.78 mm, length 0.58-0.73 mm, 1.01-1.15 times as wide as long. Lateral teeth absent, anterior and posterior angle with small groups of teeth. Puncturation and pubescence as on vertex; microsculpture well defined, reticulate.

ELYTRA. Oval, length 1.68-2.10 mm, width 0.95-1.50 mm, 1.40-1.80 times as long as wide. Rows of punctures somewhat wider than interstices. The pubescence of the studied specimens almost completely damaged, as far as visible, the setae are short and recumbent; microsculpture absent.

PARAMERES. With wide base and slender apical extension. Inner margin with numerous short setae, apex with single long seta (Fig. 10C).

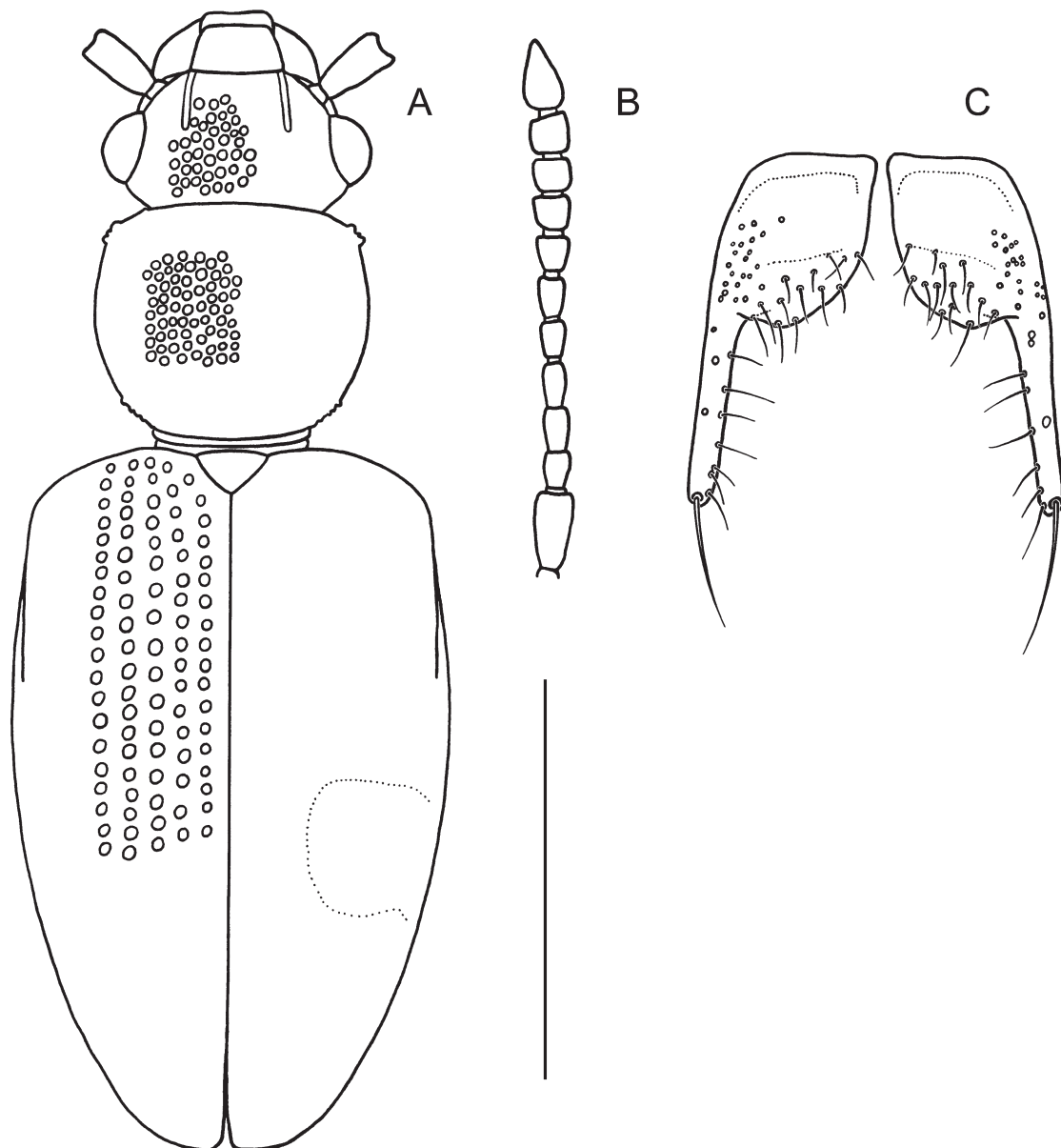


Fig. 10. *Psammoecus longicornis* Schaufuss, 1872. **A.** Habitus of specimen from Port Natal (= lectotype of *Ps longulus* Grouvelle, 1878). **B.** Right antenna of specimen from Port Natal. **C.** Parameres of specimen from Kivu. Scale line A, B: 1 mm; C: 0.2 mm.

