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Contribution to the knowledge of the butterfly fauna (Lepidoptera: Papilionoidea, Hesperioidea) of the Biokovo and Rilić mountain ranges (Croatia, Central Dalmatia)

Příspěvek k poznání fauny denních motýlů (Lepidoptera: Papilionoidea, Hesperioidea) pohoří Biokovo a Rilić (Chorvatsko, Střední Dalmácie)

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Abstract. The Biokovo Mountain Range is the second highest mountain range in Croatia, located in Central Dalmatia. This study provides information on finding of 92 species of butterflies in this range. Of these, 8 are new to this area: *Carcharodus orientalis* Reverdin, 1913, *Pyrgus serratulae* (Rambur, 1840), *Gegenes pumilio* (Hoffmannsegg, 1804), *Lycaena alciphron* (Rottemburg, 1775), *Cupido minimus* (Fuessly, 1775), *Iolana iolas* (Ochsenheimer, 1816), *Melitaea aurelia* Nickerl, 1850, and *Cacyreus marshalli* Butler, 1898. After several decades, the presence of the species *Carcharodus alceae* (Esper, 1780), *Spialia orbifer* (Hübner, 1823) and *Polygonia c-album* (Linnaeus, 1758) are confirmed. For the first time the exact localities and other data for most species found in Biokovo Mountain Range are given. New data improves the current knowledge of the vertical expansion of butterflies on Biokovo Mountain Range. The total number of butterfly species occurring in Biokovo is now at least 116. Rilić Mountain Range is linked to the higher and better known Biokovo Mountain Range. The fauna of butterflies on this mountain is not yet very well explored, and the list of 68 species is a preliminary attempt to rectify this. For *Pyrgus serratulae* (Rambur, 1840) and *Melitaea aurelia* Nickerl, 1850 the localities presented are their southernmost points of occurrence in Croatia. Apart from these two, there are other species present that are remarkable for the whole Dalmatia region: *Gegenes pumilio* (Hoffmannsegg, 1804), *Papilio alexanor* Esper, 1799, *Lycaena thersamon* (Esper, 1784), *Satyrium acaciae* (Fabricius, 1787), *Cacyreus marshalli* Butler, 1898, *Iolana iolas* (Ochsenheimer, 1816), *Brenthis hecate* (Denis et Schiffermüller, 1775), *Neptis rivularis* (Scopoli, 1763) and *Coenonympha rhodopensis* Elwes, 1900.

INTRODUCTION

Biokovo Mountain Range is a well-known Croatian mountain range located in central Dalmatia. Its highest point, Sveti Jure Peak, reaches an altitude of 1762 m a.s.l. making it the highest mountain in Dalmatia, and Biokovo the second highest mountain range in Croatia. Biokovo Mountain Range is not large – it is about 30 km long, but at its widest point only 9.5 km wide. Its average width is 7 km. It is one of the most important mountain ranges of the Dinaric mountain system and like the other mountain ranges of the system, consists of Jurassic and Cretaceous limestones and dolomites. Mountains cover the area, bordered on the north by Dubci pass, which separates the Biokovo range from the Mosor range, and the Staza lies to the south. From here to the southeast it continues as the Rilić Mountain Range to the Baćinska Lakes and the delta of the Neretva River. The geology of Rilić Mountain Range is identical to that of Biokovo, and the size of the area is also similar. Rilić Mountain Range has the length of 35 km, in the north is only about 2 km wide, in the highest central part is 6.5 km wide and is widest is in its southeast part – 11 km. The Rilić Mountain Range is significantly lower than the neighbouring Biokovo range, only exceeding a height of 1000 m a.s.l. in a small part of the ridge around the top of Velika Kapela (1155 m a.s.l.) in the Sutvid massif. The higher

parts of Biokovo have been protected as a natural park (Park Prirode Biokovo) since 1981. The Adriatic coast, adjoining the Biokovo and Rilić ranges, is called the Makarska Riviera, and is a very popular Croatian tourist destination, known throughout Europe.

Although systematic entomological surveys of Central Dalmatia have a long tradition and started in the early 19th century, the first lepidopterologist operating directly in Biokovo was probably Josef Mann in 1850. This entomologist described in his works his climb to the highest peak of the mountain range, and provided the first information about the butterflies of Biokovo. It is obvious that he also visited this area (at least the vicinity of Makarska) during his next stays in the region (Mann 1869). However, this first paper brings the first problems. Mann's record of *Plebejus optilete* (Knoch, 1781) has been questioned by Croatian entomologists (Lorković 2009a,b, Mladinov & Lorković 1985). Mann's record of *Lycaena hippothoe* (Linnaeus, 1758) is also problematic, and may refer to *Lycaena candens* (Herrich-Schäffer, 1844), which occurs in several Croatian mountains – but even this species has never been confirmed on Biokovo. Stauder (1921–1923) and Lorković (2009b) believed that several other butterflies found by Mann in Dalmatia perhaps also come from Biokovo. Some of them have actually been found there subsequently: *Neptis rivularis* (Scopoli, 1763), *Boloria euphrosyne* (Linnaeus, 1758), *Lycaena thersamon* (Esper, 1784) and now also *Lycaena alciphron* (Rottemburg, 1775). Not confirmed are records of *Lycaena dispar* (Haworth, 1802), *Aricia eumedon* (Esper, 1780), *Polyommatus damon* (Denis et Schiffermüller, 1775) and *Boloria selene* (Denis et Schiffermüller, 1775). Mann did not provide any exact data for these species, and taking into account his journeys, they could have originated from several other locations in Dalmatia.

In 1854 a well-known malacologist and versatile entomologist, Georg von Frauenfeld, conducted scientific observations in the area of Makarska and Biokovo. Of butterflies, he gave (Frauenfeld 1854) only an observation of *Vanessa atalanta* (Linnaeus, 1758). In the late 19th century and early 20th century rather different parts of the Croatian coast were explored. In the case of Central Dalmatia, it was mainly the area of Split and the Dalmatian islands, and then the region of the Pelješac Peninsula of Southern Dalmatia (e.g. Geiger 1873, Werner 1895, Galvagni 1909, Abafi-Aigner 1910, Zerny 1919). Since the beginning of the 20th century, Biokovo has been visited by coleopterists far more than by lepidopterists. Rilić has remained completely outside the interest of entomologists.

The fundamental work, which still has extraordinary significance for knowledge of the Macrolepidoptera fauna of the entire Croatian coast, is the study by the Austrian entomologist Hermann Stauder, published in parts from 1920. First part was published in the journal Zeitschrift für Wissenschaftiche Insektenbiologie and later (from 1929 to 1933) in the journal Entomologischer Anzeiger. Information on butterflies was published in the period from 1921 to 1923. Although Stauder used data from published literature and from other butterfly collectors, he listed old data from Mann only sporadically when he had no other data available (Stauder 1921–1923). This work did not discuss the Rilić Mountain Range at all.

Several entomologists operated in Biokovo and on the coast of Central Dalmatia in the next years. Data about butterflies appeared in a number of mostly short articles scattered over diverse European journals. Their complete assembly is not the aim of this work. Some of them are only marginally related to Biokovo (e.g. Lorković 1974, 1976) or are focused only on the immediate surroundings of Makarska Riviera resorts (Habeler 1976, Schmidt-Koehl 1977). Neustetter (1956) and Wiemers (1982) reported, as well as findings from the resorts

on the coast, several findings from Biokovo (Neustetter 1956) and the village of Grabovac, located in the northern foothills of Biokovo Mountain Range (Wiemers 1982). Records of several species from Biokovo are also provided by Lorković (2009a). His work was written in 1954, but was published 55 years later. The butterfly fauna of Biokovo thus remained poorly known. Mladinov & Lorković (1985) wrote that the small number of mountain species then listed for Biokovo did not reflect reality but rather a lack of research. For the faunal survey of Croatia, the edition of "Provisional Distribution Map of the Butterflies of Yugoslavia" (Jakšić 1988) in the late 20th century was very important, but even this work cannot be used as a basis for a more detailed study of the fauna of butterflies in the mountains of Biokovo and Rilić as it is not possible to distinguish with certainty from the labelled faunistic squares whether the findings are from Biokovo, the neighbouring Rilić, or the general surroundings. For the knowledge of the butterfly fauna of both ranges, two papers of Rizo Sijarić providing data on the 35 species found in Makarska, Baška Voda and Biokovo and 12 species from Gradac (Sijarić 1991a,b) are important. From that period comes an interesting description of a new subspecies *Zerynthia cerisy dalmacijae* (Sala et Bollino, 1994) from Makarska (Sala & Bollino 1994).

A large number of works devoted to the butterflies of Croatia was published by Croatian and Slovenian entomologists in a short period of time at the beginning of the 21st century. Due to their intensive and systematic work, Croatia became one of the best-studied European countries with regard to knowledge about its contemporary butterfly fauna. Nevertheless, the butterfly fauna of Rilić Mountain remained almost unknown, as entomologists focused on the higher, more interesting and more accessible Biokovo. Papers from Mihoci & Šašić (2005, 2007) list records of *Proterebia afra* (Fabricius, 1787) from the little-known and least-visited northern slopes of Biokovo. Besides, another crucial and important work devoted to the butterflies of Biokovo was published (Mihoci et al. 2011). The authors presented records of 102 butterfly species for this range, with their vertical distribution, comparing the fauna of the northeast and southwest parts of the range and of three different altitudinal zones. This work is an excellent background for further surveys of the range. Unfortunately the records are not localized, and there is a lack of data on population size and flight periods of particular species. Koren (2012a) points out that the paper does not distinguish older literature and recent data, therefore it is impossible to know which records are recent and which are taken from the literature. Also, the number of species recorded from Biokovo is actually slightly higher than the stated 102. The authors did not provide an overview of some of butterfly species that were identified in the region in the past: *Carcharodus alceae* (Esper, 1780), *Spialia sertorius* (Hoffmannsegg, 1804), *Spialia orbifer* (Hübner, 1823), *Cupido osiris* (Meigen, 1829), *Polygonia c-album* (Linnaeus, 1758), *Charaxes jasius* (Linnaeus, 1767), *Arethusana arethusa* (Denis et Schiffermüller, 1775).

MATERIAL AND METHODS

This work is based exclusively on my own findings and observations. I have visited the area irregularly in the period from 1980 to 2016, i.e. 37 years. Recording took place on the following dates: Biokovo: 11.vii.1980, 18.vii.1983, 7.viii.1987, 25.vi.–5.vii.1990, 26.–30.v.1991, 27.vii.–3.viii.1996, 20.–27.vii.2002, 31.vii.–15.viii.2004, 8.–15.vii.2006, 5.–12.vii.2008, 15.–22.vii.2009, 10.–17.ix.2011, 8.–15.ix.2012, 7.–14.vi.2014, 13.–21.ix.2014, 30.v.–13.vi.2015, 4.–18.vi.2016. Rilić: 5.–15.vii.1980, 8.–20.vii.1983, 7.–16.viii.1987, 29.vi.1990, 27.–29.v.1991, 16.–24.viii.2008, 24.–31.vii.2010, 15.–22.vi.2013, 14.–21. vi. 2014. Monitoring was carried out on a daily basis on these dates.

