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On some *Notoxus* (Coleoptera: Anthicidae) of the *N. monoceros* species-group

O některých *Notoxus* (Coleoptera: Anthicidae) ze skupiny druhů blízkých *N. monoceros*

Zbyněk KEJVAL[1)] & Gianluca NARDI[2)]

[1)] Muzeum Chodska, Chodské náměstí 96, CZ-344 01 Domažlice, Czech Republic; e-mail: anthicid@seznam.cz

[2)] Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" Carabinieri, Strada Mantova 29, I-46045 Marmirolo (Mantova), Italy; e-mail: l_nardi@hotmail.com

Coleoptera, Anthicidae, *Notoxus*, taxonomy, new species, new synonymy, faunistics, Palaearctic region

Abstract. Four taxa of *Notoxus* Geoffroy, 1762 are newly described: *Notoxus armina* sp. nov. (Armenia, Turkey), *N. hirtus bolognai* ssp. nov. (Morocco, Spain), *N. turbidus* sp. nov. (Afghanistan, India, Pakistan, Tajikistan, Uzbekistan), and *N. sergeyi* sp. nov. (Iran). A new synonymy, *Notoxus hirtus hirtus* LaFerté-Sénectère, 1849 (= *N. hirtus* var. *caucasicus* Pic, 1900, syn. nov.), is proposed. New faunistic data are presented, including the first records of *Notoxus hirtus hirtus* from Armenia and Iran, and *N. sareptanus* Heberdey, 1936 from Kazakhstan.

INTRODUCTION

The present paper deals with four species of *Notoxus* Geoffroy, 1762 of the Holarctic *Notoxus monoceros* species-group (Heberdey 1936a,b, Chandler 1982). They are undoubtedly very close, forming a small subgroup, as suggested by the following shared characters: antebasal setose band of pronotum complete or at most narrrowly interrupted medially, body setation rather hirsute, including numerous, conspicuously long tactile setae, horn crest of pronotal horn rather evenly depressed anteriorly, and apical process of dorsal plate of penis hook-shaped, curved and simply pointed apically (not bifurcate). The major distinguishing characters are those of the male aedeagus, mainly the shape of parameres, ventral plate, and apical hooked process of the penis.

In addition to the species descriptions and taxonomic remarks, new faunistic data on the occurrence of two species are presented. The rather isolated finding of *N. hirtus* LaFerté-Sénectère, 1849 (*sensu lato*) in Spain (Sierra Nevada Mts) and Morocco (Atlas Mts) may appear at first sight surprising. However, such a distributional pattern is not unique, and its biogeographical origin has been discussed by various authors, e.g. Ribera & Blasco-Zumeta (1998), Zilli (1999), Meregalli (2001), and Sanmartín (2003). As for the Palaearctic *Notoxus*, similar disjunct distribution are known for *N. simulans* Heberdey, 1936, whose nominotypical subspecies is widespread in Asia, and for *N. simulans coffini* Bonadona, 1988 which occurs in Europe (see Chandler et al. 2008, Bonadona 2013).

MATERIAL AND METHODS

Specimens were examined with a Leica MZ 9.5 stereomicroscope; morphological measurements were taken with an ocular graticule. Male genitalia were examined after being cleared in a hot 10% KOH solution. Photographs

were taken with a Nikon Coolpix 4500 digital camera attached to a Leica MZ 9.5 trinocular microscope; images of the same specimen at different focal planes were combined with Helicon Focus 5.2 Pro and edited with Adobe Photoshop 9.0.2. software.

Body length was measured from the tip of the apical margin of pronotal horn to the apex of the elytra. Label data of the additional specimens are almost exclusively rewritten. Separate labels are indicated by a double slash (//) and author's comments on specimens and label data are placed in square brackets. The terminology of body setation follows Werner & Chandler (1995).

The following abbreviations are used: [h] – handwritten; [p] – printed; env. – environs of; prov. – province; distr. – district; reg. – region; Mts – mountains; a.s.l. – above sea level, lgt. – collected by; rec. – recorded from; spec. – specimen(s).

Acronyms of the specimen depositories: ADBC – Augusto Degiovanni collection, Bubano, Italy (identified by A. Degiovanni); BMNH – The Natural History Museum, London, United Kingdom; CNBFVR – Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" Carabinieri, Marmirolo, Italy; DCDC – Donald S. Chandler collection, Durham, New Hampshire, U.S.A.; DTRC – Dmitry Telnov collection, Riga, Latvia (identified by D. Telnov); GNCC – Gianluca Nardi collection, Cisterna di Latina, Italy; HNHM – Hungarian Natural History Museum, Budapest, Hungary; HUMS – The Hokkaido University Museum, Sapporo, Japan; MCSN – Museo Civico di Storia Naturale, Milano, Italy; MCZR – Museo Civico di Zoologia, Roma, Italy; MHNG – Muséum d'Histoire Naturelle, Genève, Switzerland; MNHN – Museum national d'Histoire naturelle, Paris, France; MZUR – Museo di Zoologia, Università degli Studi di Roma "Sapienza", Roma, Italy; NHMB – Naturhistorisches Museum, Basel, Switzerland; NHMW – Naturhistorishes Museum, Wien, Austria; NKME – Naturkundemuseum Erfurt, Germany; NMPC – National Museum, Prague, Czech Republic; SMNS – Staatliches Museum für Naturkunde, Stuttgart, Germany; ZHMB – Zoologisches Museum an der Humboldt Universität, Berlin, Germany; ZKDC – Zbyněk Kejval collection, Domažlice, Czech Republic; ZSMC – Zoologische Staatssammlung München, Germany.

SYSTEMATIC PART

Notoxus armina sp. nov.
(Figs 1–3, 17, 21, 27)

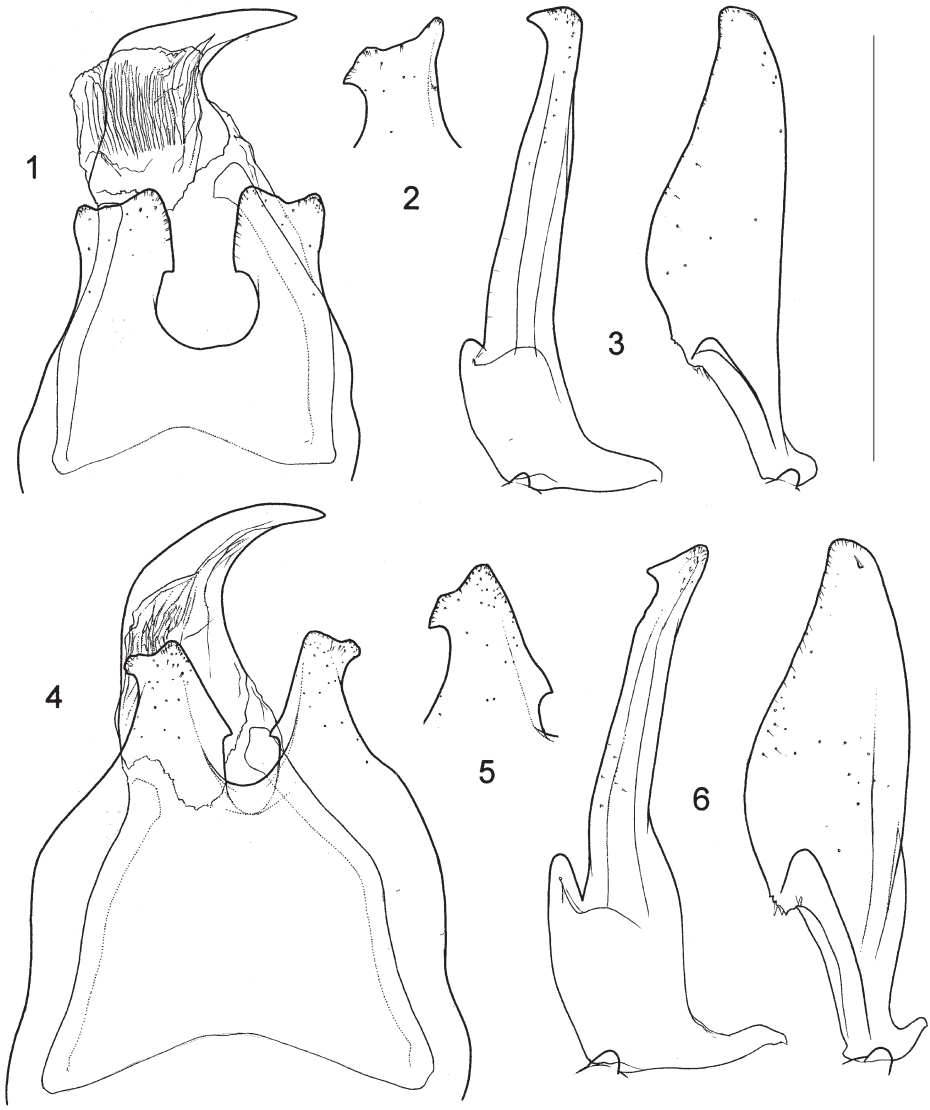
Type locality. Turkey, Van Province, Güzeldere Geçidi.

