

First record of *Corticeus bicolor* (Olivier, 1790) (Coleoptera, Tenebrionidae) from Kazakhstan

Izbasar I. Temreshev

LLP “Agro Consult”, 010010, Astana, Almaty district, 21 Kanysh Satbaev st., Republic Kazakhstan; LLP Kazakh Scientific Research Institute of Plant Protection and Quarantine named after Zh. Zhiembayev, Almaty, Republic Kazakhstan

The darkling beetle (Coleoptera: Tenebrionidae) *Corticeus bicolor* (Olivier, 1790) is recorded for Kazakhstan for the first time. The species was found in gallery of bark beetles *Anisandrus dispar* Fabricius, 1792, *Scolytus intricatus* Ratzeburg, 1837 and *Xyleborinus saxeseni* (Ratzeburg, 1837) in Akmola and Kostanai oblasts. A key to known species of the genus *Corticeus* Piller & Mitterpacher, 1783 from Kazakhstan is given.

Acta Biologica Sibirica 10: 401–408 (2024) doi: 10.5281/zenodo.11189222

Corresponding author: Izbasar I. Temreshev (temreshev76@mail.ru)

Academic editor: R. Yakovlev | Received 20 April 2024 | Accepted 9 May 2024 | Published 16 May 2024

<http://zoobank.org/1CB871CA-D31D-4BFF-AE26-6ADED9A64D94>

Citation: Temreshev II (2024) First record of *Corticeus bicolor* (Olivier, 1790) (Coleoptera, Tenebrionidae) from Kazakhstan. Acta Biologica Sibirica 10: 401–408. <https://doi.org/10.5281/zenodo.11189222>

Keywords

Corticeus bicolor, darkling beetles, new record, key, North Kazakhstan

Introduction

The genus *Corticeus* Piller & Mitterpacher, 1783 includes 255 species and subspecies. These beetles distributed worldwide in all continents, with the exception of Antarctica, and it is especially numerous in the forests of intertropical zones. In the Palearctic region is comprised of 38 species. Beetles of this genus live and develop under the bark of trees, in the tunnels of xylophagous beetles and in tree fungi. Predators and sapromycetophages. One species *C. fraxini* Kugelann, 1794 were known from Kazakhstan (South-East Kazakhstan, Almaty oblast, Ile-Alatau ridge) (Skopin 1961; Medvedev 1965; Mamaev et al 1977; Yanovsky 1977; Nikitsky 1980; Medvedev 1992; Löbl et al 2008; Temreshev and Kolov 2013; Temreshev and Kazenas 2017; Iwan et al. 2020; Lillig and Bremer 2021).

Corticeus bicolor (Olivier, 1790) found in deciduous and mixed forests and parks, groves, forest edges. The development cycle is one to two years. Larvae and beetles overwinter. Beetles are found from May to October. Beetles and larvae are found under the bark in the decaying wood of

deciduous trees (poplar, birch, oak, elm, willow, apple etc.), sometimes in dead wood and dust, and also in woodpiles. They feed on larvae, pupae and young specimens of bark beetles and others stem beetles. Known beetle hosts: *Scolytus multistriatus* (Marsham, 1802), *S. scolytus* (Fabricius, 1775), *S. sulcifrons* Rey, 1892, *S. ratzeburgi* Janson, 1856 and other species from the genus *Scolytus* Geoffroy, 1762, *Xyleborus* spp. Eichhoff, 1864 (Curculionidae), *Hylecoetus dermestoides* (Linnaeus, 1861) (Lymexylidae). The species is also found in tree mushrooms, where it preys on mycetophilous insects. Considered to be a facultative sapromycetophage, as it can be found at the adult and larval stages under the bark of trees without bark beetles (Nikitsky 1980; Koch 1989; Medvedev 1992; Cherney 2005; Krasutsky 2005; Soldati 2007; Möller 2009; Drogvalenko 2016; Nikitsky 2016; Volodchenko 2020).

