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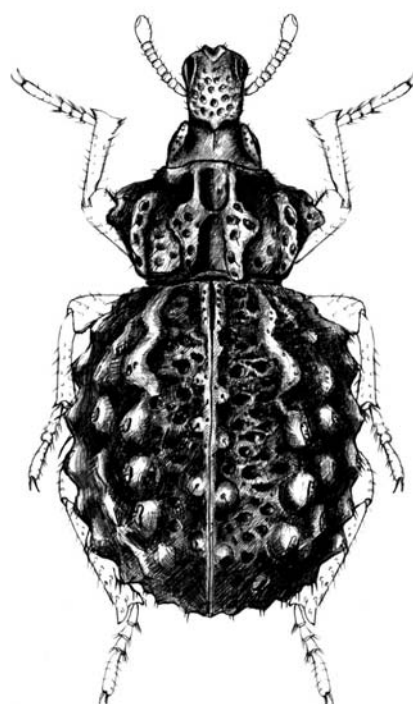


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Contribution to the knowledge of the genus *Singilis* Rambur, 1837 of Africa (Coleoptera: Carabidae: Lebiini)

К познанию африканских видов рода *Singilis* Rambur, 1837 (Coleoptera: Carabidae: Lebiini)

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Ключевые слова: Coleoptera, Carabidae, *Singilis*, новые виды, Африка, обзор, таксономия.

Abstract. The present paper deals with the taxonomy of several outstanding African species of the genus *Singilis* Rambur, 1837. Two new species are described: *S. montanus* sp. n. (Malawi), *S. basilewskyi* sp. n. (Zimbabwe). Two new species groups of the genus from tropical Africa are established: “*montanus*” species group and “*cyaneus*” species group. A key to species of both groups, illustrations of habitus and aedeagus are provided.

Резюме. В данной работе рассматривается систематическое положение нескольких стоящих особняком видов из рода *Singilis* Rambur, 1837. Описано два новых вида: *S. montanus* sp. n. (Малави) и *S. basilewskyi* sp. n. (Зимбабве). Выделены две новые группы видов из Тропической Африки: “*montanus*” и “*cyaneus*”. Приводятся определительная таблица, фотографии имаго и рисунки эдегусов.

Introduction

The present paper includes the first results of my treatment of African species of the genus *Singilis* Rambur, 1837. The genus *Singilis* is comprised of 78 described species [Lorenz, 2005; Anichtchenko, 2011]. The vast majority, 45 recognized species [Lorenz, 2005] is found in Africa. The African species have never been revised in their entirety, and composition of the genus is still far from understood. The majority of old species was described by Peringuey [1896, 1898, 1904].

The present paper deals with the taxonomy of several outstanding African species of the genus *Singilis* and includes the descriptions of two new species and two new species groups.

Material and methods

This study was based on 55 specimens, including a number of primary types. Measurements: body length, from anterior margin of clypeus to apex of elytra along suture; length of pronotum, along midline; width of pronotum, at widest point; length of elytra, from its base to apex along suture; and width of elytra, at widest point.

The material from the following institutional and private collections has been examined:

MNHN – National Museum of Natural History in Paris (France);

MRAC – Musée royal de l’Afrique Centrale (Belgium);

SAM – South African Museum, Cape Town (South Africa);

TMSA – National Museum of Natural History, previously Transvaal Museum (South Africa).

High-resolution habitus images of *Singilis* species, including type specimens and additional material, are available at <http://www.carabidae.pro>.

