

**First record of *Aradus depressus* (Fabricius, 1794)
(Heteroptera: Aradidae: Aradinae) from Kazakhstan**

**Первая находка *Aradus depressus* (Fabricius, 1794)
(Heteroptera: Aradidae: Aradinae) в Казахстане**

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Key words: Biodiversity, new record, Kazakhstan, Altai Mountains, Heteroptera, Aradidae.

Ключевые слова: биоразнообразие, новый локалитет, Казахстан, Алтай, Heteroptera, Aradidae.

Abstract. *Aradus depressus* (Fabricius, 1794) (Aradidae) is recorded in Kazakhstan for the first time, specifically within the Altai Mountain range. Previously, this species was noted from the Russian part of Altai Mountain range. The new finding expands its known distribution range by more than 100 km to the southeast. Habitus, male genitalia, collection localities are illustrated, and a distribution map of the species in the Asian part of the Palaearctic is also provided.

Резюме. Впервые для фауны Казахстана отмечен вид *Aradus depressus* (Fabricius, 1794) (Aradidae), обнаруженный на территории Алтая. Ранее этот вид приводился для Российской части Алтая. Новая находка расширяет ареал вида более чем на 100 км к юго-востоку. Проиллюстрированы габитус, гениталии самца, места сбора, а также представлена карта распространения вида в Азиатской части Палеарктики.

Introduction

The genus *Aradus* Fabricius, 1803 belongs to the subfamily Aradinae Brullé, 1836 of the family Aradidae Brullé, 1836. In the Palaearctic Region, the genus *Aradus* Fabricius, 1803 includes two subgenera: *Aradus* (*Aradus*) Fabricius, 1803, with 90 species, and *Aradus* (*Lobataradus*) Heiss, 2008, with one species, *A. (L.) bilobatus* Heiss, Shono, 2005. Additionally, three species are considered inquirendae, namely: *Aradus griseus* (Fabricius, 1794), *Aradus nigricornis* (Fabricius, 1794) and *Aradus tridentatus* (Geoffroy, 1785) [Heiss, 2001; Aukema et al., 2013; Vászrhelyi, 2016]. In Kazakhstan,

the genus *Aradus* Fabricius, 1803 is represented by 14 species belonging to the nominative subgenus *Aradus* (*Aradus*) Fabricius, 1803 [Esenbekova, 2013].

During entomological studies in the Chernaya Uba ecovillage, a single specimen of the genus *Aradus* Fabricius, 1803, externally very similar to *A. depressus* (Fabricius, 1794) from Altaiskii Krai, was collected. This is the first record of this species in Kazakhstan.

Material and methods

Material was collected in 2023 from the Chernaya Uba ecovillage. The taxonomic position of Aradidae within the superfamily Aradoidea are followed by E. Heiss [Heiss, 2001] and B. Aukema, Chr. Rieger and W. Rabitsch [Aukema et al., 2013]. Zoning of Russia is based on the studies by Vinokurov et al. [2010, 2024].

Color photographs of the dorsal view were taken with a Canon EOS RP camera (Japan) equipped with a lens Venus Optics Laowa 25 mm f/2.8 2.5–5x macro (China) and Canon EOS 5D Mark IV camera (Japan) equipped with a lens Canon MP-E 65 mm f/2.8 1–5x macro (Japan). Partially focused images of each specimen were stacked using Zerene Stacker and Helicon Focus software. The drawings were combined using Paint.NET. Photographs of the habitus were not subjected to graphic modifications. The distribution map in the Asian part of the Palaearctic was created using the online resource SimpleMapper.

The examined material is deposited in the research collection of Altai State University (ASU, Barnaul, Russia) and Zoological Institute of the Russian Academy of Sciences (ZIN, Saint Petersburg, Russia). Collection locations from the ZIN are also provided in the original language, with the translations and modifications given in square brackets «[]». The literature data on collection locations are presented in the original language, transliterated according to the BGN/PCGN standard.

