



A review of weevils of the genus *Ceutorhynchus* (Coleoptera: Curculionidae), associated with woodland draba, *Draba nemorosa* (Brassicaceae)

Обзор жуков-долгоносиков рода *Ceutorhynchus* (Coleoptera: Curculionidae), связанных с крупной дубравной *Draba nemorosa* (Brassicaceae)

В.А. Коротяев

Б.А. Коротяев

Boris A. Korotyayev , Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg 199034, Russia. E-mail: korotyay@rambler.ru

Abstract. A brief review of, and a key to eight Palearctic species of the weevil genus *Ceutorhynchus* Germar, 1823 associated with the spring and summer ephemeral crucifer *Draba nemorosa* (Brassicaceae) are given. Two new species related to *Ceutorhynchus unguicularis* C.G. Thomson, 1871 are described: *C. kerzhneri* **sp. nov.** from Primorskiy Territory and Kunashir I., and *C. melniki* **sp. nov.** from Zabaikalskiy and Primorskiy territories and eastern Mongolia.

Резюме. Даны краткий обзор и определительная таблица восьми видов долгоносиков рода *Ceutorhynchus* Гермар, связанных с весенне-летним эфемером крупной дубравной *Draba nemorosa* (Brassicaceae). Описаны два новых вида, близких к *Ceutorhynchus unguicularis* C.G. Thomson, 1871: *C. kerzhneri* **sp. nov.** из Приморского края и с о. Кунашир, и *C. melniki* **sp. nov.** из Забайкальского и Приморского краев и восточной Монголии.

Key words: key to species, Russia, Transcaucasia, Siberia, Far East, Mongolia, Coleoptera, Curculionidae, Conoderinae, Ceutorhynchini, *Ceutorhynchus*, *Draba nemorosa*, new species

Ключевые слова: определительная таблица, Россия, Закавказье, Сибирь, Дальний Восток, Монголия, Coleoptera, Curculionidae, Conoderinae, Ceutorhynchini, *Ceutorhynchus*, *Draba nemorosa*, новые виды

ZooBank Arcicle LSID: urn:lsid:zoobank.org:pub:10BA4B22-F464-401E-BE99-619D53370A0C

Introduction

One of the characteristic features of weevils, especially of the species with larvae developing in the plant tissues, is their pronounced preference for ruderal and coenophobic [term by Razumovskii (1981)] plants and pioneers of newly formed habitats (Korotyayev, 1992, 2006). This feature is obvious in the supertribe Ceutorhynchitae of the sub-

family Conoderinae and especially so in its largest genus *Ceutorhynchus* Germar, 1823, with over 300 species associated almost exclusively with the plant family Brassicaceae (= Cruciferae) (Colonnelli, 2004), a group of plants rarely attacked by polyphagous herbivores because of their richness in toxic secondary compounds. In the course of the study of relict westernmost communities of *Ulmus japonica* in southwestern Transbaikalia in 2018

and 2019, only two specialised weevils were found on this important coenose-forming tree in the flood-land forests, while on a delicate spring and summer ephemeral crucifer, the woodland draba, *Draba nemorosa*, four *Ceutorhynchus* species were found (Korotyaev et al., 2020). A brief essay on these and three additional species associated with *D. nemorosa* in the West Sayan Mts and in Transcaucasia was published (Korotyaev, 2019) but the identity of one of the species, *C. sp.* [? *C. unguicularis* C.G. Thomson, 1871], remains obscure. The COVID-19 pandemic of 2020 has deterred investigation of the woodland draba consortia, and only a single specimen of the problematic form collected in Yakutia long ago is to be added to the known distribution of the species of *Ceutorhynchus* (Korotyaev, 2019). To facilitate further investigation of the woodland draba consortia, a key to its eight known *Ceutorhynchus* species is given in this paper and descriptions of two very similar and, apparently, closely related species from the south of Transbaikalia and the Russian Far East, and also from eastern Mongolia, are published. Host plants of these new species are not known, but may well be in the genus *Draba*, so targeted collecting on *Draba nemorosa* and *D. sibirica* in those areas is most desirable. A key to the three species of the *C. unguicularis* species group from Siberia and characteristics of this group are also given.

Material and methods

The length of body was measured from anterior margins of eyes to the apex of the elytra.

All material cited in the text is in the Zoological Institute, Russian Academy of Sciences, St Petersburg (ZIN).

Taxonomic part

Order **Coleoptera**

Family **Curculionidae**

Subfamily **Conoderinae**

Genus ***Ceutorhynchus*** Germar, 1823

A key to *Ceutorhynchus* species associated with *Draba nemorosa*

1 (4). Antennal funicle six-segmented. Claws simple, free, fine, short, moderately divergent (at an

angle about 45°). Body small, 1.6–1.9 mm (Figs 1, 2). Rostrum, antennae, and at least tibiae and tarsi reddish brown, pronotum and elytra black, often with brownish tint. Dorsal vestiture moderately dense, uniform, subrecumbent to semi-erect, formed by narrow parallel-sided whitish scales. Elytral striae bare, intervals not wider than striae, flat or weakly convex. Hind wings non-functional, strongly reduced. Aedeagus angularly narrowed apically (Figs 11, 12).

2 (3). Elytra narrow, 1.23–1.27 times as long as wide, slightly rounded at sides, flattened dorsally (Fig. 1). Elytral vestiture subrecumbent. Aedeagus as in Figs 11, 19. Eastern Transcaucasia, Northeastern Turkey ***C. gemuricus***

3 (2). Elytra wider, oval, 1.08–1.15 times as long as wide, noticeably rounded laterally and convex dorsally (Figs 2). Elytral vestiture semi-erect. Aedeagus as in Fig. 12, 20. Mountain Caucasus, middle Volga area, Kazakhstan, East Siberia: West Sayan Mts, Buryatia ***C. kipchak***

4 (1). Antennal funicle seven-segmented. Claws simple or toothed, free or closely approximate at base, thin or rather stout, weakly to moderately divergent. Body on average larger, 1.5–2.5 mm. Body predominantly black, only tibiae may be varyingly dark brown; if legs, apical margin of pronotum and apex of elytra reddish brown, then body robust, claws finely dentate, elytra with white scutellar spot and mottled vestiture of narrow white and brownish scales, and middle tibia of female finely mucronate, anal ventrite deeply depressed medio-apically. Dorsal vestiture sparse to moderately dense, recumbent to semi-erect, uniform and formed by narrow parallel-sided or acuminate white scales, or predominantly by semi-erect dark setae with an admixture of white setiform scales. Elytral striae bare or with white narrow scales, intervals usually wider than striae, flat or barely convex. Hind wings not conspicuously reduced. Aedeagus of varying structure.

5 (8). Larger, 1.8–2.5 mm. Dorsal vestiture quite conspicuous, formed by recumbent uniform greyish narrow truncate scales (then claws distinctly dentate, apical margin of 4th abdominal ventrite entire, and male fore tibia finely mucronate) or by semi-erect dark setae with an admixture of white setiform scales (then claws simple, apical margin of 4th abdominal ventrite shallowly excised medially and slightly raised). Elytral striae with conspicuous narrow white scales. Aedeagus angularly narrowing apically, with sides moderately sclerotised.

