

**On some *Proteinus* species of the Caucasus region,
with description of a new species from Georgia and
a new synonymy (Coleoptera: Staphylinidae: Proteininae)**

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ASSING V. 2019: On some *Proteinus* species of the Caucasus region, with description of a new species from Georgia and a new synonymy (Coleoptera: Staphylinidae: Proteininae). *Acta Musei Moraviae, Scientiae biologicae* **104(1): 7–15**. – *Proteinus cavatus* sp. nov. (Southwest Georgia) of the *P. longicornis* group, a species with conspicuous male secondary sexual characters, is described and illustrated. Based on a study of type material, redescrptions and illustrations are provided for *Proteinus planicollis* Reitter, 1905 and *P. reflexicollis* Reitter, 1905 and lectotypes are designated for both species. A new synonymy is proposed: *P. atomarius* Erichson, 1840 = *P. hiburnus* Gistel, 1857, syn. nov. The presence of two widespread species in Georgia is confirmed.

Keywords. Coleoptera, Staphylinidae, Proteininae, *Proteinus*, taxonomy, new species, redescription, lectotype designations, new synonymy, new records, Caucasus region, Georgia

Introduction

At the turn of the Millennium, the genus *Proteinus* Latreille, 1797 included 34 species distributed in the Palaearctic, Nearctic, Neotropical, Ethiopian, and Oriental regions, plus two nomina dubia from North and Central Europe (HERMAN 2001). Up to the end of 2014, eleven additional species were described from the Palaearctic region, seven from the West Palaearctic and four from Japan (SCHÜLKE & SMETANA 2015). Very recently, another species was described from the Caucasus region (ASSING 2019). At present, the genus is represented in the Palaearctic region by 35 species (doubtful names not included), five of them with trans-Palaearctic distributions, 17 confined to the West Palaearctic and 13 to the East Palaearctic regions. Three widespread species have been recorded from Georgia: *Proteinus atomarius* Erichson, 1840, *P. brachypterus* (Fabricius, 1792), and *P. laevigatus* Hochhuth, 1872 (SCHÜLKE & SMETANA 2015).

The present study is based primarily on material, including an undescribed species, collected during a field trip conducted by Michael Schülke (Berlin) and the author to Georgia in summer 2019. Additional specimens came from several field trips to Georgia conducted by Volker Brachat (Geretsried) and Heinrich Meybohm (Großhansdorf).

Aside from providing the description of a new species and new records of two species, redescrptions and illustrations of two previously unrevised species described by REITTER (1905a, b) from “Araxestal” are given. Moreover, a new synonymy is proposed.

Material and methods

The material treated in this study is deposited in the following collections:

MNB Museum für Naturkunde, Berlin (incl. coll. Schülke; J. Frisch, M. Schülke)
 HNHM Hungarian Natural History Museum, Budapest (Gy. Makranczy)
 cAss author's private collection

The morphological studies were conducted using Stemi SV 11 and Discovery V12 microscopes (Zeiss) and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using digital cameras (AxioCam ERc 5s, Nikon Coolpix 990), as well as Labscope and Picolay stacking software. The map was created using MapCreator 2.0 (primap) software.

The measurements are given in mm. Body length was measured from the anterior margin of the clypeus to the apex of the abdomen, the length of the forebody from the anterior margin of the clypeus to the posterior margin of the elytra, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The “parameral” side of the aedeagus (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Results

Proteinus cavatus sp. nov.

