

Additions and corrections to "Die Tagfalter der Türkei". 2. Interesting observations of butterflies in Turkey during the 38th expedition of the "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Lycaenidae)

Willy De Prins & Dirk van der Poorten

Abstract. The variability of *Lycaena virgaureae aureomicans* (Heyne, 1897) and the seasonal polyphenism in *Lycaena ochimus* (Herrich-Schäffer, [1851]) are discussed. A sexual aberrant of *Polyommatus cornelia* (Freyer, [1850]) is displayed. The female of *Polyommatus eros molleti* Carbonell, [1994] is described. A probable male hybrid between *Polyommatus bellargus* (Rottemburg, 1775) and *P. ossmar* (Gerhard, [1851]) is figured.

Samenvatting. Aanvullingen en correcties op "Die Tagfalter der Türkei". 2. Interessante waarnemingen van dagvlinders in Turkije gedurende de 38ste expeditie van de "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Lycaenidae)

De variabiliteit van *Lycaena virgaureae aureomicans* (Heyne, 1897) en de generatieverschillen in *Lycaena ochimus* (Herrich-Schäffer, [1851]) worden besproken. Een seksuele aberrant van *Polyommatus cornelia* (Freyer, [1850]) wordt afgebeeld. Het wijfje van *Polyommatus eros molleti* Carbonell, [1994] wordt beschreven. Een waarschijnlijke mannelijke hybride tussen *Polyommatus bellargus* (Rottemburg, 1775) en *P. ossmar* (Gerhard, [1851]) wordt afgebeeld.

Zusammenfassung. Ergänzungen und Korrekturen zu "Die Tagfalter der Türkei". 2. Interessante Tagfalterbeobachtungen während die 38ste Expedition der "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Lycaenidae)

Die Variabilität von *Lycaena virgaureae aureomicans* (Heyne, 1897) und der saisonale Polyphenismus von *Lycaena ochimus* (Herrich-Schäffer, [1851]) werden besprochen. Ein sexuell abweichendes Exemplar von *Polyommatus cornelia* (Freyer, [1850]) wird abgebildet. Das Weibchen von *Polyommatus eros molleti* Carbonell, [1994] wird beschrieben. Einen wahrscheinlichen männlichen Hybride zwischen *Polyommatus bellargus* (Rottemburg, 1775) und *P. ossmar* (Gerhard, [1851]) wird abgebildet.

Résumé. Additions et corrections à "Die Tagfalter der Türkei". Observations intéressantes de papillons pendant la 38ième expédition en Turquie du "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Hesperidae, Pieridae, Lycaenidae)

La variabilité de *Lycaena virgaureae aureomicans* (Heyne, 1897) et la variation saisonnière de *Lycaena ochimus* (Herrich-Schäffer, [1851]) sont discutées. Un aberrant sexuel de *Polyommatus cornelia* (Freyer, [1850]) est figuré. La femelle de *Polyommatus eros molleti* Carbonell, [1994] est décrite. Un hybride probable mâle entre *Polyommatus bellargus* (Rottemburg, 1775) et *P. ossmar* (Gerhard, [1851]) est figuré.

Key words: Turkey - *Polyommatus eros molleti* - description of female - faunistics - variability - hybrid - gynandromorphism - polyphenism.

De Prins, W.: Diksmuidelaan 176, B-2600 Antwerpen.

van der Poorten, D.: Lantemhofstraat 26, B-2140 Antwerpen.

1. On the variability of *Lycaena virgaureae aureomicans* (Heyne, 1897) (Lycaenidae) (Plate 1, figs 16-21)

According to Hesselbarth, van Oorschot & Wagener (1995: 472) the populations of *Lycaena virgaureae* (Linnaeus, 1758) from the Taurus Mountains (provinces of Adana, Isparta, İçel, Konya and Niğde) belong to subspecies *aureomicans* Heyne, 1897. On Plate 89 figs 49 and 51 and on Plate 127 figs 33 and 39 of their book they figure specimens from Tekir (İçel), Taşkent (Konya) and Dedegöl Dağları (Isparta) (Type-locality of *Lycaena (Heodes) virgaureae denizae* Eckweiler & Rose, 1993, synonymised by Hesselbarth, van Oorschot & Wagener 1995). On Plate 1, figs 16-21 of the present study,

some specimens, which we caught in the Bolkar Dağları (Niğde), are displayed to show the individual variability in this population. The white spots on the underside of the hindwing are usually completely absent (figs 17-18, 21) but sometimes developed to some extent (fig. 20).

