

Records of Psocoptera (Insecta) from two protected areas of Republic of Mordovia, Russia

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Abstract. It was the first study on the Psocoptera fauna of the Mordovia State Nature Reserve and National Park «Smolny» (Russia). There were 320 specimens from 28 species and 8 families examined. Two species were new records for Russia: *Valenzuela corsicus* (Kolbe, 1882) and *Oreopsocus montanus* (Kolbe, 1884).

Key words: biodiversity, protected areas, NE Europe, Psocoptera, Insecta.

Introduction

Psocoptera is a small order of insects, which according to modern data has more than 5,730 species of barkflies (Zhang, 2013). Most Psocoptera species are inhabitants of forest ecosystems, in which they occupy mainly the woody and shrubby layer, to a lesser extent – the grassy layer, forest litter and topsoil. Some species of barkflies settle in the nests of birds and insects, some species are synanthropic (Lienhard, 1998). There are 71 Psocoptera species known in Russia (Lienhard, 2016). The Republic of Mordovia is located in the central part of European Russia. Despite its small area, it is distinguished by a variety of ecosystems. Therefore, unique and new species of insects are constantly being found in the region (Lengesova et al., 2020; Egorov et al., 2020; Gornostaev et al., 2022; MacGowan, Ruchin, 2022). At the same time, there are groups of insects that are absolutely not studied in the region. These include Psocoptera.

This publication provides information about the fauna of Psocoptera from two protected areas.

Materials and Methods

The material was collected in 2021-2022 in the central part of European Russia (on the territory of Mordovia State Nature Reserve and National Park «Smolny», Republic of Mordovia). Mordovia State Nature Reserve is located on the right bank of the Moksha River. This is a zone of coniferous-deciduous forests on the border with the forest-steppe. Malaise trap was installed in a large glade in the center of the forest (cordon Inorsky, forest glade on the lake shore, N54.7277 E43.1510). The glade is surrounded on three sides by broad-leaved and mixed forests. On one side it is bounded by the shore of the lake. Smolny National Park is located north of the Alatyr River. These are coniferous and deciduous forests, mainly growing in the cuttings of the second half of the XX century. Malaise trap was installed in a large glade on the outskirts of the forest (cordon

Mokrov, south edge of *Pinus* forest glade, N54.7591 E45.6124). The glade is surrounded on three sides by a pine forest with deciduous shrubs growing in the second tier. On the south side, the glade is open and at this point it turns into a floodplain meadow. The studies were conducted from May to October. Collecting from traps was done regularly with a frequency of 2 to 10 days.

A total of 320 specimens of Psocoptera were examined by D. Georgiev (244 from Mordovia State Nature Reserve and 56 from National Park «Smolny»). Species identifications were based on Lienhard (1998).

Abbreviations used: MSNR – Mordovia State Nature Reserve; NPS – National Park «Smolny».

Results

After the first study of the Psocoptera fauna of the State Nature Reserve of Mordovia and Smolny National Park, there were a total of 28 species from 8 families identified (MSNR: 23 species, NPS: 19 species). Two species were new records for Russia.

Species list:

Caeciliusidae

Caecilius fuscopterus (Latreille, 1799)

Material examined: MSNR: 25.-28.06.2021, 2 ♂, 2 ♀; 02.-05.07.2021, 1 ♂, 2 ♀; 05.-08.07.2021, 1 ♀; 30.07.-02.08.2021, 1 ♂; 05.-15.08.2021, 1 ♂, 2 ♀; 15.-18.08.2021, 1 ♀; 18.-23.08.2021, 1 ♂, 1 ♀; NPS: 05.07.-01.08.2022, 1 ♀.

Valenzuela atricornis (McLachlan, 1869)

Material examined: MSNR: 05.-15.08.2021, 2 ♂, 2 ♀; 15.-18.08.2021, 2 ♂, 1 ♀; NPS: 15.06.-05.07.2022, 1 ♂; 05.07.-01.08.2022, 3 ♀; 05.-17.08.2022, 1 ♂.

Valenzuela burmeisteri (Brauer, 1876)

Material examined: MSNR: 10.-15.06.2021, 3 ♂, 1 ♀; 23.-26.08.2021, 1 ♂.

Valenzuela corsicus (Kolbe, 1882)

Material examined: MSNR: 03.-08.06.2021, 2 ♀; 07.-10.06.2021, 3 ♀; 10.-15.06.2021, 4 ♀; 15.-18.06.2021, 1 ♀; 18.-22.06.2021, 2 ♀; 19.-21.07.2021, 2 ♀; 27.-30.07.2021, 1 ♀; 23.-26.08.2021, 1 ♀; NPS: 05.-17.08.2022, 2 ♀. The species was known from France, Germany, Great Britain, Italy and Bulgaria (Lienhard, 2016). New record for Russia.

