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A new species and genus of the tribe Aphodiini (Coleoptera: Scarabaeoidea) from East Africa

Nový druh a rod tribu Aphodiini (Coleoptera: Scarabaeoidea) z východní Afriky

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Taxonomy, new genus, new species, Coleoptera, Aphodiidae, Aphodini, Afrotropical region, Kenya

Abstract. A new genus, *Australagolius* gen. n., is established for a considerably aberrant new species, *Australagolius sauerovae* sp. n. The combination of characters, above all the small head, large eyes, convex body and robust terminal spur of the protibia, is unique in the Aphodiinae of the Afrotropical region.

INTRODUCTION

A satisfactory division of the large genus *Aphodius* Illiger, 1798 into new genera is a long-standing taxonomic problem. In addition, new species are being found, for which the combination of characters makes their inclusion into existing genera either impossible or only formal. The characters employed are frequently based on 90-year old works and a new concept is hardly attainable in the near future. Certain possibilities were indicated by Dellacasa et al. (2001), but their treatment of many genera remains problematic. For example, the genus *Pharaphodius* Reitter, 1892 is no longer consistently defined and criteria for including particular species into it unclear. More recently Gordon & Skelley (2007), who dealt with North American Aphodiinae, established 20 new genera, based on species formerly placed into the genus *Aphodius* and mostly endemic to the region. Before their publication, the traditionally used genera or subgenera were usually not subdivided and new genus-group taxa were only established for species whose classification was otherwise impossible.

Large genera occur also in the Afrotropical region, sometimes with additional representatives in other regions (e.g., *Blackburneus* Schmidt, 1913, *Pharaphodius* Reitter, 1892 and *Trichaphodius* Schmidt, 1913). Their future division into more compact groups based on the study of extensive material will definitely be an enormous task, but limited preliminary work can be carried out even today.

I have recently received several specimens that clearly represent an undescribed species and cannot be accommodated into any of the present genera. I therefore propose to establish a new genus for this species. At first sight, the new genus superficially resembles the genus *Neagolius* W. Koshantschikov, 1912, but differs considerably in the size of the eyes. In the Afrotropical region, species with large eyes occur chiefly in the genera *Blackburneus* Schmidt, 1913 and *Doaphius* Balthasar, 1941, but both genera possess a normally sized head. The new genus also shares a simple and slender aedeagus with the genus *Doaphius*, but a whole range of other characters is quite different from all the genera mentioned above.

MATERIAL AND METODS

Measurements were made with an ocular micrometer on an Arsenal ZZP 1120-T stereomicroscope at 10x and 20x maginification and on Meopta microscope with 80x and 160x magnification.

TAXONOMIC PART

Australagolius gen. n.

Type species. *Australagolius sauerovae* sp. n.

Description. Small, convex, shining, mostly black, upper surface glabrous.

Head small, flat, eyes strikingly large. Clypeus semicircular, slightly emarginate, with broadly rounded anterior angles. Genae obtusely rounded, with few setae, considerably more prominent than eyes. Frontal suture fine, with slightly prominent central protuberation; clypeogenal sutures distinct. Punctation fine, denser at anterior margin and sparser medially.

Pronotum strongly convex, narrowed anteriorly, with broadly rounded anterior angles and slightly truncate, not emarginate posterior angles. Pronotum with basal marginal line absent. Pronotal surface with double, sparse, anteriorly slightly denser punctation. Scutellum small, triangular.

Elytra without humeral teeth. Elytral striae narrow, widened apically, punctate; the punctures incising elytral intervals. Elytral intervals slightly convex, finely and sparsely punctate; lateral intervals rather more convex than medial ones. Striae 1 to 5 extended to elytral base, striae 6 and 7 slightly reduced anteriorly, stria 8 strongly reduced anteriorly, stria 9 bent laterally before humeral callus and fused with stria 10.

