

PHEGEA

driemaandelijks tijdschrift van de

VLAAMSE VERENIGING VOOR ENTOMOLOGIE

Afgiftekantoor 2170 Merksem 1
Periode: januari – februari – maart 2015

ISSN 0771-5277
Erkenningssnr. P209674

Redactie: Dr. J.-P. Borie (Compiègne, France), S. Cuvelier (Ieper), Dr. L. De Bruyn (Antwerpen), T. C. Garrevoet (Antwerpen), B. Goater (Chandlers Ford, England), Dr. K. Maes (Tervuren), Dr. K. Martens (Brussel), H. van Oorschot (Leiden), W. O. De Prins (Leefdaal).
Redactie-adres: W. O. De Prins, Dorpstraat 401B, B-3061 Leefdaal (Belgium).
willy.deprins@gmail.com. www.phegea.org



Jaargang 43, nummer 1
1 maart 2015



Argynnis paphia (Linnaeus, 1758) – see page 22

PHEGEA

Larsen K.: Revision of the genus <i>Ditula</i> (Lepidoptera: Tortricidae) with description of a new species	2
Nahirnić A., Jakšić P. & Viborg A. L.: <i>Colias caucasica balcanica</i> (Pieridae) rediscovered in Montenegro, with additional new records for Serbia	6
Coutsis J. G.: Telling apart <i>Euchloe (Elphinstonia) charlonia</i> from <i>Euchloe (Elphinstonia) penia</i> by wing characters and probable records of the former from Asiatic Turkey (Lepidoptera: Papilionoidea, Pieridae)	11
Meert R.: Eerste vondst van <i>Grapholita lobarzewskii</i> (Lepidoptera: Tortricidae) voor België	13
Kolev Z. & Shtinkov N.: Notes on the distribution and conservation status of the Violet Copper <i>Lycaena helle</i> (Lepidoptera: Lycaenidae) in Bulgaria	15
Spruytte S. & Cuvelier S.: Recente dagvlinderobservaties in West-Vlaanderen (Lepidoptera: Papilionoidea)	22
Boekbesprekingen	14, 21

Revision of the genus *Ditula* (Lepidoptera: Tortricidae) with description of a new species

Knud Larsen

Abstract. In this paper the genus *Ditula* Stephens, 1829 is revised. The new species *Ditula bartoniana* n. sp. from south west Cyprus is described and the taxon *Ditula saturana* (Turati, 1913) is sunk as a synonym of the common species *Ditula angustiorana* (Haworth, 1828). The species *Ditula joannisiana* (Ragonot, 1888) is discussed but for the moment kept in the genus *Ditula*. The distribution of the genus and the species in the genus is exposed and discussed.

Samenvatting. Revisie van het genus *Ditula* (Lepidoptera: Tortricidae) met beschrijving van een nieuwe soort

Het genus *Ditula* Stephens, 1829 wordt bewerkt. De nieuwe soort *Ditula bartoniana* sp. n. uit Zuidwest-Cyprus wordt beschreven en het taxon *Ditula saturana* (Turati, 1913) wordt gesynonymiseerd met de gewone soort *Ditula angustiorana* (Haworth, 1828). De soort *Ditula joannisiana* (Ragonot, 1888) wordt besproken en voorlopig in het genus *Ditula* behouden. De verspreiding van de het genus *Ditula* en de soorten erin wordt besproken.

Résumé. Révision du genre *Ditula* (Lepidoptera: Tortricidae) et description d'une espèce nouvelle

Le genre *Ditula* Stephens, 1829 est révisé et une espèce nouvelle, *Ditula bartoniana* n. sp., est décrite du sud-ouest de l'île de Chypre. Le taxon *Ditula saturana* (Turati, 1913) est mis en synonymie avec l'espèce commune *Ditula angustiorana* (Haworth, 1828). L'espèce *Ditula joannisiana* (Ragonot, 1888) est discutée et maintenue dans le genre *Ditula* provisoirement. La répartition du genre *Ditula* et de ses espèces est discutée.

Key words. *Ditula bartoniana* – Descriptions – Systematics – Faunistics – Cyprus.

Larsen K.: Røntoftevej 33, DK-2870 Dyssegård, Denmark. knud.torts@gmail.com

Introduction

The genus *Ditula* was raised by Stephens (1829: 46) to include 9 species. The type species, *Tortrix angustiorana* Haworth, 1811, type locality United Kingdom, was subsequently designated by Fletcher (1929: 69). Later Guenée, 1845 raised the genus *Batodes* on the basis of *Paedisca dumeriliana* Duponchel, 1836, type locality Russia. The description and the figures of both male and female (Duponchel 1836) define *P. dumeriliana* as a synonym of *D. angustiorana* (Haworth, 1828). Thus the genus name *Batodes* Guenée, 1845 is a junior synonym of *Ditula* Stephens, 1829. Nevertheless, the confusion about those two names has continued until today and only in Fauna Europaea (Aarvik 2013) the normally used combination of genus and species names is correct. A full synonymy of the older genus names can be seen in Obraztsov (1954: 224). The first definition of the genus is made by Obraztsov (1954) as a detailed description of *D. angustiorana* (Haworth). The most exposed characters are:

Foreswing of male with a rather broad costal fold reaching one third of costa and the forewing is broad with evenly rounded costa. In the female, which is larger, the wing shape is more elongate and the ground colour is generally lighter. Hindwing uni-coloured dark brown with lighter fringes. Male genitalia with a tegumen with broad pedunculi; valva square shaped with a rather broad rounded sacculus; uncus broad and curved with small spines; gnathos strong and pointed; socii very small; aedeagus curved, pointed, with cornuti like a few small thorns; coecum penis is large and caulis is short.

Female genitalia with a funnel shaped, well developed sterigma; ductus bursa slender and long without cestum, but with a small bulge close to ostium; bursa with a dagger-shaped signum with basal lobes. For more details see Obraztsov (1954).

Species contained in the genus *Ditula* Stephens, 1829

1. *Ditula angustiorana* (Haworth, 1811); original in *Tortrix* Linnaeus, 1758.
rotundana (Haworth, 1811); original in *Tortrix* Linnaeus, 1758.
dumeriliana (Duponchel, 1836); original in *Paedisca* Duponchel, 1836.
saturana (Turati, 1913) syn. n.; original in *Capua* Stephens, 1834.
2. *Ditula bartoniana* n. sp.
3. *Ditula joannisiana* (Ragonot, 1888); original in *Amphisa* Curtis, 1828.

Comments on the species list

D. saturana was described by Turati (1913) in the genus *Capua* on the basis of a single male specimen from Sardinia: Arizo 30th May, figured on plate B fig. 33. (Turati 1913). The type specimen is probably lost as many of the Turati types are. In Tortricid.net it is stated as unknown (Gilligan et al. 2012).

The diagnose of *D. saturana* is based on some visual differences in colour and details in the position of the dividing lines on the forewing. The colour picture on the plate shows a rather dark tortricid moth with wing shape like *D. angustiorana* and an orange area at the wing tip with inwardly a rounded edge exactly like in dark specimens of *angustiorana*. *D. angustiorana* is well known from Sardinia. In the southern part of Corsica I have collected several specimens of *D. angustiorana*. A dark male specimen of those is shown in fig. 1, where the precise orange wing tip is visible. On the basis of these facts *D. saturana* (Turati, 1913) is defined as a new junior subjective synonym of *D. angustiorana* (Haworth, 1828).



Figs 1–3. Imagines of *Ditula* species. 1.– *Ditula angustiorana* (Haworth), ♂ France: Corsica; 2.– *Ditula bartoniana* n. sp. ♂ Cyprus; 3.– *Ditula bartoniana* n. sp. ♀ Cyprus. (Photos E. Baraniak).

D. joannisiana (Ragonot, 1888) was placed by Obraztsov (1954: 226, fig. 229) in the genus *Hastula* Millière, 1857 a synonym to *Avaria* Koçak, 1981. The type species of *Hastula* is *hyerana* (Millière, 1858) of which the genitalia are figured on the same plate as the genitalia figure of *joannisiana* (Rag.). I wonder if this is the reason why *D. joannisiana* (Ragonot, 1888) in Gilligan et al. (2012) is sunk into synonymy with *Avaria hyerana* (Millière, 1858). Gilligan does not know how this error has raised (Gilligan pers. comm. 2014).

In Fauna Europaea (Aarvik 2013) the original genus of *joannisiana* is mentioned as *Amphysa* Guenée, 1845, misspelling of *Amphisa* Curtis, 1828 (Razowski 1977) but the latter is the correct original genus name. In Razowski (1993) the misspelled genus name *Amphysa* is again incorrectly used.

This species is very characteristic and with few affinities to other tortricid species. The male antenna is ciliate and the female has slightly reduced forewings. The structure of the male genitalia is unlike the structure in *angustiorana*, especially the gnathos is very well developed. The female genitalia are also very different with a short ductus bursa, no signa and a very strongly developed sterigma. It is possible that these characters would mean that this species should be placed in a genus of its own, but for the present time the species remains in the genus *Ditula*.

***Ditula bartoniana* Knud Larsen new species (Figs 2, 3)**

Type material: Holotype ♂, Cyprus: Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, genital slide 33458♂ Knud Larsen, coll. Natural History Museum, London (NHM).

Paratypes: 1♂ and 4♀: ♀ Cyprus, Moniatis N. Limassol, 850 m, 23–29.vi.1997, leg. M. Fibiger, A. Madsen, D. Nilsson, P. Svendsen, coll. ZMUC; ♀ Cyprus, Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, genital slide 33457♀ Knud Larsen, coll. NHM; ♀ Cyprus, Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, coll. NHM; ♀ Cyprys, Nikoklia, 60 m asl 04.v.2014, I. Barton leg. et coll.; ♂ Cyprus, Paphos District, Oreites Forest, 15.v.2014, 391 m asl Lat. 34.7209623 Long. 32.6292014 I. Barton leg. et coll.

Diagnosis. The species differs from the other *Ditula* species by its larger size, the pale ochreous ground colour with dark diffuse drawings and many fine dark spots. The sexual dimorphism is pronounced with a male with a very broad and black costal fold and a female

which is much larger and with a lighter ground colour and a more diffuse pattern. In the male genitalia the tegumen is shorter with very broad pedunculi; aedeagus shorter and broader. In the female genitalia the main differences are the broader ductus bursa which furthermore is narrowed in the middle and the funnel shaped sterigma is bigger and more pronounced.

Description. Imago (Figs 2, 3). Wingspan 16 mm (male), 19–21 mm (female). Antenna fasciculate grey, reaching one third of the wing. Labial palp short, grey and widening to the tip. Head grey; thorax ochreous yellow. Legs very pale yellow and ringed with light grey. Sexual dimorphism pronounced. Forewing very pale ochreous yellow with darker black and leaden coloured drawings consisting of an interrupted median fascia with darker areas close to dorsum; a dark subapical blotch connected with the subterminal blotch. The complete wing is dotted with smaller dark or leaden coloured dots. At costa there are two very light blotches divided by pale yellow lines hardly visible in the pale ground colour. The fringes are darker orange, terminal with a darker line of black and leaden coloured scales. The hind wings are evenly dark grey and with a blackish dividing line in the fringes. The underside of both wings is dark grey but with light blotches along costa of the fore wing.

Male genitalia (Fig. 4). The complete genital structure is strongly curved and surprisingly difficult to open. Most of the characters are very similar to those in *D. angustiorana* with very small socii. Besides the differences in the size and form of aedeagus, *bartoniana* also has three small cornuti but they are a little bit bigger and stronger.

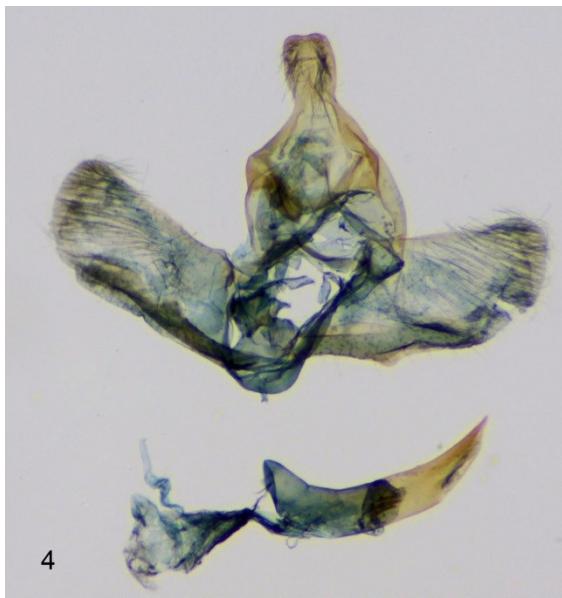
Female genitalia (Fig. 5). Under the diagnosis the main characters are mentioned but also the lack of a bulge close to ostium should be remarked plus the more narrow and broad colliculum.

Biology. Only the flight data are known – from 14.iv to 29.vi, later at higher altitudes.

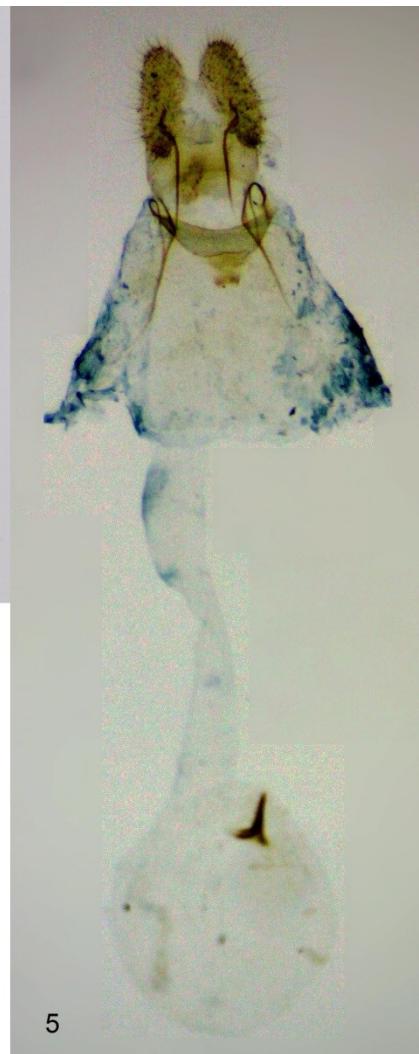
Distribution. The species is known from the type locality (Fig. 6) and from two other localities a little higher in the Trodos Mountains on Cyprus.

