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# A new species of *Phyllotreta* Chevrolat, 1836 (Coleoptera: Chrysomelidae: Galerucinae: Alticini) from Omsk Province of Russia with comments on *Phyllotreta* species diversity in Northeastern Palearctic

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## Abstract

A new species of flea beetle genus *Phyllotreta* Chevrolat, 1836 (*P. sholaksori* new species) is described from shores of saline lakes in Southwestern Siberia. It is compared with species with which it was collected as well as with species comprising a group to which it belongs (*P. araxicola* Jablokoff-Khnzorian, 1968, *P. astrachanica* Lopatin, 1977, *P. atra* Fabricius, 1775, *P. balcanica* Heikertinger, 1909, *P. cruciferae* Goeze, 1777, and *P. diademata* Fourdas, 1860). All these species are illustrated and included in the key.

**Key words:** Flea beetles, new taxa, biodiversity, Southwestern Siberia

## Introduction

Among world biogeographical regions, flea beetles (Coleoptera: Chrysomelidae: Galerucinae: Alticini) are undoubtedly best studied in the Palearctic, due to a long history of studies, extensive collecting, numerous taxonomists (both professional and amateurs) and a relatively depauperate fauna compared to tropical ones (Konstantinov et al. 2009). Therefore new species of flea beetles including *Phyllotreta* Chevrolat 1836 are rarely described from the Palearctic nowadays, particularly from its central, continental parts. The few more recently described Palearctic *Phyllotreta* were collected in the Far East, West or South parts of the Region: China (*P. schuelkei* Döberl, 2011), Japan (*P. ezoensis* Kimoto, 1993), Greece (*P. zerchei* Döberl, 1998), Spain (*P. gloriae* Biondi, 1994), and Turkey (*P. ispartaensis* Gök, 2005, *P. bolognai* Biondi, 1992). The last taxonomic publication dealing with *Phyllotreta* species from Northeastern Palearctic and Irano-Turanian subregion of Sethian Region (sensu Konstantinov et al. 2009) is that of Konstantinov and Lopatin (1992): *P. annae* Konstantinov, 1992, *P. lopatini* Konstantinov, 1992, and *P. andreevae* Lopatin, 1992.

Recent collecting in the Omsk Province of Southwestern Siberia (Moseyko *et al.* 2018) revealed a previously unknown *Phyllotreta* species described below. It belongs to a group of *Phyllotreta* species with full length elytra, covering most of the pygidium, black in color, lacking yellow pattern and metallic tint, yellowish or otherwise lightly colored first, second, third and often fourth antennomeres and male antennomeres similar to that of females, without modifications and straight metatibiae. In addition to the new species the following species share these features in central Palearctic:

*P. araxicola* Jablokoff-Khnzorian, 1968, *P. astrachanica* Lopatin, 1977, *P. atra* Fabricius, 1775, *P. balcanica* Heikertinger, 1909, *P. cruciferae* Goeze, 1777, and *P. diademata* Fourdas, 1860. They are illustrated and included in the following key.

## Material and methods

Dissecting techniques and adult morphological terminology follows Konstantinov (1998). Digital photographs of

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were taken with Axio Zoom V16 microscope and AxioCam HRC digital camera attached to it and with AxioCam HRC Zeiss attached to Leitz Diaplan compound microscope. The specimens are deposited in following collections:

ASAY S. M. Jablokoff-Khnzorian collection, Institute of Zoology, National Academy of Sciences of the Republic of Armenia, Erevan, Armenia.
USNM National Museum of Natural History, Smithsonian Institution, Washington DC, USA
ZMAS Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia

## Taxonomy

### *Phyllotreta sholaksori* Konstantinov and Moseyko new species

(Figs 1, 2)

**Description.** Body length 1.7–1.9 mm, width 0.8–0.9 mm.

Dorsum black, without metallic lustre. Femur black. Tibia dark brown or black in middle, slightly lighter apically and basally. Antennomere one mostly light, darker at base, antennomeres two and three light, antennomere four dark brown, rest of body black.

Vertex shiny, central portion evenly covered with punctures about as large as those on pronotum. Frontal ridge narrow, straight in frontal view, lateral sides nearly parallel. Antennal calli nearly triangular in frontal view, surface without punctures, widely connected along narrow, long midfrontal sulcus. Supracallical and suprafrontal sulci absent. Supraantennal, orbital and supraorbital sulci deep. Deep and short impression perpendicular to orbital sulcus in front of supraorbital pore. Anterofrontal ridge slightly concave, as tall and as narrow as frontal. Second antennomere slightly longer than third and slightly shorter than fourth. Fifth antennomere longer than fourth and sixth separately.

Pronotum flat in lateral view. Base wider than apex. Lateral margin more or less narrowly explanate. Sides evenly convex with maximum width near middle. Anterolateral callosity moderately long, with dull denticle, straight. Posterolateral callosity short, does not extend beyond lateral margin. Punctures coarse, about as large and slightly denser than those on elytra. Surface between punctures slightly shagreened. Basal part of pronotum with the same density of punctures as apical.