Results

Since I started my revision of African species, I encountered a number of phenomena that showed the need for revising the interpretation of the genus. Almost all differential characters used previously for the treatment of the genus, and even subtribe *Singilina* Jeannel, 1949 were continuously variable:

a) The last segment of labial palpi is broadly securiform [Peringuey, 1896: 245; Mateu, 1964: 127; Basilewsky, 1984]. In fact it can be variable from broadly securiform to very narrowly securiform.

b) The fourth tarsomere is deeply lobate [Mateu, 1964: 127; Basilewsky, 1984: 543]. In fact it can be variable but always more or less lobate.

c) Subocular setae are absent [Basilewsky, 1984: 534]. At the same time, chaetotaxy of the African species in general is less developed than that of the species from the Middle East and Central Asia. It also pertains to elytral, abdominal and pronotal pubescence, as well as subocular setae.

d) The median tooth of mentum can be variable. It was noted by Mateu [1964: 136].

e) The internal sac of the aedeagus is without spines. Mateu [1964: 127] used this character as differential for the genus and tribe *Singilini*. However internal sac of the aedeagus can be with or without spines. Moreover

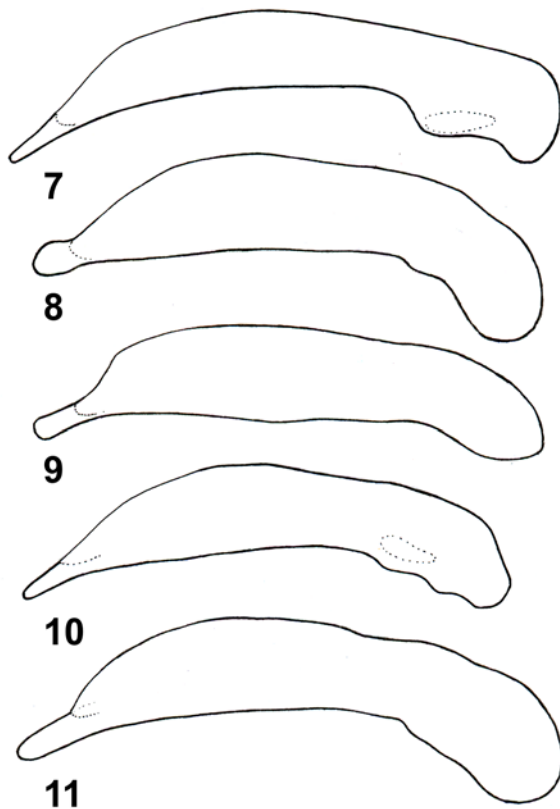


Fig. 7-11. Aedeagus of *Singilis*.

7 – *S. ater* (Holotype); 8 – *S. cyaneus* (Natal); 9 – *S. leleupi* (Paratype);
10 – *S. montanus* sp. n. (Holotype); 11 – *S. basilewskyi* sp. n. (Holotype).
Рис. 7-11. Эдеагус *Singilis*.
7 – *S. ater* (голотип); 8 – *S. cyaneus* (Наталь); 9 – *S. leleupi* (паратип);
10 – *S. montanus* sp. n. (голотип); 11 – *S. basilewskyi* sp. n. (голотип).

for several African species the aedeagal isomorphism phenomenon was found.

f) The stylomere is long, straight, parallel sided and glabrous. The apex is straight or oblique.

g) The elytra can be from completely smooth and glabrous to markedly punctured and setose.

In this article I want to avoid the temptation to place the subtribe Singilina in synonymy with Lebiina s. str., because such a decision will require exhaustive analysis of all related subtribes. In future articles I will return to this problem. Concerning the subgeneric taxonomical level, here I adhere to the principle of Occam's razor "entities must not be multiplied beyond necessity", or to quote Isaac Newton, "We are to admit no more causes of natural things than such as are both true and sufficient to explain their appearances. Therefore, to the same natural effects we must, so far as possible, assign the same causes". On this, despite the apparent existence of some natural groups within the genus *Singilis*, I prefer to refer to them as a group of species, rather than as a subgenus. Most of the species show gradually changing morphotypes, or differential characters may form various combinations and fail to serve to allocate species in natural subgenera.

Before the advent of using new criteria in the taxonomy I propose to consider the genus *Singilis* as a complex group of species, and as treated here may not be monophyletic.