Attention was paid mainly to the lowest altitude level, i.e. to the area from the coast to the southwest steep rocky walls of both ranges. In the case of Biokovo, it represents the part outside the protected area. In the first years of the survey, I collected butterflies mainly using the classical method of individual collecting with an entomological net. In following years, I reduced collecting to a minimum and the dominant method was observation. Only a minimum of specimens were collected in the protected part of Biokovo, and only those where the species could not be identified directly in the field (the last specimens were collected there on 3.vii.1990).

The survey was targeted to detect the presence of species. For every species, I recorded detailed localities and dates. This may help in assessing the number of generations and the flight period of the species. From all the excursions, I have an estimate of the number of observed individuals and notes about vertical distribution. A simple estimate of abundance (rare / not rare / common) is given for all species, separately for Biokovo and Rilić: rare (up to 10 ex.), not rare (11–100 ex.), common (more than 100 ex., but frequently this number was much higher). I mention the number of identified species only for species where small numbers of individuals were found. The nomenclature follows the current checklist of Croatian butterflies (Šašić & Mihoci 2011), following van Swaay (2010). Collected specimens of the identified species are deposited in the collection of the author, some are stored in the collections of the Museum in Nové Město nad Metují and to a lesser extent also in the Museum of Eastern Bohemia in Hradec Králové.

Overview of the localities

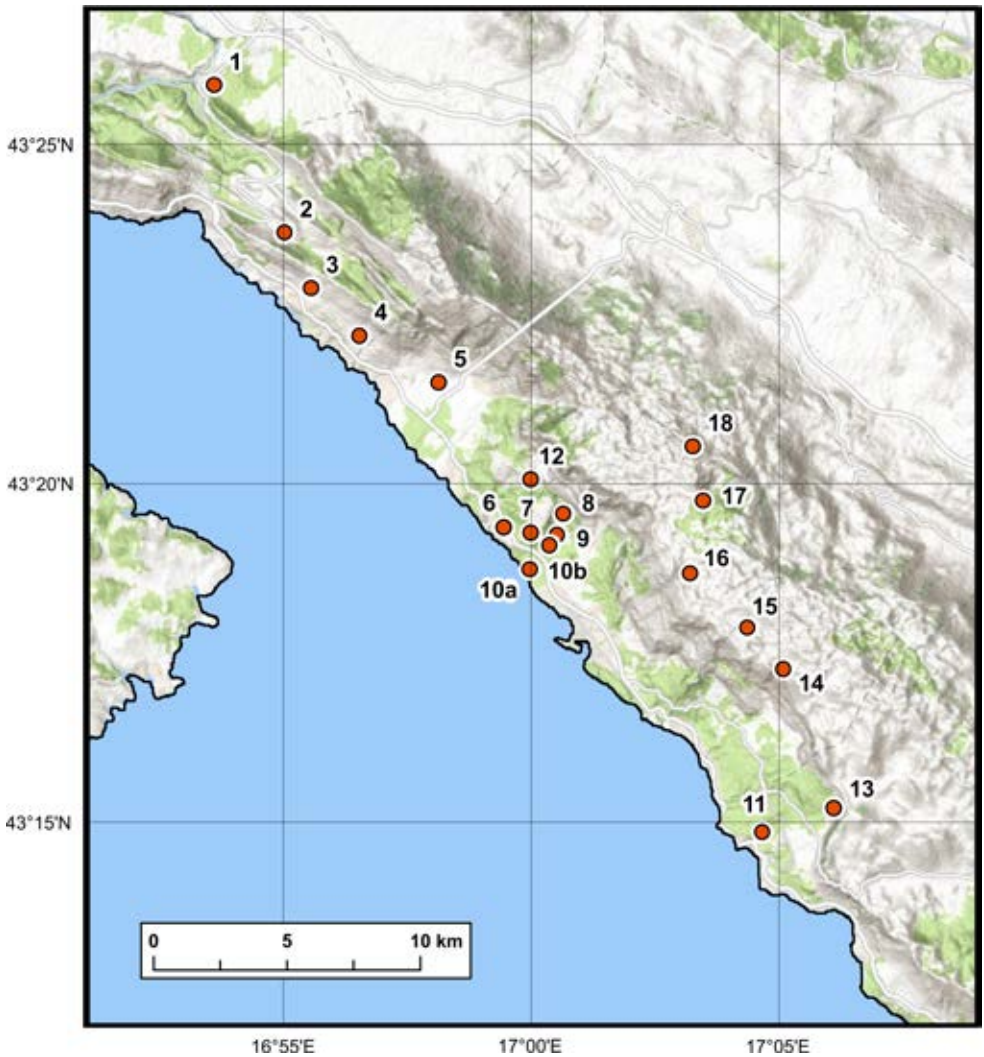
The localities are divided into three elevation zones in accordance with the work of Mihoci et al. (2011). Such a division corresponds to the geomorphic division of Biokovo Mountain Range. The area from the sea up to 500 m a.s.l. (Podgorje) has a markedly Mediterranean character. On the coast itself, the tourist resorts almost follow each other. Above them – closer to the slopes of Biokovo Mountain Range – traditional villages can still be found, now partially abandoned. The butterfly fauna around these small foothill villages is often noticeably richer than in the rest of the area of this elevation. The area from 500 to 1000 m a.s.l. (Prigorje) toward the Adriatic Sea is represented by sparsely covered and particularly steep rock walls. Observing butterflies is very difficult there and beyond the immediate vicinity of Biokovo path and touristic hiking trails, practically impossible. Inland, the mountain range falls more gradually in this height zone. At about 1000 m a.s.l. a plateau (Biokovo Vrsni zaravan) is located, from which the peaks of Biokovo rise. The terrain is very rugged there, with deep sinkholes and other karst phenomena. The bottoms of the sinkholes are sometimes covered with a thin layer of fertile soil and are generally wetter than the surrounding terrain making it a site of great importance for the fauna of butterflies of Biokovo. Habitats of this zone have a distinctly montane character.

In the Rilić Mountain Range, the situation in the first two zones is identical, the third zone is extremely small and is only using in the interests of consistency. The karst plains and sinkholes occur here on the northeast side of the mountain and between the Paskal and Sveti Ilija hills, at significantly lower altitude than on Biokovo. The higher parts of Rilić are far less accessible than those of Biokovo. Now, unlike at the time of the beginning of the survey, they are now accessible by several marked footpaths, but most of them they are rarely visited because they are physically demanding.

The height of the sites has not been measured using GPS, it was determined approximately by contour lines on the maps.

Biokovo Mountain Range.
Zone A (0–500 m a.s.l.)

1. Zadvarje: immediate vicinity of the village, 210–230 m a.s.l. (43°25′60″N, 16°53′36″E).
2. Gornja Brela: area to the south of the village, especially the valley towards the church of St. Nikola, 300–400 m a.s.l. (43°23′42″N, 16°55′16″E).
3. Donja Brela: the northernmost town on the Makarska Riviera, localities to the north of the village, 230–400 m a.s.l. (43°22′52″N, 16°55′33″E).
4. Baška Voda: slopes above the famous resort, 200–300 m a.s.l. (43°22′10″N, 16°56′32″E).
5. Topići: neighborhood of the road from Baško Polje towards the village Topići, 100–200 m a.s.l. (43°21′29″N, 16°58′81″E).
6. Krvavica: around the village, 90–150 m a.s.l. (43°19′21″N, 16°59′27″E).
7. Vučija Dubrava: localities along the road off the highway between the village of Krvavica and Makarska resort to the Baškovići settlement, 150–350 m a.s.l. (43°19′16″N, 16°59′59″E).
8. Baškovići: around the abandoned settlement, 390–400 m a.s.l. (43°19′33″N, 17°0′39″E).
9. Veliko Brdo: localities west of the village, 150–220 m a.s.l. (43°19′14″N, 17°0′31″E).



Obr. 1. Mapa pohoří Biokovo s vyznačením sledovaných lokalit.
Fig. 1. Map of Biokovo Mountain Range, with location of the collecting sites.

10. Makarska: northwestern edge of the city, vast uncultivated areas and in surroundings of the forest near the beach in northwest of the town towards the village Krvavica 10–30 m a.s.l. (10a: 43°18′44″N, 16°59′58″E). Vepric creek valley above a place of pilgrimage of the same name and near the top of Grebenac hill, 120–150 m a.s.l. (10b: 43°19′76″N, 17°0′22″E).
11. Podgora: nearby the roads and trails above the resort, 50–150 m a.s.l. (43°14′51″N, 17°4′40″E).

Zone B (500–1000 m a.s.l.)

12. Brdo: spectacular ridge between the villages of Baškovići and Bast, slopes of Mali Borovac peak, 500–650 m a.s.l. (43°20′3.8″N, 16°59′59″E).
13. Staza: surroundings of the path leading from the entrance to the nature park to the Staza saddle, 650–800 m a.s.l. (43°15′13″N, 17°6′68″E).

Zone C (above 1000 m a.s.l.)

14. Biokovo road: immediate surroundings of the road, 1200–1250 m a.s.l. (43°17′15″N, 17°5′5.6″E).
15. Ladena: karst area between Sinjal and Ladena peaks, 1200–1280 m a.s.l. (43°17′52″N, 17°4′22″E).
16. Vošac: karst sinkholes to the southeast of the mountain hut and surroundings, peak of the Vošac Mountain, 1260–1422 m a.s.l. (43°18′40″N, 17°3′13″E).
17. Troglav: slopes of the Troglav and Mali Troglav peaks, 1450–1500 m a.s.l. (43°19′44″N, 17°3′28″E).
18. Sveti Jure: peak of the mountain and nearest surroundings, 1650–1762 a.s.l. (43°20′32″N, 17°3′16″E).

The Rilić mountain.

Zone A (0 – 500 m a.s.l.)

19. Drvenik – surroundings of the path from Gornja Vala part towards the Rilić ridge to the crossroad and its surroundings, 50–200 m a.s.l. (43°9′14″N, 17°16′10″E).
20. Gornji Drvenik (Selo) – neighbourhood of the abandoned village lying under the cliff between the peaks of Sokolić and Krive Toke, 250–280 m a.s.l. (43°9′37″N, 17°15′27″E).
21. Zaostrog – beginning of the valley above the resort and between the slopes of Plana and Viter peaks, 30–80 m a.s.l. (43°8′42″N, 17°16′56″E).
22. Despoti – end of the valley above Zaostrog around the small hamlets of Despoti and Kosovići to the southwestern rocky cliffs of peak Šapašnik, 150–300 m a.s.l. (43°9′4.0″N, 17°17′42″E).
23. Brist – area to the north and northeast of the resort, especially near the path on the slope below the Crvene stine ridge, 100–250 m a.s.l. (43°7′7.2″N, 17°19′57″E).
24. Gradac – around the town to the north and northeast of the highway, path leading across a slope in the direction from the Brist village to the cemetery above Gradac and to Gradac itself, 40–120 m a.s.l. (43°6′44″N, 17°20′19″E).
25. Čista – abandoned small settlement above Gradac and its broader surroundings, especially the surrounding meadows and fields, around the path to the village of Debeli Brig, 120–160 m a.s.l. (43°6′50″N, 17°20′77″E).

