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RESEARCH ARTICLE

# The semiaquatic bugs (Heteroptera: Gerromorpha) of Uzbekistan

Natalya I. Lebedeva[1], Elena V. Kanyukova[2], Dilshod M. Musaev[1], Gulnara S. Mirzayeva[1], Maftuna N. Valieva[1], Bakhtiyor R. Kholmatov[1]

**1** *Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan, 232b Bogishamol Str., Tashkent 100053, Uzbekistan*
**2** *Zoological Museum of Far Eastern Federal University, Vladivostok, Russia*

Corresponding author: Natalya I. Lebedeva (n_lebedeva60@mail.ru)

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**Abstract**

The updated list of semi-aquatic hemipteran insects (Heteroptera) of the Gerromorpha infraorder is provided for the first time for the fauna of Uzbekistan, based on collections studied and literature sources. The insects were collected from 2021 to 2023. As a result, 18 species of water striders with two subspecies belonging to 9 genera, 5 families were identified. *Microvelia* (*Microvelia*) *reticulata* (Burmeister, 1835) is recorded for the first time for the fauna of Uzbekistan. The erroneous species records from some areas of the republic have been corrected.

**Keywords**

Fauna, Heteroptera, Gerromorpha, Uzbekistan

## Introduction

The species of Nepomorpha and Gerromorpha infraorders are aquatic inhabitants that live most of their life cycle in water. As opposed to Nepomorpha living in the water column, Gerromorpha inhabited the surface of the water and shore zone.

Imago leaves water bodies only to fly to new habitats or for the overwintering. Representatives of all families of the infraorder are predators, natural enemies of dipterans (Culicidae, etc.), the major components of the gnats. More than 2100 species of Gerromorpha from 8 families are known in the world's fauna (Henry 2009).

The aquatic insect fauna of Uzbekistan has not been sufficiently studied, and aquatic and semi-aquatic bugs have only been recorded in a few publications (Insects of Uzbekistan 1993; VI National Report 2018; Mirzaeva et al. 2021). The following authors have recorded semi-aquatic bugs from some territories of the country: R.A. Alimjanov and Ts.G. Bronstein (1956) – Zaravshan Valley; Yu.A. Popov (1966) and E.J. Shukurov et al. (2005) – Western Tien Shan mountains; N.I. Lebedeva et al. (2022) – southwestern, central, northeastern, southern and eastern regions. Aquatic and semi-aquatic bugs were recorded from the protected areas of the Gissar Reserve by A.V.-A. Kreitzberg (2004); Chatkal State Biosphere Reserve by Y.S. Lynov et al. (1993), E.V. Vashetko & S.O. Chebotarev (2007); Nuratinsky Reserve by D.B. Daminova (2011); Ugam-Chatkal State Natural National Park, Kitab Geological National Park and Surkhan State Mountain Forest Reserve – by N.I. Lebedeva et al. (2022).

Some data from Uzbekistan was published in taxonomic reviews (Tamanini 1958, Kanyukova 1973, 1979, 1982, 1997, 2006).

The purpose of this work is to review of the species composition of the semi-aquatic hemipteran insects (Heteroptera: Gerromorpha) of Uzbekistan and to study their biodiversity in the study area.

## Materials and methods

Semi-aquatic bugs were collected using a net from the surface of water bodies and from the surface of aquatic plants during the period from February to September 2021-2023. The following regions of the republic were covered by sampling: south-western (Khorezm region), central (Jizzakh region), north-eastern (Tashkent city, Tashkent region), southern (Kashkadarya, Surkhandarya regions) and eastern (Namangan, Fergana and Andijan regions), with the special attention to protected natural areas: Kitab Geological National Park, Surkhan State Mountain Forest Reserve and Ugam-Chatkal State Natural National Park (Fig. 1).

Besides the material collected, there are listed the material of the Zoological Institute of the Russian Academy of Sciences (St.-Petersburg, Russia) from the territory of Uzbekistan, identified by the second author.

Material collected by N.I. Lebedeva in 2021–2023, is deposited in the funds of the Entomological Collection of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan, Tashkent.

The species was identified using several identification keys (Kiritsheko 1951; Kershner, Jaczewski 1964; Kanyukova 1973, 1979, 1982, 2006; Shapovalov et al. 2017).

As a result, an annotated list of Gerromorpha of Uzbekistan is provided.

The following abbreviations are used: IZ of AoS of RUz – Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan, ZIN – Zoological Institute of the Russian Academy of Sciences.