Type material. Holotype ♂, labelled: "Prov. Van Güzeldere Gec, 5.6.1987 [p] // TURKEY – 1987 leg. Schönmann et Schillhammer [p] // Notoxus sareptanus Heberd. det. G. Uhmann 1989 [p+h]" (ZSMC). Paratypes: 1 ♂, "Caucasus. Araxesthal Leder.Reitter. [p; black frame] // male sex symbol [p] // *hirtus* det. v. Krekich" [p+h] // hirtus Laf. Coll. Reitter [p+h] // Notoxus hirtus Laferte det. G. Uhmann 1984 [p+h]" (HNHM).

Additional specimens. Turkey: 3 ♀♀, Van prov., Güzeldere Geçidi, 5.vi.1987, Schönmann & Schillhammer lgt. (NHMW, ZKDC).

Description. Male (holotype). Body length 4.2 mm. Head brownish-black, pronotum largely brownish, darkened anteriorly; elytra pale reddish to yellowish-brown, with conspicuous black markings (Fig. 27); antennae, legs and palpi reddish. Body moderately glossy, pronotum finely, elytra rather coarsely punctate; punctures of elytra distinctly separated, finer in apical third; body setation rather coarse, mostly subdecumbent, with numerous conspicuously long tactile setae; antebasal setose band of pronotum narrowly interrupted medially.

Head (across eyes) 0.8 times as wide as pronotum; tempora moderately arcuately narrowing towards base, posterior angles obsolete. Eyes rather small, moderately convex. Antennae long and slender, only slightly enlarged distally; antennomere X 1.75 times, XI 3.0 times as long as wide. Pronotum globular in dorsal view, 1.5 times as long as wide (including horn), disc evenly convex. Pronotal horn moderately long, slender, parallel-sided in dorsal view, its margins continuously fringed apically, with 2–3 distinct lobules laterally in dorsal view;



Figs 1–6. 1–3. *Notoxus armina* sp. nov. (holotype): 1 – penis in ventral view; 2 – apical lobe of ventral plate of penis, ventro-lateral view; 3 – paramere in dorsal (left) and lateral (right) view. 4–6. *N. hirtus bolognai* ssp. nov. (paratypes): 4 – penis in ventral view (Morocco); 5 – apical lobe of ventral plate of penis (Spain); 6 – paramere in dorsal (left) and lateral (right) view (Morocco). Scale 0.5 mm.
Obr. 1–6. 1–3. *Notoxus armina* sp. nov. (holotyp): 1 – penis, ventrální pohled; 2 – apikální lalok ventrálního skleritu penisu, ventro-laterální pohled; 3 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu. 4–6. *N. hirtus bolognai* ssp. nov. (paratypy): 4 – penis, ventrální pohled (Maroko); 5 – apikální lalok ventrálního skleritu penisu (Španělsko); 6 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu (Maroko). Měřítko 0.5 mm.

horn-crest prominent, with sharp margins, open anteriorly; dorsal surface with scattered small rugules, varying in size, reduced subapically. Elytra 1.8 times as long as wide; humeri prominent (metathoracic wings fully-developed); omoplates and postscutellar impression at most very slightly indicated; elytral apices modified, with tubercle and rounded pore of gland. Legs simple, shortly, densely setose.

Abdominal sternum VII shallowly emarginate postero-medially; tergum VII simple, somewhat widely rounded posteriorly; tergum VIII forming simple, evenly arched sclerite. Aedeagus as in Figs 1–3, 21; dorsal plate of penis projecting into rather robust, laterally directed, hook-like process, ventral plate conspicuously bilobed, lobes wide, subparallel, truncate apically; parameres largely flattened, moderately wide, apex curved laterally in dorsal view.

Female. In most external characters identical with male, differing as follows: elytral apices simple; sternum VII simple, evenly rounded posteriorly; tergum VII subtriangular, rounded apically; sclerites of tergum VIII nearly symmetrical, rounded, with few spinules on apical margin (Fig. 17).

Variation. Body length (♂♀) 3.6–4.6 mm.

Differential diagnosis. *Notoxus armina* sp. nov. resembles *N. sergeyi* sp. nov. both externally and in the shape of the ventral plate of the penis (longer, wider, subparallel, apically truncate lobes), but differs clearly by the shorter parameres, that are wider in the apical third, and are somewhat flattened and apically hooked in dorsal view (cf. Figs 3 *versus* 13).

Distribution. Armenia, Turkey (see Remarks).

Etymology. Named after Armenia/Armenians, as all known records are from present-day or historical Armenia (the Turkish Van Province has long been the heartland of this nation). The species name "*armina*" is an Old Persian word, the first unambiguous application of the name Armenia as the ethnonym of the Armenians (www.wikipedia.org). It should be treated as a noun in apposition.

Remarks. The paratype of *Notoxus armina* from the valley of the Arax River ("Araxesthal") was previously identified as *Notoxus hirtus* and recorded as such by Uhmann (1985). This "old specimen" may originate either from Armenia or Turkey, as the Arax River forms the border between these two countries. Consequently, the occurrence of *N. armina* sp. nov. in Armenia should be confirmed by new records.

The three additional females from Güzeldere Geçidi bear the same locality labels and appear to be identical with the holotype, possessing about the same body length, smaller eyes, wider base of head, and paler ground colour of elytra. Despite this, their identification should be taken as tentative, because of the sympatric occurrence of the externally similar *N. hirtus* (see Remarks under this species).

Notoxus hirtus bolognai ssp. nov.

(Figs 4–6, 22, 28)

Type locality. Morocco, Beni-Mellal Province, Zaouia-Temga env.

Type material. Holotype ♂, labelled: "MAROCCO. prov. Beni-Mellal, dint. [= env.] Zaouia-Temga, 19.V.1979, M. Bologna [lgt.] → su [= on] Mylabris tricincta [p+h; partly on underside]" (MZUR). Paratypes: 7 ♂♂, same data as holotype (1 CNBFVR, 1 coll. I. Bucciarelli MCSN, 2 MZUR, 2 GNCC, 1 ZKDC). Paratypes: 7 ♂♂, same data as holotype (MZUR, GNCC, ZKDC); 1 ♂, "S-ESPAGNE, Sierra Nevada, JEREZ DEL MARQUESADO env., 13.vi.1995, 1500 m J. Rolčík lgt. [p]" (ZKDC).

Description. Head reddish-brown, pronotum reddish-brown, pronotal horn darker, nearly brownish-black basally; elytra pale reddish to yellowish-brown, with conspicuous black markings (Fig. 28); antennae, legs and palpi reddish. Body moderately glossy, pronotum finely, elytra largely rather coarsely punctate; punctures of elytra distinctly separated, finer in apical third; body setation rather coarse, mostly subdecumbent, with numerous conspicuously long tactile setae; antebasal setose band of pronotum complete or at most slightly interrupted medially.

Head (across eyes) 0.8 times as wide as pronotum; tempora moderately and arcuately narrowing towards base, posterior angles absent. Eyes medium-sized, moderately convex. Antennae long and slender, only slightly enlarged distally; antennomere X 1.5 times, XI 3.0 times as long as wide. Pronotum globular in dorsal view, 1.6 times as long as wide (including horn), disc evenly convex. Pronotal horn moderately long and wide, parallel-sided in dorsal view, its margins continuously fringed apically, with 3–4 distinct lobules laterally in dorsal view; horn-crest prominent, with sharp margins, open anteriorly; dorsal surface with scattered small rugules, varying in size, reduced subapically. Elytra 1.8 times as long as wide; humeri prominent (metathoracic wings fully-developed); omoplates and postscutellar impression at most very slightly indicated; elytral apices modified, with tubercle and rounded pore of gland. Legs simple, shortly and densely setose.

Abdominal sternum VII shallowly emarginate postero-medially; tergum VII simple, somewhat widely rounded posteriorly; tergum VIII forming simple, evenly arched sclerite. Aedeagus as in Figs 4–6, 22; dorsal plate of penis projecting into rather robust, laterally directed, hook-like process, ventral plate bilobed, lobes strongly narrowed and obliquely truncate apically; parameres moderately wide, flattened, with prominent lateral subapical denticle in dorsal view.

Female. Unknown.

Variation. Body length (♂♂) 4.8–5.7 mm.

Bionomy. Essentially unknown; the specimens from Morocco were collected from the body of a dead specimen of *Mylabris tricincta* Chevrolat, 1840 (Coleoptera, Meloidae) in a field of Graminaceae, at elevation about 2000 m (Bologna & Havelka 1985, as *Notoxus hirtus* group), and are presumed to be canthariphilous, see Schütz & Dettner (1992, as *Notoxus hirtus*) and Hemp & Dettner (2001, as *Notoxus hirtus*).

Differential diagnosis. *Notoxus hirtus bolognai* ssp. nov. differs from the nominotypical subspecies by the much narrower lobes of the ventral plate of the penis (cf. Figs 4, 5 *versus* 7, 8) and the somewhat wider parameres, with a more prominent subapical denticle in dorsal view (cf. Figs 6 *versus* 9).

Distribution. Morocco, Spain.

Etymology. Dedicated to Marco Bologna (Italy), well-known specialist in Meloidae and collector of this subspecies.