Zone B (above 500 m a.s.l.)

26. Gornje Igrane – area around the path between Miočevići and Rudelji, to the northeast of the Rilić ridge, 550–600 m a.s.l. (43°13′46″N, 17°9′43″E).
27. Sokolić – ridge between the peaks of Sokolić and Krive Toke and the area to the northeast of the ridge, 600–700 m a.s.l. (43°10′11″N, 17°15′17″E).
28. Šapašnik – rocky cliffs on the southwest side of the mountain, extremely steep with hardly accessible, 500–700 m a.s.l. (43°9′15″N, 17°18′26″E).
29. Paškal – southern and south-western slopes of the mountain and surroundings of the saddle between Paškal and St. Ilija peaks, 570–620 m a.s.l. (43°6′23″N, 17°22′19″E).
30. Sveti Ilija – immediate area around the peak, 700–773 m a.s.l. (43°5′58″N, 17°22′33″E).

Zone C (above 1000 m a.s.l.)

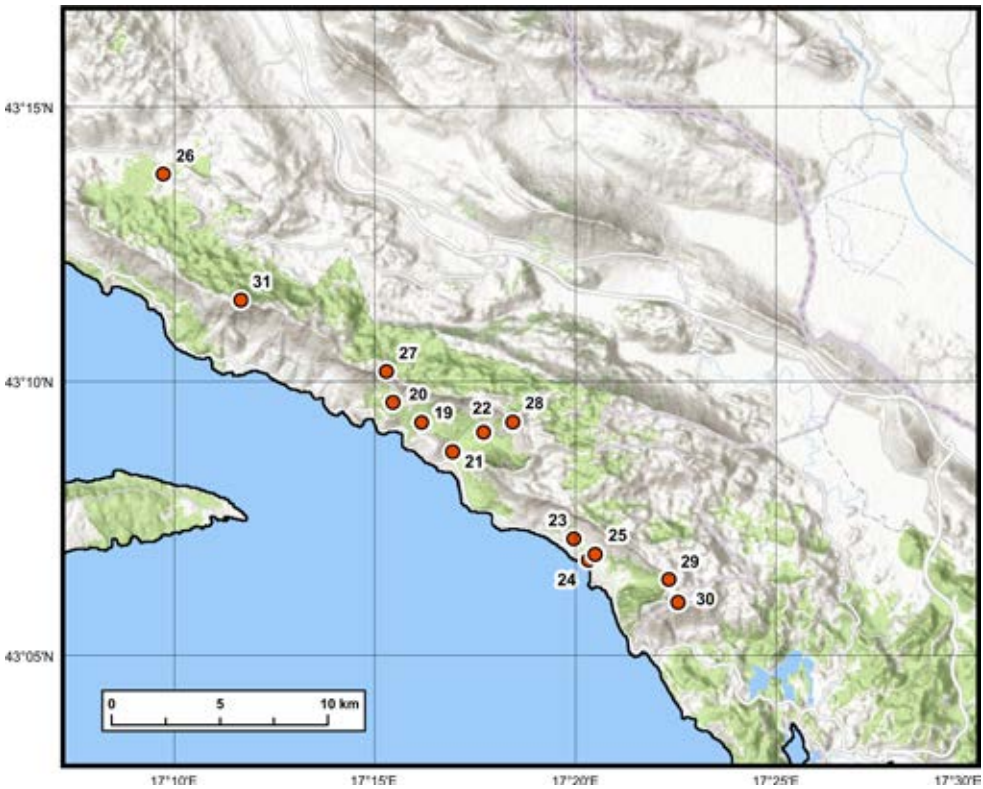
31. Velika Kapela (Sutvid) – peak and the surrounding ridge of the massif, 1000–1155 m a.s.l. (43°11′28″N, 17°11′40″E).

LIST OF RECORDED SPECIES

Hesperiidae

Erynnis tages (Linnaeus, 1758)
Biokovo: A: Veliko Brdo 2.–3.viii.1996, 10.vii.2006, 11.vii.2008; Makarska 27.–29.vii.1996, 10.vii.2006, 17.vi.2016; Podgora 20.–22.vii.2002, 27.vii. 2002; **B:** Staza 24.vii.2002. Not rare.
Rilić: A: Zaostrog 9.–13.viii.1987, 27.v.1991; Despoti 10.viii.1987, 13.viii.1987; Gradac 16.–18.vi.2014. Not rare.

Carcharodus alceae (Esper, 1780)
Biokovo: A: Donja Brela 2.vii.1990, 29.v.1991; Krvavica 5.viii.2004, 12.ix.2011, 17.vi.2016; Veliko Brdo 2.–3.viii.1996, 1.–4.viii.2004, 9.viii.2004, 13.–14.viii.2004, 10.vii.2008, 11.ix.2011, 16.ix.2011; Makarska 27.vii.1996, 29.vii.1996, 2.viii.1996, 31.vii.2004, 9.viii.2004, 10.–11.



Obr. 2. Mapa pohoří Rilić s vyznačením sledovaných lokalit.
Fig. 2. Map of Rilić Mountain Range, with location of the collecting sites.

vii.2006, 13.ix.2011, 9.–11.vi.2014, 14.–15.ix.2014, 12.vi.2015, 5.–8.vi.2016, 16.vi.2016; Podgora 26.vii.2002; Baškovići 4.viii.2004. Not rare. **Rilić: A:** Gornji Drvenik 15.viii.1987; Zaostrog 9.vii.1983, 13.vii.1983, 19.vii.1983, 9–13.viii.1987; Despoti 9.–10.viii.1987; Gradac 25.vii.2010, 16.–22.vi.2013, 20.vi.2014; **B:** Paškal 18.vi.2014. Not rare.

Carcharodus lavatherae (Esper, 1783)
Biokovo: A: Veliko Brdo 3.viii.2004; Makarska 6.vi.2015; **C:** Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990. Rare.

Carcharodus flocciferus (Zeller, 1847)
Biokovo: A: Donja Brela 29.v.1991; Makarska 9.vi.2014, 11.vi.2014, 8.vi.2015, 11.vi.2016. Rare. **Rilić: A:** Drvenik 28.v.1991. Rare.

Carcharodus orientalis Reverdin, 1913
Biokovo: A: Veliko Brdo 3.viii.2004, 5.viii.2004. Rare. **Rilić: A:** Zaostrog 16.viii.1987; Despoti 10.viii.1987. Rare.

Spialia orbifer (Hübner, 1823)
Biokovo: A: Donja Brela 26.v.1991, 28.–30.v.1991; Krvavica 17.–18.vii.2009; Veliko Brdo 2.–3.viii.1996, 6.–7.viii.2004; Makarska 27.vii.–3.viii.1996, 2.–5.viii.2004, 9.vii.2008, 11.ix.2011, 7.vi.2016; **B:** Staza 29.vi.1990. Not rare. **Rilić: A:** Gornji Drvenik 15.viii.1987; Zaostrog 9.–10.viii.1987, 29.v.1991; Despoti 9.–10.viii.1987, 29.v.1991; **B:** Gornje Igrane 29.vi.1990. Not rare.

Pyrgus serratulae (Rambur, 1839)
Biokovo: C: Vošac 3.vii.1990. Rare (only 1 ♂ lgt., genitalia examined, A. Kačírek det).

Pyrgus armoricanus (Oberthür, 1910)
Biokovo: **A:** Makarska 18.ix.2014. Rare (only 1 ♀ lgt.).

Thymelicus sylvestris (Poda, 1761)
Biokovo: A: Gornja Brela, 25.–26.vi.1990; Donja Brela, 30.v.1991; Makarska 6.vi.2015. Not rare. **Rilić: A:** Gradac 16.vi.2013, 19.vi.2014; **B:** Paškal 18.vi.2014. Not rare.

Thymelicus acteon (Rottemburg, 1775)
Biokovo: A: Gornja Brela 25.–26.vi.1990; Donja Brela 27.–30.vi.1990; Krvavica 8.vi.2014, 31.v.2015, 7.vi.2015, 17.vi.2016; Veliko Brdo 11.vii.2006, 6.–11.vii.2008, 1.vi.2015, 3.vi.2015, 8.–12.vi.2015, 9.vi.2016; Makarska 8.vii.2006, 9.–12.vi.2014, 2.–11.vi.2015, 5.–14.vi.2016. Common. **Rilić: A:** Brist 17.vi.2013, 21.vi.2013; Gradac 16.–21.vi.2013, 16.–17.vi.2014, 19.–20.vi.2014; Čista 16.vi.2013, 21.vi.2013. Not rare.

Ochlodes sylvanus (Esper, 1777)
Biokovo: A: Gornja Brela 25.vi.1990; Veliko Brdo 3.vi.2015; Makarska 2.vi.2015, 9.vi.2016; **B:** Staza 29.vi.1990; **C:** Vošac 3.vii.1990. Not rare. **Rilić: A:** Gradac 20.vi.2014; **B:** Gornje Igrane 29.vi.1990. Not rare.

Gegenes pumilio (Hoffmannsegg, 1804)
Biokovo: A: Krvavica 19.ix.2014; Veliko Brdo 3.viii.2004, 11.vii.2008, 14.ix.2014; Podgora 23.vii.2002, 25.vii.2002. Rare.

Papilionidae

Parnassius mnemosyne (Linnaeus, 1758)
Biokovo: C: Ladena 3.vii.1990; Vošac 3.vii.1990. Not rare.

Iphiclides podalirius (Linnaeus, 1758)
Biokovo: A: Zadvarje 7.viii.1987; Gornja Brela 7.viii.1987; Donja Brela 28.vi.–2.vii.1990, 29.v.1991; Topići 29.vi.1990; Krvavica 17.vii.2009, 8.vi.2014, 15.vi.2016; Vučija Dubrava 11.viii.2004; Veliko Brdo 1.viii.1996, 11.–12.viii.2004, 8.–12.vii.2006, 5.–12.vii.2008, 16.viii.2009, 12.vi.2015; Makarska 11.vii.1980, 27.vii.–2.viii.1996, 31.vii.–10.viii.2004, 13.viii.–15.viii.2004, 9.–14.vii.2006, 5.–12.vii.2008, 9.–10.vi.2014, 9.vi.2015, 11.vi.2016; Podgora 20.–27.vii.2002; Baškovići 12.viii.2004; **B:** Brdo 12.viii.2004; Staza 24.vii.2002; **C:**

Biokovo road 1.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990. Common. **Rilić: A:** Drvenik 15.viii.1987; Gornji Drvenik 15.viii.1987; Zaostrog 9.vii.1980, 9.–17.vii.1983, 10.vii.1987; Despoti 13.–17.vii.1983, 12.–14.viii.1987, 16.viii.1987; Brist 21.vi.2013; Gradac 15.vii.1983, 18.–19.viii.2008, 16.–21.vi.2013, 19.–20.vi.2014; Čista 18.–19.viii.2008, 21.vi.2013; **B:** Šapašnik 13.vii.1983; Paškal 18.vi.2014; **C:** Velika Kapela 10.vii.1980. Common.

