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Two new species of the Hypnoidini Schwarz, 1906 (Coleoptera: Elateridae: Dendrometrinae) from Afghanistan

ALEXANDER S. PROSVIROV[1]
[1]Department of Entomology, Faculty of Biology, Moscow State University, Leninskie gory 1/12, Moscow, 119234, Russia.
E-mail: carrabus69@mail.ru

Abstract

Two new species of the tribe Hypnoidini Schwarz, 1906 are described from Afghanistan: *Hypnoidus afghanus* **sp. nov.** and *Ligmargus kabakovi* **sp. nov.** The genera *Hypnoidus* Dillwyn, 1829 and *Ligmargus* Stibick, 1976 as well as the tribe Hypnoidini are recorded for the first time in Afghanistan.

Key words: Coleoptera, Elateridae, Hypnoidini, *Hypnoidus*, *Ligmargus*, new species, new records, Palaearctic region, Afghanistan, click beetles

Introduction

The elaterid fauna of Afghanistan is very poorly known. About 70 species have been recorded from Afghanistan to date, most of them recorded or described over the last three decades (see Prosvirov 2016 for all references). It is very likely that many new and previously unrecorded elaterid species will be discovered in Afghanistan in the future.

No species of the Hypnoidini Schwarz, 1906 have been recorded form Afghanistan, although species of this tribe are known from the adjacent countries China, India, Pakistan, Tajikistan, and Turkmenistan (Cate *et al.* 2007; Mertlik & Cooter 2007; Platia 2015, 2016). Studying the Hypnoidini fauna of the East Palaearctic region, I recognized two undescribed species of this tribe from Afghanistan. These species are described and discussed below.

Material and methods

Materials from the following collections were used in this study:

CCV private collection of P.C. Cate (Vienna, Austria).
CKS private collection of A.G. Koval (St. Petersburg, Russia).
CPG private collection of G. Platia (Gatteo, Italy).
CPM private collection of A.S. Prosvirov (Moscow State University, Moscow, Russia).
ZISP Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia). The material from ZISP belongs to the collection of O.N. Kabakov.

Most of the type material will be stored in ZISP, five paratypes of *Ligmargus kabakovi* **sp. nov.** will be stored in CCV, CKS, CPG, and CPM (see indications in the list of material).

The examined specimens were mounted on transparent plastic plates or on white glue boards. The genitalia were removed, cleaned and fixed under the body of the specimen in plastic micro vials with glycerol. The procedure for making such mounts was described by Prosvirov & Savitsky (2011).

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The material was studied under a Motic SMZ-143-N2GG stereomicroscope and Micromed 3 trinocular microscope.

Photographs of the beetles were taken using a Canon EOS-40D camera and a Canon EOS-6D camera, both with a Canon MP-E 65 mm lens. Photographs of the genitalia were taken from glycerol mounts using a Micromed 3 trinocular microscope with a ToupCam 5.1 MP video eyepiece. Extended focus technology was used.

Body length of the specimens was measured from the apical margin of the frons to the apices of the elytra. Body width was measured at the widest point of the body (usually near the middle of the elytra) using a measuring eyepiece of the stereomicroscope.

Types of the new species were marked with red labels indicating the type status (holotype or paratype), the name of the species, and the author. The labels of the specimens are quoted verbatim; additional information and translations of the labels are given in square brackets.

Taxonomy

Hypnoidus afghanus sp. nov.

(Figs. 1–8)

Type locality. Afghanistan, Hindu Kush mountain range, Salang Pass.

Type material. Holotype, male, **Afghanistan:** "Afghan., Hindukuš, Salang pass., 4000 m., 2.8.1972, Kabakov" [NE Afghanistan, the Hindu Kush mountain range, Salang Pass, 4000 m a.s.l., 2 August 1972, O.N. Kabakov leg.] (ZISP). **Paratype,** female, **Afghanistan:** same label data as holotype (ZISP).

Diagnosis. *H. afghanus* **sp. nov.** is similar to *H. vonhayeka* Stibick, 1980, *H. tilloae* Stibick, 1980, and *H. badachschanicus* Dolin, 1998 (Stibick 1980, 1981; Dolin 1998; Dolin & Cate 2001, 2002). It can be distinguished from these species by the notably broadened pronotum, more widened elytra as well as different shape of the aedeagus.