Notoxus hirtus hirtus LaFerté-Sénectère, 1849

(Figs 7–9, 18, 23, 29)

Notoxus hirtus LaFerté-Sénectère, 1849a: 8.

Notoxus hirtus LaFerté-Sénectère, 1849b: 28; repeated description, see Chandler (2000).

Notoxus hirtus: Gemminger & Harold (1870): 2090 (catalogue, distribution); Marseul (1879): 27 (redescription; rec. Algeria, Russia); Pic (1900a): 65 (key), (1900b): 91 (key); Bodemeyer (1906): 428 (rec. Turkey); Pic (1911): 8

(catalogue, distribution); Kiseritzky (1912): 88 (rec. Russia); Heberdey (1936a,b): 157, 179, fig. 7h (redescription, variation, catalogue, key, rec. China, Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan); Medvedev (1965): 339 (key); Nakane (1966): 247, fig. E (rec. Afghanistan, aedeagus figure); Medvedev (1975): 89 (rec. Mongolia); Medvedev & Micheetchev (1979): 141 (rec. Mongolia); Uhmann (1985): 178 (rec. Kazakhstan, Russia, Tajikistan, Uzbekistan, and "Arax Valley"); Schütz & Dettner (1992): 293 (cantharophily); Telnov (1998): 166 (rec. Kyrgyzstan); Kubisz & Szwałko (1998): 15 (key, rec. Poland); Telnov (1999): 24 (rec. Russia); Hemp & Dettner (2001): 236 (cantharophily); Telnov (2002): 21 (rec. Afghanistan); Chandler et al. (2008): 452 (catalogue, distribution); Telnov (2010): 17 (rec. Afghanistan).

Notoxus hirtus var. *caucasicus* Pic, 1900a: 65, **syn. nov.**

Notoxus hirtus var. *caucasicus*: Pic (1900b): 91 (key), (1911): 8 (catalogue, distribution).

Notoxus sareptanus ab. *caucasicus*: Heberdey (1936a): 161 (synonymy); Heberdey (1936b): 161 (note on synonymy).

Notoxus caucasicus: Pic (1937): 76; Uhmann (1985): 178 (rec. Afghanistan); Chandler et al. (2008): 452 (catalogue, distribution).

Notoxus semipunctatus Reitter, 1888: 431.

Notoxus semipunctatus: Pic (1896): 178 (characters), (1900a): 65 (key), (1911): 11 (catalogue, distribution).

Notoxus hirtus ab. *semipunctatus*: Heberdey (1936a): 159 (synonymy).

Notoxus semipunctatus var. *nigrosignatus* Pic, 1900a: 65.

Notoxus semipunctatus var. *nigrosignatus*: Pic (1900b): 91 (key).

Notoxus semipunctatus ab. *nigrosignatus*: Heberdey (1936a): 159 (synonymy).

Type locality. *N. hirtus* – West Siberia (without more precise data); *N. hirtus* var. *caucasicus* – Caucasus, Arax valley; *N. semipunctatus* – Central Asia ("Central Asien: Süd-Turkestan"); *N. semipunctatus* var. *nigrosignatus* – Kyrgyzstan, Alai Mountains/Range ("Turkestan", specified from labels of the examined syntypes).

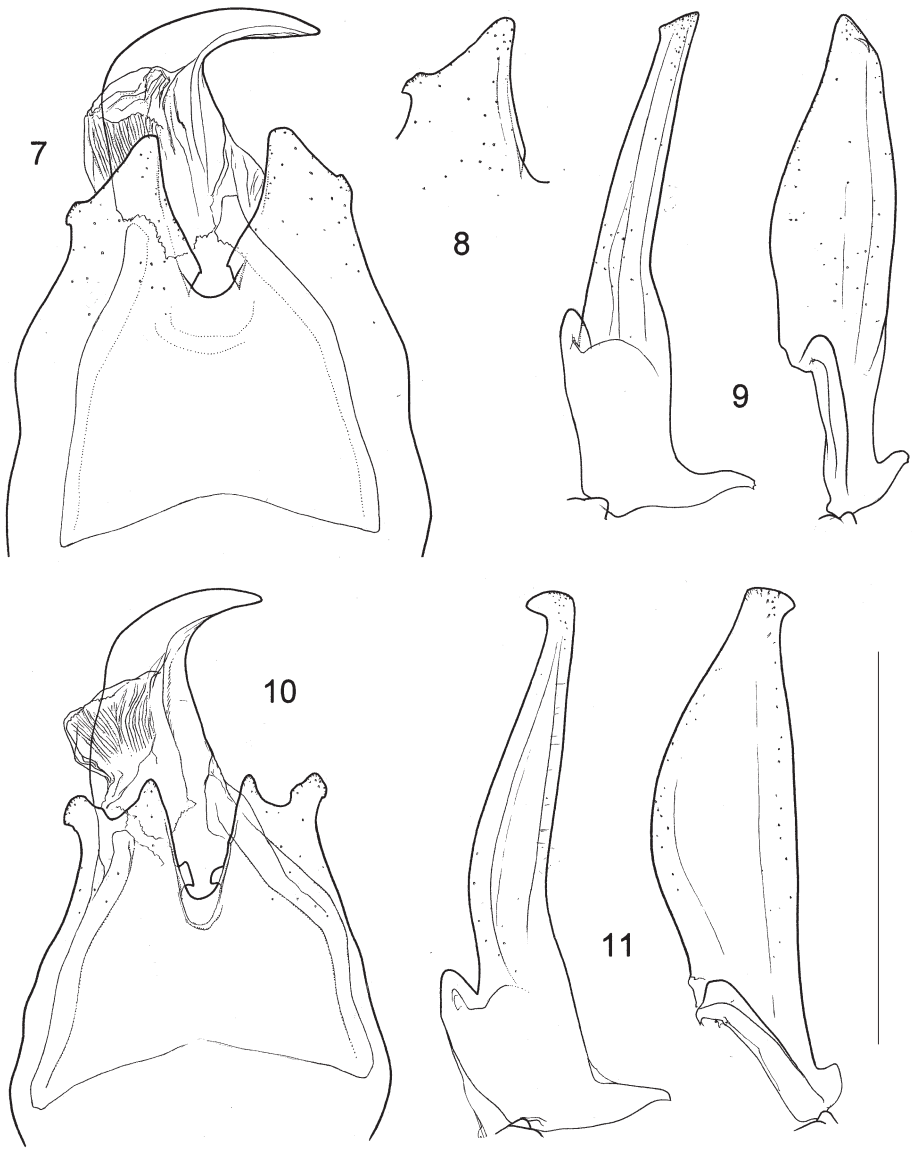
Type material. *N. hirtus* – Syntypes: 1 ♂, "47346 [p] // [male sex symbol; p] // Sibir. oc. Gebl. [h] // Hist.-Coll. (Coleoptera) Nr. 47346 Notoxus hirtus Laf. Sibir. occ. Gebler Zool. Mus. Berlin [p; black frame]" (ZHMB); 1 ♂, "Hirtus Gebler Sibérie Laferte [h] // TYPE [p; red label] // Notoxus hirtus [h]" (MHNG).

N. hirtus var. *caucasicus* – Syntypes: 1 ♀, "Caucasus. Araxesthal. Leder. Reitter // Muséum Paris Coll. M. Pic // SYNTYPE [p; red label] // v. caucasicus Pic [h]" (MNHN); 1 ♀, same data, lacking the last label, in addition: "brachycerus Coll. Reitter" (MNHN).

N. semipunctatus – Syntype ♂, "Notoxus semipunctatus m. n. sp. [h] // Central-Asien. [h] // Abhang des Przewalsky- ... [h; partly illegible] // type [h; yellowish label] // coll. Reitter [h; yellowish label] // Muséum Paris Coll. M. Pic [p] // TYPE [p; red label]" (coll. Pic, MNHN).

N. semipunctatus var. *nigrosignatus* – Syntypes: 1 spec., "[small plain purple label] // monoceros Alai Turkest [h] // v. nigrosignatus Pic [h] // Heberdey vidit 1930 [h] // Museum Paris Coll. M. Pic [p]" (MNHN); 1 spec., "[small plain purple label] // v. nigrosignatus Pic [h]" (MNHN).

