



Short note

***On the knowledge of the Psocodea (Insecta) of Rila Mts
(Bulgaria): published data and new records***

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Abstract. This study provides an updated account of the Psocodea species in the Rila Mountains, Bulgaria, with 27 species recorded, including 17 new for the area. Barkflies were collected from various habitats between 2017 and 2024. These findings expand knowledge of the region's biodiversity, but further studies are needed to better understand the distribution and ecology of these species.

Key words: barkflies, distribution, Balkans.

Introduction

The Psocodea (barkflies and booklice) are a small but ecologically significant group of insects, playing a key role in the decomposition of organic matter in forest ecosystems. Despite their importance, the knowledge of Psocodea diversity in Bulgaria (a total of 73 species known: Georgiev, 2020, 2022, Georgiev et al., 2024), particularly in the Rila Mountains, remains fragmented. The Rila Mountains, the highest mountain range in the Balkans, encompass a diverse array of habitats, making them a potential hotspot for species diversity, including Psocodea. However, comprehensive studies on this group in the region have been limited.

The first major contributions to Psocodea knowledge in the Rila Mountains were made by Drensky (1953), who documented several species, including *Graphopsocus cruciatus* and *Valenzuela piceus*. Later, Sziraki (2013) added further records, expanding the known diversity with species such as *V.*

despaxi, *V. flavidus*, *Stenopsocus immaculatus*, *S. lachlani*, and *Philotarsus picicornis*. More recently, Georgiev (2020, 2022) provided new insights with the discovery of *P. parviceps* and *Reuterella helvimacula* in the Rila Mountains, highlighting the potential for further discoveries.

Despite these advances, the Psocodea fauna of the Rila Mountains remains underexplored. This study aims to expand on the existing knowledge by presenting new records of Psocodea species collected from various habitats in the Rila Mountains between 2017 and 2024. In addition to compiling all published data, this research underscores the need for continued investigations to better understand the distribution, ecology, and conservation status of Psocodea in this region.

Material and methods

Barkflies were collected irregularly between 2017 and 2024 from different

habitats and altitudes of the Rila Mts. Sieving of leaf litter and beating the vegetation were mainly used. The material was preserved in 96% ethanol and examined in the laboratory. Species identifications were based on Lienhard (1998). A review of all published data was made and information was summarized.

Results

A total of 27 species are known from Rila Mts, from which 17 were records to the area:

Trogiidae

Lepinotus reticulatus Enderlein, 1905

Material examined: 06.08.2020, Borovets Resort, N42 16 17.9 E23 36 16.9, 1280 m a.s.l., pine forest (*Picea abies*, *Abies alba*, *Pinus peuce*), from a nest of *Formica* sp., 4 ♀, collected by sieving.

Liposcelididae

Liposcelis corrodens (Heymons, 1909)

Material examined: 09.05.2020, north of Razlog Town, N41 53 45.2 E23 26 46.2, 864 m a.s.l., meadows with single trees, from a bark of *Salix* sp., 2♀, collected by sieving.

Liposcelis formicaria (Hagen, 1865)

Material examined: 06.08.2020, Borovets Resort, N42 16 17.9 E23 36 16.9, 1280 m a.s.l., pine forest (*Picea abies*, *Abies alba*, *Pinus peuce*), from a nest of *Formica* sp., 1 ♀ nymph, collected by sieving.

Liposcelis rufa Broadhead, 1950

Material examined: 09.09.2024, near Blagoevgrad Town, N42 01 06.0 E23 04 23.4, 375 m a. s. l., bush area, from dry branches with lichen, 1 ♀, collected by beating the vegetation.

Liposcelis silvarum (Kolbe, 1888)

Material examined: 06.08.2020, Borovets Resort, N42 16 27.1 E23 36 15.1, 1276 m a.s.l., pine forest (*Picea abies*, *Abies alba*, *Pinus peuce*), from dry pine tree branches, 1 ♀, collected by beating the vegetation; 08.08.2020, Borovets Resort, N42 16 41.3 E23 36 10.2, 1221 m a.s.l., 3 ♀, collected by beating the vegetation.

Caeciliusidae

Valenzuela burmeisteri (Brauer, 1876)

Material examined: 26.09.2020, on the path Borovets - Chakar Voyvoda Hut, N42 15 11.1 E23 36 43.2, 1640 m a.s.l., pine forest, from branches of *Picea abies*, 1 ♀, collected by beating the vegetation; 04.09.2021, north of Govedartsi village and Iskar River, N42 16 06.6 E23 29 06.2, 1175 m a.s.l., pine forest (*Picea abies* and *Pinus sylvestris*), from branches of *Picea abies*, 1 ♂, 3 ♀, collected by beating the vegetation.

Valenzuela despaxi (Badonnel, 1936)

Reported by Sziraki (2013): “Rila Mts., Rilomanastirska Gora Reserve, 06.09.2005, 1 ♂”.