The present work is registered in ZooBank (www.zoobank.org) under urn:lsid:zoobank.org:pub:C6BCC4FD-29AD-44E6-AF9B-4FD31B1BB5B0

Results

Pentatomomorpha Leston, Pendergrast, Southwood, 1954:
Aradoidea Brullé, 1836: **Aradidae** Brullé, 1836: Aradinae
Brullé, 1836

Aradus Fabricius, 1803

Aradus (*Aradus*) Fabricius, 1803

Aradus (*Aradus*) *depressus* (Fabricius, 1794)

Figs 1–10.

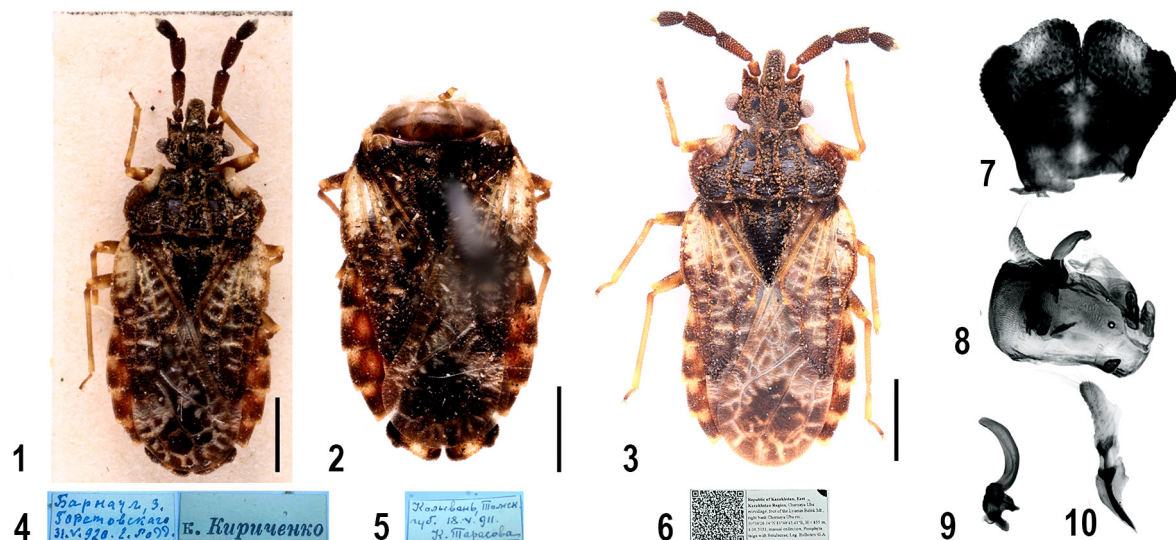
Acanthia depressa Fabricius, 1794: 72;

= *Aradus plana* Fabricius, 1794: 73; Herrich-Schaeffer, 1853: 16.

Material. **Kazakhstan, East Kazakhstan Region:** Chernaya Uba ecovillage, foot of the Lyamin Belok Mountain, right bank of Chernaya Uba River, 50°36'26.14" N, 83°48'42.41" E, 855 m, 4.VI.2023, coll. Bolbotov G.A. — 1♂ (ASU); **Russia, Altaiskii Krai:** «Барнаул, з. Горетовского | 31.V.920, г. Родд» | «К. Кириченко» [Barnaul, Goretovskogo | 31.V.1920, leg. E.G. Rodd | A.N. Kiritschenko] — 1♂ (ZIN); **Novosibirskaya Oblast:** «Колывань, Томск. губ. 18.V.911. К. Тарасова» [Kolyvan, Tomsk. gubern. 18.V.1911. leg. K. Tarasova] — 1♂ (ZIN).

Distribution. Europe: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France (with Corsica), Great Britain, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia (north, north-west, central, east, the Urals Mts., north Caucasus), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine; Asia: Turkey, Azerbaijan, Armenia, Georgia, Iran, Russia (Western and Eastern Siberia, Far East); Extralimital — Canada.

