

New data on bark and book lice fauna (Insecta: Psocodea) of Belarus

Новые данные по фауне сеноедов (Insecta: Psocodea) Беларуси

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КЛЮЧЕВЫЕ СЛОВА: сеноеды, Psocodea, фауна, Беларусь, новые регистрации.

ABSTRACT. New faunistic data for 13 psocid species of the southeastern Belarus are reported, of which three species, *Dorypteryx domestica*, *Lachesilla bernardi*, and *Ectopsocus meridionalis*, are indicated for the first time for the fauna of Belarus. The location data and briefly the data on distribution and ecological features of each species are given.

РЕЗЮМЕ. Приведены новые фаунистические данные для 13 видов сеноедов юго-востока Беларуси, из них три вида, *Dorypteryx domestica*, *Lachesilla bernardi* и *Ectopsocus meridionalis*, указываются впервые для фауны Беларуси. Приведены местонахождения и краткая информация о распространении и экологических особенностях каждого вида.

Introduction

The Psocodea are a taxonomic group of insects, traditionally considered within the cohort of Paraneoptera. Psocodea includes nonparasitic lice — former Order Psocoptera (bark and book lice, or psocids), and parasitic lice — Phthiraptera. There are more than 5,730 species of psocids in the modern fauna, including 121 fossil species [Zhang, 2013]. The bark and book lice have a worldwide distribution [Lienhard, Smithers, 2002] and usually live on vegetation, especially on the bark and foliage of trees and shrubs, where they feed on epiphytic microflora (algae, fungi and lichen) or organic detritus and pollen; some species are regularly found in ground litter, under stones, in caves or in birds' nests, mammals' nests or human dwellings [Lienhard, 1998]. There are a lot of psocid specimens in forest and bog biocenoses, they are easily collected by simple standard methods. However, difficulties in species identification restrain of use of barklice for bioindication purposes [Ostrovsky, 2016].

The psocids are poorly known in Belarus. Till the author began working on barkflies, information about the Belarusian bark and book lice fauna was available only in the works of Vishnyakova [1964] and Litvinova [1985].

The present contribution brings information on three psocid species of the new to the Belarusian fauna. There is also information about new localities for other ten species previously known from Belarus [Ostrovsky, 2019, 2024; Ostrovsky, Georgiev, 2024; Ostrovsky, Prokhorchik, 2025].

Material and Methods

The study was carried out 2024–2025 in various biocenoses on the territory of the Loev, Gomel and Bragin districts of the Gomel Region (SE Belarus). The collection points of the material are designated by the following numbers (Fig. 1): **1** — Gomel city, 52°25'49"N, 30°59'12"E, 140 m a.s.l.; **2** — same locality, 52°25'49"N, 30°59'29"E, 141 m a.s.l.; **3** — E of Gomel city, 52°24'22"N, 31°03'23"E, 122 m a.s.l.; **4** — Gomel district, Yubileynyi village, 52°23'49"N, 31°04'57"E, 128 a.s.l.; **5** — Gomel district, Rudnya Marimonova village, 52°09'37"N, 30°42'37"E, 115 m a.s.l.; **6** — Loev district, E of Pervomaisk village, 52°03'35"N, 30°46'18"E, 113 m a.s.l.; **7** — same locality, 52°03'35"N, 30°46'22"E, 113 m a.s.l.; **8** — same locality, 52°03'35"N, 30°46'24"E, 114 m a.s.l.; **9** — same locality, 52°03'35"N, 30°46'25"E, 114 m a.s.l.; **10** — Loev district, N of Koshevoe village, 52°03'35"N, 30°46'42"E, 115 m a.s.l.; **11** — Loev district, Koshevoe village, 52°02'45"N, 30°47'08"E, 115 m a.s.l.; **12** — Loev district, NW of Karpovka village, 52°01'30"N, 30°54'03"E, 120 m a.s.l.; **13** — Loev district, Karpovka village, 52°01'21"N, 30°54'12"E, 117 m a.s.l.; **14** — Bragin district, Yaseni village, 51°45'00"N, 30°14'45"E, 113 m a.s.l.; **15** — Bragin district, Volokhovshchina village, 51°44'28"N, 30°16'25"E, 114 m a.s.l.