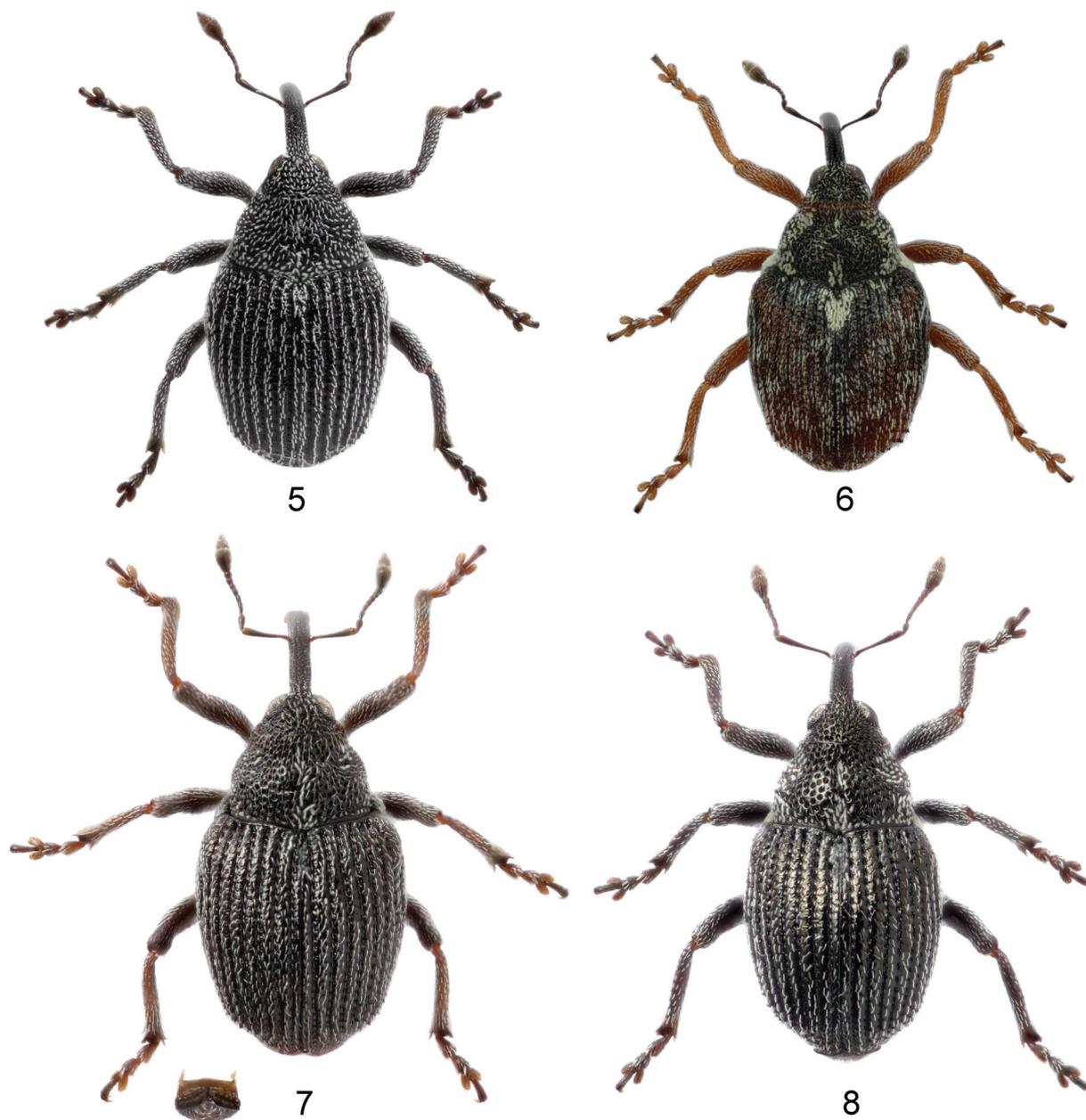
6 (7). Dorsal vestiture rather dense, formed by recumbent uniform greyish narrow truncate scales;



Figs 1–4. *Ceutorhynchus*, dorsal habitus. **1**, *C. gemuricus*, Azerbaijan, Autonomous Republic of Nakhchivan; **2**, *C. kipchak*, Buryatia, Nikol'sk Vill.; **3**, *C. seniculus*, Zabaikalskiy Terr., Zhindo Vill.; **4**, *C. klementzorum*, Zabaikalskiy Terr., Zhindo Vill. Photo by K.V. Makarov.

no trace of white stripes on pronotum or white scutellar spot present (Fig. 3); sides of mesothorax without condensed white scales on apices of mesepimera. Claws distinctly dentate, apical margin of 4th abdominal ventrite entire, male fore tibia finely mucronate; aedeagus sharpened apically (Fig. 13). East Siberia, Northeastern Russia (Magadan Prov., Chukchi Autonomous Area), Mongolia, Northern China *C. seniculus* 7 (6). Dorsal vestiture formed by subrecumbent to semi-erect dark and white very narrow parallel-sided

scales; pronotum with narrow median and lateral white stripes; elytra with ill-defined but conspicuous white scutellar spot (Fig. 4); sides of mesothorax with white scales conspicuously condensed on apices of mesepimera. Claws simple; apical margin of male 4th abdominal ventrite shallowly excised medially and slightly raised; male fore tibia non-mucronate; aedeagus narrowly rounded (Fig. 14) or shallowly excised apically. Southern East Siberia northward to Yakutia, eastern half of northern Mongolia *C. klementzorum*



Figs 5–8. *Ceutorhynchus*, dorsal habitus. **5**, *C.* sp. [? *C. unguicularis*], Tuva; **6**, *C. querceti*, Buryatia, Ina Vill.; **7**, *C. dauricus*, Zabaikalskiy Terr., Zhindo Vill. (pygidium detached below); **8**, *C. cochleariae*, Irkutsk. Photo by K.V. Makarov (5, 7, 8); photo by G.E. Davidian (6).

8 (5). Smaller, 1.5–2.4 mm. Dorsal vestiture fine, sparse and inconspicuous, elytral striae bare, or elytra with ill-defined white scutellar spot and mottled vestiture of narrow white and brownish scales on intervals and striae with conspicuous lanceolate white scales; 4th abdominal ventrite in male with apical margin not excised medially. Male fore tibia without mucro; female middle tibia finely mucronate, or claws very closely approximate and

armed with clearly visible appendage in basal half. 9 (10). Claws very closely approximate and armed with a well-developed tooth in basal half. Rostrum slender. Body and legs black, legs may be dark brown. Sides of thorax densely clothed with broad-lanceolate scales separated by less than own width (Fig. 5). Middle tibia of female non-mucronate. Elytral striae bare, intervals with sparse narrow, parallel-sided white scales. Aedeagus (Figs 15, 21) with

- narrowly rounded, weakly attenuate apex. Southern slope of West Sayan, East Tuva Plateau, Central Yakutia (new record)
. **C. sp.** [? **C. unguicularis**]
- 10 (9). Claws weakly diverging, simple or with broad tooth at base [then middle tibia of female finely mucronate, scales on elytral intervals very narrow, pointed apically, legs and partly elytra may be reddish brown (in *C. querceti*)]. Rostrum wider. Middle tibia of female finely mucronate. Aedeagus with subtruncate or shallowly emarginate apex (Figs 18, 22, 23).
- 11 (12). Apical margin of pronotum, legs and at least apical part of elytra reddish brown. Elytra with white scutellar spot and mottled vestiture of narrow white and brownish scales, elytral striae scaled similarly to the intervals (Fig. 6). Claws dentate at base. Anal ventrite of male very deeply depressed medio-posteriorly, apical margin behind the depression glabrous. Aedeagus as in Fig. 22. Holarctic species, mainly on *Rorippa palustris*, but found in southern Tuva on *Draba nemorosa* or *D. sibirica*
. **C. querceti**
- 12 (11). Body and legs black, legs occasionally brownish. Elytral vestiture uniform, composed of pointed or parallel-sided very narrow white scales.
- 13 (14). Claws with short broad tooth at base. Tibiae not paler than femora. Elytral intervals with sparse hair-like pointed scales, striae with similar but shorter scales. White scales on sides of pronotum, meso- and metathorax sparse, separated by not less than own widths; sides of pronotum without conspicuous white stripes. Elytra wider at base and more strongly narrowing toward apex (Fig. 7). Aedeagus as in Fig. 18. Body length 1.7–2.1 mm. Southern East Siberia east of Lake Baikal, eastern Mongolia, Korean Peninsula. On *Draba nemorosa*, probably also on *Cardamine* spp. **C. dauricus**
- 14 (13). Claws simple. Tibiae often brown. Elytral intervals with sparse parallel-sided, truncate apically white scales; striae bare or with inconspicuous fine hairs. Sides of pronotum without conspicuous white stripes, meso- and metathorax densely clothed with broad white scales separated by less than own widths. Elytra with humeri less convex, widest usually slightly behind them, less rounded at sides and less strongly narrowing toward apex (Fig. 8). Aedeagus as in Fig. 23. Body length 1.6–2.4 mm. Euro-Siberian species, distributed from West Europe to Irkutsk in the east. Mostly on *Cardamine* spp., but found on *Draba nemorosa* in Irkutsk and on *Barbarea arquata* south-east of Irkutsk
. **C. cochleariae**

Ceutorhynchus gemuricus Korotyaev, 1997
(Figs 1, 11, 19)

Distribution. Armenia, Azerbaijan, Northeastern Turkey (Korotyaev, 1997; Colonnelli, 2004).