In Asian part of Palearctic recorded from **Turkey** (TR) — «İzmir» [Önder et al., 2006], «Nord: Tokat et Almus, Ordu Tekkiraz» [Heiss, Péricart 2007]; **Azerbaijan** (AZ) — (var. *leptocerus* by G. Horváth [1882]) «Lenkoran» [Horváth, 1882], «In Azerbaijan occurs in Lerik, Lankaran, Ismaili, Kirovabad and Mingechevir regions» [Gidayatov, 1982], «Lenkoran» [Hoberlandt, 1974], «Lenkoran, Mts Talysh» [Heiss, Péricart, 2007]; **Armenia** (AM) — (*A. depressus leptocerus* by E. Heiss, J. Péricart [2007]) without locality [Heiss, Péricart, 2007]; **Georgia** (GE) — (*A. depressus leptocerus* by E. Heiss, J. Péricart [2007]) «Borzhomi, Batoum» [Heiss, Péricart, 2007]; **Iran** (IR) — (*A. depressus leptocerus* by E. Heiss, J. Péricart [2007]) «Persia sept.: Shahrud» [Kiritschenko, 1913], «Shahrud, Samnan, N. E. Iran» [Hoberlandt, 1974 with reference to Kiritschenko, 1913], «Sharud (=Emamrud S Shah Kuh-Gebirge)» [Heiss, 2004 with reference to Kiritschenko, 1913 and Hoberlandt, 1974], «Prov. Gilan, Asalem; Prov. Golestan, Gole Lovae, S Minudasht; Prov. Mazandaran, Weyshan S Now Shahr» [Heiss, 2004], «Gilan Prov.: Zibakenav» [Heiss, Péricart, 2007], «Golestan, Guilan, Mazandaran» [Ghahari, Heiss, 2012 with reference to Heiss, 2004], «Semnan» [Ghahari, Heiss, 2012 with reference to Kiritschenko, 1913]; **Russia** — West Siberia: (*A. depressus leptocerus* ?) Tyumenskaya Oblast, «flumen Irtysh prope vicum Selenkina» [Sahlberg, 1878], «gub. Tobolsk: Zelenkina in. fl. Irtysh.» [Kiritschenko, 1913 with reference to Sahlberg, 1878]; Altaiskii Krai, «Barnaul» [Kolenati, 1857; Kiritschenko,



Figs 1–10. Details of *Aradus depressus* (Fabricius, 1794) museum specimens from different localities. 1–3 — external appearance, dorsal view, 4–6 — labels attached to the pin, 7–10 — male genitalia structures. 1 — Barnaul, Goretovskogo; 2 — Kolyvan, Tomskaya gubernia (now Novosibirskaya Oblast) (without head and pronotum); 3 — Chernaya Uba ecovillage; 7 — tergite IX ventral view; 8 — pygophore lateral view; 9 — left paramere; 10 — left parandrium. Scale bars: 1–3 — 1 mm, 7–10 — 0.5 mm. 1, 2, 4, 5 photo by P.A. Dzhelali.

Рис. 1–10. Детали музейных экземпляров *Aradus depressus* (Fabricius, 1794) из разных локалитетов. 1–3 — внешний вид, сверху, 4–6 — этикетки с булавок, 7–10 — генитальные структуры самца. 1 — Барнаул, заимка Горетовского; 2 — Колывань Томской губернии (ныне Новосибирская область) (без головы и переднеспинки); 3 — экопоселё Чёрная Уба; 7 — тергит IX снизу; 8 — пигофор сбоку; 9 — левый парамер; 10 — левый парандрий. Масштаб: 1–3 — 1 мм, 7–10 — 0,5 мм. Фото 1, 2, 4, 5 П.А. Джелали.

