

First record of *Triplax russica* (Linnaeus, 1758) (Coleoptera, Erotylidae) from Kazakhstan

Izbasar I. Temreshev^{1,2}

1 LLP "Agro Consult", 21 Kanysh Satbaev st., Almaty district, Astana, 010010, Republic Kazakhstan

2 LLP Kazakh Scientific Research Institute of Plant Protection and Quarantine named after Zh. Zhiembayev, Almaty, Republic Kazakhstan

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

Academic editor: R. Yakovlev | Received 20 February 2023 | Accepted 1 March 2023 | Published 15 April 2023

<http://zoobank.org/4A53FCDD-A759-4184-B15A-8B3315B5D33D>

Citation: 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>

Abstract

Pleasing fungus beetle *Triplax russica* (Linnaeus, 1758) from the family Erotylidae is firstly recorded from Kazakhstan. A key to known species of the genus *Triplax* from Kazakhstan is given. Birch brittlegill *Russula betularum* Hora, stinking russula *Russula foetens* Pers., 1796, are recorded from Kazakhstan for *T. russica*.

Keywords

Triplax russica, pleasing fungus beetles, new findings, key, North and Central Kazakhstan

Introduction

Pleasing fungus beetles (Erotylidae) includes about 280 genera and above 3500 species in the world fauna (Wegrzynowicz 2007; Ślipiński et al. 2011; Drilling et al. 2013). Some new genera and species of this family were described (Tang et al. 2018; Skelley and Gasca-Álvarez 2020; Skelley et al. 2021) from Australia, French Guiana, Mexico and USA. Seven genera and sixteen species were known from Kazakhstan (Wegrzynowicz 2007; Temreshev 2017a; Temreshev 2022). Their imagoes and larvae feed on plant and fungal matter, are found on fungi, especially tinder fungi, pu-

pate in the soil; some are important pollinators (e.g. of the ancient cycads) (Krivolutskaya 1992; Krasutsky 2005; Robinson 2005; Drake 2009; Tang et al. 2018; Skelley and Gasca-Álvarez 2020). Representatives of the subfamily Languriinae are associated primarily with herbaceous plants. Some species are xylobionts (Robinson 2005; Drake 2009; Tang et al. 2018; Skelley and Gasca-Álvarez 2020). Several species were listed as pests of food supplies and / or invasive species (Mordkovich and Sokolov 1999; Krasutsky 2005; Robinson 2005; Drake 2009; Hagstrum and Subramanyam 2009; Denux and Zagatti 2010; Temreshev 2017a).

The genus *Triplax* Herbst, 1793 includes 93 species from the world (Goodrich and Skelley 1997) and is comprised of 67 species in the Palaearctic region (Wegrzynowicz 2007). Beetles from this genus are widespread in the Palaearctic, Nearctic and extends into the Oriental region (GBIF Secretariat 2022). Tree species (*T. nikritini* Nikitsky & Kompanzev, 1997, *T. rubrica* Reitter, 1891 and *T. subtilissima* Reitter, 1901) were known from Kazakhstan (Reitter 1901; Nikitsky and Kompantsev 1997; Wegrzynowicz 2007). Beetles of this genus are obligate mycetophages that eat various fungi. The larva develops in the fruiting bodies of tree mushrooms, pupates in the soil, in cracks in the bark, under the bark, in rotten wood of trees where mushrooms grew. At the adult stage, it visits some ground and xylotrophic fungi, using them as an additional food resource. Are carriers of their spores (Kryzhanovsky 1965; Khalidov 1984; Krivolutsкая 1992; Nikitsky et al. 1996; Krasutsky 1996; Droghvalenko 1997; Mitter 2004; Krasutsky 2005; Robinson 2005).

