

## ADDITIONAL DATA ON LEPIDOPTERA FROM SERBIA

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### ABSTRACT

**This work reports on results from occasional collections in many sites of Serbia in the period 2015-2018., as well as one earlier material from 1982. By more than 50 excursions, from March to October, by day and night and by light traps, a total amount of 45 selected species of Lepidoptera from 10 families were caught. A full list and description of the localities of collection, some colour plates and the comment about some species apart relevant are also included.**

**Keywords:** Lepidoptera, Serbia

### INTRODUCTION

During the few last decades our knowledge of the Lepidoptera fauna of Serbia has significantly increased. The most notable contributions are by Jakšić (2016b) for Serbian „Microlepidoptera”, Vasić (2002) and Beshkov (2015) for Serbian Noctuidae, Tomić et al. (2002) and Dodok (2006) for Serbian Geometridae, as well as Stojanović (2012) and Vajgand (2012) for Vojvodina, also Beshkov (2015, 2017), Plant et al. (2017) and Jakšić (2017) for eastern Serbia. Still, a significant part of territory of Serbia remain with only few historical or recent publications. The researchers attention was focused on new species for Serbian fauna. On the other hand, data on "ordinary" species are insufficient.

The goal of this paper is to improve our knowledge about distribution of Lepidoptera species in Serbia. Besides, all available literature and collection data were taken into account.

### MATERIALS AND METHODS

To gain an overview of the knowledge of the Lepidoptera fauna of Serbia all the available literature was consulted.

Specimens were collected with entomological net and light trap, using Mercury vapor bulb 125 W. The positions and coordinates at which the Lepidoptera were caught were determined using Garmin e-Trex 10 Vista GPS device. The following sites were investigated: **Beograd, Avala Mt.**, 320 m, 44°41' 45" N; 20° 31' 04" E; **Beograd, Zvezdara**, 187 m, 44° 47' 53" N; 20° 30' 18" E; 113–122, 8 figs, 80 m, 44° 48' 58" N; 20° 26' 02" E; **Zlatibor Mt., vic. Ljubiš village**, 1105 m, 43° 37' 42" N; 19° 45' 24" E; **Kovin, vic. Dubovac village**, 70 m, 44° 47' 36" N; 21° 12' 25" E; **Bela Palanka, Šljivovički Vis Mt.**, 926 m, 43° 08' 28" N; 22° 23' 09" E.; **Pirot, Crni Vrh Mt.**, 1123 m, 43° 10' 51" N; 22° 38' 52" E; **Svrlijig, Tresibaba Mt.**, 700 m, , 43° 30' 14" N; 22° 12' 57" E; **Golubački grad**, 110 m, , 44° 38' 42" N; 21° 41' 15" E; **Novo Brdo, Bostane village**, 800 m, 46° 36' 02" N; 21° 25' 40" E; **Divčibare vic. Kaona**, 829 m, , 44° 06' 39" N; 19° 56' 17" E; **Sjenica, vic. Trijebine**, 1227 m, , 43° 13' 50" N; 19° 57' 19" E; **Niš, Jelašnička Klisura Gorge**, 442 m, , 43° 16' 05" N; 22° 04'

16" E; **Suva Planina Mt., Bojanine Vode**, 1000 m, 43° 13' 22" N; 22° 06' 54" E; **Gornje Kusce village, Gnjlane**, 580 m, 42° 29' 57" N; 21° 29' 00" E and **Zubin Potok, Velji Breg**, 600 m, 42° 55' 51" N; 20° 40' 38" E;

After preparing, we determined the specimens by the wing-patterns and in all cases the identification has been also carried out by an examination of the male genitalia. The preparations were carried out following the well known standard procedure: maceration by boiling in potash, dissecting and cleaning, clearing in xylosum and mounting in Canada balsam. The photos of genital parameters were taken using the "Nikon SMZ800N" microscope with compact PC-based camera.

Fieldwork on protected areas was done on the basis of permits provided by the Ministry of Environment, Mining and Spatial Planning, Republic of Serbia, No. 353-01-389/2016-17, dated from 8. 4. 2016. and No. 353-01-834/2017-17, dated from 11. 05. 2017.

All the material (specimens and genitalia slides) is deposited in the author's collection.