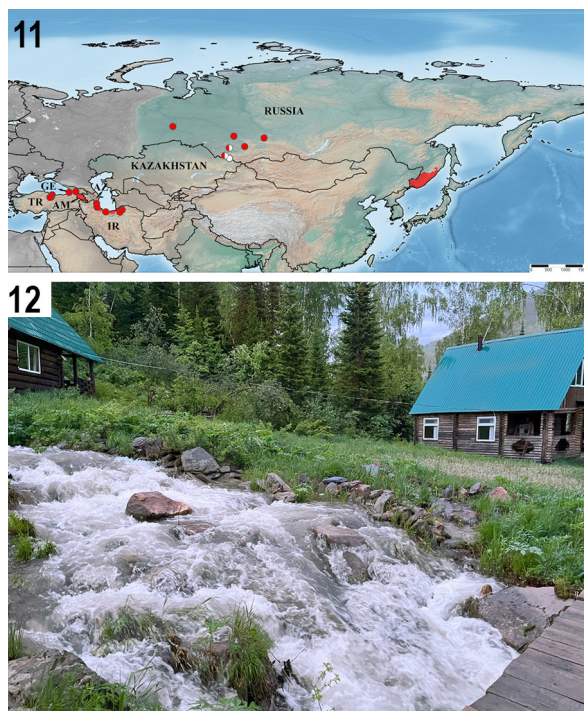
1910], «Kolyvan» [Kiritshenko, 1913]; Tomskaya Oblast, «T. [Stadt Tomsk]» [Wnukowski, 1927]; Kemerovskaya Oblast, «Myski» [Kanyukova, Vinokurov, 2007]; additionally recorded from «Altai» [Gebler, 1830], «Kolyvano-Voskresenskii (Altaiskii) gornyi okrug» [Oshanin, 1870], (*A. depressus leptocerus* by E. Heiss, J. Péricart [2007]) «Yug i sr polosa Z Sib., yug V Sib.» [Vinokurov, Kanyukova, 1995]; East Siberia: (*A. depressus leptocerus* ?) south part of Krasnoyarskii Krai: «Gub. Eniseisk: Torgashino, prope Krasnojarsk» [Kiritshenko, 1913]; Far East: (*A. depressus leptocerus* by Heiss, Péricart [2007]) Primorskii Krai, «Prim.» [Kanyukova, 1988]; **Kazakhstan** — East Kazakhstan Region: Chernaya Uba ecovillage, foot of the Lyamin Belok Mountain, right bank of Chernaya Uba River (current study, new record for the country) (Fig. 11).

Ecology. Dendrobiont, under the bark of *Acer campestre* L. (Aceraceae), *Alnus glutinosa* (L.) Gaertn., *Betula* sp. (Betulaceae), *Carpinus* sp., *Salix* sp., *Populus* sp. (Salicaceae), *Fagus* sp., *Quercus* sp. (Fagaceae), *Pinus* sp. (Pinaceae), *Malus* sp. (Rosaceae), *Zelkova* sp., *Ulmus* sp. (Ulmaceae); mesophile, under the crown; mycetophagous, trophically associated with *Trametes versicolor* (L.) Lloyd, *T. ochracea* (Pers.) Gilb., Ryvariden, *T. gibbosa* (Pers.) Fr., *Gloeophyllum odoratum* (Wulfen) Imazeki, *Polyporus* sp. (Gloeophyllaceae), *Oxyporus populinus* (Schumacher) Donk (Oxyporaceae); adult individuals and all larval stages can coexist simultaneously in a suitable habitat; adults, larvae, and even eggs may undergo diapause [Jordan, 1953; Massee, 1960; Putshkov, 1974; Gidayatov, 1982; Stehlik, Heiss, 2001; Heiss, Péricart, 2007; Aukema, Hermes, 2016].

The collection site is represented by the following trees: *Abies sibirica* Ledeb., *Pinus sibirica* (Rupr.) Mayr. (Pinaceae), *Populus laurifolia* Ledeb., *P. tremula* L., *Salix alba* L., *S. bebbiana* Sarg., *S. caprea* L., *S. triandra* L. (Salicaceae), *Padus avium* Mill., *Sorbus sibirica* Hedl. (Rosaceae), *Betula pendula* Roth., *Betula pubescens* Ehrh. (Betulaceae). Additionally, the following Polyporaceae species were observed: *Trametes versicolor* (L.) Lloyd, *Trametes coccinea* (Fr.) Hai J. Li & S.H. He, *Fomes fomentarius* (L.) Fr., *Daedaleopsis confragosa* (Bolton) J. Schröt. (Fig. 12).

Notes. The species *Aradus depressus* (Fabricius, 1794) belongs to the *Aradus depressus* group [Heiss, Péricart, 2007] and includes two subspecies: *Aradus depressus depressus* (Fabricius, 1794) and *Aradus depressus leptocerus* Horváth, 1882. No clear differences in the male genital structures (parameres, parandria and tergite IX) are observed between these two subspecies, with distinctions limited to a narrower body and more slender antennae [Kiritshenko, 1913; Heiss, 2004; Heiss, Péricart 2007].