Additional material. Armenia: 1 ♂, Caucasus, Arax River valley, Leder & Reitter lgt. (coll. Pic, MNHN); 1 ♂, Urcadzor env., Vedi River valley, 6.vi.1989, Z. Jindra lgt. (ZKDC); 1 ♂, Ararat prov., Khosrov Nature Reserve, 43°58′N 79°39′E, 1300–2100 m, 13.–14.vii.2003, V. Zieris lgt. (ZKDC); 1 ♂, Kotayk prov., Garni env., 40°07′N 44°45′E, 1400 m, 12.vii.2003, V. Zieris lgt. (ZKDC). **Iran:** 1 ♂ 1 ♀, Kerman prov., 140 km S of Kerman, Sarbizhan, 2700–3100 m, 4.–5.v.2010, K. Orszulik lgt. (ZKDC). **Kazakhstan**, Almaty Region: 1 ♂ 1 ♀, SE of Aktam, Ketmen Mts, 43°24′N 79°53′E, 1500 m, 20.v.1993 [no collector] (ZKDC); 1 ♂, Bakanas, Ili river, 44°50′N 76°14′E, 500 m, 30.v.1993 [no collector] (ZKDC); 1 ♂, Bayseit, Chilik Valley, 78°21′E 43°14′E, 700 m, 7.–15.v.1994, G. Fabián & I. Retezár lgt. (ZSMC); 2 ♂♂ 1 ♀, Charyn Valley, W of Chundza, 800 m, 10.–13.vi.1993, W. Schawaller lgt. (ZSMC,



Figs 7–11. 7–9. *Notoxus hirtus hirtus* LaFerté-Sénectère, 1849 (Kazakhstan, Kalinino): 7 – penis in ventral view; 8 – apical lobe of ventral plate of penis, ventro-lateral view; 9 – paramere in dorsal (left) and lateral (right) view. 10, 11. *N. sareptanus* Heberdey, 1936 (Russia, Sarepta): 10 – penis in ventral view; 11 – paramere in dorsal (left) and lateral (right) view. Scale 0.5 mm.
Obr. 7–11. 7–9. *Notoxus hirtus hirtus* LaFerté-Sénectère, 1849 (Kazachstán, Kalinino): 7 – penis, ventrální pohled; 8 – apikální lalok ventrálního sklerity penisu, ventro-laterální pohled; 9 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu. 10, 11. *N. sareptanus* Heberdey, 1936 (Rusko, Sarepta): 10 – penis, ventrální pohled; 11 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu. Měřítko 0.5 mm.

SMNS); 5 ♂♂ 9 ♀♀, Kalinino, 40 km S, 43°52′51″N 78°33′51″E, 630 m, 4.vi.2016, J. Halada lgt. (ZKDC); 1 ♂, Masak, 22 km N, 78°27′N 43°13′E, 460 m, 21.vi.1996, G. Fabián & L. Nádai lgt. (HNHM); 3 ♂♂ 1 ♀, Molaly, 4 km SE, 45°27′52″N 78°17′23″E, 440 m, 3.vi.2016, J. Halada lgt. (ZKDC); 1 ♂ 1 ♀, Pristan-Dubinskaya, 43°45′N 80°13′E, 500–1000 m, 18.vi.1993, V. Lukhtanov lgt. (NKME); 1 ♀, Taldykorgan, 43°58′N 79°39′E, 4.vi.1993, V. Lukhtanov lgt. (NKME); 1 ♂, Taschkarasu, 43°48′N 79°39′E, 500 m, 5.–8.vi.1993, V. Lukhtanov lgt. (NKME); 2 ♂♂ 1 ♀, Tcharyn River, near Tchunja, 25.vi.1994 [no collector] (ZKDC). Atyrau Region: 1 ♂, Atyrau, liman of Ural River, 6.vii.1999, P. Zakharkin lgt. (DTRC); 1 ♂, Dossor, steppe, 3.viii.1989, P. Petrov lgt. (DTRC); 1 ♂, Inderbor, Ural River, at light, 8.viii.1989, P. Petrov lgt. (DTRC); 1 ♂, Kulsary, Kamyskul Lake, 11.vi.1975, Yakhontov lgt. (DTRC). Karagandy Region: 1 ♂, Ulytau Mts, 29.v.1970, N. G. Skopin lgt. (ZSMC); 4 ♂♂, Bergen Uly-Tau, 29.v.1970, N. G. Skopin lgt. (HNHM). Kostanay Region: 1 ♂, S of Kostanay, steppe, at light, vi.1987, D. A. Pertchev lgt. (DTRC). Kyzylorda Region: 1 ♂, W Barsa-Kelmes, 22.viii.1985 [no collector]; 1 ♀, Kzyl-Orda [Perovsk], Bodemeyer lgt. (coll. Pic, MNHN). Mangystau Region: 3 ♂♂, Aktau, 8 km N, steppe, 12.vi.1954, M. Urusov lgt. (DTRC); 1 ♂, Beyneu, at light, 20.v.1966, V. Maktyukhin lgt. (DTRC). **Kyrgyzstan:** 2 ♂♂, Alaj Surmatash, 2000 m, 5.vii.1998, Dolin lgt. (ADBC, ZKDC); 1 ♀, Chatkalskiy Mts, Kashka-su, 1750 m, 8.–9.vii.1991, O. Mehl lgt. (ZKDC); 2 ♂♂ 2 ♀♀, 150 km NW Namangan, Tian Shan Mts, Chatkal Ridge, Yangy Bazar, 3000 m, 8.–9.vi.1995, P. Čechovský lgt. (ZKDC); 1 ♀, Gornaya Maevka, vii.1981, S. Pokorný lgt. (ZKDC); 1 ♂, Issyk-Kul reg., Kyzyl-Suu distr., Chyrak near Karakol, Issyk-Kul lake, 42°48′N, 78°10′E, 1660 m, 13.vi.2006, M. L. & L. Borowiec lgt. (ZKDC); 2 ♀♀, Issyk-Kul reg., Cholpon-Ata distr., Bosteri, Issyk-Kul lake shore, 1600 m, 42°65′N 77°18′E, 1600 m, 7.vi.2006, M. L. & L. Borowiec lgt. (ZKDC); 1 ♂, Tien-Shan Mts, E slope of Ferghanskyi Range, upper part of Urumbash River, 2000 m, 19.vii.2001, [no collector] (GNCC) . **Mongolia:** 1 ♂, Chovd siusk, 10 km SSW of Somon, Bulgan, 1200 m, 4–6.VII.1966 [no collector, Expedition Z. Kaszab, Nr. 632] (SMNS). **Russia:** 1 ♂, Kurgan reg., Kurgan, alluvium of Tobol River, 29.vi.1986, G. V. Sratchkov lgt. (DTRC); 2 ♂♂, Orenburg reg., Kardailovo, floodplain of river, v. 1977, B. P. Kruskop lgt. (DTRC); 2 ♂♂, Orenburg reg., Orsk, 13.viii.1991, P. V. Slavin lgt. (DTRC); 1 ♂, Tuva, Kyzyl env., 11.v.1999, I. Osipov lgt. (ADBC); 2 ♂♂, Volgograd reg., Volgograd, State Agricultural University, light trap, 10.vii.1981, E. Komarov lgt. (ADBC). **Tajikistan:** 1 ♂, Fanskye Mts, Iskanderkul, 2200 m, 27.vii.1994, Putckhov lgt. (ADBC); 1 ♀, Hissarskiy Khrebet Mts, near Duschanbe, Yavroz, 1000 m, 19.iv.1978, J. Strejček lgt. (ZKDC); 1 ♀, Kondara river, 1300–2300 m, 29.vi.–6.vii.1985 [no collector] (ZKDC); 1 ♂, Pamir Mts, Muksu reg., Kishlak, 2800 m, vii.1990, Schmidt lgt. (NKME); 1 ♂, Pamir Mts, Muksu reg., Dschailgan, 2200–2800 m, 26.vi.1990, Hartman lgt. (NKME); 1 ♂, Hissar Alai, Adjuk-Cleft near Warsob, 1.–3.vii.1990, M. Schülke lgt. (ZKDC). **Turkey:** 1 ♂, Bolu prov., Abant gölü, 1200 m, 23.–24.vi.1996, M. Knížek lgt. (ZKDC); 1 ♂, Erzincan prov., Ganiefendi, Ciflik Köyü, 1200 m, 27.–28.vi.1996, A. Podlussány lgt. (HNHM); 1 ♂, Gümüşhane prov., road Arpali – Salmankaş, Ceçidi (valley), 30.vi.2008, B. Zbuzek lgt. (ZKDC); 1 ♂ 2 ♀♀, Van prov., Güzeldere Geçidi, 5.vi.1987, Schönmann & Schillhammer lgt. (NHMW); 2 ♂♂, Van prov., 60 km E Tatvan, 8.vi.1987, Schönmann & Schillhammer lgt. (NHMW). **Uzbekistan:** 4 ♂♂ 2 ♀♀, Turkestanskiy Khrebet Mts, Zaaminskiy Reserve, 39.55°N 68.20°E, 2300–3000 m, 23.–25.vi.1989, Růžička & Hlasová lgt. (ZKDC); 2 ♂♂ 1 ♀, Turkestanskiy Khrebet Mts, Zaaminskiy Reserve, Iskadar, 2100 m, steppe/field, 25.vi.1989, K. Hůrka lgt. (NMPC); 2 ♂♂, Zaaminskiy

Reserve, 15.vi.1990, J. Marek lgt. (ZKDC); 2 ♀♀, Zeravshanskiy Khrebet Mts, near Mirankul, 13.v.1990, J. Strejček lgt. (ZKDC); 1 ♂, 40 km SW of Samarkand, Zeravshanskiy Khrebet Mts, Agalyk River Valley, 1500–1800 m, 6.vi.1989, Z. Jindra lgt. (ZKDC); 2 ♀♀, Pskem Khrebet Mts, Goluboe ozero Lake, 1500 m, 12.vii.1990, J. Rázga lgt. (ZKDC).