The type locality is a small village situated on the west side of the lower Diarizos valley, which arises from the south west side of the Trodos Massif. The vegetation is of a semi arid kind with shrub plants, several species of deciduous trees and fruit gardens.

Etymology. The species is named after the collector Ian Barton. He is a very active and skilled collector, who has worked many times at the type locality and surroundings.



4



5

Fig. 4.—Genitalia of *Ditula bartoniana* n. sp. ♂ gen. slide 33458 KL. (Photo E. Baraniak).

Fig. 5.—Genitalia of *Ditula bartoniana* n. sp. ♀ gen. slide 33457 KL. (Photo E. Baraniak).

Discussion

In recent time many new tortricid species have been described from the Mediterranean area. Many of these are very local or with a rather limited distribution area. Some of these species belong to genera which also have a limited distribution and which contain very few species.

The distribution of *D. angustiorana* is West European-Atlantic: from Ireland and Great Britain to North Africa: Tunisia and Morocco and the eastern border runs from Sweden, Denmark (Bornholm) to Germany, Austria, Slovenia and northern and central Italy. It is not found in Eastern Europe, the rest of the Balkan and Greece (Rungs 1979, Blackstein & Karisch 2011, Aarvik 2013). The species is introduced to North America and it is also mentioned from Asia Minor (Barrett 1905 and Razowski 2002), but it is not on the Turkish species list and despite of heavy collecting in Turkey no recent findings are reported. The type locality "Russia" of the synonym *dumeriliana* (Duponchel) is certainly wrong. Duponchel's definition is based on "Elle nous a été communiqué par M. Boisduval, comme venant de Russie (Duponchel

1836). It is possibly correct that Boisduval has travelled in Russia, but the specimen must be from somewhere else.

Summary of the distribution of *D. angustiorana*: Denmark, Sweden, The Netherlands, Germany, Belgium, Great Britain, Ireland, Luxembourg, France, Spain, Portugal, Corsica, Sardinia, Italy, Switzerland, Austria, Slovenia; in Africa: Tunisia and Morocco; introduced to North America.

Ditula joannisiana (Ragonot) is found in Spain, France and Slovenia (Aarvik 2013).

The new species *D. bartoniana* is endemic to Cyprus and represents an isolated population with the closest representative of the main species of the genus in central Italy.

The distribution of the genus is West European – Mediterranean.

The origin of this genus – and the surprisingly many other small Tortricid genera with this type of distribution – could possibly be traced back to two factors: refuge during the ice ages and possibly also plate tectonics creating the Mediterranean area.



6

Fig. 6.– Type locality of *Ditula bartionana* n. sp. Diarizos valley, Cyprus. (Photo I. Barton).

Acknowledgements

E. Baraniak (Poznan, Poland) has taken most of the photographs. O. Karsholt has helped with comments, discussions and literature and a loan from ZMUC, Copenhagen. K. Tuck assisted with literature and the loan

from the NHM, London. Ian Barton, the discoverer of the new species, has kindly informed me about every aspect of the findings and supplied the photograph of the type locality. Willy De Prins (Leefdaal, Belgium) has helped with the summaries and the manuscript. I am grateful to all the mentioned persons for their help.

References

- Aarvik L. E. 2013. Fauna Europaea: Tortricidae. – In: Karsholt O., van Nieukerken E. J. & de Jong Y. S. D. M. (Eds.) *Fauna Europaea: Lepidoptera, Moths. Fauna Europaea version 2.6.* — <http://www.faunaeur.org> [15 December 2013].
- Barrett C. G. 1905. *The Lepidoptera of the British Islands, vol. X Heterocera, Pyralidina – Tortricina.* — London, 381 pp., pls 425–469.
- Blackstein H. & Karisch T. 2011: Zur Wicklerfauna Tunisiens (Tortricidae). — *Nota lepidopterologica* **33**(2): 219–229.
- Duponchel P. A. J. 1836. *Histoire Naturelle des Lépidoptères ou Papillons de France. 9. Nocturnes.* — Paris, 321–326, pls 257–266.
- Fletcher T. B. 1929. A list of the generic names used for Microlepidoptera. — *Memoirs of the Department of Agriculture, India (Entomological Series)* **11**: i–ix–, 1–244.
- Gilligan T. M., Baixeras J., Brown J. W. & Tuck K. R. 2012. *Tortricid.net Tortricidae resources on the web, version 2.0* (July 2012). — tortricidae.net [15 December 2013].
- Guenée A. M. 1845. Essai sur une nouvelle classification des Microlépidoptères et catalogue des espèces européennes connues jusqu'à jour. — *Annales de la Société entomologique de France* **2**(3): 105–192, 207–344.
- Obraztsov N. S. 1954: Die Gattungen der Palaearktischen Tortricidae. I. Allgemeine Aufteilung der Familie und die Unterfamilien Tortricinae und Sparganothinae. — *Tijdschrift voor Entomologie* **97**(3): 141–231.
- Razowski J. 1977. Catalogue of the generic names used in Tortricidae (Lepidoptera). — *Acta Zoologica cracoviensis* **XXII**(6): 207–296.
- Razowski J. 1993. The Catalogue of the species of Tortricidae (Lepidoptera). Part II: Palaearctic Sparganothini, Euliini, Ramapesiini and Archipini. — *Acta Zoologica cracoviensis* **35**(3): 665–703.
- Razowski J. 2002. *Tortricidae of Europe, vol. 1, Tortricinae and Chlidanotinae.* — Bratislava, 247 pp., 71 pls + 16 colour pls.
- Rungs C. E. E. 1979. Catalogue Raisonné des Lépidoptères du Maroc. Inventaire Faunistique et observations écologiques. Tome I. — *Travaux de l'Institut Scientifique, Série Zoologie* **39**; 244 pp., 2 cartes.
- Stephens J. F. 1829. The nomenclature of British Insects being a compendious list of such species as contained in the Systematic Catalogue of British Insects and forming a guide to their classification. — London, 68 pp.
- Turati E. 1913. Un Record Entomologico. Materiali per una faunula dei lepidotteri della Sardegna. — *Atti della Società Italiana di Scienze naturale* **51**: 265–365, 2 pls.

***Colias caucasica balcanica* (Pieridae) rediscovered in Montenegro, with additional new records for Serbia**

Ana Nahirnić, Predrag Jakšić and Arne Lykke Viborg

Abstract. The only two records of *Colias caucasica balcanica* Rebel, 1901 from Montenegro date from the beginning of the XXth century. During our visit of Mt. Durmitor in 2013, the presence of this species was confirmed for Montenegro. Four new localities for Serbia are provided and the confirmation of two already known localities on Mt. Kopaonik. Wing characteristics of male specimens from Montenegro were compared with those from Greece and Bulgaria. Data on habitats according to EUNIS classification and conservation status as well as distributional map of *C. caucasica balcanica* in Serbia and Montenegro are given.

Samenvatting. *Colias caucasica balcanica* (Pieridae) herondekt in Montenegro en nieuwe gegevens voor Servië. De enige twee meldingen van *Colias caucasica balcanica* Rebel, 1910 uit Montenegro stammen uit het begin van de 20^{ste} eeuw. Gedurende ons bezoek aan Mt. Dumitor in 2013 werd de aanwezigheid van deze soort in Montenegro bevestigd. Vier nieuwe lokaliteiten in Servië worden meegedeeld en de aanwezigheid van de soort in twee reeds bekende lokaliteiten op Mt. Kopaonik wordt bevestigd. Vleugelkenmerken van mannelijke exemplaren uit Montenegro worden vergeleken met deze uit Griekenland en Bulgarije. Informatie over de habitats volgens de EUNIS-indeling, de beschermingsstatus, en een verspreidingskaart van *C. caucasica balcanica* in Servië en Montenegro worden gegeven.

Résumé. *Colias caucasica balcanica* (Pieridae) redécouvert au Monténégro et de nouvelles données sont apportées pour la Serbie.

Les deux seuls rapports de *Colias caucasica balcanica* Rebel, 1910 au Monténégro datent du début du 20^{ème} siècle. Lors de notre visite au Mont Dumitor en 2013, la présence de cette espèce au Monténégro a été confirmée. Quatre nouvelles localités en Serbie sont communiquées et la présence de l'espèce dans deux localités déjà connues au Mont Kopaonik est confirmée. Les caractères des ailes des spécimens mâles du Monténégro sont comparés avec ceux de la Grèce et de la Bulgarie. Informations sur les habitats selon la classification EUNIS, le statut de protection, et une carte de répartition de *C. balcanica caucasica* en Serbie et au Monténégro sont données.

Key words: *Colias caucasica balcanica* – Montenegro – Serbia.

Nahirnić A.: University of Belgrade, Faculty of Biology, Studentski trg 16, 11000 Belgrade, Serbia; and Society for biological research "Sergej D. Matvejev", Braće Srušić 53, 11000 Belgrade, Serbia. ananahirnic@gmail.com

Jakšić P.: University of Niš, Faculty of Science and Mathematics, Department of Biology and Ecology, Višegradska Str., 33, 18000 Niš, Serbia; jaksicpredrag@gmail.com

Viborg A. L.: Løvs allé 5, 3. Right. 2200 Copenhagen N., Denmark; arvi@phmetropol.dk

Introduction

Colias caucasica balcanica Rebel, 1901 is the European subspecies of the nominotypical *Colias caucasica* Staudinger, 1871. The subspecies was firstly described by Rebel (1901), from material collected in Bosnia and Herzegovina. Rebel considered the butterfly as a mountain variant of *Colias myrmidone* Esper, 1781. This assumption was based on the larger size of the butterfly, and its considerably darker and more vivid orange ground-colour (Rebel 1901, 1903, 1904), the collected specimens were therefore named *Colias myrmidone* var. *balcanica*.

Schawerda (1939) was the first to consider *Colias myrmidone* var. *balcanica* and the nominotypical *Colias myrmidone* as two separate species. Later E. Reissinger (in Wagener 1990) established the relationship of the Balkan populations to *Colias caucasica*. This assumption has been followed since by the majority of entomologists.

The nominotypical *Colias caucasica caucasica* has a distribution occupying mountains of eastern Turkey and part of the Caucasus. The Balkan populations inhabit the montane zone at an altitude between 850 and 2300 m, and their distribution ranges from mountains of Bosnia

and Herzegovina in the north to northwestern Greece in the south, and from Croatia (Tvrtković *et al.* 2011) in the west to the Osogovo and Rila mountains of Bulgaria in the east. New localities have been discovered in FYR Macedonia (Verovnik *et al.* 2010, Davkov & Melovski in Franeta & Đurić 2011), Greece (Pamperis 2009) and Serbia (Franeta & Đurić 2011) during recent years.

Material and methods

The expedition consisted of six Danish and one Serbian lepidopterologists. Material was collected using entomological nets inside and in the vicinity of the Durmitor National Park between June 23 and June 28. Photographs of locality and voucher specimens were taken using a Nikon Coolpix L100 and Nikon Coolpix 501, respectively.

Habitat types were identified according to Lakušić (2005a) and Lakušić *et al.* (2005). These habitat types were related to European EUNIS habitat classification (Davies & Moss 2002) using Lakušić (2005b). As one habitat type present in Serbia is not yet included in European classification, beside the European EUNIS name (of a higher level) we wrote the Serbian name which is more precise.



Fig. 1. Habitat of *Colias caucasica balcanica* at Borje, Montenegro. E1.72 *Agrostis - Festuca* grassland in vicinity of G3.4C Southeastern European *Pinus sylvestris* forests. (photo A. Nahirnić).

Results

Montenegro

One of the aims of the expedition was to look for *Colias caucasica balcanica* and *Agriades pyrenaicus dardanus* Freyer, 1845 among other species of Rhopalocera. A survey of the literature showed that the first to mention *Colias caucasica balcanica* from Montenegro was Mary de la B. Nicholl (1902) who determined it like *Colias myrmidone*. Here Nicholl reported to have sighted one *Colias caucasica balcanica* near Obzir. Nicholl writes that it took two long days of marching from Mt. Durmitor across the Brda, to Tara canyon and the Bosnian border. During these two days she observed several specimens of *Colias caucasica*. We were not able to find the locality Brda which corresponds with Nicholl's route so we give here our assumption based on Nicholl (1902) and Thomas (1979) that Nicholl travelled from the western foothills of the Durmitor massif to the Tara canyon over the Pivska planina plateau. Unfortunately Nicholl was not able to catch any *Colias caucasica balcanica* (Nicholl 1902), but these records are considered very reliable, as she collected numerous specimens of this species in June and July 1898 at Trebević and Baba Planina in Bosnia and Herzegovina (Nicholl 1899). Since then there have been no reliable records of *Colias caucasica balcanica* in Montenegro.

Sijarić et al. (1984) made a thorough survey of the butterflies from more than 100 localities on Mt. Durmitor, but despite this they have no records of *Colias caucasica balcanica* except Nicholl's. Also Franeta & Đurić (2011) as well as Jakšić and Nahirnić (in 2011 and 2012) have visited Mt. Durmitor several times without finding *Colias caucasica balcanica*. Only Tolman & Lewington (1997) mention the species from Mt. Sinjaljevina in Montenegro, a record we have not been able to confirm from the literature.