E. Heiss and J. Péricart [2007] classified records from Western and Eastern Siberia, as well as the Russian Far East, to *A. depressus leptocerus*, referencing the works of N.N. Vinokurov and E.V. Kanyukova [1995] and E.V. Kanyukova [1988]. The distribution data for *A. depressus leptocerus* according to Heiss and Péricart [2007] are mentioned in Volume 6 of the Catalogue of the Heteroptera of the Palearctic Region [Aukema et al., 2013]; however, no note is provided regarding the necessary removal of *A. depressus depressus* records for Western and Eastern Siberia also the Russian Far East. As a result, both *A. depressus depressus* and *A. depressus leptocerus* are listed for these regions, without Western Siberia, in the online version of the Catalogue of the Heteroptera of the Palearctic Region [Aukema 2025]. According to the Catalogue of the Heteroptera of the Asian Part of Russia [Vinokurov et al., 2010], the distribution of *Aradus depressus* (Fabricius, 1794) at the species level includes the following regions:



Figs 11–12. Distribution and habitat of *Aradus depressus* (Fabricius, 1794). 11 — locality map of the species in the Asian part of the Palearctic; 12 — habitat in the East Kazakhstan. Designations: dark circle — literary data; light circle — original data. Photo by N.A. Borovaya.

Рис. 11–12. Распространение и местообитание *Aradus depressus* (Fabricius, 1794). 11 — карта распространения вида в Азиатской части Палеарктики; 12 — местообитание вида в Восточном Казахстане. Обозначения: тёмный круг соответствует литературным данным; светлый круг — обработанные данные. Фото Н.А. Боровой.

Western Siberia: Tyumenskaya Oblast, Tomskaya Oblast, and Kemerovskaya Oblast; Eastern Siberia: the southern part of Krasnoyarskii Krai; Far East: Primorskii Krai (details in distribution). In the European part of Russia, *Aradus depressus* (Fabricius, 1794) has been documented as the nominotypical subspecies in the Northern, Northwestern, Central, and Eastern regions, as well as in the Urals and the Northern Caucasus. It has also been reported from Crimea [Vinokurov et al., 2024].

In terms of ecological association, *Aradus depressus* (Fabricius, 1794) is a dendrobiont. A.N. Kiritshenko [1913] noted that *A. depressus leptocerus* is found on *Fagus* sp. (Fagaceae). D.A. Gidayatov [1982] recorded *Aradus depressus* (Fabricius, 1794) at the species level in Azerbaijan under the bark of *Quercus castaneifolia* C.A. Mey. (Fagaceae), *Acer* sp. (Aceraceae), *Zelkova* sp. (Ulmaceae), *Salix* sp., *Populus* sp. (Salicaceae), and *Betula* sp. (Betulaceae). In Iran, «Prov. Gilan, Asalem», E. Heiss [2004] reported of *A. depressus leptocerus* with *Fagus* sp. (Fagaceae).

It is possible that *A. depressus leptocerus* is associated with fungi of the family Polyporaceae, which colonize Fagaceae, such as *Fagus* sp. and *Quercus* sp. Notably, representatives of the genus *Quercus* in Eastern Kazakhstan are only introduced species, primarily used in urban landscaping. Surveys of trees of different ages in settlements across Eastern Kazakhstan did not detect any Polyporaceae. Meanwhile, members of the family Salicaceae: *Populus laurifolia* Ledeb., *P. tremula* L., *Salix alba* L., *S. bebbiana* Sarg., *S. caprea* L., *S. triandra* L. are widespread in the study area. On these trees, two common species of the family Polyporaceae, *Trametes versicolor* (L.) Lloyd and *Daedaleopsis confragosa* (Bolton) J. Schröt., are observed

in small numbers. Representatives of the family Betulaceae, *Betula pendula* Roth., *Betula pubescens* Ehrh., growing in the Chernaya Uba ecovillage, are affected by the specialized fungus *Fomes fomentarius* (L.) Fr. (Polyporaceae). Additionally, *Trametes versicolor* (L.) Lloyd, *Trametes coccinea* (Fr.) Hai J. Li, S.H. He, and *Daedaleopsis confragosa* (Bolton) J. Schröt. were frequently observed on *Padus avium* Mill. (Rosaceae).