Psammoecus trimaculatus Motschulsky, 1858

Psammoecus excellens Grouvelle, 1908a: 115. **syn. nov.**

Psammoecus alluaudi Grouvelle, 1912: 409. **syn. nov.**

Material examined

1 ♀ [round, red label]; [yellow label]; ‘Psammecus [sic!] | trimaculatus | Motch. | Ceylon’ [Motschulsky’s hand] (ZMUM). 3 spms ‘Af. or. All. | Eichelbaum’ [Grouvelle’s hand], ‘Type’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’ [blue label], ‘Psammoecus | excellens | G Grouv’ [Grouvelle’s hand] (MNHN). One ♂ specimen was designated as lectotypus of *Ps excellens* Grouvelle and labelled accordingly. Holotype of *Ps alluaudi*. ♂: ‘Madagascar | Su[??]ieville’ [blue label, Grouvelle’s hand], ‘Type’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’ [blue label], ‘Psammoecus | alluaudi | G. Grouv’ [Grouvelle’s hand] (MNHN).

Remarks

Pal (1985) gave a redescription of *Ps. trimaculatus* based on material from Motschulsky’s collection (Museum Moscow) that he accepted as type material. He did not designate a lectotype. The material consisted of five specimens mounted on a single label (Pal 1996, personal communication).

It was not possible for the present author to see this material, but he had the opportunity to study a single, female specimen from Motschulsky’s collection (ZMUM). This specimen is not assumed to be a type, while the material mentioned by Pal may be discovered again.

Pal (1985) provided detailed figures of *Ps. trimaculatus*, including the male genitalia, and gives an overview on the taxonomy. He states that it occurs in India, Nepal, Bhutan, Sri Lanka, Myanmar, Malaysia, Australia, Japan, and Madagascar. Recently, it has also been recorded as being established in Brasil (Thomas & Yamamoto 2007).

Both *Ps. excellens* Grouvelle and *Ps. alluaudi* Grouvelle are conspecific and have to be synonymised with *Ps. trimaculatus* Motschulsky.

Psammoecus simoni Grouvelle, 1892

(Fig. 11)

Psammoecus simonis Grouvelle, 1892: 287.

Psammoecus simoni – Grouvelle 1908c: 476.— Pal 1985.

Material examined

Lectotype

♂, by present designation: ‘Antipolo | E. Simon’, ‘TYPE’ [red label], ‘MUSEUM PARIS | 1917 | Coll. GROUVELLE’ [yellow label], ‘Psammoecus | Simoni | ty. A. Grouv’ [Grouvelle’s hand] (MNHN).

Paralectotype

1 spm with identical data as lectotype (MNHN).

Other material

5 spms ‘COLL. MUS. CONGO | Madagascar: Maroansetra | (à la lumière) II/IV-1950 | J. Vadon’ (MRAC). 1 spm ‘COLL. MUS. TERVUREN | N.E. Madagascar: | Ambodivoangy 1959 | J. Vadon’ (MRAC).

Differential diagnosis

Ps. simoni differs by its short oval habitus and the short, stout parameres that are fused with the basal piece from all other African *Psammoecus*. The wide-based pronotal teeth resemble *Ps. lucti* sp. nov., it differs by the elytral striae being considerably wider than interstices, elytra being shorter, darkened basis of elytra, parameres short, stout and fused with basal piece.

Redescription

BODY. Oval, total length 2.13-3.00 mm (Fig. 11A). Surface yellowish-brown, sometimes reddish-brown, elytra with brown or blackish-brown maculae: humeral swelling, a transverse band in the middle of the elytra, the elytral suture along the posterior two thirds and the elytral apex are dark. Base of antennae yellowish or reddish brown, 6th to 10th antennomere darkened, 11th antennomere yellowish-white, some specimens with light apex of 10th antennomere.