Hosts. *Draba nemorosa* in the Nakhchivan Autonomous Republic of Azerbaijan (Korotyaev, 1997); in Northeastern Turkey I swept a few specimens in the habitats where no *D. nemorosa* was noticed.

Ceutorhynchus kipchak Korotyaev, 1996
(Figs 2, 12, 20)

Distribution. Armenia, eastern European Russia, southern slope of the West Sayan Mts in the south of Krasnoyarsk Terr. and in Tuva, East Tuva Plateau, Buryatia, Kazakhstan: Caspian Lowland (Khruleva et al., 2011, 2012), East Kazakhstan Prov. (Korotyaev, 2019).

Hosts. *Draba nemorosa*; in Tuva also on *D. sibirica* (Korotyaev, 2019).

Ceutorhynchus seniculus Brisout de Barneville, 1883
(Figs 3, 13)

Distribution. South of East Siberia, Northeastern Yakutia, Magadan Prov. (Korotyaev, 1980; as *C. changaicus* Schultze, 1898), Chukchi Autonomous Area (Berman et al., 2002), Mongolia [Schultze, 1898 (as *C. changaicus*); Voss (1967; as *C. gobiensis*), Korotyaev (1980; as *C. changaicus*)], Northern China (Alonso-Zarazaga et al., 2017).

Hosts. Several species of Brassicaceae [often *Erysimum flavum* and *E. cheiranthoides*, occasionally *Smelowskia alba*] in Tuva; *Alyssum* sp. in Chukotka (Berman et al., 2002). During two short expeditions in Buryatia this species was never found on *Erysimum* sp. in the Selenga flood plain or on *Smelowskia alba* and *Alyssum lenense* in Barguzin Valley and was common only on *Draba nemorosa* in two flood-plain ruderal localities at the southern boundary of the taiga zone on the Khilok River in the absence of other crucifers around and in the forest-steppe zone at the Chikoy River, also with a poor flora of Brassicaceae (Korotyaev, 2019).

Ceutorhynchus klementzorum Korotyaev, 1980
(Figs 4, 14)

Distribution. Irkutsk Prov., Buryatia, Zabaikalskiy Terr., Mongolia (Korotyaev, 1980, 2019).

Hosts. *Draba nemorosa* in ruderal flood-plain localities at the Khilok and Chikoy rivers together with *C. seniculus* (Korotyaev, 2019).

***Ceutorhynchus* sp. [? *C. unguicularis* C. G.**
Thomson, 1871]
(Figs 5, 9, 15, 21)

Material. **Russia**, Central Yakutia, Lena-Vilyui interfluvium, km 29 of Vilyui Hwy near Yakutsk, "Suntar" Alas, motley-grass meadow, 28.V.2013, S.N. Nogovitsyna leg., 1 male.

Distribution. Southern East Siberia: southern Krasnoyarsk Terr., Yermakovskii Distr.; Tuva: southern slope of the West Sayan Mts and East Tuva Plateau (Korotyaev, 1992, 2019), Central Yakutia (new record); Eastern Kazakhstan (Korotyaev, 2019).

Hosts. *Draba nemorosa* and *D. sibirica* in southern Krasnoyarsk Terr. and in Tuva (Korotyaev, 2019); both plants occur also in Central Yakutia (Zakharova et al., 2005) where the small (1.5 mm long) male was collected in the period of their flowering.

Note. The Siberian form is slightly but usually noticeably different from the European specimens of *C. unguicularis* in the slightly shorter antennal club, shorter rostrum, shorter, more robust and more strongly rounded at sides elytra with more angular preapical prominences (Korotyaev, 1980: 160 – "a female from Tuva of an uncertain identity"). Specimens of *C. unguicularis* from Krasnodar Terr. and Adygea have broad-lanceolate white scales sparsely scattered over the elytral disc, which is never found in the specimens from Siberia and Kazakhstan. This form differs more strongly in the bionomics; I did not find it on *Turritis borealis* in southern Krasnoyarsk Terr. in June 1979 when I went there to collect additional material to the single female brought shortly before that by E. Zemlyakova of the Moscow State University but collected in numbers on *Draba nemorosa* and *D. sibirica* belonging to a different tribe (Alyseae) and dissimilar morphologically, with sharply

different fruit structure. I also failed to find *C. unguicularis* in Apsheronsk Distr. of Krasnodar Terr. at an elevation of about 1200 m a.s.l. and collected this species on *Turritis borealis* only in the piedmont forest near Kaluzhskaya Vill. in Krasnodar Terr. and at an elevation of about 700 m S of Novoprokhladnoye Vill. in the Republic of Adygea. In Europe (Dieckmann, 1972; Alonso-Zarazaga et al., 2017) *C. unguicularis* is distributed from Ireland, Sweden and Finland in the north to Italy and Greece in the south and is associated mostly with *T. borealis* (Dieckmann, 1972; as *Arabis hirsuta*). At the eastern boundary of Europe in the east of the Russian Plain this species lives mostly on *Schivereckia hyperborea* of the tribe Alysseae (Isaev, 2007; Dedyukhin, 2016), and less often, on *T. borealis* (Dedyukhin, 2016). The long series from Bashkortostan taken by S.V. Dedyukhin from *Sch. hyperborea*, has no broad-lanceolate white scales on the elytral disc except along suture and behind scutellum.