Among other African *Singilis*, new species groups are diagnosable by internal sac of aedeagus without spines,

abdominal sterna completely black and shiny, with only a few very sparse setae. The apex of stylomere in both new species groups is oblique. They occupy montane habitats on the mainland, particularly in the highlands of Cameroon, Tanzania and Malawi. For distribution maps of the groups "*montanus*" and "*cyaneus*" see fig. 14.

Key to "*montanus*" and "*cyaneus*" group of species of the genus *Singilis*

1. Disc of pronotum convex, unpunctate, only weakly rugate on lateral sides and basal impressions. Pronotal margin narrow, "*cyaneus*" species group 2
- Disc of pronotum flattened, strongly rugate and punctate. Pronotal margin explanate, "*montanus*" species group 4
2. Elytra unicolourous black or blue. Body unicolourous 3
- Elytra bicoloured, basal 2/5 of elytra yellow 3
3. Head, prothorax, and elytra entirely dark blue *maculatus* (Mateu, 1980)
- Body entirely black *cyaneus* (Peringuey, 1896)
- Body entirely black *ater* (Mateu, 1980)
4. Legs and antennae red 5
- Legs, head, pronotum, except narrow lateral margin and antennae, except paler scape, black *montanus* sp. n.
5. Propleuron, prosternum and disc of pronotum black. Lateral margins of pronotum red. Intervals of elytra flat *leleupi* (Basilewsky, 1962)
- Pronotum entirely red. Intervals of elytra convex in basal half *basilewskyi* sp. n.

The "*cyaneus*" species group

Singilis ater (Mateu, 1979)

Phloeozetus ater Mateu, 1979: 142.

Phloeozetus ater Mateu, 1980: Lorenz, 2005: 480.

Material. Holotype: ♂, "Mt. Oku, Nov. 69" (MNHN).

Diagnosis. Body, antennae and legs entirely black, except small yellow spot on knees. Head very shallowly and superficially punctured. Disc of pronotum moderately convex, without punctures, slightly rugose, in the middle with one large fovea on each side of median furrow. Elytra elongate, subparallel, finely punctato-striate, with the intervals flat, only on the base of elytra slightly convex. Body length 4.5 mm (Color plate 2: fig. 1).

Aedeagus – fig. 7. Internal sac without spines.

Distribution. Cameroon (fig. 14a).

Singilis cyaneus (Peringuey, 1896)

Phloeozetus cyaneus Peringuey, 1896: 252.

Material. "Howick, Natal, J.P. Cregoe 1903–213" (2 spec., MNHN); "Malvern, 1.98" (1 spec., MNHN); "Musee du Congo, Howick, Natal, J.P. Cregoe 1903–213" (1♂, MRAC); "Coll. Mus. Congo, N. Tvl.: Letaba Valley, Tzaneen Dist. XII.1958, A.L. Capener" (18 spec., MRAC); "Pretoria, 2.2.1915, W. Impoy" (1 spec., TMSA); "Malvern, 10.94" (1♂, SAM-A016660); "Malvern N. 10.99" (1 spec., SAM-A016661); A. Ross, Johsb [Johannesburg] 1898 (1♂, SAM-A062926); Natal. Malvern. Barker (1♀, SAM-A062927); Natal, D'Urban, C.N. Barker, 1894 (2♂, SAM-A062925); Frere, Natal (1♂, SAM-A062924).

Diagnosis. Upper side dark blue, shining. First, second and third basal antennomeres partly rufescent. Head very shallowly and superficially punctured. Disc of pronotum