New material examined: 26.09.2020, on the path Borovets - Chakar Voyvoda Hut, N42 15 11.1 E23 36 43.2, 1640 m a.s.l., pine forest, from branches of *Picea abies*, 1 ♀, collected by beating the vegetation.

Valenzuela flavidus (Stephens, 1836)

Reported by Sziraki (2013): “Rila Mts., at Drushlevitsa Stream, 07.10.2011, 1 ♀; Rila Mts., Tiha Rila, 06.09.2005, 1 specimen”.

Valenzuela piceus (Kolbe, 1882)

Reported by Drensky (1953): “I have collected it from Rila Mts at Borovets Resort (Cham koria), 1300 m a.s.l.”

New material examined: 10.08.2017, above Sedemte Rilski Ezera Hut, N42 13 04.1 E23 19 20.7, 2061 m

a.s.l., bushes of *Pinus mugo* and *Juniperus sibirica*, from branches of *J. sibirica*, 2 ♀, collected by beating the vegetation; 04.09.2021, north of Govedartsi village and Iskar River, N42 16 06.6 E23 29 06.2, 1175 m a.s.l., pine forest (*Picea abies* and *Pinus sylvestris*), from branches of *Picea abies*, 1 ♂, 1 ♀, and from branches of *Juniperus* sp., 1 ♀, collected by beating the vegetation.

Stenopsocidae

***Graphopsocus cruciatus* (Linnaeus, 1768)**

Reported by Drensky (1953): "Collected in Rila Mts, Borovets Resort (Chamkoria), 1300 m a.s.l., among mixed broad leaf and coniferous bushes. It seems that it is widely distributed here."

***Stenopsocus immaculatus* (Stephens, 1836)**

Reported by Sziraki (2013): "Rila Mts., at Drushlevitsa Stream, 07.10.2011, 1 ♂".

New material examined: 04.09.2021, south-west vicinities of Govedartsi village, N42 14 58.9 E23 28 09.3, 1212 m a.s.l., mixed river bank forest with bushes (*Picea abies*, *Pinus sylvestris*, *Salix* sp., *Juniperus* sp.), from branches *Juniperus* sp., 1 ♀, collected by beating the vegetation; 04.09.2021, north of Govedartsi village and Iskar River, N42 16 06.6 E23 29 06.2, 1175 m a.s.l., pine forest (*Picea abies* and *Pinus sylvestris*), from branches of *Picea abies*, 1 ♀, collected by beating the vegetation; 05.09.2021, above Mechit Hut, N42 13 10.3 E23 27 36.1, 1834 m a.s.l., *Picea abies* forest, from branches of *P. abies* with a lot of lichens, 1 ♀, collected by beating the vegetation.

***Stenopsocus lachlani* Kolbe 1880**

Reported by Sziraki (2013): "Rila Mts., 0.5 km SW of Borovets, 05.10.2011, 1 ♂".

Ectopsocidae

***Ectopsocus petersi* Smithers, 1978**

Material examined: 02.12.2021, W of Belovo town, bushes near *P. nigra* forest, N42 13 12.8 E24 00 00.8, 345 m a.s.l., 2 ♂, from dry *Sambucus ebulus*, 1 ♂, 4 ♀, from dry branches with leaves of *Fraxinus* sp., collected by beating the vegetation.

Lachesillidae

***Lachesilla bernardi* Badonnel, 1938**

Material examined: 09.09.2024, near Blagoevgrad Town, N42 01 09.8 E23 04 12.6, 382 m a. s. l., bushes and trees, from dry branches with leaves of *Paliurus spina-christii*, 1 ♂, collected by beating the vegetation.

***Lachesilla quercus* (Kolbe, 1880)**

Material examined: 09.09.2024, near Blagoevgrad Town, N42 01 09.8 E23 04 12.6, 382 m a. s. l., bushes and trees, from dry branches with leaves of *Paliurus spina-christii*, 1 ♂, collected by beating the vegetation.

Mesopsocidae

***Mesopsocus unipunctatus* (Müller, 1764)**

Material examined: 05.09.2021, above Mechit Hut, N42 13 10.3 E23 27 36.1, 1834 m a.s.l., *Picea abies* forest, from branches of *P. abies* with a lot of lichens, 1 ♂, collected by beating the vegetation.

Peripsocidae

***Peripsocus didymus* Roesler, 1939**

Material examined: 06.08.2020, Borovets Resort, N42 16 27.1 E23 36 15.1, 1276 m a.s.l., pine forest (*Picea abies*, *Abies alba*, *Pinus peuce*), from dry pine tree branches, 2 ♀, collected by beating the vegetation.

***Peripsocus phaeopterus* (Stephens, 1836)**

Material examined: 08.08.2020, Borovets Resort, N42 16 41.3 E23 36 10.2, 1221 m a.s.l., pine forest

(*Picea abies*, *Abies alba*, *Pinus peuce*), from dry pine tree brunches, 1 ♀, collected by beating the vegetation.