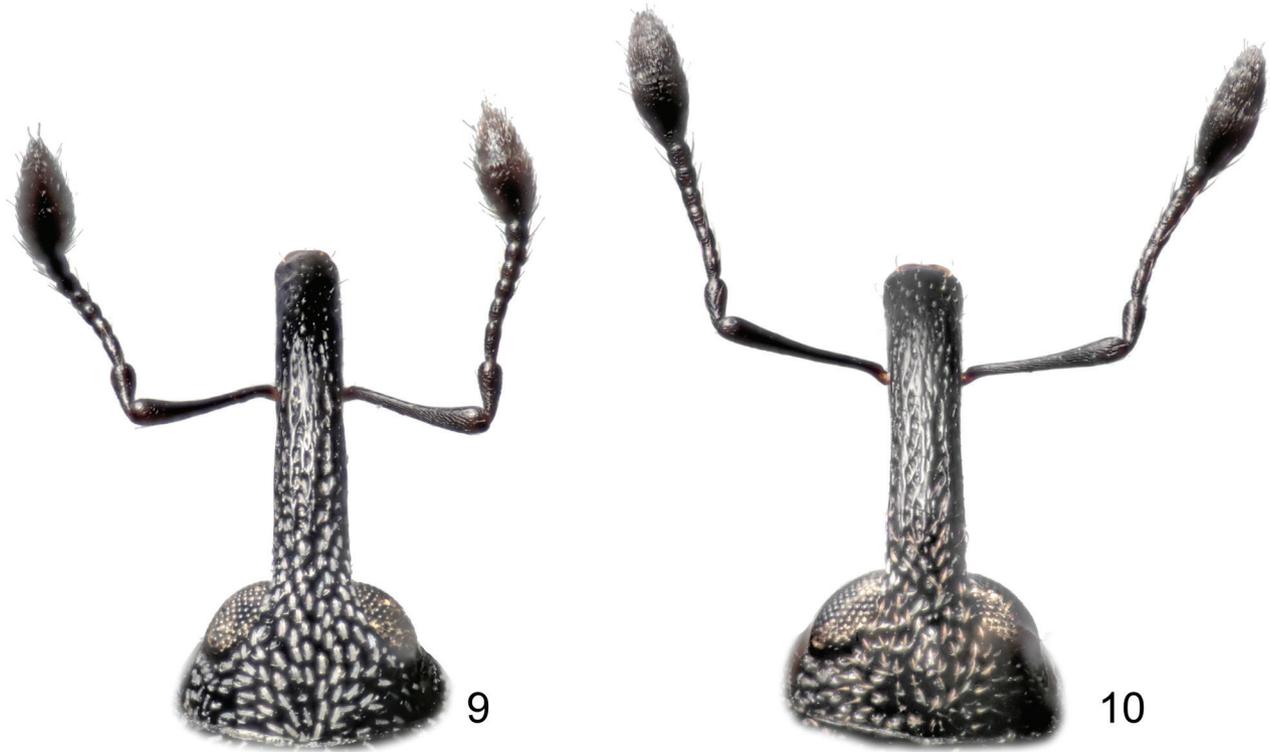
Ceutorhynchus querceti (Gyllenhal, 1813)
(Figs 6, 22)

Distribution. Holarctic species with the Arctic, boreal and northern subboreal distribution (Colonnelli, 2004).

Hosts. Mostly on *Rorippa palustris* throughout most of its Holarctic range (Dieckmann, 1972), also in several localities in Tuva [West Sayan Mts: 80 km N of Teli Vill.; southern foothills of West Sayan, town of Turan; Central Tuvian depression – Chadan River flood plain, Lake Chagytai, Seserlig (25 km NW of Kyzyl), Kok-Tey east of Kyzyl; Shurmakskii Pass on Eastern Tannu-Ola Mt. Range; Sagly and Erzin villages in southern Tuva; Yrban Vill. on East Tuva Plateau; my collections of 1979 and 1980], but beetles were found in southern Tuva in numbers on *Draba nemorosa* or *D. sibirica* and did not occur on *R. palustris* closer to the creek (Korotyaev, 1992), maybe to escape flooding.

Ceutorhynchus dauricus Korotyaev, 1997
(Figs 7, 18)

Distribution. Zabaikalskiy Terr., Amurskaya Prov., Primorskiy Terr., Mongolia, North Korea



Figs 9, 10. *Ceutorhynchus*, head and rostrum, dorsal view. **9**, *C.* sp. [? *C. unguicularis*], Tuva; **10**, *C. cochleariae*, Irkutsk. Photo by K.V. Makarov.

(Korotyaev, 1997), and South Korea (Hong et al., 2001; Korotyaev & Hong, 2004).

Hosts. On the right bank of the Chikoy River near Zhindo Vill. in Zabaikalskiy Terr. two specimens were swept in herbage with *Draba nemorosa* in early June 2019 (Korotyaev, 2019). In South Korea, *Draba nemorosa* var. *hebecarpa* was recorded as a host (Hong et al., 2001).

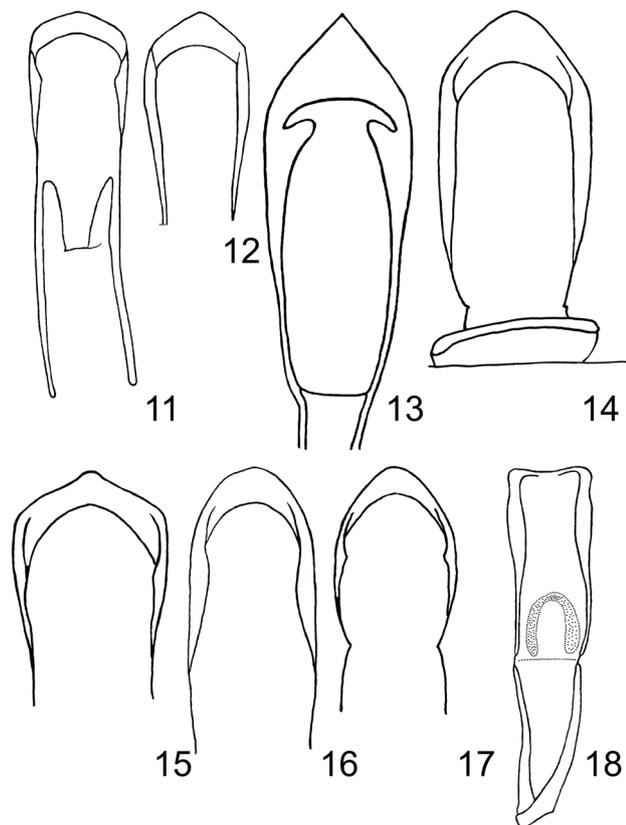
Ceutorhynchus cochleariae (Gyllenhal, 1813)
(Figs 8, 10, 23)

Distribution. Sub-boreal Western Palaearctic species distributed from West Europe to Irkutsk Prov. (Korotyaev, 1980) and northern Tuva (Korotyaev, 2019). Dieckmann (1972) and Colonnelli (2004) report it from Anatolia (Asian part of Turkey) but I have not seen material from Turkey. The record from Georgia in Colonnelli (2004) is based apparently on the only known specimen from the City of Poti on the Black Sea coast in Western

Georgia (Korotyaev & Cholokava, 1989; see taxonomic notes below).

Hosts. Usually *Cardamine pratensis* (Dieckmann, 1972: 70), but species of several other genera of Brassicaceae were also listed in the cited publication by Dieckman of which E. Colonnelli mentions only *Dentaria enneaphyllos* and *Lunaria rediviva* (Colonnelli, 2004). In Tuva the species was found only on *Cardamine pratensis* out of the 28 investigated in 1979 and 1980 species of crucifers (Korotyaev, 2019). In Irkutsk and its vicinities (Korotyaev, 2019), I have collected beetles from *Draba nemorosa* and *Barbarea arquata* far from water bodies in the habitats where no *Cardamine* sp. was present.

Taxonomic notes. The taxonomy of *C. cochleariae* in the Caucasus needs investigation. This species is apparently absent from the largest part of the steppe zone of European Russia (Arzanov, 2015), but a slightly different form with paler (reddish) legs and denser and finer dorsal vestiture is



Figs 11–18. *Ceutorhynchus*, aedeagus, dorsal view. **11**, *C. gemuricus*, Azerbaijan, Nakhchivan Autonomous Republic; **12**, *C. kipchak*, Buryatia, Nikol'sk Vill.; **13**, *C. seniculus*, Zabaikalskiy Terr., Zhindo Vill.; **14**, *C. klementzorum*, Zabaikalskii Terr., Zhindo Vill.; **15**, *C. sp.* [*? C. unguicularis*], Tuva; **16**, *C. melniki sp. nov.*, holotype; **17**, *C. kerzhneri sp. nov.*, paratype, Nakhodka; **18**, *C. dauricus*, Zabaikalskiy Terr., Zhindo Vill. After Korotyaev, 1997, modified (11, 12, 18); after Korotyaev, 1980, modified (13).

common in April and early May on *Cardamine* spp. in the Kuban River flood plain in the Republic of Adygea south of Krasnodar City. The single specimen reported by Korotyaev & Cholokava (1989) from Poti is apparently conspecific with this form. In the piedmont and low-hill Northwestern Caucasus this form has not been collected for many years, and only *C. filirostris* (Reitter, 1888) occurs (usually in small numbers) on *Cardamine* spp. and *Dentaria* spp., but more often on *Alliaria petiolata*. At higher elevations, usually at about 1300 m a.s.l. and above, *C. filirostris* is replaced (on *Cardamine lazica* in Karachai-Cherkess Republic: Korotyaev & Cholokava, 1989) by a form very

similar to *C. cochleariae* but with darker legs with black femora and tibiae and rather bright reddish tarsi; it also has sparser dorsal vestiture, and the beetles look darker than northern *C. cochleariae*. So, three allopatric forms exist along the north-south transect from the forest zone of European Russia through the Caucasus foothills to the middle forest belt with *Picea orientalis* and *Abies nordmanniana*.

