

**Chinese species of the genus *Centorus* Mulsant, 1854 (s. str.)
(Coleoptera: Tenebrionidae: Belopini) with description of two new
species**

**Китайские виды рода *Centorus* Mulsant, 1854 (s. str.)
(Coleoptera: Tenebrionidae: Belopini) с описанием двух новых видов**

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Key words: Coleoptera, Tenebrionidae, *Centorus*, new species, China.

Ключевые слова: Coleoptera, Tenebrionidae, *Centorus*, новые виды, Китай.

Abstract. This paper deals with 5 species of the subgenus *Centorus* Mulsant, 1854 known from Northwest China. Two new species (*C. medvedevi* sp. n. and *C. lineatus* sp. n.) are described and illustrated. Key to the known Chinese species of the subgenus is provided. The type specimens are deposited in the Hebei University Museum (MHBV).

Резюме. В статье рассматриваются 5 видов номинативного подрода рода *Centorus* Mulsant, 1854, известные из Северо-Западного Китая. Описаны и иллюстрированы два новых вида (*C. medvedevi* sp. n. and *Centorus lineatus* sp. n.). Дана определительная таблица китайских представителей подрода. Типовый экземпляры хранятся в Музее Хебейского университета.

Introduction

The genus *Centorus* was erected by Mulsant in 1854. This name was cited as *Belopus* Gebien, 1911 in Gebien's works [Gebien, 1911, 1943]. Silfverberg [1984] believed that *Belopus* is a synonym of *Centorus*, which distributed in Southern Europe, North Africa, the Caucasus, Kazakhstan and Middle Asia, Southern Mongolia, Arabian Peninsula, Afghanistan, Iraq, Iran, Northwest China. There are known 4 subgenera and 44 species in worldwide [Löbl et al., 2008]. So far, it is known 5 Chinese species belonging to the subgenus *Centorus*.

During the identification of the darkling beetles specimens collected from the Northwest China in 2008 and 2009, 2 new species were found: *C.* (s. str.) *medvedevi* sp. n. and *C.* (s. str.) *lineatus* sp. n. Type specimens are deposited in the Museum of Hebei University (MHBV).

Genus *Centorus* Mulsant, 1854 Subgenus *Centorus* Mulsant, 1854

Mulsant, 1854: 272 (type species *Centorus procerus* Mulsant, 1854, by monotypy).

Belopus Gebien, 1911: 459.

Calcar Latreille, 1829: 25 (nom. praeocc., non *Calcar* de Montfort, 1810, Mollusca).

Diagnosis. Eyes transversely olivary; length of 2nd antenna segment equal to wide; each elytron with evenly punctato-striates; inner surface of protibiae have small teeth in male.

Key to the known Chinese species of *Centorus* Mulsant, 1854 (s. str.)

1. Anal segment incurved in apical middle; inner margins of protibiae protuberated in middle; body length 6–6.1mm; N ingxia.....*C. helanensis* (Ren et Yu, 1994)
– Anal segment not incurved in apical middle..... 2
2. Body large (>8 mm)..... 3
– Body small (<5 mm)..... 4
3. Anal segment straight in apical middle; propleuron covered with dense granules; parameres covered with spines near apex; body length 9–9.2 mm; Western Xinjiang..... *C. lineatus* sp. n.
– Anal segment bow in apical middle; posterior angles of pronotum distinctly protruding; parameres obtuse angle-shaped at apex; body length 8.5–9 mm; Eastern Xinjiang..... *C. luculentus* (Ren, 1999)
4. Punctures in striae equal to that of interval; central part of anal segment concave and wrinkled; body length 4.4–6 mm; Kuldsha..... *C. filiformis* (Motschulsky, 1872)
– Punctures in striae distinctly larger than that in interval... ..5
5. Anal segment keen-edged in apical middle; aedeagus scimitar-shaped by lateral view; body length 5.5–6.1mm; Western Inner Mongolia *C. alashanicus* (Skopin, 1974)
– Anal segment arcuate curved in apical middle... ..6
6. Anal segment covered with yellow hairs at apex; inner margin of protibiae protuberated in base and middle; aedeagus distinctly S-curved; body length 5.5–6.1 mm; Central Inner Mongolia *C. tumotensis* (Ren et Zheng, 1993)
– Anal segment without yellow hairs at apex; anterior margin of inter-coxal process of abdomen rectangle keen-edged in middle; intervals of elytra covered with fine punctures; body length 5.4–5.8 mm; Northern Ningxia *C. medvedevi* sp. n.