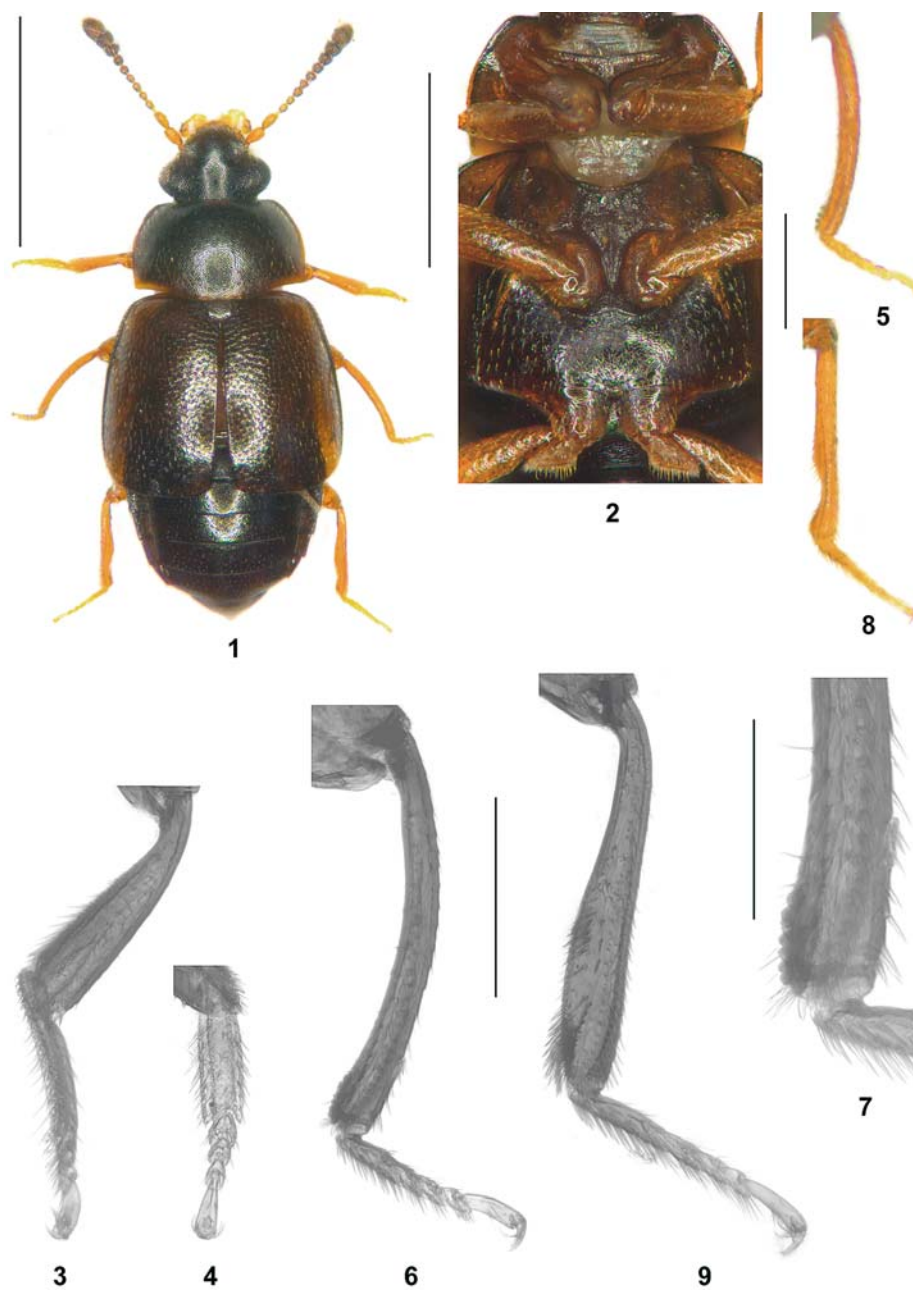
(Figs 1–14, Map 1)

Type material. Holotype ♂: “GEORGIA [42] – Imereti, SE Sairme, 41°50'15"N, 42°49'27"E, 2290 m, [Zekari] pass, litter sifted, 20.VII.2019, V. Assing / Holotypus ♂ *Proteinus cavatus* sp. n., det. V. Assing 2019” (cAss). Paratypes: 5♂♂, 5♀♀: same data as holotype (cAss, MNB); 2♂♂, 3♀♀: same data, but leg. Schülke (MNB); 1♂: “GEORGIA – Samtskhe-Javakheti, S Bakuriani, 41°42'21"N, 43°30'08"E, 2090 m, birch litter sifted, 6.VII.2019, V. Assing [1]” (cAss); 3♂♂, 2♀♀: “GEORGIA – Samtskhe-Javakheti, S Bakuriani, 41°43'11"N, 43°29'41"E, 1870 m, alder litter sifted, 7.VII.2019, V. Assing [6]” (cAss, MNB); 1♀: same data, but leg. Schülke (MNB); 1♂: “GEORGIA [26] – Adjara, NNW Khulo, 2010 m, 41°47'19"N, 42°17'25"E, forest margin, sifted, 14.VII.2019, V. Assing” (cAss); 1♂, 4♀♀: same data, but leg. Schülke (MNB); 1♀: “GEORGIA [41] – Adjara, NE Batumi, Mtirala National Park, 41°40'35"N, 41°52'29"E, 330 m, 18.VII.2019, V. Assing” (cAss); 1♀: “GEORGIA [47] – Imereti, S Sairme, 41°52'46"N, 42°46'22"E, 1510 m, moist deciduous forest, 22.VII.2019, V. Assing” (MNB); 1♂: GEORGIA – Samtskhe-Javakheti, S Bakuriani, 41°43'08"N, 43°29'35"E 1880 m, alder litter sifted 7.VII.2019, M. Schülke [5] (MNB); 1♀: “N41°51'37 E42°46'59, Georgien Imeretien (54), Sairme S 1890 m 19.5.2018, Brachat & Meybohm” (MNB).