***Peripsocus alboguttatus* (Dalman, 1823)**

Material examined: 04.09.2021, south-west vicinities of Govedartsi village, N42 14 58.9 E23 28 09.3, 1212 m a.s.l., mixed river bank forest with bushes (*Picea abies*, *Pinus sylvestris*, *Salix* sp., *Juniperus* sp.), from brunches *Juniperus* sp., 1 ♂, collected by beating the vegetation; 04.09.2021, north of Govedartsi village and Iskar River, N42 16 06.6 E23 29 06.2, 1175 m a.s.l., pine forest (*Picea abies* and *Pinus sylvestris*), from brunches of *Picea abies*, 2 ♀, collected by beating the vegetation.

Philotarsidae

***Philotarsus parviceps* Roesler, 1954**

Reported by Georgiev (2020): “06.08.2020, Rila Mountains, Borovets Resort, pine forest dominated by *Picea abies*, *Abies alba* and *Pinus peuce*, from dry brunches of pine trees with a lot of lichens, 5 ♀♀, collected by beating the vegetation. Coordinates of the locality: N42 16 27.1 E23 36 15.1, 1276 m a.s.l.”

New material examined: 05.09.2021, above Mechit Hut, N42 13 10.3 E23 27 36.1, 1834 m a.s.l., *Picea abies* forest, from brunches of *P. abies* with a lot of lichens, 1 ♂, 1 ♀, collected by beating the vegetation.

***Philotarsus picicornis* (Fabricius, 1793)**

Reported by Sziraki (2013): “Rila Mts., at Kriva Stream, 06.10.2011, 1 ♀”.

New material examined: 26.09.2020, above Chakar Voyvoda Hut, N42 13 36.0 E23 37 54.5, 2013 m a.s.l., pine forest (*Pinus peuce*, *Pinus mugo*), from brunches with a lot of lichens, 1 ♀, collected by beating the vegetation.

Elipsocidae

***Cuneopalpus cyanops* (Rostock, 1876)**

Material examined: 02.12.2021, W of Belovo Town, *P. nigra* forest mixed with various broad leaf bushes and trees, N42 13 13.9 E23 59 57.0, 349 m a.s.l., 1 ♂, 3 ♀, from dry and live brunches of *P. nigra*, collected by beating the vegetation.

***Elipsocus abdominalis* Reuter, 1904**

Material examined: 26.09.2020, above Chakar Voyvoda Hut, N42 13 36.0 E23 37 54.5, 2013 m a.s.l., pine forest (*Pinus peuce*, *Pinus mugo*), from brunches with a lot of lichens, 1 ♀, collected by beating the vegetation; 05.09.2021, above Mechit Hut, N42 13 10.3 E23 27 36.1, 1834 m a.s.l., *Picea abies* forest, from brunches of *P. abies* with a lot of lichens, 2 ♂, 1 ♀, collected by beating the vegetation.

***Elipsocus moebiusi* Tetens, 1891**

Material examined: 05.09.2021, near the path below Mechit Peak, N42 11 45.3 E23 27 50.3, 2512 m a.s.l., bushes of *Pinus mugo*, from brunches of *P. mugo*, 1 ♂, collected by beating the vegetation.

***Hemineura dispar* Tetens, 1891**

Material examined: 02.12.2021, W of Belovo Town, bushes near *P. nigra* forest, N42 13 12.8 E24 00 00.8, 345 m a.s.l., 3 ♀, from dry *Sambucus ebulus*, 1 ♀, from dry *Agrimonia* sp., collected by beating the vegetation.

***Reuterella helvimacula* (Enderlein, 1901)**

Reported by Georgiev (2022): “26.09.2020, above Chakar Voyvoda Hut, N42 13 36.0 E23 37 54.5, 2013 m a.s.l., pine forest (*Pinus peuce*, *Pinus mugo*), from brunches with a lot of lichens, 1 ♀, collected by beating the vegetation.”

New material examined: 26.09.2020, on the path Borovets - Chakar Voyvoda Hut, N42 15 11.1 E23 36 43.2, 1640 m a.s.l., pine forest, from brunches of *Picea abies*, 1 ♂, 1 ♀, collected by beating the vegetation

Psocidae

***Psococerastis gibbosa* (Sulzer, 1776)**

Material examined: 07.08.2020, Borovets Resort, N42 16 27.1 E23 35 59.1, 1274 m a.s.l., in a hotel room (hotel "Lion"), 1 ♀, collected by hand and a brush; 08.08.2020, Borovets Resort, N42 16 41.3 E23 36 10.2, 1221 m a.s.l., pine forest (*Picea abies*, *Abies alba*, *Pinus peuce*), from dry pine tree branches, 1 ♀, collected by beating the vegetation.

This study enhances our understanding of the Psocodea species diversity in the Rila Mountains, adding several new records to the region's fauna. However, the findings highlight the need for more detailed and systematic research to better comprehend the full diversity, distribution, and ecological roles of these species. Further investigations across different habitats and seasons will be crucial for a more complete understanding of the Psocodea in this important Balkan region.

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