HEAD. Broad, temples narrowed immediately behind eyes; width 0.64-0.71 mm, length 0.33-0.44 mm, 1.67-1.73 times as wide as long. Eyes protuberant, rounded, 0.17-0.20 mm long, distance of inner

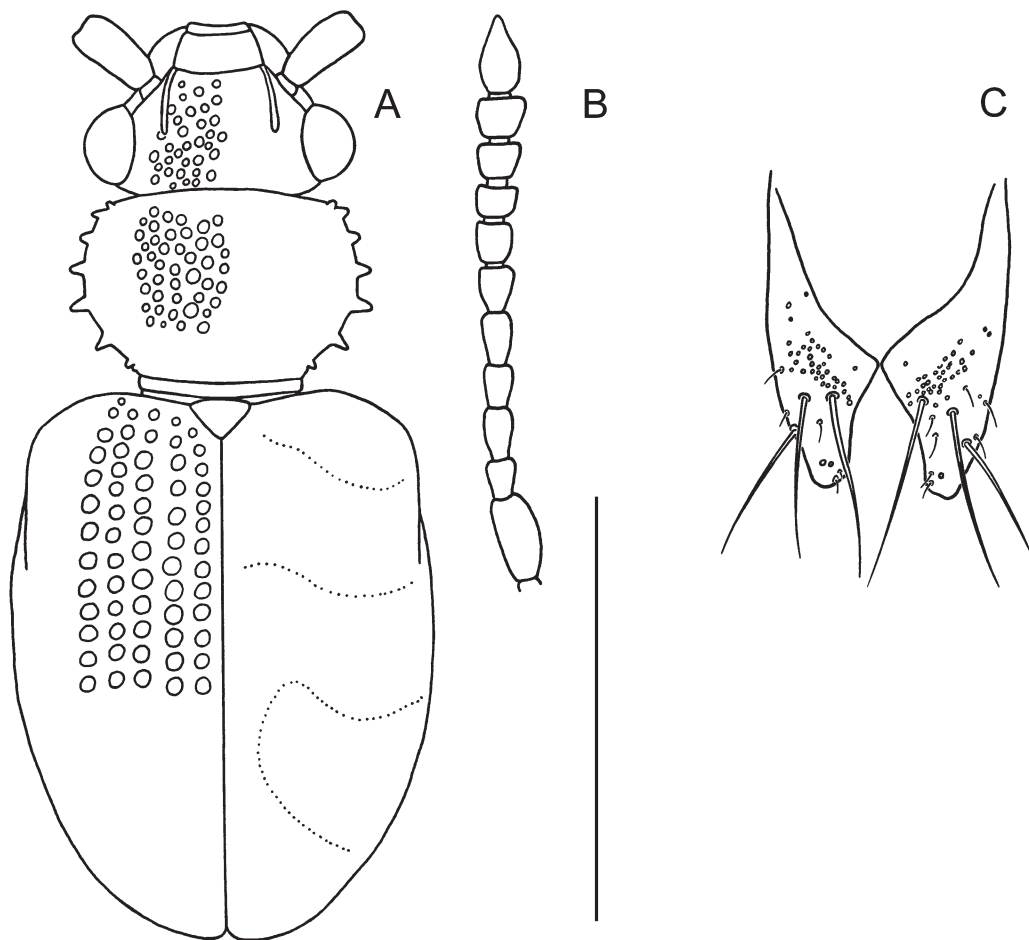


Fig. 11. *Psammoecus simoni* Grouvelle, 1892, lectotype. **A.** Habitus. **B.** Right antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

margins 0.38-0.45 mm. Punctuation on vertex coarse, density of punctures variable, pubescence composed of long, semierect setae, directed anteriorly; microsculpture absent. Longitudinal impressions on vertex very shallow, attaining the middle of the eyes, sometimes shorter. Antennae as in Fig. 11B, 1.17-1.40 mm long, stout, antennomere proportions of lectotype as follows: 2.9 : 1.3 : 1.8 : 1.5 : 1.8 : 1.6 : 1.4 : 1.0 : 1.2 : 1.4 : 2.8.

PRONOTUM. Broad; width 0.62-0.74 mm, length 0.48-0.56 mm, 1.22-1.35 times as wide as long. Surface smooth, without impressions. Anterior angles with distinct groups of small teeth; lateral margins with four distinct teeth; tooth I very small, tooth II a little larger, teeth III and IV largest. Posterior group of teeth consisting of a larger anterior tooth and a very small, almost obtuse posterior tooth. Punctuation coarser than on vertex, punctures sometimes adjoining. Pubescence as on vertex; microsculpture absent.