Scutellum nearly twice as wide as long, broadly rounded on top. Elytron with humeral callus. Lateral side of elytron slightly convex at basal 2/3. Maximum width at about middle. Punctures confused, coarse, about as large as those on pronotum. Surface between punctures even, not shagreened.

Metatibia moderately long and narrow, straight in lateral view, slightly convex on lateral side before flattening apically, gradually widening apically. Dorsally convex, flat at apical 1/4. In male first protarsomere 1.44 times as long as wide; 1.6 times as long as second and 1.4 times as wide as second. First and second metatarsomeres narrow and long, straight. First metatarsomere 4.5 times as long as wide and 1.5 times as long as second.

Median lobe of aedeagus with distal part lanceolate in ventral view, without well differentiated denticle. Sides of distal narrowing part relatively long and straight. Median lobe very slightly curved in middle in lateral view. In lateral view, distal part generally straight, very slightly S-shaped. Ventral side widely and shallowly canaliculate. Dorsal side without transverse wrinkles, sclerotized part narrowly triangular.

**Etymology:** This species is named after Lake Sholaksor near which the holotype was collected.

**Habitat:** meadows near salt lakes.

**Remarks:** *Phyllotreta sholaksori* may be differentiated from species with which it shares the following characters: full length elytra, black color, lacking yellow pattern and metallic tint, yellowish or otherwise lightly colored first, second, third and often fourth antennomeres and male antennomeres similar to that of females, without modifications and straight metatibiae, by the following key.

**Types:** Holotype. Russia, West Siberia, Omsk Province. Lake Sholaksor and field near it, 54º15´N, 75º13´E, 10.VI.2018 (A.G. Moseyko), 1 ♂ (ZMAS). Paratype ♂, the same labels as Holotype (USNM). Paratypes: Omsk Province. Moskalenskii Distr.: Amrinskaya ravine SE of Lake Ebeity, 17.VI.2018 (A.G. Moseyko), 1 ♂ (ZMAS). Okoneshnikovskii Distr.: Lake Chebakly S of Chistovo Vill., 21.VI.2018 (A.G. Moseyko), 3 ♂ (ZMAS). Cherlakskii Distr.: Lake Ulzhai, 10.VI.2018 (A.G. Moseyko), 1 ♂ (ZIN);

