

NEW DATA ABOUT THE DISTRIBUTION OF ANOMALOUS BLUE *POLYOMMATUS ADMETUS* (ESPER, 1783) (LEPIDOPTERA: LYCAENIDAE) IN CROATIA

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Abstract

Butterflies of Croatia have been studied more or less intensively since the beginning of the 19th century. In the last decade, however, much new data about the butterflies of Croatia was published, including the finding of several new species for Croatia and the expansion of the known area of distribution for some rare species. Still some species that were recorded almost a hundred years ago in Croatia have not been found since. During the field trips taken in 2009 and 2010 in middle Dalmatia, a rare butterfly species, Anomalous Blue *Polyommatus admetus* (Esper, 1783), was recorded in several new locations around the Cetina and Zrmanja Rivers. These are the first records of the species in Croatia since the beginning of the 20th century. The known range of the species in Croatia is vastly expanded, although possibly still incomplete.

KEY WORDS: *Polyommatus admetus*, Croatia, Cetina, Zrmanja, distribution

Introduction

The butterflies of Croatia have been systematically studied since the beginning of the 19th century and with shorter or longer breaks continue to be studied today (e.g. ABAFI AINGER *et al.*, 1896; CARNELUTTI, 1994; HABELER, 1976, 2003; HAFNER, 1994; JURINAC, 1884; KOČA, 1900; MANN, 1867, 1869; REBEL, 1891; WITHRINGTON & VEROVNIK, 2008). Nevertheless it cannot be said that Croatia's butterfly fauna is well studied and complete. During the last decade six new species of butterflies were added to the Croatian butterfly fauna; *Coenonympha oedippus* (Fabricius, 1787) (KUČINIĆ *et al.*, 1999), *Lycaena ottomanus* (Lefebvre, 1830) (MIHOČI *et al.*, 2005), *Polyommatus damon* (Denis & Schiffmuller, 1775) (MIHOČI *et al.*, 2006), *Danaus chrysippus* (Linnaeus, 1785) (PERKOVIĆ, 2006), *Cacyreus marshalli* (Butler, 1898) (KOSMAČ & VEROVNIK,

2009) and *Lasiommata petropolitana* (Fabricius, 1787) (MIHOČI & ŠAŠIĆ, 2009). According to MIHOČI & ŠAŠIĆ (2009) the butterfly fauna of Croatia counts 192 species.

Also, for some rare species the known area of distribution has been greatly expanded: *Brenthis ino* (Rottemburg, 1775) (MIHOČI & ŠAŠIĆ, 2005, KOREN & ZADRAVEC, 2010), *Polyommatus thersites* (Cantener, 1835) (MIHOČI & ŠAŠIĆ, 2006) and *Proterebia afra dalmata* (Godart, 1824) (ČELIK *et al.*, 2006; MIHOČI & ŠAŠIĆ, 2005; ZAKŠEK, 2005; MIHOČI & ŠAŠIĆ, 2007).

However there is a significant number of species that were recorded only in the past century by foreign entomologists, or that are known in Croatia from only one or a few specimens or one location. In his manuscript, which was published posthumously, Zdravko LORKOVIĆ, one of the greatest Croatian entomologists of all time, gives a detailed list of Croatian butterflies with remarks about each species (LORKOVIĆ, 2009). Some of those species mentioned by LORKOVIĆ (2009), and that have not been found during any recent surveys in Croatia, are: *Papilio alexanor* Esper, 1799, *Clossiana titania* (Esper, 1794), *Pararge roxelana* (Cramer, 1777) and *Erebia triaria* (de Prunner, 1798) and *Polyommatus admetus* (Esper, 1785).

The first known record of *P. admetus* from Croatia is by STAUDER (1922) who gives the locality only as "middle Dalmatia", which is worthless in terms of faunistic record. The same finding is probably shown on the distribution maps of butterflies of former Yugoslavia (JAKŠIĆ, 1988). According to LORKOVIĆ (2009) that record was questionable and he doubted that *P. admetus* is a part of Croatian fauna. The only reliable records were published by HAFNER (1994), who recorded this species in several locations around Knin at the beginning of 20th century.

According to TOLMAN & LEWINGTON (2008), *P. admetus* is distributed across central and southeast Europe and Turkey. It is present in Hungary, Croatia, Bosnia-Herzegovina, Serbia, Republic of Macedonia, Albania, Bulgaria, Greece and Turkey (TOLMAN & LEWINGTON, 2008). It is a univalent species flying from mid June to the end of July but has been observed even in September (LAFRANCHIS *et al.*, 2007). *P. admetus* is present at altitudes between 50 and 1500m (LAFRANCHIS *et al.*, 2007, TOLMAN & LEWINGTON, 2008).

