

New records of *Aeolesthes sarta* (Solsky, 1871) (Coleoptera, Cerambycidae) in 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 28 September 2023 | Accepted 24 October 2023 | Published 5 November 2023

<http://zoobank.org/3513B007-820D-467A-A6D5-943BD01CE27A>

Citation: Temreshev II (2023) New records of *Aeolesthes sarta* (Solsky, 1871) (Coleoptera, Cerambycidae) in Kazakhstan. Acta Biologica Sibirica 9: 831–843. <https://doi.org/10.5281/zenodo.10069433>

Abstract

Dangerous invasive pest the City longhorn beetle *Aeolesthes sarta* (Solsky, 1871) is firstly recorded from West Kazakhstan. The finds of *A. sarta* from Mangystau Oblast of West Kazakhstan are currently the northernmost and westernmost localities for this species and new records for Central Asia. The finds of this species in Kyzylorda Oblast (Zhanakorgan, Baikenge and Shieli vill.) show gradual penetration of this species into the south and west of Kazakhstan, and Taraz into the southeast of the country. Thus, the species spreads across the territory of Kazakhstan both in the western and eastern directions. The reasons for the resettlement are both accidental importation with building wood and planting material, and climate warming, which allows it to gain a foothold in previously inaccessible habitats. The species composition of trees damaged by *A. sarta* in Kazakhstan is identified. The most populated trees were black poplar *Populus nigra* and silver poplar *P. alba*, silverberry *Elaeagnus angustifolia* and Siberian elm *Ulmus pumila*, the least populated were Sogdian ash *Fraxinus sogdiana*, honey locust *Gleditsia triacanthos* and ashleaf maple *Acer negundo*.

Keywords

City longhorn beetle, invasive species, new records, South and West Kazakhstan

Introduction

The genus *Aeolesthes* Gahan, 1890 (Coleoptera, Cerambycidae) includes 32 species from the world (GBIF 2023) and is comprised of ten species in the Palaearctic Region (Danylevsky and Smetana 2010). Beetles from this genus are widespread in the Oriental Region and Australia (GBIF 2023). The larvae of the beetles of this genus develop on different types of trees and shrubs. Many of them are dangerous polyphagous pests of fruit and ornamental plants. One species, city longhorn beetle (sart longhorn beetle, uzbek city longhorn beetle) *Aeolesthes sarta* (Solsky, 1871), was known from Kazakhstan (Kostin 1973; EPPO 2005; Khan et al 2013; Temreshev and Kazenas 2015; CAPS 2020; EPPO 2022).

Aeolesthes sarta is distributed in Asia. The native area of *A. sarta* is Pakistan and Western India (www.cabi.org). It spread to Afghanistan and Iran, and was first found in 1911 in Samarkand, Uzbekistan (Data Sheets on Quarantine Pests). The present distribution of this species includes Afghanistan, India (Himachal Pradesh, Jammu and Kashmir), Iran, Japan, South Kazakhstan, Kyrgyzstan, Malaysia, Pakistan, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan (Data Sheets on Quarantine Pests; Farashiani et al 2001; Danylevsky and Smetana 2010; Khan et al 2013; Mazaheri et al 2015; Kamran et al 2017; CAPS 2020; CABI 2022; EPPO 2022; Hayat 2022; GBIF 2023; Hayat et al 2023). The food plants of the larvae of the city longhorn beetle are walnut (*Juglans* spp.), apple (*Malus* spp.), pear (*Pyrus* spp.), cherry and other stone fruit trees (*Prunus* spp.), plane trees (*Platanus* spp.), poplar (*Populus* spp.), willow (*Salix* spp.), elm (*Ulmus* spp.), locust (*Robinia* spp.), silverberry (*Elaeagnus* spp.), alder (*Alnus* spp.), hazelnut (*Corylus* spp.), quince (*Cydonia* spp.), mulberry (*Morus* spp.), maple (*Acer* spp.), ash (*Fraxinus* spp.), birch (*Betula* spp.), pecan (*Carya* spp.), chestnut (*Castanea* spp.), buckeye (*Aesculus* spp.), honey locust (*Gleditsia* sp.) and oak (*Quercus* spp.). The species can attack both healthy and stressed trees. Damage is greater where trees grow in difficult conditions (limited watering, proximity to roads, urban plantings, etc.) and are therefore less resistant to pests. Several generations of the beetles can develop on one tree for many years in a row before it dies. Young trees with thin bark are more susceptible to the pest. Larval development takes place over two years. The species can be found in mountains with altitudes up to 2,000 m (6,562 ft). Due to its polyphagous nature, the beetle is a dangerous pest of gardening and forestry. *Aeolesthes sarta* can spread at various life stages in unprocessed commercial wood, in wood products (packaging, fasteners, etc.), and with tree seedlings. Adults can also be carried on various surfaces and very rarely by active flight. The species is included in the list of particularly dangerous invasive pests of the European and Mediterranean Plant Protection Organization (Data Sheets on Quarantine Pests; Kostin 1973; Farashiani et al 2001; EPPO 2005; Temreshev and Kazenas 2015; Khan et al 2013; Mazaheri et al 2015; Kadyrov et al 2016; Kamran et al 2017; CAPS 2020; CABI 2022; EPPO 2022; Hayat 2022; Hayat et al 2023a, 2023b).

