

COLIAS CAUCASICA BALCANICA REBEL, 1901 (PIERIDAE) IN CROATIA – THE MOST WESTERN DISTRIBUTION POINT

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The first data on the occurrence of the species *Colias caucasica balcanica* in Croatia are presented. Findings of this species from Mt Dinara (Croatia) in 2010 and 2011 represent the westernmost distribution point. Unlike in the south-eastern Balkans, where the distribution of *C. caucasica balcanica* is mainly subalpine, in the Dinaric Alps published altitudinal stratification is mostly restricted to the montane belt between altitudes from 1,000 to 1,600 m a.s.l. in grasslands and forest clearings of beech forests. During the investigations the flight period at localities on Mt Dinara was from mid-June till mid-July. A newly found member of the Croatian fauna, *C. caucasica balcanica* is listed as the 195th butterfly species. With some unpublished data from several museum collections, a review of historical data for the whole of the Dinaric Alps is presented.

Key words: Butterflies, Pieridae, Balkan clouded yellow, Croatia, Dinaric Alps

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Objavljaju se prvi podaci o nalazima danjeg leptira *Colias caucasica balcanica* u Hrvatskoj. Nalazi na planini Dinara godine 2010. i 2011. su najzapadnije točke u rasprostranjenju vrste. Za razliku od jugoistočnog Balkana gdje je rasprostranjenost *C. caucasica balcanica* uglavnom u pretplaninskom pojasu, većina dosad objavljenih nalaza iz Dinarida je ograničena na gorski pojas, odnosno na travnjake i šumske čistine unutar pojasa bukovih šuma na nadmorskim visinama između 1.000 i 1.600 m n/m. Tijekom istraživanja leptiri su na planini Dinari opažani od sredine lipnja do sredine srpnja. Ovim nalazom broj poznatih danjih leptira u Republici Hrvatskoj je povećan na ukupno 195 vrsta. Prikazan je i pregled povijesnih podataka za čitavo područje Dinarida uz neke još neobjavljene podatke iz muzejskih zbirki.

Ključne riječi: Lepidoptera, Pieridae, planinski poštar, Hrvatska, Dinaridi

INTRODUCTION

Twelve species of the clouded yellow or sulphur butterflies of genus the *Colias* Fabricius, 1807 are known in Europe (TOLMAN & LEWINGTON, 2008). In *Colias* species characterized by an androconial patch (sex-brand) in males, only two species

have a black submarginal band without crossed yellow veins and UV reflection patterns on both wings – the Western Palaearctic Danube clouded yellow, *Colias myrmidone* (Esper, 1781) and the Balkan clouded yellow, *Colias caucasica* Staudinger, 1871 (BRUNTON, 1998; TOLMAN & LEWINGTON, 2008). The Balkan endemic *Colias caucasica balcanica* Rebel, 1901 is restricted to the mountains of the Balkan Peninsula from Bosnia and Herzegovina, Serbia, Kosovo, Montenegro, and Albania, to Macedonia (FYROM), Greece and Bulgaria (VARGA, 2003, VAN SWAAY *et al.*, 2009, FRANETA & ĐURIĆ, 2011).

Populations from the Balkan mountains were recorded as *C. myrmidone* (APFELBECK, 1892; NICHOLL, 1899, 1902) until Hans Rebel's description of *C. myrmidone* var. *balcanica* (REBEL, 1901). Several names have been used since: *C. balcanica* (HIGGINS & RILEY, 1983), *C. caucasica* (TOLMAN & LEWINGTON, 2001; LAFRANCHIS, 2004) and the currently accepted *Colias caucasica balcanica* (WAGENER, 1990; GRIESHUBER & LAMAS, 2007).

C. caucasica balcanica is considered to be of Least Concern (LC) in Europe, because of scarce data (VAN SWAAY *et al.*, 2011). Existing data regarding the distribution of this species in the western Balkans is contradictory and the species has probably disappeared from several sites (cf. SIJARIĆ & MIHLJEVIĆ, 1982; SIJARIĆ *et al.*, 1984). On the other hand, collector L. Štefner collected, in one season, as many as 52 specimens at only one site – Čajuša Hill, Bosnia and Herzegovina (National Museum of Bosnia and Herzegovina, Natural History Department collection).