Variation. Body length 3.8–6.3 mm. For conspicuous variation of dark elytral markings see Heberdey (1936a), who described a number of colour varieties (all regarded as infrasubspecific unavailable names by Chandler et al. (2004)).

Bionomy. Essentially unknown; collected mostly at higher altitudes (1200–3000 m), but there are new records from lowlands, e.g. the mouth of the Ural River in Kazakhstan (see above). It was listed as a canthariphilous species (Schütz & Dettner 1992, Hemp & Dettner 2001), based on the record by Bologna & Havelka (1985), herein attributed to *N. hirtus bolognai* sp. nov. (see above). Accordingly, the above listed specimens from Kardailovo in Russia were collected from the bodies of dead meloids of the genus *Mylabris* Fabricius, 1775.

Differential diagnosis. *Notoxus hirtus* differs from close species by the comparatively short, apically more or less narrowed and slightly emarginate lobes of the ventral plate of the penis (Figs 7, 8), the wide median basal denticle (see Fig. 10 for lobule in *N. sareptanus* Heberdey, 1936), and by the moderately wide, flat parameres that have a rather slight subapical denticle in dorsal view (Fig. 9).

Distribution. Afghanistan, Azerbaijan, China (Xizang and Xinjiang Uyghur Autonomous Regions), Kazakhstan, Kyrgyzstan, Mongolia, Russia (west Siberia, South European Territory), Tajikistan, Turkey, Turkmenistan, and Uzbekistan. The records given here are the first from Armenia and Iran.

Remarks. LaFerté-Sénectère (1849a) described *Notoxus hirtus* from two specimens originating from Siberia, and which are deposited in ZHMB and MHNG (Horn et al. 1990). Having examined both syntypes, we can only confirm that the species characters presented in the "revision" by Heberdey (1936a,b) agree with the type specimens.

Pic (1900a) described *Notoxus hirtus* var. *caucasicus* from an unstated number of specimens originating from "Caucase" that exhibit partly reduced dark margins of the elytra: "median basal spot absent, and thus lateral subhumeral spots widely separated" (Pic 1900a). It was treated, despite its priority, as an aberation of *N. sareptanus* by Heberdey (1936a,b). This placement was contested by Pic (1937), who proposed a reverse combination, *N. caucasicus* ab. *sareptanus*. Both *N. caucasicus* and *N. sareptanus* were recently considered as valid species (Uhmann 1985, Telnov 2002, Chandler et al. 2008). Having examined two female syntypes from the Pic Collection (MNHN), we found no differences from *N. hirtus*, including in the characteristic asymmetrical shape of the female tergum VIII (Figs 18, 33). Consequently, *N. hirtus caucasicus* is placed herein as a junior synonym of *N. hirtus*.

The three specimens of *Notoxus hirtus* from Güzeldere Geçidi in Turkey (listed above) were identified prior to the discovery of other specimens in ZSMC, including the holotype of *Notoxus armina* sp. nov. Consequently, the two females may belong also to this externally very similar species.

The records of canthariphily in *Notoxus hirtus* by Schütz & Dettner (1992) and Hemp & Dettner (2001) are based on the type specimens of *N. hirtus bolognai* ssp. nov.

The records of *Notoxus causcasicus* and *N. hirtus* from Pagman in Afghanistan (Uhmann 1985, Nakane 1966) belong to *N. turbidus* sp. nov.; the relevent specimens are included in the type series of this species (see below). The record of *N. hirtus* from Algeria by Marseul (1879),

questioned by Heberdey (1936a), is based on a male specimen of *N. sareptanus*, bearing the following data: "Notoxus hirtus Alger … [h; blue, round label, partly illegible] // Prov. d'Alger [h; blue label] // Coll. Camille Van Volxem Museum Paris [p]" (coll. Marseul, MNHN). The record of *N. hirtus* from the valley of the Arax River ("Araxesthal") by Uhmann (1985) is based on the paratype of *N. armina* sp. nov. (see above). Kubisz & Szwałko (1998) included *Notoxus hirtus* in their key to the Polish species of Anthicidae, based on single, dubious literature record from 1919, and regarded its occurrence in Poland as improbable.

Notoxus sareptanus Heberdey, 1936
(Figs 10, 11, 19, 24)

Notoxus sareptanus Heberdey, 1936a: 160.
Notoxus sareptanus: Heberdey (1936b): 161, fig. 7i (another part of original description); Chandler et al. (2008): 453 (catalogue, distribution).
Notoxus caucasicus ab. *sareptanus*: Pic (1937): 76 (note on synonymy).

Type locality. Russia, Sarepta [= Volgograd, Krasnoarmeysky Rayon].
Type material. Syntypes: 13 ♂♂ 1 ♀, bearing locality data "Sarepta" (NHMW).
Additional material. Kazakhstan: 12 ♂♂ 2 ♀♀, Dzhezkazgan Area, Shalgiia, 300 m, 7.v.1996, Danilewsky lgt. (ADBC). **Russia:** 1 ♂, Chechnya, Gudermes [no date], I. D. Ivanov lgt. (DTRC); 1 ♂, Dagestan, Derbent, citadel, at light, 1.viii.2003, at light, A. F. Pertol lgt. (DTRC); 1 ♂, Dagestan, Kaspiysk, seashore, 20.vi.1988, Strelkin lgt. (DTRC); 2 ♂♂, Dagestan, Sary-Kum Barkhan, vi.1990, K. Tomkovich lgt. (DTRC); 1 ♂, Kalmykia, N of Elista, Salyn, vi.1983, G. A. Sutormin lgt. (DTRC); 1 ♂, Russia, Kalmykia, S of Lola, Khara-Zukha River env., 12.vi.1979, S. A. Berkovich lgt. (DTRC); 1 ♂, Rostov reg., Volgodonsk, v.1988, Perlov lgt. (DTRC); 1 ♂, Stavropol reg., Mineralnye Vody [= Minvody], 29.–30.vi.2011, Fedorkin lgt. (DTRC); 3 ♂♂, Volgograd reg., Dyakovo, 13.v.2004, Putckhov lgt. (ADBC); 1 ♂, Volgograd reg., S of Chervlenoye, ravine with oak, 25.vi.1977, S. S. Krustov lgt. (DTRC).
Variation. Body length (♂♀) 3.7–6.2 mm. For colour variation see Heberdey (1936a,b); *Notoxus sareptanus* ab. *continuus* Heberdey, 1936 was regarded as an infrasubspecific unavailable name by Chadler et al. (2004).
Bionomy. Essentially unknown; all known records originate from lowlands or at least lower altitudes (below 1000 m a.s.l), in contrast to other species treated species herein.
Differential diagnosis. *Notoxus sareptanus* differs from the sympatric *N. hirtus* by the apically narrower and deeply emarginate lobes of the ventral plate of the penis (Fig. 10), which bears small, well-defined lobules medially at the base, and by the shape of the parameres, that are narrowed distally in lateral view and have the apex distinctly hooked in dorsal view (Fig. 11).
Distribution. Russia (South European Territory). The record here is the first from Kazakhstan.
Remarks. Heberdey (1936a) described *Notoxus sareptanus* from more than 30 specimens originating from southern Russia, "Sarepta (Gouv. Saratow)," and suspected its occurrence in the Caucasus, based on the possible synonymy with *N. hirtus* var. *caucasicus*. There are numerous additional specimens from "Sarepta" (syntypes or at least topotypes, collected mostly by Becker) deposited in MNHN (coll. Pic), MCSM (coll. I. Bucciarelli), MCZR (coll. C. Emery), and ZSMC. In addition, we have previously identified an "old specimen" from Algeria (see remarks under *N. hirtus*), that is considered to be mislabelled.