Materials and methods

The material was collected by manual method from 2015 to 2023 in South and West Kazakhstan, Turkistan, Jambyl and Mangystau Oblasts. Standard techniques (Fasulati 1971) used in entomology were used during the collection of the material. The following sources (Kostin 1973; EPPO 2005; Temreshev and Kazenas 2015; Danylevsky and Smetana 2010; Khan et al 2013; Mazaheri et al 2015; Kadyrov et al 2016; Kamran et al 2017; CAPS 2020; CABI 2022; EPPO 2022; Hayat 2022; GBIF 2023; Hayat et al 2023a, 2023b) 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), with the exception of specimens (L. Abdurasulova collected), kept in the collection of Karatau state natural reserve, and specimens, collected by A.M. Makezhanov in Kentau city.

Photographs of *Aeolesthes sarta* and their habitat were taken with a camera Redmi 7 by author (Figs. 1, 2A, B, 3), with the exception of Figs. 2C, foto by A.M. Makezhanov. Descriptions and body measuring were performed using a Micromed MC var 1-C dissecting stereomicroscope.

For convenience as well as some geographical and administrative terms: KO – Kyzylorda Oblast, MO – Mangystau Oblast, JO – Jambyl Oblast, TO – Turkistan Oblast, KCA – Kentau city, d. – district, ex. – exemplar, mt. – mounts, nei. – neighborhoods, v. – village.

Result

As a result of the research, distribution of the city longhorn beetle has been clarified in Kazakhstan, and the list of trees on which they are found is clarified.

Aeolesthes sarta (Solsky 1871)

= *Pachydissus sartus* Solsky, 1871

= *Trirachys sartus* (Solsky, 1871)

Figs 1, 2

Material examined. 1 ♂, 1 ♀ - 31.05.2006, TO, KCA, Karatau ridge, Bayaldyr gorge, L. Abdurasulova; 1 ♂, 3 ♀ - 16.06.2015, South Kazakhstan, TO, Ordabasy d., Bogen v., shore of Bogen reservoir, on the bark of silverberry *Elaeagnus angustifolia* L., 1753 and white willow *Salix alba* L., 1753, 42°42'48.28" N 68°59'56.59" E, I.I. Temreshev; 1 ♀ - 28.08.2015, South Kazakhstan, TO, Shymkent city, dead on the road, I.I. Temreshev; 1 ♂ - 3.03.2015, South Kazakhstan, TO, Shymkent city, fruit garden, apple *Malus domestica* L., 1753, M.V. Kulemin; 5 ♂, 7 ♀ - 9.06.2016, TO, Tolebi d., nei. to Mayatas v., shore of Badam reservoir, under the bark field elm *Ulmus minor* Mill. (1768), silver poplar *Populus alba* L., 1753 and black poplar *Populus nigra* L.,