The taxonomic order and nomenclature follows Fibiger et al. (2011) for Noctuidae and Aarvik et al. (2017) for other Lepidoptera. ID number before the species follows Karsholt & Razowski (1996).

### RESULTS AND DISCUSSION

Altogether 45 species were recorded. We present and discuss the results by taxonomic order.

**Ordo Lepidoptera Linnaeus, 1758**

**Superfam. Tortricoidea Latreille, 1802**

**Fam. Tortricidae Latreille, 1803**

**Subfam. Olethreutinae Walsingham, 1895**

4731 *Celypha lacunana* ([Denis & Schiffmüller], 1775)

Material examined: Beograd, Avala Mt., 320 m: 1 m, 28. V 2017. Observed and photo (Fig. 1.) by Jakšić P. The larva feeds on *Vaccinium myrtillus* and *Lycophotia porphyrea*. New species for Serbia.

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**Figure 1.** *Celypha lacunana* ([Denis & Schiffermüller], 1775). Photo Jakšić P.

**Superfam. Cossoidea Leach, 1815**

**Fam. Cossiidae Leach, 1815**

4166 *Dyspessa ulula* (Borkhausen, 1790)

Material examined: Pirot, Crni Vrh, 1123 m: 1 f, 20. V 2017., Bela Palanka, Šljivovički vis, 926 m: 2 m 2 f, 22. VI 2017.

Larval foodplants are *Allium* species, Marković (2014) reported eight species from this genus on Vidlič Mt.

**Superfam. Gelechioidea Stainton, 1854**

**Fam. Lypusidae Herrich-Schäffer, 1857**

**Subfam. Chimabachinae Heinemann, 1870**

2231 *Diurnea fagella* ([Denis & Schiffermüller], 1775)

Material examined: Beograd, Avala Mt., 320 m: 1 m, 2. IV 2017. Genitalia checked, slide SR-2936.; Gnjilane, Gornje Kusce, 550 m, 1 m, 24. III 2018., Janićijević T. leg., Jakšić P. coll.; Zubin Potok, Velji Breg, 630 m, 1 m, 14. IV 2018., Živković M. leg., Jakšić P. coll.

The larvae feed on various deciduous trees, such as *Quercus* and *Betula*.

**Superfam. Papilionoidea Latreille, 1802**

**Fam. Lycaenidae Leach, 1815**

7129 *Plebejus argyrognomon* (Bergsträsser, 1779)

Material examined: Niš, Jelašnička Klisura Gorge 450 m: 1 f, 12. V 2015. Photo Jakšić P.

This meso-xerophile species occur on calcareous habitat, such is Jelašnica gorge. Larval food plant is *Securigera varia*.

7171 *Polyommatus daphnis* ([Denis & Schiffermüller], 1775)

Material examined: Svrlijig, Tresibaba Mt., 700 m: 1 f, 14. VI 2017. Observed and photo by Jakšić P. Monophage caterpillars feed on *Securigera varia*.

**Fam. Nymphalidae Rafinesque, 1815**

7312 *Lasiommata maera* (Linnaeus, 1758)

Material examined: Golubački Grad, 110 m: 1 m, 30. VII 2016. Genitalia checked, slide SR-2687 (Fig. 4).

The larva eats full-grown grasses, from the genus *Poa*, *Festuca*, *Glyceria*, *Calamagrostis*, *Deschampsia*, *Agrostis*, *Nardus*, *Dactylis*, *Lolium* and *Hordeum* species.

**Superfam. Pyraloidea Latreille, 1809**

**Fam. Crambidae Latreille, 1809**



**Figure 2.** *Plebejus argyrognomon* (Bergsträsser, 1779). Photo Jakšić P.



**Figure 3.** *Polyommatus daphnis* ([Denis & Schiffermüller], 1775). Photo Jakšić P.



**Figure 4.** *Lasiommata maera* (Linnaeus, 1758), male genitalia.

6478 *Eurrhysis pollinalis* ([Denis & Schiffermüller], 1775)

A survey of the literature: Plant et al. (2017) has identified this species on Mt. Šljivovički Vis. Material examined: Svrlijig, Tresibaba Mt., 700 m: 2 m 1 f, 14. VI 2017. Observed and photo (Fig. 5) by Jakšić P.