2. Seasonal polyphenism in *Lycaena ochimus* (Herrich-Schäffer, [1851]) (Lycaenidae) (Plate 2, figs 9-16, 25-32)

Lycaena ochimus (Herrich-Schäffer, [1851]) is a double brooded, and in some localities possibly a triple brooded species in Turkey (Hesselbarth, van Oorschot & Wagener 1995: 496). This is certainly the case at lower altitudes. However, in 1995 we discovered a population in the Aladağ between 2800 and 3000 m which produces only one generation a year. The butterflies are of the vernal phenotype (see Plate 91 figs 47, 52 and 54 in Hesselbarth, van Oorschot & Wagener 1995). This phenotype is characterised by the somewhat paler golden orange groundcolour in the male, whereas the groundcolour of second brood specimens has a deeper orange tinge (compare Plate 2, figs 9-11 with fig. 12).

In the female the black spotting on the upperside of both wings is less abundant than in second brood specimens. Second brood females usually have a short tail on the hindwing at vein 2 (fig. 16), while first brood specimens lack this character (figs 13-15). The same phenomenon occurs in *L. asabinus* (Herrich-Schäffer, [1851]) and in *L. thersamon* (Esper, [1784]) where tailed specimens have been referred to as f. *omphale* Klug, 1834.

The underside groundcolour of first brood specimens is paler and all spots are reduced in both sexes (compare Plate 2, figs 25-27 with fig. 28 and figs 29-31 with fig. 32).

3. A sexual aberrant of *Polyommatus cornelia* (Freyer, [1850]) (Plate 1, fig. 15)

In the Aladağ (Niğde), Korac valley, we caught a specimen of *Polyommatus cornelia* (Freyer, [1850]) which has characters of both sexes. The left wings show only characters of the male, whereas the right forewing is female except for a central blue (male) streak. The right hindwing has female characters along the costa to v6.

The genitalia are mainly male, but show some abnormalities in the tegumen, the subunci and the socii, and a supplementary chitinous structure (see fig. 1).

4. On the variability of *Polyommatus eros molleti* Carbonell, [1994] with description of the female (Lycaenidae) (Plate 2, figs 1-8, 17-24)

As can be seen from figs 1-4 on Plate 2 the groundcolour of the males of *Polyommatus eros molleti* Carbonell, [1994] is very variable. It ranges from pure blue as in typical *P. eros eros* (Ochsenheimer, 1806) to greenish blue as in *P. eros yildizae* Koçak, 1977. The width of the black marginal border on the forewing varies from 1 to 2 mm. The black underlining of the veins can be more or less extended basally. The black postdiscal spot can either be less or well developed. Some specimens possess a black postdiscal spot on the hindwing (Plate 2, fig. 1) while in others this character is completely absent (Plate 2, fig. 4).

The groundcolour of the underside can be rather dark (Plate 2, fig. 1) and the pattern of the spotting can be very variable (compare Plate 2, figs 17 to 20).

Description of the female (Plate 2, figs 5-8, 21-24): on the average of the same size as the male, groundcolour brown, marginal orange lunules developed especially on the hindwing, usually vestigial and sometimes absent on the forewing, thus resembling much *P. eros eros*; postdiscal black spot better developed than in *P. eros eros*. Some specimens

have a bluish suffusion on the upperside of both wings (as supposed by Carbonell [1994]: 231). Underside as in male but groundcolour more brown (Plate 2, figs 21-24).

Female genitalia: henia trapezoid as in *P. eros*, *P. eroides* (Fivaldszky, 1835) and *P. menelaos* Brown, 1976 (fig. 2).