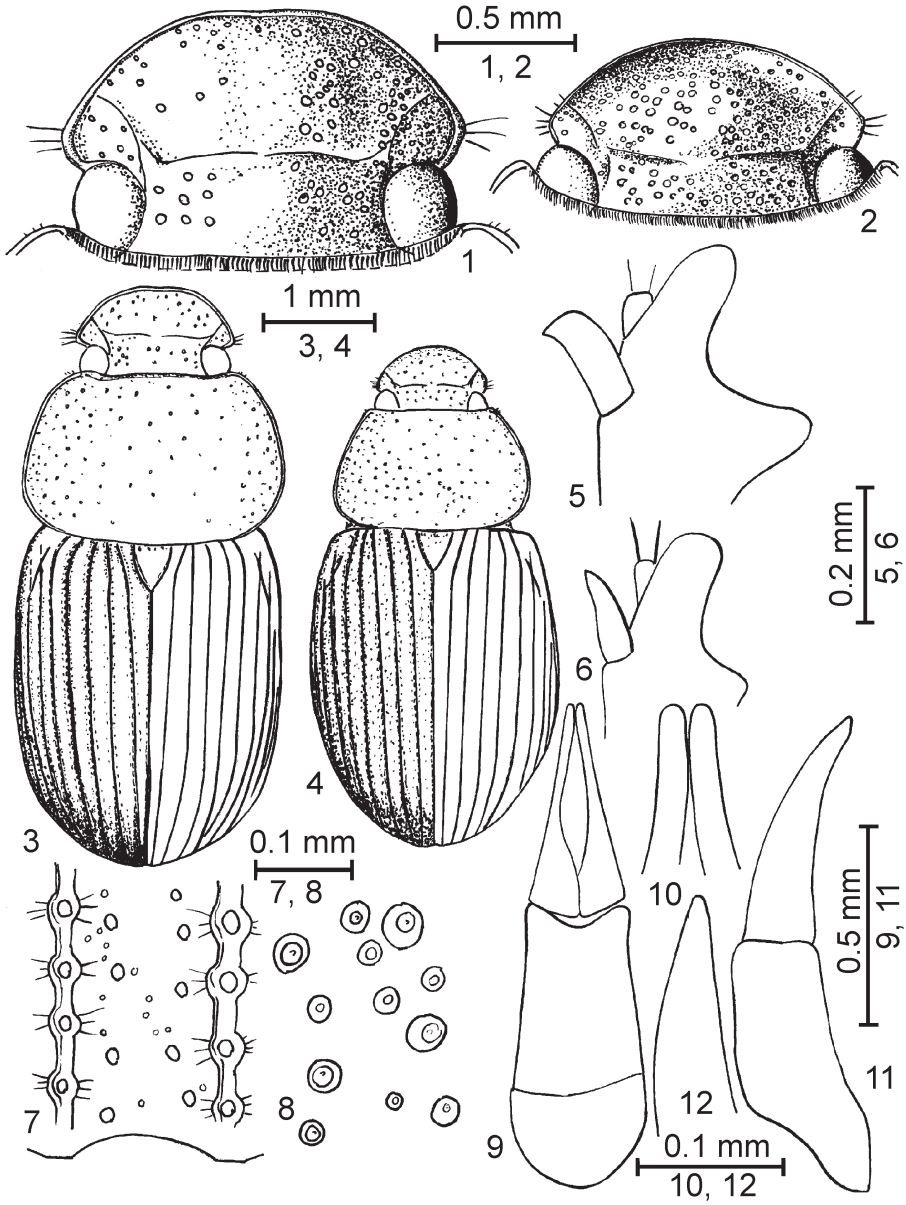
Protibiae with three acute teeth and two to three small, obtuse denticles; terminal spur, in males, robust, flattened, truncate apically. Meso- and metatibiae with two strong oblique ridges each. Apical setae not numerous, strong, of unequal lengths. Upper terminal spur of metatibia longer than basimetatarsite; basimetatarsite as long as next two metatarsites combined.

Abdominal sternites densely setose. Metasternal plate bright, medially bare, with longitudinal furrow.

Epipharynx not modified, as usual with coprophagous Aphodiini.

Aedeagus with slender, long parameres.

Differential diagnosis. When attempting to identify the genus according to the key to genera by Dellacasa et al. (2001), one arrives at the genus *Agolius* Mulsant et Rey, 1870 (thesis 150'). The key in Schmidt (1922) also leads to *Agolius*. In the key to Central African genera and species by Endrödi (1964), the genus considered here keys out to thesis 55(54) and to the genus *Blackburneus* A. Schmidt, 1913, but is actually completely unrelated to that genus. The new genus exerts some characters that may be adaptations and which occur also in other unrelated genera, such as large eyes (occurring, e.g., in *Doaphius* Balthasar, 1941), long and slender aedeagus (occurring, e. g., in *Brachiaphodius* W. Koshantschikov, 1913) and sharp teeth of protibiae (occurring, e. g., in *Nimbus* Mulsant et Rey, 1870). The new genus described here differs from the genus *Agolius* by the large eyes, the distance between eyes being less than four times the eye width in the new genus and 7–8 times the eye width in *Agolius*. The elytral striae are extended to the apical margin of the elytra as in *Pharaphodius*, although striae 4 and 5 are sometimes fused together before the margin, the elytral intervals are never keel-shaped, and the striae never considerably deeper apically.



