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**Correspondence**

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# A new scarab species, *Aphodius gissaricus* (Coleoptera: Scarabaeidae: Aphodiinae), from the Pamir-Alay Mountains in Tajikistan

LILIA AKHMETOVA & ANDREY FROLOV

*Laboratory of Insect Systematics, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab., 1, St.-Petersburg, 199034 Russia. E-mail: codocera@rambler.ru*

The fauna of the aphodiines of Pamir-Alay Mountains is relatively well known and is not very rich in comparison to the adjacent territories of lowland Middle Asia (Medvedev & Lopatin 1961, Protsenko 1968, Nikolajev 1987). For example, some 30 species of *Aphodius* Hellwig are known from Tajikistan (Medvedev & Lopatin 1961) and most of them are widely distributed in Irano-Turanian biogeographic region and in the Palaearctic. However endemism is rather high: none of these species occur outside the Palaearctic (except for recent introductions of a few species to the Nearctic and Australian Realms) and many are limited to deserts or single mountain systems.

Recently we had the opportunity to examine a few *Aphodius* specimens from the collection of David Král, currently housed in the National Museum of Natural History in Prague (NMPC), which apparently belong to Middle Asian mountain species. These specimens originated from two high and middle altitude localities in Pamir-Alay Mountains. They share characters of a few nominal *Aphodius* subgenera and could not be identified as any of the species known from Middle and Central Asia. Comparisons of these specimens with the extensive material of Palaearctic *Aphodius* from the collection of Zoological Institute of Russian Academy of Sciences (ZIN), revealed one additional specimen of this species.

The new species is similar to *Aphodius* (*Melinopterus*) *scuticollis* Semenov and both species have characters that could place them either in the subgenus *Chilothorax* Motschulsky or *Melinopterus* Mulsant. The new species shares some diagnostic characters with the subgenera *Melinopterus* (mesotibiae and metatibiae with adjacent apical setae distinctly unequal in length) and *Chilothorax* (relatively dense punctation on head and pronotum in males, sparsely setose elytra in males, similar shape of the parameres). The elytral pattern of the new species varies from that typical of *Melinopterus* species (single elongated dark macula occupying most of each elytron) to that typical of some *Chilothorax* species (species-group *A. grafi* with two more-or-less distinct longitudinal or oblique stripes mainly on elytral intervals 3–4 and 6–7). This is more evidence that elytral pattern, due to its variability, is a weak basis for subgenera delimitation in *Aphodius*.

The superspecific classification of the genus *Aphodius* is beyond the scope of this paper. We provisionally place the new species in the subgenus *Melinopterus* since the characters of this subgenus are more pronounced in the new species and it is easier to modify existing diagnostic keys of *Melinopterus* to accommodate it. Examination of mouth parts, especially the epipharynx, of the new species did not provide clue about its taxonomic position, because epipharynxes of a number of subgenera (*Melinopterus*, *Chilothorax, Nobius*, *Agolius* and other apparently related taxa) are similar.

Habitus images were taken with a Leica MZ9.5 stereo microscope from dry specimens. Partially focused, serial images were combined in Helicon Focus software (Helicon Soft Ltd.) to produce completely focused images. Aedeagus images were taken with the same microscope from specimens in glycerol. The distribution map was generated with ArcGIS software (ESRI Ltd.). Coordinates of the localities were taken from the National Geospatial-Intelligence Agency (2011).

## *Aphodius* (*Melinopterus*) *gissaricus* Akhmetova & Frolov, new species

Figs 1–3, 5, 7, 9

**Type material.** Holotype, male with the label "Tadzhikistan 1984 Hissar mts., ca 3300m ANZOB pass, 8.8 David Král lgt." (NMPC). Eleven paratypes: 7 males with the same data as the holotype (5 specimens – NMPC, 2 specimens – ZIN); 3 males, "Asia c. Tadjikistan USSR 5.4.1986 Alaj – Romit 2000 m T. Růžička lgt." (2 specimens – NMPC, 1 specimen –