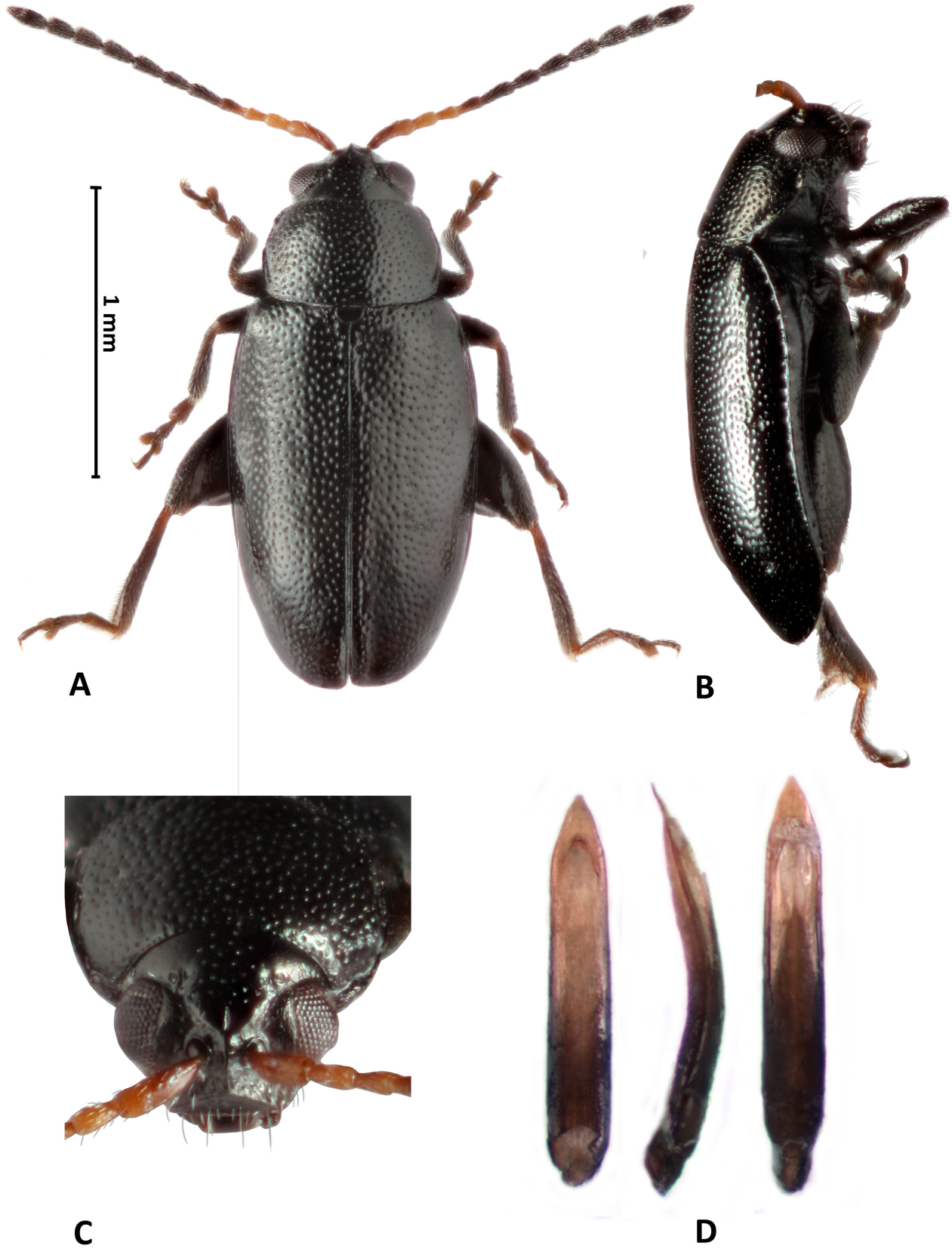


**FIGURE 1.** *Phyllotreta sholaksori* new species. A—habitus, dorsal view; B—habitus, lateral view; C—head, frontal view; D—meadian lobe of aedeagus, ventral, lateral and dorsal views.

**FIGURE 2.** *Phyllotreta sholaksori* new species, habitat.

**Specimens examined:**

*Phyllotreta araxicola* Iablokoff-Khnzorian, 1968:273 (Fig. 3)
Labels: 1) [Armenia] Erevan, Dzhervezh, ASSR, 25.V.1952 colle. Khnzorian; 2) *Phyllotreta araxicola* Khnz. (female Khnzorian coll.). 1) Armenia, Dzhervezh, 15.V.1988, Konstantinov leg.; 2) *Phyllotreta araxicola* Khnzorian, Konstantinov det. (male, female, USNM). 1) [Armenia] Erevan, Dzhervezh, ASSR, 6.V.1952 colle. Khnzorian; 2) *Phyllotreta caucasicola* (1 male Khnzorian coll.); 3) *Phyllotreta araxicola* Khnz. Det. A. Konstantinov, 2019. Two more specimens, females, the same label except, 9.V.52 and 25.V.52 (1 male Khnzorian coll.).

*Phyllotreta astrachanica* Lopatin, 1977:32 (Fig. 4)
Labels:1) [Russia] Astrahan', 18.VI, 1924 A. Il'inskii; 2) Paratypus; 3) *Phyll. diademata astrachanica* nov. I.K.Lopatin det. 1976 (2 males ZMAS). 1) Astrahan' obl. Krasnyi Yar, 7.VI.1923; 2) Paratypus; 3) *Phyll. diademata astrachanica* nov. I.K.Lopatin det. 1976 (2 males ZMAS).

*Phyllotreta atra* Fabricius, 1775:115 (Fig. 5)
Labels: 1) [Austria] Umgeb. Wien, Heikertinger; 2) *Phyll. atra* Heik. (10 females, 8 males USNM). 1) Kazakhstan: KZ-12.06: (43°12.01N; 79°12.35E; 1460m); just before Temirlik pass. *Lepidium latifolium*, 21.V.2006, leg. M. Cristofaro & H. Hinz ; 2) *Phyllotreta atra* F. det. A. S. Konstantinov, 2007 (2 males 4 females, USNM)

*Phyllotreta balcanica* Heikertinger, 1909:292 (Fig. 6)
Labels: 1) [Ukraine] Yares'ki, Mirg. u Polt. g., Fabri 17.VII.25 18.VI, 1924 A. Il'inskii; 2) *Phyllotreta balcanica* (male ZMAS). 1) [Ukraine] Poltava, 5.V.925, Luk'yanovich (male, ZMAS).

