



FAUNA OF STINK BUGS (PENTOTOMIDAE: PENTOTOMINAE) DISTRIBUTED IN THE NORTH-WEST OF KARAKALPAKISTAN

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ABSTRACT

The Ustyurt Plateau in north western Uzbekistan fauna of the family Pentotomidae is summarized in this paper. In total, 11 genus and subgenus, and 18 species are listed from Uzbekistan (Karakalpakistan).

KEY WORDS: *Fauna, Heteroptera, True bugs, Cimicomorpha, Pentotomidae, new species, new records, Uzbekistan, Karakalpakistan, Palearctic Region.*

INTRODUCTION

With more than 40,000 described species, Heteroptera or true bugs, are part of the most successful radiation of nonholometabolous insects (Weirauch & Schuh 2011). Heteroptera include 9365 species belonging to 1632 genera in the Palearctic Region (Aukema et al. 2013). Species are usually trophically specialized, phytophagous, zoophagous, or mycophagous (Schuh & Slater 1995). As a consequence of their often specialised feeding habits, many species are economically important as crop pests, biological control agents of phytophagous insect pests (Schaefer & Panizzi 2000), or vectors of diseases (Schofield & Dolling 1993; Schaefer 2000; Garcia et al. 2000). Some bugs constitute an important protein source in human diet (Fritsche & Gitsaga 2000).

The Pentatomomorpha comprise more than 14,000 species in 5 or 6 superfamilies (the Aradoidea, Coreoidea, Idiostoloidea, Lygaeoidea, Pentatomoidea, and Pyrrhocoroidea) and 40 families (Schuh & Slater 1995; Grazia et al. 2008; Weirauch & Schuh 2011). The Pentatomoidea is one of the most species-rich groups of terrestrial Heteroptera with 15 families, nearly 1250 genera and approximately 7200 species (Henry 2009) worldwide. The size varies from 2 mm to more than 30 mm. The ground color is very variable ranging from unicolorous

(brown to green) in species living on the ground or vegetation, respectively to bright colored (and often aposematic) species living on vegetation. Often the integument is matte (not shiny) but it also can be metallic shining (Scutelleridae) in some species. The pilosity varies according the group. The head is directed forwards, rarely somewhat downwards (Cydnidae and

some species in the other families). Antennae are usually 5-segmented (hence, the 'penta' in the name of the superfamily) but it may only be 4-segmented in some Dinidoridae and a few Pentatomidae, and in some exotic Pentatomidae and Scutelleridae it may even be 3-segmented. The rostrum is 4-segmented and slender in plant feeding groups but in Asopinae (predators) the rostrum, especially the first segment, is remarkably stout. The pronotum is usually trapezoid with the lateral margins variously formed (dentate, blade shape, reflexed or bent). Always visible, the scutellum is usually triangular but sometimes it is enlarged and covers a great part (Thyreocoridae, Pentatomidae: Podopinae) or entirely (Plataspididae, Scutelleridae, and the neotropical families Canopidae and Megarididae) the hemelytra. The ostioles (i.e. external openings) of the metathoracic scent glands are situated more or less laterally arising between the middle and hind legs; they are usually accompanied by a peritreme of variable (often useful at tribal or generic state) shape, and the evaporatorium is usually large, covering large portions of meta- and mesopleuron, in Plataspididae also on propleuron (Kment & Vilímová 2010 a.).

The Ustyurt Plateau is an elevated area in the central part of the Turan Lowland. It is bordered by cliffs on almost all sides. The cliff from the east is formed by the former western shore of the Aral Sea. The plateau falls to the Kunya Dar'insk ancient alluvial plain and the Uzboi River Valley in the south, to the Karynyaryk Depression and the Northern Caspian Karakumy Sands in the west, and to the Caspian Sea Lowland in the North. According to the geographical zoning of Kazakhstan and Middle Asia (in the desert region), the Ustyurt Plateau was assigned to the western– northern Turan



subprovince of the northern Turan province by E.I. Rachkovskaya (2003) and others. The total solar radiation in the northern Turan desert is 130–140 kcal/cm² per year, and the radiation balance is 45–50 kcal/cm² per year. The total of temperatures above 100°C is 3600°C. The mean temperature is 10°C for January and 26–29°C for July. The growing period lasts 200–210 days (240–270 days in the southern Turan desert). The precipitation regime is similar to the Mediterranean type. The total precipitation is 100–150 mm per year. The snow cover in the northern part of the plateau is more stable (Rachkovskaya, 2003). The water and temperature regimes are characterized by the dryness index (2.5–6.0).

