

Three new *Leiodes* Latreille, 1796 (Coleoptera: Leiodidae) from the African realm

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Abstract. *Leiodes kocianorum* sp. nov. from Madeira Island, *L. meridionalis* and *L. extraordinaria* spp. nov. from the Republic of South Africa are described and distinguished from all similar species. A key separating the South African *Leiodes* Latreille, 1796 species from the similar South African *Afroleiodes* Peck, 2003 is provided. The occurrence of the genus *Leiodes* Latreille, 1796 is recorded from the Portuguese island Madeira for the first time.

INTRODUCTION

The African continent and the adjacent islands, except the North Palaearctic continental part, are extraordinarily poorly known regarding the *Leiodes* Latreille, 1796 fauna and closely resembling fauna. No *Leiodes* has been recorded in Madeira Island up to now. As for sub-Saharan Africa only three similar species have been recorded so far in this vast region - one of the genus *Leiodes* and two of the genus *Afroleiodes* Peck, 2003.

The Sub-Saharan Leiodini were studied mainly by Daffner (1987), Hlisnikovský (1974), Peck (2003) and Švec (2008a). The first Sub-Saharan species formerly placed in the genus (*Leiodes africana* Hlisnikovský, 1974) was transferred by Peck (2003) to the genus *Hypoleiodes* Portevin, 1908. Peck (2003) described the genus *Afroleiodes* together with two new species from Southern Africa. The taxon *Afroleiodes* is closely related or at least very similar to the genus *Leiodes* (Švec 2008b). Beside the morphological features typical for the tribe Leiodini, both genera share a five-segmented antennal club with a smaller antennomere VIII, an oblique mesoventrite with a distinct longitudinal carina and with the apical thorns of the anterior tibiae shorter than tarsomeres I+II together. The most conspicuous difference between *Afroleiodes* and *Leiodes* can be found in the shape and in the surface sculptures of the head and pronotum. More details are provided below.

Leiodes zimbabwensis Švec, 2008 is the only known species of the genus occurring in the Sub-Saharan Region up to now. The aedeagus in *L. zimbabwensis* has quite unusual features for *Leiodes* closely resembling that in *Afroleiodes* or in most of *Zeadolopus* Broun, 1903. Also one of the species described in the present paper - *L. meridionalis* sp. nov. possesses the same type of the aedeagus having median lobe opened apically.

MATERIAL AND METHODS

This paper is based both on material collected in Madeira (Portugal) by Matúš Kocian (Praha) and in the Republic of South Africa.

Abbreviations of body parts and measurements:

AI–AXI	antennomeres II–XI;
TI–TV	tarsomeres I–V;
L	length;
W	width;
L/W or W/L	ratio between measurements;
R.S.A.	The Republic of South Africa;
NMPC	Collection of the National Museum, Praha, Czech Republic;
ZSPC	Zdeněk Švec, private collection, Praha, Czech Republic.

Terminology:

endophallus = sclerites or other structures inside median lobe detectable in transmitted light;

mesoventral carina = longitudinal carina located centrally on mesoventrite; the classification in *Leiodes* follows that in Švec (2008b);

punctured stria = longitudinal row of punctures on elytra, deepened or not;

median lobe = median lobe of aedeagus.

The examined material has been compared with the types and other leiodid material deposited in ZSPC and in NMPC.

Collecting data cited in quotation marks are taken from the locality labels accompanying the examined examples. The holotypes and the paratypes are indicated by a red label bearing the status of the specimen (holotypus or paratypus respectively), the name of the species, name of the author and the year of the designation (2026). The red label is attached to the same pin as the relevant specimen. The holotype labels are initialled by the author.

The specimens had been relaxed in 4% acetic acid first, then rinsed in water and if appropriate dissected in a drop of water. The male genitalia were mounted in Dimethyl formaldehyde pyrrolidine on a transparent label added to the same pin as the dissected specimen.

The description is based on the holotype. Variability is mentioned in the paragraph “Variation” and includes features exhibited by the paratypes. Also the important characters of the sexual dimorphism are included in the mentioned paragraph.

The measurements of the total body length were taken from all specimens examined. Specific measurements of the individual body parts were taken from the holotype only except of the data about the variation. The measurements of morphologic body parts were measured to the first decimal place of millimetre, the measurements of the genitalia were measured to the second decimal place of millimetre.

