Revision of the *Turanana endymion* species-group (Lycaenidae)

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Abstract. The separation of *Turanana taygetica* (Rebel, 1902) stat. n. from *Turanana endymion* (Freyer, 1850) is effected on the basis of small, but constant differences in their male genitalia, the absence of genitalia intermediates, as well as on the basis of syntopism and synchronism of these two species-group taxa in south-central Asiatic Turkey. *Turanana taygetica endymionoides* ssp. n. is described on the basis of constant and rather pronounced external differences. A male neotype is designated for nominotypical *endymion*, as well as for nominotypical *T. taygetica*. A male lectotype is designated for *T. endymion ahasveros* (Bytinski-Salz & Brandt, 1937).

Key words. Lycaenidae, *Turanana endymion*, taxonomy, typification, new subspecies, Greece, Turkey, Iran.

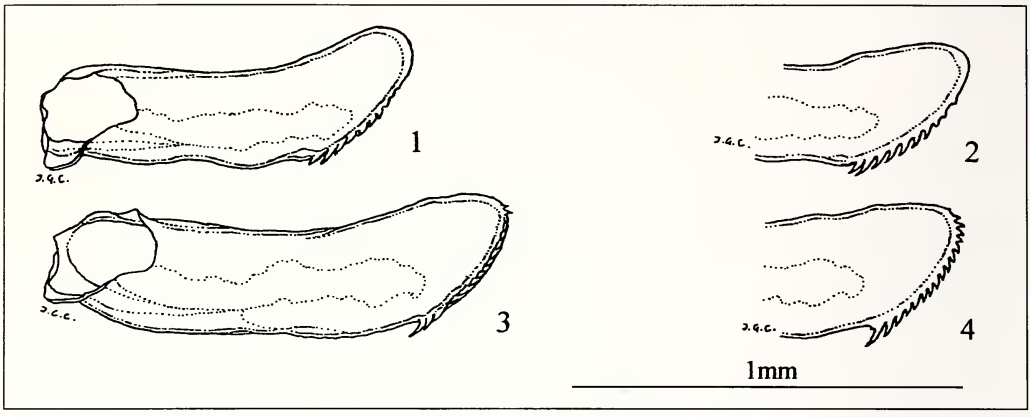
Introduction

A comparison between the valvae of *Turanana endymion endymion* (Freyer, 1850) (= *T. panagaea panagaea* (Herrich-Schäffer, 1851)) from central and eastern Asiatic Turkey (Figs. 1, 2, 5, 7–26, 27–33, 39–50), as well as from Lebanon (Fig. 34), and between the valvae of what is generally accepted as being *Turanana endymion ahasveros* (Bytinski-Salz & Brandt, 1937) from Iran (Fig. 38), and those of *Turanana endymion taygetica* (Rebel, 1902) from Mt. Helmós (Figs. 3, 4, 6, 52) and Mt. Taíyetos (Fig. 51), both situated in Pelopónnisos, Greece, revealed small, but constant differences in the average number and especially in the arrangement of their terminal spikes (Coutsis 1986). It was then suggested that possibly two separate species were involved here, but due to allopatry and the small degree of differentiation between them, it was deemed more appropriate to retain them as separate subspecies only.

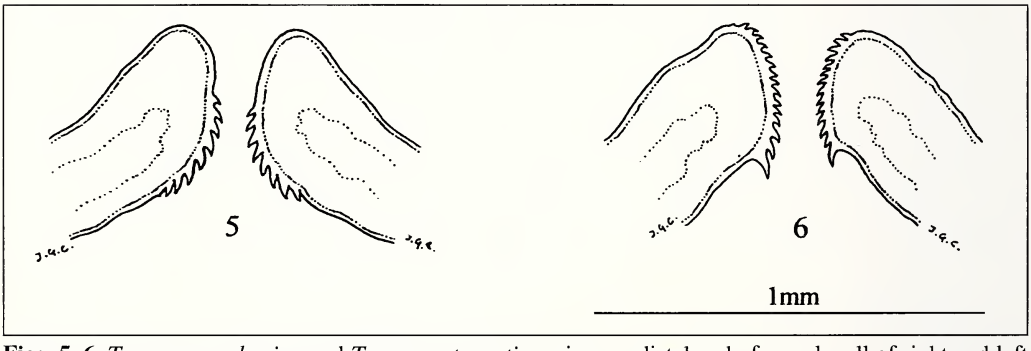
Recent material of *T. endymion* from western Asiatic Turkey, however, demonstrated that their valvae were identical to those of subspecies *T. taygetica* (Figs. 53–65, 66–87), while specimens collected as syntopic and synchronous on Bolkardağları, Niğde province, south-central Asiatic Turkey, were found to possess either one or the other valval type (Figs. 7, 64), without the presence of intermediates.

These conditions seemed important enough to necessitate a reassessment of the hitherto accepted taxonomic relationship between *endymion* and *taygetica*, as well as to warrant a revision, albeit tentative (due to lack of sufficiently extensive material), of the *T. endymion* species-group as a whole.

The name *Turanana endymion endymion* is now provisionally being applied to all specimens that possess valvae that are identical to those of specimens recorded from the type locality of *endymion*, i.e.: Turkey, Amasya province (Figs. 9, 10), the name *Turanana endymion ahasveros* to all specimens that possess valvae that are identical to those of specimens recorded from the type locality of *ahasveros*, i.e.: Iran, Elburs Mts., Keredj (Figs. 35–37), and the name *Turanana endymion taygetica*, to all specimens whose valvae are identical to those of specimens recorded from the type locality of



Figs. 1–4. *Turanana endymion* and *Turanana taygetica*, aspects of right valva for specimens of near equal forewing length. **1.** *T. endymion endymion*, Turkey, Sivas province, Gökpınar, 1600 m (forewing length 11.7 mm), side view of inner face. **2.** Same specimen, view on mesal side, showing distal end. **3.** *T. taygetica endymionoides* (formerly *T. endymion taygetica*), Greece, Pelopónnisos, Mt. Helmós, 1800 m (forewing length 11.2 mm); side view of inner face. **4.** Same specimen, view on mesal side, showing distal end.

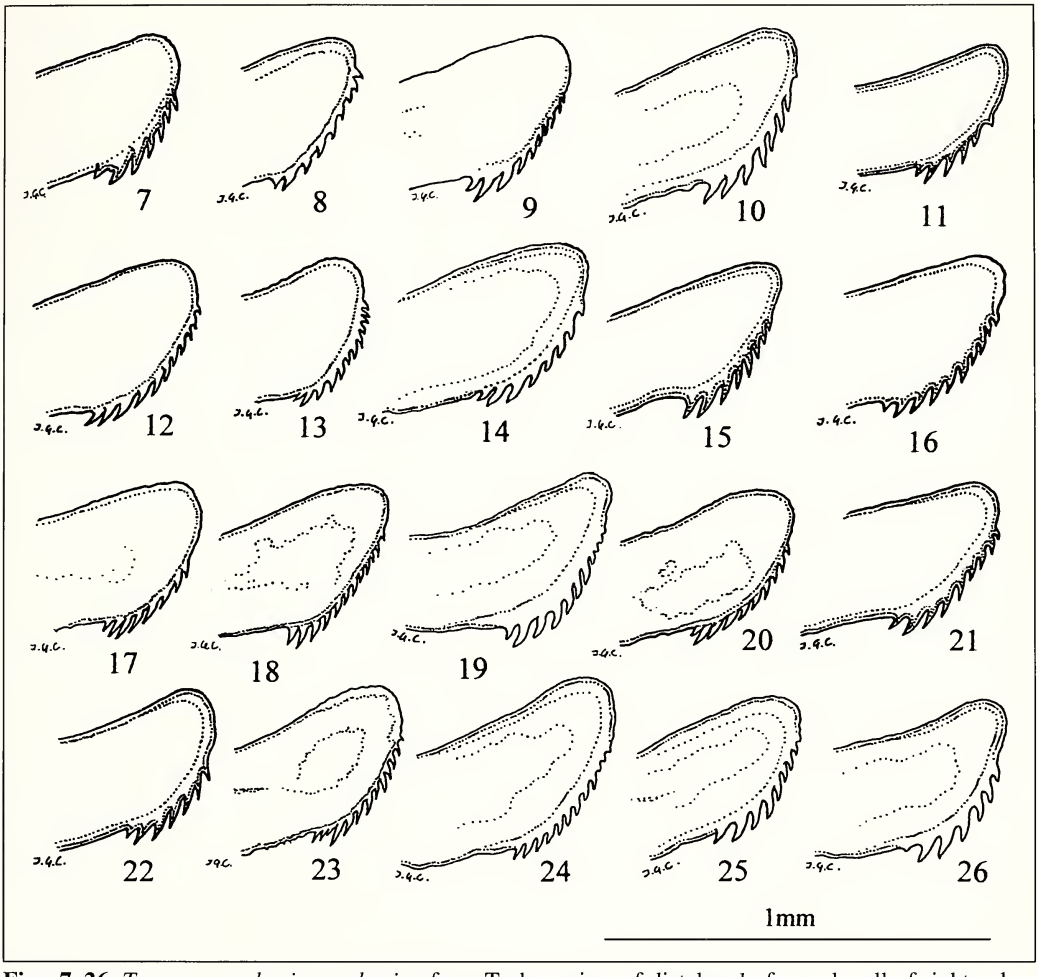


Figs. 5–6. *Turanana endymion* and *Turanana taygetica*, view on distal end of mesal wall of right and left valva, showing the near symmetry of the appendages. **5.** *T. endymion endymion*. Turkey, Sivas province, S of Gürün, Gökpınar, 1500–1650 m. **6.** *Turanana taygetica endymionoides* (formerly *T. endymion taygetica*), Greece, Pelopónnisos, Mt. Helmós, 1800 m.

taygetica, i.e.: Greece, Pelopónnisos, Mt. Taíyetos (Fig. 51). Two specimens from Mazanderan, Iran (the valva of one is shown on Fig. 38), which externally agree with *ahasveros*, but whose genitalia are identical to those of nominotypical *endymion* and differ from those of the subspecies *ahasveros*, are provisionally being referred to as *Turanana endymion* ?*-ahasveros*.