The goal of this paper is to reconstruct existing distributional and ecological data on *C. caucasica balcanica* in Dinaric Alps, and to present in detail the recently found westernmost distribution point in Europe.

MATERIAL AND METHODS

Field data were gathered during investigations on Mt Dinara in 2010 and 2011. Two collected out of five observed butterflies are deposited as voucher specimens in the central butterfly collection of the Croatian Natural History Museum (inv no. 10809 and 10810). Systematics follows KARSHOLT & RAZOWSKI (1996) and GRIESHUBER & LAMAS (2007). Photographs of sampling localities were taken using a Canon PowerShot SX120 IS and of the voucher specimen using a Canon EOS 5D. Altitudinal belts are named according to HORVAT (1962).

Data of specimens of *C. caucasica balcanica* from the western Balkans deposited in the collections of several European museums (the National Museum of Bosnia and Herzegovina, Sarajevo – NMBH, the Croatian Natural History Museum, Zagreb – CNHM, Naturhistorisches Museum, Vienna – NMW, National Museum of Natural History, Sofia – NMNHS and Natural History Museum, London – NHML) were examined, as well as published data (Tab. 1).

RESULTS AND DISCUSSION

Short review of findings.

The first finding of *Colias caucasica balcanica* in Croatia is a result of a systematic survey by a Croatian Natural History Museum team in last two years (2010, 2011)

Tab. 1. Data overview of *Colias caucasica balcanica* in Dinaric Alps from published sources and collections of several European museums

Locality	Sampling date	Sex	Collector	Coll.	Reference
Sinjač, Mt Dinara, CRO	16.07.2010	1 ♂	N. Tvrtković	CNHM	authors obs.
Sinjač, Mt Dinara, CRO	11.07.2011	1 ♂	N. Tvrtković		authors obs.
Dulač, Mt Dinara, CRO	22.06.2011	1 ♂	M. Bjelić		authors obs.
Jarebičnjak, Mt Dinara, CRO	23.06.2011	1 ♂	M. Bjelić		authors obs.
Brezovac, Mt Dinara, CRO	11.06.2011	1 ♂	M. Bjelić	CNHM	
Međugorje, Mt Šator, B&H	27.07.1975*	1 ♂* 1 ♀	R. Sijarić	NMBH	SIJARIĆ, 1977
Dugočol, Mt Šator, B&H	27.07.1977	1 ♂	R. Sijarić	NMBH	
Gornji Malovan, Cincar Mt near Kupres, B&H	12.07.1981	1 ♀*	Lj. Štefner	NMBH	SIJARIĆ, 1991
	18.07.1981*	2 ♂♂ 2 ♀♀*	Lj. Štefner	NMBH	SIJARIĆ, 1991
Jaram, Mt Cincar, B&H	10.07.1982	8 ♂♂ 1 ♀	Lj. Štefner	NMBH	SIJARIĆ, 1991
	18.07.1982	2 ♂♂ 1 ♀	Lj. Štefner	NMBH	SIJARIĆ, 1991
Čajusa Hill, Mt Cincar near Kupres, B&H	12.07.1981	2 ♂♂ 3 ♀♀	Lj. Štefner	NMBH	
	18.07.1981	5 ♂♂ 7 ♀♀	Lj. Štefner	NMBH	
	26.06.1982	20 ♂♂ 6 ♀♀	Lj. Štefner	NMBH	
	27.06.1982	15 ♂♂	Lj. Štefner	NMBH	
	10.07.1982	7 ♂♂ 11 ♀♀	Lj. Štefner	NMBH	
	11.07.1982	3 ♀♀	Lj. Štefner	NMBH	
Mt Stožer, W of Kupres, B&H	< 1982				GOOSENS-CROMPHOUT & GOOSENS-CROMPHOUT, 1982; OTTMÜLLER, 1991
Bugojno (near Kupres – Otmüller pers. comm.)	7/8.07.1988	1 ♂	T. Otmüller		
Bugojno (near Kupres – Otmüller pers. comm.)	21/22.07.1990	eggs	T. Otmüller et O. Schmitz		
»bei Kupres«	? 1994		W. Siepe		OTTMÜLLER, 1991 HESSELBARTH <i>et al.</i> , 1995
Mt Ivan, B&H	1891	1 ♀	Herbst	NMBH	LELO, 2008
Korična pass or Mt (Livno-Glamoč) (= »Korična, Bosnia« on the label), B&H	?		Leonhardt	NHML	
Mt Trebević, Sarajevo, B&H	22.06.1898	1 ♂	A. Winneguth	NMBH	
Mt Trebević, Sarajevo, B&H	30.06.1898	5 ♂♂ 5 ♀♀	A. Winneguth	NMBH	
Mt Trebević, Sarajevo, B&H	05.07.1898	1 ♀	? H. Rebel	NMNH	
Mt Trebević, Sarajevo, B&H	06.07.1898	2 ♀♀	A. Winneguth	NMBH	
Mt Trebević, Sarajevo, B&H	30.06.1898		M. de la B. Nicholl	NHML	NICHOLL, 1899
Mt Trebević, Sarajevo, B&H	end of 07.1898	1 ♀	M. de la B. Nicholl	NMBH	REBEL, 1904