Materials and methods

The material was collected by manual method from 2022 in North Kazakhstan, Kostanai and Akmola oblast. Standard techniques (Fasulati 1971) used in entomology were used during the collection of the material. The following sources (Jacobson 1905-1915; Skopin 1961; Medvedev 1965; Mamaev et al 1977; Yanovsky 1977; Nikitsky 1980, 2016; Koch 1989; Medvedev 1992; Nabozhenko 1999; Cherney 2005; Krasutsky 1996; 2005; Soldati 2007; Löbl et al 2008; Nikitsky et al 2008; Abdurakhmanov and Nabozhenko 2011; Lillig 2012; Temreshev and Kolov 2013; Kozminykh 2015; Drogvalenko 2016; State cadastre of fauna objects of the Kurgan region (Part II. Invertebrates) 2016; Temreshev and Kazenas 2017; Iwan et al 2020; Volodchenko 2020; Sergeeva and Stolbov 2020; Lillig and Bremer 2021) were used for species determination of the beetles, clarification of their taxonomic position, biology and the distribution. Studied specimens are kept in the private collection of I.I. Temreshev (Almaty, Kazakhstan).

Photographs of *Corticeus bicolor* were taken with a camera Canon EOS 50 D by author (Figs 1, 4). Photographs of the habitat were taken with a camera Redmi 7 by I.I. Temreshev (Fig. 3). Descriptions and body measuring were performed using a Micromed MC var 1-C dissecting stereomicroscope.

The bark beetles that in gallery the material was collected were determined using special literature (Stark 1952; Kostin 1973).

For convenience as well as some geographical and administrative terms: AkO– Akmola oblast, KO – Kostanai oblast, d. – district, ex. – exemplar, nei. – neighborhoods, v. – village.

Result

As a result of the research, one species of this genus *Corticeus*, are determinates as new for Kazakhstan.

***Corticeus bicolor* (Olivier, 1790)**

Fig. 1

Material examined. 6 ex. – 6.05.2022, North Kazakhstan, AkO, nei Stepnogorsk city, 52°29'31.49"N 72°1'18.97"E, grove birch, under the bark of the dead European white birch *Betula pendula* L., in gallery of bark beetles *Anisandrus dispar* Fabricius, 1792 and *Xyleborinus saxeseni* (Ratzeburg, 1837) I.I. Temreshev; 5 ex. – 10.08.2022, North Kazakhstan, KO, Fyodorov d., nei. Koskol lake, 53°55'0.58"N 62°46'26.21"E, birch forest, under the bark of the dead European white birch *B. pendula*, in gallery of bark beetles *A. dispar* and *Scolytus intricatus* Ratzeburg, 1837, I.I. Temreshev.



Figure 1. *Corticeus bicolor*, habitus, dorsal view. North Kazakhstan.

Remarks. *C. bicolor* is distributed in Europe (Albania, Armenia, Austria, Azerbaijan, Belgium, Belarus, Bosnia Herzegovina, Bulgaria, Corsica, Croatia, Czech, Denmark, Estonia, Finland, France, Georgia, Germany, Great Britain, Hungary, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine), North Africa (Algeria), Asia (Far East, Siberia) (Jacobson 1905–1915; Medvedev 1992; Nabozhenko 1999; Cherney 2005; Krasutsky 1996; 2005; Löbl et al 2008; Nikitsky et al 2008; Abdurakhmanov and Nabozhenko 2011; Lillig 2012; Kozminykh 2015; Nikitsky 2016; Iwan et al 2020; Sergeeva and Stolbov 2020; Lillig and Bremer 2021) (Fig. 3). The species was not recorded for Kazakhstan in any sources. The beetles were collected under the bark (Fig. 2).

Note. *C. bicolor* has not previously been recorded in gallery of bark beetle species *A. dispar* and *X. saxeseni*. The species was found along with pleasing fungus beetles (Erotylidae) – *Dacne bipustulata* (Thunberg, 1781), *Triplax russica* (Linnaeus, 1758) and hairy fungus beetles (Mycetophagidae) – *Mycetophagus multipunctatus* Fabricius, 1792, for which the Kostanai and Akmola Oblast is also a new distribution records in Kazakhstan (Temreshev 2019; 2022; 2023).