Papilio machaon Linnaeus, 1758
Biokovo: A: Zadvarje 7.viii.1987; Donja Brela 28.vi.–2.vii.1990; Krvavica 17.vii.2009, 12.–14.ix.2011, 15.vi.2016; Vučija Dubrava 11.viii.2004; Veliko Brdo 11.–12.viii.2004, 5.–12.vii.2006, 16.viii.2009; Makarska 27.vii.–3.viii.1996, 31.vii.–10.viii.2004, 13.–15.viii.2004, 9.–14.vii.2006, 16.viii.2009, 9.–10.vi.2014, 15.– 19.ix.2014, 2.vi.2015, 8.–14.vi.2016; Podgora 20.–27.vii.2002; Baškovići 12.viii.2004; **B:** Staza 24.vii.2002; **C:** Biokovo road 1.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Sveti Jure 1.vii.1990. Not rare. **Rilić: A:** Drvenik 15.viii.1987; Gornji Drvenik 15.viii.1987; Zaostrog 12.–14.vii.1980, 9.–17.vii.1983, 19.vii.1983, 9.–13.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 18.–23.viii.2008, 25.vii.2010, 16.vi.–22.vi.2013, 20.vi.2014; Čista 23.viii.2008, 25.vii.2010. Common.

Papilio alexanor Esper, 1799
Biokovo: A: Donja Brela 28.vi.1990. Rare (only 1 ind. observ.).

Pieridae
Leptidea sinapis (Linnaeus, 1758)
Biokovo: A: Donja Brela 29.v.1991; Krvavica 14.ix.2011, 19.ix.2014, 31.v.2015, 7.vi.2015; Vučija Dubrava 11.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 5.viii.2004, 13.–15.viii.2004, 10.vii.2006, 5.–12.vii.2008, 16.vii.2009, 17.ix.2014, 1.–3.vi.2015, 8.–10.vi.2015; Makarska 27.vii.1996 (1 ♂ genitalia examined, A. Kačírek det.), 30.vii.1996 (1 ♂ genitalia examined, A. Kačírek det.), 2.viii.1996, 31.vii.–3.viii.2004, 9.–14.vii.2006, 16.vii.2009, 13.ix.2011, 10.–11.vi.2014, 13.–16.ix.2014, 31.v.–13.vi.2015, 5.–18.vi.2016; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 12.viii.2004; **B:** Staza 24.vii.2002; **C:** Vošac 3.vii.1990 (1 ♀ genitalia examined, J. Šumpich det.). Common. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 5.–9.vii.1980 (2 ♂ genitalia examined, J. Šumpich det.), 12.–15.vii.1980, 9.vii.1983, 9.viii.1987, 12.viii.1987 (1 ♂ genitalia examined, J. Šumpich det.), 16.viii.1987, 27.v.1991; Despoti 10.viii.1987; Brist 26.vii.2010, 17.vi.2013; Gradac 22.viii.2008, 24.–31.vii.2010, 16.–21.vi.2013, 20.vi.2014. Common.

Anthocharis cardamines (Linnaeus, 1758)
Biokovo: A: Makarska 7.vi.2016. Rare (only 1 ♂ observ.).

Aporia crataegi (Linnaeus, 1758)
Biokovo: C: Vošac 1.vii.1990, 3.vii.1990. Rare. **Rilić: A:** Zaostrog 9.vii.1980, 27.v.1991; Čista 19.vi.2013. Rare.

Pieris brassicae (Linnaeus, 1758)
Biokovo: A: Donja Brela 26.v.1991, 29.v.1991; Baška Voda 30.v.1991; Veliko Brdo 16.vii.2009; Makarska 30.vii.1996, 10.viii.2002, 12.–16.ix.2011, 3.vi.2015; Podgora

25.vii.2002; **C:** Biokovo road 1.vii.1990, 3.vii.1990; Vošac 1.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Not rare. **Rilić: A:** Zaostrog 5.–9. vii.1980; Despoti 12.vii.1983. Not rare.

Pieris mannii (Mayer, 1851)
Biokovo: A: Gornja Brela 26.vi.1990; Donja Brela 28.vi.1990, 30.vi.1990, 2.vii.1990, 29.v.1991; Baška Voda 29.v.1991; Topići 29.vi.1990; Krvavica 19.vii.2009; 12.ix.2011, 14.ix.2011, 18.–19.ix.2014, 16.vi.2016; Vučija Dubrava 8.viii.2004; Veliko Brdo 27.vii.–3. viii.1996, 5.–11.viii.2004, 13.–15.viii.2004, 8.–11.vii.2006, 5.–12.vii.2008, 17.ix.2014; Makarska 27.–30.vii.1996, 31.vii.–3.viii.2004, 8.–11.vii.2006, 6.–11.vii.2008, 11.–16.ix.2011, 11.vi.2014, 13.–19.ix.2014, 5.–12.vi.2016; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004, 12.viii.2004; **B:** Staza 24.vii.2002; **C:** Biokovo road 1.vii.1990. Common. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 9.–15.vii.1983, 9.–14.viii.1987; Despoti 11.–13.vii.1980, 9.–13. vii.1983; Gradac 19.viii.2008, 30.vii.2010, 19.vi.2013, 16.–17.vi.2014, 19.–20.vi.2014; Čista 30.vii.2010; **B:** Paškal 18.vi.2014. Common.

Pieris rapae (Linnaeus, 1758)
Biokovo: A: Zadvarje 7.viii.1987; Gornja Brela 7.viii.1987; Donja Brela 27.vi.1990, 26.v.1991, 29.v.1991; Baška Voda 30.v.1991; Topići 29.vi.1990; Krvavica 16.vii.2009, 18.–19. ix.2014; Vučija Dubrava 11.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 10.vii.2006, 5.–12.vii.2008, 16.vii.2009; Makarska 11.vii.1980, 27.vii.1996, 31.vii.–15. viii.2004, 9.–14.vii.2006, 5.–12.vii.2008, 16.vii.2009, 11.–16.ix.2011, 9.–14. ix.2012, 10.–12. vi.2014, 13.–16.–19.ix.2014, 8.vi.2015, 9.vi.2016; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 12.viii.2004; **B:** Brdo 12.viii.2004; Staza 29.vi.1990, 24.vii.2002; **C:** Biokovo road 1.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 18.vii.1983. Common. **Rilić: A:** Gornji Drvenik 15.viii.1987; Zaostrog 5.–9.vii.1980, 11.–15.vii.1980, 12.–15.vii.1983, 8.viii.–14.viii.1987; Despoti 5.–9.vii.1980, 12.–15.vii.1983, 14.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 16.–24.viii.2008, 16.–21.vi.2013, 16.–17.vi.2014, 19.–20. vi.2014; Čista 18.–19.viii.2008; **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014; Sveti Ilija 18.vi.2014. Common.

Pieris ergane (Geyer, 1828)
Biokovo: A: Gornja Brela 26.vi.1990; Donja Brela 26.–28.vi.1990, 30.vi.1990, 2.vii.1990, 29.–30.v.1991; Topići 29.vi.1990; Krvavica 18.vii.2009, 12.ix.2011, 14.ix.2011, 18.–19. ix.2014; Veliko Brdo 27.vii.–3.viii.1996, 3.–7.viii.2004, 11.viii.2004, 10.vii.2006; 5.–11. vii.2008, 7.–9.vi.2015; Makarska 27.–30.vii.1996, 10.–11.vii.2006, 5.–12.vii.2008, 11.–16. ix.2011, 11.vi.2014, 15.ix.2014, 18.–19.ix.2014, 30.v.2015, 5.–12.vi.2015, 5.vi.2016; Podgora 23.vii.2002. Common. **Rilić: A:** Zaostrog 13.–17.vii.1983, 9.viii.1987, 12.viii.1987; Despoti 9.vii.1983; Gradac 16.vi.2013, 18.vi.2013. Not rare.

Pieris napi (Linnaeus, 1758)
Biokovo: A: Donja Brela 2.vii.1990; Krvavica 17.vii.2009, 14.ix.2011; Veliko Brdo 2.viii.2004, 10.–11.vii.2006; Makarska 13.ix.2009, 9.–11.vi.2014, 14.–15.ix.2014, 10.vi.2015. Not rare. **Rilić: A:** Zaostrog 9.viii.1987; Despoti 9.vii.1983; Gradac 25.vii.2010. Rare.

Pontia edusa (Fabricius, 1777)
Biokovo: A: Zadvarje 7.viii.1987; Donja Brela 28.vi.1990, 29.v.1991; Topići 29.vi.1990; Baška Voda 30.v.1991; Krvavica 12.–14.ix.2011, 18.–19.ix.2014; Vučija Dubrava 7.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 7.–15.viii.2004, 16.vii.2009; Makarska 27.vii.–3.viii.1996, 7.–15.viii.2004, 11.–13.vii.2006, 6.vii.2008, 16.vii.2009, 13.ix.2011, 16.–19.ix.2014; Podgora 26.vii.2002; Baškovići 8.viii.2004, 12.viii.2004; **B:** Brdo 12.viii.2004; Staza 29.vi.1990. Common. **Rilić: A:** Zaostrog 16.–17.vii.1983, 9.viii.1987, 13.viii.1987; Despoti 9.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 18.–21.viii.2008, 16.–21.vi.2013; Čista 18.–20.vi.2013; **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014, **C:** Velika Kapela 10.vii.1980. Common.

Colias crocea (Geoffroy, 1785)
Biokovo: A: Zadvarje 7.viii.1987; Gornja Brela 26.vi.1990; Donja Brela 27.–28.vi.1990, 30.vi.1990, 26.v.1991, 29.– 30.v.1991; Topići 29.vi.1990; Baška Voda 30.v.1991; Krvavica 12.–14.ix.2011, 8.vi.2014, 18.–19.ix.2014, 31.v.2015; Vučija Dubrava 8.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 7.–15.viii.2004, 5.–12.vii.2008, 16.vii.2009, 17.ix.2014, 8.vi.2015, 9.vi.2016; Makarska 27.vii.–3.viii.1996, 1.–15.viii.2004, 9.–14.vii.2006, 11.–16.ix.2011, 9.–12.vi.2014, 13.–19.ix.2014, 2.–8.vi.2015, 4.vi.2016, 11.vi.2016; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004, 12.viii.2004; **B:** Brdo 12.viii.2004; Staza 29.vi.1990, 24.vii.2002; **C:** Biokovo road 1.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990. Common. **Rilić: A:** Zaostrog 5.–9.vii.1980, 15.vii.1980, 8.–14.viii.1987, 16.viii.1987; Despoti 11.–13.vii.1980; 9.–15.vii.1983; 9.–13.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 16.–21.vi.2013, 20.vi.2014; Čista 18.–20.vi.2013; **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014; Sveti Ilija 18.vi.2014. Common.

