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# A new species of the genus *Pseudanostirus* Dolin, 1964 (Coleoptera: Elateridae: Dendrometrinae) from Southeastern Turkey

# Новый вид рода *Pseudanostirus* Dolin, 1964 (Coleoptera: Elateridae: Dendrometrinae) из Юго-Восточной Турции

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KEY WORDS: click beetles, Elateroidea, highlands, Palearctic region, Prosternini, West Asia, Zagros Mountains.
КЛЮЧЕВЫЕ СЛОВА: высокогорья, жуки-щелкуны, Палеарктика, Передняя Азия, хребет Загрос, Elateroidea, Prosternini.

ABSTRACT. *Pseudanostirus nabozhenkorum* **sp.n.** is described from the highlands of the Zagros Mountains in Hakkâri Province, Turkey. The species is most closely related to *P. altaicus* (Eschscholtz, 1829), but can be easily distinguished from that species in some characters of external morphology and the structure of the aedeagus.

РЕЗЮМЕ. По материалу из высокогорий хребта Загрос (Турция, провинция Хаккяри) описан *Pseudanostirus nabozhenkorum* **sp.n.** Новый вид наиболее близок к *P. altaicus* (Eschscholtz, 1829), от которого хорошо отличается рядом признаков внешней морфологии и строением эдеагуса.

## Introduction

*Pseudanostirus* Dolin, 1964 is a relatively small genus of click beetles of the tribe Prosternini Gistel, 1856, subfamily Dendrometrinae Gistel, 1848. The genus is distributed in the Holarctic region and includes about 24 known species, 19 of which are present in the Palearctic [Johnson, 2002; Cate *et al*., 2007; Kishii, 2010; Mathison, 2021; Platia, Pulvirenti, 2022]. Many species of *Pseudanostirus* are known exclusively from mountain areas [Gurjeva, 1989], so it is quite probable that some congeners from little-studied highlands remain unknown and will be described in the future.

Most Palearctic species of the genus are distributed in the East Palearctic, while only two species, *P. globicollis* (Germar, 1843) and *P. jasoni* Dolin et Chantladze, 1987, are known from the West Palearctic. Studying click beetles collected in the highlands of Southeastern Turkey, I recognized an undescribed *Pseudanostirus* species, the third West Palearctic representative of the genus. This species is described and discussed below.

## Material and methods

The single known specimen of *P. nabozhenkorum* **sp.n.** was provided by Maxim V. Nabozhenko (see acknowledgements) and will be stored in the collection of the Zoological Museum of Lomonosov Moscow State University (Moscow, Russia; hereinafter ZMMU).

The morphological terms used in this study mainly follow Costa *et al.* [2010].

The examined specimens (*P. nabozhenkorum* **sp.n.** and closely related congeners, see DIFFERENTIAL DIAGNOSIS) were mounted on transparent plastic plates. The genitalia were removed, cleaned, and fixed under the body of the specimen in plastic microvials with glycerol. The procedure for making such mounts was described by Prosvirov & Savitsky [2011].

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-6D camera 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 18 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.

The holotype of the new species is provided with a red label indicating the type status, the name of the species, and the author. The label data are quoted verbatim; additional information is given in square brackets.

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## Taxonomic account

*Pseudanostirus nabozhenkorum* **sp.n.**
Figs 1–3, 6, 10, 12, 14, 17, 20–24, 26.

MATERIAL. Holotype, male (ZMMU): "SE Turkey, Hakkâri Prov., Berçelan Yayla [Zagros Mountain Range], 37°38'11.6"N 43°45'20.2"E, h=2700 m, 3.VI.2013, M.V. & S.V. Nabozhenko, B. Keskin, A. Pektaş leg. // alpine belt with stony xerophytic patches".

TYPE LOCALITY. Southeastern Turkey, Hakkâri Province, Zagros Mountain Range, Berçelan Yayla.

DESCRIPTION. **Male** (holotype). Body length 8.1 mm; body width 2.6 mm; pronotum length 2.0 mm; pronotum width 2.2 mm; elytron length 5.3 mm; width of both elytra together 2.6 mm; antenna length 3.0 mm. Body moderately shining, elongate, rather flat; head and prothorax blackish; antenna, eye, and elytra dark brown; mouthparts and legs mostly brown or light brown; otherwise underside of body mostly brown or dark brown. Body covered with rather dense moderately long golden-bronze setae (Figs 1–3).