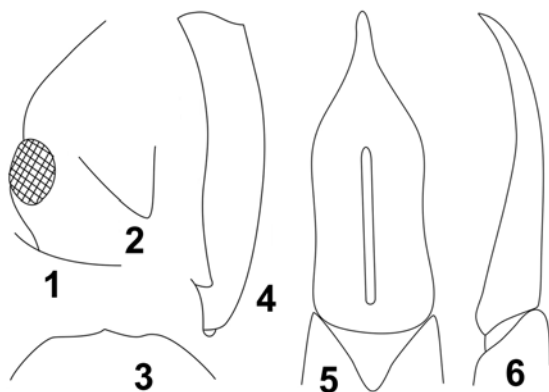


Fig. 1–6. *C. alashanicus* (Skopin, 1974) (from Skopin [1974]).
1 – head; 2 – mucro of elytron; 3 – anal sternite; 4 – protibia; 5 – parameres, dorsal view; 6 – parameres, lateral view. Scale 1 mm.

Рис. 1–6. *C. alashanicus* (Skopin, 1974) (по Скопину [Skopin, 1974]).

1 – голова; 2 – вершина надкрылья; 3 – анальный стернит; 4 – передняя голень; 5 – парамеры сверху; 6 – парамеры сбоку. Масштабная линейка – 1 мм.

Centorus alashanicus (Skopin, 1974)
(Fig. 1–6)

Skopin, 1974: 90, 98, 101, fig. 9, 28, 46, 57, 73 [*Belopus (Centorus)*]; Ren, Zheng, 1993: 52 [*Belopus (Centorus)*]; Ren, 1999: 179, fig. 108 [*Belopus (Centorus)*]; Silfverberg, 1984: 59 [*Centorus (Centorus)*]; Löbl et al., 2008: 105 [*Centorus (Centorus)*].

Material examined. None.

Distribution. China (Western Inner Mongolia).

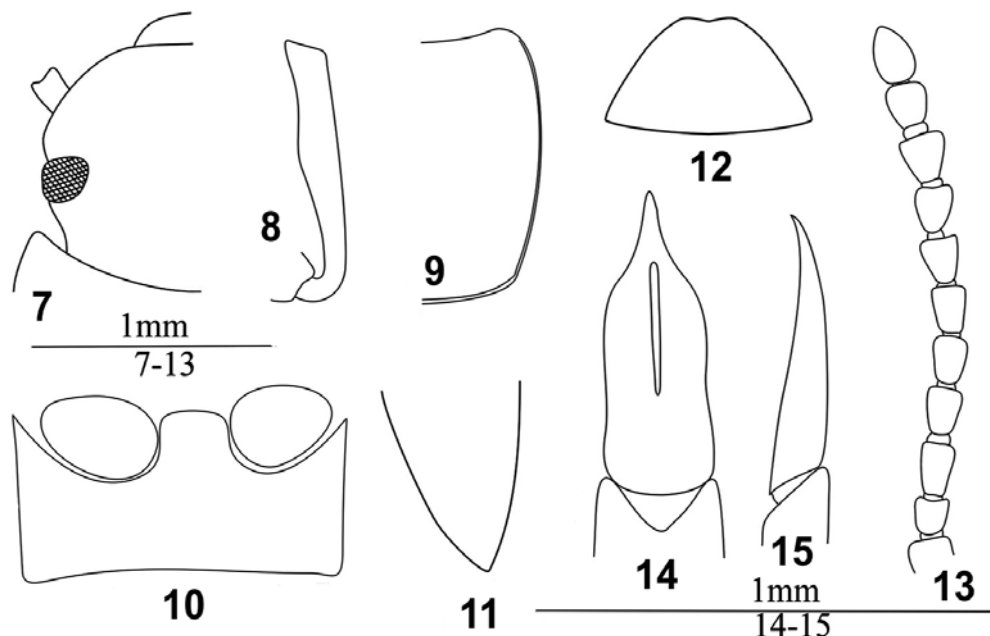


Fig. 7–15. *C. helanensis* (Ren et Yu, 1994).
7 – head; 8 – protibia; 9 – pronotum; 10 – inter-coxal process of 1st abdominal sternite; 11 – mucro of elytron; 12 – anal sternite; 13 – antenna; 14 – parameres, dorsal view; 15 – parameres, lateral view. Scale 1 mm.