Tab. 1. Continued.

Mt Trebević, Sarajevo, B&H	1898		H. Rebel	NMW	REBEL, 1904
Mt Trebević, Sarajevo, B&H	1906		Spröngerts <i>et al.</i>	NMW	SPRÖNGERTS, 1906
Mt Trebević, Sarajevo, B&H	1906, 1907		K. Schawerda <i>et al.</i>	NHML	SCHAWERDA, 1907a, b
Mt Trebević, Sarajevo, B&H	08.07.1907		Wagner	NMBH	SIJARIĆ, 1991
Mt Trebević, Sarajevo, B&H	14.07.1913	1 ♂	B. Mihljević	NMW	REBEL, 1922
Mt Trebević, Sarajevo, B&H	21.07.1914	1 ♀	H. Rebel	NMBH	SIJARIĆ, 1991
Botanička bašta, Mt Trebević, B&H	27.07.1913	1 ♀	B. Mihljević	NMBH	SIJARIĆ, 1991
Botanička bašta, Mt Trebević, B&H	11.08.1913	1 ♀	B. Mihljević	NMBH	SIJARIĆ, 1991
Botanička bašta, Mt Trebević, B&H	09.07.1975	1 ♂ 1 ♀	B. Mihljević	NMBH	SIJARIĆ, 1991
Botanička bašta, Mt Trebević, B&H	13. 07.1975	1 ♂	B. Mihljević	NMBH	SIJARIĆ, 1991
Botanička bašta, Mt Trebević, B&H	04.07.1977		B. Mihljević	NMBH	SIJARIĆ, 1991
Mt Baba (= Vučija bara), Gacko, B&H	11.07.1898		M. de la B. Nicholl	NHML	NICHOLL, 1899
Vučija bara B&H	22.07.1899	2 ♀♀	H. Rebel	NMNH	LELO, 2008
Gacko (probably Vučija bara), B&H	?		?	NMBH	REBEL, 1904
Vučija bara, Gacko, B&H	9/20.07.1900		H. Rebel	NMW	
Vučija bara B&H	19.07.1900	1 ♂	H. Rebel	NMNH	
Hochtale (= Vučija bara), B&H			H. Rebel	NMW	SCHAWERDA, 1907b
Vučija bara, Gacko, B&H	x.07.1907	(♀)	K. Schawerda	NMW	SCHAWERDA, 1909
Vučija bara, Gacko, B&H	x.07.1908		K. Schima	NMW	SCHAWERDA, 1909
Vučija bara, Gacko, B&H	< 1912	eggs et larvae			SCHAWERDA, 1912
Gacko (Mt Baba, B&H	24.07.1990	eggs	T. Ottmüller et O.Schmitz		OTTMÜLLER, 1991
Mt Bjelašnica, Herzegovina, B&H	2008	larvae	V. Sterba		ZIEGLER, 2011
Vodice bei Lipnik, B&H.	> 1922		V. Hawelka		SCHAWERDA, 1922
Kalinovik bei Treskavica Mt, B&H	? 1902		L. Schreitter	NMW	REBEL, 1904
	19.07.1903		H. Rebel		REBEL, 1904
Ljubušnja Mt (= »Ljubisna«), MNE	?		?		TOLMAN & LEWINGTON, 1998
Brdà, Mt Durmitor, MNE	25.07.1901		M. de la B. Nicholl	NHML	NICHOLL, 1902
above Tara pass, bei Měštrovac (= Obzir Hill), MNE	20.07.1901		M. de la B. Nicholl	NHML	NICHOLL, 1902
Mt Sinjajevina (= »Sinjajevina«), MNE	?		?		TOLMAN & LEWINGTON, 1998