Colias alfacariensis Ribbe, 1905
Biokovo: A: Krvavica 12.ix.2011, 14.ix.2011; Veliko Brdo 10.vii.2006, 10.vii.2008; Makarska 10.vii.2006. Rare. **Rilić: A:** Zaostrog 9.viii.1987; Despoti 9.viii.1987. Rare.

Gonepteryx rhamni (Linnaeus, 1758)
Biokovo: A: Donja Brela 27.vi.1990; Krvavica 15.vi.2016; Veliko Brdo 1.viii.1996, 5.–12.vii.2008, 1.–3.vi.2015, 8.vi.2015; Makarska 2.viii.1996, 9.–12.vi.2014, 5.vi.2015, 9.vi.2016; **C:** Biokovo road 1.vii.1990; Vošac 3.vii.1990; Troglav 3.vii.1990. Not rare. **Rilić: A:** Zaostrog 5.–9.vii.1980; **B:** Paškal 18.vi.2014. Not rare.

Gonepteryx cleopatra (Linnaeus, 1767)
Biokovo: A: Krvavica 7.vi.2015, 15.vi.2016, 17.vi.2016; Veliko Brdo 7.vi.2016; Makarska 9.–12.vi.2015, 7.–17.vi.2016. Not rare. **Rilić: A:** Gradac 18.–21.vi.2013, 19.vi.2014; Čista 21.vi.2013. Not rare.

Lycaenidae

Lycaena phlaeas (Linnaeus, 1761)
Biokovo: **A:** Donja Brela 26.v.1991; Krvavica 17.vii.2009, 12.–14.ix.2011, 18.–19.ix.2014; Veliko Brdo 27.vii.–3.viii.1996, 3.viii.2004, 7.–15.viii.2004, 8.–10.vii.2008; Makarska 27.vii.–3.viii.1996, 1.–15.viii.2004, 13.vii.2006, 17.viii.2009, 9.vi.2014, 18.–19.ix.2014,

12.vi.2016; Podgora 20.–27.vii.2002; **B:** Staza 29.vi.1990, 24.vii.2002. Common. **Rilić: A:** Zaostrog 5.–6.vii.1980, 9.viii.1987, 12.viii.1987, 27.v.1991; Brist 17.vi.2013, 21.vi.2013; Gradac 16.–21.vi.2013; Čista 18.–20.vi. 2013; **B:** Gornje Igrane 29.vi.1990. Common.

Lycaena alciphron (Rottemburg, 1775)
Biokovo: C: Vošac 3.vii.1990. Rare.

Lycaena thersamon (Esper, 1784)
Biokovo: A: Makarska 11.vi.2014. Rare (only 1 ♂ observ.).

Callophrys rubi (Linnaeus, 1758)
Biokovo: A: Donja Brela 29.v.1991; Makarska 11.vi.2014. Rare. **Rilić: A:** Zaostrog 27.v.1991; Despoti 29.v.1991. Rare.

Satyrium spini (Denis et Schiffermüller, 1775)
Biokovo: A: Gornja Brela 25.–26.vi.1990; Krvavica 9.vi.2015; Makarska 9.vi.2016, 14.vi.2016; **B:** Staza 29.vi.1990. Not rare. **Rilić: A:** Zaostrog 13.vii.1983; **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014. Not rare.

Satyrium ilicis (Esper, 1779)
Biokovo: A: Makarska 12.vi.2014, 5.–12.vi.2015, 8.–16.vi.2016. Not rare. **Rilić: B:** Sokolić 10.vii.1980. Rare.

Satyrium acaciae (Fabricius, 1787)
Biokovo: A: Gornja Brela 26.vi.1990; Donja Brela 27.vi.1990. Rare (only 2 ♀♀ lgt.).

Lampides boeticus (Linnaeus, 1767)
Biokovo: A: Makarska 12.–15.vi.2016; Podgora 20.vii.2002; Baškovići 8.viii.2004, 10.viii.2004. Not rare. **Rilić: A:** Zaostrog 14.vi.2014. Rare.

Cacyreus marshalli Butler 1898
Biokovo: A: Makarska 14.ix.2012, 8.–10.vi.2014, 15.ix.2014, 12.vi.2016, 16.vi.2016. Not rare.

Leptotes pirithous (Linnaeus, 1767)
Biokovo: A: Veliko Brdo 6.viii.2004, 16.viii.2009; Makarska 14.–18.ix.2014. Not rare.

Cupido minimus (Fuessly, 1775)
Biokovo: A: Donja Brela 26.v.1991, 29.–30.v.1991; Makarska 14.–18.ix.2014, 10.–12.vi.2015. Not rare. **Rilić: A:** Drvenik 28.v.1991; Zaostrog 9.vii.1980, 27.v.1991; Gradac, 7.vi.2013, 20.vi.2013. Not rare.

Celastrina argiolus (Linnaeus, 1758)
Biokovo: A: Donja Brela 2.vii.1990; Krvavica 30.v.2015; Veliko Brdo 27.vii.–3.viii.1996, 7.–15.viii.2004, 1.vi.2015, 7.vi.2015; Makarska 28.vii.1996, 31.vii.– 15.viii.2004, 11.vii.2006, 5.–12.vii.2008, 11.–16.ix.2011, 10.–12.vi.2014, 6.vi.2015; Podgora 25.vii.2002; Baškovići

8.viii.2004, 12.viii.2004; **C:** Vošac 3.vii.1990. Common. **Rilić: A:** Zaostrog 12.vii.1980, 10.vii.1983, 9.viii.1987, 12.viii.1987; Despoti 9.viii.1987; Gradac 31.vii.2010, 16.vi.2013; Čista 20.viii.2008, **B:** Paškal 18.vi.2014. Not rare.

Pseudophilotes vicrama (Moore, 1865)
Biokovo: A: Donja Brela 26.v.1991, 29.–30.v.1991; Baška Voda 30.v.1991; Makarska 14.ix.2014, 5.vi.2016; **B:** Staza 29.vi.1990. Not rare. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 7.–8.vii.1980, 12.viii.1987; **B:** Gornje Igrane 29.vi.1990; Sokolić 15.viii.1987. Not rare.

Scolitantides orion (Pallas, 1771)
Biokovo: A: Donja Brela 29.v.1991; Baška Voda 30.v.1991; Veliko Brdo 3.–4.vi.2015; Makarska 9.vi.2014. Not rare. **Rilić: B:** Gornji Drvenik 28.v.1991; Sokolić 28.v.1991. Rare.

Glaucopsyche alexis (Poda, 1761)
Biokovo: A: Donja Brela 26.v.1991. Rare. **Rilić: A:** Zaostrog 27.v.1991; **B:** Sokolić 28.v.1991. Not rare.

Iolana iolas (Ochsenheimer, 1816)
Biokovo: A: Donja Brela 29.v.1991; Krvavica 9.vi.2015; Makarska 2.vi.2015. Rare. **Rilić: A:** Zaostrog 6.vii.1980. Rare (only 1♂ lgt.).

Plebejus idas (Linnaeus, 1761)
Biokovo: A: Gornja Brela 25.–26.vi.1990; **C:** Vošac 3.vii.1990; Troglav 1.vii.1990 (1♂ genitalia examined, J. Šumpich det.), 3.vii.1990. Rare. **Rilić: A:** Zaostrog 12.vii.1980 (1♂ genitalia examined, J. Šumpich det.), 14.vii.1980; **C:** Sveti Ilija 18.vi.2014. Not rare.

Aricia agestis (Denis et Schiffermüller, 1775)
Biokovo: A: Gornja Brela 26.v.1991; Krvavica 17.–19.vii.2009, 30.v.2015; Veliko Brdo 27.vii.–3.viii.1996, 7.–15.viii.2004, 5.–12.vii.2008, 17.ix.2014; Makarska 2.viii.1996, 31.vii.–15.viii.2004, 16.–17.vii.2009, 13.–19.ix.2014; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004. Common. **Rilić: A:** Zaostrog 12.–14.vii.1980, 9.–14.viii.1987, 27.v.1991; Despoti 12.vii.1980, 16.vii.1983; Gradac 17.–18.viii.2008, 27.vii.2010. Common.

Polyommatus semiargus (Rottemburg, 1775)
Biokovo: C: Vošac 3.vii.1990; Troglav 3.vii.1990. Rare.

Polyommatus escheri (Hübner, 1823)
Biokovo: A: Gornja Brela 26.vi.1990; Veliko Brdo 3.–4.vi.2015; Makarska 9.–12.vi.2014, 5.–10.vi.2015, 9.–14.vi.2016. Not rare.

Polyommatus dorylas (Denis et Schiffermüller, 1775)
Biokovo: A: Donja Brela 29.v.1991; Veliko Brdo 11.vii.2006; Makarska 9.vi.2014; **C:** Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Not rare. **Rilić: A:** Zaostrog 9.–10.viii.1987. Rare.

Polyommatus amandus (Schneider, 1792)
Biokovo: C: Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Not rare.

Polyommatus icarus (Rottemburg, 1775)
Biokovo: A: Donja Brela 27.–28.vi.1990, 29.–30.v.1991; Baška Voda 29.v.1991; Krvavica 17.–18.ix.2009; Vučija Dubrava 8.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 3.–5.viii.2004, 7.–15.viii.2004, 3.vi.2015; Makarska 11.vii.1980, 22.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.–14.vii.2006, 16.–20.vii.2009, 5.–14.vi.2014, 16.–19.ix.2014, 5.vi.2015, 12.–15.vi.2016; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004, 12.viii.2004; **B:** Staza 29.vi.1990, 24.vii.2002; **C:** Vošac 3.vii.1990; Sveti Jure 18.vii.1983. Common. **Rilić: A:** Drvenik 15.viii.1987, 28.v.1991; Zaostrog 5.–9.vii.1980, 14.vii.1980, 8.–17.vii.1983, 19.–20.vii.1983, 8.–14.viii.1987, 16.viii.1987, 28.v.1991; Despoti 5.–9.vii.1980, 11.–15.vii.1980, 8.–17.vii.1983, 19.–20.vii.1983, 9.–14.viii.1987, 16.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 17.–22.viii.2008, 16.–21.vi.2013, 20.vi.2014; Čista 18.–20.vi.2013; **B:** Gornje Igrane 29.vi.1990. Common.

Polyommatus daphnis (Denis et Schiffermüller, 1775)
Biokovo: A: Makarska 2.viii.1996. Rare (only 1 ♂ lgt.). **Rilić: A:** Zaostrog 14.vii.1983. Rare (only 1 ♂ lgt.).