Рис. 7–15. *C. helanensis* (Ren et Yu, 1994).

7 – голова; 8 – передняя голень; 9 – переднеспинка; 10 – межтазиковый отросток 1-го стернита брюшка; 11 – вершина надкрылья; 12 – анальный стернит; 13 – усик; 14 – парамеры сверху; 15 – парамеры сбоку. Масштабная линейка – 1 мм.

Centorus filiformis (Motschulsky, 1872)

Motschulsky, 1872: 40 [*Belopus (Centorus)*]; Zoufal, 1893: 118, t. 2, f. 8 (*Centorus*); Reitter, 1920: 10 (*Belopus*); Skopin, 1974: 75, 98, 101, fig. 5, 69 (*Belopus*); Silfverberg, 1984: 59 [*Centorus (Centorus)*]; Löbl et al., 2008: 105 [*Centorus (Centorus)*].

americanus Motschulsky, 1872: 40 (*Centorus*); Zoufal, 1893: 118 (*Centorus armeniacus*); Reitter, 1920: 10 (*Belopus armeniacus*).

tenuicornis Motschulsky, 1872: 40 (*Centorus*); Reitter, 1920: 10 (*Belopus filiformis* ab. *tenuicornis*).

Material examined. None.

Distribution. China (Xinjiang: Kuldsha).

Centorus helanensis (Ren et Yu, 1994)
(Fig. 7–15, 52)

Ren, Yu, 1994: 351, 352, fig. 1–5 [*Belopus (Centorus)*]; Ren, Yu, 1999: 176, 177, fig. 106 [*Belopus (Centorus)*]; Löbl et al., 2008: 105 [*Centorus (Centorus)*].

Type material examined. Holotype: ♂, China, Ningxia, Helan county, 1.05.1990, collected by Guo-Yi Wang; Paratype: 1♀, China, Ningxia, Pingluo county, altitude 1200 m, 27.08.1987, collected by Guo-Dong Ren.

Distribution. China (Northern Ningxia).

Centorus luculentus (Ren, 1999)
(Fig. 16–24, 53)

Ren, 1999: 177–179, fig. 107 [*Belopus (Centorus)*]; Löbl et al., 2008: 105 [*Centorus (Centorus)*].

Type material examined. Holotype: ♂, China, Xinjiang, Mulei county, 20.08.1993, collected by Guo-Dong Ren. Paratypes: 1♂ and 1♀.

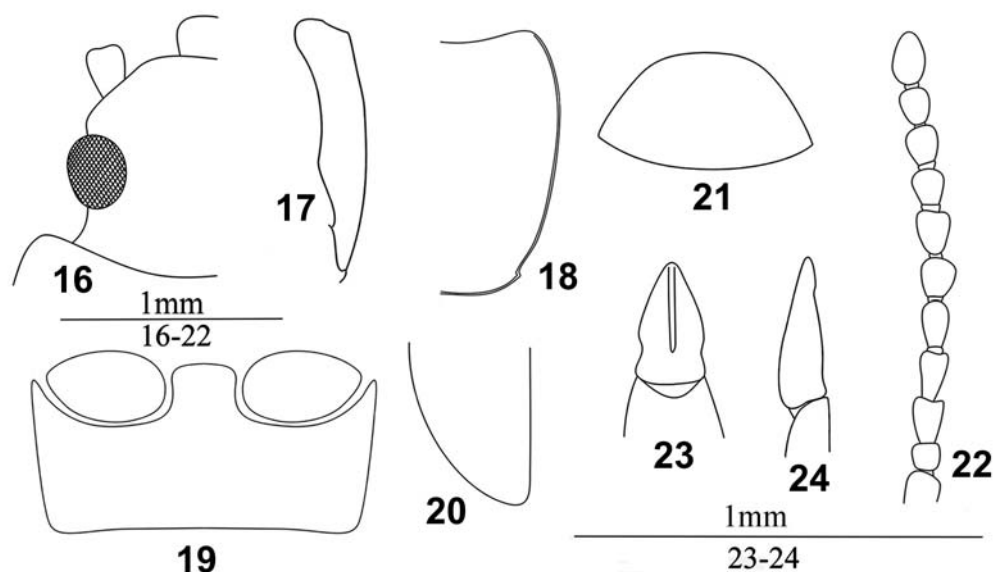


Fig. 16–24. *C. luculentus* (Ren, 1999).