Valenzuela flavidus (Stephens, 1836)

Material examined: MSNR: 31.05.-03.06.2021, 3 ♀; 03.-08.06.2021, 1 ♂, 2 ♀; 07.-10.06.2021, 1 ♀; 10.-15.06.2021, 1 ♀; 18.-22.06.2021, 2 ♀; 05.-08.07.2021, 1 ♀; 19.-21.07.2021, 2 ♀; 21.-27.07.2021, 1 ♀; 30.07.-02.08.2021, 1 ♀; 31.08.-03.09.2021, 1 ♀; 03.-09.09.2021, 1 ♀.

Valenzuela piceus (Kolbe, 1882)

Material examined: MSNR: 07.-10.06.2021, 1 ♂, 2 ♀; 10.-15.06.2021, 2 ♂; 15.-18.06.2021, 1 ♂, 1 ♀; 18.-22.06.2021, 1 ♂; 05.-08.07.2021, 1 ♂, 1 ♀; 08.-12.07.2021, 1 ♂; 15.-19.07.2021, 1 ♀; 19.-21.07.2021, 3 ♂; 18.-23.08.2021, 2 ♂, 5 ♀; 23.-26.08.2021, 1 ♀; NPS: 15.06.-05.07.2022, 1 ♂, 1 ♀.

Stenopsocidae

Graphopsocus cruciatus (Linnaeus, 1768)

Material examined: MSNR: 03.-08.06.2021, 1 ♀; 07.-10.06.2021, 3 ♂, 3 ♀; 10.-15.06.2021, 3 ♂, 3 ♀, 1 ex.; 15.-18.06.2021, 1 ♂, 2 ♀; 18.-22.06.2021, 2 ♀; 22.-25.06.2021, 1 ♂; 27.-30.07.2021, 1 ♂; 30.07.-02.08.2021, 1 ♂; 18.-23.08.2021, 1 ♂, 1 ♀; 03.-09.09.2021, 9 ♂; 13.-16.09.2021, 1 ♂, 1 ♀; 16.-19.09.2021, 1 ♂; 19.-27.09.2021, 2 ♂; 27.09.-04.10.2021, 1 ♂; 04.-11.10.2021, 3 ♂, 2 ♀; 19.-22.10.2021, 1 ♂; 01.-09.11.2021, 1 ex.; NPS: 15.06.-05.07.2022, 1 ♂.

Stenopsocus immaculatus (Stephens, 1836)

Material examined: MSNR: 03.-09.09.2021, 1 ♀.

Lachesiliidae

Lachesilla pedicularia (Linnaeus 1758)

Material examined: MSNR: 03.-08.06.2021, 2 ♀; 07.-10.06.2021, 3 ♂, 2 ♀; 10.-15.06.2021, 4 ♂, 2 ♀; 15.-18.06.2021, 1 ♂, 1 ♀; 18.-22.06.2021, 1 ♂; 02.-05.07.2021, 1 ♂; 05.-08.07.2021, 1 ♂; 08.-12.07.2021, 2 ♀; 19.-21.07.2021, 4 ♂, 2 ♀; 21.-27.07.2021, 1 ♂, 1 ♀; 27.-30.07.2021, 2 ♂; 30.07.-02.08.2021, 1 ♀; 02.-05.08.2021, 2 ♂; 18.-23.08.2021, 2 ♂; 23.-26.08.2021, 1 ♀; 31.08.-03.09.2021, 1 ♂; 03.-09.09.2021, 3 ♂, 1 ♀; 13.-16.09.2021, 2 ♂, 1 ♀; NPS: 05.07.-01.08.2022, 2 ♂, 1 ♀; 01.-05.08.2022, 1 ♂; 05.-17.08.2022, 1 ♀; 17.-24.08.2022, 3 ♂, 5 ♀; 24.-29.08.2022, 2 ♂, 6 ♀.

Lachesilla quercus (Kolbe, 1880)

Material examined: MSNR: 21.-27.07.2021, 1 ♀; 02.-05.08.2021, 1 ♀; 31.08.-03.09.2021, 1 ♂; 03.-

09.09.2021, 3 ♀; 13.-16.09.2021, 1 ♂; 16.-19.09.2021, 1 ♀; NPS: 05.-17.08.2022, 3 ♀; 17.-24.08.2022, 1 ♀; 24.-29.08.2022, 1 ♀.