Description. Habitus as in Fig. 1. Body length 2.0–2.6 mm; length of forebody 1.4–1.7 mm. Coloration: body black, with the elytra sometimes blackish-brown and the margins of the pronotum narrowly dark-reddish; legs dark-yellow; antennae with antennomeres I reddish-yellow, II reddish-yellow to dark brown, III–VIII pale-brown to blackish-brown, and IX–X blackish.

Head more or less distinctly impressed posteriorly (between vertex and dorsal margin of eyes); microreticulation of dorsal surface distinct, in posterior impressions even more pronounced; punctation extremely fine, practically invisible even at high magnification (100×). Antenna 0.7–0.8 mm long, with antennomeres IX–XI forming

Proteinus species of the Caucasus region (Staphylinidae)



Figs 1–9. *Proteinus cavatus*. 1 – male habitus; 2 – thorax in ventral view; 3 – male protibia and protarsus; 4 – male protarsus; 5–6 – male mesotibia and mesotarsus; 7 – apex of male mesotibia; 8–9 – male metatibia and metatarsus. Scale bars: 1: 1.0 mm; 2: 0.5 mm; 3–6, 8–9: 0.2 mm; 7: 0.1 mm.

a moderately distinct club; antennomere X distinctly transverse, but less than twice as broad as long.

Pronotum approximately 1.65 times as broad as long and 1.5 times as broad as head; anterior and lateral margins narrowly bordered, posterior margin unbordered; microsculpture and punctation similar to those of head.

Elytra approximately 1.6 times as long as pronotum; punctation dense and fine, but much more distinct than that of head and pronotum; interstices without distinct microsculpture. postero-median process of mesoventrite with long and moderately pronounced median keel (Fig. 2). Hind wings fully developed.

♂: protibia (Fig. 3) short and stout, gradually broadened towards apex; protarsomere I enlarged and elongate, longer than the combined length of protarsomeres II–V (Figs 3–4); mesotibia (Figs 5–7) distinctly curved, dorsally sharply edged especially in apical half, inner side (i.e., side facing body) flattened and apically with a group of approximately 5–10 peg-setae; metatibia (Figs 8–9) dilated towards apex, inner side flattened, distinctly excavate in apical third, with a cluster of moderately dense yellow setae at apical third and a cluster of very dense yellow setae at apex; aedeagus 0.45–0.50 mm long and shaped as in Figs 10–13; internal sac with a longer thin, curved, and weakly sclerotized spine, a shorter, stout, strongly sclerotized spine, numerous additional small and weakly sclerotized spines, and with membranous structures (Fig. 14); dorso-apical plate of characteristic shape.

♀: protibia longer and more slender than in male; meso- and metatibiae dorsally sharply edged and with rows of short dense setae.

Comparative notes. Based on the modified protarsomere I and the morphology of the aedeagus (shapes of ventral process and of dorsal plate; shapes of internal structures), *P. cavatus* is allied to *P. longicornis* Doderer, 1923 and related species. It is reliably distinguished from the species of this group (including the Caucasian *P. baculatus* Assing, 2019), as well as from all other congeners by the conspicuous modifications of the male tibiae and by the shape and the internal structures of the aedeagus.

