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 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°38’ 45” N; 20°26’ 02” E; Zlatibor Mt., vic. Ljubiš village, 1105 m, 43°37’ 42” N; 19°45’ 24” E; Komin, 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; Svljig, Tresibaba Mt., 700 m, 43°30’ 14” N; 22°12’ 57” E; Golubacki grad, 110 m., 44°38’ 42” N; 21°41’ 15” E; Novo Brdo, Bostoe 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 Klišura 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, Gnjilane, 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 xylotrim and mounting in Canada balsam. The photos of genital patterns were taken using the “Nikon SMZ500” 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. Tortricoidae Latreille, 1802

Fam. Tortricidae Latreille, 1803

Subfam. Olethreutinae Walsingham, 1895

4731 Celypha lacunana ([Denis & Schiffermüller], 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.
Superfam. Cossoidea Leach, 1815
Fam. Cosiidae 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: Svrljig, Tresibaba Mt., 700 m: 1 f, 14. VI 2017. Observed and photo by Jakšić P. Monophagous 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
6478 Eurrhypis pollinalis ([Denis & Schiffermüller], 1775)
A survey of the literature: Plant et al. (2017) has identified this species on Mt. Šljivovički Vis. Material examined: Svrljig, Tresibaba Mt., 700 m: 2 m 1 f, 14. VI 2017. Observed and photo (Fig. 5) by Jakšić P.
The caterpillars feed on Genista, Glycirrhiza, Laburnum, Cytisus and Ononis species.

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

6604 Pyrausta aurata (Scopoli, 1763)

A survey of the literature: Common species, Rotschild (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 second 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 7. Lomaspilis marginata (Linnaeus, 1758), male genitalia, slide SR-2933.

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.

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: 1 m, 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 *Rivula sericealis* (Scopoli, 1763)
Material examined: Beograd, Avala, 320 m: 1 m, 28. V 2017.
The larvae feed on *Brachypodium* and *Molinia* species.

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 *Diacriis sisamis* (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, Plantarum, 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, Avala, 320 m: 1 m, 28. V 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. Boletobinae 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.

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, Flamunda. 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, Šljivovicki 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. Heliothinae 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).

Subfam. Bryophilinae Guenée, 1841
8859 Bryophila 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 and algae species.

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: Kovi, 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)
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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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.

BIOPOLY

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