Polyommatus bellargus (Rottemburg, 1775)
Biokovo: **A:** Gornja Brela 26.vi.1990; Donja Brela 27.–28.vi.1990, 26.v.1991, 29.–30.v.1991; Krvavica 17.–21.vii.2009, 12.–14.ix.2011, 8.vi.2014, 2.–7.vi.2015, 17.vi.2016; Vučija Dubrava 8.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 2.–15.viii.2004, 5.–12.vii.2008, 16.–17.vii.2009; 11.–16.ix.2011, 3.vi.2015; Makarska 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.–14.vii.2006, 16.–22.vii.2009, 11–16.ix.2011, 14.–16.ix.2014, 2.–4.vi.2015, 5.–16.vi.2016; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004; **B:** Staza 24.vii.2002. Common. **Rilić: A:** Drvenik 15.viii.1987, 28.v.1991; Gornji Drvenik 15.viii.1987; Zaostrog 5.–10.vii.1980, 10.–17.vii.1983, 8.–12.viii.1987, 16.viii.1987; 27.v.1991, 29.v.1991; Despoti 11.–15.vii.1980, 19.vii.1983, 10.–12.viii.1987, 16.viii.1987; 29.v.1991; Brist 18.viii.2008, 24.–30.vii.2010, 17–21.vi.2013; Gradac 18.–23.viii.2008, 24.–30.vii.2010; Čista 19.–22.viii.2008, 16.–21.vi.2013. Common.

Polyommatus coridon (Poda, 1761)
Biokovo: A: Podgora 22.–23.vii.2002; **C:** Biokovo road 1.vii.1990. Rare (only 2 ♂♂ observ., 1 ♀ lgt.). **Rilić: A:** Drvenik 15.viii.1987. Rare (only 1 ♂ observ.).

Nymphalidae

Libythea celtis (Laicharting, 1782)
Biokovo: C: Vošac 3.vii.1990. Rare (only 1 ♀ lgt.). **Rilić: A:** Zaostrog 7.vii.1980. Rare (only 1 ind. observ.).

Argynnis paphia (Linnaeus, 1758)
Biokovo: A: Veliko Brdo 27.vii.–2.viii.1996, 2.–5.viii.2004, 10.vii.2006, 8.–10.vii.2008, 16.–17.vii.2009; Makarska 27.vii.–3.viii.1996, 1.–10.viii.2004, 10.vii.2006, 8.–10.vii.2008, 16.–17.vii.2009. Not rare. **Rilić: A:** Brist 31.vii.2010; Gradac 18.vi.2014; **B:** Paškal 18.vi.2014. Not rare.

Argynnis pandora (Denis et Schiffermüller, 1775)
Biokovo: A: Krvavica 12.–14.ix.2011, 18.–19.ix.2014; Makarska 11.–16.ix.2011, 9.–10.vi.2014, 13.–16.ix.2014, 18–19.ix.2014; **C:** Biokovo road 3.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990. Not rare. **Rilić:** Zaostrog 8.–14.viii.1987; Despoti 10.viii.1987; Brist 21.vi.2013; Gradac 21.vi.2013, 17.vi.2014; Čista 22.viii.2008, 27.vii.2010. Not rare.

Argynnis aglaja (Linnaeus, 1758)
Biokovo: A: Makarska 29.vii.1996; **C:** Vošac 1.vii.1990; Troglav 1.vii.1990. Rare. **Rilić: B:** Paškal 18.vi.2014. Rare.

Argynnis adippe (Denis et Schiffermüller, 1775)
Biokovo: A: Makarska 30.vii.1996. Rare. **Rilić: A:** Zaostrog 5.–9.vii.1980, 8.–17.vii.1983; Despoti 12.vii.1980, 16.vii.1983. Not rare.

Issoria lathonia (Linnaeus, 1758)
Biokovo: A: Veliko Brdo 29.vii.1996, 2.–15.viii. 2004; Makarska 29.vii.–2.viii.1996, 31.vii.–15.viii.2004, 17.–22.vii.2009, 11.–16.ix.2011; Baškovići 8.viii.2004; **B:** Brdo 12.viii.2004; **C:** Biokovo road 3.vii.1990; Ladena 3.vii.1990; Vošac 1.vii.1990; Troglav 3.vii.1990; Sveti Jure 18.vii.1983. Common. **Rilić: A:** Brist 17.viii.2008; Zaostrog 10.–14.viii.1987; Gradac 19.–22.viii.2008; Čista 19.–22.viii.2008; **B:** Paškal 18.vi.2014; Sveti Ilija 18.vi.2014; **C:** Velika Kapela 10.vii.1980. Common.

Brenthis hecate (Denis et Schiffermüller, 1775)
Biokovo: C: Vošac 1.vii.1990, 3.vii.1990. Not rare.

Boloria euphrosyne (Linnaeus, 1758)
Biokovo: C: Vošac 3.vii.1990. Rare. **Rilić: B:** Paškal 18.vi.2014; Sveti Ilija 18.vi.2014. Rare.

Vanessa atalanta (Linnaeus, 1758)
Biokovo: A: Donja Brela 27.vi.1990, 29.v.1991; Krvavica 12.ix.2012; Veliko Brdo 7.viii.2004; Makarska 4.–15.viii.2004, 10.–13.vii.2006, 5.–12.vii.2008, 16.viii.2009, 11.–16.ix.2011, 9.ix.2012, 10.–11.vi.2014, 13.–16.ix.2014; Podgora 26.vii.2002. Common. **Rilić: A:** Zaostrog 19.vii.1983, 10.viii.1987; Gradac 17.–23.viii.2008; Čista 17.–23.viii.2008. Not rare.

Vanessa cardui (Linnaeus, 1758)
Biokovo: A: Zadvarje 7.viii.1987; 26.v.1991, 29.v.1991; Baška Voda 29.–30.v.1991; Krvavica 12.ix.2011, 12.ix.2012, 31.v.2015; Vučija Dubrava 11.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 10.vii.2006, 16.–17.vii.2009; Makarska 11.vii.1980, 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.–14.vii.2006, 8.ix.2012, 13.–16.ix.2014, 5.vi.2015; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 12.viii.2004; **B:** Brdo 12.viii.2004; Staza 24.vii.2002; **C:** Biokovo road 1.vii.1990, 3.vii.1990; Vošac 1.vii.1990, 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 18.vii.1983, 1.vii.1990. Common. **Rilić: A:** Drvenik 15.viii.1987; Gornji Drvenik 15.viii.1987; Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 12.–15.vii.1983, 8.–14.viii.1987; Despoti 5.–9.vii.1980, 12.–15.vii.1983, 9.–10.viii.1987; Brist 16.vi.2013, 21.vi.2013; Gradac 24.–31.vii.2010, 16.–21.vi.2013; Čista 16.–20.viii.2013; **B:** Sokolić 10.vii.1980; Šapašnik 13.vii.1983; Paškal 18.vi.2014; Sveti Ilija 18.vi.2014; **C:** Velika Kapela 10.vii.1980. Common.

Aglais io (Linnaeus, 1758)
Biokovo: C: Sveti Jure 18.vii.1983. Rare (only 1 ind. observ.).

Aglais urticae (Linnaeus, 1758)
Biokovo: C: Sveti Jure 1.vii.1990. Rare.

Polygonia c-album (Linnaeus, 1758)
Biokovo: A: Makarska 9.vi.2014. Rare (only 1 ♂ lgt.).

Polygonia egea (Cramer, 1775)
Biokovo: A: Donja Brela 26.vi.–2.vii.1990, 29.–30.v.1991; Baška Voda 29.v.1991; Vučija Dubrava 11.viii.2004; Veliko Brdo 7.viii.2004, 6.vii.2008, 11.vii.2008; Makarska 11.vii.1980, 30.vii.1996, 9.viii.2004, 10.vii.2006, 11.vii.2008, 16.vii.2009, 9.vi.2016; Podgora 20.–27.vii.2002; Baškovići 8.viii.2004. Not rare. **Rilić: A:** Zaostrog 11.–17.vii.1983, 11.viii.1987; Despoti 11.–12.vii.1983, 16.vii.1983; Gradac 17.–18.viii.2008. Not rare.

Nymphalis polychloros (Linnaeus, 1758)
Biokovo: A: Makarska 9.–10.vi.2014. Rare (only 2 ind. observ.).

Melitaea cinxia (Linnaeus, 1758)
Biokovo: A: Donja Brela 29.–30.v.1991. Not rare.

Melitaea didyma (Esper, 1779)
Biokovo: A: Gornja Brela 25.–26.vi.1990; Donja Brela 26.–28.vi.1990; Krvavica 17.–21.vii.2009, 12.–14.ix.2011, 8.vi.2014, 31.v.–7.vi.2015, 17.vi.2016; Vučija Dubrava 11.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 1.–15.viii.2004, 10.vii.2006, 16.vii.2006, 9.vii.2008, 16.–18.vii.2009, 1.–8.vi.2015; Makarska 10.vii.2006, 27.vii.–3.viii.1996, 1.–15.viii.2004, 9.–14.vii.2006, 9.vii.2008, 17.vii.2009, 11.–16.ix.2011, 11.9.2012, 13.–16.ix.2014, 2.–13.vi.2015, 5.–18.vi.2016; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 12.viii.2004; **B:** Brdo 4.viii.2004; Staza 24.vii.2002. Common. **Rilić: A:** Drvenik 12.viii.1987, 15.viii.1987; Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 8.–17.vii.1983, 8.–14.viii.1987; Despoti 8.–9.vii.1980, 12.–14.vii.1980, 12.–14.vii.1983, 8.–14.viii.1987; Brist 17.–19.viii.2008, 25.–26.vii.2010, 16.–21.vi.2013; Gradac 17.–22.viii.2008; 24.–31.vii.2010, 16.–21.vi.2013; Čista 17.–22.viii.2008; 16.–21.vi.2013. Common.

Melitaea aurelia Nickerl, 1850
Biokovo: C: Vošac 3.vii.1990. Rare (1 ♂ genitalia examined, A. Kačírek det., 2 ♀♀ lgt.).

Limenitis reducta Staudinger, 1901
Biokovo: A: Donja Brela 26.vi.1990; Krvavica 12.–14.ix.2011; Vučija Dubrava 4.viii.2004; Veliko Brdo 10.–12.vii.2006, 5.–12.vii.2008, 9.ix.2012, 14.vi.2016; Makarska 27.vii.1996, 31.vii.–15.viii.2004, 10.vii.2008; 11.–16.ix.2011, 13.–16.ix.2014, 5.vi.2015, 9.vi.2016. Podgora 24.vii.2002; Baškovići 4.viii.2004; **C:** Vošac 3.vii.1990; Troglav 1.vii.1990, 3.vii.1990. Not rare. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 11.vii.1983, 16.vii.1983; Despoti 16.vii.1983; Gradac 24.vii.2010, 30.vii.2010, 20.vi.2014; Čista 18.–20.viii.2008. Not rare.

Neptis rivularis (Scopoli, 1763)
Biokovo: C: Vošac 3.vii.1990. Rare (only 1 ind. observ.). **Rilić: A:** Despoti 16.vii.1983, 9.viii.1987. Rare.

Charaxes jasius (Linnaeus, 1767)
Rilić: A: Čista 21.–22.viii.2008. Rare (only 1 ♂ lgt., 1 ♂ observ.).

Pararge aegeria (Linnaeus, 1758)
Biokovo: A: Donja Brela 1.vii.1990, 29.v.1991; Vučija Dubrava 4.viii.2004; Veliko Brdo 31.vii.1996, 5.–12.vii.2008, 17.ix.2014, 1.–3.vi.2015; Makarska 31.vii.1996, 1.–15.viii.2004, 8.–14.vii.2006, 5.–12.vii.2008, 11.–16.ix.2011, 8.–12.vi.2014, 5.vi.2015, 7.–16.vi.2016; Baškovići 4.viii.2004. Common. **Rilić: A:** Gradac 24.–30.vii.2010, 16.–21.vi.2013, 16.–17.vi.2014, 19.–20.vi.2014; Čista 17.vi.2013. Not rare.

