The genus *Prionocera* (Diptera: Tipulidae) in the fauna of the Caucasus
Род *Prionocera* (Diptera: Tipulidae) в фауне Кавказа

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Ключевые слова: Diptera, *Prionocera*, *Prionocera turcica*, *Prionocera subserricornis*, распространение, экология, Северо-Западный Кавказ, Центральное Закавказье.

Abstract. The genus *Prionocera* (Diptera: Tipulidae) and the species *Prionocera turcica* are registered in the North Caucasus for the first time. Patterns of the species distribution and ecology in the Caucasus are presented. *Prionocera subserricornis* is registered in the Transcaucasus (Armenia) for the first time.

Резюме. Впервые для Северного Кавказа отмечаются род *Prionocera* (Diptera: Tipulidae) и вид *Prionocera turcica*, для которого рассмотрены распространение и экология. Впервые для Закавказья (Армения) указан *Prionocera subserricornis*.

The genus *Prionocera* is represented in the world fauna by 21 species: 15 in the Palaearctic and 16 in the Nearctic. Eleven species of the genus are known from Russia [Brodo, 1987; Oosterbroek, 2014]. *Prionocera* is well represented in the arctic tundra subzone and in the tundra zone as a whole [Lantsov, 1984, 1997; Lantsov, Chernov, 1987; Brodo, 1987, 1990, 2012]. All species of this genus found in Russia occur in high-latitudes (tundra and forest-tundra communities). Seven species range in the North only and four have wider distributions and can be found also in boreal and mountain regions of Eurasia. *Prionocera turcica* (Fabricius, 1787) belongs to the latter group. Savchenko [1983] mistakenly cited it from Transcaucasia (Armenia), as indicated below. The genus *Prionocera* was unknown in the North Caucasus until the present time.

The standard practice of collecting specimens was used (netting). The typology of variants of altitudinal zonation in the Caucasus is given according to Sokolov and Tembotov [1989].

Prionocera turcica (Fabricius, 1787)

Material. 5♂ (1♂ in alcohol) and 2♀, "Russia: Arkhyz, Kizgich river valley [the North Caucasus], 1490 m a.s.l., N 43°33′227″ E41°16′998″, Dead Lake [= Sleeping Lake], 2.07.2012. V. Lantsov leg."; 1♂ and 1♀ in copula, 3.07.2012, same place; 1♂, 2♀, same place and date; 1♀, at light, same place and date.

Distribution and ecology. *P. turcica* is a widespread holarctic subarcto-alpine-boreal species. In the European part of Russia this species is common in Leningrad Region [Przhiboro, 1999, 2004] and in the centre of the region (Moscow and Voronezh Regions) [Savchenko, 1983; Pilipenko, 2009a]. In the Polar Ural *P. turcica* is an autumnal species, dominant in sedge-moss bogs (450–600 m a.s.l.) and very common in the mountain-tundra zone (650–950 m a.s.l.) [Malozemov, 1992]. In Asia the species is known from Tuva [Savchenko, Violovich, 1967; Lantsov, Saaya, 2006], where it occurs in boggy bottomland meadow with sedge shrub formation. In the north of Kazakhstan it occurs at 1000 m a.s.l., in Altai – up to 1750 m a.s.l. [Savchenko, 1983]. In Mongolia the species occurs at 1645–1705 m a.s.l. [Gelhaus, Podenas, 2006].

Fig.1. *Prionocera turcica* (Fabricius, 1787) (Dead Lake, Kizgich River valley, Arkhyz, the North Caucasus).
Рис. 1. *Prionocera turcica* (Fabricius, 1787) (озеро Мертвое, долина реки Кизгич, Архыз, Северный Кавказ).

Larvae of *P. turcica*, similar to the other representatives of this genus, are typically aquatic and usually inhabit the surface of submerged plants eating the algal and detritous material, clinging to the bases of these plants, in streams, small rivers and in lentic basins, as well in moss turf and in surficial soil layers of floody nival slopes [Lantsov, 1984; Brodo, 1990; Przhiboro, 1999]. In the riparian zone of small lakes of Karelia (North-West Russia) preimaginal stages of *P. turcica* together with other species of Tipulidae and Limoniidae constitute a great proportion (up to 60–70%)

Fig. 2. The North Caucasus, Arkhyz, Kizgich River valley, Dead Lake, buckbean (Menyanthes trifoliata L.) and sedge (Carex vesicaria L., Carex acuta L.) grass bog community, the habitat of *Prionocera turcica* (Fabricius, 1787).