Distribution and natural history. The species was discovered in several localities in the Trialeti and Meskheta ranges in Southwest Georgia (Map 1). The specimens were sifted from leaf litter in birch, alder, and mixed forests, as well as in a subalpine habitat with rhododendron and bush vegetation at a wide range of altitudes (330 to 2290 m).

Etymology. The specific epithet (Latin, past participle of cavare: excavate) alludes to the conspicuous modifications of the apex of the male metatibia.

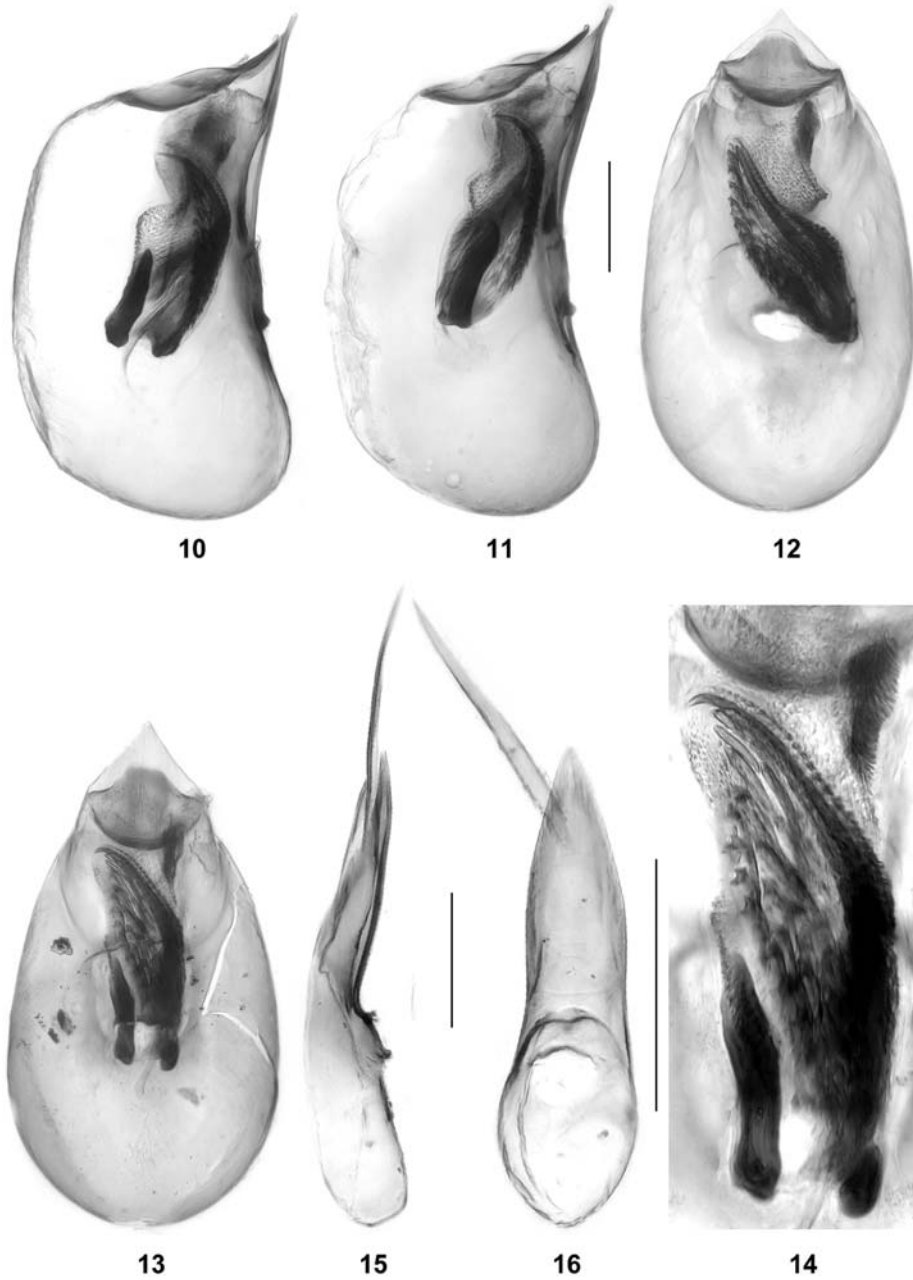
Proteinus planicollis Reitter, 1905

(Figs 15–18)