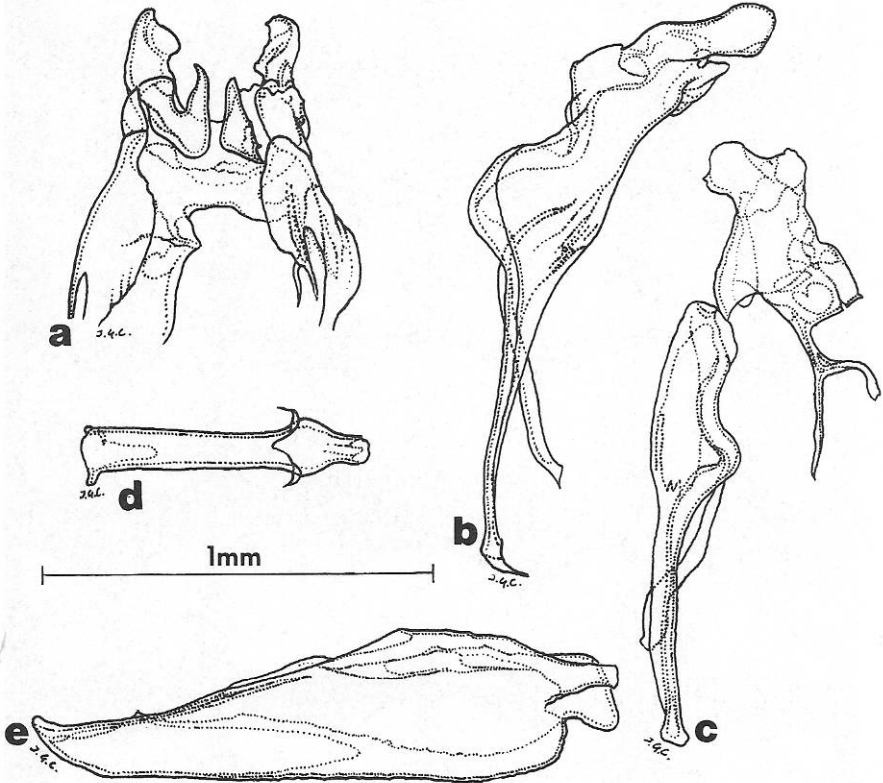


Fig. 1: Genitalia of *Polyommatus cornelia* (Freyer, [1850]), Turkey, Niğde, Aladağ West side, 15 km SE Camardı, Korac valley, 1800-2000m, 19.VII.1995; a. malformed labides, socii and upper part of tegumen, b. genitalia in side view, aedeagus and valvae removed, c. abnormal chitinous structure, d. aedeagus, e. valva (Prep. JGC2333 del. J.G. Coutsis).