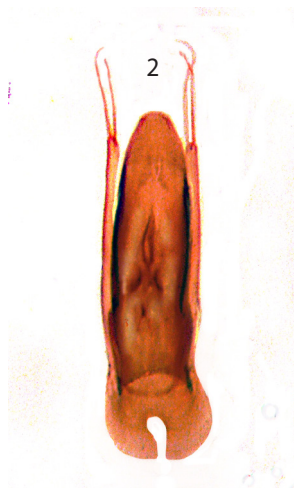
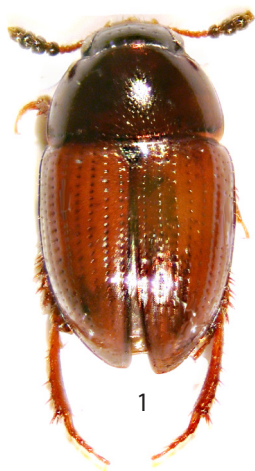
The material, mentioned in the present paper, has been deposited in ZSPC.

TAXONOMY

Leiodes kocianorum sp. nov.

(Figs. 1–2)

Type material. Holotype (♂): “PORTUGAL - MADEIRA, Fonte da Pedra, 900 m, sifting in laurel forest, 32.8293989 N, 17.1939607 W, 26.II.2026, M. Kocian lgt.” (ZSPC). Paratypes (3 ♀♀): the same data, (ZSPC).



Figs. 1-2. *Leiodes kocianorum* sp. nov. 1- body, dorsal view; 2- aedeagus, dorsal view.

Description. Length 2.3 mm. Length of body parts: head 0.2 mm, pronotum 0.7 mm, elytra 1.4 mm, antenna 0.6 mm, aedeagus 0.61 mm. Maximum width of body parts: head 0.6 mm, pronotum 1.1 mm far before posterior angles, elytra 1.3 mm just behind humeri. Dorsum without transverse strigosites or micro-sculpture except for puncturation. Oblong oval (Fig. 1), head black, pronotum brownish-black with lighter margins, scutellum dark brown, elytra, mouth, legs and AII-AVI very light chestnut, AVII-AXI black. Venter yellowish-brown, mesoventral carina darker.

Head. Dorsal surface with punctures separated predominantly by 2-3 times their own diameters. Vertex with 4 large punctures. Last antennomere a little longer than wide, distinctly narrower than previous one. AVIII very short. Ratio of length of antennomeres AII-AXI (AII=1.0): 1.0-1.4-0.9-0.9-0.9-1.3-0.3-1.7-1.6-2.3. Ratio of width of antennomeres AII-AXI (AII=1.0): 1.0-1.0-1.0-1.2-1.3-2.2-1.7-2.8-2.8-2.3. W/L AII-AXI: 0.9-0.6-1.0-1.2-1.3-1.4-5.0-1.4-1.5-0.9.

Pronotum. Widest far before posterior angles. Sides flatly, roundly tapered toward anterior and roundly to posterior angles in dorsal view; flatly rounded in lateral view. Posterior angles rectangular, closely rounded in dorsal view; obtuse, broadly rounded in lateral view. Base feebly emarginate before posterior angles. Puncturation irregular, punctures sparser than those on head, separated by about 4-6 times their diameter. Lateral margins with several erect light setae.

Elytra. With nine distinct densely punctured striae. Stria IX short, oblique, distant from lateral margin by about 2 times its punctures diameter, joining lateral channel at anterior quarter of elytral length. Punctured striae well developed, punctures separated predominantly by about two times their own diameter. Interval punctures fine and small, separated by about 4-6 times their diameters. Several large punctures as large as those in striae located in each odd interval. Sutural stria deepened all along its length, reaching approximately anterior third of elytral length continuing as row of punctures. Lateral channel narrow, without larger punctures or foveae. Elytral margins with few erect setae. Epipleura without setae.

Legs. Anterior tibiae slim. Inner terminal thorn of anterior tibia straight with simple tip, longer than lateral one. Anterior tarsomeres TI-TIV very feebly widened with inconspicuous setae. Meso- and meta-tibiae slim, meta-tibiae simply, feebly bent. Hind margin of meta-femur with blunt triangular tooth on both dorsal and ventral side of apex. TI-TIII of hind tarsi conically widened apically.

Mesoventrite. Longitudinal carina of type A.

Membranous wings developed.

Genitalia. Aedeagus as in Fig. 2. Paramera bisetose.