Ceutorhynchus unguicularis species group

Diagnosis. Body small, 1.5–2.3 mm long, robust. Dorsal vestiture sparse, rather uniform. Disc of pronotum with sparse very narrow, parallel-sided, truncate apically white or greyish scales, with short broad-lanceolate white scales along base, usually also with sparse scales along median line and along sides; intervals of elytra with sparse similar scales; in addition, with wider white scales along suture and at bases of 1st and 2nd intervals. Elytral striae bare. Underside with moderately dense white lanceolate scales. Antennal funicle seven-segmented, fine; club weakly to strongly elongate, two to four times as long as wide, terete, matte, with very dense short, fine pubescence. Rostrum moderately long, slender, leveling with frons at base, about as wide as fore tibia in middle part, cylindrical, moderately strongly, evenly curved dorsoventrally, rather finely, moderately densely punctate in basal half, sparsely and very finely punctate and moderately to strongly shining in apical one-third to one-half, with rather ill-defined low, obtuse median carina in basal part. Antennae inserted near rostrum mid-length. Pronotum weakly to moderately transverse, with weak but noticeable lateral tubercles, moderately convex, rather shining, with medium-sized, moderately dense punctures. Elytra with weakly to moderately prominent humeri and weakly to moderately rounded sides and moderately convex disc; preapical prominences weakly to moderately pronounced, with fine granules not conspicuously condensed and forming no oblique ridges. Elytral striae rather wide and deep, intervals moderately shining, as wide as, or not much wider than striae, flat or slightly convex, shining, with rather sparse punctures and minute granules. Legs moderately long, femora mutic, tarsi moderately long and wide, claws short, weakly diverging, with well vis-



Figs 19–23. *Ceutorhynchus*, aedeagus, dorsal view. **19**, *C. gemuricus*, Azerbaijan, Nakhchivan Autonomous Republic; **20**, *C. kipchak*, Buryatia, Nikol'sk Vill.; **21**, *C. sp.* [? *C. unguicularis*], Tuva; **22**, *C. querceti*; **23**, *C. cochleariae*, Irkutsk. Photo by K.V. Makarov.

ible appendage at base. Fore tibia of male not mucronate, middle and hind tibiae finely mucronate. Middle tibia of female not mucronate. Aedeagus weakly sclerotised, with obtuse-angular apex, occasionally slightly attenuate at tip.

Species included. The group includes *C. mohri* Dieckmann, 1960 from Spain, *C. nigrutilus* Schultze, 1897 from Central and Southern Europe (Alonso-Zarazaga et al., 2017), *C. unguicularis* from Europe and Anatolia, with obscure form from southern East Siberia and Central Yakutia, and two new species from the Eastern Palaearctic described below.

Comparison. Species of the *C. unguicularis* group differ from species of the *C. cochleariae* group (Korotyaev, 1980) with black elytra and legs first of all in the secondary sexual characters, namely the non-mucronate middle tibia of female and apically sclerotised and convexly rounded aedeagus, which is always emarginate and poorly sclerotised medially in *C. cochleariae*, *C. dauricus* and *C. ussuricus* Korotyaev, 1997.

A key to species of the *Ceutorhynchus unguicularis* group from Siberia and the Far East

- 1 (4). Body covered dorsally only with white scales. Elytra narrower, with less prominent humeri (Figs 5, 24). Antennal club varying long.
- 2 (3). Antennal club weakly or moderately elongate,

not more than triple as long as wide (Figs 9, 27). Elytra often less strongly rounded and with more convex humeri (Fig. 5). Aedeagus wider, less rounded and wider apically (Figs 15, 21). Body length 1.5–2.3 mm. South of East Siberia, Central Yakutia

- *C. sp.* [? *C. unguicularis*]
- 3 (2). Antennal club strongly elongate, 3.5–4.2 times as long as wide (Fig. 26). Elytra more strongly rounded, with less produced humeri (Fig. 24). Aedeagus narrower, more strongly rounded and narrower apically (Fig. 17). Body length 1.7–2.2 mm. South of the Russian Far East
- *C. kerzhneri sp. nov.*

- 4 (1). Disc of pronotum and elytra with greyish parallel-sided scales clearly contrasting with broad-lanceolate white scales. Elytra wider, with more prominent humeri (Fig. 25). Antennal club moderately long, 2.4–2.8 times as long as wide (Fig. 28). Aedeagus longer and narrower, evenly rounded apically (Figs 16, 25). Body length 2.2–2.3 mm. South of East Siberia and the Russian Far East (only Primorskiy Terr.), eastern Mongolia
- *C. melniki sp. nov.*

Ceutorhynchus kerzhneri sp. nov. (Figs 17, 24, 26)

Ceutorhynchus unguicularis: Korotyaev, 1980: 160, pro parte (specimens from Primorskiy Terr.), nec C.G. Thompson, 1871 (misidentification).

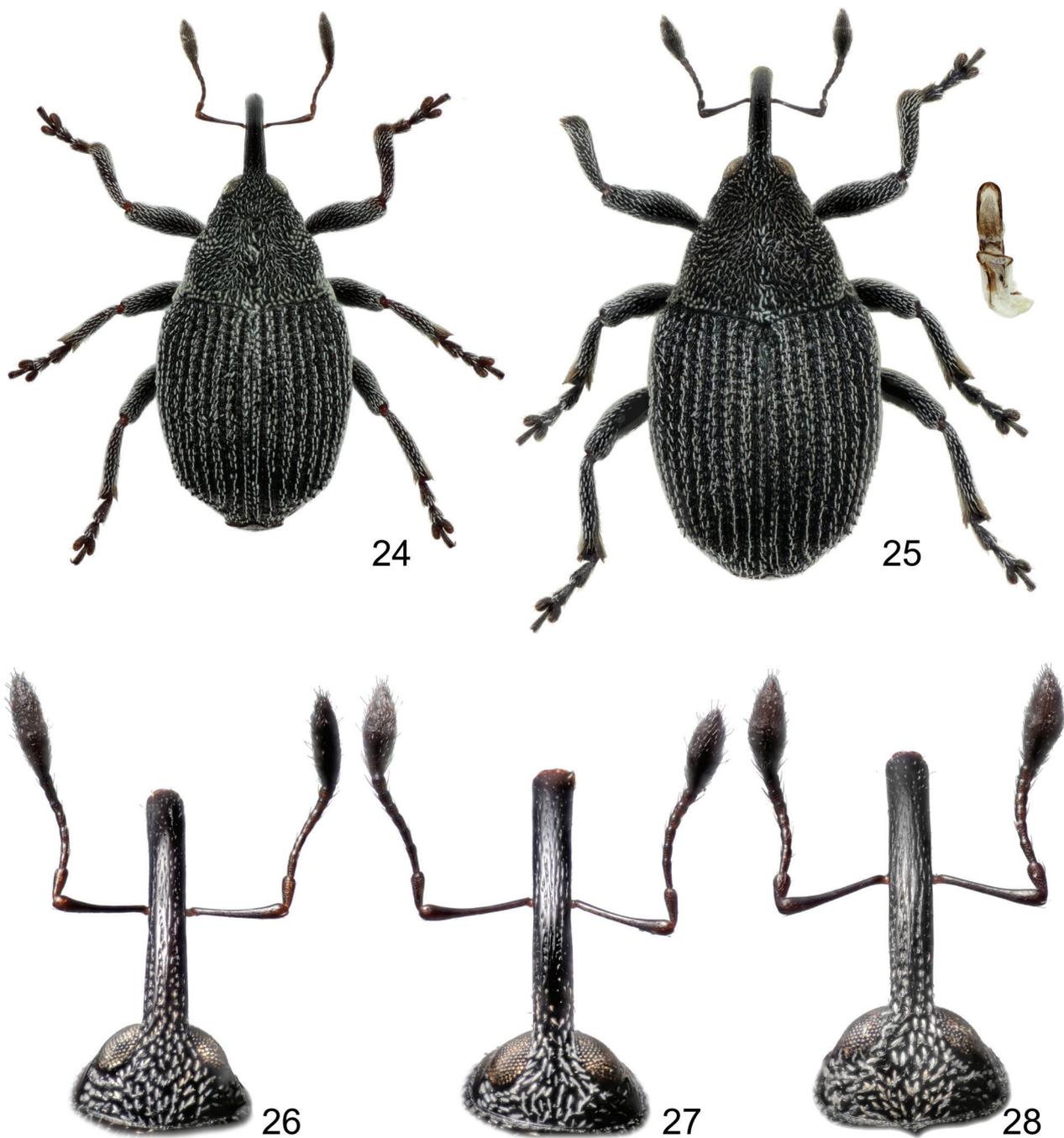
Holotype, female: **Russia**, *Primorskiy Terr.*, 20 km W of Spassk-Dal'niy, Lake Khanka shore, meadows with *Salix* stand, 12.VI.1989, S.A. Belokobyl'skiy leg.