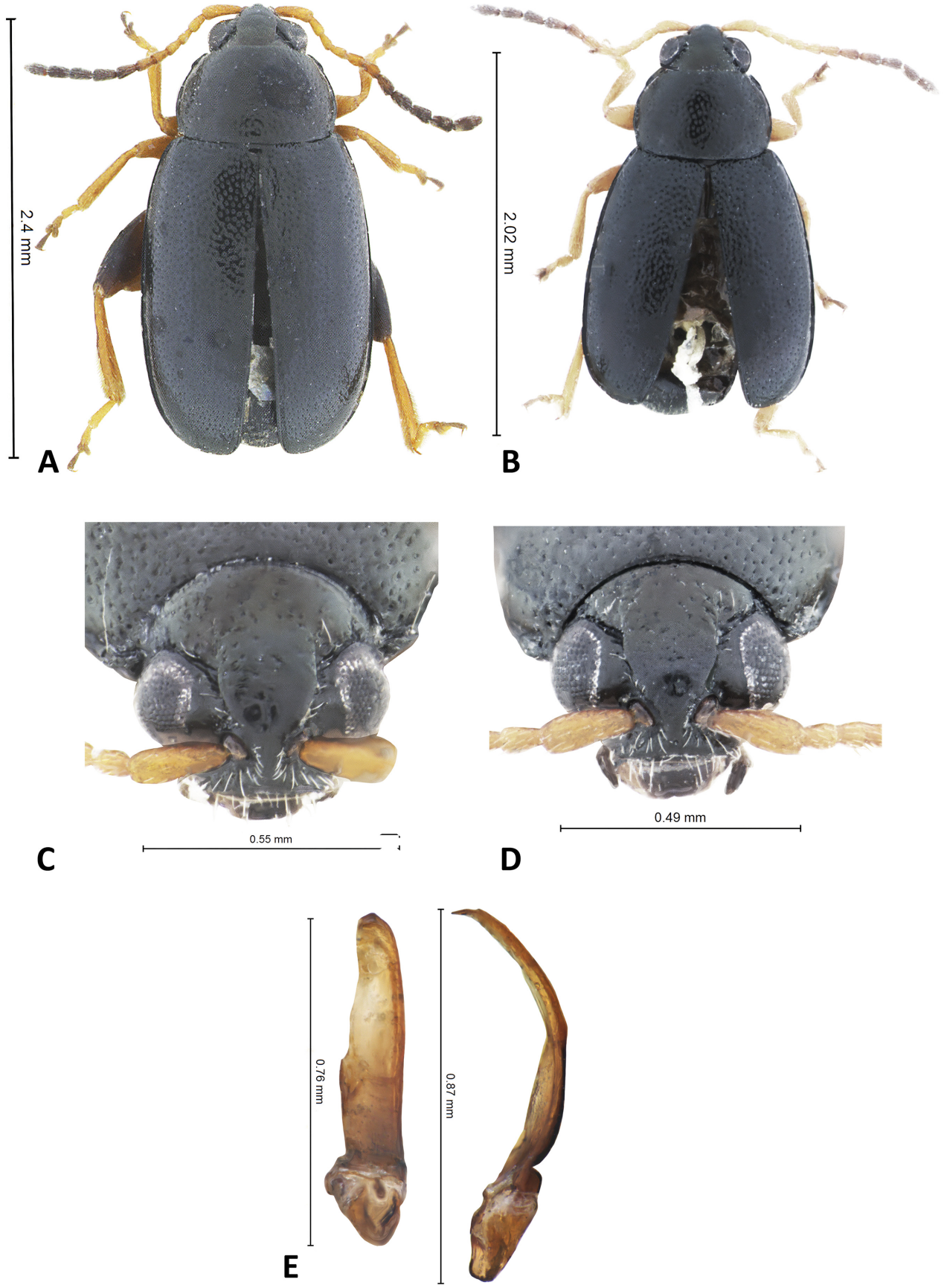


**FIGURE 3.** *Phyllotreta araxicola* Jablokoff-Khnzorian. A—habitus, dorsal view, female; B—habitus, dorsal view, male; C—head, frontal view, female; D—head, frontal view, male; E—meadian lobe of aedeagus, ventral and lateral views.