Variation. Length of body varies in the type series between 2.2-2.9 mm. Female tarsomeres slim, hind tibiae almost straight. Head and pronotum brown, elytra yellowish in one of the paratypes.

Etymology. The new species is dedicated to the family of my entomological friend Matúš Kocian (Czech Republic, Prague), well known specialist in Staphylinidae.

Differential diagnosis. *Leiodes kocianorum* sp. nov. is most similar to *L. calcarata* (Erichson, 1845) in its body size and morphological characters and also in the shape of the aedeagus. The shape of the body is oval in both compared species, the antennal club is dark brown to black, last antennomere distinctly narrower than the previous one, the head possesses four punctures at vertex distinctly larger than other head punctures, pronotum is broadest before base, thus pronotum is narrowed toward base and also toward anterior angles. Both species possess also emarginate pronotal base before hind angles, elytra with regularly developed punctured striae, lacking transverse wrinkles. Both species significantly differ by the paramerae - while paramerae in *L. calcarata* are multisetose, the same are bisetose in *L. kocianorum*. Also the shape of the endophallus differs in both species.

Remark. The occurrence of any *Leiodes* was previously unknown Madeira Island (Perreau 2015), so this genus is recorded for this part of Portugal for the first time in this description.

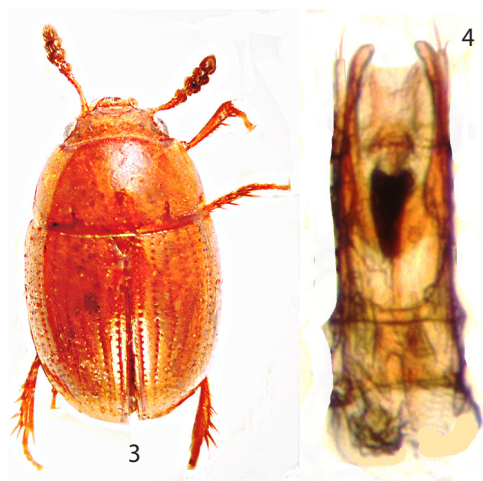
***Leiodes meridionalis* sp. nov.**

(Figs 3, 4)

Type material. Holotype (♂): "RSA, Western Cape, Ruiterbos NR borders, 33.897 S, 22.022 E, ca 700 m, 17. Nov. 2017", (ZSPC).

Description. Length 1.7 mm. Length of body parts: head 0.2 mm, pronotum 0.4 mm, elytra 1.1 mm, antenna 0.5 mm, aedeagus 0.45 mm. Maximum width of body parts: head 0.6 mm, pronotum 0.9 mm at posterior angles, elytra 1.1 mm at basal third. Dorsum without transverse strigosities or micro-sculpture except for puncturation. Oval (Fig. 3), dorsum, legs and antennomeres AI-AVI yellowish-red, AVII-AXI infusate. Venter yellowish-brown, mesoventral carina darker.

Head. Dorsal surface with punctures separated predominantly by 2-6 times their diameter. Vertex with 4 large punctures. One large puncture at medial side of eyes. Last



Figs. 3-4. *Leiodes meridionalis* sp. nov. 3- body, dorsal view; 4- aedeagus, dorsal view.

antennomere as wide as long, distinctly narrower than previous one. AVIII short. Ratio of length of antennomeres AII-AXI (AII=1.0): 1.0-1.1-0.9-0.6-0.6-0.9-0.4-1.4-1.1-2.0. Ratio of width of antennomeres AII-AXI (AII=1.0): 1.0-0.8-0.8-0.8-1.0-2.0-1.6-2.8-3.0-2.6. W/L AII-AXI: 0.7-0.5-0.7-1.0-1.3-1.7-2.7-1.4-1.9-1.0.

Pronotum. Widest at posterior angles. Sides taper straight towards half of pronotal length, then flatly rounded to anterior pronotal angles in dorsal view; flatly rounded in lateral view. Base obliquely, roundly angled toward posterior angles in dorsal view; obtuse, broadly rounded in lateral view. Punctuation fine, punctures separated by about 4-6 times their diameter. A few large punctures lined up before basal margin.

Elytra. With nine distinct densely punctured striae. Stria IX parallel, short, distant from lateral margin by about 5 times puncture diameter terminating at basal third of elytral length not continuing caudally. Punctured striae well developed, punctures separated predominantly by about their own diameter longitudinally. Strial punctuation becoming sparser anteriorly, punctures separated by about 2 times their diameter near elytral base. Interval punctures fine and small similar to those on pronotum, separated by about 4-8 times their diameter. Several large punctures as large as those in striae located in each odd interval. Sutural stria deepened all along its length, confined to posterior third of elytral length continuing as row of punctures anteriorly. Lateral channel without larger punctures or foveae. Neither lateral margin nor epipleura setose.

