

New data discovered in the last five years on Lepidoptera (Rhopalocera), which are rare in south-western Bulgaria

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Abstract. The authors present data on the occurrence and observation of Lepidoptera (Rhopalocera) in south-western Bulgaria during five years of research.

Samenvatting. De auteurs presenteren gegevens over het voorkomen en de waarneming van Lepidoptera (Rhopalocera) in het zuidwesten van Bulgarije gedurende vijf jaar onderzoek.

Résumé. Les auteurs présentent des données sur l'apparition et l'observation de lépidoptères (Rhopalocera) dans le sud-ouest de la Bulgarie au cours de cinq années de recherche.

Key words: Bulgaria — Distribution Data — Faunistics — Rare species.

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Introduction

Since 2015, the authors have investigated the occurrence of Lepidoptera within a radius of about 60 km from Sandanski, between May and July. An intensive study was made each year for up to 20 days. Data on the occurrence of the more interesting Lepidoptera in the area since 2015 are presented, family by family.

Material and methods

After the experience of the 1980's, we decided to perform research in a beautiful and very interesting area of south-western Bulgaria under the Pirin Mountains. The starting point was the city of Sandanski. Our first visit to the area was brief, from 4 to 12 June, 2015. Subsequently, we decided to vary the dates of visits to the area, to stay longer and to look for new localities. Variable weather influenced our research in the following years: in 2016 from 26.v. to 7.vi, in 2017 from 11 to 31.v, in 2018 from 13 to 30.vi, and in 2019 from 20.vi. to 10.vii. During these periods the following localities were visited: Kresna and adjacent gorges, Strumyani with gorges, Ilindentsi, Ploski, Polenitsa near Sandanski, the river valley of the Lebnice, Kozhuh, Melnik, Rozhen, Petrovo – Izvora, and Popovi Livadi - Orelek.

Results Hesperiidae

***Carcharodus orientalis* (Reverdin, 1913).** Found in Kozhuh, in the valley of the Lebnice River, and Melnik in 2015, gen. det. This species is very local, in the warmest region of Bulgaria. Documentary material: • 2♂♂, Melnik 7.vi.2015, leg. K. Konečný; • 1♂, Kozhuh 9.vi.2015, leg. K. Konečný; • 1♂, Lebnice 29.v.2016, leg. K. Konečný; • 1♂, 14.v.2017, leg. K. Konečný; • 1♂, 23.v.2017, leg. K. Konečný.

***Pyrgus cinarae* (Rambur, 1840).** This skipper was observed at Polenitsa, Lilyanovo, Petrovo – Izvora and Melnik. It is stated to be rare and very local in Bulgaria. Documentary material: • 1♂, Polenitsa, 14.vi.2018; • 1♂,

Lilyanovo, 22.vi.2018, leg. K. Stonavský; • 1♂, Petrovo – Izvora, 21.vi.2019; • 1♂, 22.vi.2019; • 1♂, 1.vii.2019; • 1♂, 4.vii.2019, leg. K. Konečný.

***Gegenes nostradamus* (Fabricius, 1793).** Karel Stonavský found this species between Ilindentsi and Ploski, flying very quickly in a very hot place. • 1♂, 1♀, Ilindentsi – Ploski, 29.vi.2019, leg. K. Stonavský (Fig. 1).



Fig. 1. *Gegenes nostradamus*, ♂, Bulharsko, Ilindentsi-Ploski, 29.vi.2019. © K. Stonavský.



Fig. 2. Ovum on *Paliurus spina-christi*, Bulharsko, Lebnice, 6.vi.2016. © K. Konečný.

Lycaenidae

***Tarucus balkanicus* (Freyer, 1843)**. This species was found in the valley of the Lebnice River, and then at the south-eastern foot of the Kozhuh ridge. Documentary material: Lebnice • 2♀♀, 29.v.2016; • 2♂♂, 7.vi.2016, leg. K. Konečný; • 1♂, 23.vi.2019; • 1♂, 9.vii.2019, leg. K. Konečný; • 1♀, Kozhuh, 29.vi.2018; • 1♀, 30.vi.2018, observation by K. Stonavský; • 1♂, 25.vi.2019, observation by K. Konečný. Last instar larvae of *Tarucus balkanicus* were found on solitary shrubs of *Paliurus spina-christi*, close to the ground. Larvae of *Callophrys rubi* (Linnaeus, 1758) were also found, on twigs of *Paliurus spina-christi*, Karel Stonavský collected them to breed out. Eggs on the top shoots of *Paliurus spina-christi* were probably those of *Callophrys rubi*. (Fig. 2). The larvae of *Tarucus balkanicus* were found at Lebnice on 23.vi., 25.vi., and 28.vi.2018, K. Stonavský & K. Konečný (Fig. 3).



Fig. 3. *Tarucus balkanicus* larva, Bulharsko, Lebnice, 25.vi.2018. © K. Konečný.