The psocids were collected using a sieve or by hand. In the wild, the plant debris were inspected, as well as the bird and bee nests have been sieved; in the anthropogenic environment,

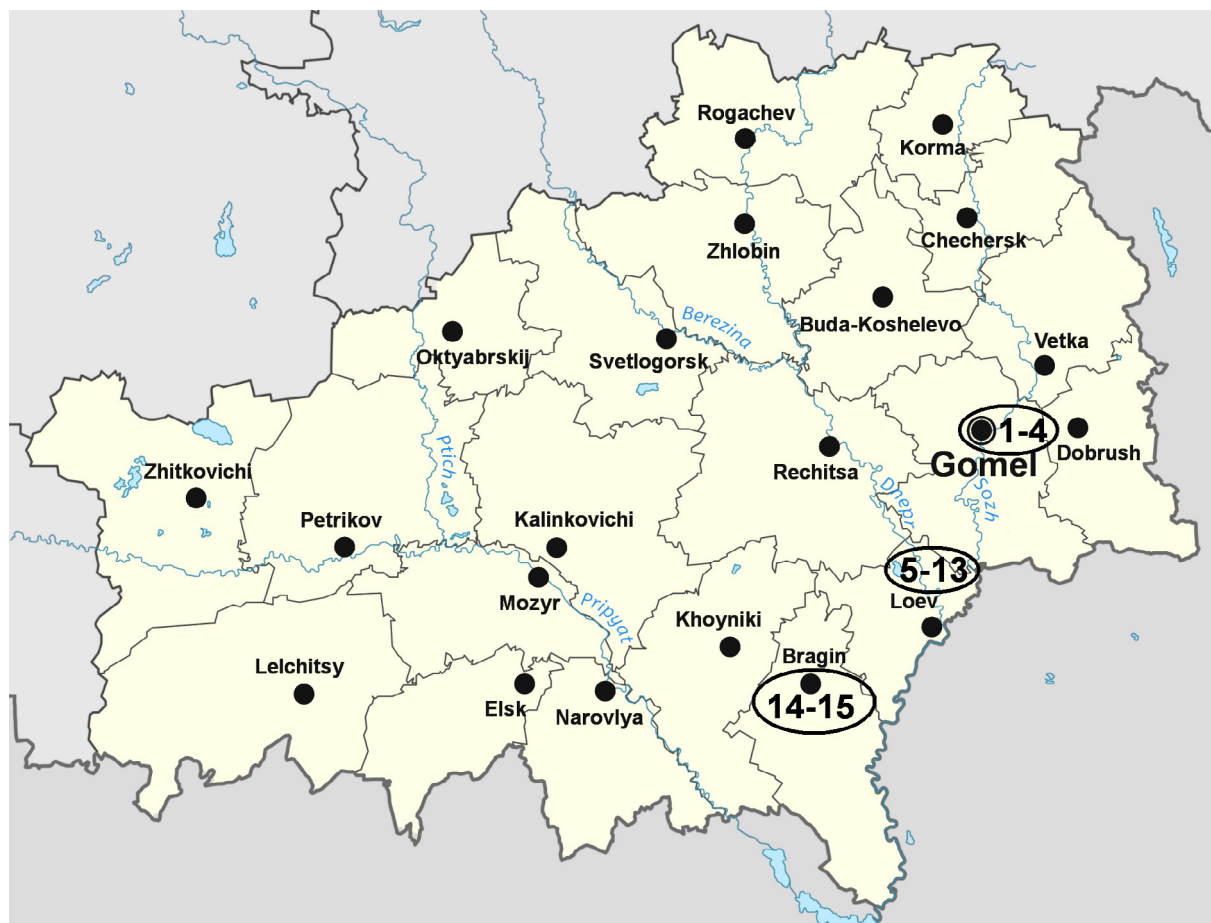


Fig. 1. Map of collecting localities of the material on the territory of Gomel oblast (SE Belarus). Designations (1–15) are given in the text (Material and Methods).