*- data for R. Sijarić's and Lj. Štefner's findings in Sijarić's butterfly collection deposited in the NMBH do not correspond to his published findings (Sijarić, 1977, 1991);

in an area of the highest Croatian mountain, Dinara. The first author collected one male on July 16th 2010 in a small karst dolina (small valley) at 1,785 m a.s.l. north-west from the mountain peak Sinjal (UTM: XJ18, 1,831 m a.s.l.) on Mt Dinara (Fig. 1a). This finding was reconfirmed on July 11th 2011. An additional male was collected at the edge of Brezovac karst polje (1,050 m a.s.l.; Fig. 1b, Fig. 2) and two additional males were observed (det. N. Tvrtković) in the localities Duler (1,200 m a.s.l.) and Jarebičnjak (1,100 m a.s.l.), all three in 2011, UTM: XJ08. Females and the host plant were not found during these surveys. All localities are situated on western part of the mountain ridge, 20 km westward from Mt Šator in Bosnia and Herzegovina, and this is the most western distribution point. Together with *C. caucasica* a rich butterfly fauna was found, including *Lycaena candens* (Herrich-Schäffer, [1844]), *Coenonympha rhodopensis* (Elwes, 1900) and several *Erebia* species: *E. aethiops* (Esper, 1777), *E. medusa* ([Denis & Schiffermüller], 1775), *E. melas* (Herbst, 1796), *E. oeme* (Esper, 1805), *E. ottomana* Herrich-Schäffer, 1847 and *E. triaria* (Prunner, 1798). A newly found member of the Croatian fauna, *C. caucasica balcanica* is listed as the 195th butterfly species.

The oldest published record on the presence of *Colias caucasica balcanica* in the western Balkans was from APFELBECK (1892) under the name *C. myrmidone* for Mt Semeč (= »Sjemeč«, »Šemeč«) in SW Bosnia. It was followed by NICHOLL (1899) in the karst Dinaric Alps too for Mt Trebević near Sarajevo, and on Mt Baba (= Vučije bare in Rebel's and Schawerda's later papers) in Herzegovina (Bosnia and Herzegovina) and later for Montenegro above the Tara pass and in the Brda (= northern foothills of Mt Durmitor) (NICHOLL, 1902). In the description of *Colias myrmidone* var. *balcanica* Rebel, 1901 no type specimen was designated (Hesselbarth *et al.* 1995) and syntypes originate from Mt Trebević and Vučije bare between Mt Baba and Mt Bjelašnica both in Bosnia and Herzegovina (all deposited in NHML, NMNH and NMW) (ABADJIEV, 2002). REBEL (1904) added two more localities for Bosnia and Herzegovina: data of Victor Apfelbeck from isolated Mt Romanja (Mt Romanija) NE of Sarajevo and of Leo Schreitter Ritter von Schwarzenfeld – Kalinovik in the Dinaric Alps. SCHAWERDA (1922) published one more locality in the Dinaric Alps: Vodice near Lipnik after specimens from Vinzenz Hawellka.