Abbreviations

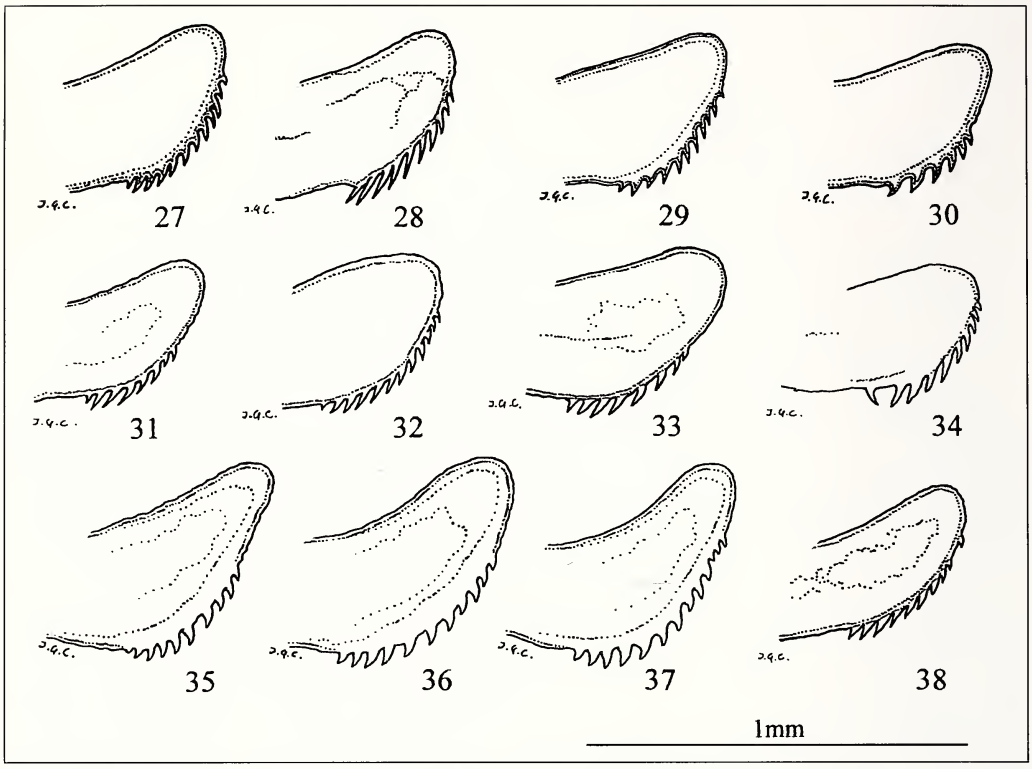
BMNH	The Natural History Museum, London
CMNH	Carnegie Museum of Natural History, Pittsburgh, Pennsylvania
NHRS	Naturhistoriska Riksmuseet, Stockholm
ZMAN	Zoölogisch Museum, Universiteit van Amsterdam



Figs. 7–26. *Turanana endymion endymion* from Turkey, view of distal end of mesal wall of right valva. **7.** Niğde province, Bolkardağları N side, SW of Maden, 1600–1800 m. **8.** Niğde province, Aladağları W side, 15 km SE of Çamardı, Elmalı Boğazı, 1600–1800 m. **9.** Amasya province. **10.** Amasya province, 10 km SW of Ladik, 900 m. **11.** Kayseri province, Hisarcık, road between Develi and Kayseri town, 1800 m. **12.** Kayseri province, Ercıyes Dağ, road between Develi and Kayseri town, 2200 m. **13.** Kayseri province, Aladağları E side, 48 km S of Yahyalı, 2800–2900 m. **14.** Tokat province, near Çamıçı, 1200 m. **15.** Ordu province, 20 km NNW of Mesudıye, 900 m. **16.** Maraş province, hills NW of Maraş town, 5–10 km along road to Ağabeylı, 800–900 m. **17.** Sivas province, near Gökpınar, 10 km S of Gürün, 1500 m. **18.** Sivas province Çamlıbel Geçidi, 1450 m. **19.** Malatya province, 3 km SE of Kubbe Geçidi, 1700 m. **20.** Malatya province, 3–6 km NW of Darende, 1500 m. **21.** Erzincan province, Dumanlı, 10–13 km SW of Erzincan town, along road to Kemah, 1100 m. **22.** Gümüşhane province, Demirkaynak, 2–5 km along road to Şırnak, 1100 m. **23.** Erzincan province, 5 km S of Çağlayan, Munzurdağları. **24.** Erzincan province, Sakaltutan Geçidi, 25 km E of Refahiye, 2000 m. **25.** Tunceli province, 1200 m. **26.** Elazığ province, near Harput, N of Elazığ town, 1200 m.

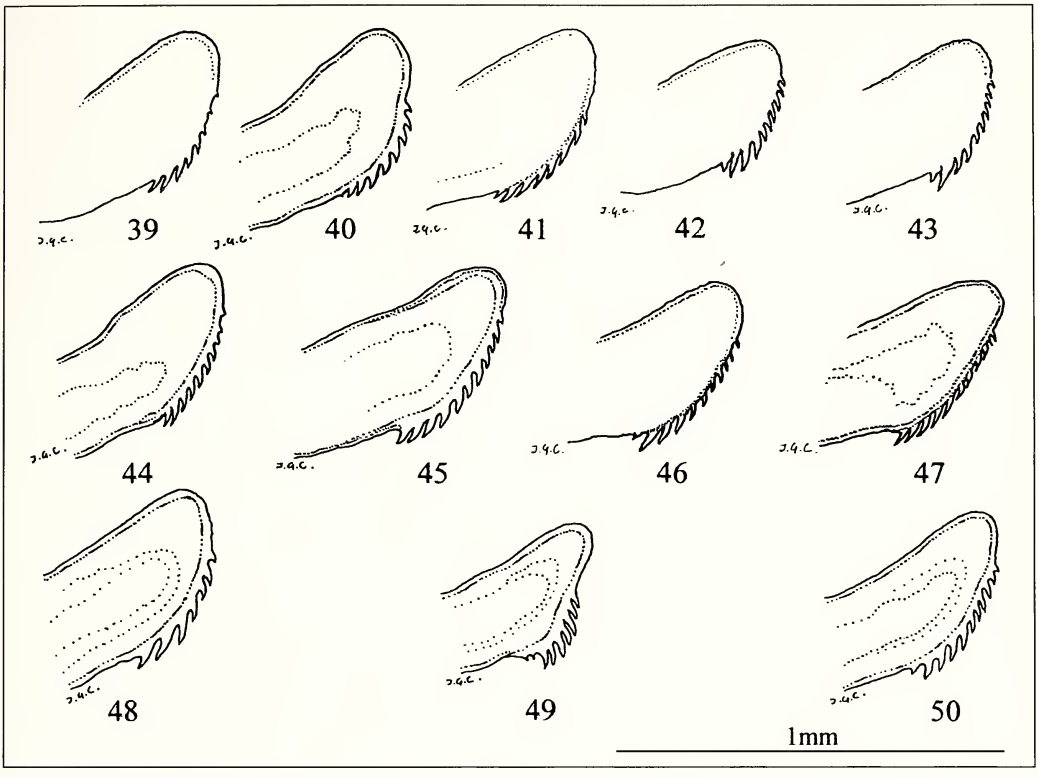
Proposed new nomenclatural arrangement

The constant differences between the valvae of nominotypical *endymion* and those of the subspecies *taygetica*, the syntopism and synchronism of their respective populations in south-central Asiatic Turkey and the absence of intermediate valval forms suggest that it would be better to consider them as representing two distinct species, rather than



Figs. 27–38. *Turanana endymion*, view of distal end of mesal wall of right valva. **27–34.** *T. endymion endymion*. **27.** Turkey, Gümüşhane province, Kopdağı Geçidi W side, 1900 m. **28.** Turkey, Erzurum province, Ovit Geçidi, 10–15 km NW of İspir, 1500–1800 m. **29.** Turkey, Erzurum province, Palandöken, 5 km S of Erzurum town, 2200 m. **30.** Turkey, Artvin province,Sarıbudak, 800 m. **31.** Turkey, Van province, near Edremit, 17 km SW of Van town. **32.** Turkey, Van province, Çatak. **33.** Turkey, Hakkâri province, 10–12 km SW of Hakkâri town, Zap valley, 1500 m. **34.** Lebanon, Mt. Lebanon. **35–37.** *T. endymion ahasveros*. **35.** Iran, Fars, road from Ardekan to Talochosroe, Comèe, ca. 3600 m. **36.** Iran, Fars, road from Chiraz to Kazeroun, Fort Sine-Sefid, ca. 2200 m. **37.** Iran, Elburs Mts., Keredj, 1700 m. **38.** *T. endymion* ?-*ahasveros*, Iran, Mazanderan, Khosh-Yeylaq, 2000–2500 m.

two subspecies of the same species. The taxon *ahasveros*, differing from nominotypical *endymion* by its extended valval apex, may very well represent yet another species, but it is at present best to consider it as a subspecies of *endymion* on account of the fact that there was no material available for study from geographically intermediate areas (perhaps *ahasveros* might prove to be the end expression of a cline) and also because certain individuals of nominotypical *endymion* likewise show a tendency towards an extension of the valval apex (Figs. 19, 26). The taxon ?-*ahasveros* from Mazanderan, Iran, requires the study of presently unavailable further material from other localities in Iran, in order for one to be able to draw sound conclusions about its true taxonomic status. Mt. Helmós *taygetica*, clearly differing externally from the nominotypical form from Mt. Taíyetos (to be dealt with in detail in the ensuing description of the type-material), rightfully deserves separation from it at the subspecies level. Macroscopic comparison of Turkish *taygetica* with nominotypical *endymion* did not reveal constant external differences, but the material at hand was probably not sufficient enough in

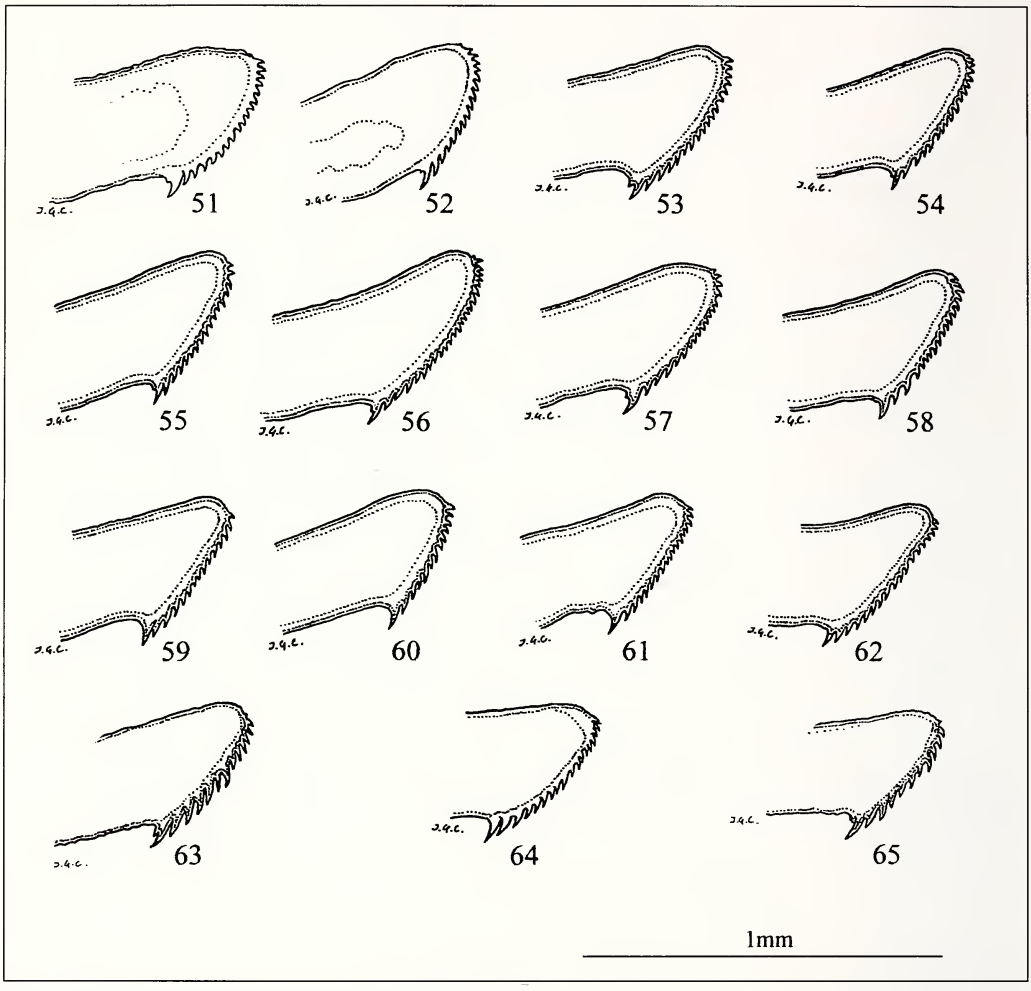


Figs. 39–50. *Turanana endymion endymion*, view of distal end of mesal wall of right valva, demonstrating individual variation within single localities in Turkey. **39–47.** Sivas province, Gökpınar. **48–50.** Erzincan province, Çağlayan.

numbers to allow definitive conclusions. Mt. Helmós *taygetica* on the whole differs externally to some extent from its Turkish counterpart, but as certain individuals are very difficult to set apart and as specimens from geographically intermediate areas (i.e. western extremity of Asiatic Turkey) were not available for study, it seems presently prudent to lump them together under a single subspecies, albeit on a tentative basis. On account of the above, it is proposed that the following taxonomic arrangement be put to effect.