Рис. 1. Карта сбора материала на территории Гомельской области (юго-восток Беларуси). 1–15 — номера местонахождений сеноедов (расшифровка в тексте).

residential and non-residential premises were checked. The psocids were fixed in 96% ethanol or glycerin (when prepared on microscope slides) and were determined was carried out according to keys [Vishnyakova, 1964; Lienhard, 1998]. As a supporting source, Saville [2008] was also used. The identification is confirmed by genitalia investigation. The material is stored in the author's private collection.

Results

Suborder TROGIOMORPHA Family Trogidae

Lepinotus reticulatus Enderlein, 1905

MATERIAL EXAMINED. **5** — from an abandoned swallow's nest inside an abandoned wooden house, 25.06.2024, 3 ♀♀, 8 nymphs, collected by sieving; **6** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 4 nymphs, collected by sieving; **7** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 49 ♀♀, 28 nymphs, collected by sieving; **8** — from an abandoned bird's nest under the roof of an abandoned wooden house, 12.07.2025, 9 ♀♀, 21 nymphs, collected by sieving; **11** —

from an abandoned bird's nest inside an abandoned wooden building, 12.07.2025, 1 ♀, 1 nymph, collected by sieving; **15** — from an abandoned beehives, 10.08.2025, 1 nymph, collected by sieving; **4** — from a dry medicinal plant raw materials in the kitchen, 11.12.2025, 1 ♀, collected by sieving.

NOTES. Cosmopolitan parthenogenetic species, common in nature in the Mediterranean Region but rare in Central and Northern Europe. The species is often found in human habitation and in warehouses where foodstuffs are stored, whereas in nature it is generally found in leaf litter and tufts of dry grass [Lienhard, 1998].

Trogium pulsatorium (Linnaeus, 1758)

MATERIAL EXAMINED. **6** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 6 ♀♀, collected by sieving.

NOTES. Eurytopic, often cosmopolitan parthenogenetic species with easily detaching wings, often found in human habitation and in warehouses where foodstuffs are stored, whereas in nature it is generally found in leaf litter, tufts of dry grass, in bird and insect nests, on and under tree bark, and in rotting wood [Lienhard, 1998; Golub, 2007; Saville, 2008].

Family Psyllipsocidae

Dorypteryx domestica (Smithers, 1958)

MATERIAL EXAMINED. **4** — in the lavatory of the apartment of a multi-storey building, 3.10.2025, 1 ♀, 11.10.2025, 3 ♀♀, 35 nymphs, collected by hand. In this one place we also collected and identified other psocid species (*Psyllipsocus ramburii*, *Liposcelis bostrychophila*, *Liposcelis decolor*) and this dispersal process may be through vectors (vehicles, plants, etc.).

NOTES. Widely distributed synanthropic psocid [Cerdeña, 2012; Pricop, 2014], recorded for the first time for the Belarus. Known from Petrozavodsk (Republic of Karelia, Russia) [Humala, Polevoi, 2025]. Smithers [1958] described this species from Zimbabwe (SE Africa). It is an invasive species, alien to Europe [Gonseth, 2005; Schneider, 2010]. Widespread in domestic situations, which lives mainly in new buildings, damp cellars and storage rooms [Schneider *et al.*, 2012]. It occurs in macropterous and brachypterous forms [Kučerová, 1997]. *D. domestica* was found for the first time in an apartment in a recently constructed building in Bosnia and Herzegovina [Lelo, 2021]. From different buildings and houses of Romania, Pricop [2014] collected and identified together *D. domestica* with *Liposcelis* sp.

Psyllipsocus ramburii Selys-Longchamps, 1872

MATERIAL EXAMINED. **1** — in a room of the private house, 14.08.2024, 1 ♀, collected by hand; **4** — in the lavatory of the apartment of a multi-storey building, 11.10.2025, 2 ♀♀, collected by hand.

NOTES. Cosmopolitan parthenogenetic species occurring mainly in houses and caves, tending to be troglomorphic. It is polymorphic and occurs in macropterous, brachypterous, and micropterous forms [New, 1974; Lienhard, 1998].