In the beginning of the 20th century several authors published additional findings on Mt Trebević and Vučije bare on the northern slopes of Mt Baba near Gacko (SPRÖNGERTS, 1906; REBEL, 1907, 1913, 1922; SCHAWERDA, 1907a, 1907b, 1909, 1912). OTTMÜLLER (1991) reconfirmed the finding of the species on Mt Baba and ZIEGLER (2011) published V. Sterba's finding on Mt Bjelašnica close to Vučije bare. LELO (2008) rediscovered the finding from 1891 for Mt Ivan (Bosnia and Herzegovina) in the collection of NMBH. Newer data are mostly restricted to the Dinaric Alps of western Bosnia: Međugorje on Mt Šator (SIJARIĆ, 1977), Mt Stožer near Kupres (GOOSSENS-CROMPHOUT & GOOSSENS-CROMPHOUT, 1982; OTTMÜLLER, 1991; HESSELBARTH *et al.*, 1995), and two localities on Mt Cincar: the first was above Gornji Malovan and second was Jaram (SIJARIĆ, 1991). The last published data from the western Balkans are from an isolated karst area in western Serbia, Mt Veliki Mučanj and Mt Javor (FRANETA & ĐURIĆ, 2011). The existence of a population on Mt Trebević was confirmed by Boro Mihljević in 1977 (SIJARIĆ, 1991).

Additional data from Bosnia and Herzegovina are found in the NMBH and NMHL collections. In the NMBH the locality of the specimen with »Han Semec –

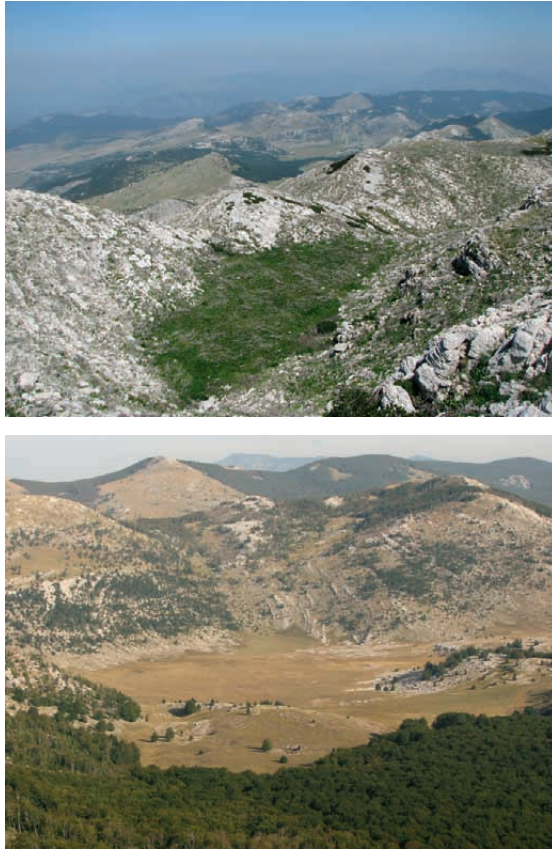


Fig. 1. Habitats of *Colias caucasica balcanica* at the locality NW Sinjal (1,785 m a.s.l.) (a) and Brezovac karst field (1,050 m a.s.l.) (b), both Mt Dinara, Croatia. Photo by N. Tvrković

Bosn. Apflb.« on the label is Han Semeč near Mt Semeč – an old finding of V. APFELBECK (1892), and unpublished data from Dinaric Alps are – Dugodol on Mt Šator (from 1977 in coll. Sijarić) and Čajuša hill – NE foothills of Mt Cincar (from 1981/1982 in coll. Štefner). In the NMHL collection there is a specimen with »Koriča, Bosnia – Leonhardt« on the label; this locality is probably Korična pass (1,080 m a.s.l.) or Mt Korična (1,172 m a.s.l.) between Livno and Glamoč.