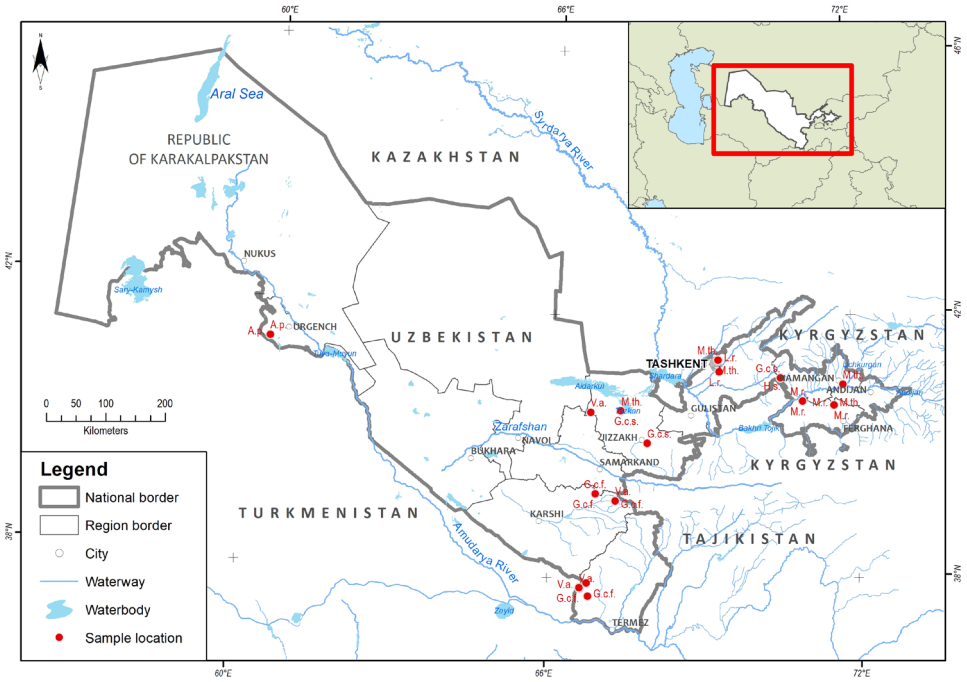


**Figure 1.** Sampling sites of the species: M.t. – *Mesovelia thermalis*; H.s. – *Hydrometra stagnorum*; M.r. – *Microvelia reticulata*; V.a. – *Velia affinis*; A.p. – *Aquarius paludum*; G.c.f. – *Gerris costae fieberi*; G.c.s. – *Gerris costae sahlbergi*; L.r. – *Limnoporus rufoscutellatus*.

## Result

### Infraorder GERROMORPHA Popov, 1971

### Family MESOVELIIDAE Douglas & Scott, 1867

### Genus *Mesovelia* Mulsant & Rey, 1852

### *Mesovelia furcata* Mulsant & Rey, 1852

**Literature records.** Khorezm region: Urgench (Kanyukova 1979).

**Distribution.** Trans-Eurasian species. In Uzbekistan it is reported from the plains of the southwestern region (Kanyukova 1979; Andersen 1995a; Aukema et al. 2013).

**Note.** The records from Tashkent city and Namangan region (Lebedeva et al. 2022) are erroneous, the material refers to *M. thermalis*.

**Habitats.** Stagnant water bodies overgrown with duckweed and other floating vegetation.

### *Mesovelia thermalis* Horváth, 1915

**Literature records.** Khorezm (Khiva, Urgench), Samarkand (Chupan-ata), Syrdarya (Syrdarya), Surkhandarya (Termez), Fergana (Fergana, Minbulak) and Namangan (Rawat) regions (Kanyukova 1979). Western Tien Shan (Ugam Chatkal National park) (Shukurov et al. 2005); Tashkent city (Lebedeva et al. 2023b).

**Material.** Collection of IoZ AoS RUz: **Jizzakh region:** Farish district, Tuzkan lake (40°33'9.04" N, 67°23'2.65" E, 234±21 m above sea level (a.s.l.), at the water t = 18oC), 27 Apr. 2023, (N.I. Lebedeva), 1 ♀♀; **Tashkent:** Yunusabad District, lake on the territory of the Botanical Garden named after academician F.N. Rusanov (41°20'41.5" N, 69°18'57.56" E, 480 m a.s.l., at the water t = 18°C), 16 Jun. 2021, (N.I. Lebedeva), 9 exs. (7 nymphae, 2 exuvia); (41°20'40.96" N, 69°18'53.82" E, 483 m a.s.l., at the water t = 18°C), 22 Sep. 2021, (N.I. Lebedeva), 2 exs. (nymphae); (41°20'40.96" N, 69°18'53.82" E), 06 Jun. 2023, (M.N. Valieva), 2 exs. (1 ♀♀, 1 nympha); (41°20'29.54" N, 69°18'43.88" E, 476±22 m a.s.l., at the water t = 25°C), 21 Aug. 2023, (N.I. Lebedeva), 152 exs. (36 ♀♀, 1 macropterous ♀♀, 20 ♂♂, 95 nymphae); **Namangan region:** Naryn District, a hole in the floodplain of the river (40°56'22.31" N, 71°48'30.06" E, 415±17 m a.s.l., at the water t = 18–20°C), 27 Jun. 2021, (N.I. Lebedeva), 2 exs. (nymphae); **Fergana region:** Altynkulsky District, rice checks near the highway (40°37'49.84" N, 71°37'3.36" E, 409 ±12 m a.s.l., at the water t = 38°C); 28 Jun. 2021, (N.I. Lebedeva), 4 exs. (nymphae).

**Distribution.** Trans-Eurasian species. In Uzbekistan, the species occurs in the floodplains of the Amudarya and Syrdarya rivers, in the west it reaches Khiva, in the north – Samarkand and Jizzakh, in the northeast – to Tashkent, in the east – to Namangan (Kanyukova 1979, 2006; Andersen 1995a; Aukema et al. 2013; Lebedeva et al. 2023b).

**Notes.** In Uzbekistan, it is more common than the previous species. The specimens from Urgench, Samarkand, Termez and Namangan were mistakenly listed under the name *M. furcata* (Kiritshenko 1964; Lebedeva et al. 2022).