Suborder TROCTOMORPHA

Family Liposcelididae

Liposcelis bostrychophila Badonnel, 1931

MATERIAL EXAMINED. **4** — in the lavatory of the apartment of a multi-storey building, 11.10.2025, 1 ♀, from under a dry cockroach in the kitchen, 7.12.2025, 4 ♀♀, collected by hand.

NOTES. Cosmopolitan species with obligate thelytokous parthenogenesis and is the most common domestic species of Psocoptera, often being a serious pest in the food industry, households, herbaria, medical mycotheca and similar commodities [Lienhard, 1990, 1998]. In the wild, it was found under the bark of trees, in anthills, abandoned bird and wasp nests [Ostrovsky, Georgiev, 2024].

Liposcelis brunnea Motschulsky, 1852

MATERIAL EXAMINED. **4** — from a dry medicinal plant raw materials in the kitchen, 7.12.2025, 26 ♂♂, 78 ♀♀, 3 nymphs, 11.12.2025, 5 ♂♂, 43 ♀♀, 1 nymph, collected by sieving.

NOTES. Cosmopolitan bisexual species is the very often domestic and found in rooms with entomological collections and herbaria, in damp basements and in apartments on organic remains, as well as in tree hollows and bird nests [Lienhard, 1998].

Liposcelis corrodens (Heymons, 1909)

MATERIAL EXAMINED. **10** — from an abandoned bird's nest inside an abandoned wooden house, 25.05.2024,

5 ♂♂, 38 ♀♀, 4 nymphs, collected by sieving; **9** — from an abandoned bee's nest in the wall of an abandoned house, 25.05.2024, 2 ♀♀, collected by sieving; **7** — from an abandoned bird's nest inside an abandoned woodshed, 25.05.2024, 6 ♀♀, 13.07.2024, 12 ♀♀, 4 ♂♂, collected by sieving; **8** — from an abandoned bird's nest under the roof of an abandoned wooden house, 25.05.2024, 7 ♀♀, 12.07.2025, 1 ♀, collected by sieving; **6** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 1 ♀, collected by sieving; **12** — from a fallen down birdhouse in pine forest, 15.08.2024, 15 ♂♂, 38 ♀♀, collected by sieving; **11** — from an abandoned bird's nest inside an abandoned wooden building, 12.07.2025, 1 ♂, 1 ♀, collected by sieving; **15** — from an abandoned beehives, 10.08.2025, 1 ♂, 4 ♀♀, 1 nymph, collected by sieving.

NOTES. Nearly cosmopolitan bisexual species found in every continent except Antarctica [Lienhard, 1998; Yoshizawa, Lienhard 2010; Cui *et al.*, 2020]. This is most common species of the genus *Liposcelis* and one of common stored product booklouse [Cui *et al.*, 2020]. Often domestic. Infestations of this species were found on paper, books, herbaria and entomological collections. It was found in anthills, beehives, abandoned bird, mammal and wasp nests, on dead insects and dry bird droppings [Ostrovsky, Georgiev, 2024].

Liposcelis decolor (Pearman, 1925)

MATERIAL EXAMINED. **8** — from an abandoned bird's nest under the roof of an abandoned wooden house, 25.05.2024, 1 ♀, collected by sieving; **5** — from an abandoned swallow's nest inside an abandoned wooden house, 25.06.2024, 1 ♂, collected by sieving; **6** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 1 ♀, collected by sieving; **7** — from an abandoned bird's nest inside an abandoned woodshed, 13.07.2024, 1 ♂, 3 ♀♀, 10 nymphs, collected by sieving; **12** — from a fallen down birdhouse in pine forest, 15.08.2024, 1 ♀, collected by sieving; **11** — from an abandoned bird's nest inside an abandoned wooden building, 12.07.2025, 2 ♀♀, collected by sieving; **4** — in the lavatory of the apartment of a multi-storey building, 11.10.2025, 2 ♂♂, 4 ♀♀, 2 nymphs, collected by hand.

NOTES. Cosmopolitan bisexual species mostly associated with ground litter and tussocks of dead grasses, also found in anthills, birds' nests, mammals' nests, bat guano, and under bark. It is also often found in warehouses and dwellings, herbaria, insect collections and similar commodities [Lienhard, 1990, 1998; Ostrovsky, Georgiev, 2024].