Available type material and type designations

The syntypes of *T. endymion endymion* have been lost and therefore a male specimen from the type locality has been chosen to be designated as the neotype. A number of syntypes of *T. endymion ahasveros* have been made available from the Naturhistoriska Riksmuseet, Stockholm, Sweden and a male specimen has been chosen to be designated as the lectotype, while the rest of the syntypes (4 males and 1 female from the above museum and 5 males and 5 females deposited in the Carnegie Museum, Pittsburgh, Pennsylvania, USA) are designated as paralectotypes. A thorough personal search for the syntypes (one male and two females) of *T. taygetica taygetica* at their depository in the Naturhistorischen Hofmuseum, Wien, Austria, brought about negative results and it is assumed that they too have been lost, thus making it necessary that a male specimen from the type locality be designated as the neotype. Lastly, a male holotype and paratypes of both sexes, all from the author's collection, are designated for *T. taygetica endymionoides*, and the necessary descriptions given below.

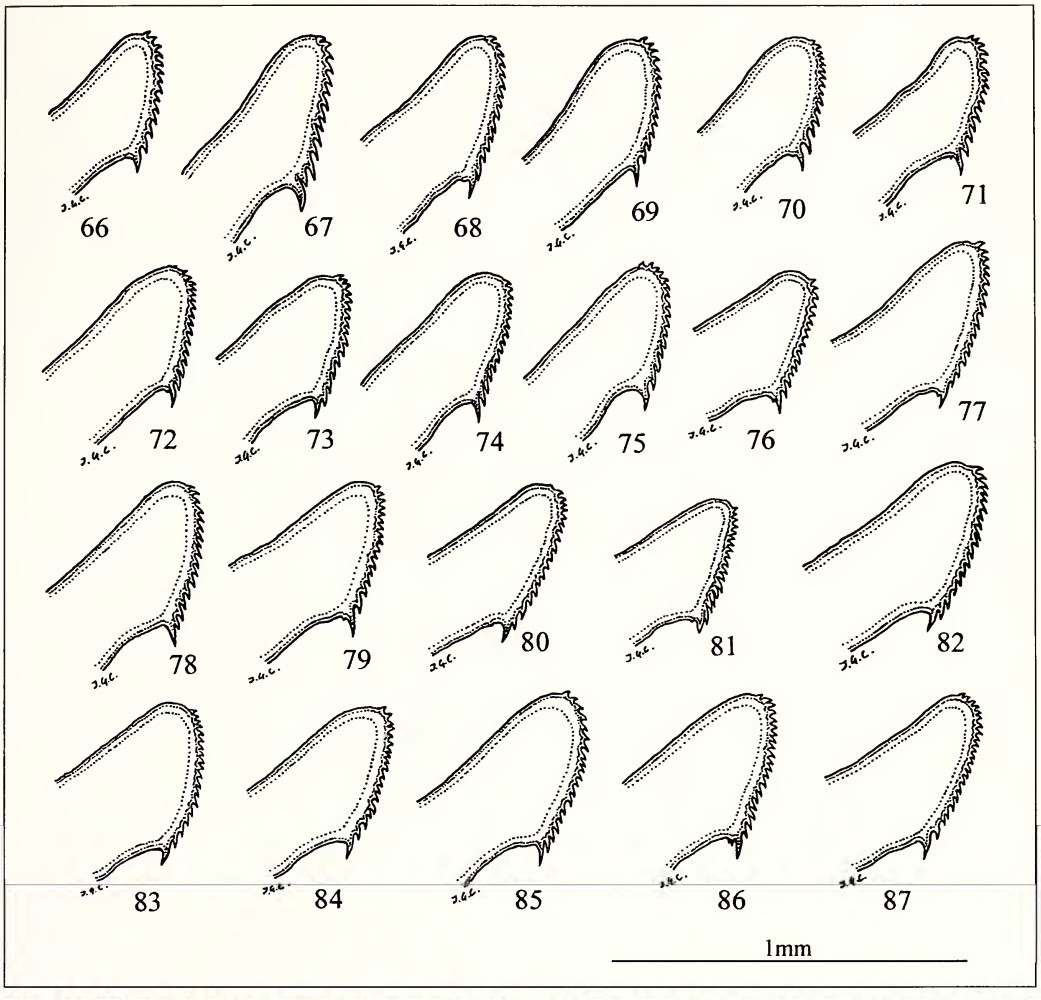


Figs. 51–65. *Turanana taygetica* (formerly *Turanana endymion taygetica*), view of distal end of mesal wall of right valva. **51.** *Turanana taygetica taygetica*. Greece, Pelopónnisos, Mt. Taíyetos, 1150–1200 m. **52–65.** *Turanana taygetica endymionoides*. **52.** Greece, Pelopónnisos, Mt. Helmós, 1800 m. **53.** Turkey, Konya province, Sultandağları, 15 km S of Akşehir, 1500 m. **54.** Turkey, Konya province, 12 km SW of Engilli, 1300–1600 m. **55.** Turkey, Konya province, 10 km NE of Gelendost, 1000 m. **56.** Turkey, Afyon province, Sultandağları, 10 km S of Çay, 1300 m. **57.** Turkey, Afyon province, Sultandağları, 8 km SW of Dereçine, 1700–2200 m. **58.** Turkey, Konya province, Sultandağları, 6km S of Çankaturan, 23km SSE of Akşehir, 1700m. **59.** Turkey, Konya province, Sultandağları, Akşehir, 1100 m. **60.** Turkey, Konya province, Derebucak, 1100 m. **61.** Turkey, Karaman province, Sertavul Geçidi, 1500 m. **62.** Turkey, Konya province, Akşehir, 1900 m. **63.** Turkey, Niğde province, Aladağları E side, 10 km S of Yahyalı, 1800–1900 m. **64.** Turkey, Niğde province, Bolkardağları N side, near Maden, 1500–1650 m. **65.** Turkey, Kayseri province, Aladağları E side, 2800–2900 m, 18 km S of Yahyalı.

Turanana endymion endymion (Freyer, 1850)

Pap.[*ilio*] *Endymion* Freyer, 1850: 145–146, pl. 572 figs. 2, 3. Type locality: Turkey, Amasia. (original description: see Figs. 89–91). Syntypes: lost.

M a t e r i a l . Neotype. ♂ designated here (Figs. 92–96), **Turkey**, Amasya province, 10 km SW of Ladik, 900 m, 2.vi.1988 (gen. prep. no. 3740), H. & Th. v. Oorschot, H. v. d. Brink & H. Wiering leg., coll. ZMAN. – 1♂ Turkey, Amasya province, coll. BMNH; 1♂ Amasya province, 10 km SW of Ladik, 900 m,



Figs. 66–87. *Turanana taygetica endymionoides* (formerly *Turanana endymion taygetica*), view of distal end of mesal wall of right valva, demonstrating individual variation within the single locality in Turkey, Sultandağları mountain range, provinces of Konya and Afyon.

2.vi.1988, coll. ZMAN; 1♂ Artvin province,Sarıbudak, 800 m, 19.vii.1993, coll. De Prins, Olivier & v. d. Poorten; 1♂ Elazığ province, near Harput, N of Elazığ town, 1200 m, 8.vii.1987, coll. ZMAN; 1♂ Erzincan province, Dumanlı, 10–13 km SW of Erzincan town, along road to Kemah, 1100 m, 12.vi.1988, coll. De Prins, Olivier & v. d. Poorten; 3♂ Erzincan province, 5 km SE of Çağlayan, 1500 m, 5.vii.1999, coll. Wiemers; 1♂ Erzincan province, 5 km S of Çağlayan, Munzurdağları, 15–18.vii.1987, coll. De Prins, Olivier & v. d. Poorten; 1♂ Erzincan province, Sakaltutan Geçidi, 25 km E of Refahiye, 2000 m, 13.vii.1986, coll. ZMAN; 1♂ Erzurum province, Ovit Geçidi, 10–15 km NW of İspir, 1500–1800 m, coll. De Prins, Olivier & v. d. Poorten; 1♂ Erzurum province, Palandöken, 5 km S of Erzurum town, 2200 m, 5.vii.1993, coll. De Prins, Olivier & v. d. Poorten; 1♂ Gümüşhane province, Demirkaynak, 2–5 km along road to Şırnak, 1100 m, 25.vii.1992, coll. De Prins, Olivier & v. d. Poorten; 1♂ Gümüşhane province, Kopdağı Geçidi W side, 1900 m, 28.vii.1987, coll. De Prins, Olivier & v. d. Poorten; 1♂ Hakkâri province, 10–12 km SW of Hakkâri town, Zap valley, 1500 m, 16–25.vii.1990, coll. De Prins, Olivier & v. d. Poorten; 1♂ Kayseri province, Hisarcık, road between Develi and Kayseri town, 1800 m, 6.vii.1982, coll. De Prins, Olivier & v. d. Poorten; 1♂ Kayseri province, Ercıyes Dağ, road between Develi and Kayseri town, 2200 m, 22.vii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Kayseri province, Aladağları E side, 48 km S of Yahyalı, 2800–2900 m, 28.vii–2.viii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Malatya province,