**Habitats.** From April to September on the plain territory (234–483 m a.s.l.) of the central, north-eastern and eastern regions of the republic. Usually on the above-water part of plants in lakes, ponds in the river floodplain, and rice checks with stagnant water and temperature of 18–38oC. Sometimes it collected sintopically with previous species.

**Family HEBRIDAE Amyot & Serville, 1843**

**Genus *Hebrus* Curtis, 1833**

**Subgenus *Hebrus* Curtis, 1833**

***Hebrus* (*Hebrus*) *kiritshenkoi* Kanyukova, 1997**

**Literature records.** Bukhara (Bukhara), Kashkadarya (Kitab) and Surkhandarya (Shirabad, Laylakan) regions (Kanyukova 1997).

**Distribution.** Central Asian species; reported from Uzbekistan, Afghanistan and Tajikistan (Kanyukova 1997, 2006; Kment, Kanyukova 2010). In Uzbekistan recorded from the plains of the central and southern regions.

**Note.** A.N. Kiritshenko (1964) mentioned it as *H. pusillus* (Fallén, 1807) and *H. montanus* Kolenati, 1857.

**Habitats.** A.N. Kiritshenko (1964) collected this species on the pebbly, bare banks of the Kafirnigan River (Tajikistan-Uzbekistan bourder) from February 19 to October 21.

***Hebrus* (*Hebrus*) *oxianus* Kanyukova, 1997**

**Literature records.** Tashkent city (Chirchik river) and Samarcand region (Zeravshan river) (Kanyukova 1997); Uzbekistan (Mirzayeva et al. 2021).

**Distribution.** Central Asian species; reported from Iran, Turkmenistan, Afghanistan, Tajikistan (Kanyukova 1997, 2006; Kment, Kanyukova 2010; Ghahari et al. 2013). In Uzbekistan recorded from the northeastern and southern regions (Kanyukova 1997; Mirzayeva et al. 2021).

**Habitats.** All records in Turkmenistan, Uzbekistan, and Tajikistan are from Amu Darya River basin.

***Hebrus* (*Hebrus*) *pilipes* Kanyukova, 1997**

**Literature records.** Namangan (Namangan) and Fergana (Fergana, Minbulak) regions (Kanyukova 1997).

**Distribution.** Central Palearctic species. In Uzbekistan in the east (Kanyukova 1997; Kment, Kanyukova 2010; Ghahari et al. 2013; Kanyukova et al. 2016).

**Habitats.** A.N. Kiritshenko (1964) cited this species as *H. pusillus* and *H. montanus*, from the bank of the Karatag creek. It was collected in Uzbekistan between May 17 and June 22, in Tajikistan from January 19 to August 29, in Turkmenistan – between October 19 and 30 (Kanyukova 1997).

***Hebrus* (*Hebrus*) *pusillus pusillus* (Fallén, 1807)**

Not known from Uzbekistan, replaced by other species.

**Distribution.** Trans-Palearctic species (Andersen 1995a; Kanyukova 1997; Aukema et al. 2013).

**Note.** The records of *H. pusillus* from Fergana region: Noviy Margilan (Kiritshenko 1915) and the Karzhantau Range, Western Tien Shan, on the border between Uzbekistan and Kazakhstan (Popov 1966) relates to one of the species listed above. Moreover, all early records of this species from the Crimea, Caucasus and Central Asia (Kiritshenko 1951, 1964, etc.) are erroneous.

**Subgenus *Hebrusella* Poisson, 1944**

***Hebrus* (*Hebrusella*) *ruficeps* Thomson, 1871**

**Literature records.** Fergana region (Noviy Margilan and Fergana city) (Kiritshenko 1911, 1915; Kanyukova 1997).

**Distribution.** Trans-Eurasian species. In Uzbekistan in the plain part of the east of the country (Kiritshenko 1911, 1915; Andersen 1995a; Kanyukova 1997; Aukema et al. 2013).

**Habitats.** It was collected in Noviy Margilan on 17 May 1908. Usually in peat or sphagnum bogs, or occurs on the outskirts of bogs (Jordan 1952). A.N. Kiritshenko (1915) observed specimens on the "stream drifts". E.V. Kanyukova collected this species in the south of the Russian Far East by netting from water in a small shady pond near the shore (Kanyukova 2006). In Chuvashia (Russia) it was collected in a floodplain sedge swamp (Egorov et al. 2023, and personal report). In the southern regions of Central Asia, species probably prefer other conditions.

**Family HYDROMETRIDAE Billberg, 1820**

**Genus *Hydrometra* Latreille, 1796**

***Hydrometra stagnorum* (Linnaeus, 1758)**
=*Hydrometra eremobia* Kiritshenko, 1925

**Literature records.** Samarkand (Samarkand, Aman-Kutan, Agalyk-noion), Jizzakh (Jizzakh), Tashkent (the mountain system of the Western Tien Shan, Karzhantau, Chatkal), Kashkadarya (Guzar), Surkhandarya (Termez, Laylakan) and Fergana (Fergana) regions (Kiritshenko 1925; Popov 1966; Kanyukova 1973). Samarkand region (Alimzhanov, Bronstein 1956).

**Material.** Collection of IoZ, AoS of RUz: **Namangan region:** Pap District, Rezak village, mountain river (sai) (41°03'38.84" N, 70°33'40.85" E, 2039 m a.s.l., at the water t = 13oC), 17 Jun. 2023, (M.N. Valieva), 1 exs. (♂♂).