MATERIAL AND METHODS

Studies on the fauna of true bugs have been carried out in AskhaMazar, Sarykamysh, Asakeaudan, Karabaur, Kartbaikum, Lysaya, Zharynkuduk, Churuk, Beleuli, Baiterek, Almambet, Aktumsuk, Kasarma, and Kyrkkyz natural areas of Ustyurt plateau (Fig. 1). Samplings were done by using a 45-cm diameter sweep-net, taking 25 (back-forth) sweep samples per site, in 2019–2020 years. Most of the material was collected using light traps. Sampling took place between 10 AM to 4 PM to allow warming so that insects may move onto the surface of plants. All samples were done by the same person, usually a straight line transect across the sample site. Samples were immediately placed into (0.5 L) plastic cups containing 96% ethyl alcohol and returned to the lab for evaluation. Adults and nymphs of Heteroptera species were sorted out from plants materials.

The collected materials were also processed in the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan and compared with the existing collection of bugs in the institute.

RESULTS

A total of 18 species of Heteroptera classified in 11 genus are known from Uzbekistan. The list of species with distribution and host data are given below.

Family Pentatomidae Leach, 1815

Subfamily Pentatominae Leach, 1815

Tribe Aelini Douglas & Scott, 1865

Genus *Aelia* Fabricius, 1803

Aelia acuminata Linnaeus, 1758

Material – Sarykamysh, 2♂, 42°14'58.65" N, 57°03'11.30" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957),

Kharezmi region (Ganjaeva, 2020.), Karakalpakstan (Kulumbetova, 1999).

General distribution and hosts. Euro-Siberian. On barley (Farahbakhsh 1961; Modarres Awal 1997b), wild Poaceae (Farahbakhsh 1961; Modarres Awal 1996a, 1997b; Linnavuori 2008; Mehneh et al. 2010; Nateq Golestan et al. 2011), *Triticum* sp. (Poaceae) (Farahbakhsh 1961; Modarres Awal 1996a, 1997b; Khanjani 2006), *Medicago sativa* (Fabaceae) (Khalilzadeh et al. 2007).

Aelia furcula Fieber, 1868

Material – Kasarma, 2♀, 1♂, 44°35'48.66" N, 58°02'33.62".

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution and hosts. Ponto-Mediterranean and Central Asia: Greece, Turkey, European Russia, Ukraine, Afghanistan, Armenia, Azerbaijan, Tadjikistan, Turkmenistan, Uzbekistan (Derjanschi & Péricart 2005); *Cyprus* (P. Moulet, unpublished data). *Hordeum spontaneum* (all Poaceae), *Helichrysum oligocephalum* (Asteraceae) (Modarres Awal 1997b).

Aelia melanota Fieber, 1868

Material – Kasarma, 2♀, 3♂, 44°35'48.66" N.

General distribution and hosts. Afghanistan (Hoberlandt 1984), and Caucasian Region and Central Asia including, Armenia, Azerbaijan, Georgia, Iran, Kazakhstan, Kirgizia, Tadjikistan, Uzbekistan. On *Triticum* sp. (Poaceae) (Modarres Awal 1996a, 1997a, b; Khanjani 2006).

Tribe Nezarini Atkinson, 1888

Genus *Brachynema* Mulsant & Rey, 1852

Brachynema germari Kalenati, 1846

Material – Kyrkkyz, 1♀, 43°28'21.86" N, 58°08'07.02".

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Ganjaeva, 2020.).

General distribution and hosts. Western Mediterranean Europe, North Africa (Canary Archipelago), Near East, Central Asia extending to Mongolia, China, Pakistan. On wild Poaceae (Modarres Awal 1996a).

Tribe Carpocorini Mulsant & Rey, 1858

Genus *Carpocoris* Kolenati, 1846

Carpocoris (Carpocoris) fuscispinus Boheman, 1849

Material – Askha - Mazar, 2♂, 42°43'21.16" N, 57°54'18.11" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957).



General distribution and hosts. Afghanistan (Hoberlandt 1984), and Caucasian Region and Central Asia including, Armenia, Azerbaijan, Georgia, Iran, Kazakhstan, Kirgizia, Tadjikistan, Uzbekistan. Asteraceae, Apiaceae (Linnavuori 2008), dill and licorice (Khaghaninia et al. 2010b), *Cirsium sp.*, *Triticum aestivum* (Poaceae) (Nateq Golestan et al. 2011), in alfalfa field (Farshbaf Pour-Abad 2000; Khalilzadeh 2008)

***Carpocoris (Carpocoris) pudicus* Poda, 1761**

Material – Sarykamys, 2♂, 42°14'58.65" N, 57°03'11.30" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957).