1753, 42°13'34.52" N 69°45'42.57" E, I.I. Temreshev; 2 ♂, 6 ♀ – 9.06.2016, TO, Shymkent city, green space, under the bark European white elm *Ulmus laevis* Pall., field elm *U. minor* and silver poplar *P. alba*, 42°18'3.81" N 69°36'23.72" E, I.I. Temreshev; 1 ex. larva III instar, 1 ♂ – 27.02.2017, South Kazakhstan, TO, Shymkent city, fruit garden, under the bark of apricot *Prunus armeniaca* (L., 1753) and apple *M. domestica*, B.K. Kulmagambetov; 2 ♂ – 21.10.2017, South Kazakhstan, KO, Zhanakorgan d., nei. Zhanakorgan v., under the bark of silverberry *E. angustifolia*, 43°55'8.25" N 67°14'14.61" E, I.I. Temreshev; 1 ♂ 1 ♀ – 21.10.2017, South Kazakhstan, KO, Zhanakorgan d., nei. Baikenge v., under the bark of white willow *S. alba*, 43°53'32.41" N 66°55'19.32" E, I.I. Temreshev; 2 ♂, 4 ♀ – 18.10.2019, South Kazakhstan, TO, KCA, Ashysai v., fruit garden, under the bark of European white elm *U. laevis*, apricot *P. armeniaca* and apple *M. domestica*, 43°32'45.78" N 68°53'55.95" E, I.I. Temreshev, A.M. Makezhanov; 3 ♂, 4 ♀ – 18.10.2019, South Kazakhstan, TO, KCA, Bayaldyr v., forest belt, under the bark of silverberry *E. angustifolia*, silver poplar *P. alba* and black poplar *P. nigra*, 43°32'46.24" N 68°29'10.25" E, I.I. Temreshev, A.M. Makezhanov; 4 ♂, 5 ♀ – 19.10.2019, South Kazakhstan, TO, KCA, Karnak v., forest belt, under the bark of field elm *U. minor*, silver poplar *P. alba* and black poplar *P. nigra*, 43°30'34.21" N 68°22'34.58" E, I.I. Temreshev, A.M. Makezhanov; 12 ♂, 13 ♀ – 13.03.2020, South Kazakhstan, TO, KCA, Kentau city, city green spaces, under the bark of Siberian elm *Ulmus pumila* L., field elm *U. minor*, silver poplar *P. alba*, black locust *Robinia pseudoacacia* L., 1753 and honey locust *Gleditsia triacanthos* L., 43°29'17.97" N 68°27'37.93" E, I.I. Temreshev, A.M. Makezhanov; 6 ♂, 9 ♀ – 24.05.2020, South Kazakhstan, TO, KCA, Kentau city, city green spaces, under the bark of Siberian elm *U. pumila*, field elm *U. minor*, silver poplar *P. alba* and apple *M. domestica*, 43°27'8.37" N 68°29'3.30" E, I.I. Temreshev, A.M. Makezhanov; 1 ♂, 2 ♀ – 26.10.2019, South Kazakhstan, TO, KCA, Ashysai v., forest belt, under the bark of white willow *S. alba* and silver poplar *P. alba*, 43°31'03" N 68°50'41" E, I.I. Temreshev, A.M. Makezhanov; 4 ♂, 2 ♀ – 28.05.2020, South Kazakhstan, TO, KCA, Khantagy v., green spaces, under the bark of field elm *U. minor*, silver poplar *P. alba* and black poplar *P. nigra*, 43°31'40.70" N 68°37'0.83" E, I.I. Temreshev, A.M. Makezhanov; 4 ♂, 2 ♀ – 29.05.2020, South Kazakhstan, TO, KCA, Khantagy v., forest belt, under the bark of silverberry *E. angustifolia*, silver poplar *P. alba* and black poplar *P. nigra*, 43°31'59.04" N 68°37'34.61" E, I.I. Temreshev, A.M. Makezhanov; 2 ♂, 4 ♀ – 26.08.2020, South Kazakhstan, TO, KCA, Burgem v., forest belt, under the bark of silverberry *E. angustifolia*, silver poplar *P. alba* and black poplar *P. nigra*, 43°30'14.73" N 68°28'22.80" E, I.I. Temreshev, A.M. Makezhanov; 2 ♂, 4 ♀ – 27.08.2020, South Kazakhstan, TO, KCA, Burgem v., forest belt, under the bark of silver poplar *P. alba* and black poplar *P. nigra*, 43°30'36.60" N 68°28'44.62" E, I.I. Temreshev, A.M. Makezhanov; 1 ♂, 3 ♀ – 28.08.2020, South Kazakhstan, TO, KCA, KCA, Kussy ata v., forest belt, under the bark of silverberry *E. angustifolia* and black poplar *P. nigra*, 43°26'53.93" N 68°26'10.87" E, I.I. Temreshev, A.M. Makezhanov; 1 ♂, 1 ♀ – 28.08.2020, South Kazakhstan, TO, KCA, Kussy ata v., forest belt, under the bark of silverberry *E. angustifolia*, 43°26'23.03" N 68°25'38.23" E, I.I. Temreshev, A.M.