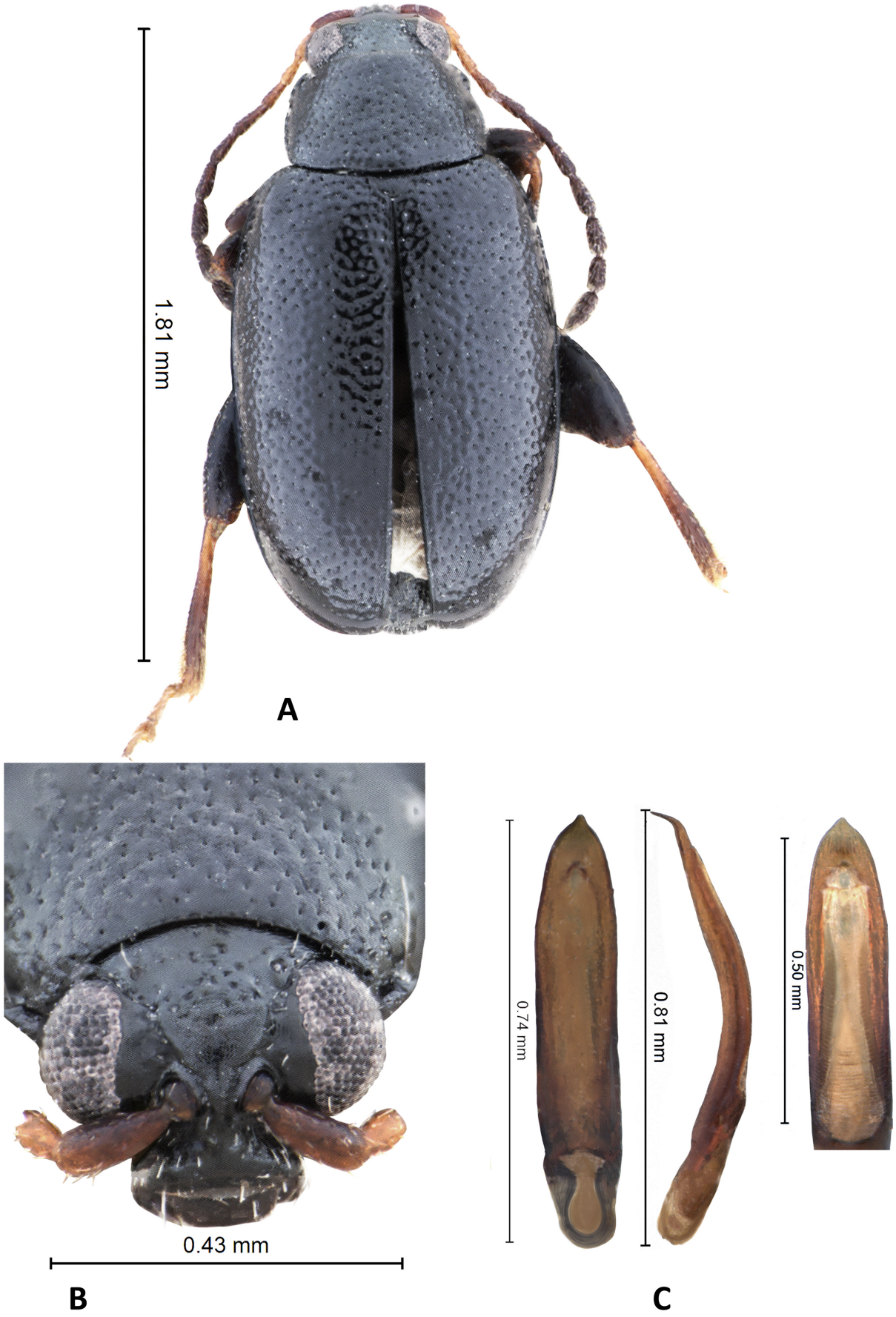


**FIGURE 4.** *Phyllotreta astrachanica* Lopatin. A—habitus, dorsal view; B—head, frontal view; C—meadian lobe of aedeagus, ventral, lateral and dorsal views.

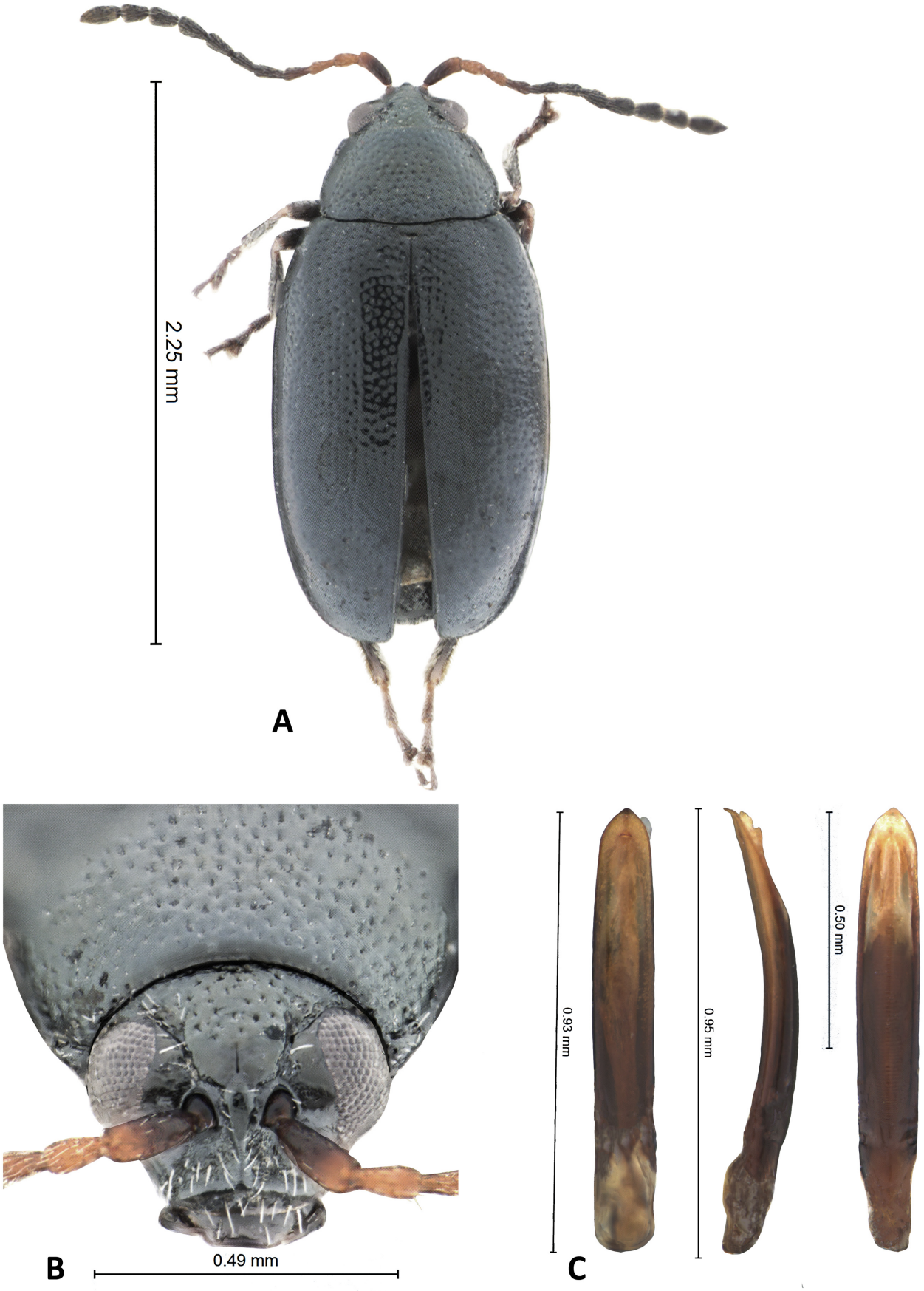


**FIGURE 5.** *Phyllotreta atra* Fabricius. A—habitus, dorsal view; B—head, frontal view; C—meadian lobe of aedeagus, ventral, lateral and dorsal views.