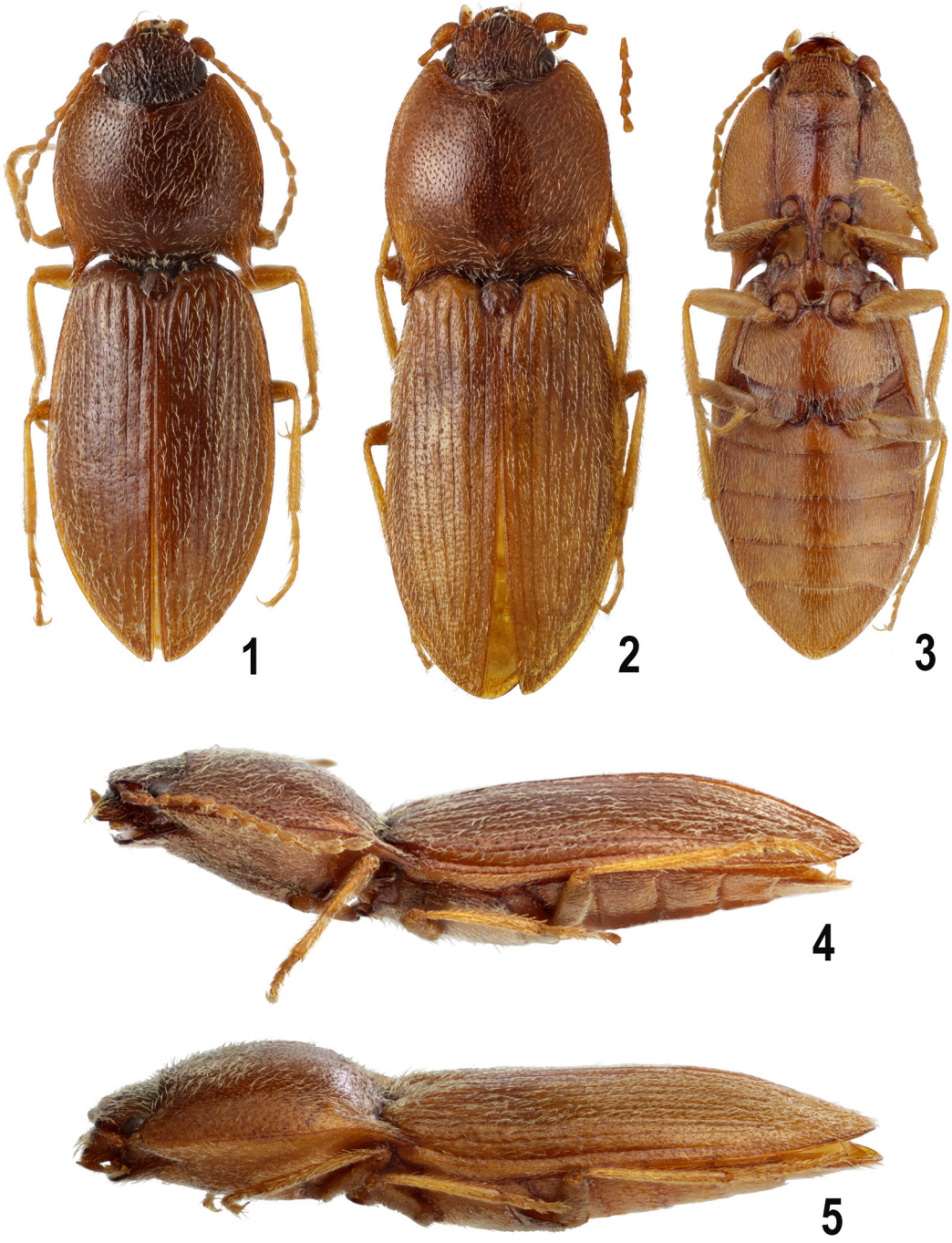
Description. Male (Figs. 1, 3, 4)**:** length 6.3 mm; width 2.2 mm. Body oblong, depressed. Shiny (only hypomera almost matt), dorsum brown; pronotum along sides, hind angles of pronotum, and lateral parts of elytra lighter; head, labrum, beaded part of prosternal lobe, scutellum along margin, and basal margin of elytra darkened. Underside, mouthparts (except brown mandibles), antennae, and legs light brown; disc of prosternum darker; eyes dark gray. Body covered with golden long recumbent setae; pubescence of dorsum and disc of prosternum moderately dense, while pubescence of underside dense. Antennae covered with numerous dense recumbent setae and some erect setae; pubescence on antennae shorter than that of other parts of body.