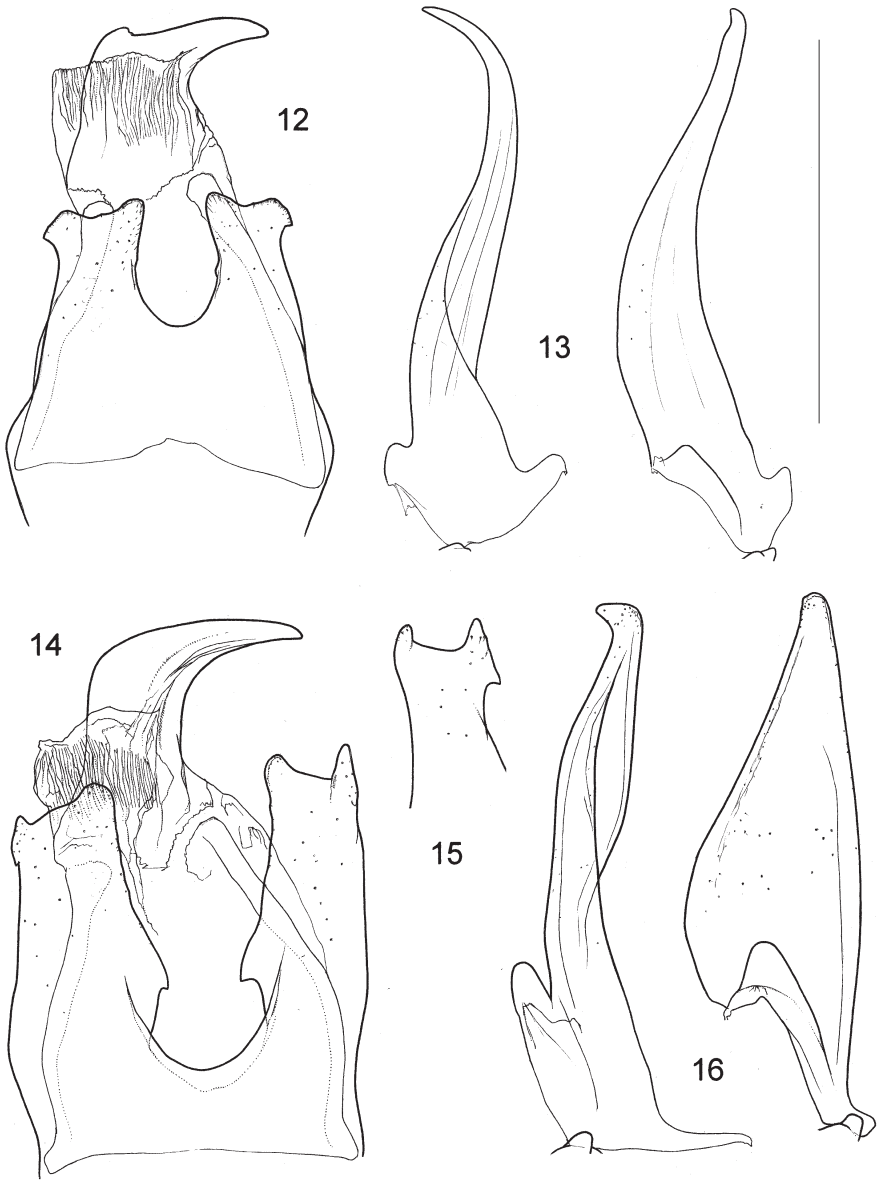
Gemminger & Harold (1870) listed *Notoxus laticollis* Motschulsky in litt. from "Sarepta", as a synonym of *N. hirtus*; this unavailable name may refer also to *N. sareptanus*.

Notoxus sergeyi sp. nov.
(Figs 12, 13, 25, 30)

Type locality. Iran, East Azerbaijan Province, Sahand Mountains, Kandovan env., 37°45′56.484″N 46°16′29.424″E, 2600 m a.s.l.
Type material. Holotype ♂, labelled: "IRAN, E. Azerbaijan, Sahand Mts, Kandovan env. 2600 m, 37.76569N 46.27484E, 1.vi.2014, S. Murzin lgt. [p]" (NMPC). Paratypes: 44 ♂♂, same data as holotype (ZKDC, 1 spec. each in ADBC, BMNH, DCDC, DTRC, GNCC, HNHM, MHNG, MNHN, NMPC, NHMW, ZSMC).
Description. Male (holotype). Body length 4.7 mm. Head dark brown, pronotum largely reddish-brown, darkened anteriorly, including horn; elytra pale reddish to yellowish-brown, with conspicuous black markings (Fig. 30); antennae, legs and palpi reddish. Body moderately glossy, pronotum finely, elytra largely rather coarsely punctate; punctures of elytra distinctly separated, finer in apical third; body setation rather coarse, mostly subdecumbent, with numerous conspicuously long tactile setae; antebasal setose band of pronotum complete or at most narrowly interrupted medially.

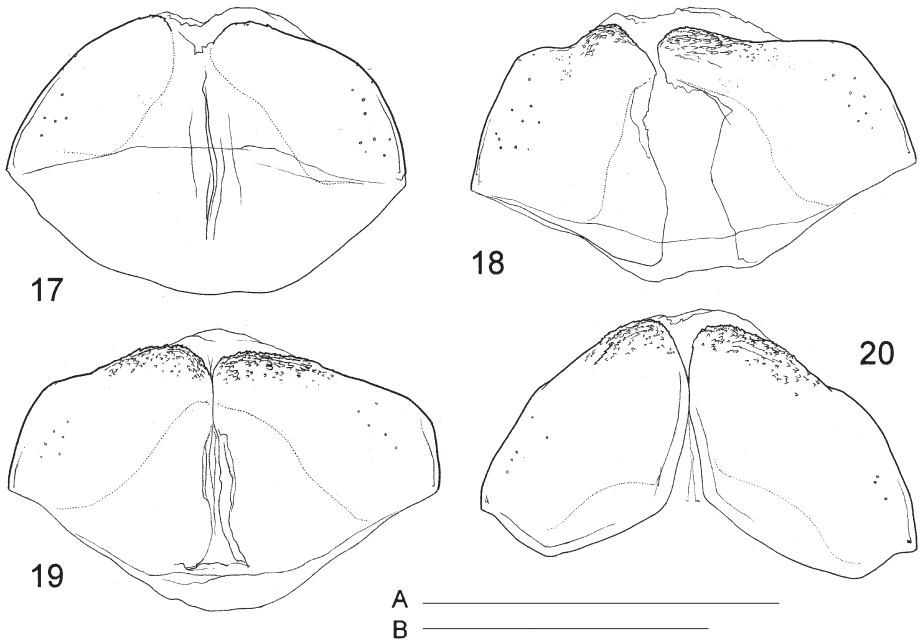
Head (across eyes) 0.8 times as wide as pronotum; tempora moderately arcuately narrowing towards base, posterior angles obsolete. Eyes rather small, moderately convex. Antennae long and slender, only slightly enlarged distally; antennomere X 1.6 times, XI 2.9 times as long as wide. Pronotum globular in dorsal view, 1.6 times as long as wide (including horn), disc evenly convex. Pronotal horn rather long, moderately wide, slightly narrowed in basal half, its margins largely continuously fringed and nearly evenly rounded apically, with 2–3 small lobules laterally in dorsal view; horn-crest prominent, with sharp margins, slightly reduced anteriorly; dorsal surface with scattered small rugules, varying in size, reduced subapically. Elytra 1.8 times as long as wide; humeri prominent (metathoracic wings fully-developed); omoplates and postscutellar impression at most very slightly indicated; elytral apices modified, with tubercle and rounded pore of gland. Legs simple, shortly, densely setose.

Abdominal sternum VII shallowly emarginate postero-medially; tergum VII simple, somewhat widely rounded posteriorly; tergum VIII forming simple, evenly arched sclerite. Aedeagus as in Figs 12, 13, 25; dorsal plate of penis projecting into rather robust, laterally directed, hook-like process, ventral plate conspicuously bilobed, lobes wide, subparallel, truncate apically; parameres simple, subcylindrical (lacking longitudinal carinae), evenly narrowed, curved and with apex pointed in dorsal view.
Female. Unknown.
Variation. Body length (♂♂) 3.4–4.7 mm. Prothoracic horn varying in detailed morphology, mainly in shape of its margins, and in number and prominence of the lateral lobules.
Bionomy. Unknown.
Differential diagnosis. *Notoxus sergeyi* sp. nov. resembles *N. armina* sp. nov. both externally and in the shape of the ventral plate of the penis (longer, wider, subparallel, with apically truncate lobes), but differs clearly from this and the other two close species treated in this paper by the conspicuously long, strongly narrowed and evenly curved parameres apically (cf. Figs 13 *versus* 3).
Distribution. Iran.
Etymology. Dedicated to Sergey Murzin (Moscow, Russia), well-known entomologist and collector of the type series of this species.



Figs 12–16. 12, 13. *Notoxus sergeyi* sp. nov. (holotype): 12 – penis in ventral view; 13 – paramere in dorsal (left) and lateral (right) view. 14–16. *N. turbidus* sp. nov. (paratype, Pakistan, Madaglasht): 14 – penis in ventral view; 15 – apical lobe of ventral plate of penis, ventro-lateral view; 16 – paramere in dorsal (left) and lateral (right) view. Scale 0.5 mm.

Obr. 12–16. 12, 13. *Notoxus sergeyi* sp. nov. (holotyp): 12 – penis, ventrální pohled; 13 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu. 14–16. *N. turbidus* sp. nov. (paratyp, Pakistán, Madaglasht): 14 – penis, ventrální pohled; 15 – apikální lalok ventrálního skleritu penisu, ventro-laterální pohled; 16 – paramera v dorzálním (vlevo) a laterálním (vpravo) pohledu. Měřítko 0.5 mm.



Figs 17–20. Female abdominal sternum VIII: 17 – *Notoxus armina* sp. nov. (paratype); 18 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazakhstan, Kalinino); 19 – *N. sareptanus* Heberdey, 1936 (Russia, Sarepta); 20 – *N. turbidus* sp. nov. (paratype, Pakistan, Madaglasht). Scale (0.5 mm): A – Figs 17, 19; B – Figs 18, 20.
Obr. 17–20. Samičí zadečkové sternum VIII: 17 – *Notoxus armina* sp. nov. (paratyp); 18 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazachstán, Kalinino); 19 – *N. sareptanus* Heberdey, 1936 (Rusko, Sarepta); 20 – *N. turbidus* sp. nov. (paratyp, Pakistán, Madaglasht). Měřítko (0,5 mm): A – obr. 17, 19; B – obr. 18, 20.