General distribution and hosts. Afghanistan (Hoberlandt 1984), and Caucasian Region and Central Asia. On *Triticum sp.* (Modarres Awal 1996a, 1997b).

Genus *Codophila* Mulsant & Rey, 1866

***Codophila varia* Fabricius, 1787**

Material – Lysaya, 1♂, 44°21'29.69" N, 56°26'39.20" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Ganjaeva, 2020).

General distribution and hosts. Europe (except Great Britain, Scandinavia), North Africa, Near East, Central Asia. On lucerne, sesame, other legumes and Elaeagnaceae family plants (Farahbakhsh 1961; Modarres Awal 1997b).

Genus *Dolycoris* Mulsant & Rey, 1866

***Dolycoris baccarum* (Linnaeus, 1758)**

Material – Kasarma, 1♀, 3♂, 45°24'15.87" N, 58°24'16.62" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957).

General distribution and hosts. Central Asia, Afghanistan, China (occidental regions), Iran, Kazakhstan (Asian part), Kirgizia, Tadjikistan, Turkmenistan. Poaceae, *Trifolium sp.* (Fabaceae), *Pistacia sp.* (Anacardiaceae), *Triticum sp.* (Poaceae), *Rumex sp.* (Polygonaceae) (Modarres Awal 1996a), barley, clover, broad bean, *Cirsium sp.* (Asteraceae), poplar (Modarres Awal 1997b).

***Dolycoris penicillatus* Horvath, 1904**

Material – Kasarma, 2♀, 3♂, 44°35'48.66" N, 58°02'33.62" E, 45°24'15.87" N, 58°24'16.62" E, Askha - Mazar, 2♂, 42°43'21.16" N, 57°54'18.11" E

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution and hosts. Central Asia, Afghanistan, China (occidental regions), Iran, Kazakhstan

(Asian part), Kirgizia, Tadjikistan, Turkmenistan. On Poaceae (Safavi 1959), barley, lucerne, lupine, tomato, sunflower, wheat (Farahbakhsh 1961; Modarres Awal 1997b), *Triticum sp.* (Poaceae) (Modarres Awal 1996b; Mehneh et al. 2010), wild Poaceae (Modarres Awal 1996a, 1997a)

Genus *Desertomenida* Kiritschenko, 1914

***Desertomenida albula* Kiritschenko, 1914**

Material – Askha - Mazar, 2♂, 42°43'21.16" N, 57°54'18.11" E

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution and hosts. Central Asia: Kazakhstan (Asian part), China (northwestern), Iran, Kirgizia, Tadjikistan, Turkmenistan, Uzbekistan. In saline steppes with *Atriplex halimus*, *Suaeda sp.* (both Amaranthaceae), *Cynodon dactylon* (Poaceae), *Tamarix sp.* (Tamaricaceae) (Linnavuori 2008).

Tribe Halyini Amyot & Serville, 1843

Genus *Apodiphus* Spinola, 1837

***Apodiphus integriceps* Horváth, 1888**

Material – Kasarma, 2♀, 3♂, 44°35'48.66" N, 58°02'33.62" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezmi region (Khamraev, 2003, Ganjaeva, 2020.), Karakalpakistan (Rulumbetova, 1999).

General distribution and hosts. Central Asia (Kazakhstan (Asian part), Iran, Kirgizia, Tadjikistan, Turkmenistan, Uzbekistan), Indian Peninsula (India, Pakistan), mentioned in Yemen not in Saudi Arabia. On *Rubus fruticosus* (Rosaceae), *Olea europea* (Oleaceae) (Farahbakhsh 1961; Modarres Awal 1997b).

Tribe Nezarini Atkinson, 1888

Genus *Brachynema* Mulsant & Rey, 1852

***Brachynema germarii* Kolenati, 1846**

Material – Sarykamys, 2♂, 42°14'58.65" N, 57°03'11.30" E, 45°24'15.87" N, 58°24'16.62" E, Lysaya, 1♂, 44°21'29.69" N, 56°26'39.20" E.

Distribution in Uzbekistan. Kyzylkum desert (Davletshina, 1960), Western Tien-Shan (Papov, 1957), Karakalpakistan (Rulumbetova, 1999), Kharezmi region (Ganjaeva, 2020).