P. admetus (Figs. 1 & 2) is like other species of the same subgenus (referring to subgenus *Agrodiaetus*) linked to a single genus of larva host plants, *Onobrychis* (Leguminosae) (LAFRANCHIS *et al.*, 2007). These plants are found in xerophile and meso-xerophile habitats from sea-level to the high mountains, either very open (grasslands, steppes) or with bushes and trees (scrub, clearings, woodland margins, open woodlands) (LAFRANCHIS *et al.*, 2007). Like some other butterfly species such as genus *Phengaris*, the larvae of *P. admetus* are associated with ants, more precisely with these species: *Camponotus aethiops*, *Camponotus oetzeni*, *Camponotus piceus* and *Plagiolepis pygmaea* (LAFRANCHIS *et al.*, 2007). The only species of the same subgenus that is present in Croatia is *P. damon*, which can easily be distinguished from *P. admetus* by the blue color of the wing upper side in males, and a well developed white stripe on the underside of the hind wing (TOLMAN & LEWINGTON, 2008).

During the visit to middle Dalmatia in July 2009, June, July and August 2010, *P. admetus* was recorded in several new locations. In this paper the first recent finding of *P. admetus* in Croatia is discussed. Also a new distribution map for the species in Croatia is given.

Material and Methods

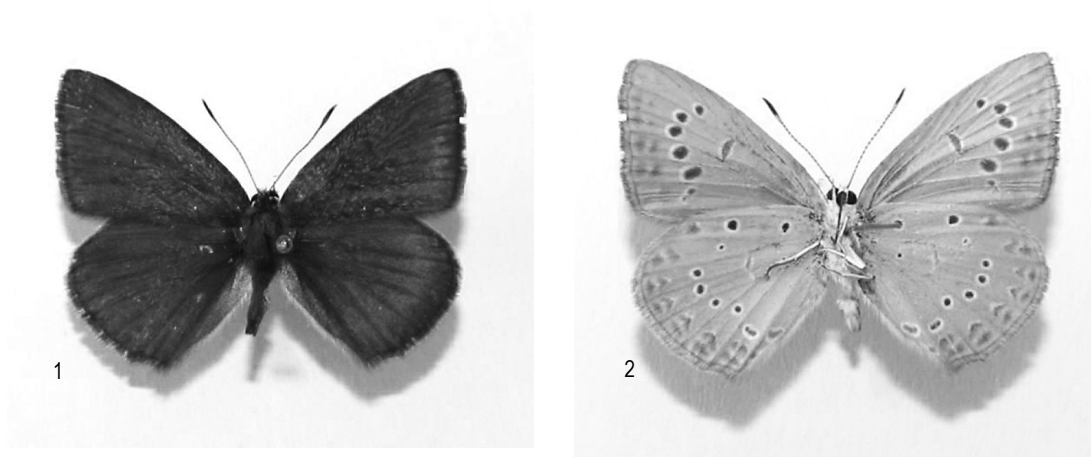
Butterflies were collected with an entomological net and only two specimens per locality were sacrificed and stored in a private collection (Koren, Pazin).

Nomenclature follows KARSHOLT & RAZOWSKI (1996) and the systematic determination of species regarding wing morphology is based on TOLMAN & LEWINGTON (2008).

During this short survey *P. admetus* was found in nine new localities in Dalmatia:

1. Zrmanja, village, X: 5585027, Y: 4895475 (33TWJ89), July 2nd, 2010.
2. Zrmanja, road toward Zrmanja spring, X: 5585683, Y: 4895919 (33TWJ89), August 2nd, 2010.
3. Zrmanja spring, X: 5585961, Y: 4896017 (33TWJ89), July 2nd, 2010.
4. Kistanje, a dump yard near the road, X: 5572630, Y: 4875098 (33TWJ77), July 3rd, 2010.
5. Očestovo, village, X: 5592506, Y: 4879261 (33TWJ97), July 3rd, 2010.
6. Paško polje, near Cetina River, X: 5615164, Y: 4867101 (33TXJ16), July 3rd, 2009.
7. Cetina river, near the main road, X: 5616134, Y: 4866797 (33TXJ16), July 3rd, 2009.
8. Ježević, X: 5617728, Y: 4865345 (33TXJ16), July 3rd, 2009.
9. Dinara, near the mountain lodge, X: 5614256, Y: 4874939 (33TXJ17), June 27th, 2010.

The UTM fields with the confirmed presence of *P. admetus* in Croatia are shown in Fig. 3.



Figures 1 & 2. Male specimen of Anomalous Blue *Polyommatus admetus* (Esper, 1783) – dorsal (1) and ventral (2) sides.