Paratypes. **Russia**: *Primorskiy Terr.*, Nakhodka City, waste land, 21.VIII.1959, I.M. Kerzhner leg., 1 male; *Sakhalin Prov.*, Kunashir I., Sernovodsk Vill., 16.VII.1973, I.M. Kerzhner leg., 1 female.

Description. The new species is very similar to *C. unguicularis* and noticeably differs only in the much longer antennal club (Fig. 26) and much narrower and more strongly rounded at sides aedeagus (Fig. 17).

Rostrum of male 1.71 times as long as pronotum, that of female, 1.77–1.80 times.

Antennae of male inserted at 0.48 length of rostrum from base, those of female, at 0.46–0.48 length. Club of female 3.54, of male 4.20 times as long as wide.



Figs 24–28. *Ceutorhynchus*, dorsal habitus (24, 25, latter plus aedeagus dorsally), head and rostrum dorsally (26–28). 24, 26, *C. kerzhneri* sp. nov., female, Primorskiy Terr., holotype; 25, 28, *C. melniki* sp. nov., male, holotype (25) and female, paratype, Mongolia (28); 27, *C. unguicularis*, female, Krasnodar Terr., Kaluzhskaya Vill. Photo by G.E. Davidian (24, 25); photo by K.V. Makarov (26–28).

Pronotum of male 1.50, that of female 1.47–1.50 times as wide as long.

Body length of male 1.65, of female 2.00 (Lake Khanka)–2.15 (Kunashir I.) mm.

Etymology. The species is named after the late I.M. Kerzhner, an outstanding Russian entomologist, who made valuable contribution to the knowledge of the insect fauna of every region he ever investigated.

Distribution. The south of the Russian Far East (Primorskiy Terr. and Kuril Is. – Kunashir).

***Ceutorhynchus melniki* sp. nov.**

(Figs 16, 25, 28)

Ceutorhynchus unguicularis: Korotyaev, 1980: 160, pro parte (female from Mongolia), nec C.G. Thompson, 1871 (misidentification).

Holotype, male: **Russia**, *Primorskiy Terr.*, 20 km E of Khasan, Golubinyy Utyos Rock, 42°24'51"N, 130°44'54"E, 1–8.VII.2000, I.V. Melnik leg.

Paratypes. **Russia**: *Primorskiy Terr.*, 5 km NW of Lake Khanka, 22 km SW of Turii Rog Vill., 2.VII.1974, A.B. Egorov leg., 1 female; *Zabaikalskiy Terr.*, 30 km NE of Borzya Stn, 6.VII.1989, O.N. Kabakov leg., 1 female. **Mongolia**, *East Aimak*, 50 km ENE of Mt. Ikh-Chulut-Ula, old Somon Matad, 22.VI.1976, E.L. Gurjeva leg., 1 female.

Description. Male. Rostrum 1.39 times as long as pronotum, subcylindrical, slightly widening toward base in basal one-third, regularly and rather strongly curved, as wide as middle part of fore tibia. Base of rostrum levelling with frons. Dorsal surface of rostrum in basal one-third almost matt, densely covered with oblong, rather shallow punctures partly merging in fine striae along obtuse low median carina closer to middle third; latter with finer striolate punctation thinning apically; apical one-third shining, with sparse fine punctures. Antennae inserted at 0.49 length of rostrum from base. Scape weakly widening in apical one-third. Funicle seven-segmented, fine and rather long; 1st segment 2.8 times as long as wide, weakly widening apically; 2nd segment 0.75 times as long as 1st, about triple as long as wide; 3rd segment two-thirds as long as 2nd; 4–6th segments of subequal lengths, noticeably shorter than 3rd segment, more than twice as long as wide; 7th segment distinctly shorter than 6th, about as long as wide. Club terete, almost symmetrical, moderate-

ly long, 2.4 times as long as wide, narrow at apex, matt, very densely covered with short fine pubescence. Sutures between segments of club not very conspicuous, only the distal to mid-length one being quite distinct. Funicle bearing sparse short, fine, semi-erect hairs. Frons flat, moderately widening posteriorly. Head capsule matt, densely covered with medium-sized, moderately deep polygonal punctures, vertex not carinate. Eyes medium-sized, almost round except for rectilinear anterior margin touching base of rostrum laterally. Dorsal margin of eye situated below frons margin in lateral view.

Pronotum moderately transverse, 1.35 times as wide as long. Base shallowly bisinuate, weakly angularly protruding posteriorly in the middle. Sides rounded, convexly converging to the moderately deep apical constriction separating moderately long apical part ("collar") narrowing anteriorly. Lateral tubercles small, obtuse, not protruding from pronotum outline. Disc moderately and rather evenly convex, its sides in anterior half moderately obliquely depressed; median sulcus obsolete in the middle, shallow and wide, rounded at base, narrower at apical constriction. Apical margin of pronotum weakly raised, weakly roundly protruding anteriorly, with shallow emargination in the medial third limited by two weak obtuse angulations; emargination somewhat narrower than frons at posterior margin. Surface of disc almost matt, with very dense small, rather deep punctures separated by narrow but flat, shining in a few places intervals.

Scutellum very small and narrow, convex, shining. Apices of mesepimera clearly visible dorsally.

Elytra 1.25 times as long as wide, 1.37 times as wide as pronotum, with moderately convex humeral prominences. Sides subparallel in basal half, without depressions behind humeri, moderately and rather smoothly converging in apical half toward ill-defined, almost smoothed preapical prominences bearing rather sparse, small, acute granules not arranged in crests. Disc moderately and rather evenly convex, slightly flattened in basal half but not depressed behind scutellum. Striae moderately wide and deep; dense, almost round punctures in them slightly excising margins of intervals. The latter about 1.5 times as wide as striae, flat, weakly shining, with irregular fine punctures and small rounded, flattened, low granules.