Lasiommata megera (Linnaeus, 1767)
Biokovo: A: Zadvarje 26.v.1991; Gornja Brela 25.–26.vi.1990, 26.v.1991; Donja Brela 26.– 28.vi.1990, 30.v.1991; Baška Voda 29.v.1991; Topići 29.vi.1990; Krvavica 17.vii.2009, 12.–14.ix.2011, 18.–19.ix.2014; Vučija Dubrava 4.viii.2004, 11.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 10.vii.2006, 9.vii.2008, 16.–17.vii.2009, 12.vi.2015; Makarska 11.vii.1980, 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.–14.vii.2006, 5.–12.vii.2008, 16.–20.vii.2009, 11.–16.ix.2011, 11.ix.2012, 13.–19.ix.2014, 5.vi.2015, 11.vi.2016; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 12.viii.2004; **B:** Brdo 4.viii.2004; Staza 29.vi.1990, 24.vii.2002; **C:** Vošac 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 18.vii.1983, 1.vii.1990. Common. **Rilić: A:** Drvenik 12.viii.1987, 28.v.1991, Gornji Drvenik 28.v.1991; Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 8.–17.viii.1983, 19.–20.vii.1983, 8.–16.viii.1987, 27.v.1991, 29.v.1991; Despoti 7.–9.vii.1980, 12.–15.vii.1980, 8.–17.vii.1983, 19.–20.vii.1983, 8.–16.viii.1987, 29.v.1991; Brist 25.–26.vii.2010, 16.–21.vi.2013; Gradac 17.–23.viii.2008; 24.–31.vii.2010, 20.–21.vi.2013; Čista 17.–22.viii.2008, 24.–31.vii.2010, 16.–17.vi.2014, 19.–21.vi.2014. **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014; Sveti Ilija 18.vi.2014. Common.

Lasiommata maera (Linnaeus, 1758)
Biokovo: A: Donja Brela 29.–30.v.1991; Baška Voda 29.–30.v.1991; **C:** Vošac 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Not rare. **Rilić: A:** Zaostrog 27.v.1991; **B:** Paškal 18.vi.2014; Sveti Ilija 18.vi.2014. Not rare.

Coenonympha rhodopensis Elwes, 1900
Biokovo: C: Vošac 3.vii.1990; Troglav 3.vii.1990. Rare.

Coenonympha pamphilus (Linnaeus, 1758)
Biokovo: A: Krvavica 12.–14.ix.2011, 8.vi.2014, 18.–19.ix.2014, 31.v.2015; Veliko Brdo 27.vii.–3.viii.1996, 1.–15.viii.2004, 10.vii.2006, 9.vii.2008, 16.–17.vii.2009, 1.vi.2015; Makarska 11.vii.1980, 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.–14.vii.2006, 5.–12.vii.2008, 16.–18.vii.2009, 11.–16.ix.2011, 11.ix.2012, 10.vi.2014, 18.–19.ix.2014, 2.–6.vi.2015; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004; **B:** Staza 29.vi.1990; **C:** Biokovo road 1.vii.1990;

Ladena 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Common. **Rilić: A:** Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 8.–17.vii.1983, 7.–10.viii.1987, 27.v1991; Despoti 5.–9. vii.1980, 11.–15.vii.1980, 8.–17.vii.1983, 9.viii.1987; Brist 16.–21.vi.2013; Gradac 15.–22. vi.2013; **B:** Gornje Igrane 29.vi.1990; Paškal 18.vi.2014. Common.

Pyronia cecilia (Vallantin, 1894)
Biokovo: A: Topići 29.vi.1990; Podgora 20.–25.vii.2002. Rare. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 5.–9.vii.1980, 15.vii.1980, 11.vii.1983, 14.viii.1987, 16.viii.1987; Brist 17.vi.2013, 21.vi.2013; Gradac 16.–22.vi.2013, 16.–21.vi.2014. Not rare.

Maniola jurtina (Linnaeus, 1758)
Biokovo: A: Gornja Brela 25.vi.1990; Donja Brela 28.vi.1990, 30.v.1991; Krvavica 17.vii.2009, 12.–14.ix.2011, 8.vi.2014, 18.–19.ix.2014, 7.vi.2015; Veliko Brdo 27.vii.–3. viii.1996, 9.viii.2004, 10.vii.2006, 17.ix.2014, 1.–10.vi.2015; Makarska 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 9.vii.2006, 5.vii.2008, 16.vii.2009; 11.–16.ix.2011, 11.ix.2012, 9.–12.vi.2014, 13.–19.ix.2014, 1.–13.vi.2015, 9.–16.vi.2016; Podgora 25.vii.2002; **B:** Staza 29.vi.1990. Common. **Rilić: A:** Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 8.–17.vii.1983, 11.–14.viii.1987; Gradac 17.–20.viii.2008, 18.–21.vi.2014; **B:** Gornje Igrane 29.vi.1990. Common.

Erebia melas (Herbst, 1796)
Biokovo: C: Biokovo road 24.vii.2002. Not rare.

Melanargia galathea (Linnaeus, 1758)
Biokovo: A: Donja Brela 26.–28.vi.1990; Veliko Brdo 27.vii.–3.viii.1996, 8.vii.2008; Makarska 27.vii.–3.viii.1996, 12.vii.2008; **B:** Staza 29.vi.1990; **C:** Vošac 3.vii.1990. Not rare. **Rilić: A:** Zaostrog 5.–9.vii.1980, 12.–15.vii.1980, 8.–10.vii.1983, **B:** Gornje Igrane 29.vi.1990. Not rare.

Melanargia larissa (Geyer, 1828)
Biokovo: A: Gornja Brela 25.–27.vi.1990; Donja Brela 26.vi.1990; Makarska 28.vii.1996, 6.vii.2008; Veliko Brdo 12.vii.2006, 6.vii.2008. Rare.

Satyrus ferula (Fabricius, 1793)
Biokovo: A: Gornja Brela 25.–26.vi.1990; Donja Brela 27.vi.–2.vii.1990; Veliko Brdo 27.vii.–3.viii.1996, 5.–8.vii.2008; Makarska 1.vii.1990, 27.vii.–3.viii.1996, 12.–14.vii.2006, 6.vii.2008; **B:** Staza 3.vii.1990; **C:** Biokovo road 1.vii.1990; Troglav 3.vii.1990. Not rare. **Rilić: A:** Zaostrog 5.–9.1980, 12.–15.vii.1980; Gradac 19.vi.2013; **B:** Gornje Igrane 29.vi.1990; Šapašnik 13.vii.1983; Paškal 18.vi.2014. Not rare.

Hipparchia fagi (Scopoli, 1763)
Biokovo: A: Veliko Brdo 2.viii.1996, 6.viii.2004, 11.–13.vii.2006; Makarska 27.vii.–3. viii.1996, 8.viii.2004, 11.–13.vii.2006, 9.vii.2008, 16.ix.2011. Not rare. **Rilić: A:** Zaostrog 8.–12.viii.1987. Not rare.

Hipparchia syriaca (Staudinger, 1871)
Biokovo: A: Veliko Brdo 6.viii.2004, 10.–13.vii.2006; Makarska 30.vii.–1.viii.1996, 6.viii.2004, 9.viii.2004, 9.–14.vii.2006, 15.ix.2011, 17.vi.2016; **C:** Vošac 3.vii.1990. Not rare. **Rilić: A:** Zaostrog 8.–14.viii.1987. Not rare.

Hipparchia semele (Linnaeus, 1758)
Biokovo: A: Gornja Brela 25.–26.vi.1990; Krvavica 17.vii.2009, 12.–14.ix.2011, 8.vi.2014, 31.v.2015, 7.vi.2015; Veliko Brdo 27.vii.–2.viii.1996, 1.–5.viii.2004, 10.–13.vii.2006, 3.vi.2015, 8.vi.2015; Makarska 27.vii.–3.viii.1996, 11.–13.vii.2006, 8.vii.2008, 16.–20.vii.2009, 13.–16.ix.2014, 4.vi.2014, 5.–9.vi.2016; **C:** Vošac 3.vii.1990; Troglav 3.vii.1990; Sveti Jure 1.vii.1990. Common. **Rilić: A:** Zaostrog 11.–12.viii.1987; Brist 25.–29.vii.2010; Gradac 20.–21.viii.2008, 24.–31.vii.2010; Čista 20.viii.2008; **B:** Paškal 18.vi.2014. Not rare.

Hipparchia statilinus (Hufnagel, 1766)
Biokovo: A: Krvavica 17.–21.vii.2009, 12.ix.2011, 14.ix.2011; Vučija Dubrava 8.viii.2004; Veliko Brdo 27.vii.–3.viii.1996, 31.vii.–15.viii.2004; Makarska 27.vii.–3.viii.1996, 31.vii.–15.viii.2004, 16.–22.vii.2009, 11.–16.ix.2011, 13.–16.ix.2014; Podgora 20.–27.vii.2002; Baškovići 4.viii.2004, 8.viii.2004; **B:** Brdo 4.viii.2004. Common. **Rilić: A:** Drvenik 15.viii.1987; Zaostrog 8.–14.viii.1987, 16.viii.1987; Brist 18.viii.2008, 24.–30.vii.2010; Gradac 17.–23.viii.2008, 24.–31.vii.2010; Čista 19.–22.viii.2008. Common.

Brintesia circe (Fabricius, 1775)
Biokovo: A: Veliko Brdo 3.viii.2004, 17.ix.2014; Makarska 3.viii.2004, 13.–16.ix.2014. Not rare. **Rilić: A:** Drvenik 10.vii.1980; Gornji Drvenik 10.vii.1980; Zaostrog 17.vii.1983; Despoti 17.vii.1983; Gradac 16.–21.vi.2013; Čista 16.–21.vi.2013; **B:** Sokolić 10.vii.1980. Not rare.

Chazara briseis (Linnaeus, 1764)
Biokovo: A: Makarska 6.vii.2008; **C:** Biokovo road 1.vii.1990; Vošac 3.vii.1990. Rare. **Rilić: A:** Gradac 18.viii.2008, 27.vii.2010; Čista 18.viii.2008. Rare.