Results and Discussion

The most northern finding site of Anomalous Blue in Croatia is Zrmanja spring, where it was found on a meadow near Zrmanja River. Many specimens were observed flying on flowers or drinking from small ponds on the road. Mating rituals were observed in July and August at this site. On the eastern border of known distribution, Očestovo, *P. admetus* was observed feeding on different flowers in great numbers. Near the

village Kistanje, a male *P. admetus* was found on a road to the dump yard. During the short visit to Dinara Mountain in July 2010 a female of *P. admetus* was found near the mountain lodge, at the beginning of the hikers' path.

In Ježević, a small village located in the western part of Central Dalmatia, *P. admetus* was found on grassy moist meadows near the village. Two other localities are located close to the river Cetina, just southern of Ježević. There *P. admetus* was found on meadows close to the river and on vegetation at the edge of road. In all three locations *P. admetus* was very numerous.

During the field trips it was noticed that *P. admetus* prefers open, grassy slopes with scattered stones. The males of this species are attracted to the small puddles that remain on the roads after the rain. From the field experience it seems that *P. admetus* is active from 8 a.m. to 8 p.m. and fly even in the hottest part of the day.

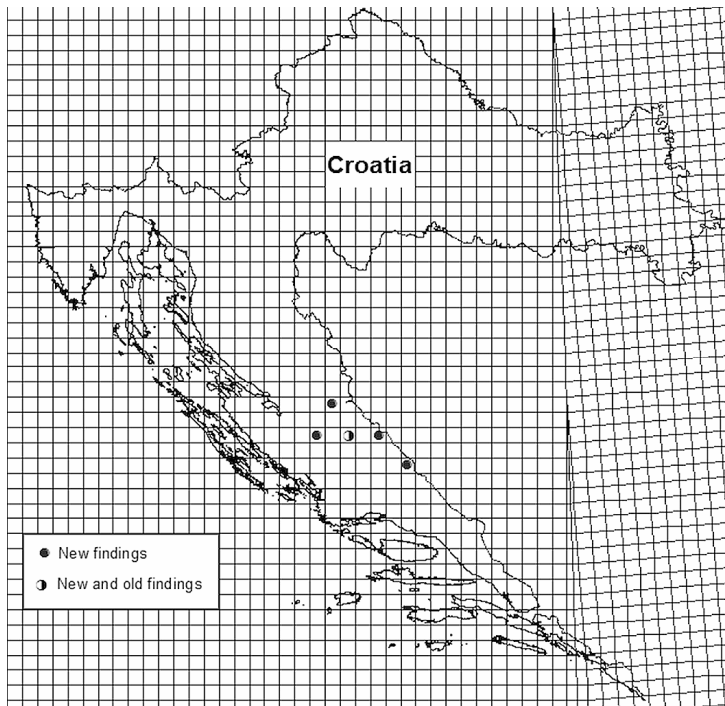


Figure 3. Distribution of Anomalus Blue *Polyommatus admetus* (Esper, 1783) in Croatia. Black circles represent new finding sites of *P. admetus* in Croatia while black and white circles represent new and literature findings in the same UTM field (10 x 10 km²).

From this survey it seems that Anomalus Blue is more common and widespread in Croatia than was previously known and expected. Previous findings around Knin (HAFNER, 1994) in a single UTM field (10 x 10 km²) are now supplemented with new records in three additional UTM fields. It is also clear that the distribution of *P. admetus* given in this paper is only preliminary, and needs to be supplemented by further research.

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НОВИ ПОДАЦИ О ДИСТРИБУЦИЈИ СМЕЂЕГ ПЛАВЦА,
POLYOMMATUS ADMETUS (ESPER, 1783)
 (LEPIDOPTERA, LYCAENIDAE) У ХРВАТСКОЈ

ТОНИ КОРЕН

Извод

Лептири Хрватске истраживани су са већим или мањим интензитетом од почетка 19. века. Свеједно, много нових података о лептирима Хрватске објављено је у протеклих десетак година, укључујући налазе неколико нових врста за фауну Хрватске и проширење познате дистрибуције за неке ретке врсте. Међутим, неке врсте лептира које су биле познате у Хрватској фауни пре готово стотину година, нису од тада пронађене. Током теренских истраживања извршених 2009. и 2010. године, ретка врста лептира, смеђи плавац *Polyommatus admetus* (Esper, 1783), забележена је на неколико нових локација дуж токова река Цетине и Зрмање. Ово су први налази ове врсте у Хрватској од почетка 20. века. Позната дистрибуција ове врсте у Хрватској знатно се проширена, али је врло вероватно још увек непотпуна.

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