On June 23 we drove from the town of Žabljak towards the Tara Gorge, making several stops. One of these stops was at Borje, Durmitor Mt. ($43^{\circ}09'29''$ N, $19^{\circ}12'34''$ E, 1297 m). The locality is described as a mosaic of pastures, F3.16 *Juniperus communis* scrub and

G3.4C Southeastern European *Pinus sylvestris* forests; the bedrocks are limestone and dolomite. Here, in pastures, several specimens of an orange *Colias* were collected and in the evening it was verified that we had collected *Colias caucasica*. It turned out that we had collected 3 fresh males of *C. caucasica balcanica*.

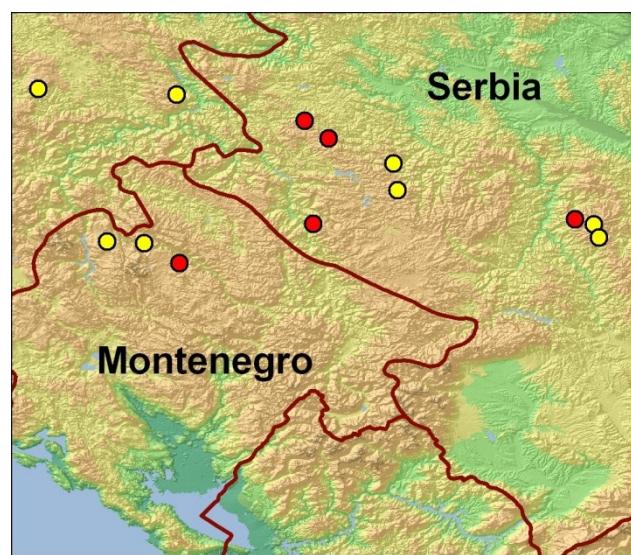


Fig. 2. Distribution of *Colias caucasica balcanica* in Serbia and Montenegro; red dots – new records, yellow dots – published records.

July 24 we spent investigating the localities Žabljak, Crno jezero, Ivan do, Javorje, Suva lokva and the high altitudes of the Sedlo Pass, without any remarkable observations. During the night and the following day the rain poured down continuously. The weather was cloudy with showers for the following 3 days and, even though we revisited the locality, no butterflies were on the wing. On June 28 we revisited the locality in sunshine. This time the area was surveyed more thoroughly during which 7 more males were collected. Borje was visited by Nahirnić several times later and at the July 10 a single male of *C. caucasica* was observed. The habitat is E1.72 *Agrostis - Festuca* grassland in the vicinity of G3.4C Southeastern European *Pinus sylvestris* forests (Fig. 1). Although no preimaginal stages were noticed during these visits we found and determined a possible larval host plant as *Chamaecytisus falcatus* (Waldst. et Kit.) Holub. Historical and our new record for Montenegro are presented on a distributional map (Fig. 2).

Serbia

We are able to publish here the following new records for Serbia:

On June 20th 2013 one male *C. caucasica* was observed by Nahirnić at Mt. Zlatibor, Čigota, Rakovica (western Serbia). GPS coordinates $43^{\circ}38'34''$ N, $19^{\circ}47'13''$ E, altitude 1249 m. One of the habitats where this specimen was noticed is E2.3 Mountain hay meadows in the vicinity of G1.6C Illyrian [*Fagus*] forests. The bedrock is serpentine. At the same locality Bernrd Plössl observed 2♀ on July 21st 2013.



Fig. 3. Males of *Colias caucasica balcanica*. Left row specimens collected at Mt. Varous (NV Greece). Middle row specimens collected at Mt. Durmitor, Borje (Montenegro) 23rd June and 28th June 2013. Right row *Colias croceus*, the upper 3 specimens collected at Mt. Durmitor, Borje, (Montenegro) 23rd June and 28th June 2013, the remaining 2 specimens are from Romania and Czech Republic. (photo A. L. Viborg).

On June 22nd 2007 1♂ *C. caucasica* was collected by Dejan Sokolović at Mt. Zlatibor, Zlatibor (western Serbia). GPS coordinates 43°42'42" N, 19°41'44" E, altitude 1005 m. The bedrock is serpentine.

On July 22nd 2012 2♀ and 1♂ *C. caucasica* were observed by Nahirnić at Mt. Jadovnik, Milošev Do, Prisoje (southwestern Serbia). GPS coordinates 43°18'43" N, 19°43'42" E, altitude 1024 m. Habitats are meadows in the vicinity of G4.6 Mixed [*Abies*] - [*Picea*] - [*Fagus*] woodland which is dominant habitat type in Milošev Do area (Mišić 1983; Matović 1986). The bedrock is limestone.

On July 15th 1988 1♂ and 1♀ were collected by Aleksandar Ćetković on Mt. Kopaonik, Kukavica (central Serbia). GPS coordinates: 43°19'45" N, 20°44'38" E, altitude 1696 m.

Additionally we can report new findings at two previously published localities.

Mt. Kopaonik, Jaram (central Serbia). GPS coordinates 43°18'35" N, 20°48'57" E, altitude 1750 m. At July 27th 2011 Jakšić observed 3♂ and Nahirnić observed 1♂ *C. caucasica balcanica*. Further at July 23th 2013 Jakšić observed 2♂ and Nahirnić, 1♂ and 1♀. One of the habitats where specimens were usually noticed is F2.23

Southern Palaearctic mountain dwarf [*Juniperus*] scrub (Serbian EUNIS name F2.231 Balkanske subalpijske žbunaste formacije sa dominacijom polegle kleke *Juniperus sibirica* (= *Juniperus nana*)). The bedrock is silicate.

Mt. Kopaonik, Bele stene (central Serbia) 43°15'31" N, 20°50'11" E, altitude 1700 m. On 23th July 2010 Jakšić collected 1♂ *C. caucasica balcanica*. On 11th July 2011 2♂, 2♀ were observed and an additional 3♂ and 2♀ were observed on 14th July 2011. The bedrock is limestone.

Including these new records for Serbia, *C. caucasica balcanica* is at present known from the following mountains: Mt. Kopaonik (Buresh & Tuleschkow 1928-1929; Jakšić 1988; this publication), Mt. Mučanj and Mt. Javor (Franeta & Đurić 2011), Mt. Zlatibor and Mt. Jadovnik (this publication) (Fig. 2).

Discussion

Wing characteristics of males

Based on descriptions in Tolman & Lewington (2008), Tvrković *et al.* (2011) states: "In *Colias* species characterized by an androconial patch (sex-brand) in males, only two species have a black submarginal band without crossed yellow veins....— the Western Palaearctic Danube clouded yellow, *Colias myrmidone* Esper, 1781 and the Balkan clouded yellow, *Colias caucasica* Staudinger, 1871". Many of the keys we have examined do not mention the presence of yellow veins in the black submarginal band of male *C. caucasica*. Chinery (1998) wrote: "In the male they are crossed by only very faint yellow veins, mainly near the tip". In Nekrutenko (1990) we found a similar description for *C. caucasica caucasica*. As one of the 3 male specimens collected at Borje had yellow veins in the upper part of the black submarginal band, it was first misidentified as a *Colias croceus* (Geoffroy, 1785) (Fig. 3, second row). This led us to study the material collected at Borje more thoroughly and we found that, from a total of 10 males, in 2 males the veins V5 to V9 of the fore-wings were yellow while 1 specimen has the veins V5 and V6 yellow.

We then expanded our investigation to include specimens collected in Greece (Mt. Varnous). A total of 64 males was examined. From these 3 have veins V5 to V9 of the fore-wings yellow, while 12 specimens have the veins V5 and V6 yellow. From Bulgaria (Rila Mts) (NMNHS) 18♂ were examined and here 1 specimen has the veins V5 to V9 of the fore-wings yellow (Fig. 4). Based on this, the above mentioned characteristic can be applied as a general rule, but exceptions are not very rare. Furthermore it seems like the frequency of yellow veins varies between different populations.

When specimens collected at Borje are compared to specimens collected in Greece (Mt. Varnous), the ground-colour of the Montenegrin specimens is clearly a less deep orange. Rebel (1903) states about females of *C. caucasica balcanica*: "Die bulgarischen orangegelben Stücke sind noch dunkler als die bosnischen." If this observation can be extrapolated to the males as well, it seems to fit our observation. Based on males collected in

Bosnia and Herzegovina, Rebel (1904) writes: "die auf den Hinterflügeln zuweilen einen schwachen violetten Schiller gewinnt". None of the 10 males collected in Montenegro, had this violet reflection on the hindwings. In specimens collected in Greece (Mt. Varnous) this violet reflection is not very rare, as it was observed in 5 of 17 examined male specimens.



Fig. 4. Male *Colias caucasica balcanica* with yellow veins from Rila Mts, Banya Kostenetz, (Bulgaria), 1000-1300m, 5th July 1928, P. Drenski leg., wing span 51 mm (photo S. Beshkov).

Protection and conservation

C. caucasica is not a protected species in Montenegro (Anonymous 2006). Based on the available data, it seems like *Colias caucasica balcanica* is extremely localized and rare in Montenegro, and this makes this species of conservational concern. Ideally this should be done by protecting the habitat rather than the species. In the Red data book of Serbian butterflies it is listed as endangered (Jakšić 2003) and it is a strictly protected species (Anonymous 2010). Moreover, it is target species in Prime Butterfly Areas in Serbia (Jakšić 2008).

Protected localities are Rakovica inside of the Nature park "Zlatibor", and Bele stene, Jaram and Kukavica inside the National park "Kopaonik". Localities Zlatibor, Prisoje, Vrela and Borje are near the boundaries of protected areas Nature park "Zlatibor", Special nature reserve "River Mileševka Gorge" and National park "Durmitor", respectively. We suppose that populations from the latter localities may also be distributed inside protected areas. An interesting record is on the locality Zlatibor on the edge of this town because this is one of the biggest touristic complexes in Serbia.

Acknowledgements

We would like to thank Torben Friis-Larsen and Ketil Mathiasen Viborg from Denmark who both participated in the expedition and greatly contributed by collecting most of the material of *Colias caucasica balcanica* from Montenegro. We thank Dejan Sokolović and Bernrd Plössl for their data on *C. caucasica* from Mt. Zlatibor, Aleksandar Ćetković for data on *C. caucasica* from Mt. Kopaonik, Vladan Đorđević for determination of habitat types at Mt. Zlatibor and Zoran Krivošej for the determination of *Chamaecytisus falcatus* from Borje. We are also grateful to the Swedish collectors Hans Forslind and Nils Broström and to the Danish collector Morten S. Møllgaard for information on the presence of yellow veins in collected specimens of *C. caucasica balcanica*.

from Mt. Varnous Greece. We thank Stoyan Beshkov for similar data on *C. caucasica balcanica* specimens from the collection in the National Museum of Natural History, Sofia. Hannes Kühtreiber is thanked for producing the map. Aleksandar Živić revised the English manuscript for which we are very thankful. We would like to express our

gratitude to BIODAT Alpin (Innsbruck, Austria), Society for Biological Research "Sergej D. Matvejev" (Belgrade, Serbia) and Association of Citizens "Jadovnik - oaza netaknute prirode" (Prijepolje, Serbia) for financial help during the field work.

