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Abstract. A new Iranian, probably pholeophilous species of the scarabaeine genus *Onthophagus* Latreille, 1802, *O. roessneri* n. sp., is described, illustrated, and its placement in the semicornis group within the subgenus *Palaeonthophagus* Zunino, 1979 is discussed. A key to the species of the group is presented.

Key Words. Scarabs, *Palaeonthophagus*, Middle East, pholeophily, dens, rodents.

Introduction

Following Ziani and Gudenzi (2006, 2007, 2009) and Ziani and Moradi Garakhloo (2010), this paper represents the fifth contribution to the knowledge of Palaearctic *Onthophagus* Latreille, 1802 associated with rodents and their burrows and nests. A new, probably pholeophile (*s.l.*) species from Iran is herein described and placed in the subgenus *Palaeonthophagus* Zunino, 1979 and in the semicornis group, as defined by Ziani and Gudenzi (2007).

Material and Methods

Terminology and study parameters follow Ziani and Gudenzi (2006) and Ziani (2011). Abbreviations of collections cited in this paper are as follows:

DFCS — Dirk Frenzel's private collection, Sonneberg (Germany)

NMEG — Naturkundemuseum Erfurt (Germany)

Onthophagus (*Palaeonthophagus*) *roessneri*, new species

Fig. 1–5

Type Locality. IRAN, Fars prov.: pass between Komehr and Ardakan, 2700/2800 m, 30°23'14"N; 51°58'35"E.

Type Series. Holotype ♂: IRAN, Fars prov.: pass between Komehr and Ardakan, 2700/2800 m, 30°23'14"N; 51°58'35"E, 24/25.iv.2014, W. Heinz leg. Allotype: IRAN, Isfahan, 10 km SW Quamsar, Kamoo, 2650 m, 33°39'37"N; 51°16'04"E, 12.v.2012, D. Frenzel leg.

Type Depositories. Holotype at NMEG, allotype at DFCS.

Type Labelling. Holotype bears three labels, as follows. 1st, white, printed in black "IR (Fars): Pass 27/2800 m / zw.Komehr u. Ardakan / Heinz leg. 24/25.IV.2014"; 2nd, yellow, printed in black "collection / NATURKUNDE- / MUSEUM ERFURT"; 3rd, red, printed in black "Holotype / *Onthophagus* (*Palaeonthophagus*) / *roessneri* mihi / S. Ziani, 2015".

Etymology. The new species is dedicated to Eckehard Rößner, specialist in Scarabaeoidea, who first recognized that the two specimens of the type series could belong to an undescribed species.

Description. Holotype. (Fig. 1). Male, length 6.1 mm, width 3.3 mm. Pronotum slightly shorter than elytra (length ratio = 0.83).

Black, upper side relatively shiny, but with a distinct isodiametric microreticulation; pubescence yellow to dark yellow or grey; antennal scape, pedicel and funicle dark yellow, antennal club dark grey.

Head short, clearly wider than long (width/length ratio = 1.70). Clypeus round on either side of median emargination, anterior angles broadly round, sides evenly arcuate with no sinuations, genae distinctly protruding from eyes. Clypeofrontal carina moderately elevate, bent posteriorly, edges in contact with clypeogenal sutures; occipital carina clearly wider at base than clypeofrontal carina, almost reaching lateral margins of head, sinuate at sides and slightly in middle. Clypeal surface with rather coarse, subconfluent, setigerous punctures; frontal surface doubly punctate, with large setigerous punctures widely spaced, more so anteriorly, separated from one to two times their diameters posteriorly; setae grey, long, thin, erect, only slightly thicker basally, gradually thinner apically.

Pronotum (Fig. 2) convex, declivous anteriorly, with anteromedian prominence and a weak but distinct anterolateral tubercle on either side; prominence slightly more projecting forward than anterolateral tubercles, more than twice wider than long. Anterior angles distinctly produced, sides sinuate behind them. Dorsal surface setigerously punctate, punctures simple or slightly umbilicate, broad, shiny, deep, well-defined, separated by 1–3 diameters on disc, more widely spaced basally; bristles dark yellow, moderately long.

