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Newly discovered morphs of *Zygaena dorycnii* Ochsenheimer, 1808 (Lepidoptera: Zygaenidae, Zygaeninae) in the Crimea, Ukraine

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Synopsis

Yellow, melanistic and suffused-confluent morphs of *Zygaena dorycnii* are newly recorded from the Crimea.

Key words: Lepidoptera, Zygaenidae, Zygaeninae, *Zygaena dorycnii*, yellow morph, melanistic morph, suffused-confluent morph, Crimea.

Introduction

Zygaena dorycnii Ochsenheimer, 1808, is distributed in the Crimea only in the eastern part of the peninsula (Holik & Sheljuzhko, 1958; Hofmann & Tremewan, 1996; Efetov, 1990*a*; 1990*b*; 1991; [1999]; 2004; 2005). Hitherto only red six-spotted peucedanoid morphs (Fig. 1) of this species were known from the Crimea (Efetov, 2005: pl. 15, figs 24.1, 24.2, pl. 30, fig. 1), but new morphs were recorded recently. The nomenclature of the morphs mentioned in this paper follows that of Tremewan (2006) and Hofmann *et al.* (2009).

In the Crimea, *Z. dorycnii* is represented by *Z. dorycnii kertshensis* (Obraztsov, 1935) that differs from the nominotypical subspecies (Fig. 5) by the more rounded spots of the forewing and the narrower black margin of the hindwing (Holik & Sheljuzhko, 1958: 257).

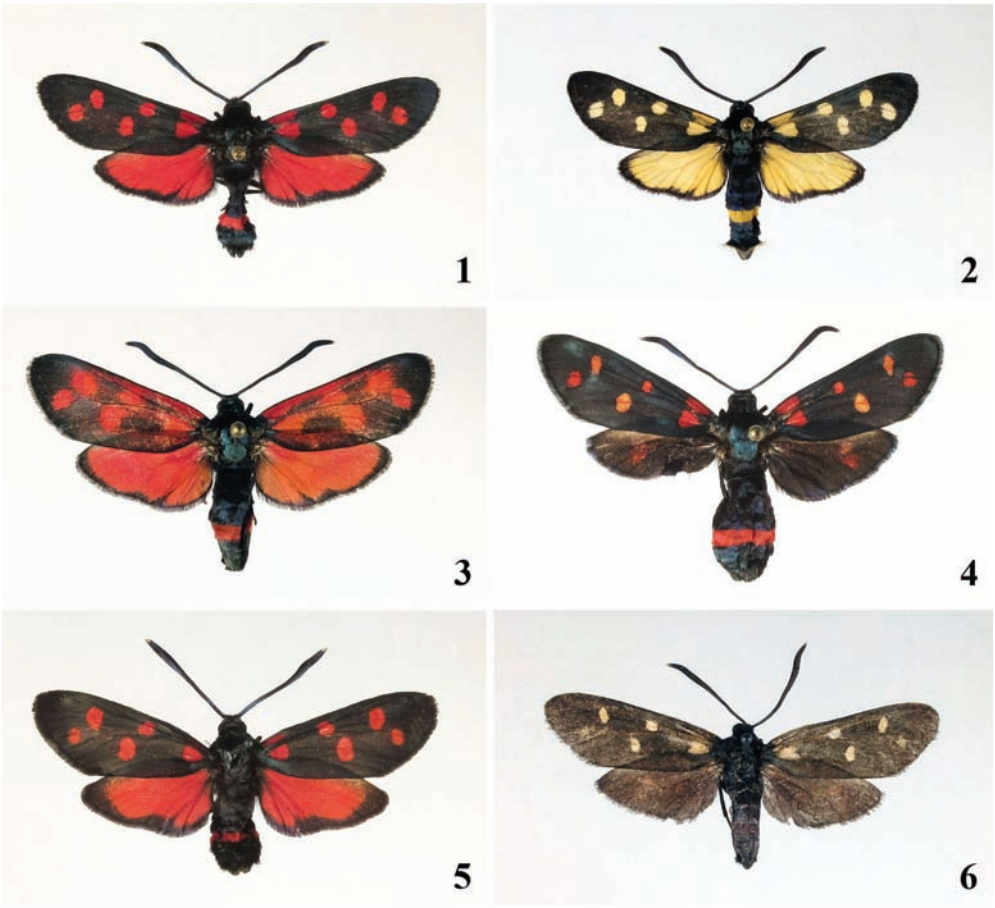
In 2010–2011, among hundreds of typical red peucedanoid specimens, yellow (one male, one female), melanistic (one female) and suffused-confluent (one female) morphs of *Z. dorycnii* were found in Primorskiy (12 m above sea level, 9 km NE. of Feodosiya). The biotope is located on a roadside verge where *Securigera varia* (L.) Lassen (Fabaceae), the host-plant of the larva of *Z. dorycnii* in the wild, grows.

Description of the morphs

Yellow peucedanoid morph (Fig. 2): forewing black with 6 yellow spots, hindwing yellow with black border, abdominal belt (cingulum) well developed, yellow.