Head: notably wider than long (length/width 0.6); surface rather densely covered with rather large, deep, and vaguely umbilicate rounded punctures; intervals between punctures on average equal to 0.5 diameters of one puncture or smaller (Fig. 6). Eye medium-sized, slightly convex (Fig. 17). Antenna rather long, almost reaching apex of hind angle of pronotum, covered with golden setae, weakly serrated from antennomere IV to X. Antennomere I thickened, bean-shaped; antennomere II almost globular, as long as wide, 0.6 times as long as antennomere III; antennomere III elongate; antennomere IV elongate and broadened at apex, 1.1 times as long as antennomere III; antennomeres V to X subequal in length, notably broadened at apices, short, subtriangular, about 0.9 times as long as antennomere IV; antennomere XI ovate, subapically slightly tapered (ratio of length/width of antennomeres from I to V: 1.6, 1, 1.7, 1.3, and 1.2, respectively). Antennomeres I to III slightly shining, sparsely punctate, covered with rather sparse short recumbent and some long erect setae; all more distal antennomeres densely punctate, with wrinkled surface, almost matt, covered with dense short recumbent and some long erect setae (Fig. 10).

Thorax: pronotum about 2 times as wide as head, slightly wider than long, widest posteriorly behind middle, more anteriorly and more posteriorly evenly narrowed toward front and hind angles, respectively, slightly sinuate in front of hind angles, weakly convex. Hind angle of pronotum rather short, stout, obtusely truncated at apex, slightly divergent, with distinct short carina near lateral margin (carina slightly longer than hind angle of pronotum). Pronotum punctate similarly to head. Surface of pronotum covered with intermixed recumbent and some erect setae (Figs 2, 17).

Prosternal lobe short, broadly rounded, not covering mouthparts, with distinctly carinate anterior margin, separated from rest of prosternum by rather deep transverse impression at about anterior 1/5 of prosternum, covered with large, deep, rounded, umbilicate punctures; intervals between punctures on average less than 0.5 diameters of one puncture (Fig. 14). Prosternum slightly broadened anteriorly, almost parallel-sided otherwise. Prosternal punctures rather small, shallow, rounded, vaguely umbilicate, sparse; punctures larger in posterior 2/3 of prosternum; intervals between punctures on average subequal to 2 diameters of one puncture or greater. Hypomeron with rather large, rounded, umbilicate punctures; intervals between punctures less than 0.5 diameters of one puncture, wrinkled; posterior 1/5 of hypomeron without punctures. Prosternal process rather thin, moderately long, about 1.3 times as long as diameter of procoxal cavity, weakly sloping behind procoxae, slightly tapered at apex, bluntly rounded, covered with rather large, moderately sparse punctures. Anterior 1/3 of disc of prosternum, mesoventrite and metavenrite punctate similarly (Fig. 3). Metaxocal plate broadened at base, about twice as wide as its narrow part (Fig. 20).

Scutellum rather short (about 1.1 times as long as wide), flat, tongue-shaped, sinuate in anterior 1/3, truncated at base, broadly rounded at apex, rather densely punctate and pubescent (Fig. 17).

Elytra oblong, slightly wider than pronotum, widest behind middle, about 2.7 times as long as pronotum, very slightly and evenly broadened over anterior 2/3 of length, evenly tapering to apex in posterior 1/3; shoulders broadly rounded. Disc of elytron flat, with rather shallow but distinct striae; punctures of striae rounded, rather large, exceeding stria width, rather sparse; interstriae very slightly wrinkled, with dense, rounded, small punctures, intervals between punctures on average subequal to diameter of one puncture or smaller (Figs 1, 12). Metathoracic wings completely developed, reaching apices of elytra.