16 – head; 17 – protibia; 18 – pronotum; 19 – inter-coxal process of abdomen; 20 – mucro of elytron; 21 – anal sternite; 22 – antenna; 23 – parameres, dorsal view; 24. parameres, lateral view. Scale 1 mm.

Рис. 16–24. *C. luculentus* (Ren, 1999).

16 – голова; 17 – передняя голень; 18 – переднеспинка; 19 – межтазиковый отросток 1-го стернита брюшка; 20 – вершина надкрылья; 21 – анальный стернит; 22 – усик; 23 – парамеры сверху; 24 – парамеры сбоку. Масштабная линейка – 1 мм.

China, Gansu, Subei county, 31.07.1995, collected by Guo-Dong Ren.

Distribution. China (From Eastern Xinjiang to Gansu).

Type material examined. Holotype: ♂, China, Inner Mongolia, Tumd Right Banner, 8.05.1983, collected by Qiang Liu.

Distribution. China (Central Inner Mongolia).

Centorus tumotensis (Ren et Zheng, 1994)

(Fig. 25–33, 54)

Ren, Zheng, 1993: 52–54, fig. 1–5 [*Belopus* (*Centorus*)]; Ren, 1999: 180, fig. 109 [*Belopus* (*Centorus*)]; Löbl et al., 2008: 105 [*Centorus* (*Centorus*)].

Centorus medvedevi sp. n.

(Fig. 34–42, 55)

Type material. Holotype: ♂, China: Ningxia, Pingluo county, 8.07.2009, collected by Cheng-Li Zhang and Zhao Pan. Paratypes: 10♂ and 26♀, same data as the holotype.

Description. Body small, flat, black shining.

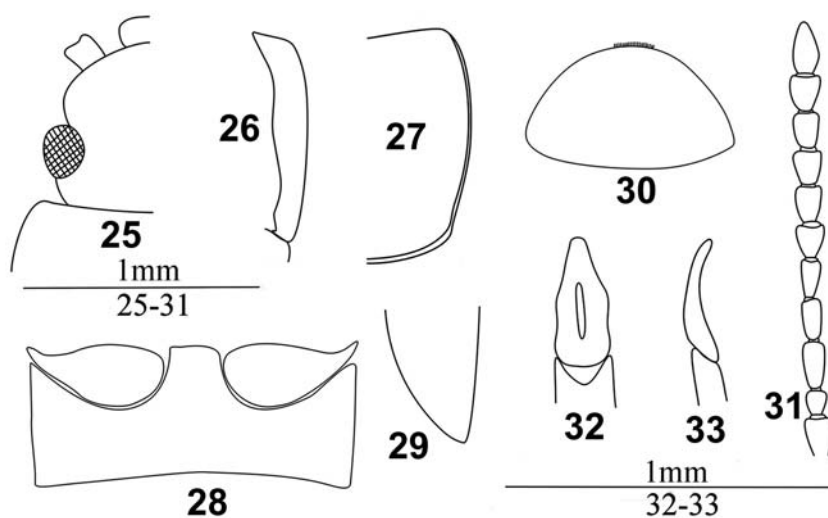
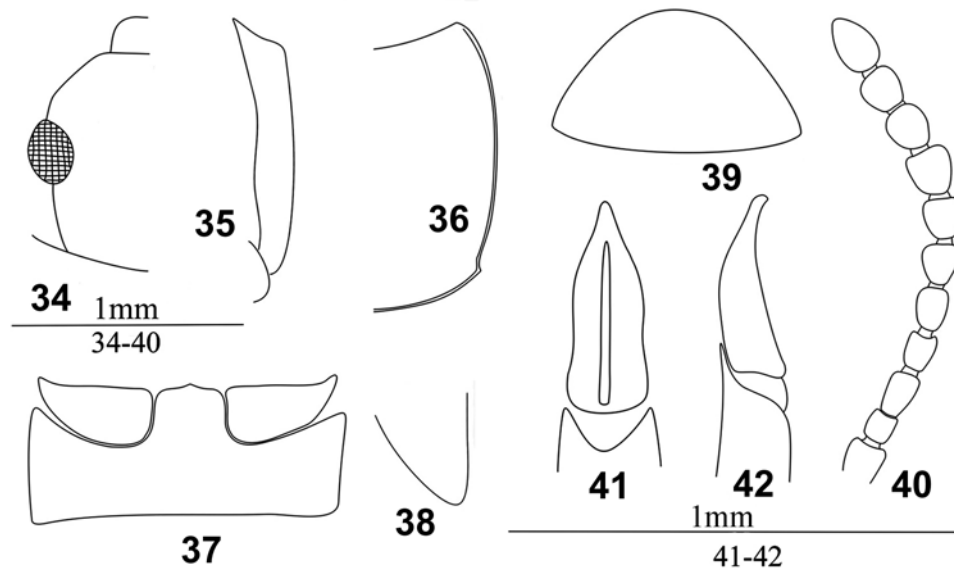