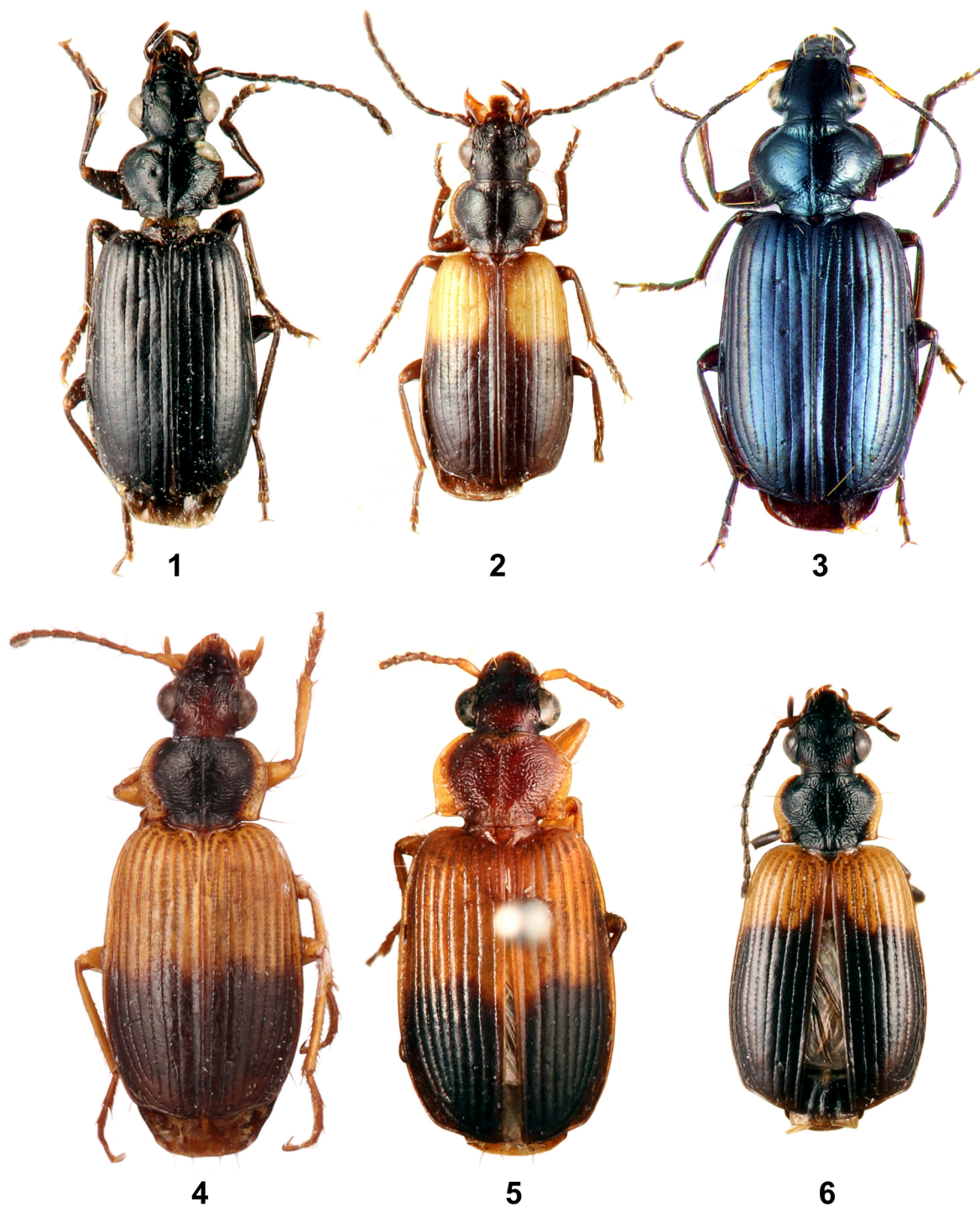


Fig. 1-6. Habitus of *Singilis*.

1 – *S. ater*, male (Holotype); 2 – *S. maculatus*, male (Holotype); 3 – *S. cyaneus*, female (Pretoria); 4 – *S. leleupi*, male (Paratype); 5 – *S. basilewskyi* sp. n., male (Holotype); 6 – *S. montanus* sp. n., male (Holotype).

Рис. 1-6. Общий вид *Singilis*.

1 – *S. ater*, самец (голотип); 2 – *S. maculatus*, самец (голотип); 3 – *S. cyaneus*, самка (Претория); 4 – *S. leleupi*, самец (паратип); 5 – *S. basilewskyi* sp. n., самец (голотип); 6 – *S. montanus* sp. n., самец (голотип).