References

- Anonymous 2006. Riješenje o stavljanju pod zaštitu pojedinih biljnih i životinjskih vrsta. — *Official Gazette of Republic Montenegro* 76/06.
- Anonymous 2010. Rulebook on proclamation and protection of strictly protected and protected wild species of plants, animals and fungi. — *Official Gazette of Republic of Serbia* 5/10.
- Buresch I. & Tuleschkow K. 1928–1829. Die horizontale Verbreitung der Schmetterlinge (Lepidoptera) [in Bulgarian]. — *Izvestiya na Tsarskite prirodonauchni instituti v Sofia* 2: 145–250.
- Chinery M. 1998. *A photographic guide to the butterflies of Britain and Europe*. — Harper Collins Publishers, London, 652 p.
- Davies C. E. & Moss D. 2002. *EUNIS Habitat classification – European Habitats Classification System*. — European Environment Agency & European Topic Centre on Nature Protection and Biodiversity, 115 p.
- De la Beche Nicholl M. 1899. Butterfly hunting in Dalmatia, Montenegro, Bosnia and Herzegovina. — *The Entomologist's Record and Journal of Variation* 11: 1–8.
- De la Beche Nicholl M. 1902. The Lepidoptera of Bosnia and Montenegro. — *The Entomologist's Record and Journal of Variation* 14: 141–146.
- Franeta F. & Đurić M. 2011. On the distribution of *Colias caucasica balcanica* Rebel, 1901, with two new records for Serbia (Lepidoptera: Pieridae). — *Nachrichten des Entomologischen Vereins Apollo* 32 (1/2): 31–37.
- Jakšić P. 1988. *Provisional distribution maps of the butterflies of Yugoslavia (Lepidoptera, Rhopalocera)*. — Societas Entomologica Jugoslavica, Editiones separatae, Zagreb, 215 p.
- Jakšić P. 2003. *Red Data Book of Serbian Butterflies, Lepidoptera, Hesperioidae and Papilioidea*. — Zavod za zaštitu prirode Srbije, Belgrade. 198 p. [in Serbian]
- Jakšić P. (ed.) 2008. *Prime Butterfly Areas in Serbia*. — HabiProt, Belgrade, 223 p.
- Lakušić D. 2005a. Ključ za identifikaciju staništa Srbije. — In: D. Lakušić (ed.). *Staništa Srbije, Rezultati projekta "Harmonizacija nacionalne nomenklature u klasifikaciji staništa sa standardima međunarodne zajednice"*. — Institut za Botaniku i Botanička Bašta "Jevremovac", Biološki fakultet, Univerzitet u Beogradu, Ministarstvo za nauku i zaštitu životne sredine Republike Srbije. <http://habitat.bio.bg.ac.rs/> [accessed 20 November 2013]
- Lakušić D. 2005b. Veze između međunarodnih klasifikacija staništa i klasifikacija staništa Srbije. — In: D. Lakušić (ed.). *Staništa Srbije, Rezultati projekta "Harmonizacija nacionalne nomenklature u klasifikaciji staništa sa standardima međunarodne zajednice"*. — Institut za Botaniku i Botanička Bašta "Jevremovac", Biološki fakultet, Univerzitet u Beogradu, Ministarstvo za nauku i zaštitu životne sredine Republike Srbije. <http://habitat.bio.bg.ac.rs/> [accessed 20 November 2013]
- Lakušić D., Blaženčić J., Ranđelović V., Butorac B., Vukojičić S., Zlatković B., Jovanović S., Šinžar-Sekulić J., Žukovec D., Čalić I. & Pavićević D. 2005. *Staništa Srbije – Priručnik sa opisima i osnovnim podacima*. Pp. 1-684. — In: D. Lakušić (ed.). *Staništa Srbije, Rezultati projekta "Harmonizacija nacionalne nomenklature u klasifikaciji staništa sa standardima međunarodne zajednice"*. — Institut za Botaniku i Botanička Bašta "Jevremovac", Biološki fakultet, Univerzitet u Beogradu, Ministarstvo za nauku i zaštitu životne sredine Republike Srbije. <http://habitat.bio.bg.ac.rs/> [accessed 20 November 2013]
- Matović M. 1986. *The vegetation of the Mileševka canyon*. — Glas Polimla, Prijepolje, 61 p. [in Serbian]
- Mišić V. 1983. Šumska vegetacija Jadovnika, Zlatara i doline reke Mileševke. — *Archives of Biological Sciences* 35(1–2): 3P–4P.
- Nekrutenko Y. P. 1990. *Butterflies of the Caucasus: keys to their identification (Papilionidae, Pieridae, Satyridae, Danidae)*. — Naukova Dumka, Kiev, 215 p. [in Russian].
- Pamperis L. N. 2009. *The butterflies of Greece*. — Editions Pamperis, Athens, 768 pp.
- Rebel H. 1901. Nachtrag zum Theil I. — In: Staudinger O. & Rebel H. (eds.). *Catalog der Lepidopteren des palaearktischen Faunengebietes*. — Friedlander & Sohn, Berlin, 249–256.
- Rebel H. 1903. Studien über die Lepidopterenfauna der Balkanländer, Bulgarien und Ostrumelien. — *Annalen des Naturhistorischen Museums in Wien* 18(2/3): 123–347.
- Rebel H. 1904. Studien über die Lepidopterenfauna der Balkanländer. II. Teil. Bosnien und Herzegowina. — *Annalen des Naturhistorischen Museums in Wien* 19: 97–377.
- Schawerda K. 1912. Versammlungen der Sektion für Lepidopterologie am 3. November 1911, II. 6. — *Verhandlungen der kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien* 61: (177).
- Schawerda K. 1939. Legende zu zwei Coliastafeln. — *Zeitschrift des Österreichischen Entomologischen Vereins Wien* 24: 24–26.
- Sijarić R., Lorković Z., Cornelutti J. & Jakšić P. 1984. Fauna Durmitora Sveska 1. Rhopalocera (Insecta, Lepidoptera). — *Crnogorska akademija nauka i umjetnosti. Posebna izdanja, knjiga XVIII, Odeljenje prirodnih nauka, Titograd* 11: 95–184.
- Thomas H. M. 1979. *Grandmother extraordinary: Mary De la Beche Nicholl 1839–1922*. — Stewart Williams, Barry, 205 p.
- Tolman T. & Lewington R. 1997. *Collins field guide butterflies of Britain & Europe*. — Harper Collins Publishers, London, 320 p.
- Tolman T. & Lewington R. 2008. *Collins Butterfly Guide*. — Harper Collins Publishers, London, 384 p.
- Tvrtković N., Mihoci I. & Šašić M. 2011. *Colias caucasica balcanica* Rebel, 1901 (Pieridae) in Croatia – The most western distribution point. — *Natura Croatica* 20(2): 375–385.
- Verovnik R., Micevski B., Đurić M., Jakšić P., Keymeulen A., Van Swaay C. & Veling K. 2010. Contribution to the knowledge of the butterfly fauna of Macedonia (Lepidoptera: Rhopalocera). — *Acta Entomologica Slovenica* 18(1): 31–46.
- Wagener S. 1990. *Colias caucasica balcanica* Rebel 1901 (comb. nov., stat. nov.) (Lep. Pieridae). — *Phegea* 18(2): 59–63.

Telling apart *Euchloe (Elphinstonia) charlonia* from *Euchloe (Elphinstonia) penia* by wing characters and probable records of the former from Asiatic Turkey (Lepidoptera: Papilionoidea, Pieridae)

John G. Coutsis

Abstract. A wing character is given for differentiating *Euchloe (Elphinstonia) charlonia* from *Euchloe (Elphinstonia) penia*, and the possibility that the former may eventually prove to be a member of the Turkish butterfly fauna is discussed.

Samenvatting. Verschillen in vleugelkenmerken tussen *Euchloe (Elphinstonia) charlonia* en *Euchloe (Elphinstonia) penia* en mogelijk voorkomen van de eerstgenoemde soort uit Aziatisch Turkije (Lepidoptera: Papilionoidea, Pieridae)

Een vleugelkenmerk waarmee *Euchloe (Elphinstonia) charlonia* en *Euchloe (Elphinstonia) penia* kunnen onderscheiden worden, wordt besproken en afgebeeld. Het mogelijk voorkomen van eerstgenoemde soort in Aziatisch Turkije wordt aangehaald.

Résumé. La différentiation d'*Euchloe (Elphinstonia) charlonia* et *Euchloe (Elphinstonia) penia* avec un caractère sur les ailes et observations probables de la première espèce en Turquie asiatique (Lepidoptera: Papilionoidea, Pieridae)

Un caractère sur les ailes d'*Euchloe (Elphinstonia) charlonia* et *Euchloe (Elphinstonia) penia* avec lequel il est possible de différencier les deux espèces est discuté et figuré. La possibilité que la première espèce soit trouvée en Turquie asiatique est discutée.

Key words: Pieridae – *Euchloe (Elphinstonia) charlonia* – *Euchloe (Elphinstonia) penia* – Species differentiation by wing character – Turkey.

Coutsis J. G., 4 Glykonos Street, GR-10675 Athens, Greece. kouts@otenet.gr

Introduction

According to Higgins & Riley (1980: 31) *Euchloe (Elphinstonia) charlonia* (Donzel, 1842) may be told apart from the otherwise quite similar *Euchloe (Elphinstonia) penia* (Freyer, [1851]) by its more pointed FW, its red marginal line along the costa and outer margin of FW underside (according to the authors absent in the latter) and its more conspicuous pale markings in the dark apex on FW upper side. Nothing is being said about the presence in *E. (E.) charlonia* and absence in *E. (E.) penia* of a solid black discoidal marking on FW underside, probably because the significance of this character was not understood at the time the book was published. Tolman (1997: 46, 47) states that in *E. (E.) charlonia* the FW underside has a solid black discoidal spot (light grey and shadowy in *E. (E.) penia*, resulting from the upper side black discoidal spot showing through), that the hair between the head and the thorax is rose-pink in the former, pale yellow, sometimes with interspersed rose-pink dorsal hair in the latter, and that in *E. (E.) penia* the FW underside costa and outer margin are sometimes lined rose-red much as are in *E. (E.) charlonia*, thus disagreeing in this last respect with Higgins & Riley. In Lafranchis (2004: 82 (figures), 83 (text)) the FW underside discoidal spot is pointed out in the figures, and it is stated in the text that in *E. (E.) charlonia* “Discoidal spot deep black on fore-wing underside” and that in *E. (E.) penia* “Discoidal spot pale grey on fore-wing underside”, this being the only difference between the two taxa given by the author. Figures in Manley & Allard (1970: pl. 38, fig. 17), Larsen (1980: 26; 1984: pl. 3, fig. 41; 1990: pl. 5, fig. 6), Tennent (1996: pl. 4, figs. 44, 45, 48), Tarrier & Delacre (2008: 131), Tshikolovets (2011: 112) confirm the existence of the FW underside solid black discoidal spot in *E. (E.) charlonia*, while figures in Abadjiev (1993: vol. 2, pl. XIII, fig. 5), Nazari (2003: pl. 13,

figs. 2, 7), Baytaş (2007: 37, figs. 5, 6), Pamperis (2009: 101), Tshikolovets (2011: 113), confirm the existence of a light grey one in *E. (E.) penia*.



Figs. 1, 2. Underside of male *Euchloe (Elphinstonia)* species. Scale bar = 1 cm. 1. *Euchloe (Elphinstonia) penia*, Greece, Makedhonía, Kozáni prefecture, foothills N of Siátista, 850–1050 m, 25.v.2008. 2. *Euchloe (Elphinstonia) charlonia*, Israel, Maale Efraim, 200 m, 2.iii.1979.

The FW underside discoidal spot as recorded from material available to the author

In the more than 100 specimens of *E. (E.) penia* from Greece that were studied by the author not one was found to possess a solid black discoidal spot on FW underside, clearly suggesting that this is the rule for this species (Fig. 1). In fact the light grey discoidal marking found in place of the solid black one is indeed no other than the upper side black discoidal spot showing through the mildly translucent forewing, as stated by Tolman (1977), but it is also due to the presence of sparse black scaling, most obvious microscopically. On the other hand, a small sample of four *E. (E.) charlonia* in the author's possession, two from Israel, one from Algeria and one from Morocco, clearly possess the solid black marking, further supporting that this is always to be met with in this species (Fig. 2).

Mixed Turkish material

In Hesselbarth *et al.* (1995: vol. 3, pl. 26 (undersides)) three specimens (figs. 40–42) have a well defined FW underside solid black discoidal spot, suggesting that they are *E. (E.) charlonia* and not, as erroneously stated by the authors, *E. (E.) penia*. These appear on the same plate together with five other specimens (figs. 37–39, 43, 44) whose FW underside discoidal spot is light grey instead of solid black, suggesting that indeed they are *E. (E.) penia*.

The geographic provenance of two of these *E. (E.) charlonia* is Ankara province (leg. Noack, 1934, Staatliches Museum für Naturkunde Karlsruhe, SMNK), which seems quite improbable because of the locality's distance from the boundaries of the known geographic

range of this species. The third specimen is from Antalya province (leg. Koçak, 1976, SMNK), and its geographic provenance appears more convincing, as this area is in fairly close proximity to the Near East, where the butterfly is known to have been recorded from.

Conclusion

Despite of what has been presented right above it still seems necessary that a confirmation is needed about the existence in Turkey of *E. (E.) charlonia*, before outright accepting it as a member of the country's butterfly fauna.

References

- Abadjiev S. 1992. *Butterflies of Bulgaria, Part 1, Papilionidae & Pieridae*. — Veren, Sofia.
- Baytaş A. 2007. *A Field Guide to the Butterflies of Turkey*. — NTV, İstanbul.
- Hesselbarth G., van Oorschot H. & Wagener S. 1995. *Die Tagfalter der Türkei unter Berücksichtigung der angrenzenden Länder*, vol. 1. — Wagener, Bocholt.
- Higgins L. G. & Riley N. D. 1980. *A Field Guide to the Butterflies of Britain and Europe*. — Collins, London.
- Lafranchis T. 2004. *Butterflies of Europe*. — Diatheo, Paris.
- Larsen T. 1980. *Butterflies of Oman*. — Bartholomew and Son, Edinburgh.
- Larsen T. 1990. *The Butterflies of Egypt*. — Apollo Books, Denmark.
- Manley W. B. L. & Allcard H. G. 1970. *A Field Guide to The Butterflies and Burnets of Spain*. — Morris Press, Manchester.
- Nazari V. 2003. *Butterflies of Iran*. — National Museum of Natural History, Tehran.
- Pamperis L. 2009. *The Butterflies of Greece*. — KOAN, Athens.
- Tarrier M. R. & Delacre J. 2008. *Les Papillons de jour du Maroc*. — Publications scientifiques du Muséum, Paris.
- Tennent J. 1996. *The Butterflies of Morocco, Algeria and Tunisia*. — Gem, Wallingford, UK.
- Tolman T. 1997. *Butterflies of Britain & Europe*. — Collins, London.
- Tshikolovets, V. V. 2011. *Butterflies of Europe & the Mediterranean area*. — Tshikolovets, Pardubice, Czech Republic.

Eerste vondst van *Grapholita lobarzewskii* (Lepidoptera: Tortricidae) voor België

Ruben Meert

Samenvatting. *Grapholita lobarzewskii* (Nowicki, 1860) werd op 20 en 27 mei 2014 waargenomen op feromonen voor deze soort te Lebbeke (Oost-Vlaanderen). Aanvankelijk was er enige twijfel omdat deze soort erg lijkt op *G. janthinana* (Duponchel, 1843). Nauwkeuriger onderzoek bevestigde echter de determinatie en deze soort kan dus toegevoegd worden aan de lijst van Belgische Lepidoptera. Er werden respectievelijk 3 en 18 ex. waargenomen, zodat de soort wellicht talrijker is dan algemeen wordt aangenomen in de entomologische literatuur.

Abstract. First Belgian record of *Grapholita lobarzewskii* (Lepidoptera: Tortricidae)

Grapholita lobarzewskii (Nowicki, 1860) was observed on 20 and 27 May 2014 in an orchard at Lebbeke (East-Flanders), using pheromones for this species. At first there was some doubt, as *G. janthinana* (Duponchel, 1843) is a very similar species. However, a closer look confirmed the determination. As a result, *G. lobarzewskii* can be added to the list of Belgian Lepidoptera. Regarding the numbers of specimens that were caught (resp. 3 and 18), this micro moth seems to be more common than generally assumed in the entomological literature.