Fig. 25–33. *C. tumotensis* (Ren et Zheng, 1993).

25 – head; 26 – protibia; 27 – pronotum; 28 – inter-coxal process of abdomen; 29 – mucro of elytron; 30 – anal sternite; 31 – antenna; 32 – parameres, dorsal view; 33 – parameres, lateral view. Scale 1 mm.

Рис. 25–33. *C. tumotensis* (Ren et Zheng, 1993).

25 – голова; 26 – передняя голень; 27 – переднеспинка; 28 – межтазиковый отросток 1-го стернита брюшка; 29 – вершина надкрылья; 30 – анальный стернит; 31 – усик; 32 – парамеры сверху; 33 – парамеры сбоку. Масштабная линейка – 1 мм

Fig. 34–42. *C. medvedevi* sp. n.

34 – head; 35 – protibia; 36 – pronotum; 37 – inter-coxal process of abdomen; 38 – mucro of elytron; 39 – anal sternite; 40 – antenna; 41 – parameres, dorsal view; 42 – parameres, lateral view. Scale 1 mm.

Рис. 34–42. *C. medvedevi* sp. n.

34 – голова; 35 – передняя голень; 36 – переднеспинка; 37 – межтазиковый отросток 1-го стернита брюшка; 38 – вершина надкрылья; 39 – анальный стернит; 40 – усик; 41 – парамеры сверху; 42 – парамеры сбоку. Масштабная линейка – 1 мм.

Male. Antennae and labrum red-brown. Labrum squareness, 0.8 times as long as clypeus. Anterior margin of clypeus straight. Lateral margin of head slantways dilated, and widest before antennal socket. Vertex flat, with densely coarse punctures. Antennae reaching the posterior margin of pronotum, 1st segment stout, 2nd segment short, 3rd to 10th nearly equal length, apical segment oblong-oval, length ratio of antennomeres 2–11 as follows: 9:13:13:13:14:13:14:14:13:17.

Pronotum slightly longer than width (length to width ratio 1.08–1.1), with dense puncturation, widest before middle. Anterior margin inflexed downward, without border. Lateral margins strongly arcuate, border entire. Base of pronotum inflexed downward, border clear. Propleura flat, with rugae and punctures. Meso- and prosternum covered with dense and coarse punctures.

Elytra elongate-oval (length to width ratio 1.9–2), base wider than base of pronotum, slightly convex, with 9 punctato-striates, distensible from shoulder to middle, steeply contracted from middle to base. Punctato-striate deep, the punctures in striae distinct, intervals flat, with fine puncturation.

Visible abdominal sternites I–IV flat in middle, V – arcuate, with punctures and short setae. Anterior margin of abdominal inter-coxal process keen-edged in middle.

Femora club-shaped, with sparse punctures. Inner margins of protibiae weakly protuberated in middle, outer margin straight. Meso- and metatibiae regularly dilated towards apex. Ratio of the length of metatarsomeres 1–4 as follows: 15:8:9:30.