Materials and methods

The material was collected by manual method from 2022 in North and Central Kazakhstan, Kostanai, Akmola and Karaganda oblast. Standard techniques (Fasulati 1971) used in entomology were used during the collection of the material. The following sources (Reitter 1901; Jacobson 1905-1915; Khalidov 1984; Kryzhanovsky 1965; Krivolutsкая 1992; Nikitsky et al. 1996; Droghvalenko 1997; Nikitsky and Kompantsev 1997; Mitter 2004; Krasutsky 2005; Wegrzynowicz 2007; Bekchiev et al. 2012; Lyubarsky and Ghahari 2020) 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 *Triplax russica* were taken with a camera Canon EOS 50 D by author (Figs 1, 4). Photographs of the mushrooms were taken with a camera Redmi 7 by I.I. Temreshev (Figs 3). Descriptions and body measuring were performed using a Micromed MC var 1-C dissecting stereomicroscope.

The mushrooms that the material was collected were determined using special literature (Samgina 1981, 1985) and the materials from the site "Mushrooms of Kazakhstan" ("Mushroom classification", n.d.).

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

Result

As a result of the research, three species of this genus, are determinates as new for Kazakhstan, and the list of mushrooms on which they are found is clarified.

Triplax russica (Linnaeus, 1758)

Figs 1, 2

Material examined. 7 ex. – 30.07.2007, North Kazakhstan, AkO, Zerendinsky d., Zerenda village, 52°53'24.55"N 69°9'46.72"E, birch brittlegill *Russula betularum* Hora, I.I. Temreshev; 7 ex. – 6.07.2018, North Kazakhstan, AkO, Akkol district, Azat village, 52°5'14.35"N 71°31'23.85"E, stinking russula *Russula foetens* Pers., 1796, I.I. Temreshev; 16 ex. – 6.05.2022, AkO, 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., I.I. Temreshev; 9 ex. – 13.07.2022, Central Kazakhstan, KgO, Karaganda city, 49°45'29.98"N 73°2'25.69"E, pheasant's back mushroom *Cerioporus squamosus* (Hudson) Quélet, 1886, I.I. Temreshev; 11 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 *B. pendula*, I.I. Temreshev.

Remarks. *T. russica* is distributed in Europe (Albania, Armenia, Austria, Belgium, Belarus, Bosnia Herzegovina, Bulgaria, Croatia, Czech, Denmark, Estonia, Finland, France, Georgia, Germany, Great Britain, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Moldova, Montenegro, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine), North Africa (Algeria), Asia (India, Iran, West Siberia), North America (introduced) (Jacobson 1905-1915; Kryzhanovsky 1965; Krivolutskaya 1992; Franc 2001; Krasutsky 2005; Wegrzynowicz 2007; Bekchiev, Smets and Crevecoeur 2012; Lyubarsky and Ghahari 2020) (Fig. 3). The records of *T. russica* were absent for Kazakhstan (Wegrzynowicz 2007). Examined trees of European white birch *B. pendula*, infected by the tinder fungus *Fomes fomentarius* (L.) Fr. (Figure 4 A, B). The beetles were on the bark (Figure 2).

Discussion

In total, fourth species of pleasing fungus beetles from genus *Triplax* are additionally recorded for Kazakhstan.

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

- 1 Head, anterior part and base of pronotum black or darkened. 3-3,8 mm.
..... *T. subtilissima*
- Head and pronotum are single-colored, light 2
- 2 Elytra red or brown-red. The whole body brownish-red, only the eyes black. 3 mm. *T. rubrica*
- Elytra black 3
- 3 Scutellum black. Body and legs orange, antennae, mesothorax and metathorax black. 4,5-6,5 mm. *T. russica*
- 4 Scutellum light. Body, antennae, and legs rufous-brown or red-brown, mesothorax, metathorax, and abdomen somewhat darkened. 2,5-3 mm.
..... *T. nikritini*

One species of Erotylidae *T. russica* are recorded for Kazakhstan. Seven genera and sixteen species pleasing fungus beetles were known from Kazakhstan (Wegrzynowicz 2007; Temreshev 2017a; Temreshev 2022). This shows that the fauna of saproxylic Coleoptera in Kazakhstan needs further study. As in the case of representatives of the families Melandryidae (Temreshev 2017b), Mycetophagidae (Temreshev 2019), Endomychidae (Temreshev 2021) and Erotylidae (Temreshev 2022) it is possible to find other species of fungus beetles in the country.