**Distribution.** Central Palearctic species. In Uzbekistan widespread in the center, south and east (Kiritshenko 1925; Alimzhanov, Bronstein 1956; Popov 1966; Kanyukova 1973; Andersen 1995a; Aukema et al. 2013).

**Notes.** *H. eremobia* Kiritshenko, 1925 is a light form of *H. stagnorum*, known Western and Central Asia. The Hydrometra sp. from the Hissar Nature Reserve (Kreutzberg 2004) probably refers to the same form of the species. In the Zaravshan Valley it is mentioned (Alimzhanov, Bronstein 1956) under two synonymous names – *H. stagnorum* and *H. eremobia*.

**Habitats.** Collected from the surface vegetation of the mountain river in the east of the republic, predominantly among thickets on the banks of water bodies, overlooks on the coastal strip of aquatic plants and on the calm surface of the water. D.B. Childibaev et al (1985) indicate that bugs can prey on mosquitoes during the fledging of insects from pupae and also suck the pupae directly (Childibaev, Akhmetbekova 1986).

**Family VELIIDAE Brullé, 1836**

**Subfamily Microveliinae China et Usinger, 1949 (1860)**

**Genus *Microvelia* Westwood, 1834**

**Subgenus *Microvelia* Westwood, 1834**

***Microvelia* (*Microvelia*) *buenoi* Drake, 1920**
=*Microvelia umbricola* Wroblewski, 1938: 213.

**Literature records.** Namangan (Namangan) and Ferhana (Min-Bulak - Syr-Darya, Fergana) regions (Kanyukova 2006); Uzbekistan (Mirzayeva et al. 2021).

**Distribution.** Holarctic species. In Uzbekistan, it is reported in the east (Andersen 1995a; Kanyukova 2006; Aukema et al. 2013).

**Notes.** Species is geographically variable; apterous individuals with yellow heads, abdominal rims, and legs are presented in material from Uzbekistan and Tajikistan. Sometimes the entire ventral side of the body or most part of the abdomen is yellow. A.N. Kiritshenko (1964) named a series of specimens from Uzbekistan and Tajikistan with similar coloration as *M. incomperta* (nomen nudum). Re-investigation of Kiritshenko material by Kanyukova (2006) established that this is a mixture of *M.* (*P.*) *pygmaea*, *M.* (*M.*) *reticulata* and *M.* (*M.*) *buenoi*. The latter two species are distinguished from *M.* (*P.*) *pygmaea* by a short pronotum and a wide abdomen (Kanyukova 2006).

**Habitats.** The surface of water and shore vegetation in slowly running water bodies. D.B. Childibaev and R.T. Akhmetbekova (1986) indicate that specimens can attack pupae and imagoes of mosquitoes from the genus *Culex* (Culicidae).

### *Microvelia* (*Microvelia*) *reticulata* (Burmeister, 1835)

**Literature records.** Uzbekistan (Mirzayeva et al. 2021). Namangan and Fergana regions (Lebedeva et al. 2022, 2023a).

**Material.** The collection of the IZ, AoS of RUz: **Namangan region:** Naryn District, a pit in the floodplain swamp (40°56'22.31" N, 71°48'30.06" E, 415±17 m a.s.l., at the water t = 18°C), 27 Jun. 2021, (N.I. Lebedeva), 2 exs. (1 ♀♀, 1 ♂♂); Pap District, near the Navbakhor village, rice checks near the highway (40°42'2.05" N, 70°59'29.51" E, 368±18 m a.s.l., at the water t = 40°C), 28 Jun. 2021, (N.I. Lebedeva), 37 exs. (24 ♀♀, 13 ♂♂); **Fergana region:** Altynkul District, rice checks near the highway (40°37'49.84" N71°37'3.36" E, 409±12 m a.s.l., at the water t = 38°C), 28 Jun. 2021, (N.I. Lebedeva), 9 exs. (2 ♀♀, 3 ♂♂, 4 nymphae).

**Distribution.** Trans-Eurasian species. In Uzbekistan in the flat part in the east (Andersen 1995a; Aukema et al. 2013; Mirzayeva et al. 2021; Lebedeva et al. 2022, 2023a).

**Habitats.** Collected in June in a pit in the floodplain at the water temperature of 18°C and in rice checks with the standing water at 38–40°C (Fig. 2). It prevails in numbers over other species of the genus *Microvelia*.