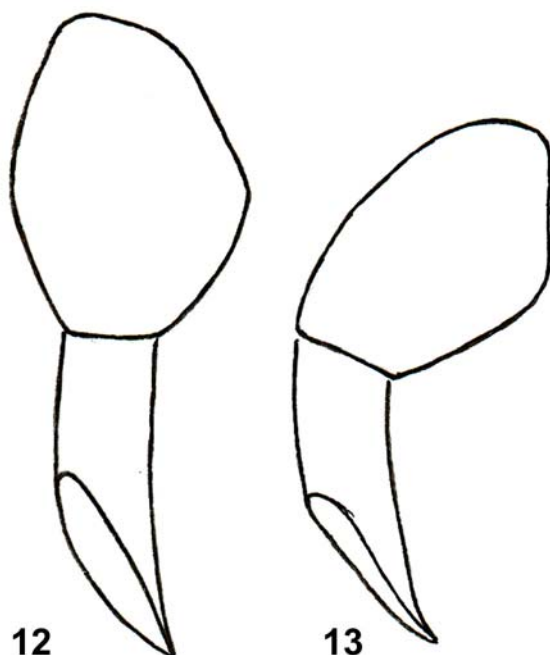


Fig. 12-13. Stylomere of *Singilis*.
12 - *S. cyaneus*; 13 - *S. basilewskyi* sp. n.
Рис. 12-13. Стиломер *Singilis*.
12 - *S. cyaneus*; 13 - *S. basilewskyi* sp. n.

convex, without punctures, slightly rugose. Basal grooves of pronotum round, indistinct. Elytra elongate, subparallel, finely punctato-striate, with flat intervals. Microsculpture of head and disc of pronotum isodiametric, but sculpticells become more transverse towards the sides of pronotum. Elytra with microsculpture of subquadrate cells. Under side, palpi, and legs blue-black. Body length 5–5.5 mm, width of elytra 2.3–2.5 mm (Color plate 2: fig. 3).

Aedeagus (fig. 8). Aedeagal median lobe moderately broad, ventral margin straight nearly to apex. Apex broad, slightly downturned and expanded near broadly rounded tip. Internal sac without spines.

Stylomere – fig. 12.

Distribution. Republic of South Africa (fig. 14c).

Singilis maculatus (Mateu, 1979)

Phloeozetus maculatus Mateu, 1979: 144.

Phloeozetus maculatus (Mateu, 1980): Lorenz, 2005: 480.

Material. Holotype: ♂, “Kichong, 24.IV.1969” (= 30 km SSE de Nkambé) (MNHN).

Diagnosis. Body, antennae and legs entirely black, except yellow humeral maculae on basal 2/5 of elytra. Head very sparsely and superficially punctured. Microsculpture of head and pronotum markedly isodiametric. Elytra with finer microsculpture of larger, subquadrate sculpticells, and thus appearing shinier than the forebody. Disc of pronotum convex, without punctures, slightly rugose towards the sides of pronotum. Anterior margin straight, anterior angles effaced, sides narrowly rounded towards posterior angles, which are rectangular. Pronotal margin narrow, basal grooves round. Elytra elongate, subparallel, finely punctato-striate, with the intervals flat. Body length 4 mm (Color plate 2: fig. 2).

Aedeagus of single known specimen is absent.

Distribution. Cameroon (fig. 14b).

The “*montanus*” species group

Singilis leleupi (Basilewsky, 1962)

Phloeozetus leleupi Basilewsky, 1962.

Material. Tanzania: holotype, ♂, paratypes, 16 spec. – “Coll. Mus. Congo, Tanganyika Terr.: Mt. Hanang, Versant Sud, 2300–2400 m, 29–30.V.1957”, “Mission Zoolog. I.R.S.A.C. en Afrique orientale (P. Basilewsky et N. Leleup)” (MRAC).