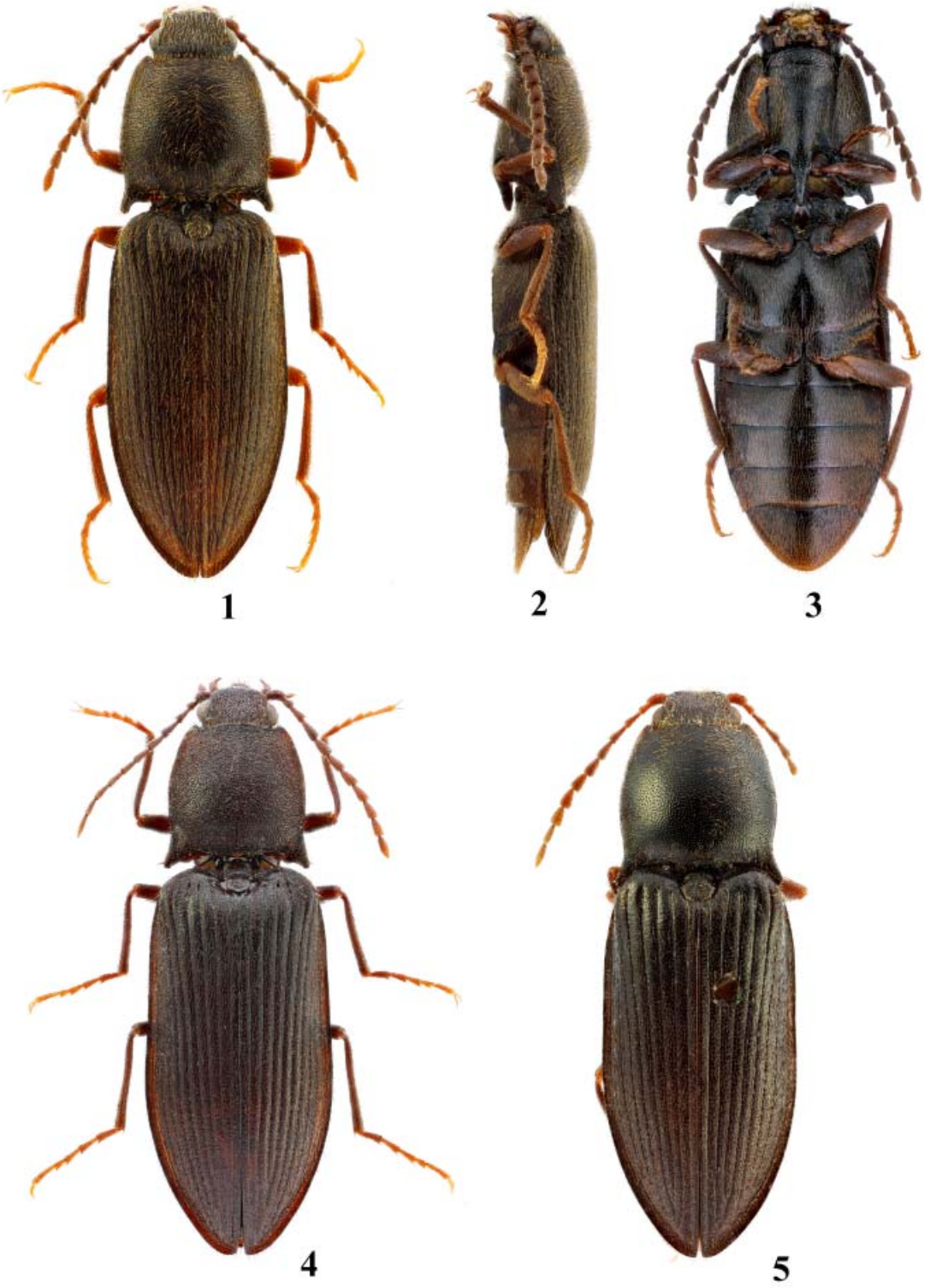
Legs moderately slender, tarsomeres getting shorter from I to IV, tarsomere V longest, tarsomere IV shortest (Fig. 1).

Abdomen: punctate similarly to metavenrite, in posterior 1/2 of apical ventrite punctures large and deep (Fig. 3). Tergite VIII cordiform, densely covered with microtrichia, except for most of basal portion; at disc, laterally and at apical margin with some short setae; laterally and at apical margin with some very long setae (Fig. 21). Tergite IX almost quadrangular, apical portion deeply triangularly concave; densely covered with microtrichia in posterior 1/2; at disc in posterior 1/2 and laterally with some short setae; lateral margins in posterior 1/2 with some very long setae (Fig. 22). Tergite X somewhat ellipsoidal, with lateral expansion in anterior 1/2, obtusely rounded at apex; densely covered with microtrichia, except for basal portion (Fig. 22). Sternite VIII transverse; at disc and posterolaterally with some short and moderately long setae, at apical margin with some very long setae (Fig. 23). Sternite IX elongated, obtusely rounded at apex; pubescent with some moderately long setae in posterior 1/2, at apical margin also with some very long setae (Fig. 24).