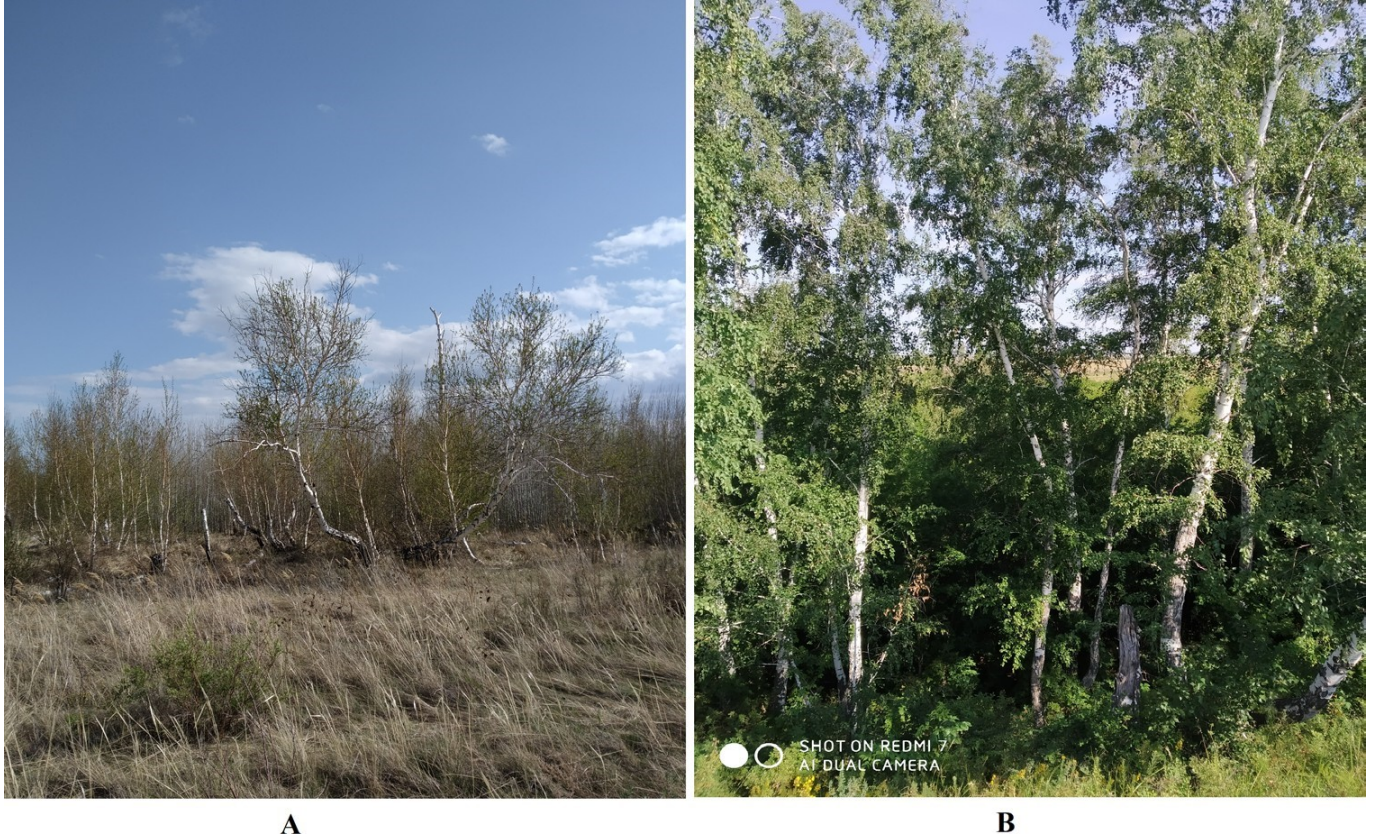


Figure 2. Habitat of *Corticeus bicolor*: European white birch grove, neighborhoods of Stepnogorsk city (A) and Kostanai oblast (B). North Kazakhstan.