Elytral striae shiny, weakly impressed, with punctures barely crenating interstrial sides. Interstriae flat, irregularly granulate, posterior margin of each granule with a small, setigerous puncture; setae dark yellow, thin, erect.

Pygidium with widely spaced setigerous punctures; setae dark yellow, long, thin.

Protibial spur slightly angularly bent inward and downward; inner angle of protibial apex with a small denticle curved downward.

Genital armature (Fig. 4–5). Parameres short, sinuate along sides, subrectangular apically, with a slight but distinctly produced latero-proximal denticle; lamella copulatrix reniform, right lobe in ventral vision thin, slightly produced outward apically.

Allotype (Fig. 3). Length 6.5 mm, width 3.7 mm. As usual in the species of the *semicornis* group, the secondary sexual dimorphism is apparent only in shape and size of the pygidium and the sixth abdominal sternite, and in the lack, in females, of the small denticle in the inner angle of the protibial apex. The allotype thus resembles the holotype, particularly in the external structures of the pronotum and head.

Distribution and Ecology. The new species is known from two high mountain localities of south-central Iran (Fars and Isfahan provinces). Unfortunately, no information is available on how specimens have been collected. I hypothesize the new species to be a true nidicolous beetle, i.e. a pholebiont or a pholephile more or less strictly associated with the nests or burrows of rodents. The protibial spur, stout and bent inward and downward as in all pholeophilous *Onthophagus* species, gives credit to this assumption.