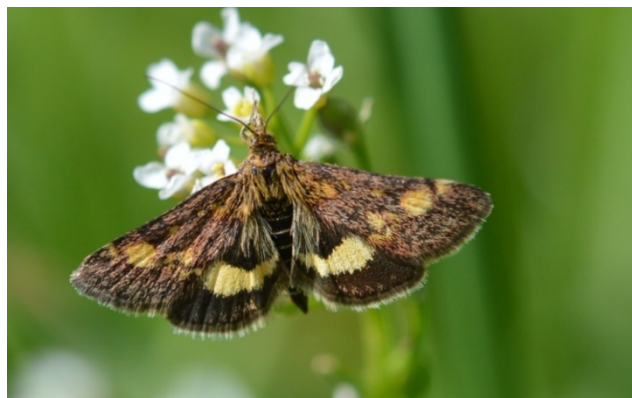
The caterpillars feed on *Genista*, *Glycyrrhiza*, *Laburnum*, *Cytisus* and *Ononis* species.



**Figure 5.** *Eurrhysis pollinalis* ([Denis & Schiffermüller], 1775). Photo Jakšić P.

6604 *Pyrausta aurata* (Scopoli, 1763)

A survey of the literature: Common species, Rothschild (1912-1917) on Deliblato Sands; Plant et al. (2017) has identified this species on several localities: Pirot, Crni Vrh; Pčinja, Vražiji Kamen; Preševo, Trnava; and Bela Palanka, Šljivovički Vis. Material examined: Beograd, Avala Mt., 312 m: 1 m 1 f, 2. IV 2017, 1 m, 11. IV 2017.; 1 m, 26. IV 2017 (Fig. 6).



**Figure 6.** *Pyrausta aurata* (Scopoli, 1763). Avala Mt. Photo Jakšić P.

**Superfam. Geometroidea Leach, 1815**

**Fam. Geometridae Leach, 1815**

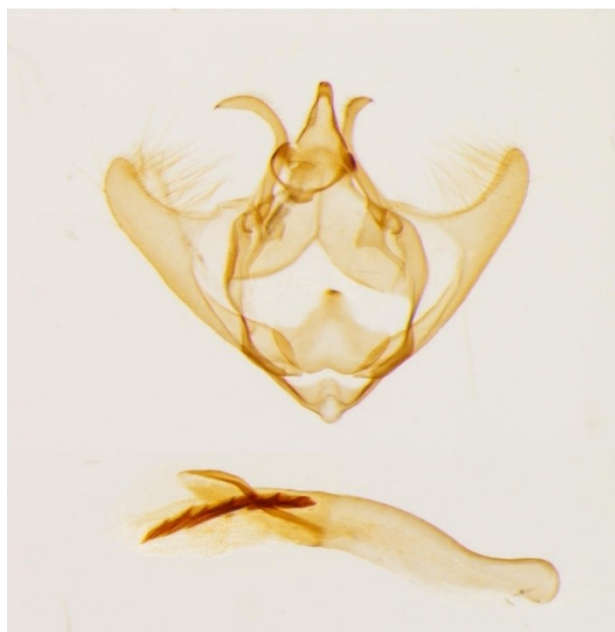
7527 *Lomaspilis marginata* (Linnaeus, 1758)

Material examined: Kovin, Dubovac, 75 m: 1 m, 8. VII 2016. Genitalia checked, slide SR-2933 (Fig. 7). The larvae feed on *Salix* and *Populus*, especially *P. tremula*.

7559 *Narraga tessularia* (Metzner, 1845)

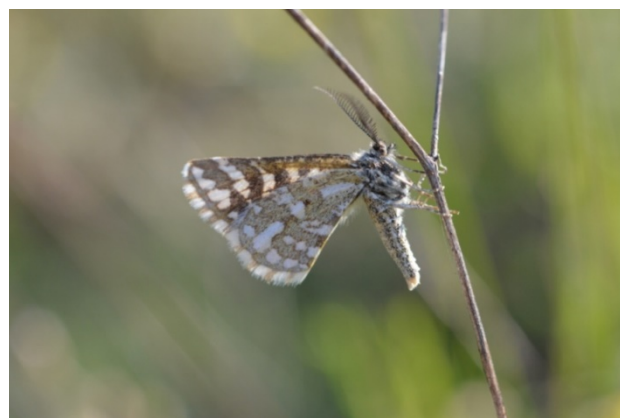
A survey of the literature: Beshkov (2015) and Jakšić (2017). Both authors independently found this species in the same locality on Pirot, Crni Vrh Mt.