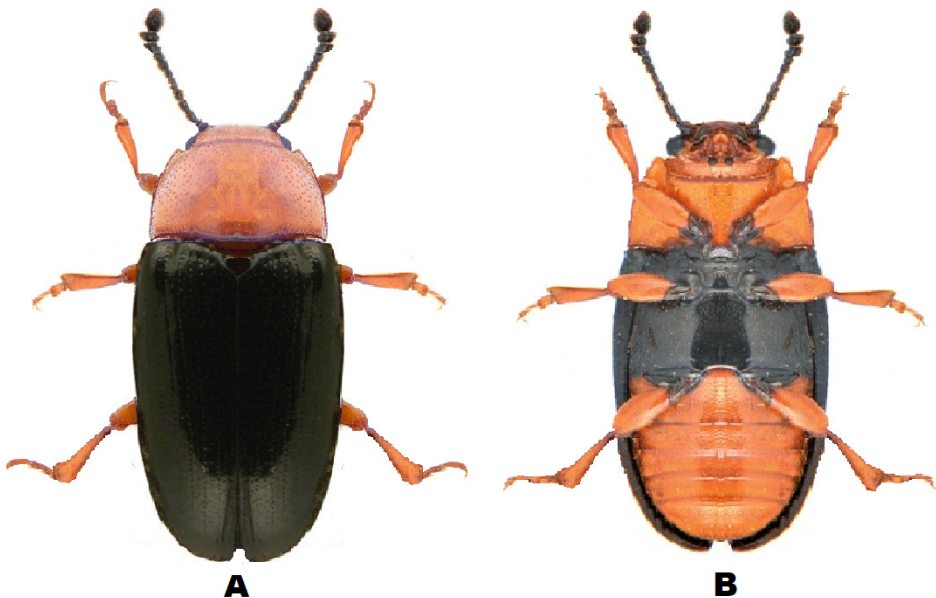


Figure 1. *Triplax russica*, habitus, dorsal (A) and ventral (B) view. North Kazakhstan.



Figure 2. *Triplax russica* in copula on the bark of dead European white birch *Betula pendula*, North Kazakhstan.

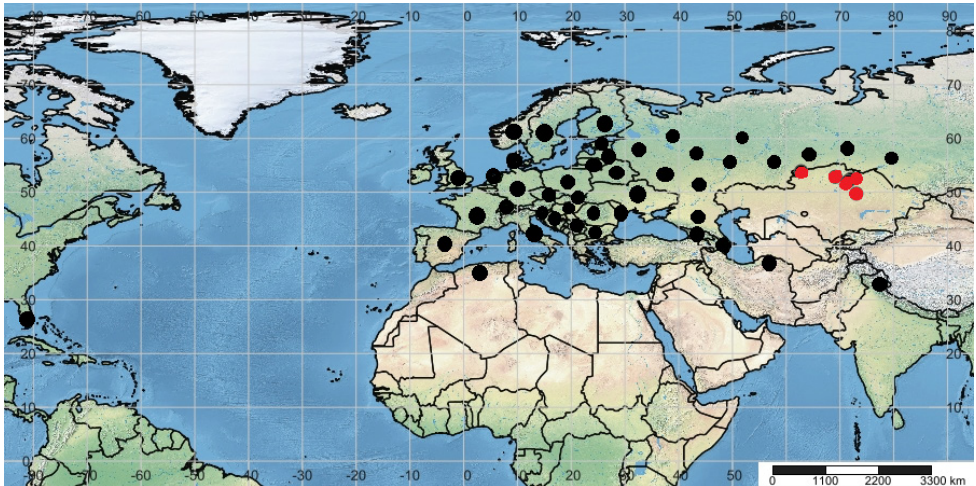


Figure 3. Distribution of *Triplax russica* in world and in Kazakhstan. New records are indicated with red circles. Known indicated in black circles.



Figure 4. Habitat of *Triplax russica*: European white birch grove (A) and trees, infected by the tinder fungus *Fomes fomentarius* (B). North Kazakhstan.

Acknowledgements

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

Autor thanks to doctor of biological sciences Andrei Aleksandrovich Legalov (Institute of Systematics and Ecology of Animals, Novosibirsk, Russia) for the valuable comments that improved the manuscript.

