

First record of the Greek clouded yellow *Colias aurorina* Herrich-Schäffer, 1850 (Lepidoptera: Pieridae) for Albania

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Abstract. During our field survey in the south-eastern part of the Republic of Albania, we encountered the Greek clouded yellow (*Colias aurorina*) at two sites, representing the first record for the species in Europe outside Greece. It was found common at one site on the Albanian side of the Grammos Mts. with possibly continuous range into northern Greece. As larval host plant of the Greek clouded yellow *Astragalus thracicus* was present in abundance on the northern slopes of the mountain, we consider the species as not threatened in Albania. In addition, the purple emperor (*Apatura iris*) and the Balkan green-veined white (*Pieris balcana*) were recorded for the first time in Albania.

Key words: diversity, faunistics, Lepidoptera, Rhopalocera, field survey

Izvleček. Prva najdba grškega senožetnika *Colias aurorina* Herrich-Schäffer, 1850 (Lepidoptera: Pieridae) v Albaniji – Med terenskim delom v jugovzhodnem delu Albanije smo našli grškega senožetnika (*Colias aurorina*) na dveh lokacijah, kar so prve najdbe te vrste v Evropi zunaj Grčije. Vrsta je bila pogosta na eni izmed lokacij na albanski strani gorovja Grammos, kjer je njena razširjenost verjetno povezana s populacijo na grški strani. Ker severna pobočja gore na gosto porašča hranilna rastlina gosenic grškega senožetnika *Astragalus thracicus*, sklepamo, da vrsta v Albaniji ni ogrožena. Dodatno smo kot novi najdbi za Albanijo našli tudi velikega spreminjavčka (*Apatura iris*) in balkanskega belina (*Pieris balcana*).

Ključne besede: pestrost, favnistika, Lepidoptera, Rhopalocera, terenske raziskave

Introduction

The butterfly fauna of the Republic of Albania is one of the most poorly studied in Europe. Main reason for that is its inaccessibility during the communist regime after the Second World War. Therefore, it is not surprising that the only comprehensive faunistic survey of the Albanian butterflies was published by Rebel & Zerny in 1931. Two additional surveys published in a local journal (Murraj 1972, Misja & Kurrizi 1984) did not contribute much new information

and include several potentially erroneous records. As several widespread species in the Balkans and the neighboring countries are not listed in any of the published lists, we could say that the butterfly fauna of Albania is still insufficiently studied.

Greek clouded yellow *Colias aurorina* Herrich-Schäffer, 1850 reaches its northwestern limit of distribution in the mountains of Greece (Pamperis 2009). It is known from several mountain ranges from the Peloponnesus in the south to the Grammos Mts. in the north, close to the border with Albania. It is much more widespread in the mountains of Turkey, Caucasus, NE Iraq and western Iran. There are isolated populations in the Khopet Dag Mts. in Turkmenistan (Tshikolovets 1998) and notably in the high mountains of Lebanon (Larsen 1974). The populations from Greece have been described as a separate subspecies *hledreichii*, and those from Lebanon as ssp. *libanotica*. In general, the species is very variable in wing colouration and as in other yellows there is an orange and a grayish form of females (f. *fountainae*). Due to its large size compared to other yellows, pointed apex of the forewing and dark orange colour of the upper side, adults are easily distinguishable from the other yellows present in Europe.

The larvae of the Greek clouded yellow utilize different *Astragalus* spp. host plants (Tshikolovets 2011), although in Greece it is known to feed only on *A. creticus*, *A. parnassi* and *A. thracicus* (Tolman & Lewington 1998, Pamperis 2009). The butterfly is characterized as a predominantly mountainous species inhabiting dry rocky grasslands, pastures and scrubland with abundance of the larval host plant at altitudes from 450 to 2400 m (Pamperis 2009). Despite their strong flight, the adults are closely associated with larval habitat and return to the host plant site even when disturbed (Hesselbarth et al. 1995). In this respect, the habitat and presence of the larval host plant can be considered as good indicators of the butterfly's presence.

Material and methods

The butterflies of the south-eastern part of Albania were surveyed during 10. - 12. 7. 2012. Due to the limited time available, we searched only for adult butterflies, netting them when necessary for determination. Tolman & Lewington (1998) was used for identification of adults. For the determination of *Pieris balcana* Lorković, 1986 the information provided by Ziegler (2013) was additionally used. With few exceptions, butterflies were released at the site of the capture. The voucher specimens are deposited in the authors' private collections. Satellite photographs accessed in Google Earth were used to identify potential sites before the survey. Butterfly surveys were focused on potential habitat of the Greek clouded yellow, which can be easily recognized by low bushes of the larval host plant (Fig. 1). Other butterfly species and their abundance were also recorded during the field survey.