Makezhanov; 2 ♀ – 29.08.2020, South Kazakhstan, TO, KCA, Orangai v., forest belt, under the bark of silverberry *E. angustifolia*, 43°21'55.42" N 68°21'49.41" E, I.I. Temreshev, A.M. Makezhanov; 1 ♂, 1 ♀ – 29.08.2020, South Kazakhstan, TO, KCA, Orangai v., forest belt, under the bark of black poplar *P. nigra*, 43°24'15.50" N 68°21'40.66" E, I.I. Temreshev, A.M. Makezhanov; 2 ex. larva III instar, 6 male, 6 ♀ – 7.12.2021, TO, Sairam d., forest belt, under the bark of dead Siberian elm *U. pumila*, 41°30'10.45" N 69°21'54.99" E, I.I. Temreshev, M. Tolykbaev; 5 ♂, 7 ♀ – 7.12.2021, TO, Sairam d., forest belt, under the bark of dead Siberian elm *U. pumila*, silver poplar *P. alba*, and white willow *S. alba*, 41°29'6.38" N 69°15'16.76" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 3 ex. larva III instar, 3 ♂, 4 ♀ – 8.12.2021, TO, Sairam d., forest belt in nei. of apple orchard, under the bark of dead Siberian elm *U. pumila*, ashleaf maple *Acer negundo* L. and apple *M. domestica*, 42°20'24.48" N 69°57'34.88" E, I.I. Temreshev, M. Tolykbaev; 3 ex. larva III instar, 6 ♂, 9 ♀ – 8.12.2021, TO, Sairam d., nei. of Nizamabad v., forest belt, under the bark of dead Siberian elm *U. pumila*, black locust *R. pseudoacacia* and ashleaf maple *A. negundo*, 42°19'59.82" N 69°57'37.93" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 1 ex. larva III instar, 4 ♂, 6 ♀ – 8.12.2021, TO, Sairam d., nei. of Akbulak v., forest belt, under the bark of dead Siberian elm *U. pumila*, European white elm *U. laevis*, black locust *R. pseudoacacia* and honey locust *G. triacanthos*, 42°22'18.03" N 69°57'57.82" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 2 ex. larva III instar, 2 ♂, 3 ♀ – 8.12.2021, TO, Sairam d., nei. of Akbulak v., forest belt, under the bark of dead Siberian elm *U. pumila*, black locust *R. pseudoacacia* and silver poplar *P. alba*, 42°22'18.03" N 69°57'57.82" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 3 ♂, 5 ♀ – 9.12.2021, TO, Sairam d., nei. of Akbulak v., poplar garden, under the bark of European white elm *U. laevis*, black poplar *P. nigra* and silver poplar *P. alba*, 42°22'18.03" N 69°57'57.82" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 1 ex. larva III instar, 3 ♂, 3 ♀ – 9.12.2021, TO, Tolebi d., shore of Badam reservoir, under the bark of *P. nigra* and Siberian elm *U. pumila*, 42°12'17.33" N 69°45'55.45" E, I.I. Temreshev; 3 ♂, 1 ♀ – 10.12.2021, TO, Shardara d., shore of Shardara reservoir, under the bark of silverberry *E. angustifolia*, 41°14'53.01" N 67°58'17.15" E, I.I. Temreshev; 1 ex. larva III instar, 5 ♂, 4 ♀ – 11.09.2021, South Kazakhstan, TO, Saryagash d., Zhibek Zholy v., forest belt, under the bark of ashleaf maple *A. negundo*, Sogdiana ash *Fraxinus sogdiana* Bunge, apricot *P. armeniaca* and black poplar *P. nigra*, 41°29'49.82" N 69°20'37.80" E, I.I. Temreshev, M. Tolykbaev, N. Seitkalieva; 3 ♂, 4 ♀ – 8.09.2022, TO, Shardara d., shore of Shardara reservoir, under the bark of silverberry *E. angustifolia*, 41°14'53.01" N 67°58'17.15" E, I.I. Temreshev; 5 ♂, 7 ♀ – 9.09.2022, South Kazakhstan, TO, Saryagash d., Zhibek Zholy v., forest belt, under the bark of white willow *S. alba*, black poplar *P. nigra* and *M. domestica*, 42°21'49.74" N 69°55'52.15" E, I.I. Temreshev; 4 ♂, 3 ♀ – 9.09.2022, South Kazakhstan, TO, Saryagash d., Zhibek Zholy v., forest belt, under the bark of Sogdiana ash *F. sogdiana*, black poplar *P. nigra*, apricot *P. armeniaca* and *M. domestica*, 41°31'11.79" N 69°23'29.78" E, I.I. Temreshev; 2 ♂, 2 ♀ – 10.09.2022, South Kazakhstan, TO, Kazygurt d., Kazygurt mt., under the bark of withe willow *S. alba*, 42° 2'17.32" N 69°39'32.53" E, I.I. Temreshev;

1 ♀ – 11.03.2022, MO, Karakiya d., nei. of Zhanaozen city, shore of the sewage reservoir, dead under bark of field elm *U. minor*, 43°20'17.81" N 52°48'53.16" E, I.I. Temreshev; 1 ♂, 2 ♀ – 13.03.2022, West Kazakhstan, MO, Karakiya d., Zhanaozen city, dead under bark of apricot *P. armeniaca*, 43°20'21.43" N 52°51'15.81" E, I.I. Temreshev; 1 ♂ – 29.03.2022, South Kazakhstan, KO, Shieli d., Shieli v., under the bark of silverberry *E. angustifolia*, 44°12'1.84" N 66°43'33.60" E, I.I. Temreshev; 1 ♀ – 6.08.2022, Jambyl oblast, Taraz city, 42°52'21.87" N 71°22'35.53" E, dead on the ground, I.I. Temreshev; 3 ♂, 4 ♀ – 18.04.2022, South Kazakhstan, TO, Kazygurt d., Ashybulak v., forest belt, under the bark of black poplar *P. nigra*, Siberian elm *U. pumila*, European white elm *U. laevis* and white willow *S. alba*, 41°47'51.63" N 69°23'30.88" E, I.I. Temreshev; 2 ♂, 3 ♀ – 19.04.2023, South Kazakhstan, TO, Shymkent city, forest belt, under the bark of black poplar *P. nigra* and Siberian elm *U. pumila*, 42°17'58.62" N 69°39'4.18" E, I.I. Temreshev; 3 ♂, 4 ♀ – 9.05.2023, South Kazakhstan, TO, KCA, Kentau city, city green spaces, under the bark of Siberian elm *U. pumila*, field elm *U. minor*, and silver poplar *P. alba*, 43°29'17.97" N 68°27'37.93" E, A.M. Makezhanov.