Holik & Sheljuzhko (1958: 267) mentioned one yellow specimen of *Z. dorycnii* from Gözna, southern Turkey (as 'f. *flava* Reiss'). However, this specimen must be referable to *Z. ephialtes senescens* Staudinger, 1887, according to the distribution. Thus, yellow morphs of *Z. dorycnii* were hitherto unknown.

Suffused-confluent morph (Fig. 3): forewing black with 6 red spots, the spots 1–3–5, 2–4, 3–4, 5–6 are connected by 'bridges' of red scales, hindwing red with black border, abdominal cingulum well developed, red.



Photos: K. A. Efetov

Figs 1–6. *Zygaena dorycnii* Ochsenheimer, 1808. Figs 1–4, *Z. dorycnii kertshensis* (Obraztsov, 1935): 1, male, typical red peucedanoid morph. Crimea, NE. Feodosiya, Primorskiy, 17.vi.2011 (*K. A. Efetov*) (Coll. K. A. Efetov); 2, male, yellow peucedanoid morph. Crimea, NE. Feodosiya, Primorskiy, 17.vi.2011 (*K. A. Efetov*) (Coll. K. A. Efetov); 3, female, suffused-confluent morph. Crimea, NE. Feodosiya, Primorskiy, 8.vi.2010 (*V. V. Savchuk*) (Coll. K. A. Efetov); 4, female, melanistic morph. Crimea, NE. Feodosiya, Primorskiy, larva – 24.v.2010, ex larva 16.vi.2010 (*V. V. Savchuk*) (Coll. K. A. Efetov). Fig. 5, *Z. dorycnii dorycnii* Ochsenheimer, 1808. Russia: Northern Caucasus, Dagestan, Gunib, cocoon – 28.vi.1989, ex pupa – 4.vii.1989 (*K. A. Efetov*) (Coll. K. A. Efetov). Fig. 6, *Z. dorycnii araratica* Staudinger, 1871. Female, araraticoid morph. Georgia: Bazaleti, 14.viii.1983 (*K. A. Efetov*) (Coll. K. A. Efetov).

Melanistic morph (Fig. 4): forewing black with 6 spots (spots 1, 2, 3, 6 red, spots 4, 5 yellowish red), hindwing black with two red spots (spots 5 and 6), abdominal cingulum well developed, red. In May 2010, three larvae of *Z. dorycnii* were collected in the locality and all developed into adults, but only one of them was a melanistic morph, the other two being typical red peucedanoid morphs.

Melanistic morphs of *Z. dorycnii* (so-called 'araraticoid') are known from the southern slopes of the main Caucasus range and represent the subspecies *Z. dorycnii araratica* Staudinger, 1871 (Fig. 6). However, araraticoid morphs have

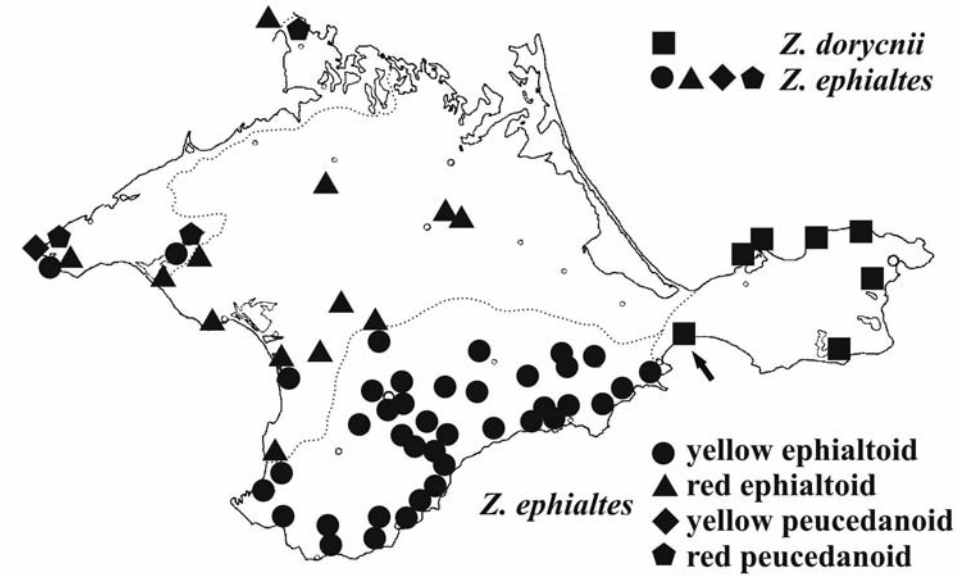


Fig. 7. Distribution of *Zygaena dorycnii* Ochsenheimer, 1808, and *Z. ephialtes* (Linnaeus, 1767) in the Crimea. The locality 'Primorskiy' is indicated by arrow.

no real abdominal cingulum although it can sometimes be represented by a very weak suffusion of red scales laterally.