Legs rather long and slender; femora mutic, weakly S-curved, weakly widened in middle part. Fore tibia non-mucronate, weakly S-curved, weakly widening along most of length and noticeably shortly outcurved and widened at apex; spines in apical comb very fine and dense. Middle and hind tibiae with sharp short mucro, weakly S-curved, moderately roundly and shortly widened at apex, with slightly longer fine setae in apical comb. Tarsi moderately long and rather narrow; 1st segment about 1.5 times as long as wide, 2nd segment in fore tarsus 1.4 times as long as wide, in middle and hind tarsi slightly shorter; 3rd segment 0.8 times as long and almost twice (1.82 times) as wide as 2nd. Claw-segment weakly widening apically, by 0.6 extending beyond lobes of 3rd segment. Claws short, weakly divergent, with well visible subconate appendages in basal half. Anal ventrite shallowly depressed in medial third along its entire length, sides of the depression weakly, obtusely convex in apical part. Pygidium almost twice as wide as long, weakly convex, neither sulcate nor carinate, matt, densely rugosely punctate. Aedeagus (Figs 16, 25) much longer and narrower than in *C. unguicularis*, subparallel-sided, shortly narrowly rounded apically, with sclerotised lateral areas narrow and developed only in apical two-thirds.

Body black, only antennae and 3rd tarsal segment very dark brown. Rostrum with sparse short narrow, posteriorly-pointed recumbent greyish scales along sides in basal quarter. Head capsule with moderately dense narrow subrecumbent, posteriorly-pointed greyish (along eyes margins) and brownish scales. Pronotum and elytra with moderately dense narrow, parallel-sided or somewhat narrowing apically truncate, subrecumbent (on pronotum) or recumbent (on elytral intervals) light brownish scales. In addition, pronotum with a row of small lanceolate white scales along base and along median line; elytra also with a few such scales at bases of 1st and 2nd intervals and with wider scales in mid-length one-third of lateral interval. Underside with almost uniform vestiture of wider short-lanceolate white scales separated mostly by own widths. Depression on anal ventrite in posterior two-thirds densely covered with white scales, especially at sides, and with fine pale erect setae at posterior margin. Pygidium lacking

white scales, with moderately dense, long, fine, subrecumbent yellow and white (at sides) hairs.

Female. Rostrum 1.37–1.48 times as long as pronotum, strongly and evenly curved. Basal part of rostrum moderately shining, finely punctate; mid-length third of rostrum with low, almost strip-like wide median carina and 2 rows of semi-obiterated small punctures along sides; apical half shining, with sparse fine punctures. Frons feebly convex in cross-section and longitudinally. Antennae inserted at 0.46–0.47 length of rostrum from its base, club 2.56–2.84 times as long as wide. Pronotum 1.36 times as wide as long. All tibiae unarmed. First and second ventrites of abdomen rather strongly jointly convex, 2nd rather steeply sloping to 3rd ventrite. Anal ventrite feebly depressed medially at apex.

Body length 2.25–2.30 mm.

Comparison. The new species is similar to *C. unguicularis*, but differs in the slightly more shining, more sparsely punctate in the apical part rostrum; slightly convex and less strongly widening posteriorly, especially in anterior half, frons; less transverse pronotum with more convex disc and noticeably protruding anterior margin shallowly sinuate medially; slightly wider and more strongly narrowing posteriorly in apical half elytra with more protruding humeral prominences; narrower elytral striae and wider, flat, more densely punctate and less shining intervals; slightly wider 3rd tarsal segment and longer claw-segment; slightly longer and more widely diverging claws with finer, not fused medially and more conspicuous inner appendages. The dorsal vestiture is bicolored, so that beetles look more similar to *C. typhae* (Herbst, 1795) and especially to the Eastern Palaearctic *C. asiaticus* Korotyaev, 1997 with its long antennal club but may be immediately distinguished by the seven-segmented dark antennal funicle and appendiculate tarsal claws.

Etymology. The species is named after I.V. Melnik of Moscow, an enthusiastic amateur coleopterist, who has collected the only male of the new species and has donated to the ZIN collection this specimen together with many other interesting beetles.

Distribution. South of Transbaikalia (Zabai-kalskiy Terr.) and the Russian Far East (Primorskiy Terr.), eastern Mongolia.

Discussion

The weevil consorts of *Draba nemorosa* are rather numerous and include strictly specialised (at least in large parts of their ranges) – *C. gemuricus*, *C. kipchak*, *C. klementzorum*, *C. sp.* [? *C. unguicularis*] and *C. dauricus* – and widely oligophagous species occurring on this plant only in limited areas and capable of developing on other crucifers (*C. querceti*, *C. seniculus*, and *C. cochleariae*). They belong to several species groups; *C. gemuricus* and *C. kipchak* constitute a rather close pair distributed mostly in open dry landscapes, both plain (*C. kipchak* occurring even in the semi-deserts of northern Caspian Lowland) and mountain (*C. kipchak* in Eastern Kazakhstan and in Siberia). These two species are related to the nemoral European *C. posthumus* Germar, 1823 and *C. pumilio* (Gyllenhal, 1827) associated with *Teesdalia nudicaulis* of the tribe Lepideae (Dieckmann, 1972). *Ceutorhynchus klementzorum* belongs to the *C. viator* Faust, 1885 group (Korotyayev, 1980) distributed mostly in the arid regions of the Central Palaearctic and including apparently moderately specialised oligophagous species. *Ceutorhynchus sp.* [? *C. unguicularis*] is a form of obscure identity with an extensive range in East Siberia; it belongs to a Trans-Palaearctic species group inhabiting mostly woodlands. *Ceutorhynchus dauricus* is a predominantly nemoral Eastern Palaearctic species of the large Holarctic complex centering around *C. cochleariae* and comprising about twenty species distributed from the Arctic to subtropical regions of North America and East Asia (Korotyayev, 2008). No specialised *Ceutorhynchus* species is known from West Europe, and no species has been recorded from *Draba nemorosa* in North America (Colonnelli, 2004). Most of the eight species associated with this ephemeral ruderal crucifer have hind wings fully or almost fully developed, which is natural for herbivores of this sort, but wings are strongly reduced in *C. gemuricus* (shorter than the elytra and narrow) and aborted in *C. kipchak*; the first has a very limited distribution in the mountains of Eastern Transcaucasia and adjacent Northeastern Turkey, whereas the second has one of the largest ranges of the *Draba nemorosa* consorts.

Acknowledgements

I greatly appreciate the invitation to the joint investigation of the relict communities with *Ulmus japonica* in southwestern Transbaikalia by E.V. Sofronova (V.B. Sochava Institute of Geography, Siberian Branch of the Russian Academy of Sciences, Irkutsk) and friendly help of all the members of the expeditions of 2018 and 2019. Invaluable was the help of O.A. Anenkov, V.V. Chepinoga, and A.P. Sofronov in identification of plants and other advice on the botany, ecology, and geography of the region. I give my thanks to S.N. Nogovitsyna and N.N. Vinokurov (Institute for Biological Problems of the Cryolithozone, Siberian Branch of the Russian Academy of Sciences, Yakutsk) for collecting weevils in Yakutia, donating a part of their material to ZIN, and providing a copy of the book on the Yakut flora and vegetation. I cordially thank V.I. Dorofeyev (V.L. Komarov Botanical Institute of the Russian Academy of Sciences, St Petersburg) for consultations on the taxonomy of Brassicaceae and identification of my herbarium specimens of crucifers from the West Sayan Mts, S.V. Dedyukhin for a gift of a long series of *Ceutorhynchus unguicularis* from *Schivereckia hyperborea*, collected by him in Bashkortostan, and K.V. Makarov (Moscow State Pedagogical University) and G.E. Davidian (All-Russian Institute of Plant Protection, St Petersburg–Pushkin) for making photographs for this paper. And, last but not the least, I greatly acknowledge considerable improvement of the paper by the reviewers, R.S. Anderson (Canadian Museum of Nature, Ottawa, Canada) and E. Colonnelli (University of Rome La Sapienza, Italy).

The study was performed based on the ZIN collection within the State Program No. AAA-A-19-119020690101-6 and supported by the Russian Foundation for Basic Research (projects No. 19-04-00565 A and 18-05-00557 A).