Résumé. Première observation belge de *Grapholita lobarzewskii* (Lepidoptera : Tortricidae)

Grapholita lobarzewskii (Nowicki, 1860) a été trouvé les 20 et 27 mai 2014 dans un verger à Lebbeke (Flandre-Occidentale), en utilisant les phéromones pour cette espèce. Au début, il y avait un certain doute, car la *G. janthinana* (Duponchel, 1843) est une espèce très similaire. Mais une observation approfondie a donné une conclusion certaine. Il en résulte que la *G. lobarzewskii* peut être ajoutée à la liste des lépidoptères belges. D'après le nombre de spécimens comptés (resp. 3 et 18), cette micro teigne semble plus répandue que généralement supposé dans la littérature entomologique.

Key words: *Grapholita lobarzewskii* – Belgium – Faunistics – New record.

Meert R.: Grote Snijdersstraat 75, 9280 Lebbeke. ruben_meert@hotmail.com.

Wat begon met een feromonopreparaat voor Populierenwespvlinder (*Paranthrene tabaniformis*) (Rottemburg, 1775)), ontaardde al snel in een intensieve monitoring van andere wespvinders via feromonen in de regio rond Dendermonde. Gaandeweg verruimden enkele leden van Insectenwerkgroep Voelspriet het project, zodat in 2014 enkele lokstoffen voor microvlinders werden aangekocht.

De catalogus van het Nederlandse bedrijf Pherobank (<http://www.pherobank.com/Pages/Products.aspx>) oogt indrukwekkend. Omdat het niet eenvoudig is om elke vlinder uit deze lijst te gaan opsporen en om de kosten te drukken, werd een overzicht gemaakt welke microvlinders prioriteit zouden krijgen. Criteria die bij deze selectie van soorten werden gehanteerd door de werkgroep waren o.a. 1) mogelijke voedselplanten in de nabije omgeving; 2) zeldzaamheid; 3) soorten die op onze persoonlijke belangstelling konden rekenen.

De feromonen, die meestal in de vorm van rubberen dopjes werden opgestuurd, gebruikten we systematisch in combinatie met een mottenvallen met 4-puntssluiting. Fruitdwergbladroller (*Pammene argyrana* Hübner, 1799), Pruimenmot (*Grapholita funebrana* Treitschke, 1835) en Rookkleurige fruitmot (*Grapholita janthinana* (Duponchel, 1843)) (fig. 2) reageerden vanaf april 2014 onmiddellijk op hun respectievelijke feromonen. Omdat micro's in bepaalde gevallen overlappingen vertonen in feromonocomponenten (waarbij vaak enkel de verhoudingen wisselen), werden af en toe ook andere soorten in de vallen opgemerkt. Vermeldenswaard zijn in dit verband Wilgenspiegelmot (*Cydia servillana* (Duponchel, 1836)) en Eikendwerg-bladroller (*Pammene*

albuginana Guenée, 1854). Over *P. albuginana* is overigens het laatste woord nog niet gezegd: nieuw gevangen exemplaren zullen in de toekomst aan genitaalonderzoek worden onderworpen, om met zekerheid de eveneens zeer zeldzame Galdwergbladroller (*Pammene gallicolana* (Lienig & Zeller, 1846)) te kunnen uitsluiten (med. C Snyers).



Grapholita lobarzewskii (Nowicki, 1860), Lebbeke (Oost-Vlaanderen), 29.v.2014 (Foto R. Meert).



Grapholita janthinana (Duponchel 1835), Lebbeke (Oost-Vlaanderen), 19.v.2014 (Foto R. Meert).

In de nacht van 19 op 20 mei 2014 werd voor het eerst het feromoon van Kleine fruitmot (*Grapholita lobarzewskii* (Nowicki, 1860)) in een gemengde boomgaard met appel-, kersen- en pruimenbomen te Lebbeke, Oost-Vlaanderen opgehangen. De ochtend nadien zaten 3 bladrollers in de val, waarvan eerst twijfellees of het geen exemplaren van *G. janthinana* betrof. Beide soorten lijken immers goed op elkaar én hun feromonen bevatten gemeenschappelijke componenten (<http://www.pherobase.com/database/genus/genus-Grapholita.php>). Algemene habitus, grootte en vleugeltekening wezen toch eerder richting *G. lobarzewskii* (fig 1) (Sterling & Parsons 2012).

Een week later werd op dezelfde plek de test nog eens opnieuw gedaan. Deze keer lieten zich niet minder dan 18 exemplaren vangen. De vaststelling dat hetzelfde feromoon de nacht daarop geen enkel exemplaar van *G.*

janthinana kon aantrekken én de bevestiging door Willy De Prins, deed ons definitief besluiten dat de eerste waarnemingen van Kleine fruitmot voor België een feit waren (De Prins & Steeman 2014).

Op de foto's van beide soorten is te zien dat *G. lobarzewskii* een meer langwerpige habitus vertoont in vergelijking met *G. janthinana*. De paarse gloed ontbreekt grotendeels. De vleugeltekening is duidelijker en het snuitje ten slotte is bleker (Lepiforum).

De gevangen aantallen in een doorsnee Vlaamse boomgaard doen tevens vermoeden dat –hoewel nog nooit eerder in ons land aangetroffen– deze soort algemener is dan de statistieken doen uitschijnen. Dit is een vermoeden waar we ook bij andere vaak gelokte soorten van uit gaan. Dit bewijst alweer dat veel van deze diertjes razend knap zijn in verstoppertje spelen.

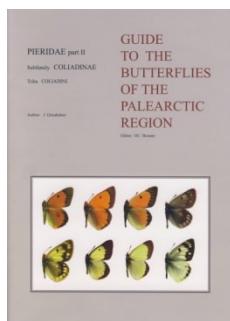
Referenties

- De Prins W. & Steeman C. 2014. *Catalogue of the Lepidoptera of Belgium*. — <http://webh01.ua.ac.be/vve/Checklists/Lepidoptera/Tortricidae.htm> (bezocht op 25 mei 2014).
- Lepiforum 2014. Bestimmungshilfe für die in Europa nachgewiesenen Schmetterlingsarten. — http://www.lepiforum.de/lepiwiki.pl?Grapholita_Lobarzewskii (bezocht op 20 mei 2014).
- Sterling P. & Parsons M. 2012. *Field Guide to the microths of Great Britain and Ireland*. — British Wildlife Publishing Ltd., Gillingham, Dorset, UK.

Boekbespreking

Grieshaber J.: *Pieridae part II Subfamily Coliadinae Tribe Coliadini*. – In: Bozano G. C. (Ed.) *Guide to the Butterflies of the Palearctic Region*.

21 × 30 cm, 86 pagina's, volledig in kleur, Omnes Artes s.a.s., Via Castel Morrone 19, I-20134 Milano, www.omnesartes.com, te bestellen bij de editor, G. C. Bozano, Viale Romagna 76, I-20133 Milano, e-mail: giancristoforo.bozano@fastwebnet.it, paperback, 2014, 38,- EUR exclusief verzendkosten (ISBN 978-88-87989-15-1).



In dit zeventiende deel in de reeks over de dagvlinders van het Palaearctisch gebied—het tweede dat over Pieridae handelt—worden de soorten uit het tribus Coliadini besproken. Dit tribus omvat in het besproken gebied de genera *Colias* en *Catopsilia*, maar over dit laatste genus, enkel vertegenwoordigd door *Catopsilia florella* (Fabricius, 1775), wordt niet gesproken. De 54 soorten uit het genus *Colias* worden op gelijkaardige wijze behandeld: een uitgebreide lijst van synoniemen, met referenties naar de oerbeschrijvingen, diagnostische kenmerken, individuele variatie, taxonomische notities en verspreiding.

Omdat vele *Colias*-soorten nogal variabel zijn, incl. sexueel dimorfisme, werden er in sommige soorten nogal wat ondersoorten beschreven, waarvan de meeste in dit boek tot synoniem herleid worden. In de paragraaf over de taxonomische notities wordt hierop soms dieper ingegaan. Ook de verspreiding wordt, per erkende ondersoort, kort besproken.

Het hele boek is doorlopend en rijkelijk geïllustreerd met het rechter vleugelpaar van de vlinders, met telkens de boven- en onderkant van mannelijke en vrouwelijke exemplaren. Hierdoor wordt de variatiebreedte van de meeste soorten voldoende aangetoond.

De verspreiding wordt schematisch voorgesteld met een rode vlek op een kaart. Daarbij valt op dat, behalve de wijd verspreide soorten *Colias hyale*, *alfacariensis*, *palaeno* en *croceus*, de meeste andere *Colias*-soorten een erg beperkt verspreidingsgebied hebben, meestal gesitueerd in het hoge noorden of hoog in de bergen. De meeste soorten komen trouwens in het Oost-Palaearctisch gebied voor.

Een zeer goed uitgegeven en rijkelijk geïllustreerd boek over een, bij iedere vlinderaar, bekend genus.

Willy De Prins

Notes on the distribution and conservation status of the Violet Copper *Lycaena helle* (Lepidoptera: Lycaenidae) in Bulgaria

Zdravko Kolev and Nikolay Shtinkov

Abstract. This paper studies the rare and endangered butterfly *Lycaena helle* ([Denis & Schiffermüller], 1775) in Bulgaria, reporting two new records for the country, observations on habitat preferences and notes on other potential habitats. A detailed survey of the region shows that the very limited habitat base of the species has been deteriorating at an alarming rate for the last two decades. The causes of threat and proposed measures for conservation and population management are discussed.

Samenvatting. Gegevens over de verspreiding en beschermingsstatus van *Lycaena helle* (Lepidoptera: Lycaenidae) in Bulgarije

In dit artikel wordt de zeldzame en bedreigde dagvlinder *Lycaena helle* ([Denis & Schiffermüller], 1775) in Bulgarije besproken, met twee nieuwe vindplaatsen in dat land, waarnemingen van habitatvoorkeuren en notities over potentiële andere habitats. Een gedetailleerde studie van het gebied toont aan dat de reeds erg beperkte habitatbasis voor deze soort de laatste twee decennia in een alarmerend tempo sterk achteruit is gegaan. De oorzaken van de bedreiging en mogelijke beschermingsmaatregelen en populatiemanagement worden besproken.

Résumé. Notes sur la distribution et le degré de survie de *Lycaena helle* (Lepidoptera: Lycaenidae) en Bulgarie
Dans cet article le cas de ce papillon rare et menacé *Lycaena helle* ([Denis & Schiffermüller], 1775) en Bulgarie est discuté. Deux nouvelles localités sont mentionnées dans ce pays, ainsi que les préférences de biotope et quelques notes sur des habitats potentiels sont fournies. Une étude détaillée de cette région montre que la situation des biotopes pour cette espèce est devenue pire durant les deux derniers décennies. Les causes de cette menace et de possibles mesures de protection et gestion sont discutées.

Key words: *Lycaena helle* – Bulgaria – Faunistics – Distribution – Conservation.

Kolev Z.: Taivaskero 1 A 21, FI-01280 Vantaa, Finland. zkolev72@gmail.com

Shtinkov N.: Department of Physics, University of Ottawa, K1N 6N5, Canada. nshtinkov@gmail.com

Introduction

The Violet Copper *Lycaena helle* ([Denis & Schiffermüller], 1775) is a widespread Palaearctic species, whose range extends from northern Spain across the forest zone of Central and Northern Europe and Asia to China, North Korea and the Pacific coast of Russia (Gorbunov 2001, Settele *et al.* 2008). Despite occurring over such a vast territory, the Violet Copper is one of the most threatened butterfly species in Europe west of Russia. It has declined strongly (by 50 to 80 %) in Western and Central Europe during the last century and is currently considered extinct in Hungary, the Czech Republic, Italy, Latvia and Slovakia (Van Swaay *et al.* 2010b). In Eastern Europe, the decline is more recent and ongoing and the species is listed as Endangered (EN) in Europe (Van Swaay *et al.* 2010a). As a species of high conservation priority in Europe, *L. helle* is included in Annexes II and IV of the European Union Habitats Directive (Council of the European Communities 1992). The population reduction in Europe is a result mainly of habitat loss (IUCN criterion A2c) due to land drainage, afforestation and changes in traditional land use practices (Van Swaay *et al.* 2012).

Until very recently, there were no indications that *L. helle* might be present on the Balkan Peninsula. The nearest record to this area is old collection material from Romania, Bucureşti: Chitila, 20.v.1889, coll. Salay (Popescu-Gorj 1964). While very close to the Balkan

Peninsula indeed, this population is now apparently extinct (Székely 2008, 2011). The nearest known extant populations are in Central Romania, north of the Carpathian chain (Székely 2008; Rákosy 2013). Therefore it came as a considerable surprise when *L. helle* was discovered in Eastern Serbia, in the Stara Planina mountain chain, as recently as 2011. This discovery was first published, almost as a footnote without further details, in a field guide to Serbian butterflies (Popović & Đurić 2011). More details were published online, identifying the locality as Mt. Ponor, near Dojkinci village (Popović 2011). Shortly afterwards, photographs of *L. helle* specimens (adults, eggs and first-instar larvae) from the Bulgarian part of Western Stara Planina together with exact geographic co-ordinates were published in the online database Observado.org by Dutch ornithologists (Anonymous 2012). The available details relating to the Serbian and Bulgarian records have just been published (Popović *et al.* 2014).

Considering the high interest presented by *L. helle* in zoogeographical as well as conservation aspect, the present paper makes an important and timely contribution by detailing the independent surveys carried out by the present authors in the Bulgarian territory of the Western Stara Planina range. This research has resulted in a significant accumulation of information on the distribution, habitat preferences, threats and future priorities for research and conservation of this remarkable species in Bulgaria and the Balkan Peninsula.