Distribution of *Z. dorycnii* and *Z. ephialtes* in the Crimea

Zygaena dorycnii and *Z. ephialtes* (Linnaeus, 1767) are vicariant species and one of the boundaries of their distributions is situated in the Crimea (Figs 7, 8). *Zygaena ephialtes* is represented in the Crimea by three subspecies (Efetov, 2005):

Z. ephialtes medusa (Pallas, 1771) (red ephialtoid), which is distributed in the Plain region of the Crimea (except Tarkhankut and Perekop-Karkinit landscapes); elsewhere, the subspecies occurs in south-eastern Ukraine and Russia (Voronezh to Samara (Kuybyshev)).

Z. ephialtes tarkhankutica Efetov, 2005 (mainly red peucedanoid and red ephialtoid but with some yellow peucedanoid and yellow ephialtoid specimens), which is distributed in the Tarkhankut and Perekop-Karkinit landscapes of the Plain region of the Crimea;

Z. ephialtes taurida Holik & Sheljuzhko, 1953 (yellow ephialtoid) is distributed only in the Mountain region of the Crimea. The eastern boundary of the distribution of *Zygaena ephialtes taurida* almost coincides with that of *Zygaena sedi* Fabricius, 1787 (Efetov, 1996; 2005).

It can be seen from the distribution map (Fig. 7) that the eastern boundary of the range of *Z. ephialtes taurida* (yellow ephialtoid) and the western boundary of the range of *Z. dorycnii kertshensis* (red peucedanoid) are situated very close to each other; while the distance between them is almost 15 km, the territory in

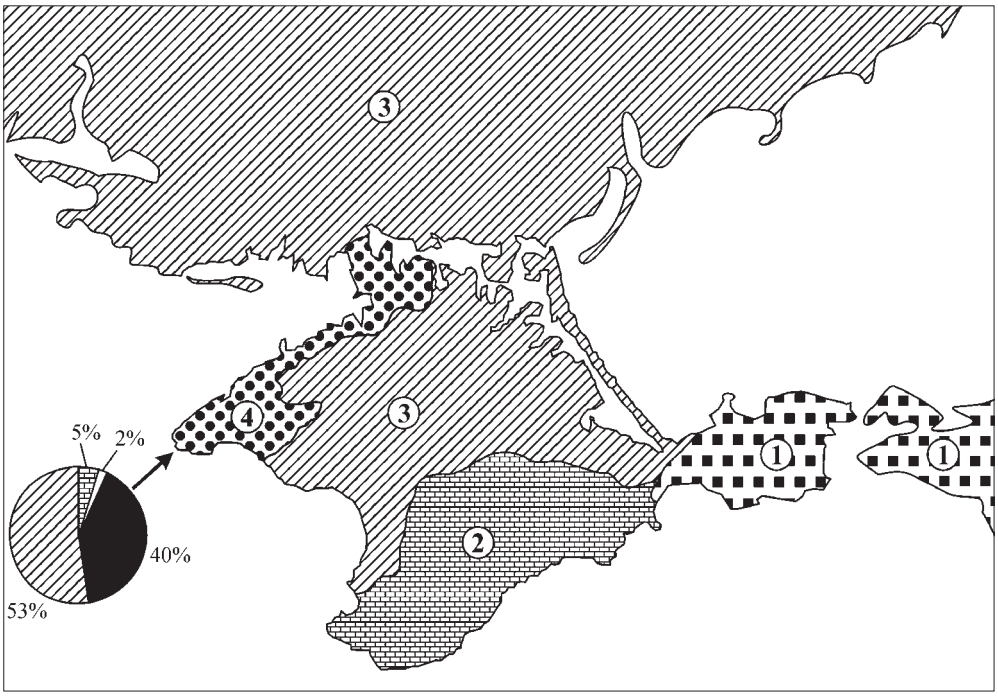


Fig. 8. Distribution of subspecies of *Zygaena dorycnii* Ochsenheimer, 1808, and *Z. ephialtes* (Linnaeus, 1767) in the Crimea and adjacent territories (after Efetov, 2005: 191). 1, *Z. dorycnii kertshensis* (Obraztsov, 1935); 2, *Z. ephialtes taurida* Holik & Sheljuzhko, 1953 (yellow ephialtoid morphs); 3, *Z. ephialtes medusa* (Pallas, 1771) (red ephialtoid morphs); 4, *Z. ephialtes tarkhankutica* Efetov, 2005 (40% red peucedanoid, 53% red ephialtoid, 5% yellow ephialtoid and 2% yellow peucedanoid morphs). It should be noted that the boundaries of distributions coincide with those of the natural landscapes.

between is completely urbanized. However, genetic contact (i.e. gene flow) between these two species in earlier times cannot be excluded. As shown by Tremewan (2006) and Hofmann *et al.* (2009), these two species can produce hybrids under laboratory conditions. One of the explanations of the presence of yellow and melanistic morphs of *Z. dorycnii* is the possibility of genetic contact with yellow ephialtoid morphs of *Z. ephialtes taurida* in former times. Further investigations of the Mendelian genetics and a DNA study of the newly discovered population might provide an answer to this question.

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