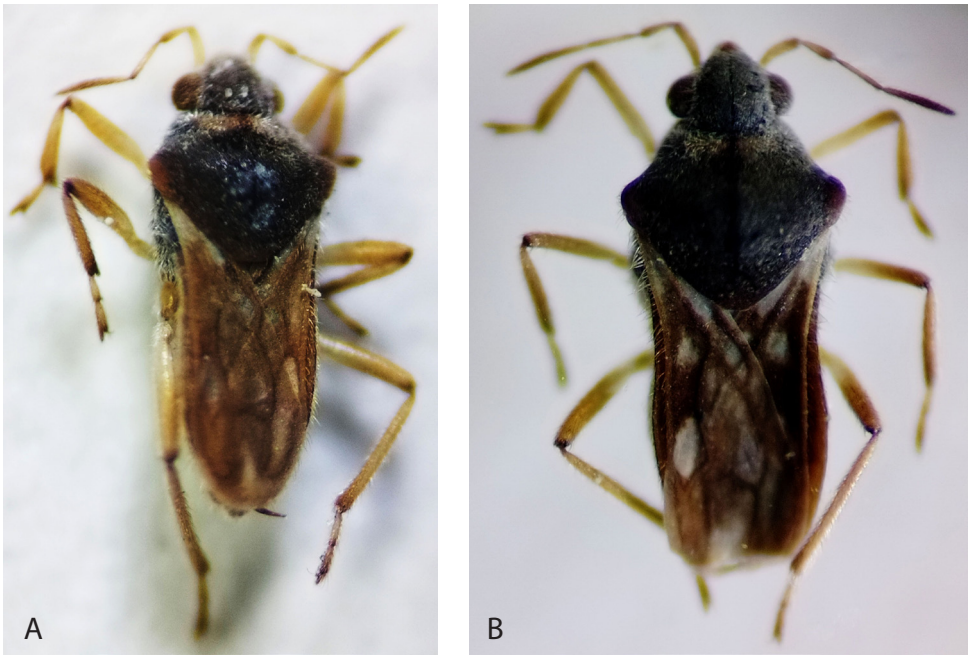


**Figure 2.** *Microvelia* (*Microvelia*) *reticulata* (Burmeister, 1835): A – macropterous male, B – macropterous female (photo by N.I. Lebedeva).

**Subgenus *Picaultia* Distant, 1913**

***Microvelia* (*Picaultia*) *pygmaea* (Dufour, 1833)**

**Literature records.** Khorezm (Dargan ata, Khiva), Bukhara (Farab, Karatag), Samarkand (Chupan ata), Syrdarya (Hungry Steppe station (Khavast)), Tashkent (Tashkent), Surkhandarya (Termez), Fergana (Fergana), Andijan (Andijan) regions, Fergana Ridge (Oshanin 1908; Kiritshenko 1964; Popov 1966).

**Distribution.** Central Palearctic species. In Uzbekistan in flat terrains of the western, central, southern, and eastern regions (Oshanin 1908; Kiritshenko 1964; Popov 1966; Andersen 1995a; Aukema et al. 2013).

**Habitats.** Stagnant reservoirs, rice fields and small floodplain water bodies of Asian rivers (Kiritshenko 1964), macropterous forms collected into the light. A.N. Kiritshenko (1964) suggested that uncountable numbers of these predatory bugs are of considerable importance in the sanitation of rice fields.

**Subfamily Veliinae Brullé, 1836**

**Genus *Velia* Latreille, 1804**

**Subgenus *Plesiovelia* Tamanini, 1955**

***Velia* (*Plesiovelia*) *affinis affinis* Kolenati, 1857**

**Literature records.** South of Samarkand (Aman-kutan) (Tamanini 1958; Kerzhner, Jaczewski, 1964). Kashkadarya and Surkhandarya regions (Lebedeva et al. 2022).

**Material.** Collection of IZ, AoS of RUz: **Jizzakh region:** Farishsky District, Nuratinsky State Reserve, Khayet village, bio-station, Hayatsai (40°31'38.5" N, 66°46'37.81" E, 944 m a.s.l., at the water t = 10°C), 2 Apr. 2023, (N.I. Lebedeva), 32 exs. (1 ♀♀, 31 nymphae); **Kashkadarya region:** Kitab district, Kitab Geological National Park, the mountainside spring in a narrow gorge (39°11'32.14" N, 67°17'34.01" E, 1290±4 m a.s.l., at the water t = 14°C), 27 Apr. 2021, (N.I. Lebedeva), 1 ♀♀; **Surkhandarya region:** Sherabad District, Surkhan State Mountain Forest Reserve: mountain river in a narrow gorge (37°51'30.42" N, 66°38'4.24" E, 1676±135 m a.s.l., at the water t = 13oC), 18 exs. (1 ♀♀, 17 nymphae); lagoon of the river (37°50'51.07" N, 66°38'34.08" E, 1560±47 m a.s.l., at the water t = 12°C), 28 May 2022, (N.I. Lebedeva), 10 nymphae.

**Distribution.** Central Palearctic species. In Uzbekistan in the mountainous territories of the central and southern regions (Alimzhanov, Bronstein 1956; Tamanini 1958; Kerzhner, Jaczewski, 1964; Andersen 1995a; Kanyukova 2006; Aukema et al. 2013; Lebedeva et al. 2022).

**Notes.** Former published records on different Velia species collected in Uzbekistan probably refers to the same taxon, *V*. (*P*.) *a. affinis*: European *V*. (*P*.) *saulii*

Tamanini, 1947 and *Velia* sp. (Kreutzberg 2004) from the Hissar Reserve, as well as the Mediterranean *V.* (*Velia*) *rivulorum* (Fabricius, 1775) (Alimzhanov, Bronstein 1956) from the Zaravshan Valley. Due to color variations, identification based on habitus for the species of the genus is not reliable; they can be identified only by the structure of male genitalia.

**Habitats.** Collected in April-May on the water surface of the shaded mountain rivers (944–1676 m a.s.l.) at the water t = 10–14°C. Usually in cold springs, brooks, and rivers.

**Family GERRIDAE Leach, 1815**

**Subfamily Gerrinae Leach, 1815**

**Genus *Aquarius* Schellenberg, 1800**

***Aquarius paludum* (Fabricius, 1794)**

**Literature records.** The Republic of Karakalpakstan (Nukus and Turtkul Districts), Khorezm, Kashkadarya (Shakhrisabz), Bukhara (Bukhara) and Surkhandarya (Termez) regions (Kanyukova 1982). Khorezm (Khiva, Urgench, Koshkupyrsky District) (Lebedeva, Mirzayeva 2023). Tashkent (Lebedeva et al. 2023b).