Liposcelis silvarum (Kolbe, 1888)

MATERIAL EXAMINED. **13** — from an abandoned bird's nest inside an abandoned bathhouse, 15.08.2024, 1 ♀, collected by sieving; **12** — from a fallen down birdhouse in pine forest, 15.08.2024, 1 ♀, collected by sieving.

NOTES. Mainly widespread Eurasian bisexual species but has been recorded also from Morocco, Canary Islands and U.S.A. [Lienhard, 1998; Yoshizawa, Lienhard, 2010]. Very often woodland [Lienhard, 1990, 1998]. It is species mostly associated with bird and mammal nests, also found in anthills and under bark [Ostrovsky, Georgiev, 2024].

Suborder PSOCOMORPHA

Family Stenopsocidae

Stenopsocus immaculatus (Stephens, 1836)

MATERIAL EXAMINED. **3** — on the bushy shore of the pond, 21.08.2024, 1 ♂, collected by hand on deciduous shrub.

NOTES. Palearctic species mainly found on a wide range of deciduous tree and bush shrubs [Lienhard, 1998; Saville,

2008]. This species prefers shaded waterlogged biotopes [Golub, 2007].

Family Ectopsocidae

Ectopsocus meridionalis Ribaga, 1904

MATERIAL EXAMINED. **8** — from an abandoned bird's nest under the roof of an abandoned wooden house, 12.07.2025, 1 ♀, 1 nymph, collected by sieving; **15** — from an abandoned beehives, 10.08.2025, 1 ♀, 2 nymphs, collected by sieving. Also from this abandoned bird's nest and beehives, we collected and identified other psocid species as so as *Lepinotus reticulatus* and *Liposcelis corrodens*.

NOTES. Mainly widespread nearly cosmopolitan species [Lienhard, 1998; Lienhard, Smithers, 2002], recorded for the first time for the Belarus. Known from Khopyorsky State Reserve (Voronezh Oblast, Russia) [Golub, 2007]. It is an obligatory parthenogenetic species, associated with numerous deciduous trees and shrubs, especially on dead leaves still attached to the living plant. It is sometimes also found in human habitation or on cultivated plants [Lienhard, 1998]. It is thermophilic and often found in shaded biotopes with high humidity [Golub, 2007].

Family Lachesillidae

Lachesilla bernardi Badonnel, 1938

MATERIAL EXAMINED. **2** — flying near a railway station building, 14.07.2025, 1 ♂, collected by hand.

NOTES. Circum-Mediterranean species [Lienhard, 1998], recorded for the first time for the Belarus. Known from Mordovia State Nature Reserve (Republic of Mordovia, Russia) [Georgiev *et al.*, 2023]. It is species mainly associated with dead branches of different trees and shrubs, occasionally found also on dead leaves of herbaceous plants or in leaf litter [Lienhard, 1998].

Family Peripsocidae

Peripsocus subfasciatus (Rambur, 1842)

MATERIAL EXAMINED. **14** — abandoned garden, 11.08.2025, 1 ♀, collected by hand on deciduous tree.

NOTES. Holarctic species with thelytokous parthenogenesis, found on a wide range of deciduous trees and shrubs (branches and trunks), less — conifer (evergreen) branches and heather [Lienhard, 1998; Saville, 2008]. It mainly inhabits well-insolated areas of forests [Golub, 2007].

Conclusions

Currently, 47 species of psocids inhabiting Belarus are reliably known, and 3 species (*Dorypteryx domestica*, *Lachesilla bernardi*, *Ectopsocus meridionalis*) are recorded for the first time in this article. The coexistence of certain psocids in some synanthropic places to be at least in part environmental: humidity, temperature, light, etc. Food may be another possible factor, i.e. that fungal mycelium alone induced the specimen crowding of various psocid species. It should be noted that Lienhard and Smithers [2002] list up to 75 species of psocids for the neighboring countries. The given pattern testifies to the insufficient knowledge of the Belarusian bark and book lice fauna and to the need for further research.

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