References

- Alonso-Zarazaga M.A., Barrios H., Borovec R., Bouchard P., Caldara R., Colonnelli E., Gültekin L., Hlaváč P., Korotyayev B., Lyal C.H.C., Machado A., Meregalli M., Pierotti H., Ren L., Sánchez-Ruiz M., Sforzi A., Silfverberg H., Skuhrovec J., Trýzna M., Velázquez de Castro A.J. & Yunakov N.N. 2017. Cooperative Catalogue of Palaearctic Coleoptera Curculionoidea. *Monografías electrónicas SEA*. 8: 1–729. <https://www.biotaxa.org/mesea/article/view/34195>
- Arzanov Yu.G. 2015. A revised checklist species of the Curculionoidea (Coleoptera, excluding Scolytinae) of Rostov Oblast and Kalmykia, the southern

- part of European Russia. *Journal of Insect Biodiversity*, **3**(12): 1–32. <https://doi.org/10.12976/jib/2015.3.12>
- Berman D.I., Alfimov A.V. & Korotyaev B.A.** 2002. Xerophilic arthropods in the tundra-steppe of the Utyosiki Locality (Chukchi Peninsula). *Zoologicheskii Zhurnal*, **81**(4): 444–450. (In Russian; English translation: *Entomological Review*, 2002, **82**(1): 94–100).
- Colonnelli E.** 2004. *Catalogue of Ceutorhynchinae of the World, with a key to genera (Insecta: Coleoptera: Curculionidae)*. Barcelona: Argania editio. 124 p.
- Dedyukhin S.V.** 2016. Consortial associations of phytophagous beetles (Coleoptera: Chrysomeloidea, Curculionoidea) with plants in the east of the Russian Plain. *Entomologicheskoe Obozrenie*, **95**(3): 515–542. (In Russian; English translation: *Entomological Review*, 2016, **96**(6): 679–700. <https://doi.org/10.1134/S0013873816060038>).
- Dieckmann L.** 1972. Beiträge zur Insektenfauna der DDR: Coleoptera – Curculionidae: Ceutorhynchinae, *Beiträge zur Entomologie*, **22**(1/2): 3–128.
- Hong K.J., Egorov A.B. & Korotyaev B.A.** 2001. *Illustrated Catalogue of Curculionidae in Korea (Coleoptera)*. Insects of Korea, Ser. 5. Seoul. 337 p.
- Isaev A.Yu.** 2007. *Opredelitel' zhestkokrylykh Srednego Povolzh'ya. Ch. III. Polyphaga–Phytophaga* [An identification guide to the beetles of the Middle Volga area. Pt. III. Polyphaga–Phytophaga]. Ulyanovsk: Vektor-S. 256 p. (In Russian).
- Khruleva O.A., Chernov Yu.I., Korotyaev B.A. & Piterkina T.V.** 2011. Beetles of the superfamily Curculionoidea (Coleoptera) in a complex semi-desert in relation to climate changes in the North Caspian Region. *Zoologicheskii Zhurnal*, **90**(3): 311–324. (In Russian; English translation: *Entomological Review*, 2011, **91**(3): 312–325. <https://doi.org/10.1134/S0013873811030055>).
- Khruleva O.A., Korotyaev B.A. & Piterkina T.V.** 2012. Stratification and seasonal dynamics of weevil (Coleoptera, Curculionoidea) assemblages in the North Caspian semi-desert. *Zoologicheskii Zhurnal*, **91**(1): 58–70. (In Russian; English translation: *Entomological Review*, 2012, **92**(3): 71–284. <https://doi.org/10.1134/S0013873812030037>).
- Korotyaev B.A.** 1980. Contribution to the knowledge of Ceutorhynchinae (Coleoptera, Curculionidae) of Mongolia and the USSR. *Nasekomye Mongolii* [Insects of Mongolia], **7**: 107–282. Leningrad: Nauka. (In Russian).
- Korotyaev B.A.** 1992. On trophic specialization of Palaearctic weevils of the subfamily Ceutorhynchinae (Coleoptera, Curculionidae). *Proceedings of 4th ECE/13th SIEEC, Gödöllő, 1991*. **2**: 510–512. Budapest.
- Korotyaev B.A.** 1996. A new species of *Ceutorhynchus* misidentified as *C. ovulum* Schultze (Coleoptera: Curculionidae). *Zoosystematica Rossica*, **4**(1): 166.
- Korotyaev B.A.** 2006. A review of the weevil genus *Rhinoncomimus* Wagner (Coleoptera: Curculionidae: Ceutorhynchinae). *Entomologische Abhandlungen*, **63**(1–2): 99–122.
- Korotyaev B.A.** 2008. Geographical distribution of the weevil subfamily Ceutorhynchinae (Coleoptera, Curculionidae). *Entomologicheskoe Obozrenie*, **87**(4): 854–879. (In Russian; English translation: *Entomological Review*, 2008, **87**(8): 928–947. <https://doi.org/10.1134/S0013873808080071>).
- Korotyaev B.A.** 2019. Weevils of the genus *Ceutorhynchus* Germ. (Coleoptera, Curculionidae), associated with *Draba nemorosa* L. (Brassicaceae) in the south of Eastern Siberia. *Entomological Review*, **99**(7): 1011–1013. <https://doi.org/10.1134/S001387381907011X>
- Korotyaev B.A., Anenkhonov O.A., Sofronova E.V., Sofronov A.P. & Chepinoga V.V.** 2020. Preliminary results of the investigation of relict communities with Japanese elm at western boundary of its range. *Otchyotnaya nauchnaya sessiya po itogam rabot 2019 g. Tezisy dokladov. 26–28 oktyabrya 2020 g.* [Annual scientific readings on the results of the investigations of 2019. October 26–28 2020]: 24–25. St Petersburg: Zoological Institute of Russian Academy of Sciences. (In Russian).
- Korotyaev B.A. & Cholokava A.O.** 1989. A review of the weevil subfamily Ceutorhynchinae (Coleoptera, Curculionidae) of the fauna of Georgia. *Entomologicheskoe Obozrenie*, **68**(1): 154–177. (In Russian; English translation: *Entomological Review*, 1989, **68**(4): 117–140).
- Korotyaev B.A. & Hong K.-J.** 2004. A revised list of the weevil subfamily Ceutorhynchinae (Coleoptera; Curculionidae) of the Korean fauna, with contribution to the knowledge of the fauna of neighbouring countries. *Journal of Asia-Pacific Entomology*, **7**(2): 143–169.
- Razumovskii S.M.** 1981. *Zakonomernosti dinamiki biotsenozov* (Regularities of the biocoenoses dynamics). Moscow: Nauka. 231 p. (In Russian).
- Schultze A.** 1898. Beschreibung neuer Ceuthorrhynchinen. *Deutsche Entomologische Zeitschrift*, **2**: 225–260.
- Thomson C.G.** 1871. XX: Bidrag till Sveriges insect-fauna (2) a) Coleoptera. *Opuscula Entomologica*, **4**: 361–394.

Voss E. 1967. Attelabidae, Apionidae, Curculionidae. Ergebnisse der zoologischen Forschungen von Dr. Kaszab in der Mongolei (Coleoptera) (194. Beitrag zur Kenntnis der Curculioniden). *Entomologische Abhandlungen, Staatliches Museum für Tierkunde in Dresden*, **34**: 249–328.

Zakharova V.I., Kuznetsova L.V., Sosina N.K. & Yegorova A.A. 2005. A check list of higher plants. In: **N.S. Danilova** (Ed.). *Raznoobrazie rastitel'nogo mira Yakutii* [Diversity of the plant world of Yakutia]: 42–91. Novosibirsk: Siberian Branch of the Russian Academy of Sciences Publishers. (In Russian.)

Received 25 November 2020 / Accepted 24 December 2020. Editorial responsibility: B.M. Kataev