Aedeagus. Phallobase 2.5 times as long as paramera. Parameres aculeated at apex. Aedeagus slightly S-curved in lateral view.

Female. Not apparent external sexual dimorphism is recognized except inner surface of protibiae with small teeth.

Measurements. Length 5.4–5.8 mm; width 1.6–1.7 mm.

Etymology. Species named in honour of Prof. Gleb Sergeevich Medvedev, a famous entomologist.

Distribution. China (Ningxia).

Diagnosis. The new species similar to *C. tumotensis* Ren et Zheng, 1994, but with the following differences: posterior margin of anal segment without hairs in middle; anterior margin of inter-coxal process abdomen keen-

edged in middle; intervals of punctato-striates covered with clearly fine punctures; inner margins of protibiae protuberated in middle.

Centorus lineatus sp. n.

(Fig. 43–51, 56)

Type material. Holotype: ♂, China: Xinjiang, Jinghe county, 7.08.2008, collected by Ming-Sheng Zhu and Feng Zhang. Paratypes: 5♂ and 15♀, same data as the holotype.

Description. Body large, flat, strongly black shining.

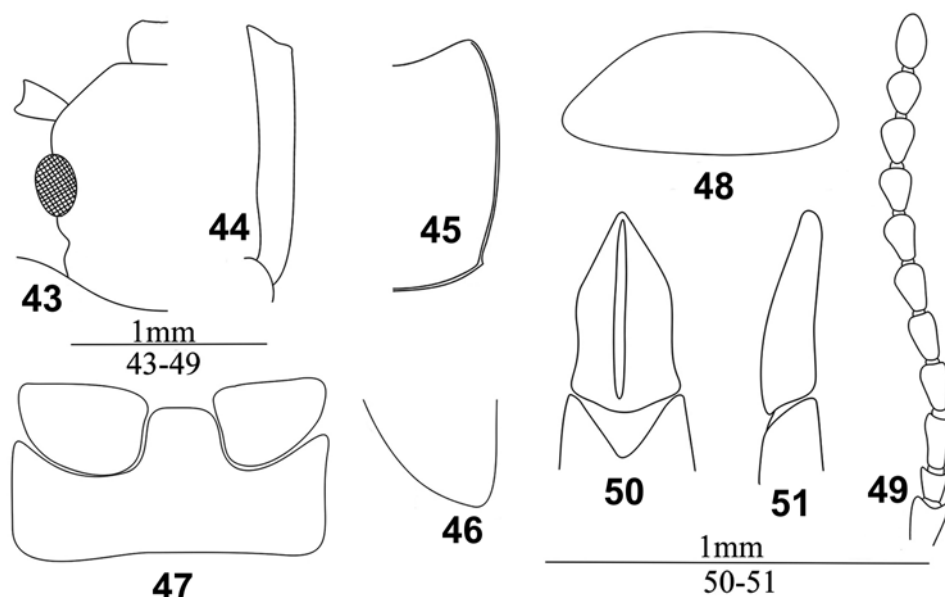
Male. Antennae and labrum brownish. Labrum oblate, with golden hairs, 0.7 times as long as clypeus. Anterior margin of clypeus shallowly incurved. Lateral margin of head slantways dilated, and widest before antennal socket. Vertex flat, with densely coarse punctures. Antennae reaching the posterior margin of pronotum, 1st segment stout, 2nd segment short, 3rd to 10th nearly equal length, apical segment oblong-oval, weakly asymmetrical, length ratio of antennomeres 2–11 as follows: 19:29:27:27:28:27:25:26:25:31.

Pronotum slightly longer than wide (length to width ratio 1.1–1.2), with dense puncturation, widest before middle. Anterior margin weakly inflexed downward, without border. Lateral margins strongly curved, entire and distinct border. Posterior margin inflexed downward and straight in middle, border clear. Propleura flat, with rugae and punctures. Meso- and prosternum covered with dense and coarse granules.

Elytra elongate-oval (length to width ratio 2–2.1), base wider than base of pronotum, slightly convex, with 9 punctato-striates, distensible from shoulder to middle, steeply contracted from middle to base. Punctato-striate shallow, punctures in striae distinct, interval flat, with fine punctures, narrower than the distance of punctures.