Material examined: Pirot, Crni Vrh Mt., 1123 m: common, 20-21. VI 2017.; Bela Palanka, Šljivovički vis, 926 m: common. Genitalia checked, slide SR-2918. Šljivovički Vis Mt. is the sec-



**Figure 7.** *Lomaspilis marginata* (Linnaeus, 1758), male genitalia, slide SR-2933.

ond locality on which this species has been established (Fig. 8). Ecologically, it is a specialist of salty steppes with *Artemisia maritima* as a larval food plant. In eastern Serbia it is locally distributed in the forest belt, up to 1000 m above sea level, occurring in forest margins. On so far known habitats in eastern Serbia *Artemisia alba* Turra were present. This means that the habitat shift has occurred. This is a taxon with a disjunct distribution. It is distributed in Iberian Peninsula (Granada), South-East Europe and central Asia (Russia, Kazakhstan). Agenjo (1956) described this species as a *N. isabel* Agenjo, 1956. Now, this name is synonym. Several subspecies are described: *N. t. tessularia* (Metzner, 1845); *N. t. illia* Wehrli, 1940; *N. t. kasyi* Moucha & Povolny, 1957 and *N. t. pannonica* Vojnits, 1977. According to Skou & Sihvonen (2015) populations from Serbia are related to nominal subspecies – *N. tessularia tessularia* (Metzner, 1845).



**Figure 8.** *Narraga tessularia* (Metzner, 1845), male, Bela Palanka, Šljivovički Vis. Photo Jakšić P.

7671 *Apocheima hispidaria* ([Denis & Schiffermüller], 1775)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 14. III 2017.

The larvae feed on *Quercus*, *Salix*, *Carpinus*, *Prunus* and *Malus* species.

7676 *Lycia graecarius* (Staudinger, 1861)

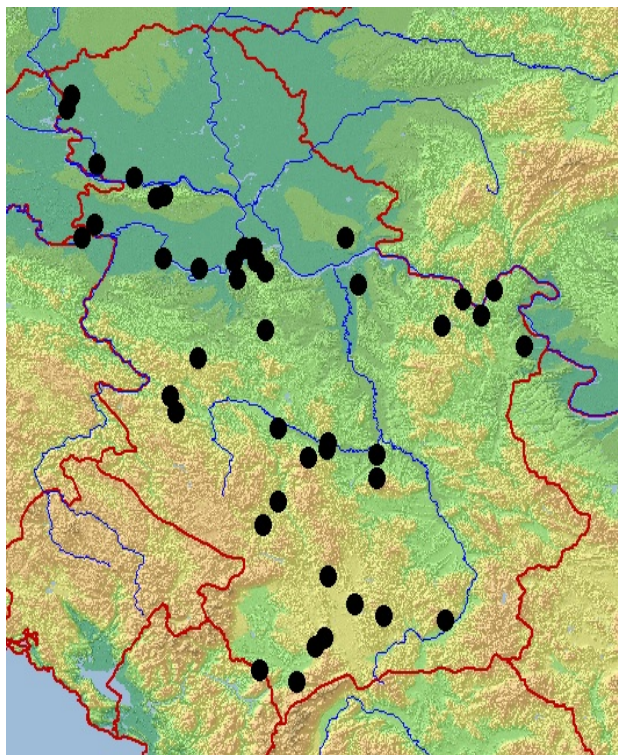
Material examined: Zlatibor Mt., vic. Ljubiš, 1105 m: 1 m, 2. V 2017.

Polyphagous caterpillars feed on *Achillea*, *Laburnum*, *Rumex*, *Taraxacum*, *Trifolium* and *Centaurea* species. The presence of species of the genus *Lycia* in Serbia has not been completely resolved. This genus is present in Europe with eight species. In Serbia, four species are registered: *L. hirtaria* (Clerck, 1759), *L. graecarius* (Staudinger, 1861), *L. zonaria* (Denis und Schiffermüller, 1775) and *L. pomonaria* (Hübner, 1790) (Tomić et al., 2002; Stojanović et al., 2006; Jakšić, 2016a). However, the species of this genus due to insufficient morphological-anatomical distinction, as well as due to hybridization, are of particular interest (Harrison, 1919). Preliminary results of the current DNA barcoding method show that this method can solve complex taxonomic problems (Hausmann et al., 2011).