In addition, there are also unexplained old data of specimens morphologically similar to »caucasica« from the southern border of the Dinaric Alps: the female of »*Colias myrmidone*« collected by Herzog in August 1908 in the lowland part of Montenegro (Rjeka /= Rijeka Crnojevića op. auct./) deposited in the NMW collection (REBEL, 1913), and the observed *C. myrmidone*-like specimen of Slovenian lepidopterologist J. Hafner in September 1938 near Knin, on the foothills of Mt Dinara (Dalmatia, Croatia) (HAFNER, 1994). Both observing dates are in the flight period of the second generation of the Danube clouded yellow, but distant from distribution area of this species and close to the southern distribution border of the Balkan clouded yellow.



Fig. 2. *Colias caucasica balcanica* – male from Brezovac, Mt Dinara, Croatia, caught on June 12th 2011. Photo by M. Šašić.



Fig. 3. Geographical distribution of *Colias caucasica balcanica* in Dinaric Alps with isolated localities in eastern Bosnia and western Serbia. Localities from Dinaric Alps are presented numerically: 1–Mt Dinara: Brezovac, Jarebičnjak and Duler; 2–Mt Dinara: Sinjal; 3–Mt Šator: Međugorje, Dugodol; 4–Korična hill; 5–Mt Cincar: Jaram; 6–Mt Cincar: Gornji Malovan, Čajuša hill; 7–Mt Stožer near Kupres; 8–Mt Ivan; 9–Mt Trebević; 10–Kalinovnik; 11–Mt Bjelašnica; 12–Mt Baba: Vučije bare; 13–Vodice near Lipnik; 14–Obzir hill above Tara pass, Mt Durmitor: Brda; 15–Mt Ljubišnja; 16–Mt Sinjajevina. Isolated localities from eastern Bosnia and Serbia are presented alphabetically: A–Mt Romanija; B–Mt Semeč; C–Mt Mučanj, D– Mt Javor, E– Mt Kopaonik

Geographical and altitudinal distribution.

The finding of *C. caucasica balcanica* at 1,785 m a.s.l. on Mt Dinara is at the highest altitude so far published for the Dinaric Alps. All other findings (Tab. 1) are within the montane belt from 1,000 to 1,600 m a.s.l. (NICHOLL, 1899, 1902; REBEL 1904; SPRÖNGERTS, 1906; SCHAWERDA, 1907b; SIJARIĆ, 1977, 1991, own data), probably because of lack of systematic investigations at higher altitudes. Populations from isolated karst areas northern and eastern of Dinaric Alps (E Bosnia: Mt Romanija, Mt Semeč, W Serbia: Mt V. Mučanj and Mt Javor) probably belong to the Dinaric Alps metapopulation (Mt Dinara, Mt Šator, Korična pass, Mt Cincar, Mt Stožer near Kupres, Mt Ivan, Mt Trebević, Kalinovik, Vučije bare – northern slopes of Mt Baba, Mt Bjelašnica, Vodice near Lipnik, Tara gorge – Obzor hill N of Tara river pass, Mt Ljubišnja, Mt Durmitor and Mt Sinjajevina) (Fig. 3).

Habitats, larval foodplant, eggs and caterpillar.

Most our findings from Mt Dinara are linked to montane grasslands in the vicinity of beech forests or in beech forest clearings (Brezovac, Jarebičnjak and Duler), with only one finding in a small doline (Sinjal: Fig. 1a) inside the dwarf pine (*Pinus mugo*) subalpine belt. Habitats in the subalpine altitudinal belt are known so far only in Bulgaria (ABADIJEV, 1994), Greece (TOLMAN & LEWINGTON, 1998) and Serbia (JAKŠIĆ, 2003). In the Dinaric Alps notes of habitats are scarce for *C. caucasica balcanica*. NICHOLL (1902) found this butterfly in flight in dolinas and in hollows in the dry limestone plateau on Mt Durmitor and above Tara pass, on Mt Baba (Herzegovina) in hayfields (NICHOLL, 1898), on Mt Trebević in alpine grasslands (SPRÖNGERTS, 1906), and on Mt Šator in grasslands below beech forests (SIJARIĆ, 1977).