Plate 2



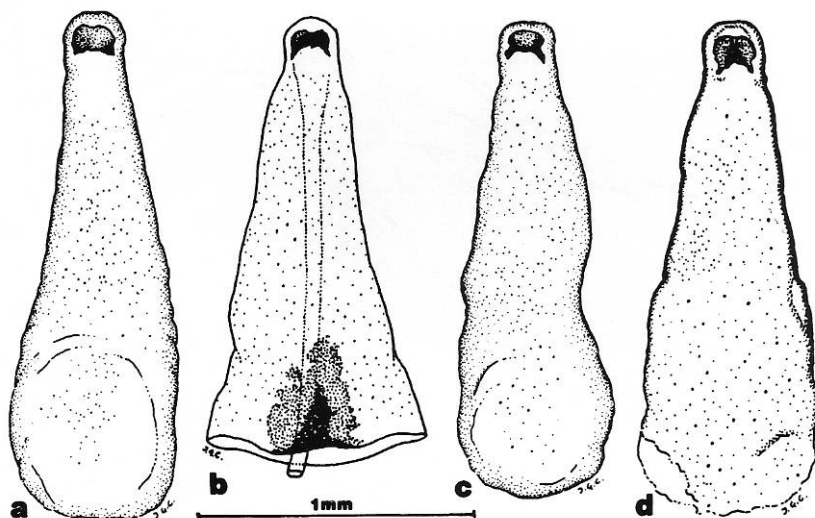


Fig. 2: Female genitalia (henia) of a. *Polyommatus eros eros* (Ochsenheimer, 1806), Switzerland, Engadin, Guarda 11.VII.1929 (Prep JGC1505), b. *P. eros molleti* Carbonell, [1994], Turkey, Niğde, Bolkar Mts 2700 m, 29.VII.1994 (Prep JGC2247), c. *P. eroides* (Frivaldszky, 1835), Greece, Macedonia, Mt Perister 1900m, 15.VII.1959 (Prep. JGC1504), d. *P. menelaos* (Brown, 1976), Greece, Lakonia, Taygetos Mts 2000 m, 21.VII.1968 (Prep. JGC 1506) (del. J.G. Coutsis).

Legend of Plate 2:

Figs 1-8 (upperside), 17-24 (underside): *Polyommatus eros molleti* Carbonell, [1994]

Fig. 1: ♂, Turkey, Niğde, Bolkar Mts North side, SW of Maden, 3.VIII.1995, 2600-2800 m, St. 2109, leg. D. van der Poorten & W. De Prins.

Fig. 2: as fig. 1.

Fig. 3: ♂, Turkey, Niğde, Bolkar Mts North side, SW of Maden, 24.VII.1994, 2600-2800 m, St. 1996, leg. H. van Oorschoot, H. van den Brink, D. van der Poorten & W. De Prins.

Fig. 4: as fig. 1.

Fig. 5: ♀, Turkey, Niğde, Bolkar Mts North side, SW of Maden, 3.VIII.1995, 2600-2800 m, St. 2109, leg. D. van der Poorten & W. De Prins.

Fig. 6: as fig. 5.

Fig. 7: ♀, Turkey, Niğde, Bolkar Mts North side, SW of Maden, 24.VII.1994, 2600-2800 m, St. 1996, leg. H. van Oorschoot, H. van den Brink, D. van der Poorten & W. De Prins.

Fig. 8: as fig. 7.

Figs 9-16 (upperside), 25-32 (underside): *Lycaena ochimus* (Herrich-Schäffer, [1851])

Fig. 9: ♂, Turkey, Niğde, Aladağlari West side, 15km SE Camardi, Avci Veli, Emli Boğazi, 31.VII.1995, 2600-2800 m, St. 2104, leg. D. van der Poorten & W. De Prins.

Fig. 10: ♂, Turkey, Kayseri, Aladağlari East side, 48 km S Yahyali, 26.VV-2.VIII.1995, 2800-2900 m, St. 2096, leg.

Fig. 11: as fig. 9.

Fig. 12: ♂, Turkey, Hakkari, Hakkari, 54 km NE Hakkari, Road Yüksekova, 30.VI-11.VII.1992, 1800 m, St. 1809, leg. D. van der Poorten & W. De Prins.

Fig. 13: ♀, Turkey, Niğde, Aladağlari West side, 15km SE Camardi, Avci Veli, Emli Boğazi, 31.VII.1995, 2600-2800 m, St. 2104, leg. D. van der Poorten & W. De Prins.

Fig. 14: ♀, Turkey, Niğde, Aladağlari West side, 15km SE Camardi, Emli Boğazi, 31.VII.1995, 2000-2300 m, St. 2103, leg. D. van der Poorten & W. De Prins.

Fig. 15: as fig. 13.

Fig. 16: ♀, Turkey, Van, env. Edremit, 17 km SW Van, 13-18.VIII.1988, 1700-1800 m, St. 1504, leg. B. van Oorschoot, W. De Prins & A. Riemis.