ELYTRA. Oval, short, length 1.35-1.70 mm, combined width 1.00-1.23 mm, 1.27-1.43 times as long as their combined width. Rows of punctures on disc wider than interstices. Pubescence consists of long, semierect setae. Microsculpture absent.

PARAMERES. Short, stout, fused with basal piece; with distinct pattern of three large setae (Fig. 11 C).

Remarks

In his original description, Grouvelle (1892) spells the name 'simonis'. However, on the labels that Grouvelle added to the syntypes as well as in a later paper (Grouvelle, 1908c), he spells the name 'simoni'. Pal (1985) also uses the latter spelling. Hence the present author considers 'simonis' to be a misprint and proposes to spell the name in accordance with Grouvelle (1908c) and Pal (1985).

Psammoecus spinosus Grouvelle, 1882
(Fig. 12)

Material examined

1 spm 'I.R.S.A.C.-MUS.CONGO | Kivu: Kavimvira (Uvira) | (à la lumière) I-1956 | G. Marlier' (MRAC). 1 spm 'I.R.S.A.C.-MUS.CONGO | Kivu: Kavimvira (Uvira) | (à la lumière) II/III-1956 | G. Marlier' (MRAC). 1 spm 'COLL. MUS. CONGO | Tanganika: Moba, 780 m. | (à la lumière) XI-1953 | H. Bomans' (MRAC). 1 spm 'Angola: Cazombo, | Alto Zambeze II-1955 | 4987.1 | E. Luna de Carvalho' (MRAC). 1♂ 'Nigeria VdoFR | m State | IV 1975 | J. T. Nedler Coll.' (MRAC). 1 spm 'COLL. MUS. TERVUREN | Côte d'ivoire: Bingerville | II.1962 | J. Decelle', 'Psammoecus sp. | D. G. H. Halstead | det. 1978' (MKF). 1♂ 'COLL. MUS. TERVUREN | Côte d'ivoire: Bingerville | I/12.III.1962 | J. Decelle' (MRAC).

Differential diagnosis

Ps. spinosus differs by the very characteristic shape of the pronotum and the distinctly toothed elytral margins from all other African *Psammoecus*.

Redescription

BODY. Oval, total length 2.40-3.15 mm (Fig. 12A), reddish-brown, elytra with darkened basis and with dark lateral macula near their middle, connected to the darkened suture in posterior half which is connected to another lateral macula close to the apex; the maculae forming a roughly x-shaped pattern on posterior two thirds of elytra. Antennae reddish-brown, 7th to 10th antennomeres darker brown, 11th antennomere bright yellowish, almost white.

HEAD. Wide, temples strongly narrowed immediately behind eyes; width 0.60-0.75 mm, length 0.38-0.45 mm, 1.58-1.71 times as wide as long. Eyes very large and protuberant, length 0.18-0.23 mm,

distance of inner margins 0.36-0.48 mm. Puncturation on vertex irregular, punctures comparatively small and sparse, pubescence composed of moderately long, semierect setae, microsculpture absent. Longitudinal impressions on vertex very distinct, deep, slightly curved, attaining slightly beyond the middle of eyes. Antennae as in Fig. 12B, long and slender, 1.23-1.30 mm long; antennomere proportions as follows: 2.8 : 1.0 : 1.3 : 1.2 : 1.3 : 1.4 : 1.3 : 1.0 : 1.0 : 1.1 : 2.2.

PRONOTUM. Transverse, posterior and lateral margins with distinct impressions, close to the middle of the anterior margin with shallow impression; width 0.65-0.83 mm, length 0.45-0.58 mm, 1.38-1.44 times as wide as long. Anterior angle with very distinct group or large teeth; lateral margin characteristic pattern of four teeth; tooth I large with wide basis, teeth II and III almost fused, forming a large forked tooth,