Legs. Anterior tibiae slim, almost straight. Inner terminal thorn of anterior tibia straight with simple tip, longer than lateral one. Anterior tarsomeres TI-TIV feebly widened bearing inconspicuous setae ventrally. Mid-tibiae lightly simply curved, gradually broadened toward apex. Longest terminal spine longer than TI. Hind margin of meta-femur with inconspicuous lobe apically. Hind tibia slim, similar to anterior ones, feebly simply curved. TI-III of hind tarsi subparallel.

Mesoventrite. High longitudinal carina of type δ .

Membranous wings developed.

Genitalia. Aedeagus of similar shape as it is usual in most *Zeadolopus* Broun, 1903 - apically opened with swollen lateral margins (Fig. 4). Paramera bisetose.

Etymology. The new species is named according to the part of Africa where it was discovered, as the Latin adjective *meridionalis* means southern.

Differential diagnosis. *Leiodes meridionalis* sp. nov. is most similar to *L. extraordinaria* sp. nov. in its small body, in the last antennomere being distinctly narrower than the previous one, in the head possessing four large punctures at the vertex, in the pronotum being broadest at the posterior angles and in the elytra possessing regularly developed punctured striae lacking transverse wrinkles. Both species differ significantly by the shape of the median lobe. While the median lobe is stout, broad and apically opened in *L. meridionalis*, the median lobe is slim, long and apically deeply split in *L. extraordinaria*.

***Leiodes extraordinaria* sp. nov.**

(Figs. 5-7)

Type material. Holotype (♂): "RSA Eastern Cape, Pirie, nr. creek, 32.729 S, 27.249 E, 20. Jan. 2016", (ZSPC).

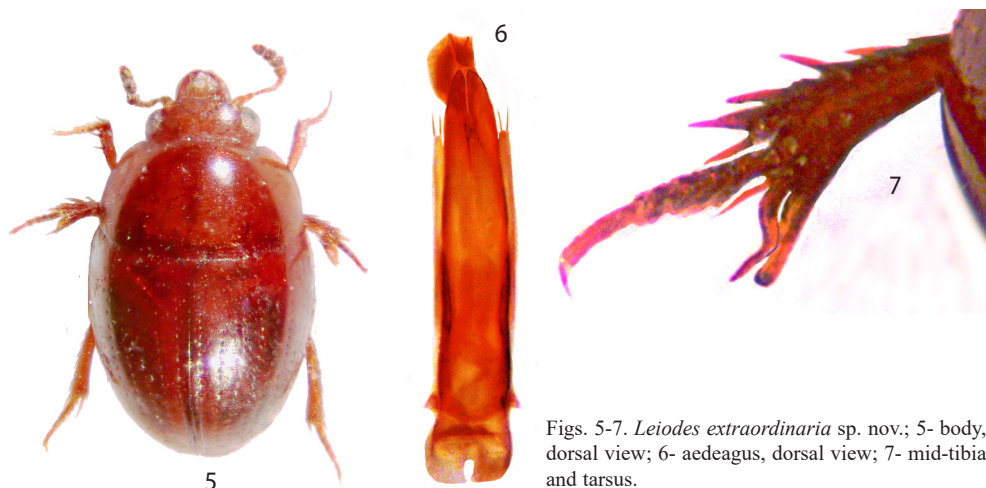
Description. Length 2.1 mm. Length of body parts: head 0.3 mm, pronotum 0.6 mm, elytra 1.2 mm, antenna 0.6 mm, aedeagus 0.67 mm. Maximum width of body parts: head 0.6 mm, pronotum 1.1 mm at posterior angles, elytra 1.2 mm at basal third. Dorsum without transverse strigosites or micro-sculpture except for puncturation. Oval (Fig. 5), dorsum, legs and antennomeres AI-AX chestnut, AXI infusate. Venter reddish-brown, mesoventral carina darker.