Lachesilla rossica Roesler, 1953

Material examined: MSNR: 22.-25.06.2021, 2 ♀; 25.-28.06.2021, 4 ♂, 3 ♀; 05.-08.07.2021, 1 ♂; 21.-27.07.2021, 1 ♂, 1 ♀; 27.-30.07.2021, 1 ♂; 02.-05.08.2021, 1 ♂; 05.-15.08.2021, 2 ♂, 3 ♀; 15.-18.08.2021, 1 ♂, 1 ♀; 18.-23.08.2021, 3 ♂, 6 ♀.

Lachesilla tanaidana Roesler, 1953

Material examined: MSNR: 02.-05.07.2021, 1 ♂, 1 ♀; 05.07.-01.08.2022, 1 ♂, 1 ex.

Ectopsocidae

Ectopsocopsis xerophylla Vishnyakova, 1970

Material examined: MSNR: 27.-30.07.2021, 1 ♂; 30.07.-02.08.2021, 1 ♂; 02.-05.08.2021, 1 ♂, 2 ♀.

Peripsocidae

Peripsocus alboguttatus (Dalman, 1823)

Material examined: MSNR: 02.-05.07.2021, 1 ♂; 08.-12.07.2021, 1 ♂; 05.07.-01.08.2022, 1 ♀; 30.07.-02.08.2021, 1 ♀; 18.-23.08.2021, 1 ♀; 31.08.-03.09.2021, 1 ♀; NPS: 05.-17.08.2022, 1 ♀.

Peripsocus didymus Roesler, 1939

Material examined: MSNR: 02.-05.08.2021, 1 ♂.

Peripsocus phaeopterus (Stephens, 1836)

Material examined: MSNR: 22.-25.06.2021, 1 ♀; 19.-21.07.2021, 1 ♀; 18.-23.08.2021, 1 ♂, 1 ♀; NPS: 05.07.-01.08.2022, 1 ♂.

Peripsocus subfasciatus (Rambur, 1842)

Material examined: MSNR: 10.-15.06.2021, 1 ♀; 15.-19.07.2021, 1 ex.; NPS: 15.06.-05.07.2022, 1 ♀.

Elipsocidae

Elipsocus abdominalis Reuter, 1904

Material examined: MSNR: 19.-27.09.2021, 1 ♂; 04.-11.10.2021, 1 ♀; 19.-22.10.2021, 1 ♀.

Elipsocus moebiusi Tetens, 1891

Material examined: MSNR: 03.-09.09.2021, 1 ♀; 04.-11.10.2021, 1 ♀. Remark: The species was known from many localities in Europe and North America (Lienhard, 2016). It was recorded for Russia by Golub (2007) but not included in the list of Lienhard (2016).

Hemineura sp.

Material examined: NPS: 19.-24.06.2022, 2 ♂.

Pseudopsocus fusciceps (Reuter, 1893)

Material examined: MSNR: 22.-25.06.2021, 1 ♀; 02.-05.07.2021, 1 ♀; 05.-15.08.2021, 2 ♀; 31.08.-03.09.2021, 1 ♀; NPS: 05.07.-01.08.2022, 2 ♂; 24.-29.08.2022, 2 ♀.

Mesopsocidae

Mesopsocus unipunctatus (Müller, 1764)

Material examined: NPS: 15.06.-05.07.2022, 1 ♂; MSNR: 30.07.-02.08.2021, 1 ♂; 02.-05.08.2021, 1 ♂.

Psocidae

Amphigerontia bifasciata (Latreille, 1799)

Material examined: MSNR: 15.-18.06.2021, 1 ex. (body parts).

Amphigerontia contaminata (Stephens, 1836)

Material examined: NPS: 15.06.-05.07.2022, 2 ♀; 05.-08.08.2022, 1 ♂.

Metylophorus nebulosus (Stephens, 1836)

Material examined: MSNR: 21.-27.07.2021, 1 ♀; NPS: 05.-17.08.2022, 1 ♂.

Neopsocopsis hirticornis (Reuter, 1893)

Material examined: NPS: 17.-24.08.2022, 1 ♀.

Oreopsocus montanus (Kolbe, 1884)

Material examined: NPS: 05.07.-01.08.2022, 1 ♂. Remark: The species was known from many localities in South and North Europe (Lienhard, 2016). New record for Russia.

Trichadenotecnum majus (Kolbe, 1880)

Material examined: NPS: 05.07.-01.08.2022, 1 ♂.

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