References

- Bekchiev R, Smets K, Crevecoeur L (2012) Contribution to the knowledge of the genus *Triplax* Herbst, 1793 (Coleoptera: Erotylidae) in Bulgaria. *ZooNotes* 30: 1–6.
- Triplax* Herbst, 1793 in GBIF Secretariat (2021) GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei> (Retrieval date 10.11.2022).
- Denux O, Zagatti P (2010) Coleoptera families other than Cerambycidae, Curculionidae sensu lato, Chrysomelidae sensu lato and Coccinellidae. Chapter 8.5. In: Roques A, Kenis M, Lees D, Lopez-Vaamonde C, Rabitsch W, Rasplus JY, Roy D (Eds) Alien terrestrial arthropods of Europe. *BioRisk* 4 (1): 315–406. <https://doi.org/10.3897/biorisk.4.61>

- Drake JA (2009) Handbook of Alien Species in Europe. Invading nature Springer series in invasion ecology. Volume 3. Springer Science + Business Media B.V., 399 pp.
- Drogvalenko AN (1997) Review of Erotylidae (Coleoptera) fauna of Ukraine. The Kharkov Entomological Society Gazette V (1): 74–78. [In Russian]
- Fasulati KK (1971) Field study of terrestrial invertebrates. Higher school, Moscow, 424 pp. [In Russian]
- Franc V (2001) Beetles of the family Erotylidae (Coleoptera) in the Slovakian fauna. Acta Zoologica Universitatis Comenianae 44: 63–69.
- Goodrich MA, Skelley PE (1997) New synonymy in the genus *Triplax* (Coleoptera: Erotylidae), with notes on the biology of *Triplax californica*. Annales Zoologici 47 (1 & 2): 55–58.
- Hagstrum DW, Subramanyam B (2009) Stored-product insect resource. AACC International, Inc., St Paul, USA, 509 pp.
- Jacobson GG (1905-1915) Beetles of Russia and Western Europe. Publication A.F. Devrient, St. Petersburg, 1024 pp. [In Russian]
- Hartmann O, Schmidl J (2012) Bestimmungsschlüssel und Ikonografie der Familie Erotylidae s.str. (Coleoptera) für den europäischen Teil und den Fernen Osten der ehemaligen UdSSR - eine Übersetzung aus dem Russischen ins Deutsche. Bericht zur Projektarbeit der AG Ökologie am Department für Biologie, Lehrstuhl für Entwicklungsbiologie, Friedrich-Alexander-Universität Erlangen-Nürnberg, 96. <http://dx.doi.org/10.13140/RG.2.2.30138.39360> [In German]
- Khalidov AB (1984) Insects – fungus destroyers. Kazan University Press, Kazan, 151 pp. [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]
- Kryzhanovsky OL (1965) Family Erotylidae – Pleasing fungus beetles. In: Key of insects in the European part of the USSR. T. II. Beetles and twisted-wing insects. Science, Moscow-Leningrad, 316–317 p. [In Russian]
- Krivolutskaya GO (1992) Family Erotylidae – Pleasing fungus beetles. In: Key to insects of the Far East. T. III. Part 2. Coleoptera, or beetles. Science, St. Petersburg, 285–303 p. [In Russian]
- Lyubarsky GYu, Ghahari H (2020) Annotated checklist of the Iranian Erotylidae (Coleoptera: Cucujoidea). Entomological News 129 (3): 244–256. <https://doi.org/10.3157/021.129.0303>
- Mitter H (2004) Notizen zur Biologie und Verbreitung der Erotylidae und Biphyllidae (Schwammkäfer) in Oberösterreich (Coleoptera: Erotylidae, Biphyllidae). Denisia 13: 239–245. [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]
- Mushroom classification. (n.d.). In: Mushrooms of Kazakhstan, from http://fungi.su/infusions/advanced_articles_sort/fungi_cl.php (Retrieval date: 6.03.2021). [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 at-sciences, Siktivkar, 452 pp. [In Russian]