Visible abdominal sternites I–IV flat in middle, V – straight in apical middle; with densely rough punctures and long hairs.

Femora club-shaped, with sparse punctures. Inner margins of protibiae protuberated in base, outer margin straight. Meso- and metatibiae regularly dilated towards apices. Ratio of the length of metatarsomeres 1–4 as follows: 28:13:17:56.

Fig. 43–51. *C. lineatus* sp. n.

43 – head; 44 – protibia; 45 – pronotum; 46 – inter-coxal process of abdomen; 47 – mucro of elytron; 48 – anal segment; 49 – antenna; 50 – parameres, dorsal view; 51 – parameres, lateral view. Scale 1 mm.

Рис. 43–51. *C. lineatus* sp. n.

43 – голова; 44 – передняя голень; 45 – переднеспинка; 46 – межтазиковый отросток 1-го стернита брюшка; 47 – вершина надкрылий; 48 – анальный сегмент; 49 – усик; 50 – парамеры сверху; 51 – парамеры сбоку. Масштабная линейка – 1 мм.

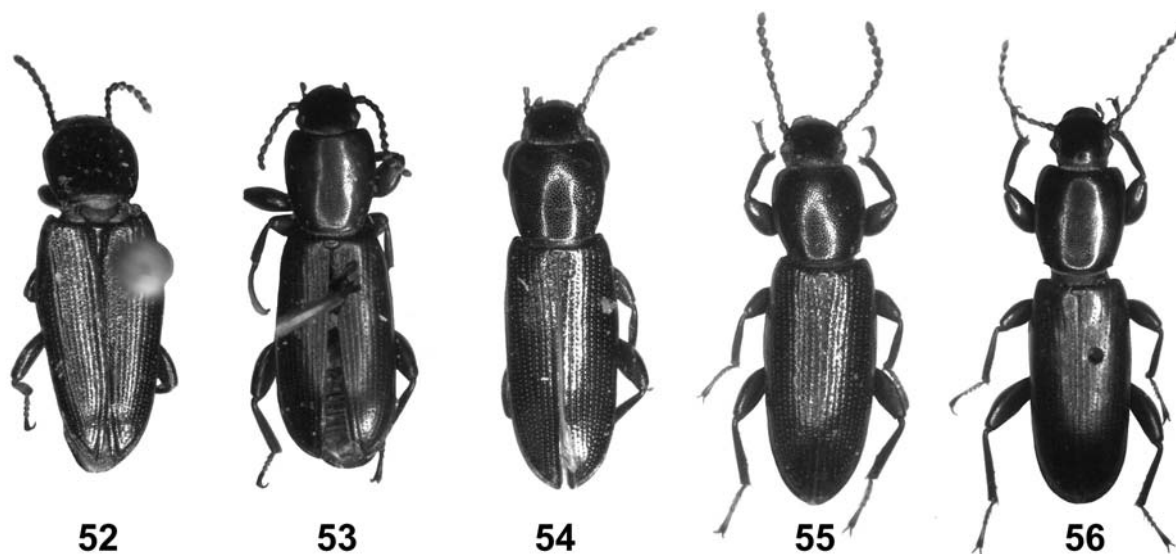


Fig. 52–56. Habitus in dorsal view (males).

Рис. 52–56. Общий вид самцов сверху.

52 – *C. helanensis* (Ren et Yu, 1994); 53 – *C. luculentus* (Ren, 1999); 54 – *C. tumotensis* (Ren et Zheng, 1993); 55 – *C. medvedevi* sp. n.; 56 – *C. lineatus* sp. n.

Aedeagus. Phallobase 2.2 times as long as paramera. Parameres covered with spines near apex. Aedeagus curved in lateral view.

Female. Without apparent external sexual dimorphism, except inner surface of protibiae with small teeth in male.

Measurements. Length – 9–9.2 mm; width – 2.4–2.5 mm.

Etymology. Species named from its straight base margin of pronotum in middle.

Distribution. China (Xinjiang).

Diagnosis. The new species similar to *C. luculentus* Ren, 1999, but with the following differences: sides of

pronotum depressed in base; base margin of pronotum straight in middle; shape of parameres obviously differed from the latter; anal segment straight in apical middle.

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