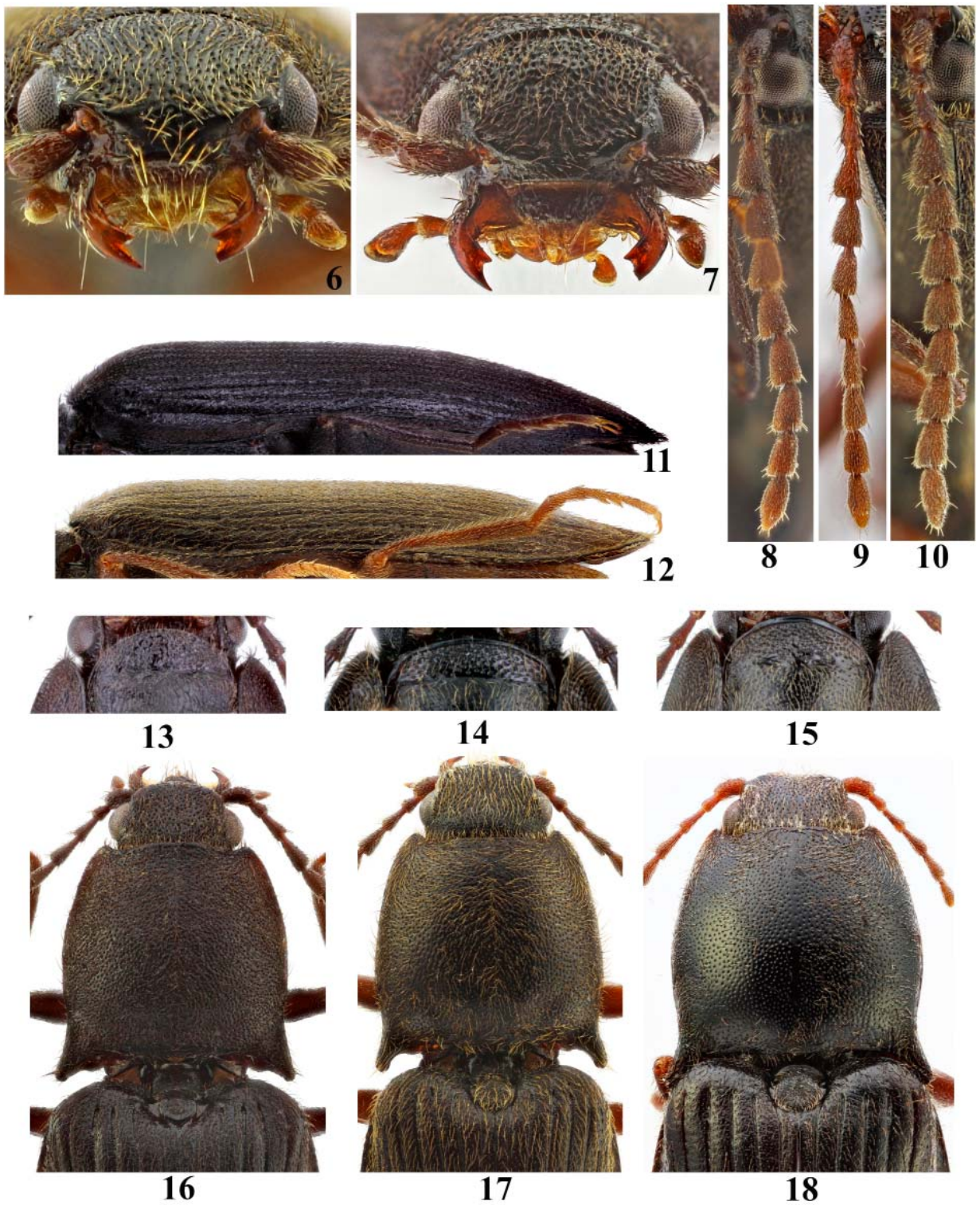
Genitalia: penis moderately thick, slightly longer than paramere, gradually narrowed towards apex, with apical portion constricted; its apophysis short, about 0.3 times as long as penis. Paramere almost straight in basal 1/2, then distinctly curved, with subapical portion notably expanded, club-like, obtusely rounded at apex. Phallobase transverse, almost U-shaped (Fig. 26).