Notoxus turbidus sp. nov.
(Figs 14–16, 20, 26, 31, 32, 34, 35)

Type locality. North Pakistan, Khyber Pakhtunkhwa Province, Chitral District, Madaglasht.
Type material. Holotype ♂, labelled: "PAKISTAN: Chitral s/Madaglasht; 27.V.1983 2900-3050 m Besuchet - Löbl [p] // Notoxus simulans Heberd. det.G.Uhmann1988 [p]" (MHNG). Paratypes: 13 ♂♂ 11 ♀♀, same data as holotype (MHNG, ZSMC, 1 ZKDC); 7 ♂♂ 3 ♀♀, same data as holotype, except: "Notoxus simulans Heb. [p]" (MHNG, 2 ZKDC); 2 ♀♀, "Pakistan (Chitral) Garam Chashma 1900-2800 m, 1.-2.VII.1982 Erber & Heinz leg. [p]// Notoxus simulans Heb. det.G.Uhmann1988 [p]" (ZSMC); 5 ♂♂ 2 ♀♀, "PAKISTAN: Hazara s/Naran 2600 m 1.VI.1983 Besuchet - Löbl [p] // Notoxus simulans Heberd. det.G.Uhmann1988 [p]" (MHNG); 1 ♀, "Pakistan (Swât): Utrot 2200-2800 m 12.-14.VII.1982 Erber & Heinz leg. [p] // Notoxus simulans Heb. det.G.Uhmann1988 [p]" (ZSMC); 1 ♂, "PAKISTAN: Swat s/Utrot; 14.V.1983 2500-2600 m Besuchet – Löbl [p]" (MHNG); 3 ♂♂, "Naran, Khagan 2370–2750 m [p] // Pakistan, 1977 22.6 Wittmer, Brancucci [p]" (NHMB); 1 ♀, "Cabral 8.VI. 2300/2450 m [p] // Swat, Pak. 1978 W. Wittmer [p]" (NHMB); 5 ♂♂ 2 ♀♀, "PAKISTAN: Punjab, 2400m, Kagan valley, Naran, 4.VII.1986 leg. Forti [p]" (ADBC, GNCC, ZKDC); 1 ♀, "Afghanistan, 12-17.7.1963, 25 km N v. Barikot, Nuristan, 1800 m, Kasy & Vartian [p] // Notoxus caucasi-

cus Pic, det. G. Uhmann 1992 [p]" (HNHM); 1 ♂, "O-Afghanistan Umgeb. v. Kabul 1740 m, 4.5.52 J. Klapperich [p] // Notoxus caucasicus Pic P. BONADONA dét [p+h] // vid. G. Uhmann 1984 [p]" (ZSMC); 1 ♂, "Pagman, 17 – VI – 60" [h; date on underside]"// Notoxus sareptanus Hbd. ssp. Det. T. Nakane 1964 [p+h]" (HUMS); 1 ♀, "Afghanistan, Pagman, 30 km NW v. Kabul, 2500 m, 12.u.15.VI.1965 [p] // Notoxus simulans Heb. det. G. Uhmann 1988 [p]" (NHMW); 1 ♂, "O - Afghanistan, Pagmangebirge, 2300 m, 30.5.52, J. Klapperich lgt. [p] // Notoxus caucasicus Pic det. P. Bonadona [p+h] // vid. G. Uhmann 1984 [p]" (HNHM); 1 ♂, "O-Afghanistan, Pagmangebirge 2300m, 30.5.52, J. Klapperich [p] // Préparation microscop. no 263642 [h] // MUSÉUM PARIS Coll. Bonadona [p+h] // Notoxus caucasicus Pic P. Bonadona dét. [p+h]" (MNHN); 1 ♂, "Afghanistan, Paghman 2740m, 15.VII.1960, K. Lindberg. [p] // MUSÉUM PARIS Coll. Bonadona [p+h] // Préparation microscop no 2110631 [h] // Notoxus sareptanus Hbdy P. Bonadona dét [p+h]" (MNHN); 1 ♀, "Afghanistan, Quadés, lumiére 2.VII.1959, K. Lindberg [h] // MUSÉUM PARIS Coll. Bonadona [p+h] // Notoxus sareptanus Hbdy P. Bonadona dét [p+h]" (MNHN); 1 ♂, "Afghanistan, Ichkachim, 16.VII.1959, K. Lindberg [h] // MUSÉUM PARIS Coll. Bonadona [p+h] // Préparation microscop no 214603 [h] // Notoxus sareptanus Hbdy P. Bonadona dét [p+h]" (MNHN); 1 ♂, "USSR, Tadžikistan, Javroz (Dušanbe), 24.-30.4.1981, O. Odvárka legit. [p]" (ZKDC); 1 ♂, "INDIA, LADAKH Leh 16.8.2016 3500-3700m lgt. Orszulik" (ZKDC).

Additional material. 1 ♂,"Turkestan [p] // Prof. Schneider Vermächt.1903 [p] // coll. Heberdey [p] // Notoxus hirtus Laf. [h]" (NHMW). **Uzbekistan:** 1 ♂, "Buchara [h] // [male sex symbol] // hirtus Laf. Coll. Reitter [p+h] // hirtus det. v.Krekich [p+h] // Notoxus hirtus Laferté ~~det.~~ G.Uhmann1984 [p+h]" (NHMW).

Description. Male (holotype). Body length 5.1 mm. Head and pronotum reddish; elytra yellowish-brown to pale reddish, with conspicuous black markings (Figs 31, 32); antennae, legs and palpi reddish. Body moderately glossy, pronotum finely, elytra largely coarsely and rather densely punctate; punctures of elytra distinctly separated, finer in apical third; body setation coarse, subdecumbent, with numerous conspicuously long tactile setae; antebasal setose band complete, at most slightly narrower medially (not interrupted).

Head (across eyes) 0.8 times as wide as pronotum; tempora moderately arcuately narrowing towards base, posterior angles obsolete. Eyes medium-sized, moderately convex. Antennae long and slender, only slightly enlarged distally; antennomere X nearly twice, XI 3.3 times as long as wide. Pronotum globular in dorsal view, 1.6 times as long as wide (including horn), disc evenly convex. Pronotal horn moderately long and wide, subparallel, its margins continuously fringed and nearly evenly rounded apically, crenulate posteriorly in dorsal view; horn-crest prominent, rather gradually lowering anteriorly in lateral view, its sharp margins uneven to crenulate anteriorly. Elytra 1.8 times as long as wide; humeri prominent (metathoracic wings fully-developed); omoplates and postscutellar impression at most slightly indicated; elytral apices modified, with tubercle and round pore of gland. Legs simple, shortly, densely setose.

Abdominal sternum VII shallowly emarginate postero-medially; tergum VII simple, somewhat widely rounded posteriorly; tergum VIII forming simple, evenly arched sclerite. Aedeagus as in Figs 14–16, 26; dorsal plate of penis projecting into rather robust, laterally directed, hook-like process, ventral plate conspicuously bilobed, its paired posterior lobes wide, subparallel, truncate to nearly bifurcate apically, with small tooth-like median projection; parameres conspicuously wide in basal half, strongly narrowed (still somewhat flattened) and nearly parallel-sided in apical half in lateral view, with apex moderately hooked in dorsal view.



Figs 21–26. Aedeagus, ventral view: 21 – *Notoxus armina* sp. nov. (holotype); 22 – *N. hirtus bolognai* ssp. nov. (paratype); 23 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazakhstan, Kalinino); 24 – *N. sareptanus*, Heberdey, 1936 (Russia, Sarepta); 25 – *N. sergeyi* sp. nov. (holotype); 26 – *N. turbidus* sp. nov. (paratype, Pakistan, Madaglasht). Scale 0.5 mm.

Obr. 21–26. Aedeagus, ventrální pohled: 21 – *Notoxus armina* sp. nov. (holotyp); 22 – *N. hirtus bolognai* ssp. nov. (paratyp); 23 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazachstán, Kalinino); 24 – *N. sareptanus*, Heberdey, 1936 (Rusko, Sarepta); 25 – *N. sergeyi* sp. nov. (holotyp); 26 – *N. turbidus* sp. nov. (paratyp, Pakistán, Madaglasht). Měřítko 0.5 mm.