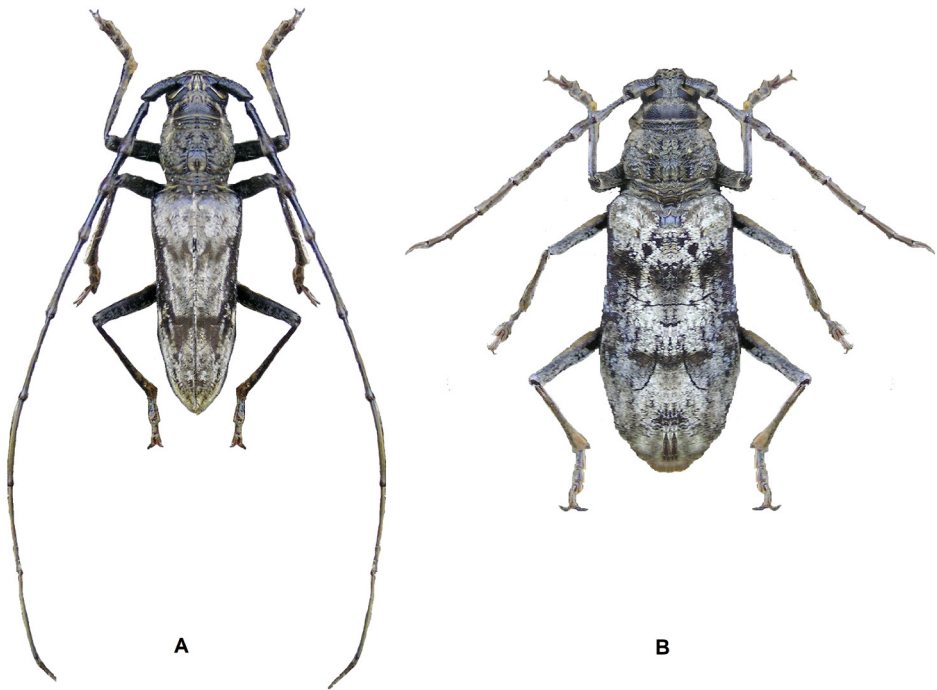


Figure 1. *Aeolesthes sarta*, habitus, male (A) and female (B) view. South Kazakhstan.



A



B



C

Figure 2. *Aeolesthes sarta*, dead male from West Kazakhstan (A), larva III instar (B), South Kazakhstan, male and female in copula on the bark of field elm *Uimus minor* (C), South Kazakhstan.

The species composition of trees damaged by the city longhorn beetle in Kazakhstan was identified. The most populated trees were black poplar *Populus nigra* and silver poplar *P. alba*, silverberry *Elaeagnus angustifolia* and Siberian elm *U. pumila*, the least populated were Sogdiana ash *Fraxinus sogdiana*, honey locust *Gleditsia triacanthos* and ashleaf maple *Acer negundo* (Figs 3, 4).



Figure 3. Habitat of *Aeolesthes sarta*: european white elm *Ulmus laevis* with drilling flour from larvae under the trunk, Kentau city, South Kazakhstan (A), dead trees of silver poplar *Populus alba*, black poplar *Populus nigra* and field elm *Ulmus minor*, shore of Badam reservoir, South Kazakhstan (B), damaged Siberian elm *Ulmus pumila*, forest belt in Sairam District, South Kazakhstan (C), damaged white willow *Salix alba*, Kazygurt mounts, South Kazakhstan.

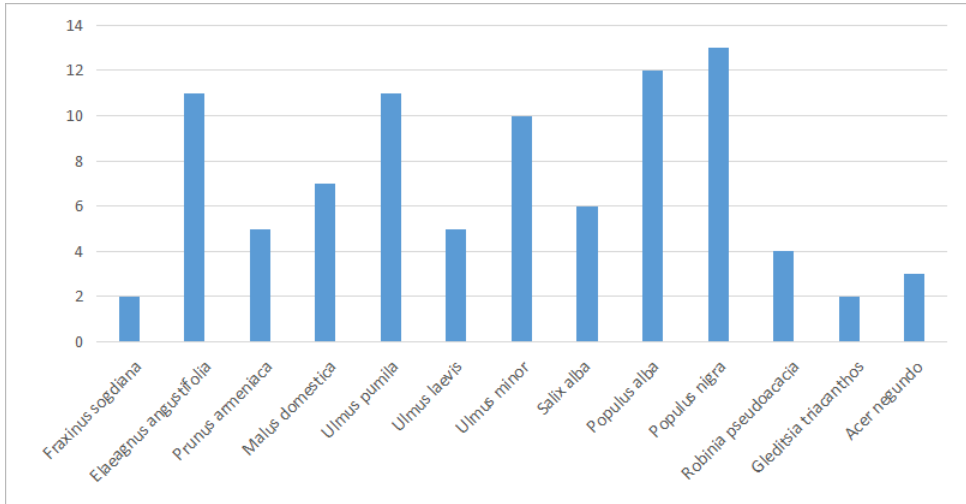


Figure 4. Species composition of trees damaged by the city longhorn beetle in Kazakhstan.

The finds of *A. sarta* from Mangystau oblast of West Kazakhstan are currently the northernmost and westernmost localities for this species and new record for Central Asia. The finds of a species in the Kyzylorda oblast (Zhanakorgan, Baikenge and Shieli village) speaks of its gradual penetration into the south and west of the country. The finds of a city longhorn beetle in the city of Taraz speaks of its gradual penetration into the southeast of the country (Figs 5, 6).