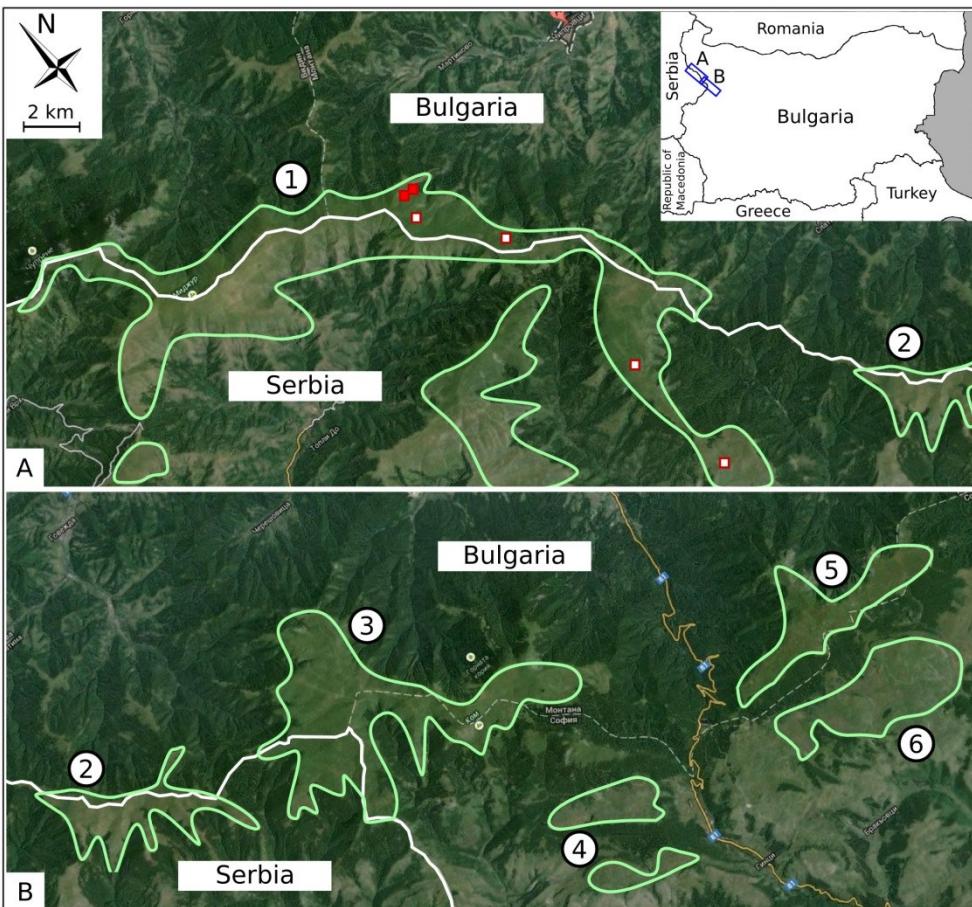


Figure 1. Map of W Stara Planina with the areas containing potential habitat for *Lycaena helle*:

1. Midzhur-Kopren;
2. Dalgi Del;
3. Kom;
4. Gintsi;
5. Todorini Kukli;
6. Magareshtitsi.

Records are shown with filled squares (new records) and empty squares (Popović *et al.* 2014). The inset shows the position of the two map panels A and B on the map of Bulgaria. The Bulgarian-Serbian border is shown with a continuous white line. Satellite images from Google Maps, (c) 2013 TerraMetrics.

Surveys for *L. helle* in the Bulgarian Western Stara Planina

The butterfly fauna of the Western Stara Planina region in Bulgaria and especially of the montane and subalpine zones is poorly studied. To the best of our knowledge, there have been only two dedicated studies of the region to date (Tuleschkow 1932, Beshkov 2000), both of them devoting only passing attention to the highest parts of the range. Recent studies, which have led to the discovery of some remarkable butterfly species in the Bulgarian part of western Stara Planina (Dincă *et al.* 2010), have focused exclusively on the lower, calcareous parts of the mountain south of the main ridge.

Our research on the butterfly fauna of the montane and subalpine zones of Western Stara Planina began in 2010, prior to the discovery of *L. helle* in Serbia, when we undertook an extensive search for the Nymphalid butterfly *Boloria eunomia* (Esper, 1799) in Western Stara Planina. In Bulgaria, *B. eunomia* is reliably known only from Central Stara Planina (Abadjiev 2001) and is one of the most poorly known butterfly species in the country. The recent discovery of this species at Babin Zub in Serbia (Jakšić *et al.* 2007), a mere 5 km from the Bulgarian border, was intriguing and suggested that this species could occur at the Bulgarian side of the border as well. It is important to note that both *B. eunomia* and *L. helle* are boreal relicts inhabiting wet mountain grassland

habitats near and above the tree line; in addition, they share the same larval food-plant, *Polygonum bistorta* (Polygonaceae) (Tolman 2008, Jakšić *et al.* 2007, Popović *et al.* 2014). Hence, our initial surveys for *B. eunomia* are relevant for *Lycaena helle* as well, although at the time we were unaware of the existence of a population of the latter species in the region.

As our research progressed in 2010–2012, we identified six different areas in Western Stara Planina that were likely to host suitable habitats for *L. helle* and *B. eunomia*. Those areas are shown in the map in Fig. 1. In the rest of this section, we describe the history of our surveys that culminated in our records of *L. helle* in June 2013. An overview of the characteristics of the six areas and a summary of our surveys is given at the end of this section.

Our visits in the area were on 9.vii.2010, 26.vi.2011 (N. Shtinkov), 9.vii.2011 (N. Shtinkov and Z. Kolev) and 18.vii.2011 (N. Shtinkov). We surveyed vast areas containing an abundance of *Polygonum bistorta* west of Petrohan pass in the vicinities of Kom peak (area 3 in Fig. 1), near and well above the tree line. We carried out a detailed survey of the areas with *P. bistorta* for the highly local and rare *B. eunomia*, examining the inflorescences of each clump of *P. bistorta* at close distance. We did not observe *L. helle* (or, for that matter, *B. eunomia*), although it is likely that the flight period of *L. helle* had ended by then.

After becoming aware of the discovery in 2011 of *L. helle* in Serbia and taking into account the known character of the Serbian localities, especially that on Ponor, we set out to identify and research potentially suitable areas in Bulgaria. We combined geological data (Gerasimov & Galabov 1966), satellite imagery and geotagged digital photographs in Google Earth® and identified as most closely corresponding, although somewhat distant, geographical features a series of depressions east of Petrohan pass. These lie at altitudes of about 1350–1450 m and run in a roughly west-to-east direction (area 6 in Fig. 1). These formations are situated at the boundary of siliceous rock to the north and calcareous rock to the south (Gerasimov & Galabov 1966) and are covered by a dense network of meandering streams and associated open boggy terrain, with the streams eventually disappearing in sinkholes in the calcareous layer. During our survey on 10.vi.2012 (Z. Kolev and N. Stinkov) we noted that the initial expectations regarding the orographic character and vegetation of the area were fully confirmed (see Fig. 2d). In particular, the abundance of *P. bistorta* over large areas was striking, as was that of the red-flowered *Geum coccineum*, a nectaring source of *L. helle* in Stara Planina as documented by Popović & Đurić (2011) and Popović et al. (2014). However, *L. helle* was not found during our extensive survey of an area of ca. 800 ha.

This forced us to reconsider our priorities for future research in 2013. An obvious strategy shift was to focus next on areas that were geographically closest to the known Serbian sites, i.e. the main ridge of western Stara Planina between the Midzhur and Kopren peaks, the highest in that part of the chain (area 1 in Fig. 1). Accordingly, we surveyed the area on 18.vi.2013. There

are few suitable points of access to the main ridge on the Bulgarian side, of which Chiprovtsi was chosen due to the presence of a charted road reaching from the town to within a few kilometers of the tree line. Reality, however, fell short of expectations, and the last leg of our trek was accomplished through rough terrain without any paths. However once we were clear of the tree line, already one of the first encountered clumps of *P. bistorta* yielded a single female specimen of *L. helle* flying weakly around the host-plants. Further specimens were not discovered on that site (43°22'37"N, 22°47'19"E, 1500 m: Fig. 2a). Systematic search lead us to a small stream below the Golema Chuka peak, where three other specimens, all males, were discovered (43°22'38"N, 22°46'54"E, 1600 m; specimen photo Fig. 2b, locality shown in Fig. 2c). In most of the area we observed worrying degrees of vegetation succession clearly due to abandonment of the subalpine pastures, as large parts of the grasslands had been, or were being, replaced with species-poor *Juniperus*-dominated plant communities.

Following this discovery, on 22.vi.2013 we undertook a first survey of the subalpine zone east of Petrohan pass (area 6 in Fig. 1). This survey showed that the vegetation succession was much more advanced than in area 1, with virtually all former grasslands being overgrown with *Juniperus* spp. and a complete lack of any potential habitats for *L. helle*. Another visit on 22.vi.2013 (N. Shtinkov) to the Magareshnitsi depressions (area 6) also failed to discover the species there. Yet both surveys allowed us to gather information about the quality of potential habitats and to assess the conservation status of the species in Bulgaria. A summary of our surveys of the six areas shown in Fig. 1 is given below and the main data are summarized in Table 1:

Table 1. Data from our surveys (2010–2013) of the six areas marked in Fig. 1.

No. and name	Altitude range	Total area (km ²)/% in Bulgaria	% overgrown	Remarks
1. <i>Midzhur-Kopren</i> (Fig. 2c)	1600–2168 m	65 km ² /35%	30–80%	All existing records for <i>L. helle</i> are from this area.
2. <i>Dalgi Del</i>	1400–1700 m	10 km ² /80%	–	Not surveyed.
3. <i>Kom</i>	1600–2016 m	31 km ² /80%	10%	Larval host plant abundant above ca. 1700 m.
4. <i>Gintsi</i>	1350–1400 m	7 km ² /100%	–	Not surveyed. Geologically similar to area 6.
5. <i>Todorini Kukli</i>	1600–1785 m	11 km ² /100%	90–100%	Larval host-plant not found.
6. <i>Magareshnitsi</i> (Fig. 2d)	1350–1450 m	13 km ² /100%	0%	Intensively managed. Larval host-plant abundant.

1. Midzhur-Kopren. (Fig. 2c) This area includes the highest parts of the main ridge of Stara Planina between the peaks Midzhur (2168 m) and Kopren (2119 m) at altitudes mostly above 1600 m, but including several lower-altitude areas on the Serbian side of the border. The total area of open grasslands is about 65 km² of which about 23 km² (35%) are in Bulgaria. Surveyed on 18.vi.2013. All existing records for *L. helle* are from this

area. Our surveys of the Bulgarian part have shown that large areas are heavily overgrown with *Juniperus* spp., thus destroying large parts of the species habitat. Where open grasslands are present, the larval host plant is widespread.

2. Dalgi Del. Open grassland areas at altitudes 1400–1700 m along the main ridge SW of Dalgi Del village.

Total area of 10 km², most of it (80%) in Serbia. Not surveyed.

3. Kom. Includes the grassy slopes in the vicinities of the Kom peak (2016 m) at altitudes mostly above 1600 m. Total area 31 km² of which about 25 km² (80%) in Bulgaria. Surveyed on 9.vii.2010, 26.vi.2011, 9.vii.2011, 18.vii.2011. Our detailed surveys of the areas S and E of Kom peak have shown that the larval host plant is abundant above ca. 1700 m but have failed to discover *L. helle* in spite of seemingly favourable conditions. However, it is likely that the flight period of the species might have ended just prior to our surveys, and it is highly recommended that the area be revisited during the first half of June.

4. Gintsi. Includes two depressions W of Gintsi village at altitudes of 1350–1400 m; total area 7 km². Geologically similar to area 6. Not surveyed.

5. Todorini Kukli. Main ridge of Stara Planina W of Petrohan pass; altitudes 1600–1785 m (Todorini Kukli peak); area 11 km². Surveyed on 22.vi.2013. The area consists of abandoned mountain pastures, now completely overgrown with *Juniperus* sp. The larval food plant was not found and any suitable habitat that might have been present seems to have disappeared.

6. Magareshnitsi. (Fig. 2d) Includes several depressions south of the main ridge at altitudes of about 1400 m with total area of 13 km². Surveyed on 10.vi.2012 and 22.vi.2013. The specific relief and geological conditions favour accumulation of water in the depressions, creating moist meadows with an abundance of the larval host-plant and rich flower vegetation, particularly near the forest edges and in the vicinities of several small streams. The grasslands are intensively used for cattle grazing and actively maintained with regular pruning and cutting of bushes and tree saplings (pers. obs.). In spite of the abundance of the larval host plant and nectaring sources for the adults, the search for *L. helle* was unsuccessful.

Threats and conservation status

The Violet Copper (*Lycaena helle*) is a threatened butterfly of high conservation importance in Europe, included in Annexes II and IV of the European Union Habitats Directive (Council of the European Communities, 1992) and listed as Endangered (EN) in Europe (Van Swaay *et al.* 2010a). The population reduction is a result mainly of habitat loss (IUCN criterion A2c) due to land drainage, afforestation and changes in traditional land use practices (Van Swaay *et al.* 2012). The recent discovery of *L. helle* in Serbia and Bulgaria therefore calls for urgent assessment of its conservation status and development and implementation of necessary conservation measures.