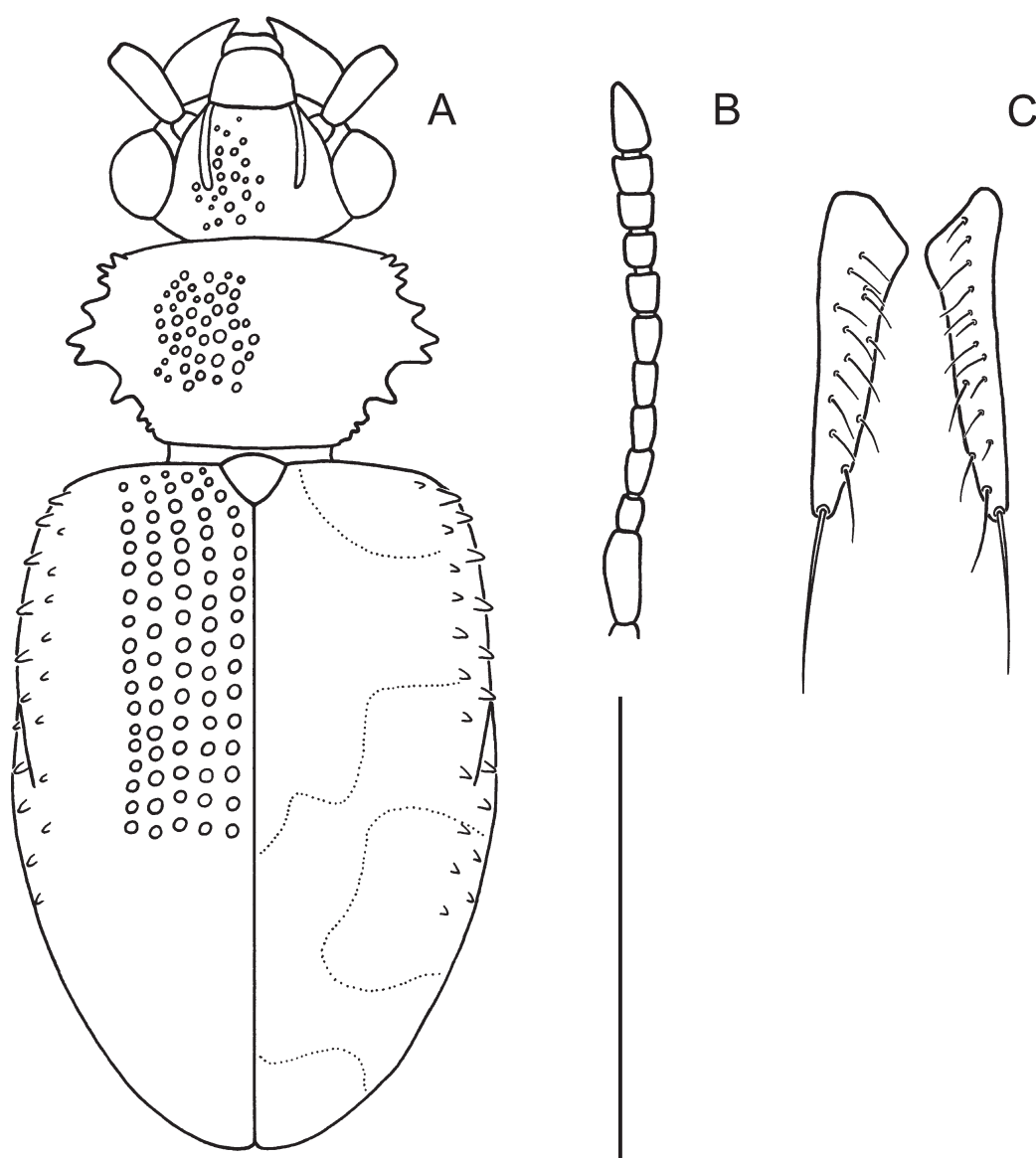


Fig. 12. *Psammoecus spinosus* Grouvelle, 1882, specimen from Bingerville. **A.** Habitus. **B.** Right antenna. **C.** Parameres. Scale line A, B: 1 mm; C: 0.2 mm.

tooth IV as large as tooth I; posterior angle with small group of teeth. Anterior margin with a small short tooth right between anterior group of teeth and middle of anterior margin. Puncturation on disc somewhat coarser as on vertex, pubescence as on vertex, microsculpture absent.

ELYTRA. Oval, length 1.55-2.08 mm, combined width 0.98-1.40 mm, 1.46-1.59 times as long as combined width. Rows of punctures on the disc about as wide as interstices; pubescence composed of long semierect setae, directed posteriorly; interstices of lateral rows of punctures with tubercles that are enlarged to form distinct teeth; towards the elytral disc, these teeth become successively smaller. Microsculpture absent.