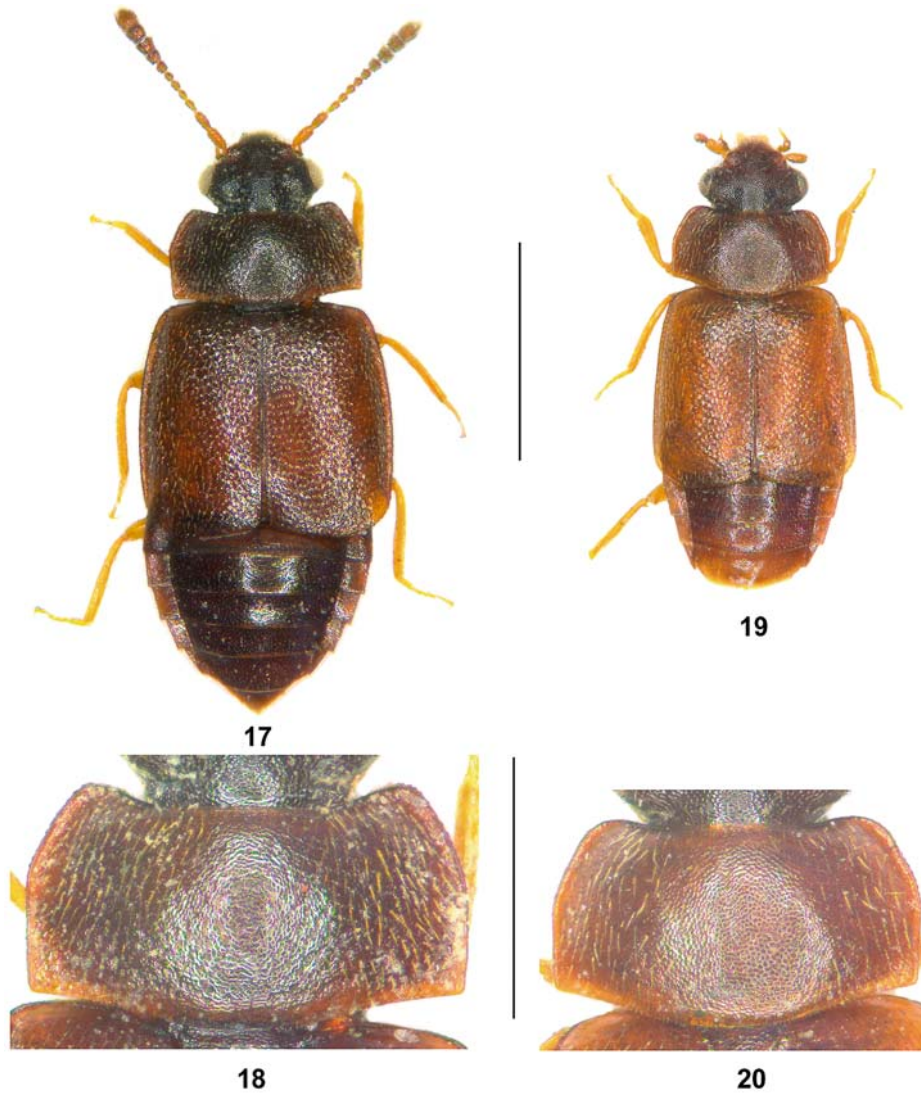
Proteinus planicollis Reitter, 1905a: 201.

Type material. Lectotype ♂ [in poor condition; dissected prior to present study], present designation: “Caucasus. Araxesthal. Leder. Reitter. / Typus *Proteinus planicollis* Reitt., W. 24. 1905. 201. Coll. Reitter [curator label] / Lectotypus ♂ *Proteinus planicollis* Reitter, desig. V. Assing 2019” (HNHM). Paralectotype ♀: “Caucasus. Araxesthal. Leder. Reitter. / *Proteinus planicollis* m. 1905 / coll. Reitter / *Proteinus planicollis* Reitt. det. Székessy / Holotypus 1905 *Proteinus planicollis* Reitter [curator label]” (HNHM).