The most significant threat to *L. helle* in Western Stara Planina appears to be habitat loss due to

overgrowing of mountain pastures above the tree line as a result of the natural vegetation succession after a strong decline in traditional grazing since the 1990s. Large-scale overgrowing with species-poor plant communities dominated by *Juniperus* sp. was observed in approximately 30–40% of the surveyed open areas superficially suitable for *L. helle* habitat. In some regions the overgrown areas can be 80% (Donchev 2008, pers. obs.). In addition, the potential areas that could provide suitable habitat are very fragmented and further fragmentation and loss of connectivity between habitat patches is observed due to overgrowing (pers. obs.). This trend could be especially important for an extremely sedentary species such as *L. helle* (Fischer *et al.* 1999). The potential area of occupancy (AOO) appears to be rather small because of the small size and low number of suitable habitat patches in most of the area. Even considering the entire area of all locations that we identified as superficially suitable for the species in Western Stara Planina, a generous tentative estimate based on direct observation and satellite images gives a total AOO in Bulgaria and Serbia of less than 140 km². The extent of occurrence (EOO) is also generously estimated to less than 850 km², including the disjunct areas around Kom and east of Petrohan Pass. Thus, it appears that the species satisfies IUCN criterion A2c for Vulnerable status (inferred population reduction due to habitat decline of more than 30% in the last 10 years) and B1+2ab(ii,iii) criteria for Endangered status nationally (IUCN 2012a). The Balkan population is separated by a considerable distance from the nearest known occurrences of *L. helle* and is therefore completely isolated. However, migration across the border can easily occur given the known altitude range of existing records (see also Popović *et al.* 2014). Nevertheless, since the above assessment is valid for the entire population on both sides of the border (see also Popović *et al.* 2014), we believe immigration does not significantly affect the extinction risk (IUCN 2012b).

In addition to overgrowing, potential threats that could lead to habitat destruction are posed by various development projects in the region. Examples are the (now abandoned) plans for construction of two wind farms above the tree line near Chiprovtsi and near the Dalgi Del village (Donchev 2008a, b) and a project for a winter resort considered by the Chiprovtsi municipal administration, including skiing courses that would pass right through the localities reported in the present work, below Golema Chuka peak (Anonymous 2009). Another threat could be posed by the increasing tourist influx due to ongoing construction of new recreational infrastructure that will facilitate access to this part of Stara Planina (Tsvetkov 2013) which has so far remained relatively pristine and far from popular tourist destinations. Nevertheless, all those threats are secondary and their effect, at least in the short term, is unlikely to be as significant as the ongoing habitat degradation due to abandonment of mountain pastures.



Figure 2. *Lycaena helle*:

a) female, 43°22'37"N, 22°47'19"E, 1500 m, 18.vi.2013.

b) male, 43°22'38"N, 22°46'54"E, 1600 m, 18.vi.2013.

c) habitat below Golema Chuka peak (area 1 in Fig. 1), 43°22'38"N, 22°46'54"E, 1600 m, 18.vi.2013.

d) potential habitat: Magareshnitsi (area 6 in Fig. 1), 1400 m, 22.vi.2013.

Based on the above discussion, we propose Endangered (EN) B1+2ab(ii,iii) red list status for *Lycaena helle* in Bulgaria. As the species is listed in Annexes II and IV of the Habitats Directive (Council of the European Communities, 1992), it is entitled to legislative protection in Bulgaria. Hence immediate measures should be taken for amending the relevant legislation. Specifically, *Lycaena helle* should be included in Annexes 2 and 3 of the Biological Diversity Act (Republic of Bulgaria, 2002), which implements the relevant European legislation in Bulgaria. The area in which *L. helle* occurs is part of the Natura 2000 protected zone BG0001040 Western Stara Planina and Predbalkan and the species should also be immediately included in the list of protected species in the protected zone. We also recommend listing *L. helle* in the Red Data Book of Bulgaria as Endangered. Although unlikely to have any effect by themselves (or to pose any obstacles to development projects endangering the species like the ones described above), these administrative measures would provide the necessary framework for funding conservation projects that could carry out the measures outlined below.

Habitat management seems to be essential for the survival of this species (Fischer 1999, Goffart *et al.* 2010, Van Swaay *et al.* 2012, Habel *et al.* 2012), which in Bulgaria means mainly curbing the overgrowing of existing habitat. Unfortunately the strong decline of traditional land use practices is a major trend which affects simultaneously large territories and cannot be easily reversed, especially in a region of the country which has marked the worst economic decline on a national scale for a quarter-century. The economic restructuring of the 1990's has been accompanied by a decline of the human population and livestock numbers that continues at an alarming rate to present days and has been further exacerbated by the global economic downturn of the last decade. For example, sheep herds in the Montana Province have declined by more than

35% between 2001 and 2011 (Montana Province 2005: 28, 2013: 27). Some temporary relief could be provided by economic incentives for traditional grazing through existing policies and programmes for maintaining wildlife habitats such as the European-funded Rural Development Programme (Bulgarian Ministry of Agriculture and Food 2012) but this is unlikely to reverse the long term economic and demographic trends.

In view of the above, it seems that the most feasible and effective short-term strategy would be to selectively maintain small patches of suitable habitats by clearing bushes around streams and valleys above the tree line in area 1 (Fig. 1) which so far contains the only known populations of *L. helle* in Bulgaria. This focused effort could be undertaken by volunteers and should also be used to contribute new data to the knowledge of the distribution of *L. helle* in Stara Planina and to determine the population size and dynamics of this species, as well as other butterflies with similar ecological requirements and facing similar conservation challenges, e.g. *Boloria eunomia*. As both species can be extremely sensitive to habitat management (Goffart *et al.* 2010, Habel *et al.* 2012), a careful scientific evaluation of the impact of different management options on the populations should be undertaken in order to develop a long-term conservation strategy.

Conclusion

The very recent addition of the Violet Copper to the butterfly fauna of the Balkan Peninsula, Serbia and Bulgaria is a fascinating zoogeographical discovery. However, even more importantly it offers considerable challenges but also opportunities in terms of effecting necessary, timely, science-based and responsible conservation measures on par with Western-European standards. While the species is a brand new addition to the fauna of Bulgaria, the government is bound by

current EU legislation to immediately devise and implement such conservation measures as are deemed necessary. In the case of the Violet Copper, the culprit for the ongoing detrimental development is not the hand of man, but rather the lack thereof. The decline is underlined by recent socioeconomic trends that are unlikely to be reversed in the near future and have to be taken into account when developing a conservation strategy.

Preserving the only populations of the Violet Copper on the Balkan Peninsula is ultimately a joint responsibility of Serbia and Bulgaria, especially in view of the fact that currently the area of potential habitat for *L. helle* is larger in Serbia than in Bulgaria (present work; see also Popović *et al.* 2014). However, Bulgaria is a full member state of

the EU which means both a clearer regulatory framework as well as better practical prerequisites for implementing concerted conservation measures. There is a pressing need for such measures as present data indicate that the species' very limited habitat base has been deteriorating at an alarming pace for the last two decades. If these changes continue unchecked, the only known population of the Violet Copper in the Balkan peninsula may soon follow the fate of this species in most of Western and Central Europe and be driven to the brink of extinction.

Acknowledgement

We thank Mr Miloš Popović for sending us his paper (Popović *et al.* 2014) prior to publication.

References

- Abadjiev S. P. 2001. *An Atlas of the Distribution of the Butterflies in Bulgaria (Lepidoptera: Hesperioidae & Papilionoidea)*. — Pensoft Publishers, Sofia, Moscow, 335 pp.
- Anonymous. 2009. *Chiprovtsi is looking for investors for a winter resort. Interview with Zaharin Zamfirov, mayor of Chiprovtsi*. — Investor.bg, July 27, 2009. <http://www.investor.bg/novini/122/a/chiprovci-tyrsi-investitor-za-zimen-kurort,84343/> (accessed 29.vi.2013, in Bulgarian).
- Anonymous. 2012. Observation.org: Violet Copper – *Lycaena helle* ([Denis & Schiffermüller], 1775). — <http://observado.org/soort/photos/70081?from=2012-06-16&to=2012-06-16> (accessed 5.iii.2014).
- Beshkov S. 2000. Lepidoptera species (Macrolepidoptera) recorded and reported from the Western Stara Planina Mountain, NW Bulgaria. — *Entomologica romanica* 5: 11–43.
- Bulgarian Ministry of Agriculture and Food 2007. Republic of Bulgaria rural development programme 2007–2013. The European Agricultural Fund for Rural Development. http://prsr.government.bg/Admin/upload/Media_file_en_1318469686.rar (accessed 31.vii.2013).
- Council of the European Communities, 1992. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. — *Official Journal of the European Communities* 35: 7–50.
- Dincă V., Kolev Z. & Verovnik R. 2010. The distribution, ecology and conservation status of the Spinose Skipper *Muschampia cribrellum* (Eversmann, 1841) at the western limit of its range in Europe (Hesperiidae). — *Nota lepidopterologica* 33: 39–57.
- Donchev K. 2008a. Assessment of compatibility of investment proposal for building a wind generator farm “Georgi Damyanovo Wind” in the region of Dalgi Del village, Georgi Damyanovo municipality, Montana Province. Regional Inspection for Environment and Water, Montana. <http://www.riosv-montana.com/old/reports/report194.doc> 18 pp. (accessed 30.vi.2013, in Bulgarian).
- Donchev K. 2008b. Assessment of compatibility of investment proposal for building a wind generator farm “Chiprovtsi Wind” in the region of Chiprovtsi town, Chiprovtsi municipality, Montana Province. Regional Inspection for Environment and Water, Montana. <http://www.riosv-montana.com/old/reports/report195.doc>, 22 pp. (accessed 30.vi.2013, in Bulgarian).
- Gerasimov I. P. & Galabov Zh. S. (eds.) 1966. *Geography of Bulgaria. Vol. 2: Physical geography*. — Bulgarian Academy of Sciences, Sofia, 548 pp. (in Bulgarian).
- Goffart P., Schtickzelle N. & Turlure C. 2010. Conservation and management of the habitats of two relict butterflies in the Belgian Ardenne: *Proctissiana eunomia* and *Lycaena helle*. — in: Habel J. C. & Assmann T. (eds.) *Relict species. Phylogeography and Conservation Biology*. — Springer (Berlin Heidelberg), p. 357–369.
- Gorbunov P. 2001. The butterflies of Russia: classification, genitalia, keys for identification (Lepidoptera: Hesperioidae and Papilionoidea). — Thesis, Ekaterinburg, 320 pp.
- Habel J. C., Meyer M. & Schmitt T. (eds.) 2012. Jewels in the mist. A synopsis on the highly endangered butterfly species the Violet Copper, *Lycaena helle*. — Pensoft (Sofia-Moscow), 235 pp.
- IUCN 2012a. *IUCN Red List Categories and Criteria: Version 3.1. Second edition*. — Gland, Switzerland and Cambridge, UK: IUCN, iv + 32 pp.
- IUCN 2012b. *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0*. — Gland, Switzerland and Cambridge, UK: IUCN. iii + 41pp.
- Jakšić P., Van Swaay C. & Đurić M. 2007. *Boloria eunomia* (Esper, 1799): a new species for Serbia (Nymphalidae). — *Nota lepidopterologica* 30: 65–70.
- Montana Province 2005. *Montana Province development strategy 2005–2015*. — <http://oblastmontana.org/add/Montana-OSR.pdf> (accessed 31.vii.2013, in Bulgarian).
- Montana Province 2013. *Montana Province development strategy 2014–2020*. — <http://oblastmontana.org/add/Montana-OSR-2020.pdf> (accessed 31.vii.2013, in Bulgarian).
- Popescu-Gorj A. 1964. *Catalogue de la Collection de Lépidoptères “Prof. A. Ostrogovich” du Muséum d’Histoire Naturelle “Grigore Antipa”, Bucarest*. — Bucarest, 293 pp., 18 pl.

- Popović M. 2011. *Endangered Serbian Butterflies – Urgent Need for Research and Conservation.* — http://www.habiprot.org.rs/rsg2011/index_en.html (accessed 5.iii.2014).
- Popović M. & Đurić M. 2011. *Dnevni leptiri Srbije – priručnik.* — HabiProt, Beograd, 198 pp. (in Serbian).
- Popović M., Đurić M., Franeta F., Deijk J. & Vermeer R. 2014. First records of *Lycaena helle* ([Denis & Schiffermüller], 1775) for the Balkan peninsula (Lepidoptera: Lycaenidae). — *SHILAP Revista lepidopterologica* **42** (165): 1–8.
- Rákosy L. 2013. *Fluturii diurni din România. Cunoaștere, protective, conservare.* — Editura MEGA, Cluj-Napoca, 352 pp.
- Republic of Bulgaria 2002. Biological Diversity Act. — *State Gazette* **77**, 2002.
- Settele J., Kudrna O., Harpke A., Kühn I., van Swaay C., Verovnik R., Warren M., Wiemers M., Hanspach J., Hickler T., Kühn E., van Halder I., Veling K., Vliegenthart A., Wynhoff I. & Schweiger O. 2008. *Climatic Risk Atlas of European Butterflies.* — Pensoft Publishers, Sofia – Moscow, 712 pp.
- Székely L. 2008. *Fluturii de zi din Romania [The butterflies of Romania].* — Muzeul Județean de Istorie Brasov, 305 pp.
- Székely L. 2011. The Lepidoptera of Bucharest and its surroundings (Romania). — *Travaux du Muséum National d'Histoire Naturelle «Grigore Antipa»* **LIV** (2): 461–512.
- Tolman T. 2008. *Collins Butterfly Guide. The Most Complete Guide to the Butterflies of Britain and Europe (Illustrated by R. Lewington).* — HarperCollins Publishers, London, 384 pp.
- Tsvetkov T. 2013. *Projects for eight million levs are being implemented by Chiprovtsi Municipality.* — Bulgarian News Agency, June 18, 2013. <http://bta.bg/bg/c/BO/id/622767> (accessed 30.vi.2013, in Bulgarian).
- Tuleschkow K. 1932. Erster Beitrag zur Schmetterlingsfauna des Westbalkans (Westliche Stara-Planina). — *Trudove na bulgarskoto prirodoizpitatelno druzhestvo, Sofia* **15–16**: 307–312.
- Van Swaay C., Cuttelod A., Collins S., Maes D., López Munguira M., Šašić M., Settele J., Verovnik R., Verstrael T., Warren M., Wiemers M. & Wynhof I. 2010a. *European Red List of Butterflies.* — Luxembourg: Publications Office of the European Union. x+47 pp.
- Van Swaay C., Wynhoff I., Verovnik R., Wiemers M., López Munguira M., Maes D., Sasic M., Verstrael T., Warren M. & Settele J. 2010b. *Lycaena helle.* — In: IUCN 2012. *IUCN Red List of Threatened Species. Version 2012.2.* — <http://www.iucnredlist.org>.
- Van Swaay C., Collins S., Dušej G., Maes D., Munguira M. L., Rakosy L., Ryholm N., Šašić M., Settele J., Thomas J., Verovnik R., Verstrael T., Warren M., Wiemers M., Wynhoff I. 2012. Dos and Don'ts for butterflies of the Habitats Directive of the European Union. — *Nature Conservation* **1**: 73–153.