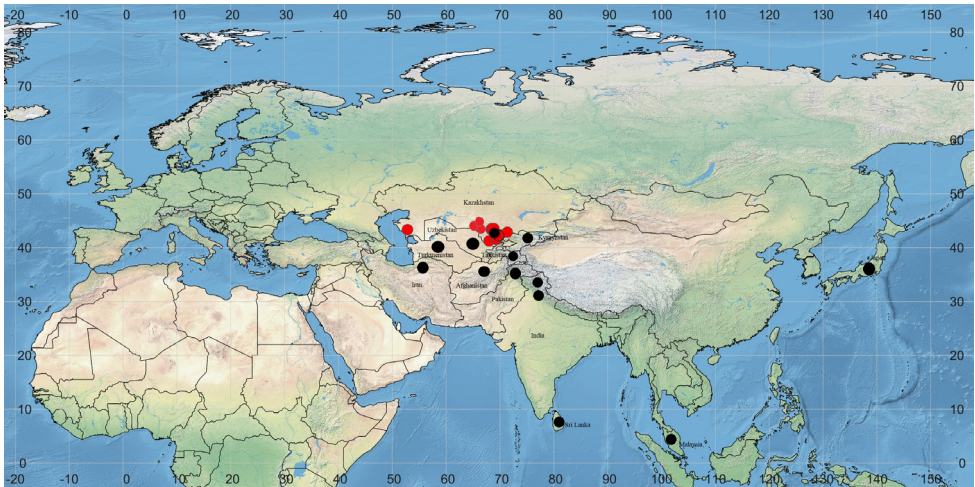


Figure 5. Distribution of *Aeolesthes sarta* in world. New records are indicated with red circles. Known indicated in black circles.

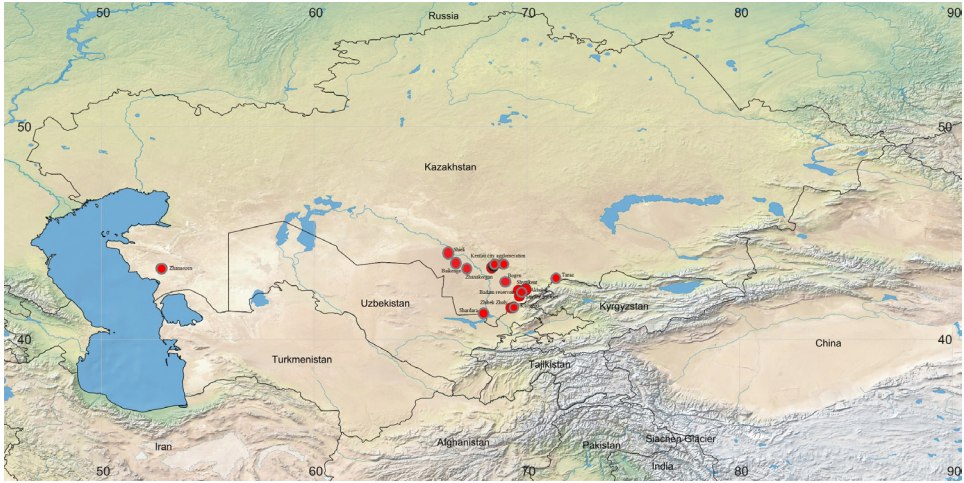


Figure 6. Distribution of *Aeolesthes sarta* in Kazakhstan.

Conclusion

Findings of *Aeolesthes sarta* in Zhambyl, Kyzylorda and Mangystau Oblasts of Republic of Kazakhstan show that the species is actively spreading throughout the country. At the same time, settlement occurs both in the eastern and western directions. Several factors contribute to the spread of the species. The first is the ongoing climate changes, which allow the species to gain a foothold in new places. This can also be seen in other insects that are external and internal invaders in Kazakhstan, for example various seed beetles *Acanthoscelides pallidipennis* (Motschulsky, 1874), *Callosobruchus phaseoli* (Gyllenhal, 1833), *Megabruchidius dorsalis* Fahreus, 1839, and some other stock pests, Asian giant mantes *Hierodula tenuidentata* Saussure, 1869, Oriental hornet *Vespa orientalis* Linnaeus, 1761, *Polistes wattii* Cameron, 1900, etc. (Temreshev 2016a, 2016b, 2017a, 2017, 2023b; Temreshev and Makezhanov 2019; Temreshev and Kazenas 2020). The second is the increased volume of transportation of agricultural products, tree seedlings, timber, etc. within the country, together with which it is possible to penetrate into other areas of the country from already populated. Various stem pests can be an example here (*Acanthocinus griseus* (Fabricius, 1793), *Rhagium inquisitor* (Linnaeus, 1758), *Ips sexdentatus* (I.C.H. Boerner, 1776), *Dryocoetes autographus* Eichhoff, 1864, *Sirex noctilio* Fabricius, 1773, *Sirex juvenicus* (Linnaeus, 1758)), ant-lovings crickets *Myrmecophilus acervorum* (Panzer, 1799) and *M. crenatus* Gorochov, 1986, etc. (Ismuhambetov 1964; Temreshev 2015, 2017b, 2023; Kazenas and Temreshev 2016; Kazenas et al. 2016). Thirdly, in already known places of distribution of the pest, targeted control is not carried out. Currently, most of the forest belts and urban plantings of deciduous trees in the Turkistan oblast are damaged by the city longhorn beetle. Damage is often caused together with another dangerous stem pest - the goat moth *Cossus cos-*