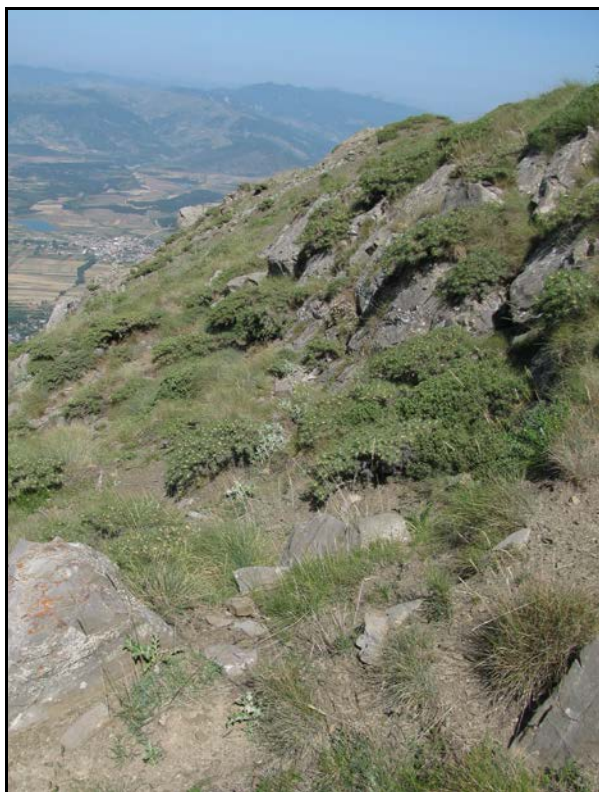


Figure 1. Habitat of the Greek clouded yellow (*Colias aurorina*) with predominant cover of the larval host plant *Astragalus thracicus* on the northern slopes of Mt. Grammos above the village Rehovë (photo: Rudi Verovnik).

Slika 1. Življenjski prostor grškega senožetnika (*Colias aurorina*) na severnih pobočjih gorovja Grammos nad vasjo Rehovë; tu največjo pokrovnost dosega hranilna rastlina gosenic te vrste *Astragalus thracicus* (foto: Rudi Verovnik).

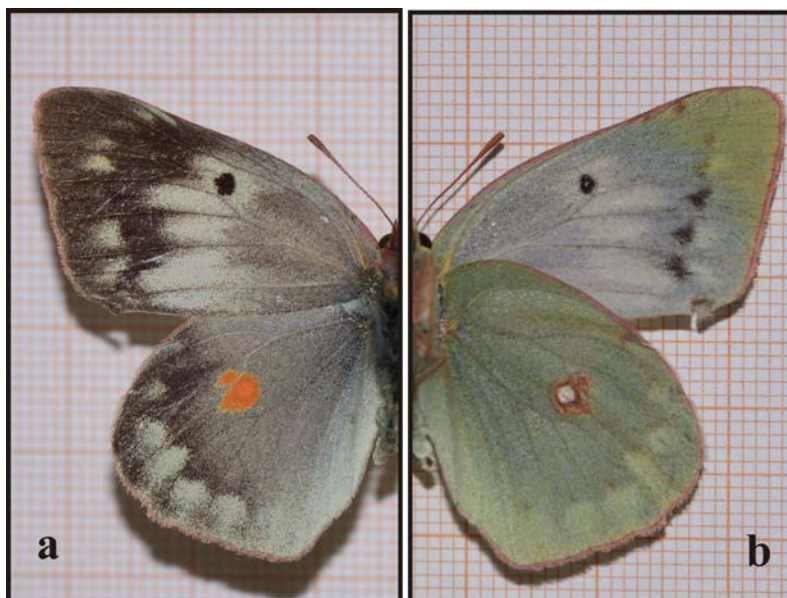
Results and discussion

Among eight surveyed sites, the larval host plant *Astragalus thracicus* and the Greek clouded yellow were observed at two sites (Tab. 1) approximately 20 km apart in the northern and central parts of the Grammos mountain range. The site near Dardhë is characterized by dense deciduous woods on the northern side of the ridge. It is dominated by beech forest, with flower-rich meadows distributed along the road. Here no host plants or adults of the Greek clouded yellow were observed, but many woodland species were present, including *Apatura iris* (Linnaeus, 1758) and *Pieris balcana*. On the southern slopes and part of the ridge south of the road, the habitat is barren with prominent, scarce batches of the larval host plant *Astragalus thracicus*. At least two worn males of the Greek clouded yellow were observed and netted here, while a single female was seen nectaring on batches of an unidentified scabiose from close proximity. An impressive list of 66 butterfly species was observed at the site.