**Material.** Collection of the IZ, AoS of RUz: **Khorezm region:** Khorezm District, hauz (dug square hole) on the cemetery territory of the Khiva village (41°24'17.5" N, 60°17'41.35" E, 105 m a.s.l., at the water t = 20–22oC), 05 Aug. 2022, (N.I. Lebedeva), 5 exs. (4 ♀♀, 1 nympha), 14 Sep. 2022, (N.I. Lebedeva), 43 exs. (14 ♀♀, 12 ♂♂, 17 nymphae); **Tashkent:** Yunusabad District, lake on the territory of the Botanical Garden named after academician F.N. Rusanov (41°20'29.54" N, 69°18'43.88 E, 476±22 m a.s.l., at the water t = 25°C), 21 Aug. 2023, (N.I. Lebedeva), 2 exs. (♂♂).

**Dispersal.** Trans-Eurasian species. In Uzbekistan in the flat territories of the western, central, northeastern and southern regions (Kanyukova 1982; Andersen 1995a; Aukema et al. 2013; Lebedeva, Mirzayeva 2023; Lebedeva et al. 2023b).

**Habitats.** Plain water bodies. Collected on the open water of shaded water bodies (hauz, lake) with the water temperature = 20–25°C.

**Genus *Gerris* Fabricius, 1794**

**Subgenus *Gerris* Fabricius, 1794**

***Gerris* (*Gerris*) *argentatus* (Schummel, 1832)**

**Literature records.** The Republic of Karakalpakstan (Chimbai, Nukus, Khojeyli, Kyzyl jar 18 km from Kungrad, Palvankuduk in Kyzylkum Desert), Khorezm (Urgench, Khiva), Bukhara (Old Bukhara), Samarkand (Kumak, Katta-ming), Tashkent (Chatkal Ridge), Surkhandarya (Termez), Namangan (Namangan) and Fergana

(Min-bulak, Fergana) regions (Kanyukova 1982). Uzbekistan (Insects of Uzbekistan 1993); Tashkent region: Chatkal State Biosphere Reserve (Vashetko, Chebotarev 2007).

**Distribution.** West-central Palearctic species. In Uzbekistan in the plain territories of the western, central and southern regions and the mountainous foothill territories of the northeastern and eastern regions (Kanyukova 1982; Insects of Uzbekistan 1993; Andersen 1995a; Vashetko, Chebotarev 2007; Aukema et al. 2013).

**Habitats.** Small plain and mountainous foothill water bodies.

### *Gerris* (*Gerris*) *costae* (Herrich-Schaeffer, 1850)

The species is geographically variable, divided into four subspecies: two in Western Europe – *G. costae costae* Herrich-Schaeffer, 1850 and *G. costae poissoni* Wagner and Zimmerman, 1955, as well as the Eastern European – *G. costae fieberi* Stichel, 1938 and the Central Palaearctic *G. costae sahlbergi* Distant, 1879. The boundaries of the ranges of the last two subspecies in the republics of Central Asia were established by Kanyukova (1982).

### *Gerris* (*Gerris*) *costae fieberi* Stichel, 1938

**Literature records.** Samarkand (Alimzhanov, Bronstein 1956); Bukhara (Bukhara, Sium, Karatag East Bukhara, Gorif village, Ulyan na Rue Dene), Samarkand (Aman-Kutan south of Samarkand and Urgut), Kashkadarya (Kzyltam) and Surkhandarya (Baysun) regions (Kanyukova 1982); Kashkadarya region (Kreutzberg 2004; Lebedeva et al. 2022). Uzbekistan (Insects of Uzbekistan 1993; Mirzayeva et al. 2021).

**Material.** Collection of IZ, AoS of RUz: **Kashkadarya region:** Kitab District, below Kitabsky pass, mountain dam on the river spring from the slope of a wide gorge (39°17'25.87" N, 66°54'9.61" E, 1615±7 m a.s.l., at the water t = 10°C), 26 Apr. 2021, (N.I. Lebedeva), 9 exs. (5 ♀♀, 4 ♂♂); (39°17'25.4" N, 66°54'9.9" E, 1584 m a.s.l., at the water t = 12°C), 2 May 2022, (N.I. Lebedeva), 3 exs. (♀♀); Kitab Geological National Park, mountain river spring from the slope of a narrow gorge (39°11'32.14" N, 67°17'34.01" E, 1290±4 m a.s.l., at the water t = 14°C), 27 Apr. 2021, (N.I. Lebedeva); 5 exs. (3 ♀♀, 2 ♂♂); a branch of the river at the slope of a narrow gorge (39°11'14.5" N, 67°17'36.71" E, 1361± 10 m a.s.l., at the water t = 14°C), 27 Apr. 2021, (N.I. Lebedeva), 5 exs. (3 ♀♀, 2 ♂♂); **Surkhandarya region:** Sherabad district, Surkhan State Mountain Forest Reserve, above the Khadak village, mountain sai spring from the slope of a narrow gorge (37°55'55.13" N, 66°46'6.28" E, 1438±4 m a.s.l., at the water t = 17°C), 01 May 2021, (N.I. Lebedeva), 1 exs. (♀♀); a pond for receiving artesian water coming from a pipe in the mountains on a plateau on the way to the reserve (37°43'52.43" N, 66°48'4.79" E, 853 m a.s.l., at the water t = 12oC), 27 May 2022, (N.I. Lebedeva), 13 exs. (4 ♀♀, 2 ♂♂, 7 nymphae); mountain sai in a narrow gorge (37°51'30.42" N, 66°38'4.24" E, 1676±135 m a.s.l., at the water t = 13°C), 28 May 2022, (N.I. Lebedeva), 1 exs. (♂♂).