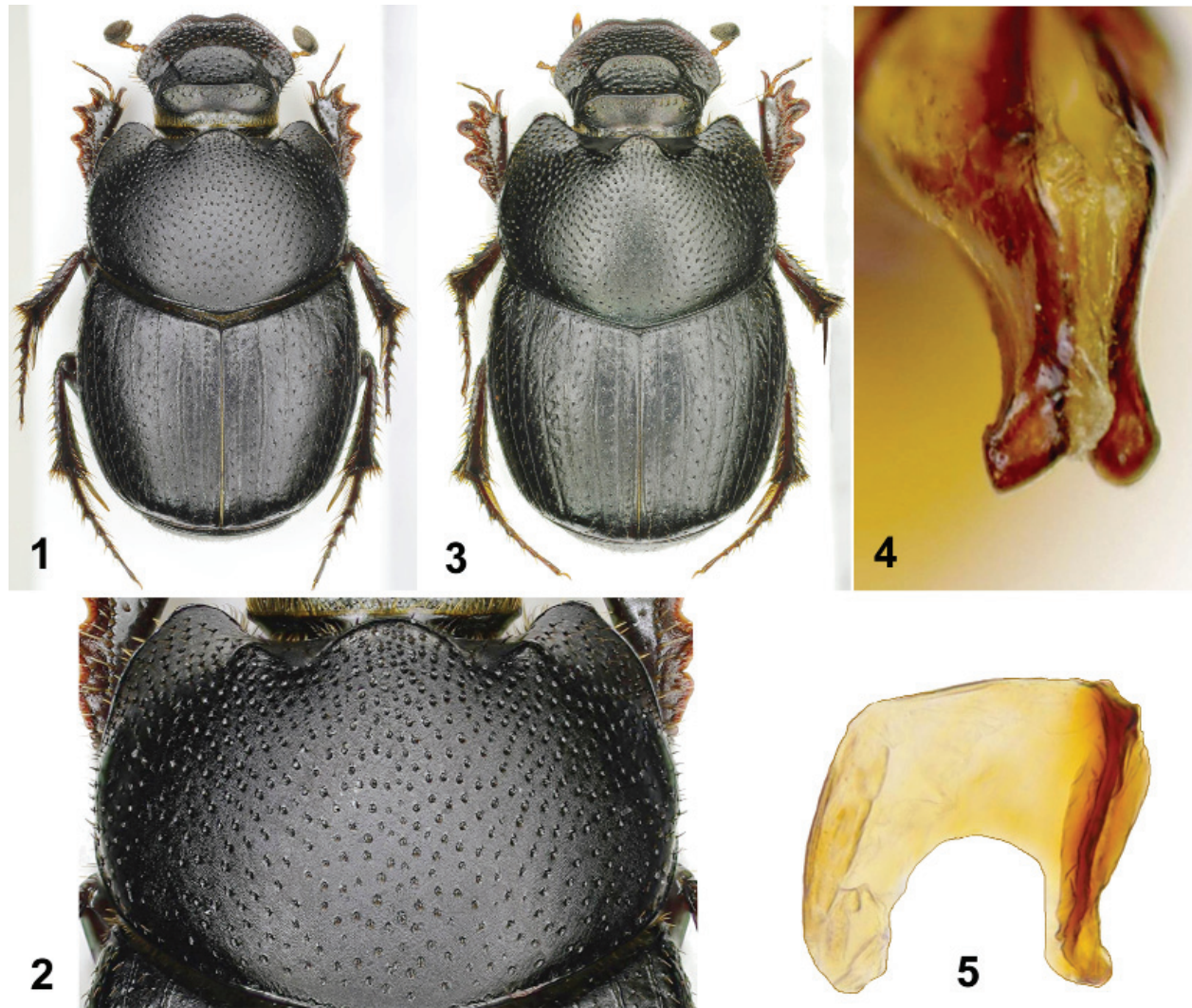
Discussion. The diagnosis of the *semicornis* species group, as given by Ziani and Gudenzi (2007), follows: “The species of *Onthophagus* (*Palaeonthophagus*) *semicornis* species-group are of medium size (length 4.8–7.5 mm), pronotum 0.75 to 0.96 times shorter than elytra, black, upper side with distinct isodiametric microreticulation, dorsal pubescence yellowish white to reddish yellow. Head short, clearly wider than long, clypeus more or less emarginate at middle, in one species arcuately excised, sides indistinctly or not at all sinuate in front of genae which are protruding; clypeo-frontal carina distinct in both sexes, occipital carina with a more or less elevate, sometimes apically bifurcate lamina. Pronotum convex, strongly declivous towards anterior edge, with a distinct anterolateral tubercle on either side and with an anteromedian gibbosity, sometimes divided in two small tubercles; anterior angles more or less obtusely produced, sides sinuate behind them; pronotal surface punctuate, each puncture usually with a small granule at the anterior margin; bristles of pronotal surface progressively widened from base to top. Elytral surface with setae only slightly or not at all thicker basally than distally. Fore, middle and hind femora ventrally with small, rather sparse setigerous punctures.