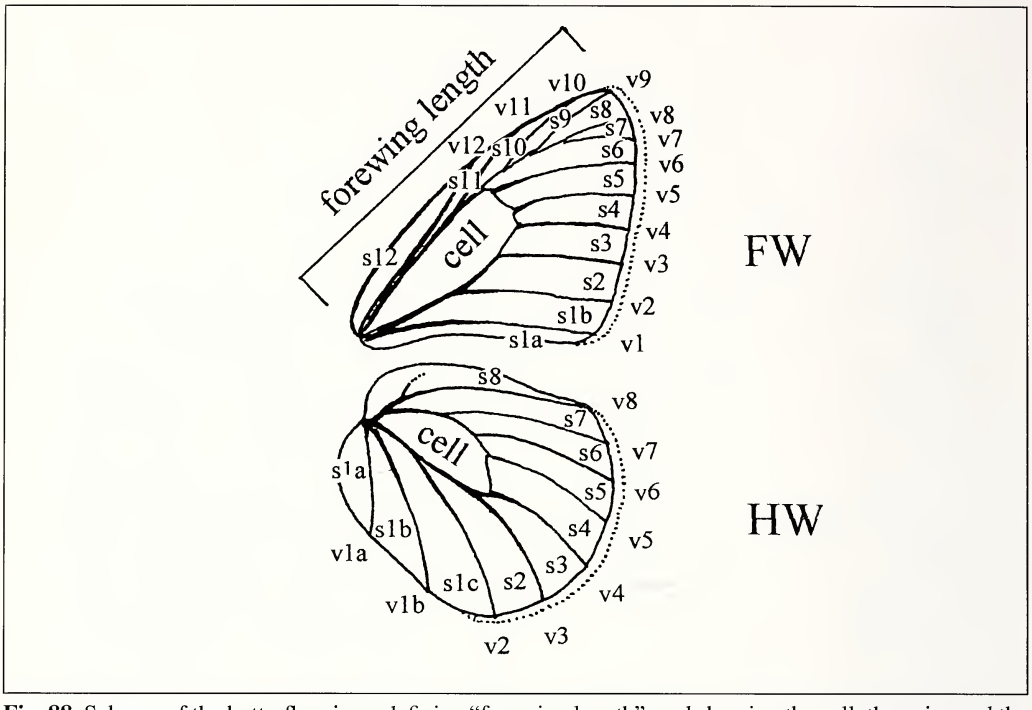


Fig. 88. Scheme of the butterfly wings, defining "forewing length", and showing the cell, the veins and the inter-venal spaces of the fore- and hindwing.

3 km SE of Kubbe Geçidi, 1700 m, 12.vi.1999, coll. ZMAN; 1♂ Malatya province, 3–6 km NW of Darende, 1500 m, 30.vii–3.viii.1983, coll. De Prins, Olivier & v. d. Poorten; 1♂ Maraş province, hills NW of Maraş town, 5–10 km along road to Ağabeylı, 800–900 m, 29.v.1985, coll. De Prins, Olivier & v. d. Poorten; 1♂ Niğde province, Bolkardağları N side, SW of Maden, 1600–1800 m, 24.vii.1994, coll. De Prins, Olivier & v. d. Poorten; 1♂ Niğde province, Aladağları W side, 15 km SE of Çamardı, Elmalı Boğazı, 1600–1800 m, 19.vii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Ordu province, 20 km NNW of Mesudıye, 900 m, 6.vi.1988, coll. De Prins, Olivier & v. d. Poorten; 1♂ Sivas province, Gökpınar, 1600 m, 9–11.vii.1987, coll. Coutsis; 3♂ Sivas province, Gökpınar, 1600m, 10.vii.1982, coll. Coutsis; 1♂ Sivas province, near Gökpınar, 10 km S of Gürün, 1500 m, 10–11.vii.1985, coll. De Prins, Olivier & v. d. Poorten; 4♂ Sivas province, S of Gürün, Gökpınar, 1500–1650 m, 9–11.vii.1982, coll. Coutsis; 1♂ Sivas province, 15 km S of Gökpınar, 1800 m, 2.vi.1999, coll. ZMAN; 1♂ Sivas province Çamlıbel Geçidi, 1450 m, 4.vii.1987, coll. De Prins, Olivier & v. d. Poorten; 1♂ Tokat province, near Çamıçı, 1200 m, 4.vi.1988, coll. ZMAN; 1♂ Tunceli province, 1200 m, 13–14.vii.1987, coll. ZMAN; 1♂ Van province, near Edremit, 17 km SW of Van town, 1–6.vii.1990, coll. Wiemers; 1♂ Van province, Çatak, 2.vii.1991, coll. Coutsis; 1♂ **Lebanon**, Mt. Lebanon, coll. BMNH.

Description. Neotype (Figs. 92, 93). Forewing length 11.1 mm. Upperside ground-colour blue; blackish marginal borders averaging about 1.7 mm wide; blackish border on forewing tending to invade the post-distal area basad of apex; weakly defined pure black spots present in borders in s1c, s2, s3, s4 and s5 of hindwing; apex of cell on forewing marked by a fine, weakly-defined black stria shaped like shallow crescent; fringes pure white. Underside ground-colour light gray-brown, giving impression of "dirty and rough" texture; basal area of hindwing with faint, shiny, whitish-blue dusting; post-discal black spots on forewing large and surrounded by off-white rings; post-discal spot in s3 conspicuously displaced distad; apex of cell on forewing with fine, well-

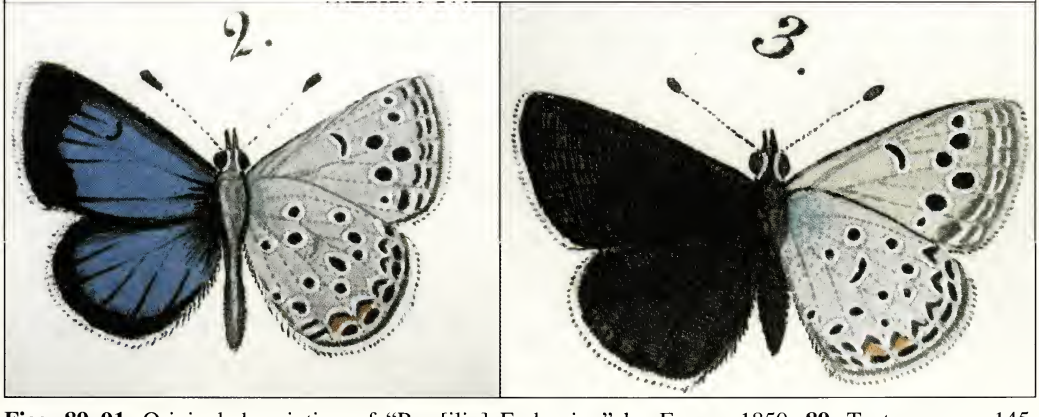
1049. Pap. Endymion.

Tab. 572.

Etwas größer als der vorhergehende Falter wie Lyc. Hylas. Es kommt der Falter Hübners Lysimon Fig. 534. und 535 ſehr nahe, jedoch nur auf der Oberſeite. Die Grundfarbe des Mannes iſt mit L. Erebus faſt einerlei, und die ſchwarzbraune Einfaſſung hat er mit ſolchem übereinſtimmend. Nur fehlen die ſchwarzen länglichten Flecken zwiſchen den Adern auf der Oberſeite. Der ſchwarze Mittelfleck, welcher die Sehnen verbindet, iſt vorhanden. Das Weibchen iſt einfach braun auf der Oberſeite. Die Franſen ſind weißgrau. Die Unterſeite iſt bei beiden Geſchlechtern übereinſtimmend. Ihre Grundfarbe iſt blaß braungrau, auf den Oberflügeln mit 5 ziemlich großen ſchwarzen Augen, welche weiß eingefaßt, und wovon die oberſten kleiner ſind, auf den Unterflügeln mit 11 kleinen Augen beſetzt. Die länglichten Mittelmöndchen ſind vorhanden. Nach den Franſen ſteht eine doppelte Reihe länglich brauner Flecken mit weißem Vorſtoß, und die Hinterflügel führen zwiſchen der fünften und ſiebenten Ader orangegelbe Flecken. Es gleicht übrigens dieſer Falter auf der Unterſeite ſehr der L. Optilete, nur fehlen die blauen 3 Flecken unweit des Innenrandes.

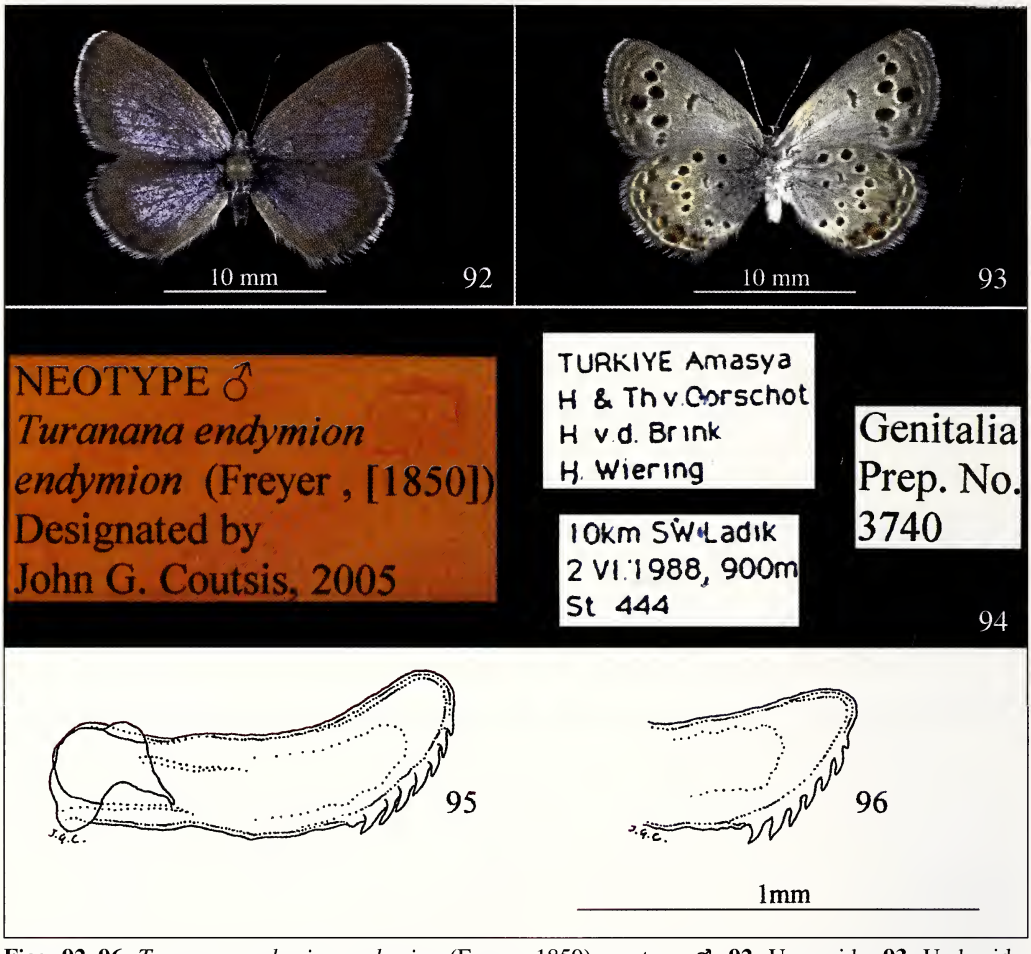
Die Fühler ſind ſchwarz und weiß geringelt mit ſchwarzer Kolbe, welche weißen Vorſtoß hat.

Heimath bei Amasia.