**Distribution.** West-central Palearctic species. In Uzbekistan in the southwestern, central, and southern regions, to the east the range of the subspecies reaches the line Urgut (Samarkand region) – Kzyltam (Kashkadarya) – Baysun (Surkhandarya region). To the east, this subspecies is replaced by *G. costae sahlbergi* (Alimzhanov, Bronstein 1956; Kanyukova 1982; Andersen 1995a; Kreutzberg 2004; Aukema et al. 2013; Mirzayeva et al. 2021; Lebedeva et al. 2022). The range boundaries of the two subspecies are divided by a gap (interval) of about 100 km or more, no transitional forms were found (Kanyukova 1982).

**Notes.** It is the subspecies was listed as *G. costae* from the Zaravshan Valley (Alimzhanov, Bronstein 1956), the Gissar Reserve (Kreutzberg 2004), southern Uzbekistan (Mirzayeva et al., 2021); in the work of E.V. Kanyukova (1982) as *G. costae costae* Herrich-Schaeffer; in G.S. Mirzayeva et al. (2021) and N.I. Lebedeva et al. (2022) part of the material from the Kashkadarya region was listed as *G.* (*G.*) *lacustris* (Linnaeus, 1758); N.I. Lebedeva et al. (2022) – the material from the Surkhandarya region – as *G.* (*Gerriselloides*) *lateralis* (Schummel, 1832), and from Jizzakh Region as *G. costae fieberi* Stichel, 1938.

### *Gerris* (*Gerris*) *costae sahlbergi* Distant, 1879

**Literature records.** Tashkent (Sary-Agach station, Kurgan), Namangan (Kokand, Skobelev station, Fergana, Namichi to the east of Garma, Uch-Kurgan) and Fergana (alkaline-sandy steppe Northern Gavi, Kyzyl Unikur, Sergilek) regions (Kanyukova 1982); Jizzakh (Nuratinsky Reserve), Tashkent region (Ugam ridge of the Western Tien Shan, Chatkal State Biosphere Reserve) (Popov 1966; Lynov et al. 1993; Daminova 2011; Vashetko, Chebotarev 2007).

**Material.** Collection of IZ, AoS of RUz: **Jizzakh region:** Sharaf Rashidov District, hauz near the highway, plain (40°4'23.84" N, 67°54'12.28" E, 368±13 m a.s.l., at the water t = 18°C), 29 May 2022, (N.I. Lebedeva), 1 exs. (♀♀); Farishsky District, shallow excavation in a drying ditch between Lake Tuzkan and rocks, plain (40°33'34.42" N, 67°22'10.7" E, 245±15 m a.s.l., at the water t = 16°C), 28 Apr. 2023, (N.I. Lebedeva), 65 exs. (39 ♀♀, 23 ♂♂, 3 nymphae); **Namangan region:** Rezak village, mountain river (41°03'38.84" N, 70°33'40.85" E, 2039 m a.s.l.), 17 Jun. 2023, (M.N. Valieva), 3 exs. (2 ♀♀, 1 ♂♂).

**Distribution.** Central Palearctic species. In Uzbekistan, the range of *G. c. sahlbergi* extends to the east of Tashkent (Kanyukova 1982; Andersen 1995a; Aukema et al. 2013; Kanyukova et al. 2016).

**Notes.** Yu.A. Popov (1966) listed this subspecies as *G. costae*, N.I. Lebedeva et al. (2022) from Jizzakh region, Ugam Ridge as *G. costae fieberi* Stichel, 1938. N.M. Andersen (Andersen, Chen 1993; Andersen 1995a, 1995b, etc.) distinguished *G. sahlbergi* as an independent species. Later it was downgraded to subspecies level based on molecular studies (Damgaard 2006).

**Habitats.** Small running mountainous and stagnant plain water bodies. Collected it in April-June on the surface of water in clear mountain rivers (2039–853

m a.s.l.), ponds with the artesian water, and plain (368–245 m a.s.l.) pools with groundwater, and a hauz with stagnant, turbid, polluted with organic matter water with temperature = 10–18°C.

### *Gerris* (*Gerris*) *lacustris* (Linnaeus, 1758)

Not recorded from Uzbekistan. The southern boundary of the range of this species lies in southern (in the lower reaches of the Syr-Darya) and southeastern Kazakhstan (Kanyukova 1982). The records of these species from the mountainous territory of the Kashkadarya region (Mirzayeva et al. 2021; Lebedeva et al. 2022) are erroneous, the specimens belong to *G. costae fieberi* Stichel, 1938.

### *Gerris* (*Gerris*) *odontogaster* (Zetterstedt, 1828)

**Literature records.** There is a single record of this species from Karzhantau, a mountain range on the border of South Kazakhstan Oblast of Kazakhstan and Tashkent Oblast of Uzbekistan, part of the Western Tien Shan mountain system (Popov 1966).