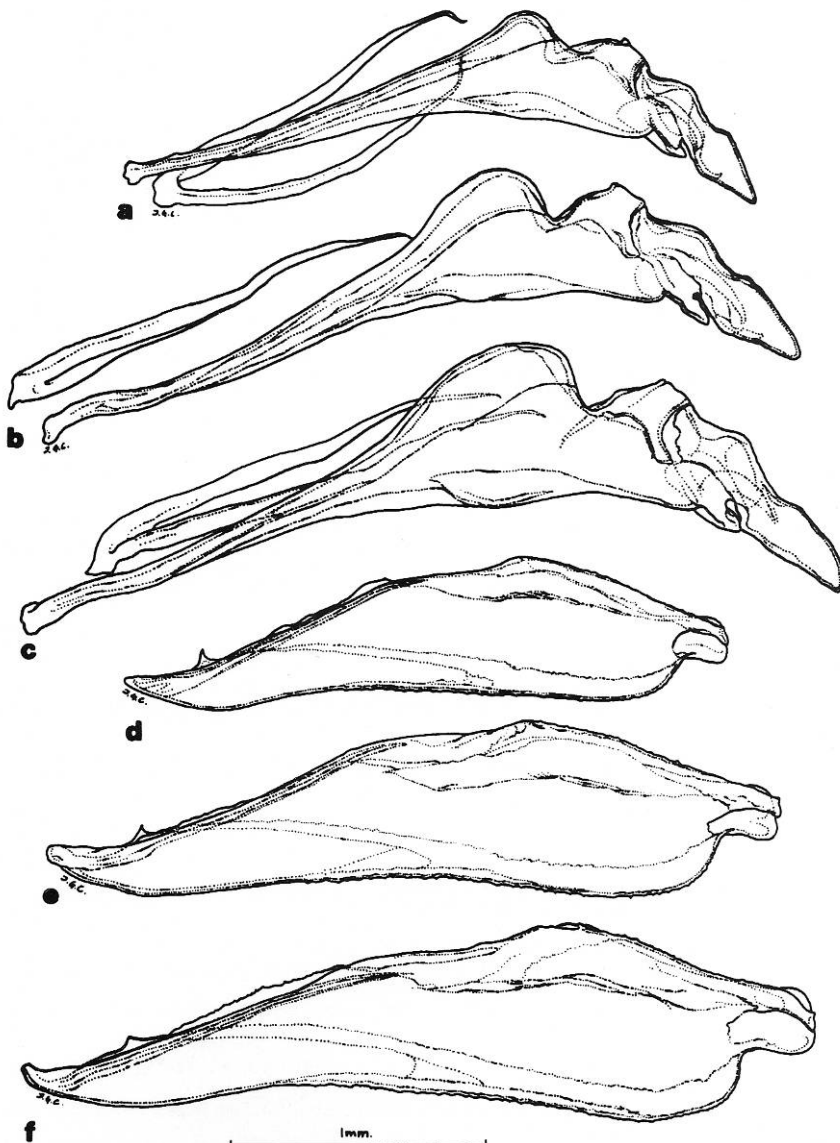


Fig. 3: Male genitalia (a-c: tegumen and labides in lateral view, d-f: valva) of: a, d *Polyommatus bellargus* (Rottemburg, 1775), c, f *P. oxymar* (Gerhard, [1851]), and b, e a probable hybrid between these two species; all Turkey, Aladag (Niğde), Korac valley, 15 km SE Camardi, 19.VII.1995, 1800-2000 m (Prep. JGC2444, JGC2443, JGC2442, del. J.G. Coutsis).