Figs. 89–91. Original description of "Pap.[ilio] Endymion" by Freyer, 1850. **89.** Text on page 145. **90.** Figure of ♂ on pl. 572 fig. 2. **91.** Figure of ♀ on pl. 572 fig. 3.

defined black-brown stria shaped like shallow crescent; both wings with double row of well-defined black-brown sub-marginal markings, the darkest (almost black) and most conspicuous being situated nearest wing margin in s2 of hindwing; space between outer and inner row of dark sub-marginal markings filled with macroscopically conspicuous orange scaling in s1c, s2 and s3 and microscopically discernible orange dusting in s1b, s4 and s5; post-discal black spots on hindwing likewise surrounded by off-white rings,



Figs. 92–96. *Turanana endymion endymion* (Freyer, 1850), neotype ♂. **92.** Upperside. **93.** Underside. **94.** Data labels. **95.** Male genitalia, view on mesal wall of right valva. **96.** Male genitalia, view on mesal wall of distal end of right valva.

but smaller than their forewing counterparts; apex of cell on hindwing underside with black-brown stria shaped like shallow crescent as in forewing, but about half as long as its forewing counterpart; single black spot enclosed by off-white ring also present in cell of hindwing, just distad of and slightly diagonally to dark stria of cellular apex; fringes pure white. Valva (Figs. 95, 96) 1.26 mm in length, with 7 terminal spikes, most proximal equal in size to next one and most distal situated below apex of valva at distance equal to about ¼ total length of valval distal margin.

Variation. This is expressed in both males and females by their overall size (forewing length from slightly under 10 mm to slightly over 12 mm). In the males in particular it is expressed on their upperside by the width of the blackish marginal borders, the number and intensity of black spots within these borders on the hindwing, the degree of invasion of these borders into the post-distal area of the forewing just basad of wing apex, and the presence, or total absence of the black stria on the hindwing's cell apically.

Lycaena (*Glaucopsyche*) *panagaea*, H.-Sch. ssp. **ahasveros** ssp. nov.

Very variable in size; the ♂ ♂ span 18-23mm., the ♀ ♀ 18-21mm.

Male: Blue of the fore-wing lighter than in *panagaea*, H.-Sch. from Anatolia and the Taurus. Black margin much narrower. Discocellular streak straight, not semilunar as in *taygetica*, Rbl.

Under side in both sexes lighter grey without any brown colour. Only one orange marginal spot between vein IV_1 and IV_2 present, much reduced in size and of a pale yellowish-orange colour. The large black spot in front of the orange one, small and pale, in some specimens not more distinct than the other semilunar spots of the marginal row.

This subsp., which comes near the var. *taygetica*, Rbl. agrees with this form by its narrow black border and the greyish underside. It differs by the presence of only one pale orange spot on the underside and the reduction of the black spot between vein IV_1 and IV_2.

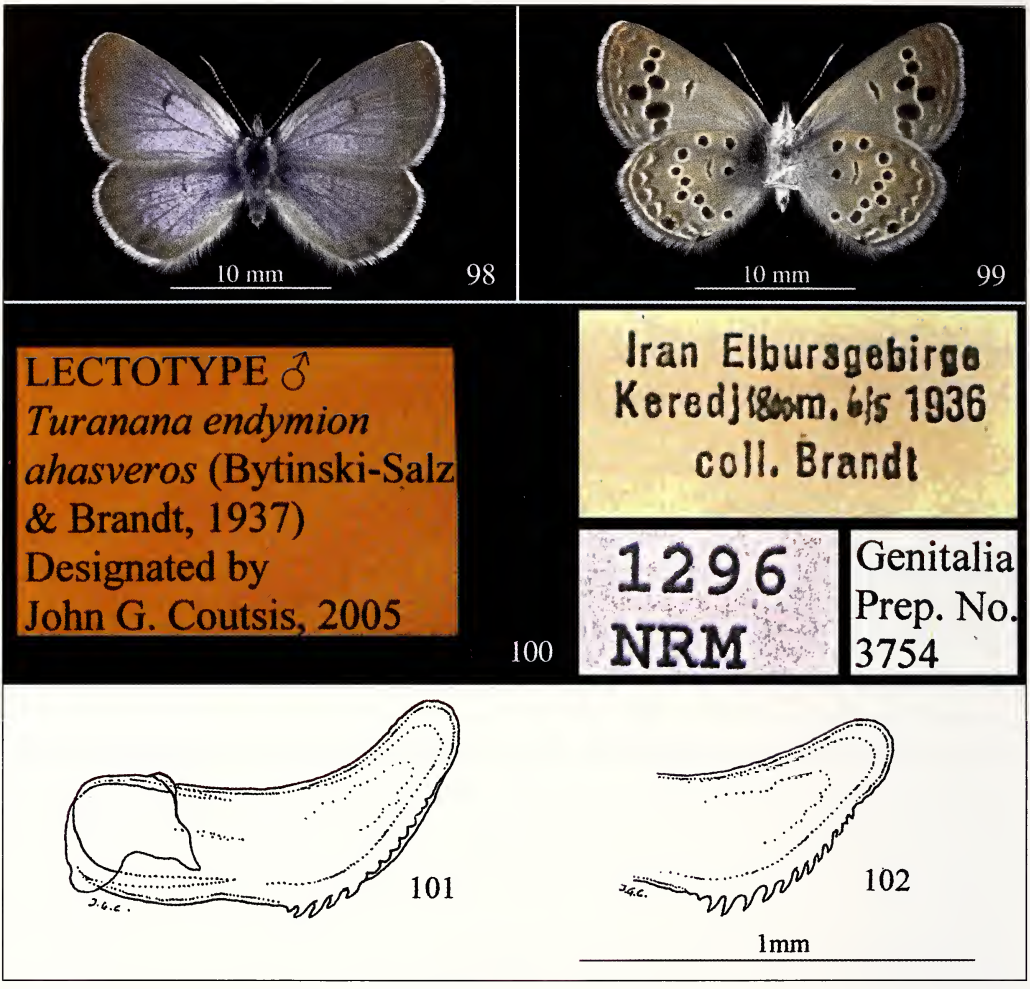
Cotypes: Keredj 1700m. 6-10.v.1936. 10 ♂ ♂ 6 ♀ ♀ in coll. Bytinski-Salz; other specimens in coll. Brandt.

Fig. 97. Original description of "*Lycaena* (*Glaucopsyche*) *panagaea*, H.-Sch. Ssp. *ahasveros* ssp. nov.", by Bytinski-Salz & Brandt, 1937: (1).

On the underside it is expressed by the spread and intensity of the sub-marginal orange scaling of the hindwing and the degree of shiny, whitish-blue dusting at the base of the hindwing. In the females which are overall dark brown on the upperside and are similar to the males on the underside, exhibiting at the same time similar variation, it is expressed on the upperside by the degree of basal blue scaling (often macroscopically invisible), the presence (in various numbers and different intensities), or total absence, of sub-marginal black spots on the hindwing and the occasional presence of a sub-marginal off-orange spot in s2 (and very rarely in s3) on the hindwing. In the male genitalia it is expressed by the number, spread, and positioning of the valval terminal spikes and by the degree of the valval apex extension.

Male genitalia. Right and left valvae (Fig. 5) roughly symmetrical, as in *endymion taygetica* (Figs. 6), but shorter (Fig. 1) than those of *endymion taygetica* (Fig. 3) for specimens of equal, or near-equal forewing length. Number and placement of terminal spikes very variable (6–13 in number and extending distad from about one half (Fig. 49) to more than two thirds (Fig. 34) length of distal margin of valva). In specimens from within two separate localities spikes varying in number from 7 to 11 (Figs. 39–47 and 48–50 respectively). The three characters that stand out as being constant are the short length of the valva, the fact that the most proximal of its terminal spikes is as a rule shorter than, rarely equal in length to and never longer than the one immediately distad and that the terminal spikes, though extending at times towards the valval apex, never quite reach it. Valvae with the above-described configuration are also illustrated in Higgins (1975), from Lebanon, and in Mattoni (1979), without locality data.

Distribution. *Turanana endymion endymion* (Freyer, 1850) applies to specimens from the eastern half of Asiatic Turkey and Lebanon that possess valvae that are similar to those of topotypical *endymion*. Syntopic and synchronous with *taygetica* in south-central Asiatic Turkey.



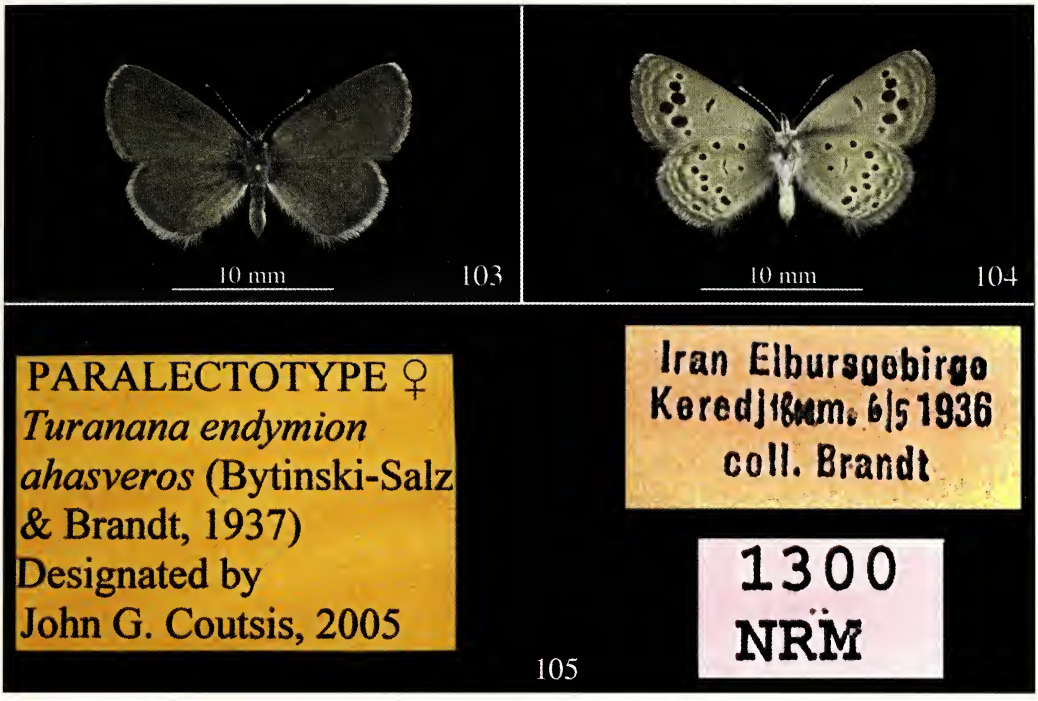
Figs. 98–102. *Turanana endymion ahasveros* (Bytinski-Salz & Brandt, 1937), lectotype ♂. **98.** Upperside. **99.** Underside. **100.** Data labels. **101.** Male genitalia, view on mesal wall of right valva. **102.** Male genitalia, view of distal end of mesal wall of right valva.