sus (Linnaeus, 1758), which aggravates the condition of trees and accelerates their death. About 80% of trees in such plantings need urgent treatment against the pest. However, no protective measures are taken except for private fruit growing farms. In Zhambyl, Kyzylorda and Mangystau Oblasts, where the species entered relatively recently, the situation is not so critical. However, careful monitoring of tree plantations and control of the number and distribution of *Aeolesthes sarta* is required within the framework of a separate scientific project. Monitoring invasive forest insects is important for their control (Ismuhambetov 1964; Kazenas et al 2016; Lakatos et al. 2023). Since the species is a dangerous invasive polyphagous pest, in the event of further uncontrolled spread and reproduction of the longhorned beetle on the territory of Kazakhstan, the damage from it will be very large.

Acknowledgements

The work was carried out within the framework of the project "Works on environmental design JSC Intergas Central Asia". Author thanks to Bakytzhan Kulmagambetovich Kulmagambetov (Shymkent, Kazakhstan) and Maxim Viktorovich Kulemin (Shymkent, Kazakhstan) for the provided material, to Arman Makezhanov (Almaty, Kazakhstan), Murat Tolykbaev and Nazira Seitkalieva (JSC «Intergas Central Asia», Uralsk, Kazakhstan) for help in collecting material and foto, and 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

- Data Sheets on Quarantine Pests (2006) *Aeolesthes sarta*, March 2006.
- Danylevsky ML, Smetana A (2010) Cerambycidae. Cerambycinae. Taxa from Russia and countries former Soviet Union, and Mongolia. In: Löbl I, Smetana A (Eds) Catalogue of Palaearctic Coleoptera. Vol. 6: Chrysomeloidea. Apollo Books, Stenstrup, 143–207 p.
- CABI (2022) *Trirachys sartus* – Invasive Species Compendium. Available at: <https://www.cabi.org/isc/datasheet/3430>
- CAPS (2020) *Aeolesthes sarta*. CAPS Program Resource and Collaboration Site. Available at: <http://download.ceris.purdue.edu/fle/3122>
- EPPO (2005) *Aeolesthes sarta*. Datasheets on quarantine pests. EPPO Bulletin 35: 387–389.
- EPPO (2022) *Trirachys sarta*. EPPO datasheets on pests recommended for regulation. Available at: https://www.eppo.int/media/uploaded_images/RESOURCES/eppo_standards/pm1/pm1-002-29-en.pdf
- Farashiani ME, Sadeghi SE, Abaii M (2001) Geographic distribution and hosts of sart longhorn beetle, *Aeolesthes sarta* Solsky (Col.: Cerambycidae) in Iran. Journal of Entomological Society of Iran 20: 81–96.

- Fasulati KK (1971) Field study of terrestrial invertebrates. Higher school, Moscow, 424 pp. [In Russian]
- GBIF (2023) *Aeolesthes sarta* (Solsky, 1871). Available at: <https://www.gbif.org/species/1160956>
- Hayat U (2022) City longhorn beetle (*Aeolesthes sarta*): A review of the species, its distribution, ecology, damage, prevention and control. Journal of Forest Science 68 (6): 199–212. <https://doi.org/10.17221/34/2022-JFS>
- Hayat U, Akram M, Kour S, Arif T, Shi J (2023a) Pest Risk Assessment of *Aeolesthes sarta* (Coleoptera: Cerambycidae) in Pakistan under Climate Change Scenario. Forests 14 (253): 1–16. <https://doi.org/10.3390/f14020253>
- Hayat U, Kour S, Akram M, Shi J, Wiarta R (2023b) Assessing the Global Pest Risk of *Aeolesthes sarta* with Regards to the Host Specie *Populus alba* under Climate Change Scenarios. Forests 14 (1260). <https://doi.org/10.3390/f14061260>
- Ismuhambetov JD (1964) Insect pests, imported from the Siberian forest – a danger to the Tien Shan fir. Proceedings of the Kazakh Research Institute of Plant Protection 8: 245–254. [In Russian]
- Kadyrov AKh, Karpiński L, Szczepański WT, Taszakowski A, Walczak M (2016) New data on distribution, biology, and ecology of longhorn beetles from the area of west Tajikistan (Coleoptera, Cerambycidae). ZooKeys 606: 41–64. <https://doi.org/10.3897/zookeys.606.9190>
- Kamran K, Kakar A, Arif S, Iqbal A (2017) Evaluation of insect repellent and insecticide implantation techniques against *Aeolesthes sarta* Solsky in Quetta district of Baluchistan province, Pakistan. Pak. Journal of Entomology and Zoology Studies 5: 273–276.
- Kazenas VL, Temreshev II (2016) Horntails (Hymenoptera: Siricidae, Xiphydriidae) of Almatinskaya Oblast of Kazakhstan. Euroasian entomological journal 15 (5): 403–411.
- Kazenas VL, Temreshev II, Esenbekova PA (2016) Review of the sanitary condition of coniferous forests in windfall places in the Ile-Alatau National Park (Kazakhstan) in 2011–2015. Nature Conservation Research 1 (1): 23–37. <http://dx.doi.org/10.24189/ncr.2016.003> [In Russian]
- Khan SA, Bhatia S, Tripathi N (2013) Entomological investigation on *Aeolesthes sarta* (Solsky), a major pest on walnut trees (*Juglans regia* L.) in Kashmir valley. Journal of Academia and Industrial Research 2 (6): 325–330.
- Kostin IA (1973) Beetles dendrophagous of Kazakhstan. Publisher of the Kazakh SSR Academy of Sciences, Institute of Zoology, Alma-Ata, 288 pp. [In Russian]
- Lakatos F, Ünal S, Ayan S (2023) Climate change and invasive insects in forest ecosystems – Recent examples from Türkiye. SilvaWorld 2 (2): 92–102. <https://doi.org/10.61326/silvaworld.v2i2.4>
- Mazaheri A, Khajehali J, Marzieh K, Hatami B (2015) Laboratory and field evaluation of insecticides for the control of *Aeolesthes sarta* Solsky (Col.: Cerambycidae). Journal of Crop Protection 4 (2): 257–266.
- Temreshev II (2015) On invasions of some insect species into the territory of the State National Natural Park "Ile-Alatau". Materials of the IV International Scientific and Practical Conference "The Role of Special protected natural areas in the conservation of