Head. Slightly wider than long (length/width 0.8), depressed. Punctures coarse, round, and umbilicate, notably larger than punctures on pronotum; intervals between punctures clearly smaller than diameter of one puncture. Antenna short, not reaching apex of hind angle of pronotum about by length of two apical antennomeres, very weakly serrate from antennomere 4. Antennomere 1 thickened and broadened; antennomeres 2 and 3 elongate, more than two times as long as wide, slightly expanded to apex, antennomere 3 longer than antennomere 2; antennomere 4 elongate and broadened at apex, nearly as long as antennomere 3; subsequent antennomeres about as long as antennomere 4, slightly more expanded to apex; apical antennomere ovate oblong (ratio of length/width of antennomeres from 1 to 5 is 1.7, 2.3, 3, 2, 1.4, respectively).

Thorax. Pronotum more than twice as wide as head, wider than long (length 1.6 mm; width 2.1 mm), widest behind middle, narrowed toward anterior angles more sharply than toward hind angles, slightly sinuate in front of hind angles. Hind angle of pronotum rather thin and long, clearly divergent, sharply rounded at apex; carina distinct, short, and not reaching posterior third of pronotum. Disc of pronotum moderately convex, with indistinct median impression in posterior half. Punctures umbilicate; rather dense and elongate laterally, intervals between punctures equal to diameter of one puncture or smaller; punctures on disc sparser, circular or slightly elongated, intervals between punctures equal to diameter of one puncture or larger. Pubescence of pronotum directed caudad and medio-caudad laterally and in anterior half, mediad in posterior half.

Punctures of hypomeron very dense, circular, consisting of a mixture of shallow small ones and considerably larger deep ones; intervals between punctures matt or slightly shiny. Prosternal lobe rather long, exceeding far beyond apex of hypomeron, arcuate in front, partially covering labium, clearly bent downwards, broadly carinate

along margin, separated from rest of prosternum by distinct transverse impression at about anterior quarter of prosternum, coarsely punctured by homogeneous large punctures. Prosternum at about its anterior half with other short, obsolete, transverse lateral impressions. Sides of prosternum punctate as hypomeron, punctures on disc generally large, less dense, intervals between punctures shining. Prosternal process flat, straight, about three times as long as diameter of procoxal cavity, bordered at sides. Punctures of mesosternum small and rather dense. Metasternum subequal in length and width, punctate as hypomeron, but with punctures less dense, intervals between punctures shining. Hind coxal plate strongly widened inwards, more than five times as wide as its narrowest part.



FIGURES 1–5. Habitus of *Hypnoidus afghanus* **sp. nov.**, dorsal (Figs. 1, 2), ventral (Fig. 3) and lateral (Figs. 4, 5) view. **1, 3, 4.** Male, holotype (6.3 mm). **2, 5.** Female, paratype (6.8 mm). Not to scale.

FIGURES 6–8. Genitalia of *Hypnoidus afghanus* **sp. nov. 6.** Holotype, aedeagus, ventral view. **7.** Paratype, ovipositor, ventral view. **8.** Paratype, part of female genital tract, general view. Not to scale.

Scutellum flat, about as long as wide, truncated at anterior margin, with sparse small punctures. Both elytra together ellipsoidal, slightly wider than pronotum, widest behind middle, more than twice as long as pronotum (both elytra together: length 4.3 mm; width 2.2 mm); tapering more strongly to apex than to base; shoulders obtusely rounded. Disc of elytra flat, elytral striae near suture with fine circular punctures; lateral striae with larger and deeper punctures; each interstria with two or three rows of fine, sparse punctures. Wings strongly reduced, represented by vestigials at basal parts of elytra.

Abdomen. Abdomen punctate as metasternum. Ratio of length of abdominal sternite 2 and length of metasternum about 0.5.

Aedeagus (Fig. 6)**.** Parameres about as long as penis, almost straight, expanded at anterior quarter, rounded at apex. Penis rather slender, somewhat narrow, its apophysis short, about 0.3 times as long as penis.

Female (Figs. 2, 5)**.** Coloration lighter than in male. Body larger than in male (length 6.8 mm; width 2.3 mm); disc of pronotum more convex, without median impression. Antenna shorter than in male. In all other respects similar to male.

Female genitalia (Figs. 7, 8)**.** Ovipositor rather long; baculum long, weakly sclerotized (length of baculum/length of ovipositor 0.8); coxite weakly sclerotized, narrowed to apex, with short, indistinct stylus, and with several setae. Bursa copulatrix without sclerotized structures.

Larva. Unknown.

Distribution. Northeastern Afghanistan: Hindu Kush mountain range.