***Plebejus idas baldur* (Kolev, 2005)**. This species was collected above the Rozhen Monastery at an altitude of 640 m. Documentary material: • 2♂♂, 7.vi.2015. • 1♂, 30.v.2016; • 3♂♂, 3.vi.2016, leg. K. Konečný. Genitalia were checked and compared with those of *P. idas croatica* (Grund, 1913) from Gornja Lastva, 18.vi.1987; • 3♂♂, leg. & det. K. Konečný (Fig. 4a, 4b). Determination is difficult for *P. argyrognomon* and *P. idas* in the southern Balkans and the two species may be confused. Larvae were found on shrubs of the endemic *Chamaecytisus absinthioides*. Karel Stonavský took these larvae to complete their development, but the pupae did not complete the transformation into imago, even after two years. The pupae look similar to those of *Callophrys rubi* (Fig. 5).

***Callophrys rubi* (Linnaeus, 1758)**. This species was discovered above Izvora near Petrovo. Documentary material: • 1♂, 22.vi.2019. • 1♂, 1.vii.2019, leg. K. Konečný, at an altitude of 750 m. The determination of the butterfly was verified by genital preparation. Karel Stonavský observed a female below the Orelek peak at 1850 m, which was laying an egg into the tassel of the top twig of *Chamaecytisus absinthioides*. • 1♀, 7.vii.2019, observation by K. Stonavský (Fig. 6), but its identity was not confirmed despite its association with *Chamaecytisus absinthioides*.

***Kretania sephirus* (Fivaldszky, 1835)**. This butterfly was found in the gorges above the village of Strumyani. Documentary material: • 1♂, 18.v.2017; • 2♂♂, 22.v.2017, leg. & det. K. Konečný (Fig. 7). Eggs of *K. sephirus* were found rarely on the foodplant *Astragalus spruneri* (Fig. 8).

***Polyommatus andronicus* (Coutsis & Chavalas, 1995)**. This species of blue was found above Izvora near Petrovo at an altitude 750 m, K. Konečný. *Polyommatus andronicus* differs from *P. icarus* in the size of the genitalia.

***Polyommatus orphicus* (Kolev, 2005)**. *P. orphicus* was collected rarely at the Izvora site. Documentary material: • 2♂♂, 21.vi.2018, leg. K. Konečný and on the way to Petrovo, observation by K. Stonavský and K. Konečný; • 1♂, in the village of Petrovo on 8.vii.2019.

***Aricia artaxerxes* (Fabricius, 1793)**. This little blue was discovered at an altitude of 750 m above the site at Izvora 2♂♂ on 5.vii.2019, leg. K. Konečný. A second finding was at the top of Orelek, at an altitude of 2000 m. Documentary material: • 1♂, 7.vii.2019, leg. K. Konečný. This individual is morphologically different from the appearance of the butterflies from the Izvora site, in both size and colour.

***Polyommatus eroides* (Fivaldszky, 1835)**. This blue was observed at an altitude of 1850 m, on southern Pirin at the top of Orelek. Documentary material: • 2♂, 7.vii.2019, leg. K. Konečný.

***Agriades dardanus* (Freyer, 1844)**. K. Stonavský found this very small blue at an altitude of 2030 m, at the top of Orelek 2♂♂, 1♀ on 7.vii.2019.

Nymphalidae

***Erebia oeme* (Hübner, 1804)**. The species was rare, flying together with *Erebia medusa*. Documentary material: • 1♂, Orelek 27.vi.2019, leg. K. Konečný, 1800 m, confirmed by genital preparation.

***Erebia neleus* (Freyer, 1833)**. This species was found below the peak of Orelek at an altitude of 1800 m. Documentary material: • 2♂♂, 2.vii.2019, gen. prep. & det. K. Konečný (Fig. 9). *Erebia neleus* and *E. cassioides* differ at the molecular level, and the differences in the genitalia are small, but the latter species does not occur in the mountains of the Balkans.

***Polygonia egea* (Cramer, 1775)**. This species was observed at Ploski on 29.vi.2019, where several butterflies were seen, and the main foodplant, *Parietaria officinalis*, was present. *P. egea* is local and rare in Bulgaria.



Fig. 4a. *Plebejus idas baldur*, ♂, genitalia, Bulgaria, Rozhen, 3.vi. 2016. © K. Konečný.

Fig. 4b. *Plebejus idas croatica*, ♂, genitalia, Montenegro, Gornja Lastva, 18.vi.1987. © K. Konečný.

Fig. 5. *Callophrys rubi*, pupa on *Chamaecytisus absinthioides*, Bulgaria, Sandanski, 6.vi.2017. © K. Stonavský.

Fig. 6. Ovum on *Chamaecytisus absinthioides*, Bulgaria, Orelek, 7.vii.2019. © K. Konečný.

Fig. 7. *Kretania sephirus*, genital, Bulgaria, Strumyani, 22.v.2017. © K. Konečný.

Fig. 8. *Kretania sephirus*, ovum on *Astragalus spruneri*, Bulgaria, Strumyani, 22.v.2017. © K. Konečný.

Fig. 9. *Erebia neleus*, ♂, genital, Bulgaria, Orelek, 2.vii. 2019. © K. Konečný.

Discussion and conclusion

The site below Ali Botush is considered to be the place with the greatest diversity of *Lycaenidae* in Europe. The

authors proved the occurrence of 30 species of *Lycaenidae* between 22.vi.2015 and 7.vii.2019 and they are keen to return to this interesting area of south-western Bulgaria.

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