Head. Dorsal surface with punctures separated predominantly by 2-4 times their diameter. Vertex with 4 large punctures. Last antennomere narrower than previous one. AVIII short and wide. Ratio of length of antennomeres AII-AXI (AII=1.0): 1.0-1.1-0.6-0.7-0.7-1.0-0.3-1.1-1.1-1.9. Ratio of width of antennomeres AII-AXI (AII=1.0): 1.0-1.0-1.3-1.3-1.3-2.8-2.0-3.8-3.5-3.3. W/L AII-AXI: 0.6-0.6-0.8-1.0-1.0-1.6-4.0-1.9-1.8-1.0.

Pronotum. Widest at posterior angles. Sides straight, tapering towards half of pronotal length, then flatly rounded to anterior angles in dorsal view; flatly rounded in lateral view. Base obliquely, roundly angled toward posterior angles in dorsal view; obtuse, broadly rounded in lateral view. Puncturation fine, finer than that on head, punctures separated by about 2-4 times their own diameter. A few large punctures lined up before basal margin.

Elytra. With nine punctured striae. Stria IX very short, parallel, distant from lateral margin by about 5 times puncture diameter terminating at basal fourth of elytral length, not continuing caudally. Punctured striae well developed, punctures separated predominantly by about their own diameter longitudinally. Strial puncturation becoming sparser anteriorly, punctures separated by about 4 times or more their diameter near elytral base. Interval punctures fine and small similar to those on pronotum, separated by about 4-8 times their diameters. Several large punctures as large as those in striae located in each odd interval. Sutural stria deepened all along its length, reaching approximately posterior third of elytral length continuing as row of punctures anteriorly. Lateral channel without larger punctures or foveae. Neither lateral margin nor epipleura setose.

Legs. Anterior tibiae slim, almost straight. Inner terminal thorn of anterior tibia very feebly bent with simple tip, longer than lateral one. Anterior tarsomeres TI-TIV feebly



Figs. 5-7. *Leiodes extraordinaria* sp. nov.; 5- body, dorsal view; 6- aedeagus, dorsal view; 7- mid-tibia and tarsus.

widened bearing inconspicuous setae ventrally. Mid-tibiae strongly gradually broadened distally, bearing two closely adjacent spines at apex - one straight, second one S-shaped (Fig. 7). Both spines longer than TI+TII. Hind margin of meta-femur with inconspicuous lobe apically. Hind tibia slim, similar to anterior ones, feebly simply curved. TI-TIII of hind tarsi subparallel.

Mesoventrite. High longitudinal carina of type β .

Membranous wings developed.

Genitalia. Aedeagus slim, median lobe deeply split apically (Fig. 6). Paramera bisetose.

Etymology. The new species is named for the extraordinary widened mid-tibiae bearing two unusually shaped terminal spines, The Latin adjective *extraordinarius* means extraordinary.

Differential diagnosis. *Leiodes extraordinaria* sp. nov. is most similar to *L. meridionalis* sp. nov. in its small body, the last antennomere narrower than the previous one, in the head possessing four large punctures at the vertex, in the pronotum being broadest at the posterior angles and the high mesoventral carina. Both species also possess the pronotal base angled toward hind angles and the elytra with regularly developed punctured striae, lacking transverse wrinkles.

Both species differ significantly by the shape of the median lobe. While the median lobe is stout, broad, and apically opened as is usual in many *Zeadolopus* Broun, 1903 species in *L. meridionalis*, the median lobe is slim, long and deeply split apically in *L. extraordinaria*.

KEY TO THE IDENTIFICATION OF THE SOUTH AFRICAN *LEIODES* LATREILLE, 1796 SPECIES

- 1 Head and pronotum without any conspicuous structure, only punctured. Hind tibiae of usual width.....2
- Head and pronotum with conspicuous deep transversal punctures. Posterior tibiae conspicuously widened. Two species from S. Africa.....*Afroleiodes* Peck, 2003

- 2(1) Mesoventral carina of type δ or β3
 - Mesoventral carina of type A. Median lobe elongate, poorly sclerotized, similar to that in most of *Zeadolopus* Broun, 1903 species. Paramera distinctly shorter than median lobe. 2.1-2.6 mm. Zimbabwe. *Leiodes zimbabwensis* Švec, 2008
 3(2) Mesoventral carina of type β . Aedeagus slim with two-cleft apex of median lobe. Paramera distinctly shorter than median lobe. 2.1 mm. R.S.A. *Leiodes extraordinaria* sp. nov.
 - Mesoventral carina of type δ . Aedeagus stout with aedeagus opened anteriorly. Paramera almost as long as median lobe. 1.7 mm. R.S.A. *Leiodes meridionalis* sp. nov.

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