Female and immature stages: unknown.

DIFFERENTIAL DIAGNOSIS. *Pseudanostirus nabozhenkorum* **sp.n.** belongs to the *P. altaicus*-species group (third group of species according to Gurjeva [1989]), which mainly characterized by the presence of the carina on the hind angle of the pronotum. Within this group, the new species most resembles *P. jasoni* and *P. altaicus* (Eschscholtz, 1829) (Figs 4, 5) in the rather dense punctation of pronotum, comparatively narrow pronotum (at least only slightly wider than long), rather broadly spread lateral margin of elytron (wider than 0.5 of sutural interval width), and rather elongated elytra (2.7–3.2 times as long as pronotum). The new species can be easily distinguished from these congeners by several male characters. *Pseudanostirus nabozhenkorum* **sp.n.** differs from *P. jasoni*, the only other known species of the genus from Turkey, in the smaller body size (body length of males 8.1 mm in *P. nabozhenkorum* **sp.n.** and 9.8–11.0 mm in *P. jasoni*), paler

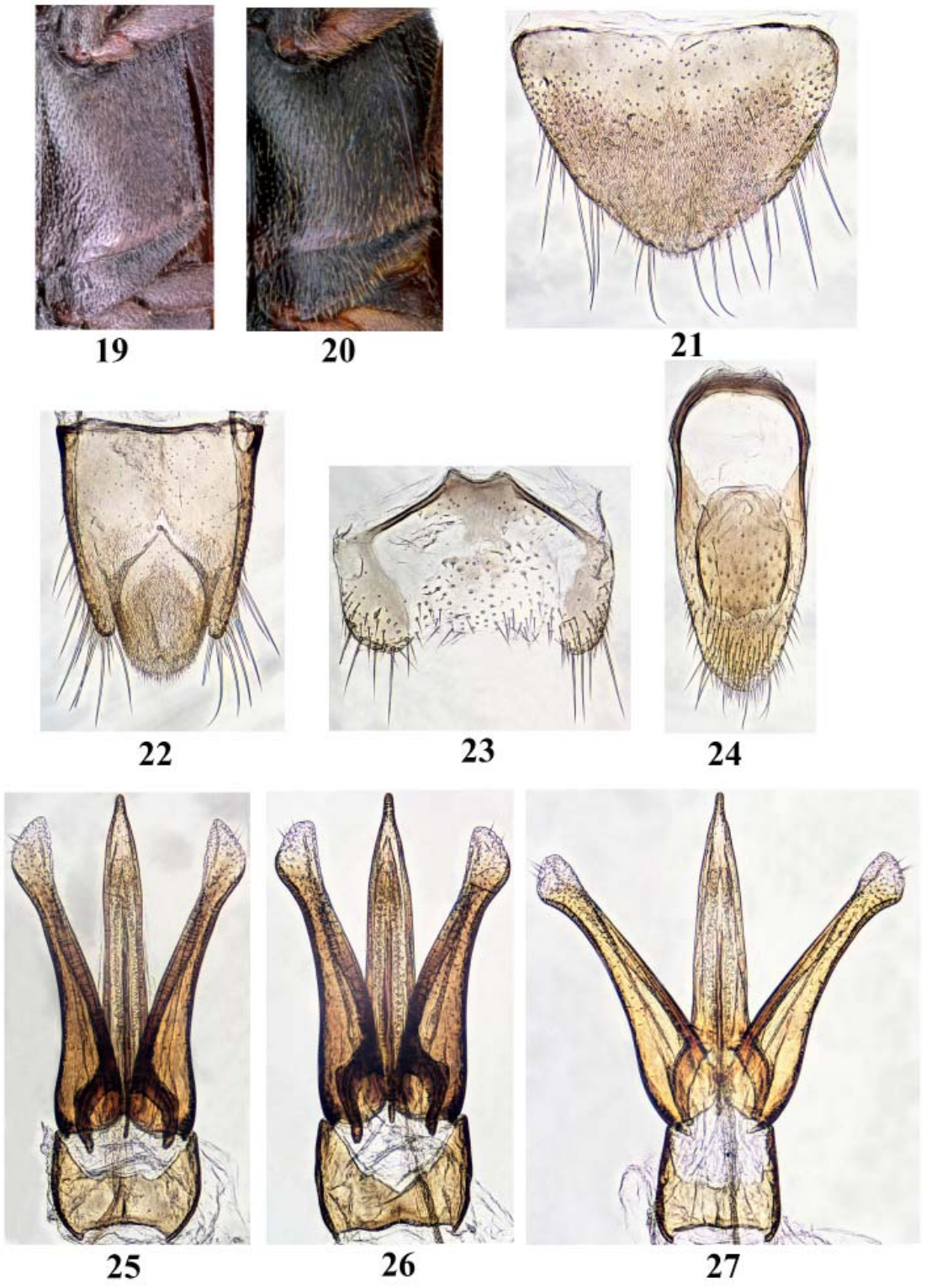



**Figs 1–5.** *Pseudanostirus* spp., habitus of male: 1–3 — *P. nabozhenkorum* **sp.n.**, holotype (body length 8.1 mm); 4 — *P. jasoni* Dol. et Chant. (body length 9.8 mm; Georgia); 5 — *P. altaicus* (Esch.) (body length 8.5 mm; Russia, Altai Republic). 1, 4, 5 — dorsal view; 2 — lateral view; 3 — ventral view. Not to scale.
**Рис. 1–5.** *Pseudanostirus* spp., внешний вид самца: 1–3 — *P. nabozhenkorum* **sp.n.**, голотип (длина тела 8.1 мм); 4 — *P. jasoni* Dol. et Chant. (длина тела 9,8 мм; Грузия); 5 — *P. altaicus* (Esch.) (длина тела 8.5 мм; Россия, Республика Алтай). 1, 4, 5 — вид сверху; 2 — вид сбоку; 3 — вид снизу. Не в масштабе.




**Figs 6–18.** *Pseudanostirus* spp., details of morphology of male: 6, 10, 12, 14, 17 — *P. nabozhenkorum* **sp.n.