Table 1. Records of newly observed butterfly species for Albania.**Tabela 1.** Podatki o prvih najdbah vrst dnevnih metuljev za Albanijo.

Species	Date	Locality	Altitude	Lat.	Long.
<i>Apatura iris</i>	11.7.2012	Korçë Dardhë, at the pass N of ski-run	1,550 m	40° 31.471'	20° 48.141'
<i>Pieris balcana</i>	11.7.2012	Korçë Dardhë, at the pass N of ski-run	1,550 m	40° 31.471'	20° 48.141'
<i>Colias aurorina</i>	11.7.2012	Korçë Dardhë, ridge S of the pass	1,620 m	40° 31.038'	20° 47.647'
<i>Colias aurorina</i>	12.7.2012	Ersekë, Rehovë, N slopes of Mt. Grammos	2,150 m	40° 19.992'	20° 45.124'

The site at Rehovë village near Ersekë town is situated above the village on the slopes of the main chain of the Grammos Mts. The habitat is predominantly rocky pastures that start just above the village. In places, these are intensively grazed, but become less grazed and more flower-rich towards the highest peaks. The larval host plant *Astragalus thracicus* was possibly the commonest plant on the steeper parts of the slope (Fig. 1), evidently not being grazed by the sheep. The Greek clouded yellows proved to be one of the most abundant butterflies at the site. Adults were seen at altitudes from 1250 to 2150 meters mostly in close proximity of the host plants, which also provided the nectar source for the adults. All observed males and most of the females were worn, indicating the end of the season for this butterfly in mid-July. The majority of females observed were greyish green f. *fountainei* (Fig. 2), while males were dark orange - typical of the Greek subspecies *heldreichii*. Males were seen patrolling along the slopes, while females were more sedentary commonly visiting flowering host plants and ovipositing (Fig. 3).

**Figure 2.** The upperside (a) and underside (b) of the female of *Colias aurorina* f. *fountainei*, the common form of females on the northern slopes of Mt. Grammos (photo: Rudi Verovnik).

Slika 2. Zgornja (a) in spodnja stran (b) samice *Colias aurorina* f. *fountainei*, pogostejše forme samic na severnih pobočjih gorovja Grammos (foto: Rudi Verovnik).



Figure 3. Female ovipositing on *Astragalus thracicus* (a) and gliding along the slope searching for oviposition spot (b) (photo: Miloš Popović).

Slika 3. Samica pri odlaganju jajčec na *Astragalus thracicus* (a) in iskanju mesta za odlaganje jajčec (b) (foto: Miloš Popović).

At this site, the butterfly diversity was lower (51 species), but several interesting species were observed. Most remarkable are the records of *Erebia rhodopensis* Nicholl, 1900 and *Coenonympha orientalis* Rebel, 1910, which were recorded for the first time in the southern part of Albania. *E. rhodopensis* had previously been known only from Mt. Kobilica, part of the Šar Planina Mts. (Rebel & Zerny 1931), while for *C. orientalis* the same authors describe a new subspecies *skypetarum* from the northern Albanian Alps.

Given the close proximity of the records of Greek clouded yellow in northern Greece (Pamperis 2009), its discovery in Albania was anticipated and provides only a small shift of its range northwards in Europe. It has a possibly continuous distribution on both sides of the Grammos Mts. and could also be found elsewhere in the mountains of southern Albania. As the larval host plant is very conspicuous, additional surveys should target locating them in other mountain chains up to the central part of Albania. Most of these mountains have not been surveyed yet and there is a great chance to find some additional populations.

Despite the known distribution of the Greek clouded yellow in Albania is very limited, the extent of the habitat observed and its current use for extensive pastoralism could not be considered threatened. The abundance of the larval host plant in grazed areas indicates that *A. thracicus* is not preferred by the cows and sheep probably due to spiny branches. The Greek clouded yellow is not indicated as threatened for Greece (Pamperis 2009) and Europe in general (Van Swaay et al. 2010). The lack of records for *Apatura iris* and *Pieris balcana* is rather surprising as both species are known from the neighbouring areas of northern Greece (Pamperis 2009) and Macedonia (Schaidler & Jakšić 1989). As they are both linked to

woodland habitat, their range in SE Albania is possibly limited due to the lack of suitable forest cover. Three new species for butterfly fauna of Albania observed during our limited survey indicate that the butterfly fauna of this interesting country is extremely poorly studied. We hope that the results of our study will generate more interest in faunistic surveys of this fascinating country.

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