**Distribution.** Trans-Eurasian species. In Uzbekistan in the mountainous foothill territories of the northeastern region (Popov 1966).

### *Gerris* (*Gerris*) *thoracicus* (Schummel, 1832)

**Literature records.** Khorezm (Urgench), Bukhara (Bukhara, Old Bukhara), Navoi (Kanimeh), Samarkand, Tashkent (Tashkent, Chimgan, Vrevskaya station (now Almazar station)), Surkhandarya (Termez, Laylakan), Syrdarya (Hungry Steppe station of Khodzhensky district) regions (Kanyukova 1982). Tashkent region (Chatkal and Ugam ranges of the Western Tien Shan, Chatkal State Biosphere Reserve) (Popov 1966; Vashetko, Chebotarev 2007).

**Distribution.** West-central Palearctic species. In Uzbekistan in the flat part from the west to the northeast and in the south, it is recorded in the mountains of the northeast (Popov 1966; Kanyukova 1982; Andersen 1995a; Vashetko, Chebotarev 2007; Aukema et al. 2013).

## Subgenus *Gerriselloides* Hungerford et Matsuda, 1958

### *Gerris* (*Gerriselloides*) *lateralis* Schummel, 1832

This northern species is not found in Uzbekistan. The records from the Republic of Karakalpakstan are erroneous, the specimens belong to *G.* (*G.*) *costae fieberi*, and the material found in the Jizzakh region belongs to *G.* (*G.*) *costae sahlbergi* (Lebedeva et al. 2022).

**Genus *Limnoporus* Stål, 1868**

***Limnoporus rufoscutellatus* (Latreille, 1807)**

**Literature records.** Samarkand region (Katta Kurgan, Agalyk mountain range) (Kanyukova 1982).

**Material.** Collection of IZ, AoS of RUz: **Tashkent:** Yunusabad District, lake on the territory of the Botanical Garden named after academician F.N. Rusanov (41°20'29.54" N, 69°18'43.88" E, at the water t = 25oC, 06 Jun. 2023, (M.N. Valieva), 3 exs. (nymphae); **Tashkent region:** Urtachirchik District, mahalla (Uzbek quarter) Mustakillik, collector RV5, water comes from the Karasu River (41o09'49.49"N 69o19'57.26"E, at the water t = 22oC), 28 Jun. 2023, (M.N. Valieva), 1 exs. (♂♂).

**Distribution.** Holarctic species. In Uzbekistan in the central and northeastern regions of the republic (Kanyukova 1982; Andersen 1995a; Aukema et al. 2013).

**Habitats.** Collected in June in shaded areas of an overgrown lake and among the shore vegetation of the reservoir (Tashkent city, Tashkent region).

**Subfamily Ptilomerinae Bianchi, 1896**

**Genus *Heterobates* Bianchi, 1896**

***Heterobates dohrandti* Bianchi, 1896**

**Literature records.** The Republic of Karakalpakstan: Nukus, Oxus River [= Amu Darya], type locality (Bianchi 1896), Turtkul (Kiritshenko 1952); Surkhandarya: Termez – Surkhan, Shirabad and Kattakurgan rivers and Katta-ming; Kara-chalak of the Amu Darya delta; Julek, Syrdarya Valley, Bukhara, Khatyrchi (Kiritshenko 1952); Samarkand: Zaravshan Valley (Alimzhanov, Bronstein 1956); Kashkadarya: Gissar Reserve (Kreutzberg 2004) regions; Amudarya, Syrdarya, Zeravshan, Surkhandarya rivers (Kanyukova 2006).

**Distribution.** Central Asian species. In Uzbekistan in the western, central and southern regions of the republic; large Asian rivers: Amudarya, Syrdarya, Zeravshan, Surkhandarya (Bianchi 1896; Kiritshenko 1952; Alimzhanov, Bronstein 1956; Kanyukova 1982; Andersen 1995a; Kreutzberg 2004; Kanyukova 2006; Aukema et al. 2013).

**Habitats.** Fast running rivers. It forms large flocks sliding against a very strong current (Kiritshenko 1952). The type material was collected 03–15 September 1874; the ZIN material is dated from May 28 to September 27 (Kiritshenko 1952).

## Conclusion

As a result of the study of semi-hard-winged insects of the Gerromorpha infraorder of Uzbekistan, taking into account literary and proprietary data, the composition of

semiaquatic bugs of the fauna of Uzbekistan was established. The Uzbekistan fauna of the infraorder cuurently includes 18 species with 2 subspecies, belonging to 9 genera of 5 families. One species is recorded for the fauna of Uzbekistan for the first time: *Microvelia* (*Microvelia*) *reticulata* (Burmeister, 1835). Three species are excluded from fauna: *Hebrus* (*Hebrus*) *pusillus pusillus* (Fallén, 1807), *Gerris* (*Gerris*) *lacustris* (Linnaeus, 1758) and *Gerris* (*Gerriselloides*) *lateralis* (Schummel, 1832).

Most of the species are characterised by a broad ranges. The trans-Eurasian range is characteristic for 6 species (33.3%), the Central Palaearctic for 4 species and one subspecies (27.8%), the West Central Palaearctic for 2 species and one subspecies (16.7%), the Holarctic for 2 species (11.1%). Only two species (11.1%) have a restricted range of a Central Asian type.

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