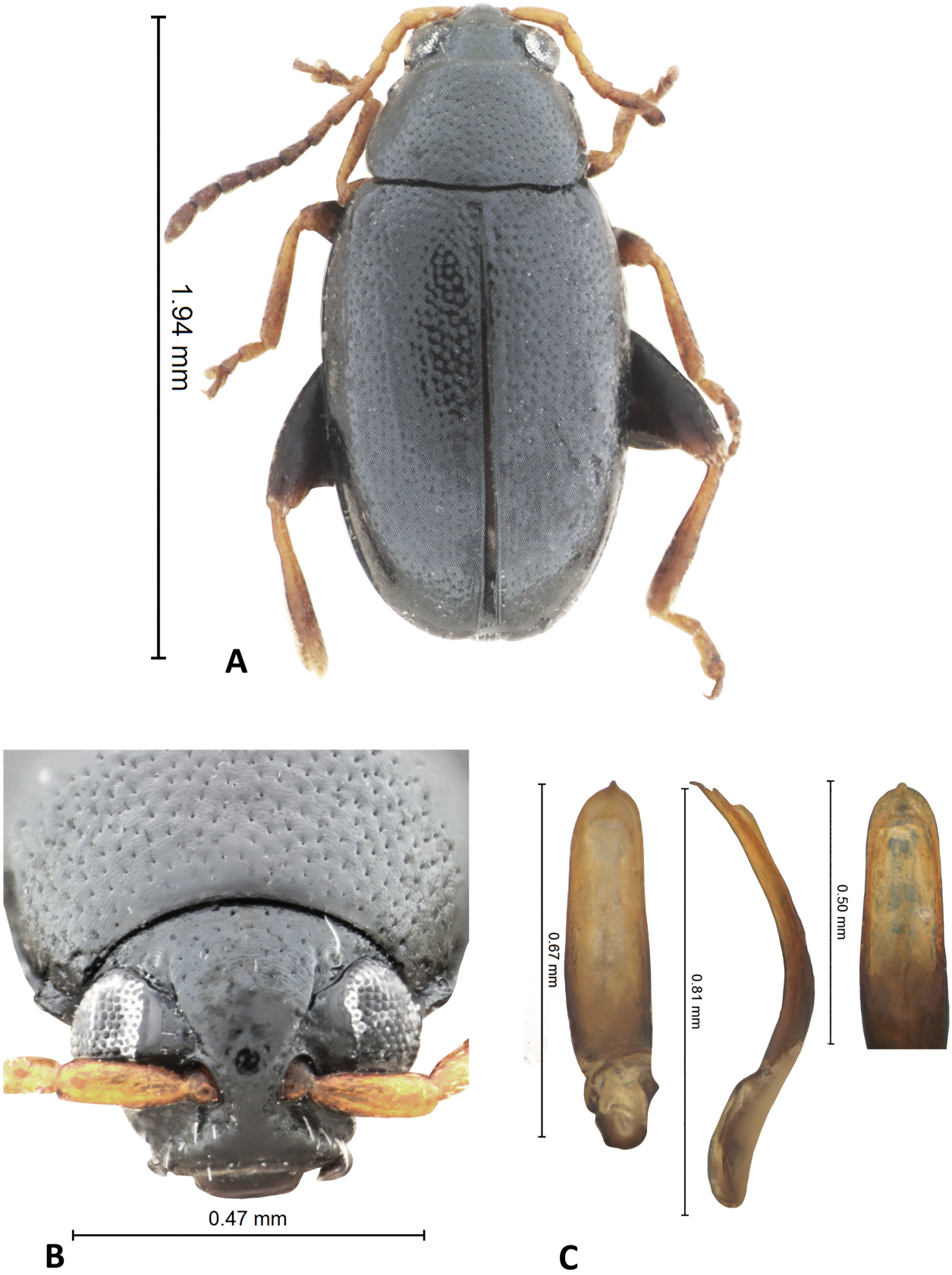


**FIGURE 6.** *Phyllotreta balcanica* Heikertinger. A—habitus, dorsal view; B—head, frontal view; C—meadian lobe of aedeagus, ventral, lateral and dorsal views.