- Nikitsky NB, Kompantsev AV (1997) Two new species of genus *Triplax* Herbst. (Coleoptera, Erotylidae) from Middle Asia and Kazakhstan. Bulletin of Moscow Society of Naturalists. Biological series 102 (3): 31–33. [In Russian]
- Nikitsky NB, Osipov IN, Chemeris MV, Semenov VB, Gusakov AA (1996) Coleoptera-xylobionts, mycetobionts and lamellar beetles of the Prioksko-Terrasny Biosphere Reserve (with a review of the fauna of these groups of the Moscow Region). Moscow State University, Moscow, 197 pp.
- Reitter E (1901) Uebersicht der Arten der Coleopteren-Gattung *Triplax* Payk. aus Europa und den angrenzenden Ländern. Wiener Entomologische Zeitung, XX. Jahrg., IV. Heft, 73–76. [In German]
- Robinson WH (2005) Handbook of Urban Insects and Arachnids. Cambridge University Press, Cambridge, 456 pp. <https://doi.org/10.1017/CBO9780511542718>
- Samgina DI (1981) Flora of spore plants of Kazakhstan. V. 13. Gilled mushrooms. 1. Agaricales. Science of the Kazakh SSR, Alma-Ata, 272 pp. [In Russian]
- Samgina DI (1985) Flora of spore plants of Kazakhstan. V. 13. Book 2. Gilled mushrooms (Agaricales). Science of the Kazakh SSR, Alma-Ata, 269 pp. [In Russian]
- Skelley PE, Gasca-Álvarez HJ (2020) *Michyrus*, a new genus of pleasing fungus beetles with coarsely faceted eyes (Coleoptera: Erotylidae). Insecta mundi 0836: 1–8.
- Skelley PE, Leschen RAB, Liu Z (2021) New Australian Erotylinae with notes on Dacnini (Coleoptera: Cucujoidea: Erotylidae). Zootaxa 4948 (3): 363–380. <https://doi.org/10.11646/zootaxa.4948.3.3>
- Ślipiński SA, Leschen RAB, Lawrence JF (2011) Order Coleoptera Linnaeus, 1758. In: Zhang Z-Q (Ed) Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. Zootaxa 3148: 203–208. <https://doi.org/10.11646/zootaxa.3148.1.39>
- Tang W, Skelley P, Pérez-Farrera MA (2018) *Ceratophila*, a new genus of erotylid beetles (Erotylidae: Pharaonothinae) inhabiting male cones of the cycad *Ceratozamia* (Cycadales: Zamiaceae). Zootaxa 4508 (2): 151–178. <https://doi.org/10.11646/zootaxa.4508.2.1>
- Temreshev II (2017a) Pests of storage and raw materials, distributed in the territory of the Republic of Kazakhstan, and some accompanying and quarantine species (species composition and brief technology protection measures). Second edition, revised and supplemented. Almaty: LLP "Nur-Print", 419 pp. [In Russian]
- Temreshev II (2017b) New records of false darkling beetles of the genus *Melandrya* Fabricius, 1801 (Coleoptera: Melandryidae) in Kazakhstan. Euroasian entomological journal, 16 (3): 205–206. [In Russian]

- Temreshev II (2019) Hairy Fungus beetles (Coleoptera, Mycetophagidae) of the Almaty oblast (Sout-East Kazakhstan). *Acta Biologica Sibirica* 5 (1): 63–70. <https://doi.org/10.14258/abs.v5.i1.5193> [In Russian]
- Temreshev II (2021) First record of *Lycoperdina succincta* (Linnaeus, 1767) (Coleoptera, Endomychidae) from Kazakhstan. *Acta Biologica Sibirica* 7: 441–450. <https://doi.org/10.3897/abs.7.e77663>
- Temreshev II (2022) Review of the genus *Dacne* Latr. (Coleoptera, Erotylidae) from Kazakhstan. *Acta Biologica Sibirica* 8: 367–380. <https://doi.org/10.14258/abs.v8.e21>
- Wegrzynowicz P (2007) Erotylidae. In: Löbl I, Smetana A (Eds) *Catalogue of Palaearctic Coleoptera*. Vol. 4: Elateroidea-Derodontoidea-Bostrichoidea-Lymexyloidea-Cleroidea-Cucujoidea. Apollo Books, Stenstrup, 531–546 p.