We assigned processed materials to the species *Aradus depressus* (Fabricius, 1794) due to the difficulty in determining the distribution ranges and ecological characteristics of both subspecies, *A. depressus depressus* and *A. depressus leptocerus*, in the Western Siberia of Asian part of Russia.

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References

- Aukema B. 2025. Catalogue of Palaearctic Heteroptera. Database with all information from the Catalogue of the Heteroptera of the Palaearctic Region volumes I–VI as published by the Netherlands Entomological Society, Amsterdam (1995–2013). Available from: <https://catpalhet.linnaeus.naturalis.nl>. Accessed 1.1.2025.
- Aukema B., Hermes D.J. 2016. Verspreidingsatlas Nederlandse wantsen (Hemiptera: Heteroptera). Deel IV: Pentatomomorpha I (Aradidae, Lygaeidae, Piesmatidae, Berytidae en Pyrrhocoridae). Leiden: EIS Kenniscentrum Insecten en andere ongewervelden. 160 p.
- Aukema B., Rieger Ch., Rabitsch W. 2013. Catalogue of the Heteroptera of the Palaearctic Region. Vol.6. Amsterdam: The Netherlands Entomological Society. 629 p.
- Esenbekova P.A. 2013. [True bugs (Heteroptera) of Kazakhstan]. Almaty: Nur-Print. 349 p. [In Russian].
- Fabricius J.C. 1794. Entomologia systematica emendata et aucta, secundum classes, ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus. Tom.4(I–VI). Hafniae: C.G. Proft. 472 + [5] p.
- Gebler F.A. 1830. Bemerkungen über die Insekten Sibiriens, vorzüglich des Altai // Ledebour's Reise durch des Altai-Gebirge und die Soongarische Kirgisen-Steppe. Bd.2. Pt.2. 228 s.
- Ghahari H., Heiss E. 2012. Annotated Catalog of Iranian Aradidae (Hemiptera: Heteroptera: Pentatomomorpha: Aradoidea) // Zootaxa. Vol.3571. P.81–86.
- Gidayatov D.A. 1982. [True bugs of the group Pentatomomorpha of Azerbaijan]. Baku: Elm. 160 p. [In Russian].
- Heiss E. 2001. Family Aradidae Brullé, 1836 — flat bugs // Aukema B., Rieger Ch. (Eds): Catalogue of the Heteroptera of the Palaearctic Region. Vol.4. Amsterdam: The Netherlands Entomological Society. P.3–34.
- Heiss E. 2004. Beitrag zur Kenntnis der Wanzenfauna Irans, III. Familie Aradidae Brullé, 1836 (Heteroptera) // Carinthia II. Vol.114. P.395–412.
- Heiss E., Péricart J. 2007. Hemipteres Aradidae, Piesmatidae et Dipsocoromorphes Euro-Méditerranéens // Faune de France. Paris: Fédération Française des Sociétés de Sciences Naturelles. No.91. 509 p.
- Herrich-Schaeffer G.A.W. 1853. Die wanzenartigen Insecten. Nürnberg: Verlag von J.L. Lotzbeck. Bd.9: Index alphabetico-synonymicus. 210 p.
- Hoberlandt L. 1974. Results of the Czechoslovak-Iranian Entomological Expedition to Iran 1970. No. 2: Heteroptera: Aradidae // Acta Entomologica Musei Nationalis Pragae. Suppl.6. P.21–28.
- Horváth G. 1882. Hemiptera nova vel minus cognita. II // Természettudományi Füzetek. Vol.5 (1881). P.217–225.
- Jordan K.H.C. 1953. Neue Funde und Beobachtungen zur Heteropterenfauna der Oberlausitz und Ostsachsen // Natura Lusatica. Vol.1. P.2–17.