Aedeagus slender, apex of parameres curved ventrally, divergent and always more or less hooked, the outer margin of parameres bearing a proximal denticle. Copulatory lamina overall shape oval or quadrangular, excluding the basal emargination.

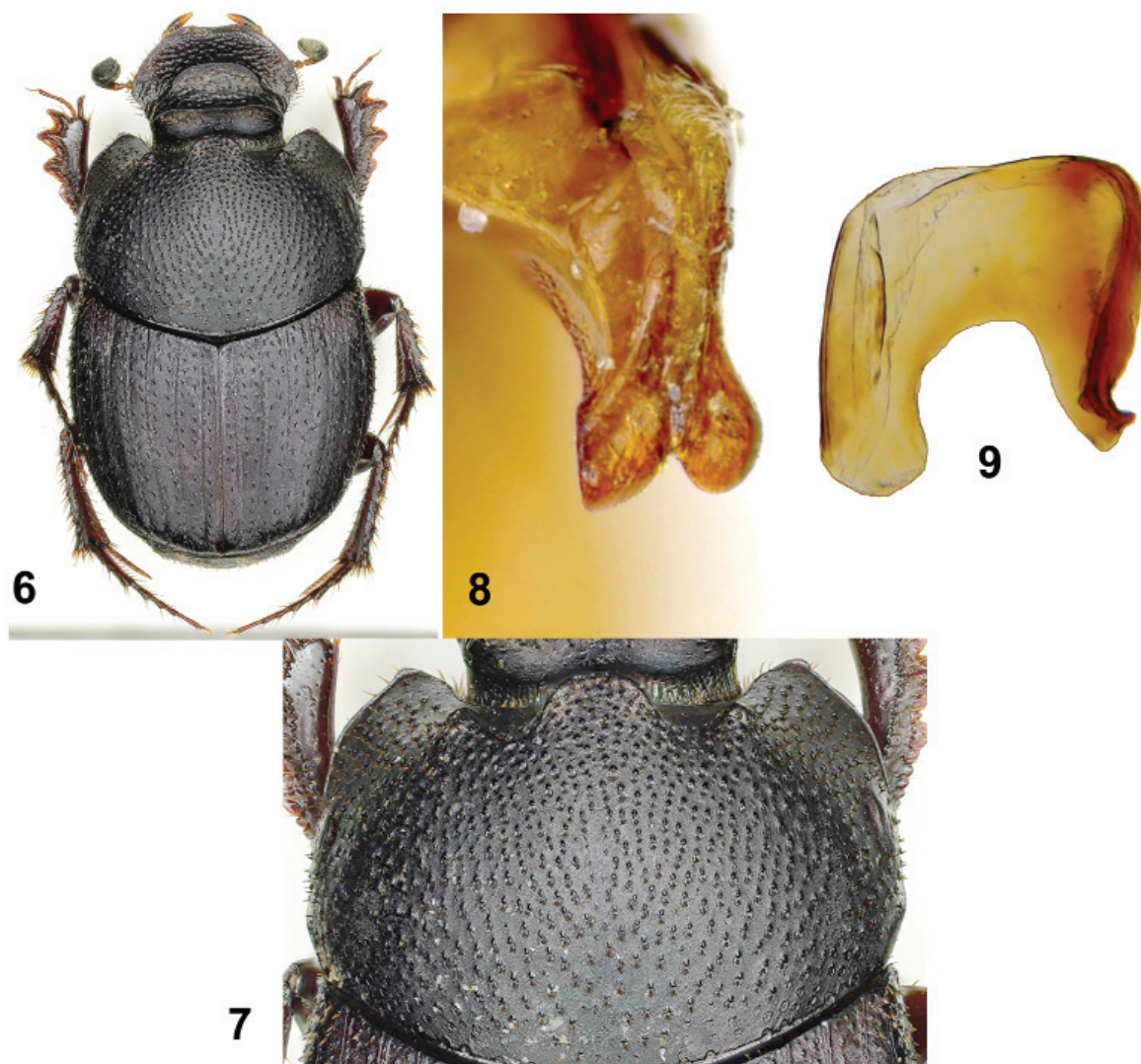
Epipharynx nearly oval, round at sides, anterior margin barely or not at all emarginate at middle; tylus, in ventral view, with very close strong setae, acropariae consisting of long setae of different thickness; outline of gymnopariae scarcely sclerotized.

Secondary sexual characters almost entirely restricted to the difference in shape and size of pygidium and sixth abdominal sternite."

Onthophagus (Palaeonthophagus) roessneri n. sp. can be included in this group, and particularly in the lineage of *O. semicornis*, with *Onthophagus eulaminicornis* Pittino, 2006, *Onthophagus sacharovskii* Olsoufieff, 1918, *Onthophagus samai* Ziani, 2011 and *Onthophagus semicornis* (Panzer, 1798). With these species, distributed in west-central Palaearctic, *O. roessneri* shares the shape of the lamella copulatrix, overall oval, excluding the basal emargination, and its anterior angles distinctly round. The new species is most similar to *O. sacharovskii* (Fig. 6), from which can be distinguished by its shining dorsal surface (*O. sacharovskii* is duller), the simple, fine and more widely spaced frontal punctures, simple and spaced (granulate, coarse, sometime subconfluent in *O. sacharovskii*), the simple, slightly



Figures 1–5. *Onthophagus (Palaeonthophagus) roessneri* n. sp. 1) Holotype, habitus. 2) Holotype, pronotum. 3) Allotype, habitus. 4) Parameres, dorsolateral view. 5) Lamella copulatrix, ventral view. Photographs by A. Degiovanni.



