

## Contribution to the butterfly species of Belasitsa Mountain (SW Bulgaria) and second record of *Gonepteryx cleopatra* (Linnaeus, 1767) from Bulgaria

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**Abstract.** At present, according to the literature data for Belasitsa Mountain are published 139 butterfly species. This article contributes to the knowledge of the butterfly fauna of the mountain by adding five more species. With this supplement the number of the butterflies' fauna of Belasitsa Mountain increase to 144 species. This article also presents information about the second record of *Gonepteryx cleopatra* (Linnaeus, 1767) in Bulgaria.

**Key words:** Belasitsa Mountain, Alibotoush Mountain, Rupite locality, *Gonepteryx cleopatra*, butterflies, faunistic data.

### Introduction

Belasitsa Mountain is a mountain range in the central part of the Balkan Peninsula. Currently the southern slope of the mountain belongs to the territory of Greece, the southwestern slope to Republic of Macedonia and the southeastern slope – to Bulgaria. The considerable displacement, the specific geographical location and the distinctive climate are the main reasons which determine the diverse butterflies' fauna of Belasitsa Mt. Unlike any other borderline areas (for example the Vlahina Mountain), the butterflies of Belasitsa Mt. are studied very well.

### Material and methods

The current report presents a summary of the published faunistic data of butterfly taxa inhabiting the Bulgarian section of Belasitsa Mt. (Fig. 1). In addition, 5 species, not registered before in Belasitsa Mt. are reported here with locations, data of records, number and sex of specimens. Short faunistic analysis is made based on the comparison between the butterflies of Belasitsa Mt. and those of Alibotoush (Slavyanka) Mountain. Of a great interest is the record of *Gonepteryx cleopatra* (Linnaeus, 1767) in the lower parts of Belasitsa Mt. Short comment about the distribution of this species is given, as well as a review of the previous record.

### Discussion

The main work dedicated to the Belasitsa' butterflies is by Slivov and Nestorova (1988), who listed 134 butterfly species in total. Several other species were added later: *Melitaea aurelia* Nickerl, 1850 (Abadjiev 1995), *Pseudochazara geyeri* (Herrich-Schäffer, [1846]) (Slivov & Abadjiev 1999), *Muschampia proto* (Ochsenheimer, 1818) (Abadjiev 2001), *Hipparchia syriaca* (Staudinger, 1871) (Abadjiev 2001 revised Drenowsky 1920 and Drenovski 1921), *Apatura iris* (Linnaeus, 1758) (Abadjiev & Beshkov 2007), *Neptis sappho* (Pallas, 1771), *Tarucus balcanicus* (Freyer, [1844]) and *Lampides boeticus* (Linnaeus, 1767) (Domozetski 2009).



**Fig. 1.** Map of the Bulgarian section of Belasitsa Mt.

The species *Muschampia proto* and *Pseudochazara geyeri* are mentioned for the Belasitsa Mt. only in the context of revised specimens from the collections of the former Institute of Zoology (now the Institute for Biodiversity and Ecosystem Research, Sofia) at the Bulgarian Academy of Sciences. However, a serious doubt exists regarding these findings and the case is probably a case of wrongly labeled specimens (Kolev 2002). *Muschampia proto* and *Pseudochazara geyeri* have never been reported for Belasitsa Mt. for a second time and for that reason they should not be counted to the Lepidoptera species typical for this region, or even to Bulgaria. Acceptable explanation how such wrong data appeared in the literature is given in Ignatov, Wetton and Beshkov, 2013 (unlabeled specimens donated to Slivov from colleagues abroad).

Furthermore, Slivov and Nestorova (1988) reported three species from the genus *Colias* in this region: *Colias crocea* (Fourcroy, 1785), *Colias hyale* (Linnaeus, 1758) and *Colias australus* Veity, 1911 (syn. *Colias alfacariensis* Ribbe, 1905). Abadjiev (2001) rightfully includes only *Colias crocea* and *Colias alfacariensis*, excluding *Colias hyale*. Making a difference between *Colias alfacariensis* and *Colias hyale* is very hard, especially with females and this species are readily separable in larval stage (Tolman & Lewington 1997). The habitat of these species is also different and *C. hyale* has no place in Belasitsa. For example, it has been established that all the specimens from NMNHS collection previously reported as *Colias hyale* actually represent *Colias alfacariensis*, and the only reliable record of *Colias hyale* from Bulgaria is based on the specimens from a single locality in Ludogorie (Abadjiev 2001).

Up to now the number of the butterfly species in Belasitsa Mt. is 139 according to the data in the literature. The current article contributes to this by adding five more (with locations, data of records, number and sex of specimens) species as follows:

*Erynnis marloji* (Boisduval, [1843]): 2 km SW of Razhdak Village, 03.04.2013, 1 ♀.

*Carcharodus orientalis* Reverdin, 1913: between Gabrene Village and Skrat Village, 08.06.2012, 1 ♂.