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Figs 10–16. *Proteinus cavatus* (10–14) and *P. planicollis* (15–16). 10–13, 15–16 – aedeagus in lateral and in ventral view; 14 – internal structures of aedeagus in ventral view. Scale bars: 0.1 mm.



Figs 17–20. *Proteinus planicollis* (17–18) and *P. reflexicollis* (19–20). 17, 19 – habitus; 18, 20 – pronotum.
Scale bars: 17, 19: 1.0 mm; 18, 20: 0.5 mm.

Comment. The original description is based on “zwei übereinstimmende Exemplare” from “Araxestal, bei Ordubad” (REITTER 1905a). Both syntypes, a male and a female, are deposited in the Reitter collection at the HNHM. The male is designated as the lectotype. This species has never been recorded again since the original description.

Redescription. Habitus as in Fig. 17. Body relatively large, broad, and depressed; length of forebody 1.7–1.8 mm; head width 0.54–0.57 mm; length of pronotum 0.42–0.44 mm; width of pronotum 0.83–0.87 mm. Coloration: body blackish with the elytra and the narrow margins of the pronotum brown; legs yellow; antennae blackish-brown with the basal 4–5 antennomeres reddish-brown. Pronotum (Fig. 18) weakly convex in cross-section, somewhat explanate laterally, and strongly transverse, 1.96–2.00 times as broad as long and 1.53 times as broad as head; lateral margins distinctly bordered; posterior margin not bordered in the middle. Elytra twice as long as pronotum. Protarsi without sexual dimorphism.

♂: protarsomere I not elongated; aedeagus (Figs 15–16) 0.36 mm long, slender, and with long rod-like structure.

Proteinus reflexicollis Reitter, 1905

(Figs 19–20)

Proteinus reflexicollis Reitter, 1905b: 226.

Type material. Lectotype ♂ [in poor condition; aedeagus completely transparent and deformed; dissected prior to present study], present designation: “Caucasus. Araxesthal. Leder. Reitter. / Typus *Proteinus reflexicollis* Reitt., W. 24. 1905. 226. Coll. Reitter [curator label] / Lectotypus ♂ *Proteinus reflexicollis* Reitter, desig. V. Assing 2019” (HNHM). Paralectotype ♂ [in poor condition; aedeagus missing; dissected prior to present study]: “Caucasus. Araxesthal. Leder. Reitter. / *Proteinus reflexicollis* m. 1905. Type / coll. Reitter / Holotypus 1905 *Proteinus reflexicollis* Reitter [curator label]” (HNHM).

Comment. The original description is based on “1♂♀” from “Araxesthal bei Ordubad” (REITTER 1905b). An examination of the syntypes revealed that both of them are males in poor condition, one of them with the aedeagus missing. The specimen of which the – completely bleached and deformed – aedeagus is still present is designated as the lectotype.

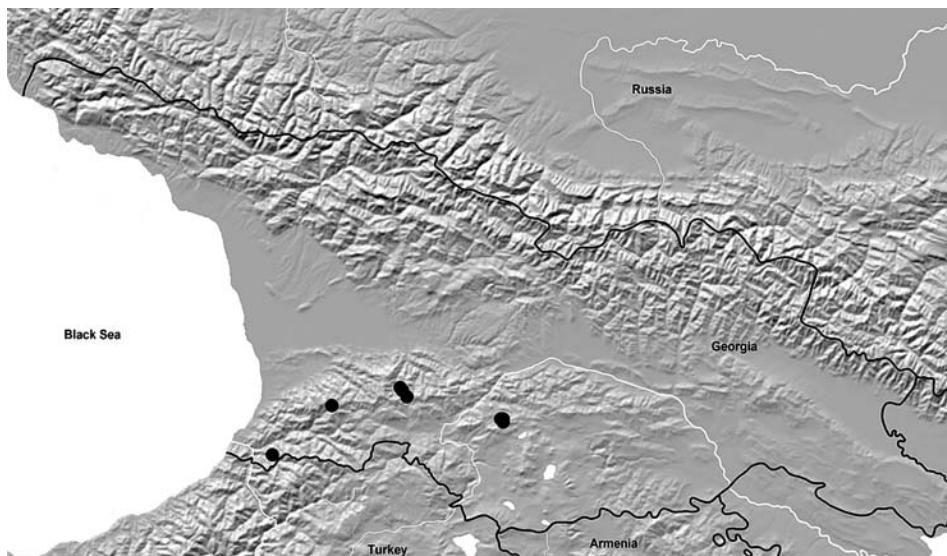
This species has never been recorded again since the original description.