Figs 1–12. *Australagolius sauerovae* sp. n.: 1, 2 – head, dorsal view, male and female, respectively; 3, 4 – habitus, male and female, respectively; 5, 6 – apical spur of protibia, perpendicular view, male and female, respectively; 7 – punctures of elytra; 8 – punctures of median part of pronotum; 9, 11 – aedaegus, dorsal and lateral view, respectively; 10, 12 – apex of aedaegus, dorsal and lateral view, respectively.

Obr. 1–12. *Australagolius sauerovae* sp. n.: 1, 2 – hlava samce a samice, pohled svrchu; 3, 4 – celkový pohled svrchu, samec, samice; 5, 6 – kolmý pohled na přední terminální trn samce a samice; 7, 8 – tečkování krovek a střední části štítu; 9, 11 – aedaegus, pohled svrchu a zboku; 10, 12 – špička aedaegu, pohled svrchu a zboku.

Key to genera (modified from Dellacasa et al. 2001):

150 (149) – Upper side elongatelly densely pubescent, sometimes more finely pubescent in females; pubescence recumbent; hind angles of pronotum distinct, obtusely rounded (Dellacasa et al. 2001: fig. 250). Blackish; sides of pronotum and elytra yellowish, elytra with several cloudy blackish spots. Body length 3.5-9 mm. Palaearctic region. ..... *Aphodaulacus* (partim: *nigrotessellatus* group)

150' – Upper side nearly glabrous; sometimes elytra only laterally and apically faintly pubescent (fig. 258). .... 150 A

150 A – Eyes large, distance between eyes less than four times the eye width. Upper side glabrous. Afrotropical region. ..... *Australagolius* gen. n.

150 A' – Eyes small, distance between eyes at least six times the eye width. Upper side nearly glabrous; sometimes elytra only laterally and apically faintly pubescent (Dellacasa et al. 2001: fig. 258). Piceous blackish; elytra brownish or yellowish with or without blackish spots. Body length 5-10 mm. Western Palaearctic region (mountain ranges). ..... *Agolius*

Name derivation. Based on a combination of *australis* = southern and *Agolius* (the genus resembles *Agolius* by its small head, but *Agolius* occurs in the northern hemisphere).

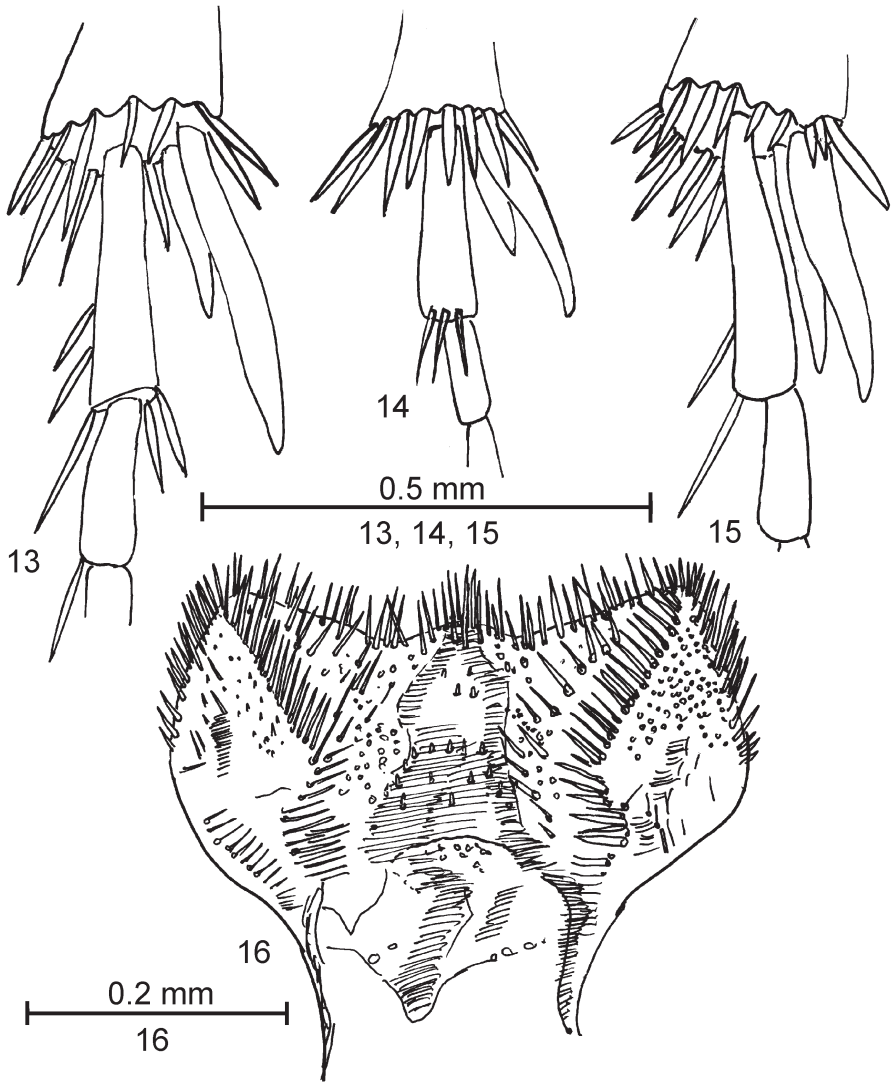
***Australagolius sauerovae* sp. n.**
(Figs 1-6)