Key to known species of the genus *Corticeus* from Kazakhstan

1 Dorsal side (head, pronotum and elytra) are unicolorous, from yellow-brown to dark brown.
3.5-4.5 mm *C. fraxini*

- Elytra bicolor..... 2

2 Elytra black in the apical part 2/3, rusty-red in basal third, like head and pronotum. 3.3-4.2 mm *C. bicolor*

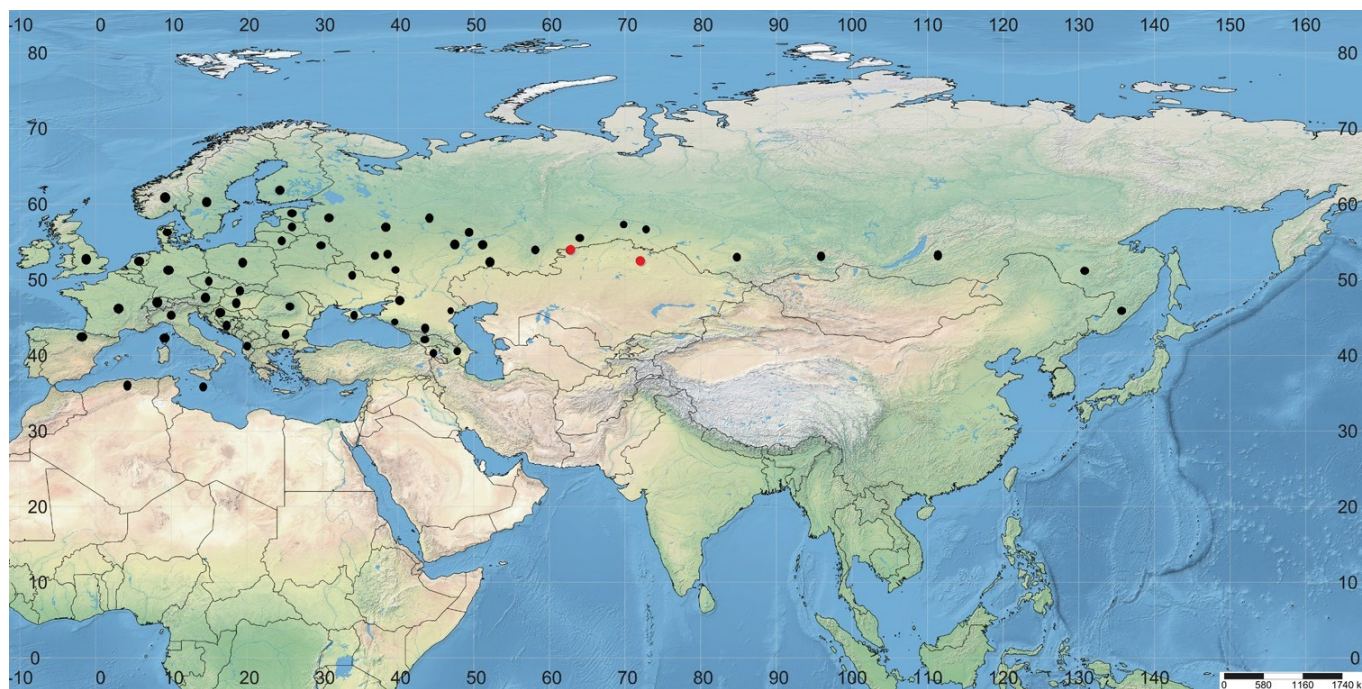


Figure 3. Distribution of *Corticeus bicolor* in world and in Kazakhstan. New records are indicated with red circles. Known indicated in black circles.

Acknowledgements

The work was carried out within the framework of the project "Works on environmental design JSC "Intergas Central Asia".

The author thanks to anonymous reviewers for the valuable comments that improved the manuscript.