Turanana endymion ahasveros (Bytinski-Salz & Brandt, 1937)

Lycaena (*Glaucopsyche*) *panagaea ahasveros* Bytinski-Salz & Brandt, 1937: (1). Type locality: Iran, Elburs Mts., Keredj (see Fig. 97 for original description).

Material. Lectotype ♂ designated here (Figs. 98–102), Iran, Elburs Mts., Keredj, 1700 m, 6.v.1936 (gen. prep. no. 3754), coll. NHRS. – Paralectotypes: 1♀ (Figs.103–105), same data; 4♂, same locality, 6.–10.v.1936, coll. NHRS; 5♂, 4♀, same locality, 6.–10.v.1936, coll. CMNH. – 1♂ **Iran**, Fars, road from Ardekan to Talochosroe, Comèe, ca. 3600 m, 4.vii. 1937, coll. NHRS; 1♂ Fars, road from Chiraz to Kazeroun, Fort Sine-Sefid, ca. 2200 m, 15.v.1937, coll. NHRS; 1♂ Elburs Mts., Keredj, 1700 m, 6.–10.v.1936, coll. NHRS; – *T. endymion* ?-*ahasveros*: 1♂ Iran, Mazanderan, Khosh-Yeylaq, 2000–2500 m, 15.–21.vii.1973, coll. De Prins, Olivier & v. d. Poorten.

Description. Lectotype (Figs. 98, 99). Forewing length 11.7 mm. Upperside as in nominotypical *endymion*, but blue ground-colour of a "chalkier" lighter hue; blackish marginal borders averaging 2 mm in width, hindwing black spots within borders and



Figs. 103–105. *Turanana endymion ahasveros* (Bytinski-Salz & Brandt, 1937), paralectotype ♀. **103.** Upperside. **104.** Underside. **105.** Data labels.

forewing black stria in apex of cell better defined, and hindwing black stria in apex of cell present. Underside as in nominotypical *endymion*, but ground-colour slightly browner in tone and giving impression of having "clean and smooth" texture; double row of sub-marginal markings (with exception of one closest to wing margin in s2 of hindwing) lighter-coloured and not in sharp contrast to ground-colour; base of hindwing with better-defined shiny, whitish-blue dusting; usual orange scaling of hindwing substituted by light orange-beige and restricted macroscopically to s2; some light orange-beige dusting also evident microscopically in s1c and s3 of hindwing. Valva (Figs. 101, 102) 1.27 mm in length, with strongly extended apex, and possessing 12 terminal spikes, with most proximal shorter than next one and most distal situated at a distance from valval apex equal to a little under 1/3 total length of valval distal margin.

♀ paralectotype (Figs. 103, 104). Forewing length 9.7 mm. Upperside with ground-colour dark brown, wing outer-margins thinly lined black-brown, stria at apex of cell on forewing black-brown, fringes off-white on hindwing and off-white to light brown on forewing; base of wings with microscopically discernible light-blue dusting; traces of black-brown sub-marginal spots present on hindwing, especially in s2. Underside as in male, but fringes off-white to light-brown.

Variation. Expressed in males as in nominotypical *endymion*, but all specimens observed always with a well-defined black stria at the apex of the cell on the hindwing upperside, with the hindwing underside sub-marginal light orange-beige scaling

*53. *L. Panagaea* HS. v. *Taygetica* nov. var. Tayg. in 2100 m Seehöhe am 10. VII. ein ♂ und zwei ♀♀ erbeutet. Die Stücke weichen beträchtlich von solchen aus Klein-Asien ab, so dass die Aufstellung einer eigenen Lokalform nothwendig erscheint. Die Flügel-Oberseite des ♂ zeigt einen viel schmäleren dunklen Saum als bei der Stammart, welcher auf den Vdfl. nur die Breite von circa 2, auf den Htfl. von 1 mm erreicht. Hierdurch tritt die hellblaue Grundfarbe in viel grösserer Ausdehnung auf, so dass die Oberseite stark an jene von *Lycaena Baton* Brgstr. erinnert. Der Mittelpunkt der Vdfl. besitzt in beiden Geschlechtern eine halbmondförmige Gestalt, und fehlt auf den Htfl. vollständig. Die Aussenhälfte der Fransen ist (wie bei der Stammart) rein weiss.

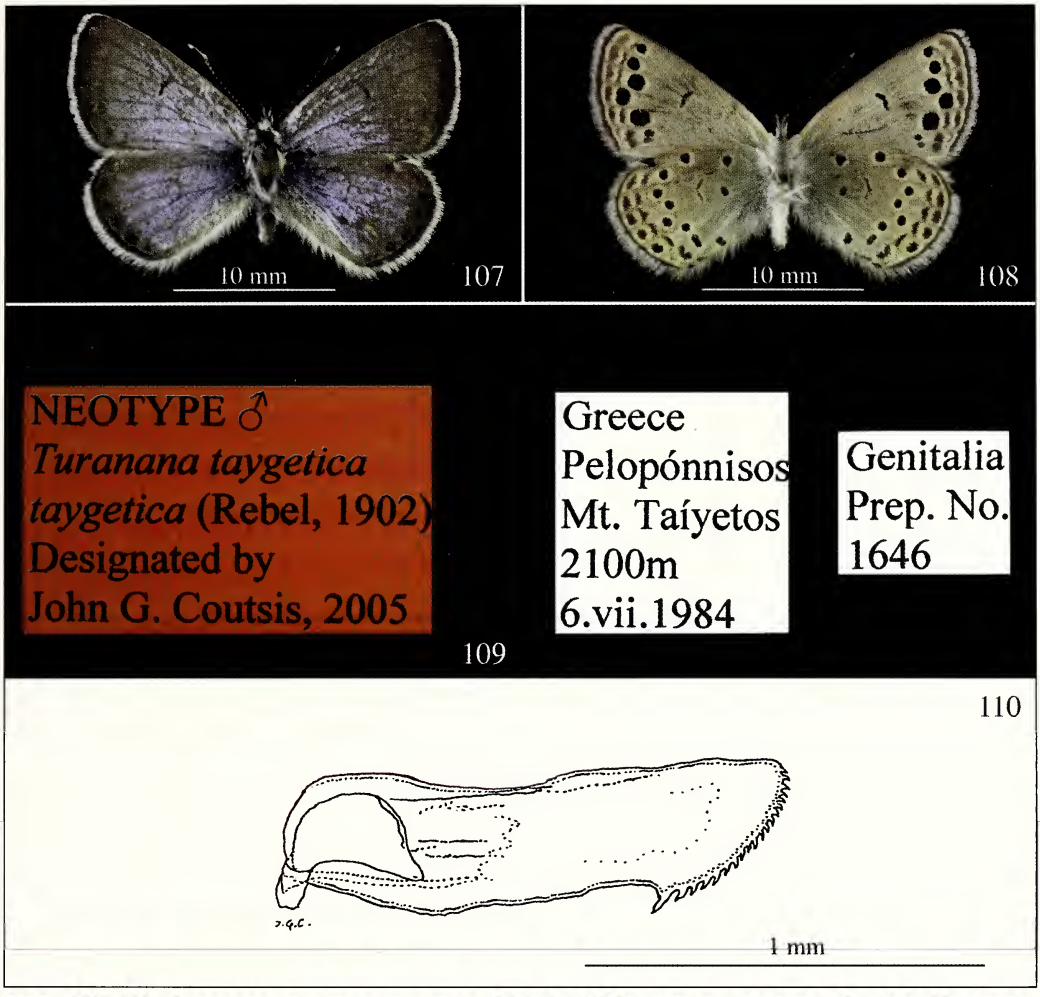
Das ♀ ist oberseits schwarzgrau mit gegen die Flügelbasis zunehmendem blauen Anflug. Vor dem Saum der Htfl. liegen schwärzliche, hellgerandete Fleckchen, die auch beim ♂ wahrnehmbar sind.

Die Grundfarbe der Flügelunterseite ist grau, ohne den bräunlichen Farbenton, den *Panagaea* fast stets aufweist, die Fleckenanlage kommt aber mit jener von *Panagaea* fast ganz überein, nur fehlen die rothen Randflecken vor dem Analwinkel der Htfl. vollständig.

In letzterem Merkmal stimmt *Taygetica* mit *L. Cytis* Chr. und deren var. *Panaegides* Stgr. aus Nordpersien resp. Central-Asien überein. *Cytis* Chr. weist jedoch in beiden Geschlechtern auf der Oberseite eine sehr charakteristische Reihe schwarzer Aussenflecke auf und zeigt auch im männlichen Geschlecht einen viel schärfer contourirten Saum. *Panaegides* ♂ ist auf der Oberseite noch dunkler als *Panagaea*, also von dem vorwiegend blau gefärbten *Taygetica* ♂ sehr verschieden. Die Unterseite aller *Cytis*-Formen hat einen vorherrschend bräunlichen Farbenton. *Taygetica*, welche eine Spannweite von 20—21 mm besitzt, stellt eine sehr interessante Lokalform in dieser östlichen Artgruppe dar. Eines der beiden ♀ zeigt die Fleckenzeichnung auf der Unterseite der Vdfl. reducirt und asymetrisch angeordnet, so dass auf dem linken Vdfl. von den 5 grossen schwarzen Flecken vor dem Saum nur je ein solcher in Zelle 2 und 4, auf dem rechten Vdfl. aber nur ein einziger, punktförmig gewordener, in Zelle 4 erhalten geblieben ist.

Die drei *Taygetica*-Stücke gelangten in den Besitz des Naturhistorischen Hofmuseums.

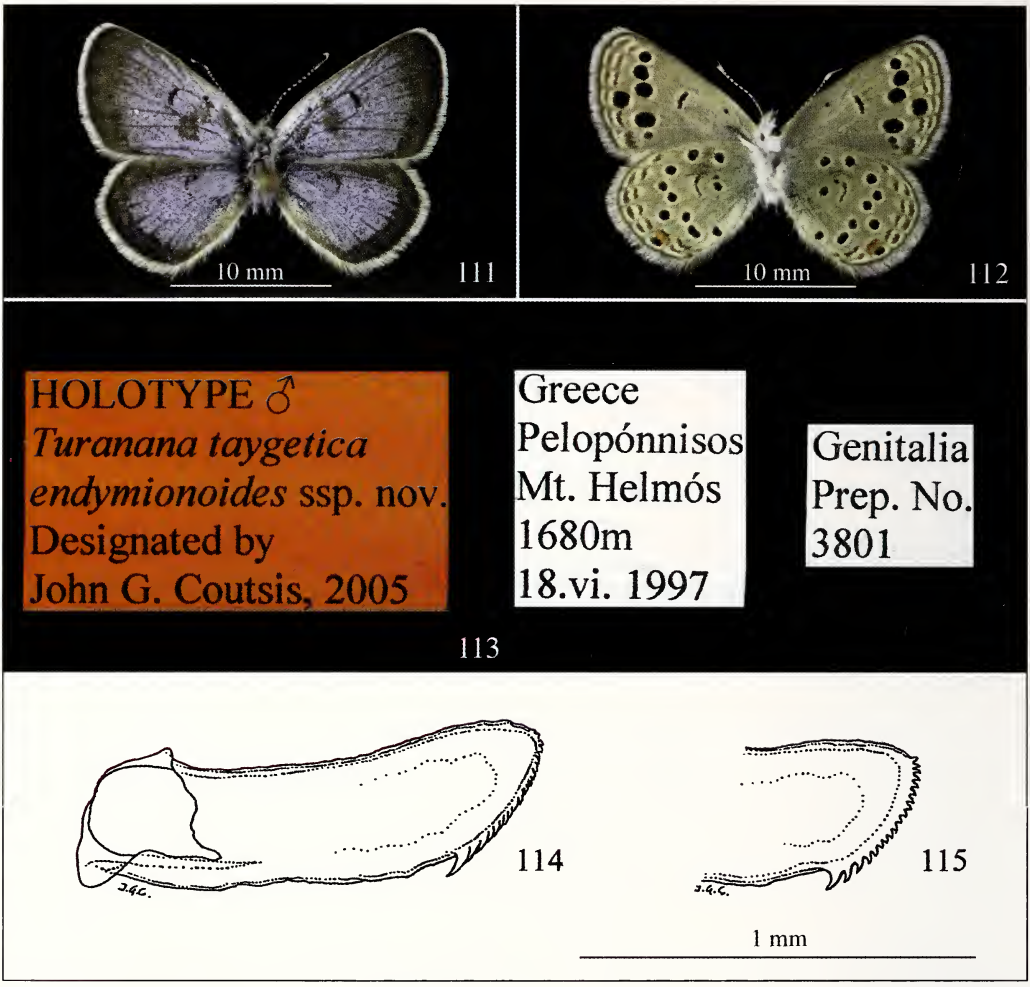
Figs. 106. Original description of "*L*[*ycaena*]. *Panagaea* HS. V. *Taygetica* nov. var." by Rebel, 1902: 90–91.