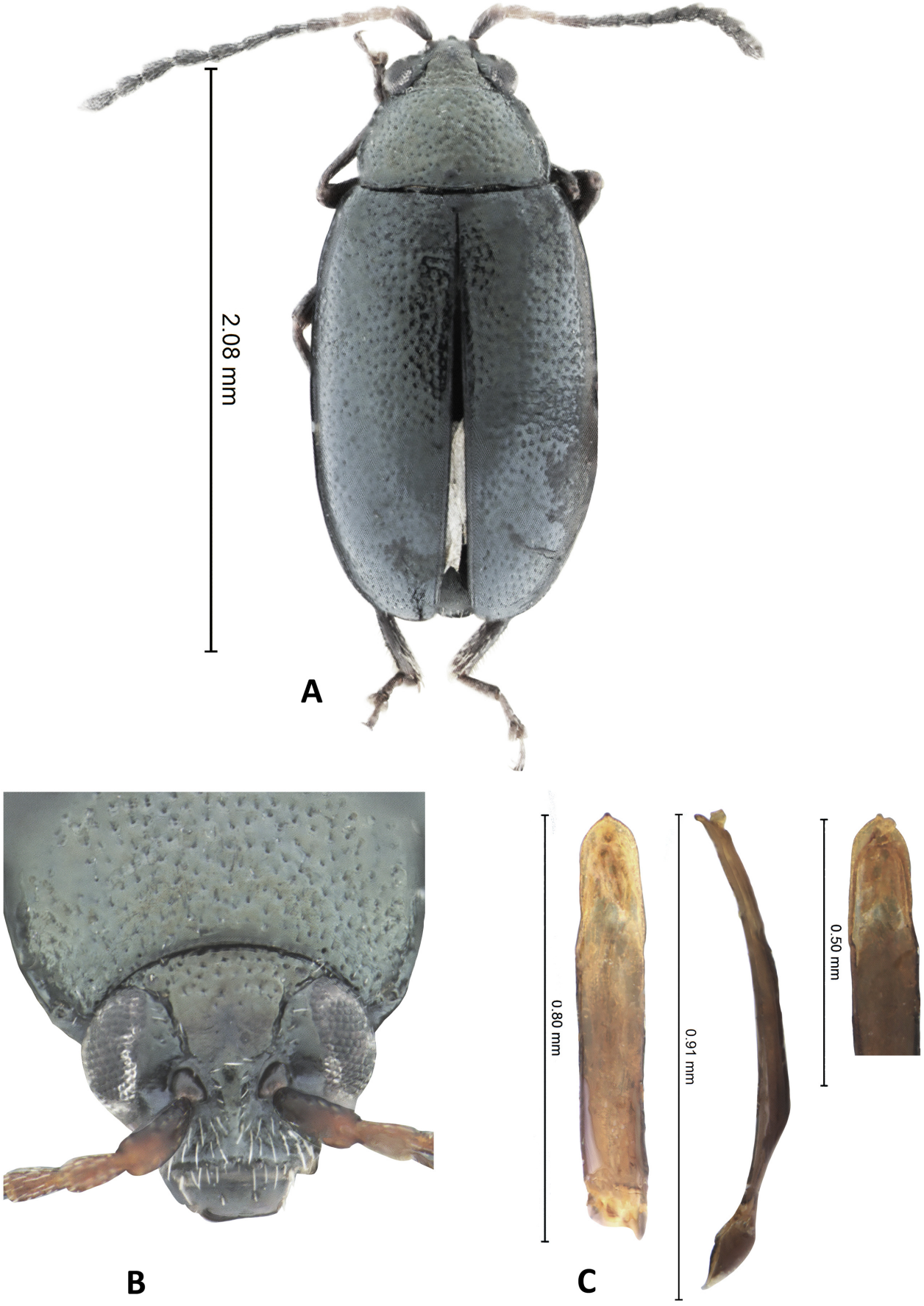


**FIGURE 7.** *Phyllotreta cruciferae* Goeze. A—habitus, dorsal view; B—head, frontal view; C—meadian lobe of aedeagus, ventral, lateral and dorsal views.