References

Abdurakhmanov GM and Nabozhenko MV (2011) Keys and catalogue to Darkling beetles (Coleoptera, Tenebrionidae s. str.) of the Caucasus and South of European part of Russia. KMK Scientific press LTD, Moscow, 361 pp. [In Russian]

Bouchard P, Bousquet Y, Aalbu RL, Alonso-Zarazaga MA, Merkl O, Davies AE (2021) Review of genus-group names in the family Tenebrionidae (Insecta, Coleoptera). ZooKeys 1050: 1-633. <https://doi.org/10.3897/zookeys.1050.64217>

Cherney LS (2005) Fauna of Ukraine. Vol. 19. Beetles. Iss. 10. Darkling-beetles (Coleoptera, Tenebrionidae). Naukova Dumka, Kiev, 431 pp. [In Russian]

Drogvalenko OM (2016) Mycetophilous darkling beetles (Coleoptera, Tenebrionidae) faunae of Ukraine. Ukrainian Entomological Journal 1-2: 77-84. http://nbuv.gov.ua/UJRN/Uej_2016_1-2_11

Fasulati KK (1971) Field study of terrestrial invertebrates. Higher school, Moscow, 424 pp. [In Russian]

Iwan D, Löbl I, Bouchard P, Bousquet Y, Kaminski M, Merkl O, Ando K, Schawaller W (2020) In: Iwan D, Löbl I (Eds) Catalogue of Palearctic Coleoptera, Vol. 5. Tenebrionoidea. Revised and Updated Second Edition. Brill, Leiden, 945 pp. <https://doi.org/10.1163/9789004434998>

Jacobson GG (1905–1915) Beetles of Russia and Western Europe. Publication AF Devrient, St. Petersburg, 1024 pp. [In Russian]

Koch K (1989) Die Käfer Mitteleuropas. Ökologie. Band 2. Goecke und Evers Verlag, Krefeld, 382 pp.

Kostin IA (1973) Beetles dendrophagous of Kazakhstan. Publisher of the Kazakh SSR Academy of Sciences, Institute of Zoology, Alma-Ata, 288 pp. [In Russian]

Kozminykh VO (2015) Faunistic data on tenebrionid beetles (Coleoptera, Tenebrionidae) of the Orenburg Region. Vestnik of Orenburg State Pedagogical University. Electronic Scientific Journal (13): 16–42. [In Russian]

Krasutsky BV (1996) Mycetophilic beetles of the Urals and Trans-Urals. Vol. 1. Brief illustrated guide to determining the most common coleoptera in the entomocomplexes of wood-destroying basidiomycetes. Ekaterinburg Publishing House, Ekaterinburg, 146 pp. [In Russian]

Krasutsky BV (2005) Mycetophilic beetles of the Urals and Trans-Urals. Vol. 2. System "Mushrooms-insects". Chelyabinsk, 213 pp. [In Russian]

Lillig M, Barthet HB, Mifsud D (2012) An identification and informative guide to the Tenebrionidae of Malta (Coleoptera). Bulletin of the entomological Society of Malta 5: 121–160.

Lillig M, Bremer HJ (2021) World Catalogue of Hypophlaeini Billberg, 1820 (Coleoptera: Tenebrionidae: Diaperinae). Annales Zoologici 71(1): 27–81.
<https://doi.org/10.3161/00034541ANZ2021.71.1.004>

Löbl I, Merkl O, Ando K, Bouchard P, Lillig M, Masomuto K, Schawaller W (2008) Tenebrionidae. In: Löbl I, Smetana A (Eds) Catalogue of Palaearctic Coleoptera, Vol. 5: Tenebrionoidea. Apollo Books, Stenstrup, 303–318.

Mamaev BM, Krivosheina NP, Prototskaya VA (1977) Key to larvae of stem entomophagous insects pests. Nauka, Moscow, 392 pp. [In Russian]

Medvedev GS (1965) Family Tenebrionidae – Darkling beetles. In: Key of insects in the European part of the USSR. T. II. Beetles and twisted-wing insects. Moscow-Leningrad, 356–381. [In Russian]

Medvedev GS (1992) Family Tenebrionidae – Darkling beetles. In: Key of insects in the Far East of the USSR. T. III, Part 2. Beetles. Science, St. Petersburg, 621–659. [In Russian]

Möller G (2009) Struktur- und Substratbindung holzbewohnender Insekten, Schwerpunkt Coleoptera – Käfer. Dissertation zur Erlangung des akademischen Grades des Doktors der Naturwissenschaften (Dr. rer. nat.). Freien Universität Berlin, Berlin, 294 pp. [In German]