In the eastern and southern Balkans including the isolated northern Mt Kopanik in Serbia (LAFRANCHIS, 2004; ABADIJEV *et al.*, 2007; TOLMAN & LEWINGTON, 2008; JAKŠIĆ, 2008) *C. caucasica balcanica* inhabits habitats on an acidophilic soils (over granite and other igneous rocks). Conversely, populations from Bosnia and Herzegovina, Montenegro, western Serbia and two Macedonian (FYROM) mountains (Mt Placenska, Mt Baba /= Mt Pelister /) are attached to limestone karst (NICHOLL, 1902; REBEL, 1904; SIJARIĆ, 1997; TOLMAN & LEWINGTON, 2008; FRANETA & ĐURIĆ, 2011).

SCHAWERDA (1912) first identified the host plant of *Colias caucasica balcanica* in Vučije bare locality on Mt Baba by observing egg-laying and some larval stages on *Cytisus capitatus* Scop. /syn. of *Chamaecytisus supinus* (L.) Link /. OTTMÜLLER (1991) observed eggs on *Ch. hirsutus* (L.) Link. in two habitats in Bosnia and Herzegovina, and TOLMAN & LEWINGTON (2008) mention this plant as larval food plant in Greece too, but without noted localities. For Bulgaria, ABADIJEV (1994) published *Ch. absinthioides* Janka /= *eriocarpus* (Boiss) Rothm./ as a host plant on acidophilic soils. So far, *Ch. absinthioides* has not been found in the western Balkans (HEYWOOD & FRODIN, 1968; DOMAC, 1989; LOVAŠEN-EBERHARDT, 1997).

SCHAWERDA (1912) observed eggs and caterpillar colour. Green-white eggs are laid singly on the upper side of the leaf, but in time the eggs change colour, to red. He noted green caterpillars with soft hairs only. In September the caterpillar set along the central leaf vein to spend the winter. OTTMÜLLER (1991) described the colour of all larval stages from two localities in Bosnia and Herzegovina: the first

instar larva (L1) is dirty-yellowish in colour with brown-black head, but after first feeding becomes green. The third instar green larvae (L3) have white lateral lines, and fifth instar larvae (L5), in every segment, have one yellow spot in the white lateral line.

Flight period

According to TOLMAN & LEWINGTON (2008) the Balkan clouded yellow is univoltine, active from mid June to mid August, according to altitude. Our data on flight period for Mt Dinara (Croatia) are from June 11th to July 16th only. Older findings from other parts of the Dinaric Alps were from June 22th to July 27th, with the exception of August 11th. The first females were found on June 26th.

Comments on taxonomical status

C. c. caucasica and *C. balcanica* are allopatric, but morphologically similar (WAGENER, 1990; ABADJIEV, 1994). Adults of mountain *Colias caucasica balcanica* and lowland *C. myrmidone* differ in size as *C. caucasica balcanica* is larger and deeper reddish orange-yellow coloured in the wings of males (REBEL, 1901, 1904). Male genitalia differ only in size (REBEL, 1907). *C. myrmidone* and *C. caucasica balcanica* probably have the same coloration of caterpillars (SCHAWERDA, 1912; OTTMÜLLER, 1991; SAUER, 1992). Preliminary genetic investigations (BRUNTON, 1998) on *C. myrmidone* from Romania and *C. caucasica balcanica* from Macedonia resulted in the discovery of one of the smallest divergences in all investigated European clouded yellow butterflies. Present taxonomic relations inside *C. caucasica*, and between *C. caucasica* and *C. myrmidone* as well, are not clear and must be reinvestigated in the future.

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