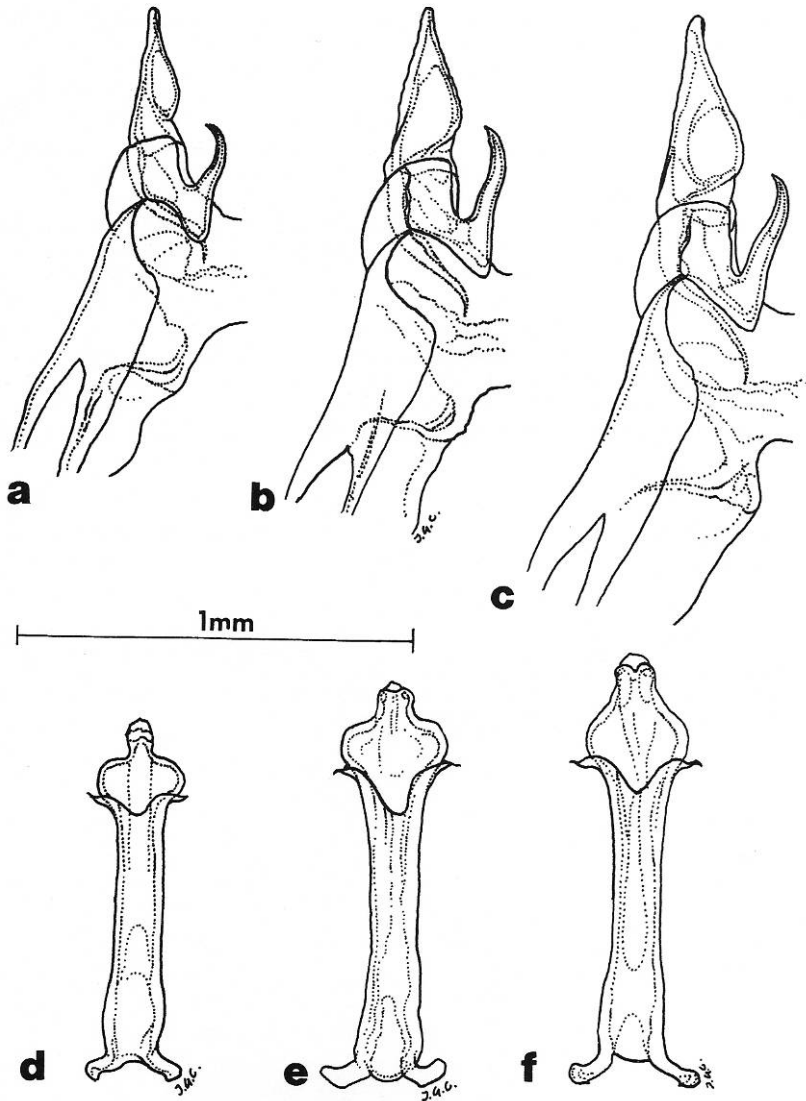


Fig. 4: Male genitalia (a-c: labides and socius in ventral view, d-f: aedeagus) of: a, d *Polyommatus bellargus* (Rottemburg, 1775), c, f *P. ossmar* (Gerhard, [1851]), and b, e a probable hybrid between these two species; all Turkey. Aladağ (Niğde), Korac valley, 15 km SE Camardi, 19.VII.1995, 1800-2000 m (Prep. JGC2444, JGC2443, JGC2442. del. J.G. Coutsis).

5. A probable male hybrid between *Polyommatus bellargus* (Rottemburg, 1775) and *P. ossmar* (Gerhard, [1851]) (Lycaenidae) (Plate 1, figs 22-24)

In the Aladağ (Niğde), Korac valley, we caught a male specimen (Plate 1, fig. 23) of which the blue colour is intermediate between *Polyommatus bellargus* (Rottemburg, 1775) (Plate 1, fig. 22) and *P. ossmar* (Gerhard, [1851]) (Plate 1, fig. 24). Both these species are common in this mountain range. A third species, *Polyommatus syriacus* (Tutt, [1910]), cannot be involved in the present case as it has a completely different ground colour and a broad dark margin.

The probability that the specimen is indeed a hybrid between the two forementioned species is substantiated by the comparison of its genitalia with those of true *P. bellargus* (see figs 3a, d, 4a, d) and *P. ossmar* (see figs 3c, f, 4c, f). In side view the labides of *P. bellargus* are conical with straight edges (fig. 3a), whereas in *P. ossmar* they have a curved upper and lower edge (fig. 3c). The aedeagus of *P. bellargus* is slenderer in general, ending in a slender protuberans that hooks at a right angle as opposed to the remaining part of the structure (fig. 4d), whereas in *P. ossmar* the aedeagus is much thicker, distally gradually tapering into a much broader protuberans (fig. 4f). The probable hybrid shows these characters precisely intermediate (Coutsis i.l.) (see figs 3b, e, 4b, e).

Acknowledgments

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