Рис. 2. Северный Кавказ, Архыз, долина реки Кизгич, озеро Мертвое, вахтово-осоковое сообщество травяного болота – местообитание *Prionocera turcica* (Fabricius, 1787).

of the dipterous biomass [Przhiboro, 1999]. Larvae also occur in flooded littoral sludge of boggy lakes (Lithuania) [Podeniene, 2003]. Depending upon the region, the flight period usually lasts from the 23rd of May till the 15th of August [Brodo, 1987] or up to September [Tjeder, 1948; Savchenko, 1983].

In the Caucasus *P. turcica* (Fig. 1) was found in the Arkhyz section of the Teberdinskiy State Nature Biosphere Reserve in the valley of Kizgich River, right-hand side of the gorge (1490 m a.s.l.), "Revshcherskoy" stow at the foot of the Uzhum mountain range. The investigated localities are within the Kuban variant of altitudinal zonation [Sokolov, Tembotov, 1989] in the mountain cold-temperate landscapes (1000–1800 m a.s.l.), which are characterized by more cold conditions than the lower mountain moderately damp landscapes, and the development of coniferous forest communities [Bratkov, Salpagarov, 2001].

The species is found in three habitats: buckbean-sedge community (Dead Lake), in fir forest with wood sorrel and in swertia-sedge community with common (candle) rush. In the first of these habitats P. turcica is a dominant species. The average results of the three surveys of imago in buckbean-sedge community: 20 specimens at 10 m (trip records) and 9.3 specimens/m^2. In the other two neighboring communities *P. turcica* is met sporadically.

Name of the lake "Dead Lake" is present in official geographical maps. Another name "Sleeping Lake" the author found out in maps, which are used by the staff of the preserve. Dead Lake is an extensive marshland, occupied by buckbean-sedge grass bog community (Fig. 2). The dominant species are buckbean (Menyanthes trifoliata L.)– a typical plant for grass bogs, bladder sedge (Carex vesicaria L.), and acute sedge (Carex acuta L.). The associated species are brownish sedge (Carex brunnescens (Pers.) Poir), common (candle) rush (Juncus effusus L.), geranium (Geranium palustre L.), stitchwort (Stellaria persica Boiss.), and common skullcap (Scutellaria galericulata L.).

Directly adjacent to the lake biotope is the fir forest with wood sorrel and herbs. The density of the fir stand is 0.75, and the average height of stand is 26 m. Nordmann fir (Abies nordrnanniana (Stev.) Spach) is dominant with a mixture of Scots pine (Pinus sylvestris L.) and oriental beech (Fagus orientalis Lipsky).

Hazel-nut (Corylus avellana L.) is dominant in the understory. The dominant soil cover is wood sorel (Oxalis ocetosella L.) and grass (30%). Woodruff (Asperula odorata L.), lungwort (Pulrnonaria rnollissirna A. Kemer), wood millet (Miliurn effusurn L.), bird's-nest orchid (Neottia nidus-avis (L.) Rich.), lily of the valley (Convallaria transcaucasica Utkin), meadow grass (Poa remota Forsell) and some other plants occur sporadically.

The third habitat, which is also directly adjacent to the lake biotope, is swertia-sedge community with common (candle) rush on swampy soil. Swertia-sedge (Swertia iberica Fisch. et C.A. Mey.), bladder sedge (Carex vesicaria L.) and acute sedge (Carex acuta L.) are co-dominants. Common (candle) rush (Juncus effusus L.) is fairly abundant. Meadow pea (Lathyrus pratensis L.) and stitchwort (Stellaria persica Boiss.) occur sporadically. The

forest side of the biotope is bordered by European alder (Alnus glutinosa (L.) Gaertn.) with admixture of common birch (Betula pendula Roth). Buckbean occurs from the lake side at the edge of the biotope.