Bionomics. The biology of this species remains unknown, but according to its morphological characters (almost complete reduction of wings and associated shortening of metasternum) and the label data it is likely that *H. afghanus* **sp. nov.** lives exclusively in high mountain areas.

Etymology. The name of the new species is derived from the name of the country of its origin, Afghanistan.

***Ligmargus kabakovi* sp. nov.**
(Figs. 9–19)

Type locality. Afghanistan, Nuristan Province, Waygal Valley.

Type material. Holotype, male, **Afghanistan:** "Afghan., Nurestan, N Waygal, 3500 m, 2.7.1972, Kabakov" [NE Afghanistan, Nuristan Province, N Waygal, 3500 m a.s.l., 2 July 1972, O.N. Kabakov leg.] (ZISP). **Paratypes,** 11 males, 20 females, **Afghanistan:** 2 males, 6 females, same label data as holotype (2 males, 5 females in ZISP, 1 female in CPM); 4 females, same label data as holotype, but 10 July 1972 (3 females in ZISP, 1 female in CKS); 2 females, same label data as holotype, but 2700 m a.s.l., 6 July 1972 (ZISP); 1 male, 1 female, same label data as holotype, but 3600 m a.s.l., 2 July 1972 (ZISP); 3 males, 1 female, same label data as holotype, but 4000 m a.s.l., 2 July 1972 (ZISP); 1 female, "Afghan., Nurestan, upp. Waygal riv., 3000 m, 7.7.1971, Kabakov" [NE Afghanistan, Nuristan Province, upper reaches of Waygal River, 3000 m a.s.l., 7 July 1971, O.N. Kabakov leg.] (ZISP); 4 males, 3 females, same data but 3500 m a.s.l., 2 July 1972 (ZISP); 1 male, 2 females, "Афганистан, Нуристан, верх. р. Вайгал, 3000 м, 9.07.1972, О. Кабаков" [NE Afghanistan, Nuristan Province, upper reaches of Waygal River, 3000 m a.s.l., 9 July 1972, O.N. Kabakov leg.] (1 male and 1 female in CCW, 1 female in CPG).

FIGURES 9–13. Habitus of *Ligmargus kabakovi* **sp. nov.**, dorsal (Figs. 9, 10), ventral (Fig. 11) and lateral (Figs. 12, 13) view. **9, 12.** Male, holotype (8.4 mm). **10, 13.** Female, paratype (8.1 mm). **11.** Male, paratype (7.4 mm). Not to scale.

Diagnosis. *L. kabakovi* **sp. nov.** is similar to *L. kalabi* Mertlik, 2001 (Mertlik 2001) and can be distinguished from the latter by the shorter antennae, wider pronotum, and different shape of the aedeagus.

Description. Male (Figs. 9, 11, 12)**:** length 7.1–8.4 mm (holotype 8.4 mm); width 2.4–2.9 mm (holotype 2.9 mm). Body oblong, depressed. Weakly shiny, dorsum varying from black to dark brown; hind angles of pronotum and elytra usually slightly lighter; underside varying from dark brown to brown; legs, antennae, and mouthparts light brown, femora usually darkened; eyes grayish brown. Dorsum covered with rather short brown or bronze recumbent setae; pubescence of rest of body silvery or slivery yellowish, rather long; pubescence of underside notably denser than that of other parts of body. Antennae covered with numerous dense recumbent setae and some erect setae.

Head. Slightly wider than long (length/width varies from 0.6 to 0.8), depressed, sometimes with more or less distinct triangular impression in anterior half. Punctures rather coarse, round or weakly elongate, and umbilicate, larger than punctures on pronotum; intervals between punctures usually smaller than diameter of one puncture. Antenna rather short, usually not reaching apex of hind angle of pronotum about by length of one to one and a half apical antennomeres, sometimes almost reaching apex of hind angle of pronotum, very weakly serrate from antennomere 4. Antennomere 1 elongate, slightly thickened, and weakly broadened; antennomeres 2 and 3 elongate, about two times as long as wide, slightly expanded to apex, antennomere 3 longer than antennomere 2; antennomere 4 elongate and broadened at apex, as long as antennomere 3; subsequent antennomeres about as long as antennomere 4, more expanded to apex; apical antennomere ovate oblong (ratio of length/width of antennomeres from 1 to 5 about 2.5, 1.8, 2.2, 1.7, 1.5, respectively).