*Gonepteryx cleopatra* (Linnaeus, 1767): 1 km NE of Kolarovo Village, 22.06.2013, 1 ♂; Gabrene Village, 23.06.2013, 1 ♂ (Fig. 2).

*Araschnia levana* (Linnaeus, 1758): Kamena Village, 12.08.2011, 1 ♀ and 1 ♂; Klyuch Village, 17.07.2012, 1 ♂; Yavornitsa Village, 17.07.2012, 1 ♀.

*Hipparchia fatua* Freyer, [1844]: 500 m NE of Kolarovo Village, 10.10.2009, 1 ♂; Kolarovo Village, 16.07.2012, 1 ♀.



**Fig. 2.** *Gonepteryx cleopatra*, Gabrene Village, 23.06.2013.

With this supplement the number of the butterflies' fauna of Belasitsa Mt. increase to 144 species. Typical of the butterflies' fauna of Belasitsa Mt. is the small percentage of mountain species. Of great interest is the comparison between the butterflies of Belasitsa Mt. and those of Alibotoush (Slavyanka) Mountain. These two mountains are located on almost the same latitude and they extend a maximum altitude of over 2000 m (Radomir Top in Belasitsa Mt. – 2029 m; Gotsev Top in Alibotoush Mt. – 2212 m). Alibotoush Mt. is connected with Pirin Mountain (Vihren Peak – 2914m) to the North and with Cherna Gora Mountain (Cherna Gora Top – 1653 m) and Sengelska Mountain (Chal Top – 1330 m) to the South. Belasitsa Mt. is connected only with Plavush Mountain (Plavush Top – 997 m) and Krousha Mountain (Krousha Top – 860). Alibotoush Mt. is characterized by a large number of mountain species, such as *Parnassius apollo* (Linnaeus, 1758), *Plebeius dardanus* (Freyer, [1844]), *Polyommatus nephohiptamenos* (Brown & Coutsis, 1978), *Coenonympha rhodopensis* Elwes, 1900, *Erebia ottomana* Herrich-Schäffer, [1847], *Erebia melas* (Herbst, 1796), *Boloria graeca* (Staudinger, 1870) completely absent from Belasitsa Mt. The presence of these species in Alibotoush Mt. is partly explicable by its connection to the higher Pirin Mt. and the penetration of certain mountain species from Pirin Mt. to Alibotoush Mt. is conceivable. In the relatively isolated by high mountains Belasitsa Mt. such processes are not possible. Even the S Europe mountain genus *Erebia* in Belasitsa Mt. is represented by 3 species only, the most widely distributed species of this genus in Bulgaria. Certainly the connection between Alibotoush Mt. and Pirin Mt., and the insularity of Belasitsa Mt. are not the only reasons for the distribution of mountain species in Alibotoush Mt. and their absence in Belasitsa Mt. The differences in the geomorphological structure of both the mountains and the specifics of vegetation also play an important role in the formation of their butterflies' fauna. For example, on Belasitsa there is no coniferous zone and the pseudosubalpine zone is just above the *Fagus* forest. In Alibotoush coniferous belt is well presented.

Another characteristic of butterflies of Belasitsa Mt. is the large percentage of thermophilic species of southern origin in the lower parts of the mountain. These are *Erynnis marloyi* (Boisduval, [1843]), *Anthocharis gruneri* Herrich-Schäffer, [1851], *Pontia chloridice* (Hübner, [1813]), *Tarucus balkanicus* (Freyer, [1844]), *Lycaena ottomana* (Lefebvre, [1830]), *Hipparchia fatua* Freyer, [1844], *Pseudochazara anthelea* (Hübner, [1824]), *Polygonia egea* (Cramer, [1775]), specific for the southern parts of Strouma Valley. *Pontia chloridice* is not even known from the Strouma Valley and in SW Bulgaria this species is distributed only on the slopes of Belasitsa Mt.

Of great interest is the record of *Gonepteryx cleopatra*. This species is distributed on the Canary Islands, Madeira, Northwest Africa, South Europe, Turkey and the Middle East (Tolman & Lewington 1997). The first and single published record of this species in Bulgaria is from the Northeastern slope of Rila Mountain near Kostenets (Ganev 1989). It is probably a case of migrant specimen because the species have never been recorded again in Rila Mt. or Bulgaria in general. Here it should be mentioned one record of *Gonepteryx cleopatra* from the region of Rupite locality (SW Bulgaria), near the church of St. Petka, 10.03.2013, 1 ♂. Considering that the region of Rupite with the adjacent Kozhuh Hill are one of the most visited places for butterflies' monitoring in Bulgaria, undoubtedly it is a case of migrant specimen and not a permanently residing species. Nevertheless, even in the case of migrant one, the records of *Gonepteryx cleopatra* from Belasitsa Mt. and Rupite are particularly interesting in zoogeographical point of view. There are some more still unpublished observations of *G. cleopatra* from lower parts of Alibotoush and from Southern Pirin Mt., even from Northern Pirin, which supports the opinion for wandering specimens.

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