7699 *Erannis defoliaria* (Clerck, 1759)

A survey of the literature: Jovanović (1888). After Jovanović's first contributions there are another 35 literature data for presence of this species in Serbia (see distribution map on Fig. 9).

Material examined: Novo Brdo, Bostane, 800 m: common, 27. XI 1982.; Novi Beograd, vic. TC "Ušće", 1 f, 26. XI 2016. Jakšić P. photo (Fig. 10), observed and col.



**Figure 9.** *Erannis defoliaria* (Clerck, 1759) distribution map in Serbia.

7822 *Bupalus piniarius* (Linnaeus, 1758)



**Figure 10.** *Erannis defoliaria* (Clerck, 1759), female. Photo Jakšić P.

A survey of the Literature: Species as pests in forestry were introduced early in professional literature (Todorović, 1900), but they were just Zečević & Radovanović (1974) gave the first faunistic data about it.

Material examined: Divčibare, vic. Kaona, 820 m: 14. VI 2017., 1 m, observed and photo (Fig. 11) by Jakšić P.

This species is an inhabitant of coniferous woodland, their caterpillar feed mainly on *Pinus* species.



**Figure 11.** *Bupalus piniarius* (Linnaeus, 1758), male. Photo Jakšić P.

8036 *Scopula immorata* (Linnaeus, 1758)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 28. V 2017.

The caterpillar feeds on various low-growing plants, as *Thymus* and *Origanum*.

8102 *Idaea aureolaria* ([Denis & Schiffermüller], 1775)

Material examined: Svrljig, Tresibaba Mt., 700 m: 4 m, 19. VI 2017. Genitalia checked, slide SR-2919.

The caterpillars are polyphagous and have been recorded feeding on *Rumex*, *Onobrychis*, *Securigera* and *Vicia* species.

8184 *Idaea aversata* (Linnaeus, 1758)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 4. IX 2017.

The larva feeds on a variety of plants, as *Galium*, *Stellaria*, *Taraxacum* and *Polygonum* species.



8240 *Scotopteryx mucronata* (Scopoli, 1763)  
Material examined: Sjenica, Trijebine, 1227 m: 1 m, 5. VII 2017.

*Ulex* sp. and *Cytisus* sp. are food plants for caterpillars.

8255 *Xanthorhoe montanata* ([Denis & Schiffermüller], 1775)  
Material examined: Sjenica, Trijebine, 1227 m: 1 f, 5. VII 2017.

Caterpillars on *Stachys*, *Geum* and *Rumex* species.

8274 *Epirrhoe tristata* (Linnaeus, 1758)  
Material examined: Sjenica, Trijebine, 1227 m: 1 m, 5. VII 2017. Genitalia checked, slide SR-2934.

Caterpillars on *Galium* ssp.

8447 *Operophtera brumata* (Linnaeus, 1758)  
Material examined: Beograd, Zvezdara, 187 m: 1 m, 17. XII 2017.

Larva feeds on *Cornus*, *Evonimus*, *Fraxinus*, *Ulmus*, *Acer*, *Quercus* ssp.

8513 *Eupithecia breviculata* (Donzel, 1837)  
Beshkov (2017) for the first time reported this species for Serbia. Our finding is second. Material examined: Pirot, Crni Vrh, 1123 m: 1m, 20. VI 2017.

The larvae feed on *Peucedanum* and *Pimpinella* species.

#### Superfamily Noctuoidea Latreille, 1809

##### Fam. Notodontidae Stephens, 1829

8708 *Furcula furcula* (Clerck, 1759)  
Material examined: Suva Planina Mt., Bojanine vode, 1000 m: 3 m, 19-20. VI 2017.

The host plants are *Salix* and *Populus* species.

8732 *Pterostoma palpina* (Clerck, 1759)  
Material examined: Zlatibor Mt., vic. Ljubiš, 1105 m: 1 m, 2. V 2017.

The host plants are *Salix* and *Populus* species.