P. turcica in these habitats occurs with limoniids *Helius* (*Helius*) *longirostris longirostris* (Meigen, 1818) and *Erioptera* (*Erioptera*) *lutea lutea* Meigen, 1804. These two species are abundant (the number of *H. l. longirostris* in the buckbean-sedge community reached more than 50 specimens on 30 sweeps of a net). *Ormosia* (*Ormosia*) *fascipennis* (Zetterstedt, 1838), *Neolimonia dumetorum* (Meigen, 1804) and *Phylidorea* (*Phylidorea*) *ferruginea* (Meigen, 1818) were found as single specimens. *Dicranota* (*Paradicranota*) *simulans* Lackschewitz, 1940 (Pediciidae) and *Tipula* (*Schummelia*) *ahrensi* Savchenko, 1957 (Tipulidae) were also found here.

The value of species from the genus *Prionocera* in coenosis of arctic communities is that at the stage of larva, pupa and imago they are a significant component of food for fish and shore birds; imago are involved in the pollination of flowers of vascular plants, and larvae are phytophagous [Lantsov, 1984, 1997; Lantsov, Chernov, 1987]. We can surmise that *P. turcica* can play a similar role where it occurs in the mountain communities of the Caucasus.

Savchenko's [1983] citing of occurrence of *P. turcica* in Armenia was based on one misidentified female (see below).

Prionocera turcica is registered for the North Caucasus for the first time.

Prionocera subserricornis (Zetterstedt, 1851)

Material. 1♀, "дол. р. Манташ на Алагезе [Алагяз] 16 VI [1]934 Тер-Минасян" (in Cyrillic) ([Armenia] Manthash River valley on Alageze [Alagyaz] 16 VI [1]934 Ter-Minassian), "*Prionocera subserricornis* (Zetterstedt) [19]93 det. F. Brodo".

The species in question is no less widely distributed than the previous one; it is holarctic. It is present in most countries of Central and Northern Europe. In Russia it is found in Moscow, Tver [Pilipenko, 2009a] and Leningrad Regions [Przhiboro, 2004], Primorye [Pilipenko, 2009b], as well as in Siberia, Altai, Kamchatka, Sakhalin, and the Kuril Islands. In the Eastern Palaearctic it also occurs in Mongolia and North Korea [Brodo, 2012; Oosterbroek, 2014].

The female mentioned above, was provided to the author by Nikolai Paramonov, researcher of Zoological Institute RAS (St. Peterburg, Russia). This specimen was identified by Fenja Brodo in 1993 as *Prionocera subserricornis* (Zetterstedt, 1851). There is no other label for the specimen except the identification label (bottom) pinned by Fenja Brodo and geographic (upper) one (see the "Material").

Prionocera subserricornis is registered for Armenia and the Caucasus for the first time.

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References

Bratkov V.V., Salpagarov D.S. 2001. Landshafty Severo-Zapadnogo i Severo-Vostochnogo Kavkaza [The landscapes of the North Western and North Eastern Caucasus]. Moscow: Ileksa. 256 p. (in Russian).

Brodo F.A. 1987. A revision of the genus *Prionocera* (Diptera: Tipulidae). *Evolutionary Monographs.* 8: 1–93.

Brodo F.A. 2012. *Prionocera* revisited (Diptera: Tipulidae). *Canadian Entomologist.* 144: 182–185.

Brodo F.A. 1990. Crane flies (Diptera: Tipulidae) of the Arctic Islands. *In:* Canadas missing dimension. Vol. 2. (C.R. Harrington ed.). Ottawa: Canadian Museum of Nature: 471–484.

Gelhaus J.K., Podenas S. 2006. The diversity and distribution of crane flies (Insecta: Diptera: Tipuloidea) in the Hovsgol lake watershed, northern Mongolia. *In:* The geology, biodiversity and ecology of Lake Hovsgol, Mongolia (C. Goulden, T. Sitnikova, J.K. Gelhaus, B. Boldgiv eds.). Leiden: Backhuys: 279–303.

Lantsov V.I. 1984. Ecology, morphology and taxonomy of arctic crane-flies of the genus *Prionocera* (Diptera, Tipulidae). *Zoologicheskii Zhurnal.* 63(8): 1196–1204 (in Russian).

Lantsov V.I. 1997. Trophic relations of Tipulidae (Diptera) aquatic larvae in arctic communities. *In:* Mesto i rol' dvukrylych nasekomykh v ecosistemakh. Trudy VI Vserossiyskogo simpoziuma dipterologov [Diptera (Insecta) in ecosystems. Proceedings of the VI All-Russian symposium on Diptera (systematics, phylogeny and biogeography) (St. Peterburg, Russia, 21–25 April 1997)]. St. Peterburg: Zoological Institute RAS: 73–75 (in Russian).