Thorax. Pronotum more than twice as wide as head, slightly wider than long (length 1.9–2.3 mm; width 2.2–2.5 mm), widest near middle, narrowed toward anterior angles more sharply than toward hind angles, slightly sinuate in front of hind angles. Hind angle of pronotum rather thin and long, clearly divergent, sharply rounded or truncated at apex; carina distinct, short, and not reaching posterior third of pronotum. Disc of pronotum weakly convex, usually with more or less distinct median impression in posterior half. Punctures umbilicate, more or less elongate, consisting of a mixture of shallow small ones and considerably larger deep ones; punctures dense laterally, intervals between punctures smaller than diameter of one puncture; punctures on disc sparser, intervals between punctures about equal to diameter of one puncture. Pubescence of pronotum directed caudad and mediocaudad laterally, laterad on disk, caudad and mediad on posterior slope.

Punctures of hypomeron very dense, circular, consisting of a mixture of shallow small ones and considerably larger deep ones; intervals between punctures matt or slightly shiny. Prosternal lobe rather long, exceeding far beyond apex of hypomeron, arcuate in front, partially covering labium, weakly bent downwards, broadly carinate along margin, separated from rest of prosternum by indistinct transverse impression at about anterior quarter of prosternum, coarsely punctured, with homogeneous large punctures. Sides of prosternum punctate as hypomeron, punctures on disc only large, less dense, intervals between punctures on disc shining. Prosternal process flat, straight or very weakly bent inwards in posterior half, about three times as long as diameter of procoxal cavity, bordered at sides. Punctures of mesosternum more or less large and rather dense. Metasternum subequal in length and width, punctate as hypomeron, but with punctures less dense, intervals between punctures shining. Hind coxal plate strongly widened inwards, more than five times as wide as its narrowest part.

Scutellum flat, almost circular, truncated at anterior margin, with sparse small punctures. Both elytra together ellipsoidal, slightly wider than pronotum, widest near middle, more than twice as long as pronotum (both elytra together: length 4.6–5.1 mm; width 2.4–2.9 mm); tapering more strongly to apex than to base; shoulders obtusely rounded. Disc of elytra flat, elytral striae distinct, with large and deep punctures; interstriae with fine, sparse punctures. Wings reduced, barely reaching middle of elytra.

Abdomen. Abdomen punctate as metasternum. Ratio of length of abdominal sternite 2 and length of metasternum less than 0.5.

Aedeagus (Fig. 14–16)**.** Typical of this genus, trilobate. Parameres about as long as penis, slightly expanded at posterior half and at anterior third, rounded at apex. Penis rather slender, somewhat narrow, its apophysis very long, about two times as long as penis.

Female (Figs. 10, 13)**.** Body larger than in male (length 7.3–8.6 mm; width 2.5–2.9 mm); disc of pronotum and elytra usually more convex. Antenna slightly shorter than in males. In all other respects females similar to males.

Female genitalia (Figs. 17–19)**.** Ovipositor rather long; baculum long, weakly sclerotized (length of baculum/length of ovipositor about 0.8); coxite weakly sclerotized, narrowed to apex, with short, indistinct stylus, and with

several setae. Bursa copulatrix with sclerotized structures typical of this genus: two large symmetrical sclerotized plates and two small symmetrical sclerotized plates, both sets of plates consisting of conjoined spines.

Larva. Unknown.

Variability. Size, body proportions and coloration somewhat variable. Shape and proportions of aedeagus also variable (Figs. 14–16) as well as shape and size of sclerotized plates of bursa copulatrix (Figs. 18, 19).

Distribution. Northeastern Afghanistan: Nuristan Province, Waygal Valley.

Bionomics. The biology of this species remains unknown, but according to its morphological characters (almost complete reduction of wings and associated shortening of metasternum) and the label data it is likely that *L. kabakovi* **sp. nov.** lives exclusively in high mountain areas.

FIGURES 14–19. Genitalia of *Ligmargus kabakovi* **sp. nov. 14.** Holotype, aedeagus, ventral view. **15.** Paratype, aedeagus, ventral view. **16.** Paratype, aedeagus, ventral view. **17.** Paratype, ovipositor, ventral view. **18.** Paratype, part of female genital tract, general view. **19.** Paratype, part of female genital tract, general view. Not to scale.

Etymology. Named in honour of the collector of the type series, the distinguished geologist and entomologist Oleg N. Kabakov.

Discussion

The known Hypnoidini fauna of Afghanistan is thus represented now by two species. It is highly probable that other species of this tribe known from the adjacent territories will be recorded in Afghanistan in the future. It is also very likely that new Hypnoidini species will be discovered in various mountain areas of Afghanistan, because these regions remain almost unexplored and have favorable conditions for the existence of such species.

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