**, holotype; 7, 8, 11, 13, 16 — *P. jasoni* Dol. et Chant. (Georgia); 9, 15, 18 — *P. altaicus* (Esch.) (Russia, Altai Republic). 6, 7 — head, frontal view; 8–10 — left antenna, lateral view; 11, 12 — left elytron, lateral view; 13–15 — anterior part of prothorax, ventral view; 16–18 — head, pronotum and base of elytra, dorsal view. Not to scale.

**Рис. 6–18.** *Pseudanostirus* spp., детали морфологии самца: 6, 10, 12, 14, 17 — *P. nabozhenkorum* **sp.n.**, голотип; 7, 8, 11, 13, 16 — *P. jasoni* Dol. et Chant. (Грузия); 9, 15, 18 — *P. altaicus* (Esch.) (Россия, Республика Алтай). 6, 7 — голова, вид спереди; 8–10 — левый усик, вид сбоку; 11, 12 — левое надкрылье, вид сбоку; 13–15 — вершинная часть переднегруди, вид снизу; 16–18 — голова, переднеспинка и основание надкрыльев, вид сверху. Не в масштабе.




**Figs 19–27.** *Pseudanostirus* spp., details of morphology of male: 20–24, 26 — *P. nabozhenkorum* **sp.n.**, holotype; 19, 25 — *P. jasoni* Dol. et Chant. (Georgia); 27 — *P. altaicus* (Esch.) (Russia, Altai Republic). 19, 20 — left half of metaventrite and metacoxal plate, ventral view; 21 — tergite VIII, dorsal view; 22 — tergite IX–X, dorsal view; 23 — sternite VIII, ventral view; 24 — sternite IX, dorsal view; 25–27 — aedeagus, ventral view. Not to scale.

**Рис. 19–27.** *Pseudanostirus* spp., детали морфологии самца: 20–24, 26 — *P. nabozhenkorum* **sp.n.**, голотип; 19, 25 — *P. jasoni* Dol. et Chant. (Грузия); 27 — *P. altaicus* (Esch.) (Россия, Республика Алтай). 19, 20 — левая половина стернита заднегруди и бедренная покрышка, вид снизу; 21 — тергит VIII, вид сверху; 22 — тергиты IX–X, вид сверху; 23 — стернит VIII, вид снизу; 24 — стернит IX, вид сверху; 25–27 — эдеагус, вид снизу. Не в масштабе.