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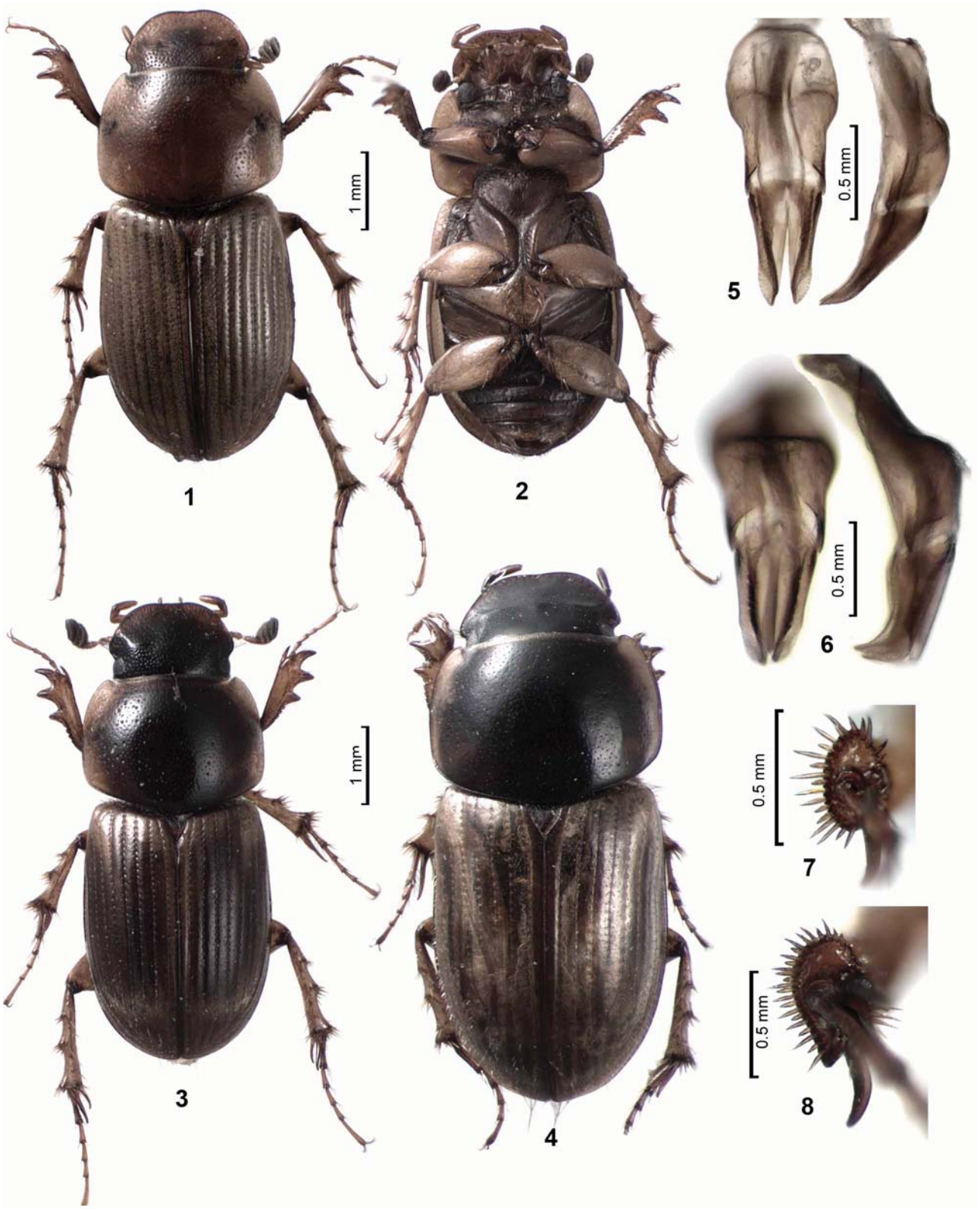
ZIN); 1 male, “Tadzhikistan, yugo-zap. sklon khr. Aktau [south-western slope of Aktau Ridge], 2000 m. 13.IV.1984 T. N. Vereschagina” [in Cyrillic letters] (ZIN).




**FIGURES 1–8.** *Aphodius*. *A. gissaricus*, holotype, male (1, 7); paratype, male (2, 3, 5); *A. scuticollis* male (4, 6, 8). Figs. 1, 3, 4 — body in dorsal view; 2 — body in ventral view; 5, 6, — aedeagus in dorsal and lateral view; 7, 8 — apices of metatibiae.

**Description.** Holotype, male (Fig. 1). Body length 5.0 mm. Head shiny, with dark brown disc and pale brown anterior margin and sides of clypeus, densely punctate (punctures separated by approximately their diameter). Clypeus with feeble sinuation anteriorly, rounded laterally. Genae rounded, weakly separated from lateral margin of clypeus, distinctly protruding past eyes, with a few long setae. Frontoclypeal suture visible as fine line, interrupted medially. Head disc without tubercles. Eye approximately as wide as distance between eye and gula in ventral view.

Pronotum wider than elytral base, shiny, pale brown on disc and pale yellow laterally. Pronotum apical margin without border, lateral margins and base with thin border. Disc with sparse, fine punctation (punctures separated by 1–4 times their diameter). Basal angles of pronotum rounded; sides with sparse, short, yellow setae.

Scutellum narrow, triangular, shiny, pale brown with brown lateral sides.

Elytra pale yellow with brown suture. Humeral teeth absent. Elytral intervals feebly convex, finely and sparsely punctate. Sides and apices of elytra without setae. Striae deep, punctures on striae larger than width of striae.

Ventral side of body pale yellow except abdomen brown. Legs pale yellow. Perimeter of metasternal disc with dense, long, pale setae.