Type material. Holotype (male): KENYA mer., VOI, 23.11.1997, Lgt. M Snížek [printed]. Allotype (female): KENYA EASTERN, E 729, SOSOMA, 202 km of THIKA, 20.11.2007, Lgt. M. Snížek. Paratype No. 1 (male) KENYA mer., VOI, 23.11.1997, Lgt. M Snížek [printed], paratype No. 2 (male) KENYA EASTERN, E 729, SOSOMA, 202 km of THIKA, 20.11.2007, Lgt. M. Snížek. The holotype and paratype specimens are provided with the following label: "*Australagolius sauerovae* sp. n. HOLOTYPUS [or ALLOTYPUS or PARATYPUS, respectively], L. Mencl det. 2008. [red label, printed]". Holotype, allotype and paratype No. 2 and are deposited in the author's collection. Paratype No. 1 is deposited in the collection of Miloslav Rakovič (Dobřichovice, Czech Republic).

Description. Body small and convex, shining. Colouration black; head in front of eyes, narrow anterior pronotal margin, wide lateral pronotal margins, narrow lateral elytral margins and legs reddish brown.

Male: Clypeus semicircular, moderately truncate and slightly emarginate anteriorly, broadly rounded on each side of the emargination; genae obtusely rounded and with long setae, considerably more prominent than eyes; clypeal margin bare, with narrow marginal line, genae with wider marginal line. Frontal suture fine, with slightly prominent central protuberance. Punctation sparse to very sparse, consisting of larger punctures intermixed with smaller ones, denser at anterior margin; larger punctures absent on area surrounding frontal protuberance. Surface almost impunctate behind middle of eyes. Genae with individual small punctures at margins. Antennae whitish yellow. Eyes large, distance between eyes 3.5 times eye width.

Pronotum strongly convex, narrowed anteriorly, anterior angles broadly rounded, posterior ones slightly truncate, not emarginate, with marginal lines. Pronotum widest at basal third. Pronotal length to width ratio 1 : 1.4. Pronotum without anterior marginal line but with lateral marginal lines; basal marginal line extended to elytral stria 6, lacking medially. Pronotal surface with double, sparse, anteriorly rather denser punctation. Large punctures of about 0.025 mm in diameter; distance between punctures on disk at least three times as large as



Figs 13–16. *Australagolius sauerovae* sp. n.: 13, 14 – apex of left mesotibia, dorsal view, male and female, respectively; 15 – apex of left male metatibia, dorsal view; 16 – epipharynx, ventral view.
Figs 13–16. *Australagolius sauerovae* sp. n.: 13, 14 – konec levé střední holeně samce a samice, pohled svrchu; 15 – konec levé zadní holeně, pohled svrchu; 16 – epipharynx, ventrální pohled.

their diameter. Punctures in areas of anterior corners denser, distances between them as large as their diameters. Smaller punctures of about 0.006 mm in diameter, more numerous than larger ones. Scutellum small, triangular, with few punctures at base.