Diagnosis. Head black, back of the head red-brown. Surface with isodiametric microsculpture, deeply irregularly punctate, punctures near eyes sometimes almost confluent. Antennomeres I–III yellow, IV–XI brown. Mandibles and palpes brown. Body length 5 mm (Color plate 2: fig. 4). Propleuron, prosternum and disc of pronotum black. Lateral margins of pronotum red. Lateral explanate margin rapidly widened from the apex, broad and flat at base. Posterior angles rectangular. Disc wavy rugose. Elytra elongate, subparallel, finely punctato-striate, with the intervals flat, apical 1/2 of elytra black. Mesosternum, metasternum, metaepisterna yellow. Abdominal sterna black. Femora and tibiae yellow, tarsi brown.

Aedeagus – fig. 9. Internal sac without spines.

Distribution. Tanzania (fig. 14d).

Singilis montanus sp. n.

Material. Holotype: ♂, “Chelinda, 2300 m, 1/21.XII.1981”, “Coll. Mus. Tervuren, Malawi North Reg., Nyika Plateau, XII.1981 – R. Jocqué” (MRAC). Paratype: 1♂, same locality and date (MRAC).

Diagnosis. This new species is most similar to *S. leleupi*, shares with *S. leleupi* general body coloration. The two species can be diagnosed easily by the color of legs and palpes, black in *S. montanus*, yellow in *S. leleupi*, and by black elytral band, occupying apical 1/2 of elytra in *S. leleupi*, apical 2/3 in *S. montanus*.

Description. Length 4.4–4.5 mm. Head, prosternum, propleuron and pronotum (except yellow lateral margin), antennae (except dark brown scape), legs, palpes and abdominal sterna black. Basal 1/3 of elytra, metasternum and metepisterna yellow (Color plate 2: fig. 6).

Head deeply and densely punctate with punctures separated by 1–2 their diameters, on the frons smooth. Clypeus smooth. Head and clypeus with strong, almost isodiametric microsculpture throughout. Eyes moderately large and bulging. Temples short, smooth, without microsculpture. Scape with a very long subapical seta and several small setae; pedicel and antennomere III with one apical bands of setae. Antennae pubescent from the basal third of antennomere IV.

Pronotum 1.2 times as wide as head, 1.43 times as wide as long, widest behind marginal setae. Anterior margin straight, anterior angles effaced, sides narrowly and regularly rounded, weakly sinuate at base, posterior angles rectangular. Disc strongly wavy rugose. Lateral margin flat, explanate in basal half. Basal grooves indistinct, flat. Pronotal base extended in a rounded median lobe. Microsculpture as on head.

Elytra subparallel, 1.58 times as long as wide, with polygonal microsculpture. Elytral apices truncate, weakly obliquely sinuate, rounded at suture. Striae deep and slightly crenulate. Intervals slightly convex.

Protarsomere V with 2 pairs of ventral setae. Claws with 3 teeth. Abdominal sterna black, smooth, shiny, with few tiny setae. Propleuron strongly wavy rugose. Prosternum, mesepisternum,