- biodiversity”, dedicated to the 20th anniversary of the state natural reserve “Prisursky” October 21–24, 2015, Cheboksary, Russia. Scientific works of the Prisursky State Nature Reserve 30 (2): 17–21.
- Temreshev II (2017a) Pests of stocks and raw materials, common in the territory of the Republic of Kazakhstan, and some related and quarantine species (species composition and brief technology protection measures). Second edition, revised and supplemented. LLP "Nur-Print", Almaty. [In Russian]
- Temreshev II (2017b) Adventive insect species of the Sayram-Ugam National Natural Park, Kazakhstan. Acta Biologica Sibirica 3 (3): 12–22. <https://doi.org/10.14258/abs.v3i3.3626> [In Russian]
- Temreshev II (2018) On the expansion of the areas of *Vespa orientalis* and *Polistes wattii* (Hymenoptera: Vespidae) on the territory of the Republic of Kazakhstan. Acta Biologica Sibirica 4 (1): 38–45. <http://dx.doi.org/10.14258/abs.v4i1.3915>
- Temreshev II (2020) First record of the ant-loving cricket *Myrmecophilus crenatus* Gorochov, 1986 (Orthoptera, Myrmecophilidae) in Kazakhstan. Acta Biologica Sibirica 6: 407–412. <https://doi.org/10.3897/abs.6.e54135>
- Temreshev II (2023) Three new for the fauna of West Kazakhstan species of the orders Mantodea, Orthoptera and Embioptera. Acta Biologica Sibirica 9: 349–359. <https://doi.org/10.5281/zenodo.7889226>
- Temreshev II, Kazenas VL (2015) On the distribution of the city longhorn beetle *Aeolesthes sarta* (Solsky, 1871) (Coleoptera, Cerambycidae) in Southern Kazakhstan. Materials of the International scientific conference “Innovative environmentally friendly technologies for plant protection”, September 24–25, 2015, Almaty, Republic of Kazakhstan. Taugul-Print, Almaty, 232–235. [In Russian]
- Temreshev II, Kazenas VL (2020) *Callosobruchus phaseoli* (Gyllenhal, 1833) (Coleoptera, Chrysomelidae, Bruchinae): a new invasive species in Kazakhstan. Acta Biologica Sibirica 6: 87–92. <https://doi.org/10.3897/abs.6.e53070>
- Temreshev II, Makezhanov AM (2019) Expansion of invasive seed beetle *Megabruchidius dorsalis* Fahreus, 1839 (Coleoptera, Chrysomelidae, Bruchinae) in the Turkestan Region (South Kazakhstan). Acta Biologica Sibirica 5 (4): 1–4. <http://dx.doi.org/10.14258/abs.v5.i4.6722> [In Russian]
- Temreshev II, Valieva BG (2016a) *Megabruchidius dorsalis* Fahreus, 1839 – a new invasive species in the fauna of seed-beetles (Coleoptera, Chrysomelidae, Bruchinae) of Kazakhstan. Eurasian Entomological Journal 15 (2): 139–142. [In Russian]
- Temreshev II, Valieva BG (2016b) Invasion of the seed-beetles *Acanthoscelides pallidipennis* (Motschulsky, 1874) (Coleoptera, Chrysomelidae, Bruchinae) to Kazakhstan. Eurasian Entomological Journal 15 (6): 527–529. [In Russian]