body (elytra and legs dark brown in *P. nabozhenkorum* **sp.n.** and almost uniformly blackish in *P. jasoni*), body pubescence (long, golden-bronze in *P. nabozhenkorum* **sp.n.** and rather short, dark bronze in *P. jasoni*) (Figs 1, 4), shape of middle antennomeres (antennomeres V to VII short, subtriangular, almost as long as wide in *P. nabozhenkorum* **sp.n.** and at least 1.5 times as long as wide in *P. jasoni*) (Figs 8, 10), sparser punctuation of head and pronotum (moderately dense, intervals between punctures on average equal to 0.5 diameters of one puncture or smaller in *P. nabozhenkorum* **sp.n.** and very dense, intervals between punctures on average less than 0.5 diameter of one puncture or smaller in *P. jasoni*) (Figs 6, 7, 16, 17), carination of prosternal lobe (with broad carina at anterior margin in *P. nabozhenkorum* **sp.n.** and with narrow carina at anterior margin in *P. jasoni*) (Figs 13, 14), smaller relative length of metaventrite (1.3 times as long as wide in *P. nabozhenkorum* **sp.n.** and 1.5 times as long as wide in *P. jasoni*), broader metacoxal plate (notably broadened at base, about twice as wide as its narrow part in *P. nabozhenkorum* **sp.n.** and moderately broadened at base, less than twice as wide as its narrow part in *P. jasoni*) (Figs 19, 20), shape of elytron (in lateral view only slightly sloping near scutellum and in apical 1/3 in *P. nabozhenkorum* **sp.n.** and notably sloping near scutellum and in apical 1/3 in *P. jasoni*) (Figs 11, 12), and shape of aedeagus (penis and paramere rather short and robust, paramere bluntly rounded at apex in *P. nabozhenkorum* **sp.n.** and penis and paramere relatively longer and slender, paramere narrowly rounded at apex in *P. jasoni*) (Figs 25, 26). The new species seems most closely related to *P. altaicus*, known form Southern Siberia, Northern Mongolia and Eastern Kazakhstan, but distinguished from the latter by the paler elytron (dark brown in *P. nabozhenkorum* **sp.n.** and blackish in *P. altaicus*), paler body pubescence (golden-bronze in *P. nabozhenkorum* **sp.n.** and bronze in *P. altaicus*) (Figs 1, 5), shape of middle antennomeres (antennomeres V to VII short, subtriangular, almost as long as wide in *P. nabozhenkorum* **sp.n.** and at least 1.5 times as long as wide in *P. altaicus*) (Figs 9, 10), denser punctation of head and pronotum (intervals between punctures on average equal to diameter of 0.5 puncture or smaller in *P. nabozhenkorum* **sp.n.** and intervals between punctures on average equal to diameter of one puncture or smaller in *P. altaicus*), absence of narrow smooth longitudinal line on pronotal disc (pronotal disc with narrow smooth longitudinal line over most of its length in *P. altaicus*) (Figs 17, 18), rather deep transverse impression at anterior 1/5 of prosternum (rather smooth in *P. altaicus*) (Figs 14, 15), only slightly wrinkled interstriae (clearly wrinkled in *P. altaicus*) (Figs 17, 18), and shape of paramere (rather thick, with large subapical expansion in *P. nabozhenkorum* **sp.n.** and slender, with rather small subapical expansion in *P. altaicus*) (Figs 26, 27).

DISTRIBUTION. Southeastern Turkey, Hakkâri Province, Zagros Mountain Range, Berçelan Yayla.

**Figs 28.** Type locality of *P. nabozhenkorum* **sp.n.**: SE Turkey, Hakkâri Prov., Zagros MtR., Berçelan Yayla (photograph by M.V. Nabozhenko).
**Рис. 28.** Типовое местонахождение *P. nabozhenkorum* **sp.n.**: ЮВ Турция, пров. Хаккяри, хр. Загрос, плато Бершелан (фотография М.В. Набоженко).

BIONOMICS. This species was collected in the alpine belt, in a stony area with patches of xerophytic vegetation (Fig. 28). Other aspects of its biology remain unknown.

ETYMOLOGY. Named in the honour of its collectors, the distinguished entomologists Maxim V. and Svetlana V. Nabozhenko.

## Discussion

The finding of the new *Pseudanostirus* species in the northwestern Zagros Mountains and its affinity to the East Palearctic *P. altaicus* could indicate that some other still unknown related species might inhabit various mountain areas of the region between West and East Asia.

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