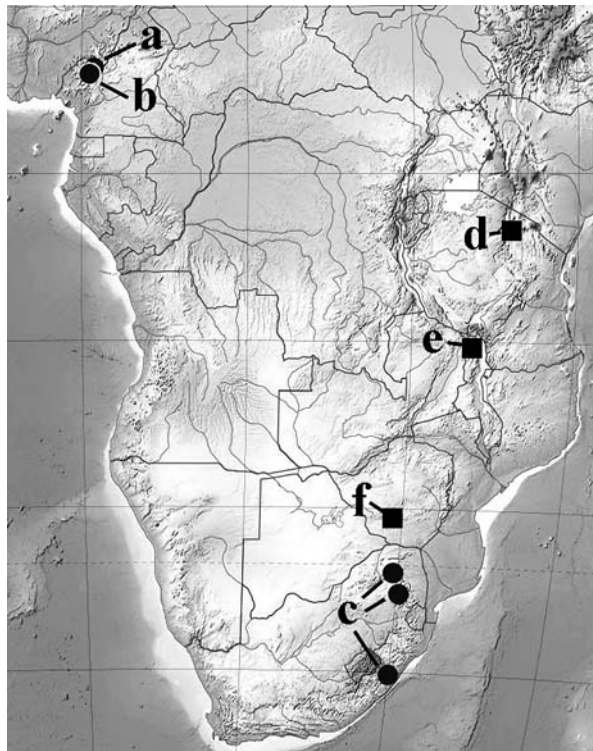


Fig. 14. Distribution of species of the groups "montanus" (squares) and "cyaneus" (circles).

a - *S. ater*, b - *S. maculatus*, c - *S. cyaneus*, d - *S. leleupi*, e - *S. montanus* sp. n., f - *S. basilewskyi* sp. n.

Рис. 14. Карта распространения видов групп "montanus" (квадраты) и "cyaneus" (круги).

a - *S. ater*, b - *S. maculatus*, c - *S. cyaneus*, d - *S. leleupi*, e - *S. montanus* sp. n., f - *S. basilewskyi* sp. n.

mesosternum and metasternum smooth.

Aedeagus - fig. 10. Aedeagal median shaft slightly arcuate between basal bulb and elongate, with narrow apex. Internal sac without spines.

Etymology. The specific name "montanus" means pertaining to mountains and refers to the common occurrence of the species in mountainous areas.

Distribution. Malawi (fig. 14e).

Singilis basilewskyi sp. n.

Material. Holotype: ♂, "Hope Fountain, S. Rhodesia", "Coll. Mus. Tervuren" (MRAC). Paratypes: 1♂, 2♀, same locality and date (MRAC).

Diagnosis. This new species is most similar to *S. leleupi*, shares with *S. leleupi* body size, shape and coloration of elytra. The two species can be diagnosed easily by the colour of pronotum, completely red in *S. basilewskyi* sp. n., black with yellow narrow lateral margin in *S. leleupi*.

Description. Length 4.8–5.2 mm. Red-brown with apical half of elytra black; anterior margin of the dark area blur wavy and perpendicular to suture (Color plate 2: fig. 5).

Head deeply and irregularly punctate, punctures sometimes almost confluent in frontal depressions, separated by 1–2 their diameters, towards the base of head, by 3–4 diameters, on the frons smooth. Microsculpture almost isodiametric. Clypeus smooth. Eyes large and bulging. Temples short, smooth. Scape with long subapical seta and several small setae; pedicel and antennomere III with one apical bands of setae. Antennae pubescent from the basal third of antennomere IV.

Pronotum 1.3 times as wide as head, 1.43 times as wide as long, widest near the middle. Anterior margin straight, anterior

angles effaced, sides broadly and regularly rounded, slightly sinuate at base, posterior angles rectangular. Disc with confused and coarse punctation, wavy rugose. Lateral margins narrowly explanate from anterior angle to lateral setae, then strongly widened basally, broad and flat at base. Basal grooves small, round. Microsculpture slightly transverse.

Elytra subovate, 1.42 times as long as wide, with irregular polygonal microsculpture. Elytral apices truncate, weakly obliquely sinuate, rounded at suture. Striae deep and slightly punctate. Outer intervals slightly convex.

Legs red-brown. Tarsomere V with 3 pairs of ventral setae. Claws with 4 long teeth. Abdominal sterna black, smooth, shiny, with few sparse setae throughout. Propleuron strongly wavy rugose. Prosternum, mesepisternum, mesosternum and metasternum smooth.

Aedeagus - fig. 11. Aedeagal median shaft slightly arcuate between basal bulb and elongate, narrow apex with tightly rounded tip. Internal sac without spines.

Stylomere - fig. 13.

Etymology. The species is named after Pierre Basilewsky who studied African carabid fauna for many years.

Distribution. Zimbabwe (fig. 14f).

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