Outer teeth of protibia long and slender. Spur of protibia slightly curved downward and rounded apically. Lower spur of mesotibia acute apically, more than half as long as upper spur. Metatarsomere 1 as long as upper spur of metatibia and metatarsomeres 2–3 combined. Adjacent apical setae of mesotibiae and metatibiae distinctly unequal in length (Fig. 7).

Parameres feebly curved, tapering and slightly acute apically.

**Female.** Unknown.

**Variability.** Body length of the paratypes varies from 3.5–5.0 mm. Specimens from Romit are darker than those from Anzob Pass and Aktau Mountains. The coloration of elytra varies: one paratype has a dark, obscure elytral pattern (Fig. 3), while the holotype has almost uniformly pale yellow elytra (Fig. 1). An elytral pattern with a few longitudinal maculae (similar to that in *A. scuticollis*, Fig. 4) is found in most of other paratypes, but the maculae are only slightly darker than the background and the pattern is feebly distinct. The sides and apices of the elytra of a few paratypes bear short, sparse, pale setae.

**Diagnosis.** The species is similar to *A. scuticollis* Semenov, 1898 (Figs. 4, 6, 8), but differs from it in lacking acute process on the apex of metatibia in males (Fig. 7, 8), in having less convex body, and in having slightly longer and more slender parameres with less curved apices (Fig. 5, 6).

In the key to Palaearctic *Aphodius* (Balthasar 1964), *A. gissaricus* will key to the couplet with *A*. (*Melinopterus*) *stolzi* Reitter but can be easily separated from it by slender and acute apices of parameres. These two species also have widely separated ranges: *A. stolzi* occurs in southern Europe.

**Distribution.** *Aphodus gissaricus* is currently known from three localities in the Pamir-Alay mountain system: two in Gissar Range (Anzob Pass and Romit) and one in Aktau Mountains. *Aphodius scuticollis* has a wider distribution from the Kopet-Dag Range on the southern border of Turkmenistan to South Siberia (Fig 9).

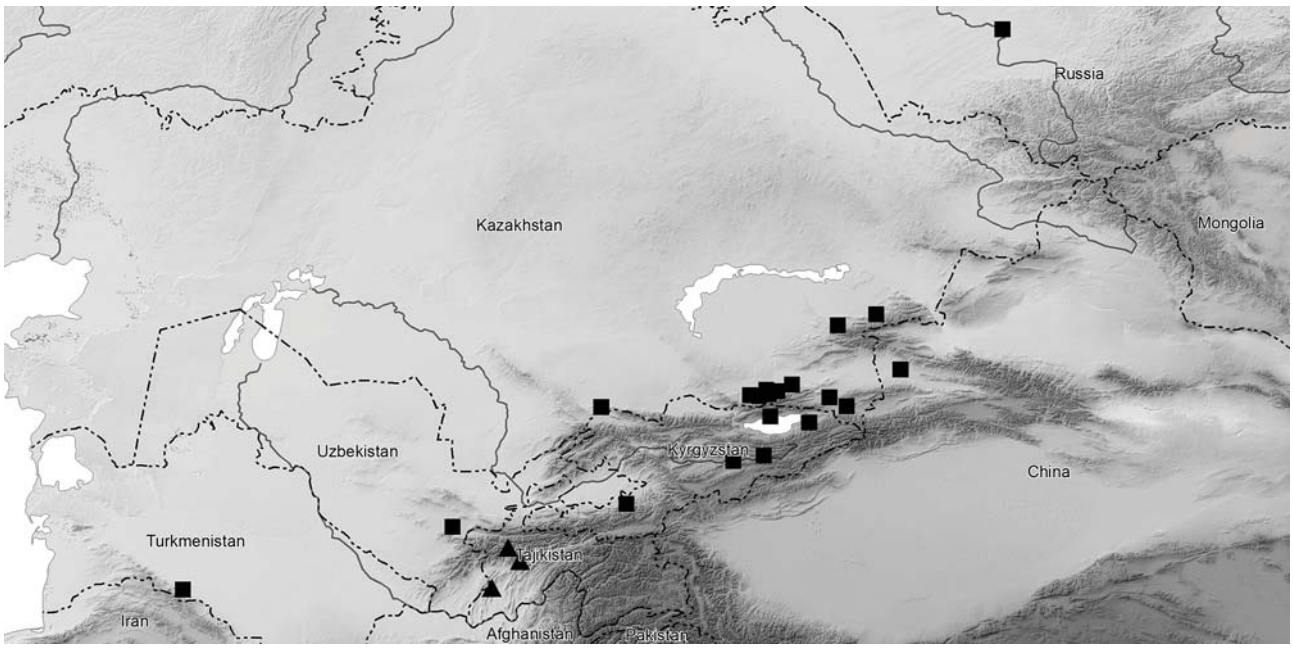



**FIGURE 9.** Distribution map of *Aphodius gissaricus* (▲) and *A. scuticollis* (■).

**Etymology.** The name of the new species is derived from Gissar Mountains where the larger part of type series was collected.

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