PARAMERES. Simple, narrowed towards apex, without well-defined basal part. Inner portion of parameres with numerous small setae; apex with one large seta (Fig. 12C).

Remarks

It has not been possible to locate and study type material of *Ps. spinosus*. However, Grouvelle (1882) provides an illustration that leaves little doubt regarding the identity of this species, given its peculiar habitus.

Key to species

1. Lateral margins of pronotum without teeth; only anterior and posterior groups of small teeth present 2
– Lateral margins of pronotum with various number of large or small teeth 3
2. 3rd antennomere shorter than 2nd; elytral rows of punctures narrower than interstices *lateralis* (Grouvelle, 1899)
– 3rd antennomere longer than 2nd; elytral rows of punctures somewhat wider than interstices *longicornis* Schaufuss, 1872
3. Body length 3.40-4.20 mm; lateral margins of pronotum with very small teeth; 1st antennomere more than three times as long as 2nd *grandis* Grouvelle, 1908
– Body length not more than 3.30 mm; lateral margins of pronotum with distinct teeth, 1st antennomere less than three times as long as 2nd 4
4. Interstices of lateral striae of elytra with small, distinct spines; pronotum with large lateral teeth, bases of tooth II and III connate *spinosus* Grouvelle, 1882
– Interstices of lateral striae of elytra without spines, often with tubercles; lateral teeth of pronotum always well separated 5
5. 1st antennomere less than two times as long as 2nd 6
– 1st antennomere more than two times as long as 2nd 8
6. 3rd antennomere longer than 2nd *marginicollis* Grouvelle, 1908
– 3rd antennomere as long as 2nd 7
7. Striae on elytral disc narrower than interstices; lateral teeth of pronotum with narrow bases *personatus* Grouvelle, 1919
– Striae on elytral disc wider than interstices, lateral teeth of pronotum with wide bases *leleupi* sp. nov.

8. Maximum pronotal width near middle (excluding lateral teeth) 9
 – Maximum pronotal width in anterior third (excluding lateral teeth) 11
9. Lateral teeth of pronotum slender *hacquardi* Grouvelle, 1889
 – Lateral teeth of pronotum triangular, with wide bases 10
10. Elytral striae distinctly wider than interstices; humeral swelling, a transverse band in the middle of elytra, elytral suture along posterior two thirds and elytral apex dark; parameres short, stout, fused with basal piece *simoni* Grouvelle, 1892
 – Elytral striae slightly wider than interstices; elytra with dark, transversal band at beginning of posterior portion, sometimes with darkened suture near elytral apex; parameres spatula-shaped, distinctly separated from basal piece *luchti* sp. nov.
11. Elytrae with darkened humeral area, wide dark band across middle and darkened suture near apex; paramera slender *laetulus* Grouvelle, 1914
 – Elytrae with round macula and darkened suture near apex 12
12. Lateral margin of pronotum with 4 distinct teeth between small posterior tooth and anterior group of small teeth *trimaculatus* Motschulsky, 1858
 – Lateral margin of pronotum with 5 distinct teeth between small posterior tooth and anterior group of small teeth *parallelus* Grouvelle, 1919

Discussion

The genus *Psammoecus* Latreille, 1829 (Coleoptera, Silvanidae, Brontinae, Telephanini) consists of about 80 Old World species, with one species recently found to be established also in Brazil (Thomas & Yamamoto 2007). The vast majority of species inhabits tropical regions, where they are found in plant detritus and sometimes at light sources. After the studies of Antoine Henri Grouvelle (1843-1917), little research on the taxonomy of this genus was done, until Pal (1985) provided a revision of the Indian *Psammoecus*. Hetschko (1930) lists 14 species of *Psammoecus* for Africa, including *Ps. bipunctatus* (F.) var. *algericus* Pic, 1920 and *Ps. oblitus* Grouvelle, 1908. *Psammoecus bipunctatus* is a common species in Europe. The author was not able to retrieve the material studied by Pic and has not seen other specimens of *Ps. bipunctatus* from Africa.

Hetschko lists *Psammoecus oblitus* Grouvelle, with reference to Grouvelle (1908a: 116), where *Silvanus oblitus* is described. The description itself is sufficient to conclude that Grouvelle did indeed not describe a species belonging to the genus *Psammoecus*. Halstead (1973) includes the species in the genus *Parasilvanus* Grouvelle, 1912. Since no original description is available, *Psammoecus oblitus* is to be considered a *nomen nudum*.

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