DISCUSSION

During my visits I found a total of 92 species in Biokovo and 68 species in Rilić. In Biokovo I recorded the presence of the following species not listed by Mihoci et al. (2011) or mentioned in other available literature. Thus, these species are probably reported from this mountain range for the first time: *C. orientalis, P. serratulae, G. pumilio, L. alciphron, C. marshalli, C. minimus*, *I. iolas* and *M. aurelia*. After several decades, the occurrence of the species *C. alceae*, *S. orbifer* and *P. c-album*, records of which were reported in the older literature (Habeler 1976, Neustetter 1956, Wiemers 1982) is confirmed. On the contrary, I was not able to confirm some other old literature records. Of these, the occurrence of *L. hippothoe* and *P. optilete*, reported by Mann (1869), is unlikely. Records of *S. sertorius* may be based on misidentifications of *S. orbifer*, although Neustetter (1956) reports both species. *Ch. jasius*, which is reported by Mann (1869) and Neustetter (1956), occurs throughout the whole coastal zone of Croatia (Koren 2012b). I have found it on Rilić and it will undoubtedly be found in

the future in the lower localities of Biokovo. Records by Habeler (1976) of *C. osiris* are very probably correct, as males were found, which could not be mistaken for *C. minimus*. A record of *A. arethusa* published by Sijarić (1991a, b) is also convincing.

I did not confirm 21 species recorded by Mihoci et al. (2011). For most of these species the reasons are obvious. Twelve of them were found only on the northern side of the mountain, which I did not have the opportunity to visit: *Pyrgus sidae* (Esper, 1784), *Pyrgus alveus* (Hübner, 1803), *Thymelicus lineola* (Ochsenheimer, 1808), *Satyrium w-album* (Knoch, 1782), *Aricia artaxerxes* (Fabricius, 1793), *Argynnis niobe* (Linnaeus, 1758), *Nymphalis antiopa* (Linnaeus, 1758), *Nymphalis xanthomelas* (Esper, 1781), *Melitaea trivia* (Denis et Schiffermüller, 1775), *Limenitis camilla* (Linnaeus, 1764), *Pyronia tithonus* (Linnaeus, 1767) and *Proterebia afra* (Fabricius, 1787). The other species, *Zerynthia polyxena* (Denis et Schiffermüller, 1775), flies only in early spring when no survey was done. The remaining species that I did not confirm are: *Zerynthia cerisyi* (Godart, 1824), *Euchloe ausonia* (Hübner, 1804), *Colias hyale* (Linnaeus, 1758), *Plebejus argus* (Linnaeus, 1758), *Neptis sappho* (Pallas, 1771), *Hyponephele lycaon* (Kühn, 1774), *Hyponephele lupina* (Costa, 1836) and *Minois dryas* (Scopoli, 1763).

If we add together the 102 species from the work by Mihoci et al. (2011) and 3 species reported in older literature that I have managed to confirm plus 3 that I was not able to confirm but are unmistakable, and the 8 species newly found, the Biokovo Mountain Range hosts at least 116 species of butterflies.

It is interesting to compare the number of species found in Biokovo with the number of butterfly species found in the northern mountains of about the same altitude but larger size – the Velebit Mountain Range, where 153 species have been found so far (Tvrtković et al. 2015). In the relatively close Dinara Mountain Range about 130 species have been found (Tvrtković et al. 2012, Koren & Lauš 2013), so both ranges have a significantly greater number of species. Koren & Lauš (2013) explain this by stating that the situation of Biokovo differs, since it lies outside the main Dinaric chain and is under a strong influence from the Mediterranean climate, so the 102 recorded species probably represent almost all the butterflies present in the area. I want to show in this study that this assumption is confirmed only partially. With the additional species reported here, the total number has increased, but is still less than the number of butterfly species found on Velebit or Dinara mountain ranges.

The acquired data largely refine knowledge of the vertical extension of butterflies in Biokovo. In zone A (0–500 m a.s.l.) were the newly detected *E. tages*, *C. alceae*, *C. lavatherae*, *R. orientalis*, *S. orbifer*, *P. armoricanus*, *T. acteon*, *G. pumilio*, *S. spini*, *C. marshalli*, *C. minimus*, *I. iolas*, *P. escheri*, *P. dorylas*, *P. daphnis*, *P. coridon* and *P. c-album*. In zone B (500–1000 m a.s.l.) newly found species are *E. tages*, *S. orbifer*, *O. sylvanus*, *L. phlaeas*, *H. statilinus*. For zone C (above 1000 m a.s.l.) *P. serratulae*, *L. alciphron*, *C. argiolus*, *C. semiargus*, *M. aurelia* and *N. rivularis* are the new records. However, it is necessary to bear in mind that the distance between the highest and lowest positions in the mountain is minimal. Therefore butterflies may drift from one zone to another. An example may be the observation of what was probably only a single late male *A. cardamines* near Makarska.

The butterfly fauna of the Rilić Mountain Range has never been explored in detail. This article is the first attempt to compile an overview of the butterfly fauna of this mountain range. It was expected, given the height of the mountain and the character of the nature sites in its highest parts, that the number of species found here will be significantly smaller than for

Biokovo, and this was confirmed. In Rilić I have recorded 68 species. However, this should be taken as only a basis for further exploration. It is necessary to focus on the north-eastern side of the mountain range, and also on the lowest positions in the spring.

C. *marshalli* is one of the most remarkable of the newly reported species. Finding a stable population at altitudes 5–150 m a.s.l. on the northwest outskirts of Makarska testifies to the on-going invasion of this butterfly, which originally comes from South Africa. In recent years, this butterfly spread quickly throughout the southern part of Western Europe – Spain, Portugal, France, Italy (Luy 2002, Kučinić et al. 2013). In 2008 it was discovered in Slovenia (Verovnik et al. 2011). The first record for Croatia also dates from 2008, from the island of Mali Lošinj (Kosmač & Verovnik 2009). Currently, it is spreading along the coast from north to south in the Mediterranean area of Croatia (Kučinić et al. 2013, 2014, Koren et al. 2014). Another interesting species is *C. orientalis.* Its finding, however, is not unexpected as the localities smoothly follow its occurrence along the southern part of the Croatian coast (Jakšić 1988, de Jong 1974). For *P. serratulae* and *M. aurelia* this is the southernmost point of their distribution in Croatia (Jakšić 1988, Koren & Jugović 2012). A few species can be considered widespread and rare in Dalmatia, in particular: *G. pumilio*, *P. alexanor*, *L. alciphron*, *L. thersamon*, *S. acaciae*, *I. iolas*, *B. hecate, N. rivularis* and *C. rhodopensis* (Lorković 1971, 2009a, Jakšić 1988).

Some of recorded species are listed on the Red list of butterflies of Croatia (Šašić et al. 2013). No species from threatened categories, i.e Critically endangered (CR), Endangered (EN) or Vulnerable (VU), were found during the survey. Five species are labelled as Near Threatened (NT): *P. mnemosyne*, *P. machaon*, *G. alexis*, *S. orion*, *P. vicrama*. Another five are listed as Data Deficient (DD): *T. acteon*, *P. alexanor*, *P. brassicae*, *L. thersamon* and *M. aurelia*. Fifteen of the species recorded are listed as Near Threatened in the European Red Butterfly list (van Swaay et al. 2010): *C. lavatherae*, *C. flocciferus*, *P. serratulae*, *T. acteon, P. mnemosyne*, *L. alciphron*, *P. vicrama*, *S. orion*, *I. iolas*, *P. dorylas*, *N. polychloros*, *M. aurelia*, *H. fagi*, *H. statilinus* and *Ch. briseis.*

Given that, especially at altitudes from 0 to 500 m a.s.l., the butterfly fauna has been monitored for 37 years, I can confidently state that the strength of the populations of most species of butterflies at low altitudes in the mountains has gradually slightly decreased. Examples of species in which the number of individuals observed is definitely smaller than in the past include: *S. orbifer*, *P. machaon*, *P. manni*, *L. reducta*, *M. galathea*, *S. ferula*, *H. fagi*, *H. syriaca* and in recent years also *L. phlaeas*, *L. bellargus* and *H. statilinus*. For only few species the opposite situation can be observed, i.e. the number of observed individuals has increased. These include *T. acteon*, *P. escheri* and *P. aegeria*. However, these data should be treated with caution as many species show large fluctuations in size of population over the years. A typical example is *P. ergane,* occurring in the monitored area some years sporadically, some years in abundance. In terms of the butterfly fauna, a small flat plateau on top of the Biokovo range is of great importance. Unfortunately, the small number of visits to this place has not allowed me to evaluate the development of populations of butterflies in this part of the mountain.

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SOUHRN

Pohoří Biokovo a Rilić jsou chorvatská pohoří Dinárské horské soustavy ve střední Dalmácii. Vyšší Biokovo zahrnuje území ohraničené na severozápadě průsmykem Dubci, oddělujícím Biokovo od pohoří Mosor, po sedlo Staza na jihu. Odkud pak dále na jihovýchod plynule pokračuje nižší pohoří Rilić až po Bačinská jezera a deltu Neretvy. Obě pohoří jsou velmi známá, neboť jejich jihozápadní svahy spadají až k Jaderskému moři a vrcholy vytvářejí kulisu turisticky mimořádně atraktivní pobřežní oblasti, nazývané Makarská riviéra. Článek přináší stručné informace o historii výzkumu denních motýlů tohoto území a výsledky mé vlastní entomologické činnosti v letech 1980 až 2016. Za toto období jsem v pohoří Biokovo

zjistil 92 druhů denních motýlů (Hesperioidea a Papilionoidea). Z nich 8 je z tohoto pohoří hlášeno poprvé: *Carcharodus orientalis* Reverdin, 1913, *Pyrgus serratulae* (Rambur, 1840), *Gegenes pumilio* (Hoffmannsegg, 1804), *Lycaena alciphron* (Rottemburg, 1775), *Cupido minimus* (Fuessly, 1775), *Iolana iolas* (Ochsenheimer, 1816), *Melitaea aurelia* Nickerl, 1850, *Cacyreus marshalli* Butler, 1898. Po několika desetiletích je potvrzen výskyt druhů *Carcharodus alceae* (Esper, 1780), *Spialia orbifer* (Hübner, 1823) a *Polygonia c-album* (Linnaeus, 1758). Protože většina z dosud malého počtu prací týkajících se Biokova neuvádí přesné lokality a často ani data nálezů, jsou přinášené údaje první konkrétní data pro většinu druhů zde dosud nalezených. Řada nových údajů upřesňuje a významně doplňuje dosavadní poznatky o vertikálním rozšíření denních motýlů v pohoří. Celkem je nyní známo z Biokova nejméně 116 druhů denních motýlů. Fauna denních motýlů pohoří Rilić je známa minimálně. Nyní uvedených 68 druhů je prvním pokusem o sestavení přehledu fauny denních motýlů tohoto pohoří.

Některé nalezené druhy denních motýlů jsou zajímavé pro celou Dalmácii: *Gegenes pumilio* (Hoffmannsegg, 1804), *Papilio alexanor* Esper, 1799, *Lycaena thersamon* (Esper, 1784), *Satyrium acaciae* (Fabricius, 1787), *Cacyreus marshalli* Butler, 1898, *Iolana iolas* (Ochsenheimer, 1816), *Brenthis hecate* (Denis et Schiffermüller, 1775), *Neptis rivularis* (Scopoli, 1763), *Coenonympha rhodopensis* Elwes, 1900. Pro *Pyrgus serratulae* (Rambur, 1840) a *Melitaea aurelia* Nickerl, 1850 jsou uváděné lokality nejjižnějšími místy jejich výskytu v Chorvatsku.