Redescription. Habitus as in Fig. 19. Length of forebody 1.5–1.6 mm; head width 0.45–0.50 mm; length of pronotum 0.36–0.39 mm; width of pronotum 0.63–0.70 mm. Coloration: head blackish; pronotum dark-brown; elytra reddish-brown; abdomen dark-brown; legs yellow; antennae dark-brown with antennomere I yellow. Pronotum (Fig. 20) weakly convex in cross-section, and strongly transverse, 1.75 times as broad as long and 1.4 times as broad as head; lateral margins distinctly bordered; posterior margin not bordered in the middle. Elytra approximately 1.9 times as long as pronotum. Protarsi with distinct sexual dimorphism.

♂: protarsomere I elongate, approximately as long as the combined length of protarsomeres II–V.

Proteinus brachypterus (Fabricius, 1792)

Caucasian material examined. Georgia: 2♂♂, Zemo Svaneti, 7 km NE Ushguli, 42°57'01"N, 43°04'27"E, 2280 m, 31.VII.2016, leg. Meybohm (cAss).



Map 1. Distribution of *Proteinus cavatus*.

Comment. This common and widespread species is easily confused with other species of the same group. The above males confirm the identification of previous records.

***Proteinus atomarius* Erichson, 1840**

Proteinus hiburnus Gistel, 1857: 63; **syn. nov.**

Caucasian material examined. **Georgia:** 1♀, Mtskheta-Mtianeti, Shatili–Gudani, 42°31′50″N, 45°00′52″E, 1960 m, 16.VII.2015, leg. Brachat & Meybohm (cAss); 1♀, Kakheti, Gombori-Pass, 41°51′43″N, 45°17′59″E, 1440 m, deciduous forest, litter sifted, 12.V.2019, leg. Brachat & Meybohm (cAss); 1♂, Adjara, Meskheta Range, NNW Khulo, 41°47′00″N, 42°17′22″E, 1840 m, stream valley in beech forest, beech litter near stream sifted, 14.VII.2019, leg. Assing (cAss); 1 ex., Adjara, Meskheta Range, NNW Khulo, 41°47′19″N, 42°17′25″E, 2010 m, mixed beech and spruce forest, forest margin, beech litter, mushroom, and debris in ditch with *Tussilago* sifted, 14.VII.2019, leg. Schülke (MNB); 1 ex., Imereti, Meskheta Range, SE Sairme, 41°52′07″N, 42°46′53″E, 1820 m, degraded forest with predominant spruce, mushrooms, spruce bark, and spruce litter sifted, 20.VII.2019, leg. Schülke (MNB); 1♂, Samtskhe-Javakheti, Trialeti Range, S Bakuriani, 41°42′21″N, 43°30′08″E, 2090 m, birch trees at tree line, litter and roots of grass and herbs sifted, 10.VII.2019, leg. Assing (cAss).

Comment. *Proteinus hiburnus* has been a nomen dubium since the original description, which is based on an unspecified number of syntypes from South Germany (“Bavaria”) (GISTEL 1857). Gistel is notorious for his poor descriptions and nearly all his names treated in revisions have been synonymized. The type material of the numerous names this author has made available is generally lost. At least this applies to all the names that

have been treated by myself (e.g., ASSING 2008). The only characters mentioned in the original description of *P. hiburnus* are the punctation (densely punctate), the coloration (black with castaneous elytra and a reddish antennal base), and body size ($3/4''$; i.e., approximately 1.6 mm). While there are several species in Bavaria with a densely punctate body and a reddish antennal base, there is only one with a body size of about 1.6 mm: *P. atomarius*. In consequence, there is little doubt that *P. hiburnus* is conspecific with, and a junior synonym of, *P. atomarius*.

The material listed above confirms the presence of *P. atomarius* in Georgia.

Acknowledgements

György Makranczy arranged a loan of the type material of *Proteinus planicollis* and *P. reflexicollis*. The helpful corrections of two anonymous reviewers are appreciated.

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