Figures 6–9. *Onthophagus (Palaeonthophagus) sacharovskii* Olsoufieff, 1918 [male: TR-Kayseri, Bünyan, 1300 m]. **6)** Habitus. **7)** Pronotum. **8)** Parameres, dorsolateral view. **9)** Lamella copulatrix, ventral view. Photographs by A. Degiovanni.

umbilicate and more widely spaced pronotal punctures (granulate and more closely spaced in *O. sacharovskii*, as in Fig. 7), and the anteromedian pronotal prominence transverse, more than twice wider than long (about twice wider than long in *O. sacharovskii*). Furthermore, the parameres are subrectangular apically (subquadrangular in *O. sacharovskii*, as in Fig. 8), and the right branch of the lamella copulatrix is in ventral view slightly produced outward apically (distinctly produced outward, almost hook shaped, in *O. sacharovskii*, as in Fig. 9).

Key to the semicornis Species Group

The key to the semicornis species group, proposed by Ziani and Gudenzi (2007) and Ziani (2011), is here modified to include *O. roessneri*.

1. Clypeal margin more or less shallowly emarginated medially **2**
- Clypeal margin excised medially, subdentate. Kazakhstan, Uzbekistan, Kyrgyzstan
..... ***O. silus* Balthasar, 1960**

- 2(1). Pronotum with two anteromedian tubercles, distinctly separated 3
 — Pronotum with a single anteromedian prominence, sometimes more or less bilobed 5
- 3(2). Pronotal punctures simple, large, umbilicate on disc. Afghanistan *O. nurestanicus* Kabakov, 1982
 — Pronotal punctures with a very small granule at anterior margin 4
- 4(3). Superior edge of occipital carina straight in dorsal view, with no trace of lateral horns; occipital carina broader basally than the clypeofrontal carina. Turkmenistan *O. rufimanus* Kabakov, 1982
 — Superior edge of occipital carina sinuate in dorsal view, weakly dentate at middle and/or with a lateral horn more or less erect on each side; occipital carina basally at least as broad as the clypeofrontal carina. Eastern Russia, northern and central China, Mongolia, Korea, Japan *O. olsoufieffi* Boucomont, 1924
- 5(2). Pronotum doubly sinuate laterally; anteromedian pronotal prominence slender, prolonged to top of occipital horn. South Korea *O. koryoensis* Kim, 1985
 — Sides of pronotum sinuate only behind anterior angles; anteromedian pronotal prominence not prolonged to top of occipital horn 6
- 6(5). Occipital carina with an erect, terminally narrow keel, its base widely separated from sides of head 7
 — Occipital carina with a simple, weakly erect ridge, its base extending nearly to sides of head 8
- 7(6). Anteromedian pronotal prominence broad, transverse, more than two times wider than long, projecting slightly more anteriorly than anterolateral tubercles. Dorsal surface shining. Central and southern Europe, Turkmenistan, Kazakhstan, Uzbekistan, Mongolia *O. semicornis* (Panzer, 1798)
 — Anteromedian pronotal prominence narrower, less than two times wider than long, projecting markedly more anteriorly than anterolateral tubercles. Dorsal surface dull. Northeastern Iran *O. samai* Ziani, 2011
- 8(6). Occipital carina forms a rectangular lamina with vertical sides, straight in dorsal view, extending at base to inner edge of eyes. Greece, Bulgaria *O. eulamincornis* Pittino, 2006
 — Occipital carina barely elevate, sometimes raised at edges, sinuate in dorsal view, distinctly bent back laterally, clearly twisted over each lateral extremity and visibly turning out and backwards, extending at base almost to outer edge of eyes 9
- 9(8). Dorsal surface dull; pronotal punctures with very small granule at anterior margins, separated by one to two diameters on disc. Turkey, Caucasus, southern European Russia, northwestern Iran *O. sacharovskii* Olsoufieff, 1918
 — Dorsal surface shining; pronotum with simple punctation, punctures separated by three diameters on disc. Central southern Iran *O. roessneri* n. sp.

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