Figs. 107–110. *Turanana taygetica taygetica* (Rebel, 1902) stat. n., neotype ♂. **107.** Upperside. **108.** Underside. (Antennae inadvertently broken off during photographing; one antenna later restored). **109.** Data labels. **110.** Male genitalia, view on mesal wall of right valva.

restricted to s1c and s2 and never extending beyond s3, and with more evident basal, shiny, whitish-blue dusting on the hindwing underside. The variation in the females cannot be defined, due to lack of material.

Male genitalia. Recent material obtained for study and representing the syntypes of *ahasveros*, as well as coming from places in Iran situated outside the type-locality of *ahasveros*, though following the nominotypical *endymion* general valval pattern, demonstrate a strong extension of the valval terminal apex (Figs. 35–37). Valvae with the above-described configuration are also illustrated in Tshikolovets (1998), from Turkmenistan, in Tuzov et al. (2000), from the Armenian highland, and in Zhdanko (1984), without locality data. Two specimens of *T. endymion* ?-*ahasveros* – one of which is shown on Fig. 38 – from Mazanderan, Iran, are externally attributable to *ahasveros*, but were found to have valvae that are identical to those of nominotypical *endymion*.

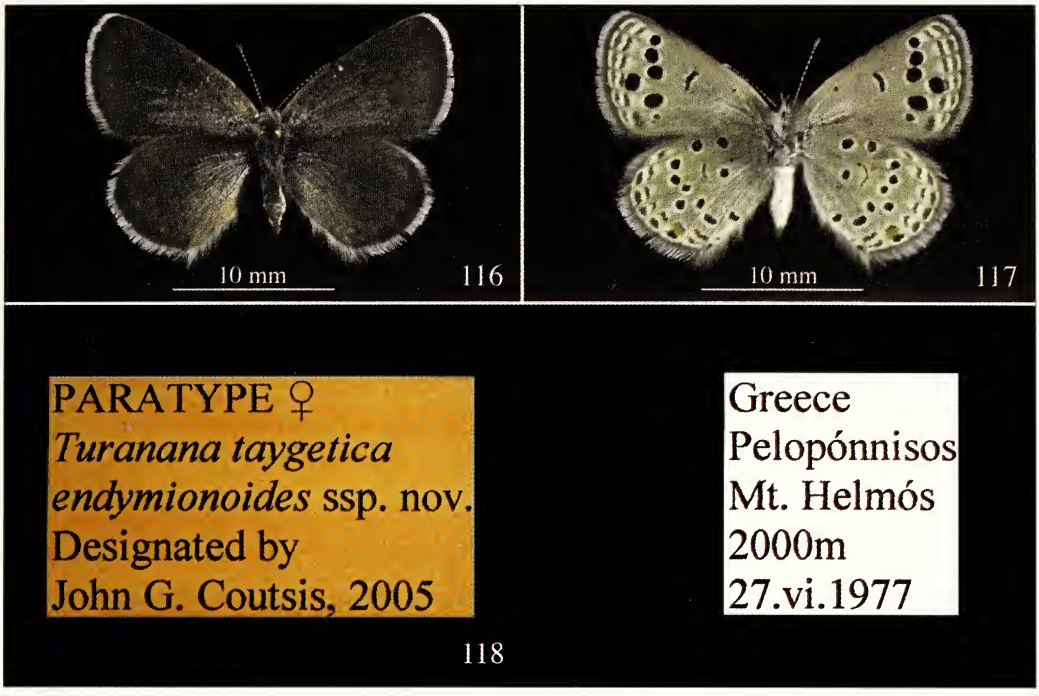


Figs. 111–115. *Turanana taygetica endymionoides* ssp. n., holotype ♂. **111.** Upperside. **112.** Underside. **113.** Data labels. **114.** Male genitalia, view on mesal wall of right valva. **115.** Male genitalia, view on distal end of mesal wall of right valva.

Distribution. *Turanana endymion ahasveros* (Bytinski-Salz & Brandt, 1937) applies to specimens from the Elburs range in Iran and from mountains in the province of Fars that possess valvae that are similar to those of *topotypical ahasveros*. *Turanana endymion* ?-*ahasveros* applies to specimens from mountains in the province of Mazanderan, Iran, whose valvae are found to be similar to those of nominotypical *endymion*.

Turanana taygetica taygetica (Rebel, 1902) stat. n.

L[*ycaena*] *Panagaea* v. *Taygetica* Rebel, 1902: 90–91. Type locality: Greece, Morea (= Pelopónnisos), Taygetos Gebirge (= Mt. Taíyetos). (see Fig. 106 for original description). Syntypes (1♂, 2♀) presumably lost.



Figs. 116–118. *Turanana taygetica endymionoides* ssp. n., paratype ♀. **116.** Upperside. **117.** Underside. **118.** Data labels.

Material. Neotype ♂, designated here (Figs. 107–110), **Greece**, Pelopónnisos, Mt. Taíyetos, 2000 m, 6.vii.1984 (gen. prep. no. 1646), Coutsis leg., coll. ZMAN. – 1♂ Greece, Pelopónnisos, Mt. Taíyetos, 1150–1200 m, 16.vi.2003, Coutsis leg., coll. Coutsis.

Description. Neotype (Figs. 107, 108). Forewing length 12.5 mm. Upperside as in nominotypical *endymion*, but blue ground-colour slightly lighter than in nominotypical *endymion* and slightly darker and brighter than in ssp. *ahasveros*; blackish marginal borders averaging about 1.3 mm in width and having a poorly defined inner margin, especially on hindwing; black spots contained inside blackish borders standing out rather sharply; black stria at apex of cell evident on forewing, but imperceptible on hindwing. Underside as in nominotypical *endymion*, but ground-colour whitish-gray, post-discal black spots placed closer to wing outer-margins, and usual hindwing sub-marginal orange spots substituted by single macroscopically-evident yellowish-beige spot in s2 only; yellowish-beige dusting also evident microscopically on hindwing in s1c and s3; base of hindwing with faint, shiny, whitish-blue dusting. Valva (Fig. 110) 1.59 mm in length; terminal spikes 20 in number and extending along whole length of valval distal margin, reaching its apex; most proximal spike decidedly longest.

Variation. This is expressed in the males by their overall size (forewing length from just under 10 mm to about 12.5 mm), by the extent, width and definition of the blackish marginal borders on the upperside (in some specimens these are being clearly invaded by blue scaling especially on the hindwing), by the number and definition of

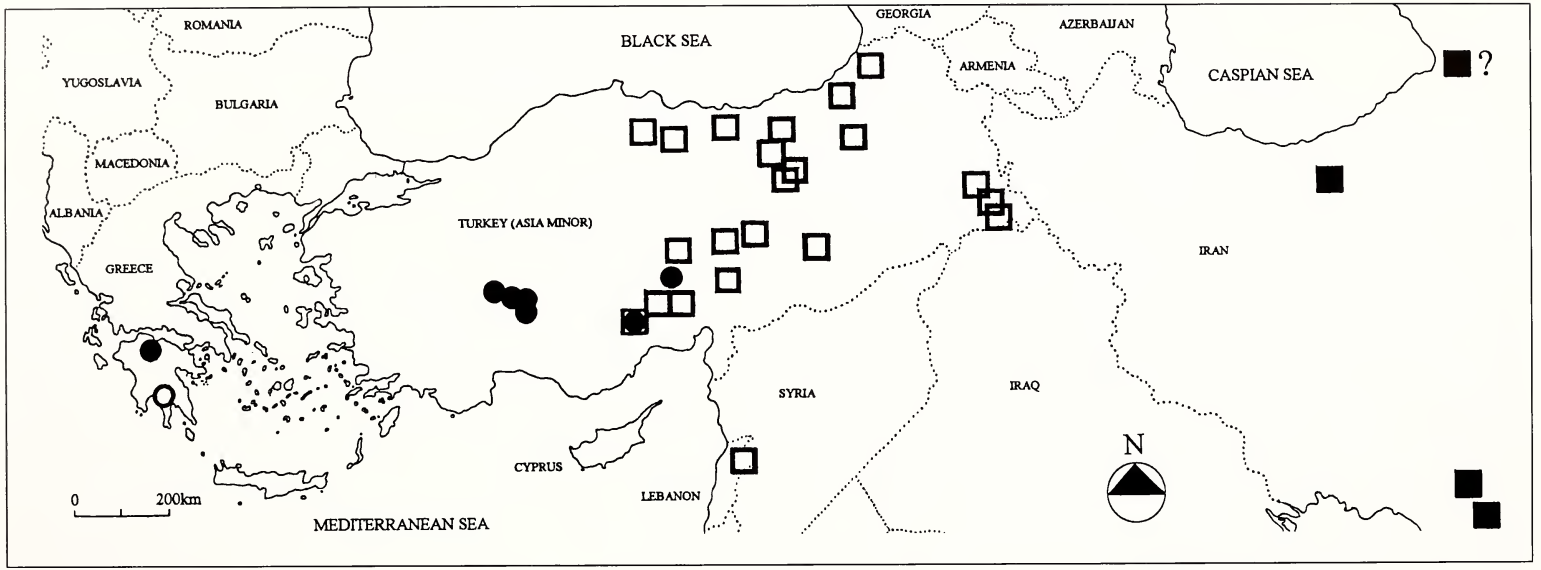


Fig. 119. Map indicating sampling localities of *Turanana endymion* and *T. taygetica*.