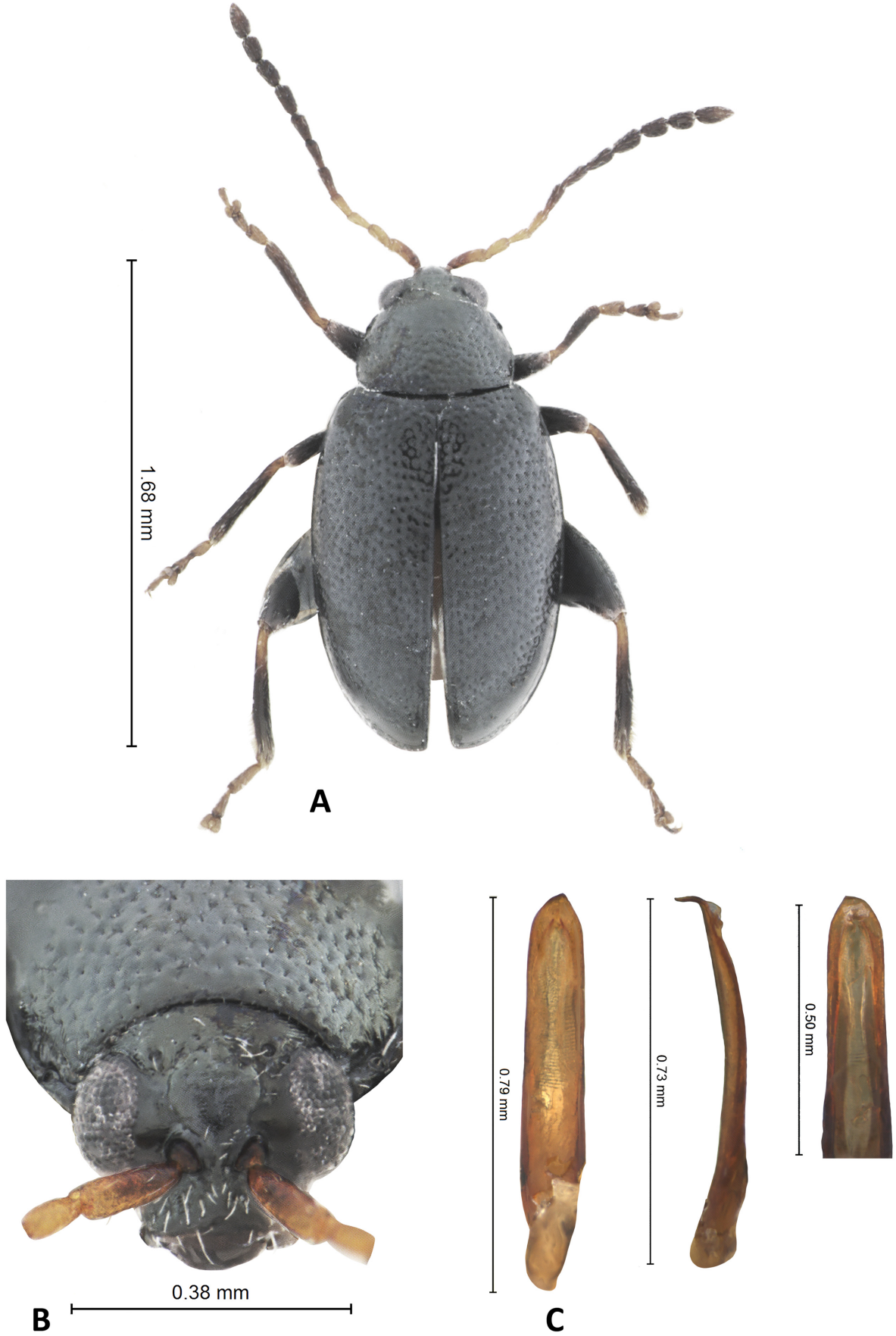


**FIGURE 8.** *Phyllotreta diademata* Fourdas. A—habitus, dorsal view; B—head, frontal view; C—meadian lobe of aedeagus, ventral, lateral and dorsal views.

*Phyllotreta cruciferae* Goeze, 1777:312 (Fig. 7)
Labels: 1) [Austria] Umgeb. Wien, Heikertinger; 2) *Phyllo. cruciferae* Heik. (3 females, 5 males USNM).

*Phyllotreta diademata* Fourdas, 1860:369 (Fig. 8)
Labels: 1) Bulgaria, Plovdiv, 29.V.1962; 2) *Brassica chinenesis*; 3) *Phyllotreta diademata*; 4) 3) *Phyllotreta diademata* Fdr. I.K.Lopatin det. 1976 (male USNM). Female, the same labels.

## Key to *Phyllotreta sholaksori* and allied species

1. Antennomeres one to five and all tibiae more or less light in color, yellowish . . . . . 2
- Antennomere 4 and all tibiae dark in color, dark brown or black, antennomere one slightly darkened . . . . . 3
2. Surface of antennal calli and following vertex much higher than surface of orbit. Anterofrontal ridge deeply concave, relatively narrow, as wide as frontal ridge near it. . . . . *P. araxicola*
- Surface of antennal calli and following vertex only slightly higher than surface of orbit. Anterofrontal ridge shallowly concave, relatively wide, wider than frontal ridge near it . . . . . *P. balcanica*
3. Distal part of median lobe of aedeagus in lateral view generally straight, very slightly S-shaped (Fig. 1 D). . . . . *P. sholaksori* new species
- Distal part of median lobe of aedeagus in lateral view curved ventrally, not slightly S-shaped (e. g. Fig. 4 C) . . . . . 4
4. Bent part of apex of median lobe of aedeagus in lateral view long (Fig. 4 C). . . . . 5
- Bent part of apex of median lobe of aedeagus in lateral view short (Fig. 5 C) . . . . . 6
5. Vertex with punctures relatively sparsely placed just above antennal calli (Fig. 8 B). Median lobe of aedeagus slender, more or less parallel sided in ventral view, nearly straight in lateral view, apex without well developed denticle (Fig. 8 C) . . . . . *P. diademata*
- Vertex with punctures relatively densely placed just above antennal calli. (Fig. 4 B). Median lobe of aedeagus robust, with slightly curved sides in ventral view, strongly bent in lateral view, apex with well developed denticle (Fig. 4 B). . . . . *P. astrachanica*
6. Midfrontal sulcus well visible. Surface of frontal ridge at same level as antennal calli (Fig. 5 B). Apical part of median lobe of aedeagus narrowing gradually, apex without well developed denticle (Fig. 5 C).. . . . . *P. atra*
- Midfrontal sulcus invisible. Surface of frontal ridge slightly above level as antennal calli (Fig.7 B). Apical part of median lobe of aedeagus narrowing abruptly, apex with well developed denticle (Fig. 7 C). . . . . *P. cruciferae*

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