##### Fam. Erebidae Leach, [1815]

###### Subfam. Rivulinae Grote, 1895

9008 *Rivula sericealis* (Scopoli, 1763)  
Material examined: Beograd, Avala, 320 m: 1 m, 28. V 2017.

The larvae feed on *Brachypodium* and *Molinia* species.

###### Subfam. Lymantriinae Hampson, [1893]

10414 *Leucoma salicis* (Linnaeus, 1758)  
Material examined: Beograd, Zvezdara, 187 m: 1 m, 29. VII 2017.

The larvae feed on *Populus* and *Salix* species.

10387 *Calliteara pudibunda* (Linnaeus, 1758)  
Material examined: Zlatibor Mt., vic. Ljubiš, 1105 m: 1 m, 2. V 2017.

The larvae feed on *Picea*, *Juniperus* and *Larix* species.

###### Subfam. Herminiinae Leach, 1815

8845 *Herminia tarsicrinalis* (Knoch, 1782)  
Material examined: Kovin, Dubovac, 70 m, 1 m, 9. VII 2016. Genitalia checked, slide SR-2781.

Caterpillars on *Rubus fruticosus* and *Clematis* ssp.

###### Subfam. Metoponinae Herrich-Schäffer, [1851]

8965 *Tyta luctuosa* (Denis & Schiffermüller, 1775)  
Material examined: Beograd, Zvezdara, 187 m: 1 m, 28. V 2017.

Foodplant *Convolvulus arvensis*.

###### Subfam. Arctiinae Leach, [1815]

10583 *Diacrisia sannio* (Linnaeus, 1758)  
Material examined: Beograd, Avala, 320 m: 1 m, 28. V 2017.; Sjenica, Trijebine, 1227 m, 1 f: 4. VII 2017.

The larvae feed on *Galium*, *Plantago*, *Taraxacum*, *Epilobium* and *Urticae* species.

10479 *Pelosia muscerda* (Hufnagel, 1766)  
Material examined: Beograd, Avala Mt., 320 m, 15. VIII 2017., 1 male. Genitalia checked, slide SR-2914 (Fig. 12).

Larval food plants are algae, lichens and different plants, e. g. *Taraxacum*.



Figure 12. *Pelosia muscerda* (Hufnagel, 1766), male genitalia, slide SR-2914.

10499 *Eilema (Wittia) sororcula* (Hufnagel, 1766)  
Material examined: Beograd, Zvezdara, 187 m: 1 m, 29. IV 2017. Genitalia checked, slide SR-2878.

Larval food plants different lichens.

10521 *Dysauxes ancilla* (Linnaeus, 1767)  
Material examined: Kovin, Dubovac, 70 m: 1 m, 9. VII 2016. Genitalia checked, slide SR-2938 (Fig. 13). Caterpillars feed on *Taraxacum*, *Senetio*, *Plantago* and *Lactuca* species.

10526 *Spiris striata* (Linnaeus, 1758)  
Material examined: Bela Palanka, Šljivovički vis, 926 m: 1 f, 22. VI 2017.

Food plants of caterpillar: *Artemisia*, *Calluna*, *Festuca*, *Hieracium*, *Plantago*, and *Salvia* species.

###### Subfam. Boletobiinae Grote, 1895

8975 *Laspeyria flexula* (Denis & Schiffermüller, 1775)  
Material examined: Beograd, Zvezdara, 187 m: 1 f, 29. V 2017.

Larval food plants different *Salix* and *Populus* species.



**Figure 13.** *Dysauxes ancilla* (Linnaeus, 1767), male genitalia, slide SR-2938.



**Figure 14.** *Cryphia algae* (Fabricius, 1775), male genitalia, slide SR-2946.

**Fam. Noctuidae Latreille, 1809**

**Subfam. Acontiinae Guenée, 1841**

9097 *Emmelia trabealis* (Scopoli, 1763)

Material examined: Beograd, Avala, 312 m: 1 m, 7. VII 2017.