- Kanyukova E.V. 1988. [Family Aradidae] // Ler P.A. (Ed.): Keys to the insects of the Far East of the USSR. T.2. Leningrad: Nauka. P.761–777. [In Russian].
- Kanyukova E.V., Vinokurov N.N. 2007. New data on distribution of bark bugs in Siberia and the Far East of Russia (Heteroptera: Aradidae) // Zoosystematica Rossica. Vol.16. No.1. P.48. [In Russian].
- Kiritshenko A.N. 1910. [Contribution to the entomofauna of West Siberia: Hemiptera-Heteroptera of Altai and Tomsk Gubernia] // Revue Russe d'Entomologie. T.10. No.3. P.173–185. [In Russian].
- Kiritshenko A.N. 1913. Insectes Hémiptères. Dysodidae et Aradidae // Faune de la Russie et des pays limitrophes. T.6. Liv.1. Saint Petersburg. 302 p. [In Russian, with Latin descriptions].
- Kolenati F.A. 1857. Meletemata entomologica. Fasc. VI. Hemipterorum Heteropterorum Caucasi. Harpagocorisidae, monographice dispositae // Bulletin de la Société Impériale des Naturalistes de Moscou. Vol.29 (1856). P.419–502.
- Masse A.M. 1960. Massed flights of *Aradus depressus* (F.) (Hem. Aradidae) noted at East Malling, Kent // Entomologist's Monthly Magazine. Vol.96. P.7.
- Önder F., Karsavuran Y., Tezcan S., Fent M. 2006. Heteroptera (Insecta) Catalogue of Turkey. Turkey: Izmir. 164 p.
- Oshanin B.Th. 1870. [On Siberian Heteroptera] // Izvestiya Obshchestva Lyubiteley Estestvoznaniya, Antropologii i Etnografii. T.43. No.1. P.97–108. [In Russian].
- Putshkov V.G. 1974. Berytidae, Pyrrhocoridae, Piesmatidae, Aradidae and Tingidae // [Fauna of Ukraine]. T.21. Vol.4. Kiev: Naukova Dumka. 332 p. [In Ukrainian].
- Sahlberg J. 1878. Bidrag till nordvestra Sibiriens insektfauna, Hemiptera Heteroptera insamlade under expeditionerna till Obi och Jenesej 1876 och 1877 // Kungliga Svenska Vetenskapsakademiens Handlingar. Vol.16. No.4. P.1–39.
- Stehlík J.L., Heiss E. 2001. Results of the investigations on Heteroptera in Slovakia made by the Moravian Museum (Aradidae, Pyrrhocoridae) // Acta Musei Moraviae, Scientiae biologicae. Vol.86. P.177–194.
- Vásárhelyi T. 2016. *Aradus oroszi* sp.n. from Taiwan (Hemiptera, Heteroptera, Aradidae) // Acta Zoologica Academiae Scientiarum Hungaricae. T.62. No.2. P.153–156. <https://doi.org/10.17109/AZH.62.2.153.2016>
- Vinokurov N.N., Kanyukova E.V. 1995. [Conspect of the fauna of Heteroptera of Siberia: Contribution to the Catalogue of Palaearctic Heteroptera]. Yakutsk: Yakutian Scientific Centre, Siberian Branch, Russian Academy of Sciences. 62 p.
- Vinokurov N.N., Kanyukova E.V., Golub V.B. 2010. [Catalogue of the Heteroptera of the Asian part of Russia]. Popov Yu.A. (Ed.). Novosibirsk: Nauka. 320 p. [In Russian].
- Vinokurov N.N., Gapon D.A., Golub V.B., Zinov'yeva A.N., Kanyukova E.V., Konstantinov F.V. 2024. [Catalogue of the Heteroptera of the European part of Russia and Ural] // Gapon D.A. (Ed.): St Petersburg: Zoological Institute of the Russian Academy of Sciences. 792 p. [In Russian]
- Wnukowski W. 1927. Über die Hemiptera Fauna des Bezirks Tomsk, Nowo-Sibirsk (Nowo-Nikolaewsk) und Atschinsk in West-Sibirien // Zoologischer Anzeiger. Bd.72. Htn 3–4. S.110–114.