Female. In most external characters identical to male, differing as follows: elytral apices simple; sternum VII simple, evenly rounded posteriorly; tergum VII subtriangular, rounded apically; sclerites of tergum VIII nearly symmetrical, rounded, conspicuously spinulose on/near apical margin (Figs 20, 34, 35).
Variation. Body length (♂♀) 5.5–6.4 mm. Posterior transverse band of elytra may be both separated or fused with basal markings; some specimens from Madaglasht with elytra largely black (Fig. 32). Antennomere X 1.8–1.9 times, XI 3.1–3.3 times as long as wide. Prothoracic horn varying in detailed morphology, mainly in shape of its margins, and in the number and prominence of the lateral lobules.
Differential diagnosis. *Notoxus turbidus* sp. nov. can be distinguished from close species by the somewhat paler colouration of the head and pronotum (always brightly reddish, including horn, never distinctly darkened), more elongate distal antennomeres (antennomere XI more than 3.0 times as long as wide), by the extremely long, wide, subparallel, apically truncate to excavate lobes of the ventral plate of the penis, the wide, strongly narrowed apices of the parameres, and by nearly symmetrical, rounded and conspicuously spinulose sclerites of female sternum VIII.
Distribution. Afghanistan, India (Jammu & Kashmir), Pakistan, Tajikistan, and Uzbekistan.
Bionomy. Unknown; the available faunistic data indicate that *N. turbidus* may be a mountain species, occuring at altitudes from 1740 m to about 3500 m a.s.l. A single specimen from Quadés in Afghanistan was collected at light.
Etymology. From Latin *turbidus* (restless, disordered); named in reference to the present political situation in the area of distribution of this species.
Remarks. *Notoxus turbidus* sp. nov. is described from longer series of specimens that were either partly identified as "*Notoxus simulans* Heberdey" or "*Notoxus caucasicus* Pic" by Gerhard Uhmann and Paul Bonadona. The former species differs clearly in having a distinctly interrupted antebasal setose band of the pronotum, and by the characters of aedeagus, e.g. a shortly bilobed ventral plate and narrower parameres that are widest at their mid-length; see figures by Heberdey (1936b). The latter species is placed herein in synonymy with *N. hirtus* (see above).

There are no doubts about the identity of the two additional males. They are listed separately due to their insufficient and/or somewhat dubious locality data.

Telnov (2003) recorded "*Notoxus turbidus* Kejval & Nardi [im Druck]" from Pakistan; the name was regarded as unavailable (nomen nudum) by Chandler et al. (2004). The holotype and numerous paratypes from Pakistan, collected by C. Besuchet and I. Löbl, were identified as *Notoxus simulans* and recorded as such by Uhmann (1989). A paratype from Afghanistan (25 km N of Barikot, HNHM) was identified as *Notoxus caucasicus* and recorded as such by Uhmann (1985); a paratype from Afghanistan (Pagman, HUMS) was identified as *N. sareptanus*, but later recorded as *N. hirtus* by Nakane (1966).

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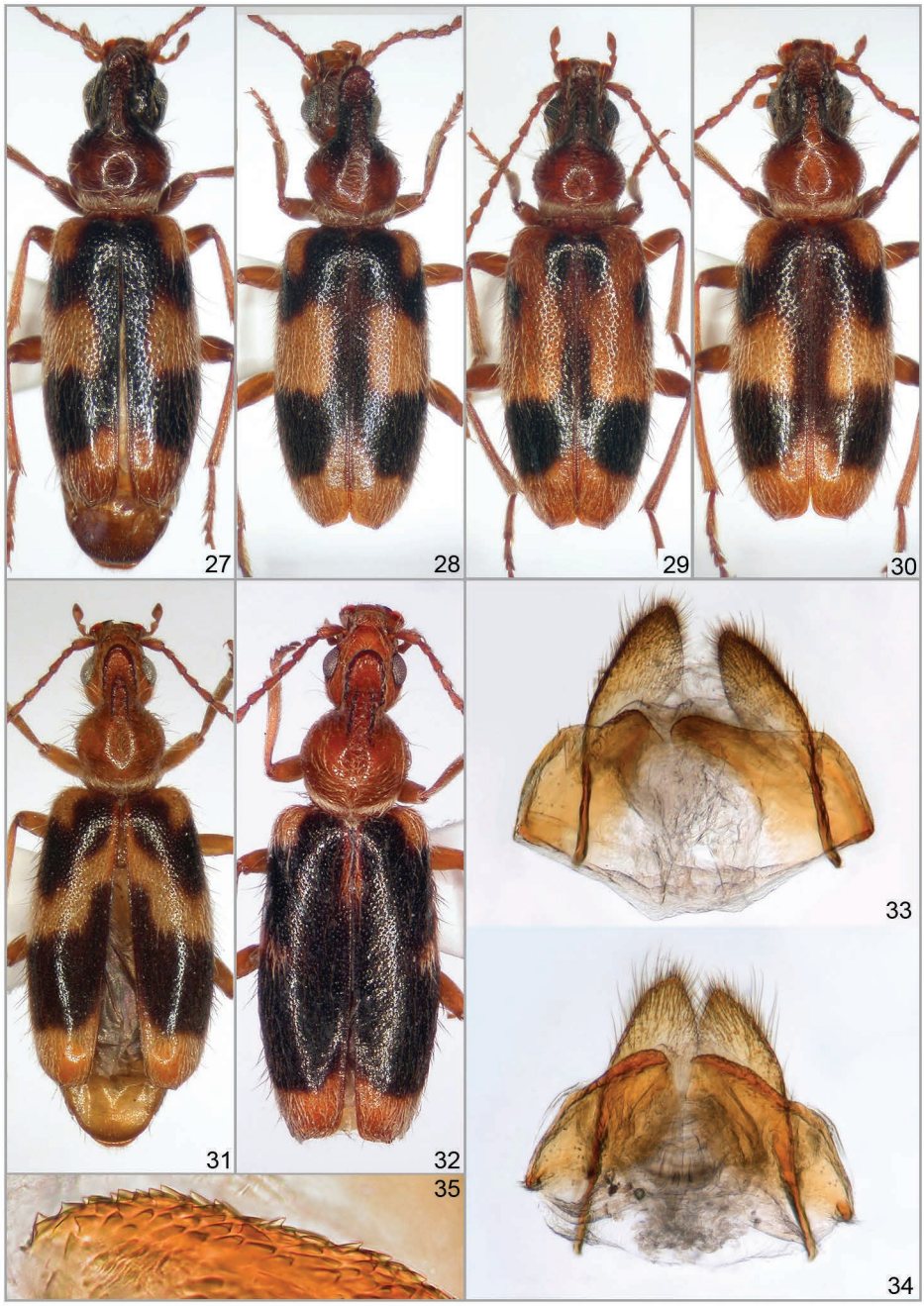
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Figs 27–35. 27–32. Habitus: 27 – *Notoxus armina* sp. nov. (holotype); 28 – *N. hirtus bolognai* ssp. nov. (paratype, Morocco); 29 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazakhstan, Kalinino); 30 – *N. sergeyi* sp. nov. (holotype); 31 – *N. turbidus* sp. nov. (paratype, Pakistan, Madaglasht); 32 – same (dark form). 33, 34. Female abdominal sternum VIII and styli: 33 – *N. h. hirtus* (Kazakhstan, Kalinino), 34 – *N. turbidus* sp. nov. (paratype, Pakistan, Madaglasht). 35 – *N. turbidus* sp. nov. (same), apical margin of female sternum VIII.

Obr. 27–35. 27–32. Habitus: 27 – *Notoxus armina* sp. nov. (holotyp); 28 – *N. hirtus bolognai* ssp. nov. (paratyp, Maroko); 29 – *N. h. hirtus* LaFerté-Sénectère, 1849 (Kazachstán, Kalinino); 30 – *N. sergeyi* sp. nov. (holotyp); 31 – *N. turbidus* sp. nov. (paratyp, Pakistán, Madaglasht); 32 – dtto (tmavá forma). 33, 34. Samičí zadečkové sternum VIII a styli: 33 – *N. h. hirtus* (Kazachstán, Kalinino), 34 – *N. turbidus* sp. nov. (paratyp, Pakistán, Madaglasht). 35 – *N. turbidus* sp. nov. (dtto), apikální okraj samičího sterna VIII.


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SOUHRN

Práce se zabývá čtyřmi druhy rodu *Notoxus* Geoffroy, 1762 z holarktické skupiny druhů blízkých *Notoxus monoceros* (Linnaeus, 1760) (Heberdey 1936, Chandler 1982). Jsou to nepochybně blízké druhy, tvořící malou podskupinu, jak je zřejmé z následujících sdílených znaků: bazální páska sét na pronotu kompletní nebo jen nepatrně přerušená uprostřed, ochlupení těla poměrně ježaté, včetně dlouhých, vztyčených sét, dorzální hřeben rohu pronota rovnoměrně klesající směrem k vrcholu, apikální výběžek dorzálního skleritu penisu aedeagu háčkovitý, zahnutý do strany a jednoduše špičatý (není rozeklaný). Hlavními znaky k rozlišení těchto druhů je tvar paramer a ventrálního skleritu penisu.

Vedle popisu nových druhů práce obsahuje nové údaje k výskytu dvou známých druhů. Dosti izolované nové nálezy *N. hirtus* LaFerté-Sénectère, 1849 (sensu lato) ve Španělsku (Sierra Nevada) a Maroku (Atlas) mohou na první pohled vypadat překvapivě. Avšak takové rozšíření není u hmyzu nijak neobvyklé a jeho původ byl již diskutován různými autory, např. Zilli (1999), Sanmartín (2003) a Meregalli (2001). Mezi palearktickýmu druhy rodu *Notoxus* má podobné disjunktní rozšíření druh *N. simulans* Heberdey, 1936, jehož nominotypický poddruh se vyskytuje v Ázii a *N. simulans coffini* Bonadona, 1988 v západní Evropě (viz Chandler et al. 2008, Bonadona 2013).