**Subfam. Oncocnemidinae Forbes Franclemont, 1954**

9275 *Teinoptera olivina* (Herrich-Schäffer, [1852])

A survey of the literature: the first data on this species was given by Rotschild (1911) who found it on Deliblato Sands, Flammunda. Then, for Serbia, Culot (1913) also quoted it, stating that it has material in its collection. But he does not say who collected the material. Gradojević (1963) and Vasić (1969) also state this species for Deliblato Sands. Recently, Ronkay & Ronkay (1995) describe subspecies *deliblatica* (G. Ronkay L. Ronkay, 1995) on material from Deliblato Sands. We can see from this review of literature that the species is known only from Deliblato Sands. Material examined: Bela Palanka, Šljivovički Vis, 926 m, 1f, 22. VI 2017.

This is the second locality on which this species was found in Serbia.

Larval food plants are *Dianthus* species.

**Subfam. Heliotinae Boisduval, [1828]**

9367 *Heliotis peltigera* ([Denis & Schiffermüller], 1775)

Material examined: Beograd, Zvezdara, 187 m: 1f, 20. VIII 2017.

The larvae feed on *Ononis*, *Senecio*, *Tagetes*, *Atropa* and other species.

**Subfam. Bryophilinae Guenée, 1841**

8801 *Cryphia algae* (Fabricius, 1775)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 15. VIII 2017. Genitalia checked, slide SR-2946 (Fig. 14).

Caterpillars feed on lichen species.

8806 *Bryophila ereptricula* Treitschke, 1825

Material examined: Beograd, Zvezdara, 187 m: 1 f, 29. VII 2017. Genitalia checked, slide SR-2917 (Fig. 15).

Caterpillars feed on lichen and algae species.



**Figure 15.** *Bryophila ereptricula* Treitschke, 1825, female genitalia, slide SR-2917.

**Subfam. Xyleninae Guenée, 1841**

9454 *Hoplodrina ambigua* ([Denis & Schiffermüller], 1775)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 24. V 2017., 1 f 4. IX 2017. Genitalia checked, slide SR-2947.

The polyphagous larvae feed on *Betula*, *Medicago*, *Taraxacum* and other species.

9492 *Polyphaenis sericata* (Esper, [1787])

Material examined: Kovin, Dubovac, 70 m, 1 m, 9. VII 2016. Genitalia checked, slide SR-2819.

The larvae feed on *Ligustrum vulgare*.

9660 *Lithophane ornitopus* (Hufnagel, 1766)

Material examined: Beograd, Zvezdara, 187 m: 1 m, 14. III 2017.

The caterpillars on *Salix*, *Populus*, *Prunus*, *Ulmus*, *Quercus* species.

**Subfam. Hadeninae Guenée, 1837**

10039 *Orthosia cruda* ([Denis & Schiffermüller], 1775)

Material examined: Beograd, Zvezdara, 187 m: 1 f, 14. III 2017.

The larvae feed on a number of deciduous trees, mostly *Quercus* and *Salix*.

9895 *Calocestra trifolii* (Hufnagel, 1766)

Material examined: Beograd, Zvezdara, 187 m, 1 m: 4. IX 2017. Genitalia checked, slide SR-2948.

The larvae feed on *Atriplex* and *Chenopodium* species.

## CONCLUSIONS

Species in Serbia are present on different types of habitats. Several species (7671, 7699, 8036, 8184, 8447, 10414, 8965, 10499, 8975, 9367, 8801, 8806, 9454, 9660, 10039 and 9895) were found in urban habitats of the city of Belgrade, with significant anthropogenic pressure, indicating ecological plasticity of these species. Some species (4743, 6604, 8845 and 10522) were found in suburban and rural habitats. These are synanthropic species, whose survival is dependent on man. The largest number of species (4166, 2231, 7129, 7171, 7312, 6478, 7527, 7676, 7822, 8102, 8240, 8255, 8274, 8513, 8708, 8732, 9008, 10388, 10583, 10479, 10526 and 9097) was found in typical habitats. Their occurrence is related to the presence of food for the caterpillars. In some species (7559) there was a change of habitat in relation to the typical ecological requirements of the species.

In unexplored areas, there are discovering new and rare species for Serbia's fauna. This speaks of insufficient exploration of this group of insects. Zečević (1996) summed up the knowledge for that time, quantitatively expressed by the number of 1334 species of Lepidoptera in Serbia. According to uncertificated data it is estimated that up to 2500 species have been found in Serbia so far. And that's about half the number of species known in Hungary or Romania. Our results show that, in addition to identifying new species, it is also important to identify already known species in new areas throughout Serbia.

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