General distribution and hosts. Western Mediterranean Europe, North Africa (Canary Archipelago), Near East, Central Asia extending to Mongolia, China, Pakistan. On wild Poaceae (Modarres Awal 1996a), wheat



(Modarres Awal 1996a, 1997b), bean caper, harmel, seidlitzia, saltwort, sugar-beet (Modarres Awal 1997b), *Ephedra major* (Ephedraceae), *Artemisia sp.* (Asteraceae), *Kochia sp.* (Chenopodiaceae).

Genus *Nezara* Amyot & Serville, 1843

***Nezara viridula* Linnaeus, 1758**

Material - Baiterek; 1♂, 45°16'15.87" N, 57°42'05.11" E.

E.

Distribution in Uzbekistan. Kyzylkum desert

(Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezsm region (Khamraev, 2003).

General distribution and hosts. Mediterranean basin,

Near East, Central and Far Eastern Asia (Japan), tropical and subtropical Africa and Asia, (Ferrari et al. 2010), it is also known from Argentina to the southern half of United States. *Salix sp.* (Salicaceae) near rice field (Miyamoto 1963).

Tribe Pentatomini Leach, 1815

Genus *Menaccarus* Amyot & Serville, 1843

Subgenus *Orocephalus* Mulsant & Rey, 1866

***Menaccarus (Orocephalus) deserticola* Jakovlev, 1900**

Material - Material – Kasarma, 2♀, 3♂, 44°35'48.66" N, 58°02'33.62" E, 45°24'15.87" N.

Distribution in Uzbekistan. Kyzylkum desert

(Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezsm region (Khamraev, 2003).

General distribution and hosts. European Russia, Iran,

Kazakhstan, Tadjikistan, Turkmenistan, Uzbekistan; mentioned doubtfully from Algeria by Derjanschi & Péricart (2005). Poaceae (*Festuca sp.*, *Elymus sp.*, *Calamagrostis sp.*, *Corynephorus sp.*) but also on *Artemisia sp.* (Asteraceae), *Thymus sp.* (Lamiaceae) or *Astragalus sp.* (Fabaceae) (Derjanschi & Péricart 2005).

Genus *Eurydema* Laporte, 1833

Subgenus *Eurydema* Laporte, 1833

***Eurydema (Eurydema) oleracea* Linnaeus, 1758**

Material - Karabaur; 2♀, 1♂, 42°54'59.81" N, 56°27'14.39" E, Kasarma, 1♂, 44°35'48.66" N, 58°02'33.62" E.

Distribution in Uzbekistan. Kyzylkum desert

(Давлетшина, 1960), Kharezsm region (Khamraev, 2003).

General distribution and hosts. European Russia, Iran,

Kazakhstan, Tadjikistan, Turkmenistan, Uzbekistan; mentioned doubtfully from Algeria by Derjanschi & Péricart (2005). On *Sinapis sp.* (Nateq Golestan et al. 2010a).

***Eurydema (Eurydema) ornata* Linnaeus, 1758**

Material –Baiterek; 1♂, 45°16'15.87" N, 57°42'05.11" E, 45°13'33.30" N, 57°50'04.65" E.

Distribution in Uzbekistan. Kyzylkum desert

(Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezsm region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution and hosts. Palearctic though not

in Scandinavia, Korea, or Japan. On cabbage (Farahbakhsh 1961; Modarres Awal 1997b; Askari et al. 2009; Hassanzadeh et al. 2009a).

Subgenus *Rubrodorsalium* Stichel, 1944

***Eurydem (Rubrodorsalium) maracandica* Oshanin, 1871**

Material – Kyrkkyz, 2♀, 3♂, 43°28'21.86" N, 58°08'07.02" E.

Distribution in Uzbekistan. Kyzylkum desert

(Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezsm region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution. Widely distributed in Asia:

Azerbaijan, Asian Kazakhstan, Iran, Turkmenistan, Tadjikistan, Mongolia, China.

***Eurydema (Rubrodorsalium) ventralis* Kolenati, 1846**

Material – Kasarma, 2♀, 3♂, 44°35'48.66" N, 58°02'33.62" E, 45°24'15.87" N, 58°24'16.62" E, Askha - Mazar, 2♂, 42°43'21.16" N, 57°54'18.11" E.

Distribution in Uzbekistan. Kyzylkum desert

(Davletshina, 1960), Western Tien-Shan (Papov, 1957), Kharezsm region (Khamraev, 2003, Ganjaeva, 2020.).

General distribution and hosts. Euro-Siberian but not

in Great Britain, Scandinavia and North Africa. On colza, mustard, raddish, turnip (Modarres Awal 1997b), *lucerne* (Modarres Awal 1997b; Modarres Awal 2008), cabbage (Modarres Awal 1997b; Hassanzadeh et al. 2009a).

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