Boekbespreking

Aukema B., Chérot F., Viskens G. & Bruers J.: *Verspreidingsatlas van de Belgische Miridae (Insecta: Heteroptera).* 21 x 30, 311 p., doorlopend geïllustreerd in kleur, Fauna van België, Koninklijk Belgisch Instituut voor Natuurwetenschappen, Vautierstraat 29, 1000 Brussel, bestellingen@natuurwetenschappen.be, paperback, 2014, 60,- EUR, exclusief verzendkosten (ISBN 9789073242326).



Wanten zitten duidelijk in de lift! Nadat in het vorige deel in deze reeks de water- en oppervlaktwantzen van België aan bod kwamen, is het nu de beurt aan de Miridae. Deze wantenfamilie is in België met haar 231 soorten het soortenrijkst. De meeste soorten zijn fytofaag en sommige zijn zelfs schadelijk in de landbouw. Andere soorten zijn carnivoor en deze worden dan weer gebruikt in de biologische bestrijding. Vele Miridae zijn erg klein en onopvallend, en misschien daardoor is hun studie slechts langzaamaan op gang gekomen.

In deze atlas ligt de aandacht op de verspreiding van de soorten in België. Die verspreiding wordt dan ook kort besproken en grafisch voorgesteld op drie kaartjes: Europa waar het voorkomen per land wordt aangeduid, en België met een kaart van de verspreiding vóór 1980 en eentje vanaf 1980. Daaruit is gemakkelijk af te lezen dat sommige soorten slechts laat ontdekt zijn, o.a. *Isometopus intrusus*, *Deraeocoris flavilinea*, terwijl andere minder talrijk voorkomen dan vroeger, o.a. *Capsodes gothicus*.

Over het algemeen ziet men dat er in de latere periode meer stippen op de kaartjes voorkomen. Dit heeft uiteraard niet met de uitstekende toestand van de Belgische natuur te maken, maar wel met het feit dat er nu meer aandacht aan deze diergroep wordt besteed.

Achteraan volgen enkele overzichtslijsten: literatuur, wetenschappelijke wantsennamen, plantennamen, systematische wantenlijst, aantal uurhokken vóór en vanaf 1980, verspreiding per provincie, waarnemers, soorten uit het grenzend gebied maar nog niet in België waargenomen. Vooral deze laatste lijst is interessant voor de liefhebbers van het ontdekken van nieuwe soorten voor de Belgische fauna want er staan enkele soorten in die in al onze buurlanden voorkomen, o.a. *Agnocoris rubicundus*, maar nog niet in België,!

Een mooi uitgegeven en rijk geïllustreerd boek. Hoewel de auteurs de vooruitgang en de voordelen van de digitale fotografie vermelden, blijft wie mooie plaatjes van adulte Miridae wil zien, op zijn honger zitten. De weinig afgebeelde soorten zijn voor het overgrote deel exemplaren uit Nederland. België moet het met één foto doen.

Willy De Prins

Recente dagvlinderobservaties in West-Vlaanderen (Lepidoptera: Papilionoidea)

Stef Spruytte & Sylvain Cuvelier

Samenvatting: In 2011 werd in een tuin te Nieuwkerke-Heuvelland een merkwaardige aberratie van *Anthocharis cardamines* (Linnaeus, 1758) waargenomen. Eén jaar later, in dezelfde bovengenoemde locatie, zorgde een zwervende *Nymphalis polychloros* (Linnaeus, 1758) voor een onverwachte eiafzetting. Intussen wordt de opmars van *Argynnис paphia* (Linnaeus, 1758) en *Apatura iris* (Linnaeus, 1758) in de provincie West-Vlaanderen bevestigd.

Résumé: Observations récentes de papillons en Flandre occidentale (Lepidoptera : Papilionoidea)

En 2011, dans un jardin à Nieuwkerke-Heuvelland, une aberration remarquable d'*Anthocharis cardamines* (Linnaeus, 1758) a été observée. Une année plus tard, dans la même localité mentionnée au-dessus, un *Nymphalis polychloros* (Linnaeus, 1758) errant, a provoqué une ponte inattendue. Entretemps, la poussée d'*Argynnис paphia* (Linnaeus, 1758) et *Apatura iris* (Linnaeus, 1758) en Flandre occidentale est confirmée.

Abstract: Recent observations of butterflies in West Flanders (Lepidoptera: Papilionoidea)

In 2011, in a garden in Nieuwkerke-Heuvelland, a remarkable aberration of *Anthocharis cardamines* (Linnaeus, 1758) was observed. One year later, in the same above-mentioned locality, a vagrant *Nymphalis polychloros* (Linnaeus, 1758) provided an unexpected oviposition. Meanwhile the advance of *Argynnис paphia* (Linnaeus, 1758) and *Apatura iris* (Linnaeus, 1758) in the province West-Vlaanderen is confirmed.

Key words: Lepidoptera – Rhopalocera – *Anthocharis cardamines* – *Nymphalis polychloros* – *Argynnис paphia* – *Apatura iris* – West-Vlaanderen – Belgium.

Spruytte, S.: Vogelweerde 15, 8950 Nieuwkerke-Heuvelland, Belgium. stef.spruytte@telenet.be

Cuvelier, S.: Diamantstraat 4, 8900 Ieper, Belgium. sylvain.cuvelier@pandora.be

Inleiding

Met het Z.W.V.V.K.-project 2000–2006 werden de West-Vlaamse dagvlinders gedurende zeven jaar intensief geïnventariseerd door ruim honderd enthousiaste vrijwilligers. Na intermediaire publicaties (Cuvelier *et al.* 2004, 2005) werden alle gegevens tenslotte gebundeld en verwerkt in het boek Dagvlinders

in West-Vlaanderen. Verspreiding en Ecologie 2000–2006 (Cuvelier *et al.* 2007). Een eerste aanvulling documenteerde nog enkele opmerkelijke waarnemingen (Cuvelier *et al.* 2009). Door klimatologische en andere externe factoren staat de dagvlinderfauna zwaar onder druk. Een continue opvolging, ook van onverwachte observaties, is dan niet alleen wenselijk maar noodzakelijk.



Fig. 1 – *Anthocharis cardamines* forma *decolorata* ♀, boven- en onderzijde, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 17.iv.2011 (Coll. & foto's: S. Spruytte).

Verrassende tuinobservaties

Op 17 april 2011 zag Stef Spruytte in zijn tuin te Nieuwkerke-Heuvelland een wijfje *Anthocharis cardamines* (Linnaeus, 1758) op Pinksterbloem. Omdat op het eerste gezicht het kleurpatroon nogal sterk afweek van een normaal exemplaar werd het Oranjetipje genet om zo tot nauwkeuriger onderzoek te kunnen overgaan. Hieruit bleek dat de discale zwarte vlek en de donkergrijze apex op de bovenkant van de voorvleugel tot een zeer lichtgrijs gereduceerd was. Ook aan de onderkant van de achtervleugels was de diepe, peterseliekleurige structuur herleid tot een flets,

geelgroen vlekkenpatroon (Fig. 1). Allemaal kenmerken die uiteindelijk leidden naar de zeldzame afwijkende forma *decolorata* (Caruel, 1955).

Ongeveer een jaar later, op 30 april 2012 omstreeks 16u00, was de eerste auteur opnieuw in zijn tuin te Nieuwkerke-Heuvelland getuige van een niet-alledaagse vlinderwaarneming. Dit keer kreeg hij bezoek van een wijfje *Nymphalis polychloros* (Linnaeus, 1758). Onrustig bleef de vlinder hoog rond de kruin van een knotwilg (*Salix alba*) rondjes fladderen. Af en toe rustte ze wat uit en exploreerde daarna een ander gedeelte van de kruin. Het uiteindelijke resultaat, na ruim een half uur, waren

twee eipakketjes (Fig. 2), telkens mooi in ringvorm rond een twijg afgezet. De ene manchet telde een 20-tal eitjes

en de andere een 100-tal. Het hele gebeuren speelde zich af op een hoogte van 6,5 meter.



Fig. 2 – Eilegsel van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 30.iv.2012.

Fig. 3 – Rupsjes L1 van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 13.v.2012.

Fig. 4 – Rupsen L3 van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 24.v.2012.

Fig. 5 – Rups L5 van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 30.v.2012.

Fig. 6 – Prepupa van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 05.vi.2012.

Fig. 7 – Pop van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 05.vi.2012.

Fig. 8 – Pop van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 19.vi.2012.

Fig. 9 – Imago van *Nymphalis polychloros*, België, West-Vlaanderen, Nieuwkerke-Heuvelland, 20.vi.2012 (foto's: S. Spruytte).

Een kweek werd binnenshuis opgestart. De eerste rupsjes (Fig. 3, 4) verschenen op 13 mei 2012 en werden opgekweekt met bladeren van de knotwilg waarop de eiafzetting was gebeurd. Vanaf 3 juni 2012 begonnen enkele volgroeide rupsen (Fig. 5) zich al te verpoppen (Fig. 6, 7) en vanaf 18 juni 2012 verschenen de eerste imago's Grote vos (Fig. 8).

Al bij al verliep de kweek zonder veel sterfte zodat een 100-tal imago's in de nabije omgeving werden vrijgelaten (Fig. 9). Niettegenstaande meerdere dagen zoeken, werd geen enkel imago daarna terug waargenomen.

Argynnis paphia (Linnaeus, 1758) met afwijkend vleugelpatroon

Al diverse jaren is *Argynnis paphia* (Linnaeus, 1758) in onze regio aan een duidelijke opmars bezig. Dat kunnen we alleen maar toejuichen. En af en toe komt een verrassende waarneming om de hoek kijken. Dat overkwam Johan Seys te Hollebeke op 12 juni 2011 toen hij in het Provinciedomein De Palingbeek een knappe aberratie van een mannetje *A. paphia* fotografeerde (Fig. 10). Ruim twee weken later, op 30 juni 2011, werd hetzelfde exemplaar door Krist Calmeyn gefotografeerd op het Golfterrein te Hollebeke.



Fig. 10 – Aberratie van ♂ *Argynnis paphia*, België, West-Vlaanderen, Hollebeke, West-Vlaanderen, België, 12.vi.2011 (foto: J. Seys).

***Apatura iris* (Fabricius, 1807) in de spotlights**

Ook *A. iris* (Fabricius, 1807), de Grote weerschijnvlinder, liet zich in West-Vlaanderen de laatste jaren af en toe opmerken. Op 16 juni 2011 nam Klaas Dekeyser een wijfje *A. iris* waar aan de Vaarttaluds te Moen-Zevegem. De vlinder vertoefde laag bij de grond en werd met behulp van de gsm vereeuwigd (mail Wouter Vanreusel). Een jaar later, op 30 juni 2012, werd

een mannetje *A. iris* geobserveerd door Stijn Glorie in de Galgenbossen te Elverdinge (mail W. Vanreusel). Ook Sancho Vanherck spotte een Grote weerschijnvlinder in de Galgenbossen op 4 augustus 2013 (mail W. Vanreusel). Een ander exemplaar werd op 6 augustus 2013 op de zuidflank van de Kemmelberg te Dranouter-Heuvelland, snel voorbijvliegend, waargenomen door Olivier Dochy, Erwin Verfaillie en Johan Seys (mail W. Vanreusel).

Besluit

Opmerkelijke waarnemingen en areaalverschuivingen van sommige dagvlindersoorten komen af en toe voor. De kans is dan ook groot dat *N. polychloros*, *A. paphia* en *A. iris* vaste waarden worden voor de West-Vlaamse dagvlinderfauna.

Dankwoord

Graag bedanken we Wouter Vanreusel voor het doorsturen van gegevens en Johan Seys voor de foto van de *A. paphia*-aberratie waardoor deze bijdrage geoptimaliseerd kon worden.

Referenties

- Cuvelier S., Degrande J., Merveillie L., Spruytte S. & Vervaeke J. 2004. Verspreidingsgegevens van de dagvlinders in de provincie West-Vlaanderen (België). Intermediaire analyse (2000–2003). — *Phegea* **32**(3): 91–107.
Cuvelier S., Degrande J., Merveillie L., Spruytte S. & Vervaeke J. 2005. Drie opmerkelijke dagvlindersoorten in West-Vlaanderen anno 2004 (Lepidoptera). — *Phegea* **33**(2): 55–58.
Cuvelier S., Degrande J., Merveillie L., Spruytte S. & Vervaeke J. 2007. *Dagvlinders in West-Vlaanderen. Verspreiding en Ecologie 2000–2006.* — Zuid West-Vlaamse Vlinder Kring, België, 144 p.
Cuvelier S., Degrande J., Merveillie L., Spruytte S. & Vervaeke J. 2009. Opmerkelijke dagvlindersoorten in West-Vlaanderen anno 2008 (Lepidoptera). — *Phegea* **37**(4) 147–152.