Lantsov V.I., Chernov Y.I. 1987. Tipuloid crane flies in the tundra zone. Moskow: Nauka. 176 p. (in Russian).

Lantsov V.I., Saaya A.D. 2006. Species diversity and ecology of crane-flies (Diptera, Tipulidae) in Verkhniy Yenisey river valley. *In:* Problemy ecologii gornykh territotiy [Problems in ecology of mountain territories. Proceedings of IEMT RAS]. Moscow: KMK Scientific Press Ltd.: 43–51 (in Russian).

Malozemov A.Yu. 1992. Peculiarities of spatio-temporal structure of crane-flies communities (Diptera, Tipulidae) in mountains of Polar Ural. *In:* Materialy V Vsesoyuznogo dipterologicheskogo simpoziuma. Sistenatika, zoogeographiya i kariologiya dvukrylykh (Insecta, Diptera) [Materials of All-Union dipterological symposium. Systematics, zoogeography and karyology of dipterans (Insecta, Diptera) (Novosibirsk, Russia, 13–17 August 1990)]. St. Petersburg: Zoological Institute RAS: 110–113 (in Russian).

Oosterbroek P. 2014. Catalogue of the Craneflies of the World (CCW). Available at: http://nlbif.eti.uva.nl/ccw/ (latest update: 14 May 2014).

Pilipenko V.E. 2009a. A check list of craneflies (Diptera, Tipulidae) of the Central European territory of Russia. *Zoosymposia.* 3: 203–220.

Pilipenko V.E. 2009b. Tipulidae. *In:* Insects of Lazovsky Nature Reserve. Vladivostok: Institute of Biology and Soil Science, Far Eastern Branch of Russian Academy of Science, Dal'nauka: 328–331 (in Russian).

Podeniene V. 2003. Morphology and ecology of the last instar larvae of the crane flies (Diptera, Tipulomorpha) of Lithuania. SciD Abstract. 35 p.

Przhiboro A.A. 1999. The quatitative characteristics of Diptera (Insecta) of the shallow littoral zone of small lakes in the North Karelia. *In:* Trudy Zoologicheskogo instituta. Tom 281. Zoologicheskie sessii. Godichnye doklady. 1998 [Proceedings of the Zoological Institute. Vol. 281. Zoological Sessions. Annual Reports. 1998]. St. Petersburg: Zoological Institute RAS: 129–134.

Przhiboro A.A. 2004. Dipterans (Insecta: Diptera) inhabiting the shallow water zone of lakes Pionerskoye and Pridorozhovnoye and quantitaive assessment of their abundance. *In:* Zakonomernosti gidrobiologicheskogo rezhima vodoemov raznogo tipa [Regularities of hydorbiological regime in water bodies of different types (A.F. Alimov, M.B. Ivanova eds.)]. Moscow: "Scientific World" Publishing House: 102–121 (in Russian, general conclusion in English).

Savchenko E.N. 1983. Fauna SSSR. Nasekomye dvukrylye. Tom 2. Vypuski 1–2. Komary-dolgonozhki semeystva Tipulidae. Obshchaya chast' i nachalo sistematicheskoy chasti. Podsem. Dolichopezinae; podsem. Tipulinae (nachalo) [Fauna of the USSR. Diptera. Volume 2. Issues 1–2. Crane flies of the family Tipulidae. General part and the beginning of the systematic part. Subfamily Dolichopezinae; subfamily Tipulinae (beginning)]. Leningrad: Nauka. 586 p. (in Russian).

Savchenko E.N., Violovich N.A. 1967. Review of the crane-flies (Diptera,

Tipulidae) of Tuva. *Annales Zoologici*. 25(4): 317–365 (in Russian).
Sokolov V.E., Tembotov A.K. 1989. Mammalia. Insectivora. *In:* Pozvonochnye Kavkaza [Vertebrate of the Caucasus]. Moscow: Nauka: 1–547 (in Russian).
Tjeder B. 1948. The Swedish Prionocera. *Opuscula Entomologica.* 13(1/3): 75–99.