□ = *T. endymion endymion*
■ = *T. endymion ahasveros*
○ = *T. taygetica taygetica*
● = *T. taygetica endymionoides*

black spots within these borders on the hindwing upperside, and by the occasional presence of blue rings surrounding the black spots located within the blackish marginal borders. On the underside there is some variation in the extent and definition of the sub-marginal yellow-beige dusting on the hindwing, which occasionally may also be seen microscopically in s1b and s4. The single dark brown female at hand has a forewing length 12.5 mm and is characterised on the upperside by the extended basal blue dusting, by the presence of a narrow sub-marginal light brown area – in the form of a poorly defined band – enclosing black-brown spots (most evident on hindwing in s2 through s5), by a well-defined black-brown stria at the apex of the cell, and by the presence of weekly-defined black-brown post-discal spots on the forewing. Underside, as in males, but the variation is unknown, due to lack of material.

Male genitalia. Right and left valvae roughly symmetrical to one another, as in nominotypical *endymion*, but longer than those of nominotypical *endymion* for specimens of equal, or near equal forewing length (these conditions are figured below under *T. taygetica endymionoides*, which has similar male genitalia to nominotypical *taygetica*) The degree of variation in the number of terminal spikes cannot at present be calculated due to lack of sufficient material. The three characters, however, that stand out as being constant are the long valva, the fact that the most proximal terminal spike (occasionally also bearing a single, or bifid minute extension just basad to it) is always decidedly the longest of the lot, and that the terminal spikes extend all along the distal margin of the valva, clearly reaching its apex.

Distribution. *Turanana taygetica taygetica* (Rebel, 1902) stat. n. applies to specimens derived from the type locality only.

Life history. A low-flying species with males often found watering at altitudes of as low as 1100–1200 m, inside the forest zone and outside the vicinity of *Acantholimon* bushes, the presumed host-plant.

Turanana taygetica endymionoides ssp. n.

Material. Holotype ♂ (Figs. 111–115), **Greece**, Pelopónnisos, Mt. Helmós, 2000 m, 27.vi.1977 (gen. prep. no. 3801), Coutsis leg. coll. ZMAN. – Paratypes (all with same locality data): 1♀ (Figs. 116–118), 2000 m, 27.vi.1977, Coutsis leg., coll. ZMAN; 7♂, 2♀, 1800–1900 m, 4.vi.1997; 3♂, 1♀, 1800 m, 20.vi.1998; 1♂, 2100 m, 23.vi.1981; 1♂, 1700–1800 m, 12.vi.2001; 1♀, 2000 m, 27.vi.1977; 1♀, 2100 m, 23.vi.1981; 1♀, 1650 m, 18.vi.1997, all Coutsis leg. et coll. – 2♂ Greece, Pelopónnisos, Mt. Helmós, 1800 m, 12.vi.2001, leg. et coll. Coutsis; 4♂ **Turkey**, Afyon province, Sultandağları, 10 km S of Çay, 1300 m, 18.–25.vii.1980, coll. De Prins, Olivier & v. d. Poorten; 1♂ Afyon province, Sultandağları, 15 km SE of Çay, 1400–1800 m, 14–18.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 3♂ Afyon province, Sultandağları, 8 km SW of Dereçine, 1700–2200 m, 19.–20.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 1♂ Karaman province, Sertavul Geçidi, 1500 m, 1.viii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Kayseri province, Aladağları E side, 2800–2900 m, 18 km S of Yahyalı, 26.vii.–2.viii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, Sultandağları, 15 km S of Akşehir, 1500 m, 16.–19.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 12♂ Konya province, Sultandağları, 15 km S of Akşehir, 1500 m, 12.–21.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, Sultandağları, 6km S of Çankaturan, 23km SSE of Akşehir, 1700 m, 12.–21.vii.1995, coll. De Prins, Olivier & v. d. Poorten; 3♂ Konya province, Sultandağları, Akşehir, 1100 m, 17.–26.vii.1980, coll. De Prins, Olivier & v. d. Poorten; 2♂ Konya province, Sultandağları, 22 km SE of Akşehir, 1600–1900 m, 29.vii.1995, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, 12 km SW of Engilli, 1300–1600 m, 12.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, 10 km NE of Gelendost, 1000 m, 16.vii.1980, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, Derebucak, 1100 m, 11.vii.1981, coll. De Prins, Olivier & v. d. Poorten; 1♂ Konya province, Akşehir, 1900 m, coll. De Prins, Olivier & v. d. Poorten; 1♂ Niğde province, Aladağları E side, 10 km S of Yahyalı, 1800–1900 m, 26.vii–2.viii.1994, coll. De Prins, Olivier & v. d. Poorten; 1♂ Niğde province, Bolkardağları N side, near Maden, 1500–1650 m, 18.vii.1995, coll. De Prins, Olivier & v. d. Poorten.

Description. Holotype (Figs. 111, 112). Forewing length 12.0 mm. Upperside ground-colour slightly lighter and shinier blue than in nominotypical *endymion* (due to the relative freshness of the specimen; specimens that have been kept longer in collections have the same ground-colour as do nominotypical *endymion* of same age); blackish marginal borders averaging 1.5 mm in width and with sharply defined proximal edge; black spots evident within these borders on hindwing in s2 through s6; black stria of apex of cell well-defined on both forewing and hindwing, but half as wide on the hindwing than on the forewing; fringe pure white. Underside ground-colour, fringes, and spot arrangement as in nominotypical *endymion*, but sub-marginal orange scaling on hindwing fully developed in s2 only, macroscopically appearing as narrow dusting in s1c and s3 and microscopically also in s4; base of hindwing with faint, shiny, whitish-blue dusting. Valva (Figs. 114, 115) 1.48 mm in length and bearing 20 terminal spikes in same arrangement as in nominotypical *taygetica*.

♀ paratype (Figs. 116, 117). Forewing length 11.9 mm. Upperside ground-colour dark brown, as in nominotypical *endymion*; base of wings with blue scaling extending on forewing into post-discal area; outer margins of wings thinly lined black-brown; sub-marginal black-brown spots present on both forewing and hindwing; black-brown stria at apex of cell clearly evident on forewing, less so on hindwing; some post-discal black-brown spots also in evidence on forewing; fringes white. Underside as in male, but fringes off-white.

Variation. This is expressed in both males and females by their overall size (forewing length from a little under 10 mm to about 12 mm), and on the upperside of the males in particular by the width and definition of the blackish marginal border, the extent of black spotting and occasional blue dusting within this border, the degree of definition of the black stria at the apex of the cell on the hindwing, and the extension of the blackish marginal border into the post-discal area of forewing, just basad of its apex. On the underside it is expressed primarily by the extent of sub-marginal orange scaling and of the basal, shiny, whitish-blue dusting on the hindwing. In the females variation is expressed on the upperside by the amount of basal blue scaling, by the degree of definition and number of black-brown sub-marginal and post-discal spots, and by the occasional presence of a light brown sub-marginal area on the hindwing. Underside variation as in male.

Male genitalia. Identical to those of nominotypical *taygetica*; right and left valvae (Fig. 6) roughly symmetrical to one another, as in nominotypical *endymion* (Fig. 5), but longer (Fig. 3) than those of nominotypical *endymion* (Fig. 1) for specimens of equal, or near equal forewing length. Number of terminal spikes very variable (12–25). In specimens from a single locality the number of spikes was found to vary from 14–23 (Figs. 66–87).

Distribution. *Turanana taygetica endymionoides* ssp. n. applies to specimens that have the same valvae as those of nominotypical *taygetica*, but differ externally from it, and that are found in Greece on Mt. Helmós only (where it was first recorded by Thurner 1967, who listed it as *Vaccinii*[*n*]*a panagaea taygetica* Rebel) and in the western half of Asiatic Turkey (specimens figured in Hesselbarth et al. 1995, pl. 97 figs. 52, 56, 58, 59, 63, 65, 70, are within all probability referable to *taygetica*, as all material checked from the Turkish provinces of Konya and Afyon invariably turned out to be *taygetica*). Syntopic and synchronous with *endymion* in south-central Asiatic Turkey.

Life history. Tolman (1993) discovered on Mt. Helmós the larvae feeding on *Acantholimon androsaceum* ([Jaub & Spach]. Bois, 1846) (Plumbaginaceae). The adults are low-flying and restricted to within the vicinity of the host-plant; found above the tree line and at altitudes ranging from about 1800–2000 m. So far never seen watering despite the fact that a water spring is situated at about 250 m away from its host-plants.

Derivatio nominis. The name *endymionoides*, meaning in Greek "looking like *endymion*", was chosen because of the butterfly's greater external resemblance to nominotypical *endymion* than to nominotypical *taygetica*.

External differentiation

Male specimens of nominotypical *endymion* may be told apart from ssp. *ahasveros* by the darker blue and somewhat shinier ground-colour of the wings upperside and by the – on average – wider marginal blackish borders. On the underside they differ from *ahasveros* by the greyer, less brown and "rough-looking" ground colour, by the better-defined sub-marginal double row of black-brown spots, and by the greater spreading and more intense colour of the sub-marginal orange scaling on the hindwing. Female nominotypical *endymion* differ from those of *ahasveros* on the underside as do the males.

Both male and female *ahasveros* differ from all other members of the species-group on the underside by the brownish tinge and "smooth" texture of the ground-colour, by the less contrasting sub-marginal double row of black-brown markings, and by the light orange-beige colour of the hindwing sub-marginal dusting. Males on the upperside differ by their "chalkier" and lighter blue ground-colour.

Male specimens of nominotypical *taygetica* differ from all other members of the species-group on the upperside by the narrower and poorly defined blackish marginal borders and on the underside by the light grey ground-colour, by the position of the post-discal black spots, these being closer to the wing outer margins, and by the substitution of the usual sub-marginal orange dusting on the hindwing by one of yellow-beige tint; they differ from the males of *endymionoides* on the upperside by the slightly lighter blue ground-colour. The single available female specimen of the nominotypical *taygetica* differs on the underside from all other members of the species-group as do the males.

Male specimens of topotypical ssp. *endymionoides* as a rule differ from all other members of the species-group on the upperside by the sharper blackish marginal borders, and from nominotypical *endymion* in particular, on the upperside by the narrower blackish marginal borders, and on the underside by the more restricted spread of the hindwing sub-marginal orange scaling. Female *edymionoides* differ on the underside from nominotypical *endymion* as do the males and from nominotypical *taygetica* by the darker, grey-brown (instead of light grey) ground-colour and the orange (instead of yellow-beige) sub-marginal hindwing dusting.

Specimens of *endymionoides* from Asiatic Turkey cannot be told apart from nominotypical *endymion* (at least macroscopically and on the basis of the rather limited available material), and they differ from topotypical *endymionoides* in the same way as does nominotypical *endymion* differ from topotypical *endymionoides*. As previously said, however, I have tentatively included them under ssp. *endymionoides* because

of occasional character overlap with topotypical *endymionoides* and because of the unavailability of geographically intermediate material from the western extremity of Asiatic Turkey, that might conceivably reveal the existence of a cline in external characters.

The need for further validation

The taxonomic arrangements that have now been adopted for the *endymion* species-group, should eventually be further validated – or perhaps even disputed – by a future study of the DNA-sequences of the various taxa in this species-group. It is hoped that this task will not take long to materialize.

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