Elytra without humeral teeth, short, only 1.2 times as long from base of scutellum to elytral apex as their combined width, broadest in posterior third and almost straight and narrowed

towards base. Striae narrow, wider at apex, punctate, punctures incising intervals. Intervals weakly convex, more so on sides, with fine, sparse, irregularly scattered punctures; punctation arranged more regularly, nearly in two rows, in apical third. Apex of elytra with very short erect seta in each puncture (under magnification 60x). Only striae 1–3 extended separately onto elytral apex, with stria 4 combined with stria 5 and stria 6 combined with stria 7 before elytral apex (holotypus), or striae 1–5 extended independently onto elytral apex (Paratypes 1 and 2). Striae 1–5 extended to elytral base, striae 6 and 7 slightly reduced anteriorly, stria 8 strongly reduced anteriorly, stria 9 bent laterally before humeral callus and fused with stria 10. Humeral callus with short oblique stria.

Anterior tibiae with three acute teeth and two to three small, obtuse teeth; terminal spur robust (Fig. 5), flattened, truncate apically. Meso- and metatibiae with two strong oblique ridges each. Mesotarsi longer than mesotibiae; their upper terminal spur longer than basimesotarsite (Fig. 13). Apical setae (Fig. 15) not numerous, strong, of unequal lengths. Upper terminal spur of metatibia longer than basimetatarsite; basimetatarsite as long as next two tarsites combined. Ratios of lengths of protarsites 1–5 equal to 0.5 : 0.9 : 0.8 : 0.7 : 1.9; claw 0.9. Ratios of lengths of metatarsites 1–5 (in the same relative units as protarsites) equal to 2 : 1 : 1 : 0.9 : 1.8; claw 0.8.

Abdominal sternites densely setose. Metasternal plate distinctly impressed, punctured, medially bare, with a longitudinal furrow.

Epipharynx (Fig. 16) not modified, as usual with coprophagous Aphodiini. Spiculae at apex of corypha not stronger than spiculae at acropariae.

Aedeagus (Figs 9–12) with slender, long parameres.

Sexual dimorphism: considerably pronounced, with female characterized by stronger punctation, less convex head with lower protuberation and different shape of protibial terminal spurs. The description below contains characters by which female differs from male.

Clypeus semicircular; genae more rounded, distinctly pronounced, but not extending beyond eye margins. Clypeal margin flat and moderately lifted upwards. Only traces of frontal suture and median protuberance present. Head punctation rather uniform throughout, without impunctate spots. Punctures separated by one to two diameters. Size of punctures between 0.008 to 0.032 mm, larger punctures present posteriorly.

Pronotum widest at posterior angles, rounded and narrowed forward. Anterior angles more acute but still rounded; posterior angles truncate and more rounded. Pronotal length to width ratio 1 : 1.5. Pronotal punctures coarser and denser; diameters of larger and smaller punctures equal to 0.04 mm and 0.01 mm, respectively; punctures denser laterally, distance between them equal to their diameter.

Elytra more elongate, 1.3 times as long as their combined width, widest at middle, narrowed towards base, evenly convex.

Anterior tibiae with three acute teeth and two to three small, obtuse denticles; terminal spur short and acute (Fig. 6). Terminal spurs of mesotibiae shorter and moderately bent apically; upper terminal spur shorter than basimesotarsite (Fig. 14). Tarsi as long as tibiae.

Metasternum flat, with few punctures and moderately impressed median furrow.

Body length 5.1 mm (holotype), 4.4 mm (allotype) and 4.4–4.6 mm (paratypes). Width 2.5 mm (holotype), 2.2 mm (allotype) and 2.0–2.2 mm (paratypes). Ratios of head width : pronotal width : elytral width equal to 0.57 : 0.92 : 1.0 (holotype and paratypes 1 and 2) and 0.5 : 0.8 : 1.0 (allotype).

Differential diagnosis. See the differential diagnosis for *Australagolius* gen. n.
Name derivation. The species is named in honour of my long-time friend, Mrs. Jindra Sauerová.

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SOUHRN

Austalagolius sauerovae sp. n. je zatím jediný zástupce nového rodu *Australagolius* gen. n. Velmi připomíná palaearktický rod *Agolius* Mulsant et Rey, 1870, případně *Neagolius* W. Koshantschikov, 1912, ovšem je to podobnost jen povrchní. Ostatně i zařazení podle klíčových znaků je formální. Skutečné místo nového rodu by bylo blíže rodu *Pharaphodius* Reitter, 1892, ale tento rod je nepochybně skupinou více rodů a lze očekávat jeho rozdělení (Dellacasa et al. 2001).