Mordkovich YaB, Sokolov EA (1999) Key of quarantine and other dangerous pests of raw materials, storage products and seed. VNII plant quarantine. Kolos, Moscow, 384 pp. [In Russian]

Nabozhenko MV (1999) Landscape-ecological characteristics and common regularities of the Darkling beetles (Coleoptera, Tenebrionidae) in South Russia. Kharkov Entomological Society gazette 7(2): 40–54. [In Russian]

Nikitsky NB (1980) Insects are predators of bark beetles and their ecology. Nauka, Moscow, 232 pp. [In Russian]

Nikitsky NB (2016) Darkling beetles (Coleoptera: Tenebrionidae) of Moscow Region. Caucasian

entomological bulletin 12(1): 117–130. <https://doi.org/10.23885/1814-3326-2016-12-1-117-130>[In Russian]

Nikitsky NB, Bibin AR, Dolgin MM (2008) Xylophilous beetles (Coleoptera) of the Caucasian State Biospheric Natural Reserve and adjacent territories. Institute of Biology of Komi centre of science. Ural branch of the Russian Academy of Sciences, Syktyvkar, 452 pp. [In Russian]

Sergeeva EV, Stolbov VA (2020) A review of Tenebrionoid beetle fauna (Coleoptera, Tenebrionoidea) of the Tyumen region. Amurian Zoological Journal XII(2): 224–242. <https://doi.org/10.33910/2686-9519-2020-12-2-224-242>[In Russian]

Skopin NG (1961) Materials on the fauna and ecology of darkling beetles (Coleoptera, Tenebrionidae) of South-Eastern Kazakhstan. Proceedings of the Kazakh Research Institute of Plant Protection. Kazakh State Publishing House of Agricultural Literature, Alma-Ata 6: 172–208. [In Russian]

Soldati F (2007a) Fauna of France and Corsica, Coleoptera Tenebrionidae (Alleculinae excluded). Systematic Catalogue and Atlas. Mémoires de la Société linnéenne de Bordeaux, Tome 6. Société linnéenne de Bordeaux, Bordeaux, 186 pp.

Stark VN (1952) Coleoptera. Bark beetles. Fauna of the USSR. T. 31. Publishing House of the USSR Academy of Sciences, Moscow-Leningrad, 462 pp. [In Russian]

State cadastre of fauna objects of the Kurgan Region (Part II. Invertebrates) (2016) Department of Natural resources and Environmental protection of the Kurgan Region, Kurgan, 153 pp. [In Russian]

Temreshev II (2019) Hairy Fungus beetles (Coleoptera, Mycetophagidae) of the Almaty oblast (South-East Kazakhstan). Acta Biologica Sibirica 5(1): 63–70. <https://doi.org/10.14258/abs.v5.i1.5193>[In Russian]

Temreshev II (2022) Review of the genus *Dacne* Latr. (Coleoptera, Erotylidae) from Kazakhstan. Acta Biologica Sibirica 8: 367–380. <https://doi.org/10.5281/zenodo.7703397>

Temreshev II (2023) First record of *Triplax russica* (Linnaeus, 1758) (Coleoptera, Erotylidae) from Kazakhstan. Acta Biologica Sibirica 9: 147–155. <https://doi.org/10.5281/zenodo.7825636>

Temreshev II, Kazenas VL (2017) Natural enemies of stem pests in the mountain forests of the Ile-Alatau State National Natural Park (South-Eastern Kazakhstan). LLP "Nur-Print", 150 pp. [In Russian]

Temreshev II, Kolov CV (2013) Insects from windbreak sites in the State National Natural Park «Ile-Alatau», Almaty Oblast, Kazakhstan. Euroasian entomological journal 12(2): 125–131. [In Russian]

Volodchenko AN (2020) Notes on the fauna of xylophilous beetles (Coleoptera) of Voroninsky Nature Reserve, Tambovskaya Oblast, Russia. Euroasian entomological journal 19(3): 164–170. <https://doi.org/10.15298/euroasentj.19.3.11>[In Russian]

Yanovsky VM (1977) Entomophages of forest pests in Mongolia. In: Insects of Mongolia 5: 60–77. [In Russian]