

**Taxonomical notes on *Melitaea ambrisia* HIGGINS, 1935 and
Melitaea alraschid HIGGINS, 1941 stat. nov. from Central Asia**

(Lepidoptera, Nymphalidae)

by

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Summary: The status of *Melitaea alraschid* HIGGINS, 1941 was confirmed by genitalia's characteristics. The main distinctions of this species from *M. ambrisia* HIGGINS, 1935 are as follows: the cell mark on the forewing upperside is rectangular, the harpe is much wider and heavier, the structure of the distal end of the aedeagus and of thescaphium is quite different. The actual areal of *M. alraschid* is in the Ghissar mountain system. Besides, *M. ambrisia avicaena* subsp. nov. has been described from Turkestansky Mts.

Introduction

Melitaea ambrisia belonging to the *fergana*-group of the genus was described from Alai Mts. (Kirgizia) by HIGGINS in 1935. The same author described *M. alraschid* as a subspecies of *M. ambrisia* (HIGGINS, 1941). Only one specimen of *M. alraschid* has been known so far bearing the label "Persia" but without any further data (type preserved in The Natural History Museum, London). The photo of this type was complemented by description. We were also provided with good colour photos to complete our study, and they are identical to those published.

HIGGINS noted that the finding of *M. ambrisia* in Persia—although this butterfly is specific for the Alai—is a very interesting indication. He pointed out some distinctions between both taxa but concluded that "it can reasonably be looked upon as a subspecies of that insect, in spite of the small differences in genitalia. Perhaps others (specimens of *alrashid*) may soon be found" (HIGGINS, 1941: 260). We can assert now that no forms of the Central Asian *fergana*-group of species occurs in Iran or, instantly, in Kopetdag. In fact, no specimens of *M. ambrisia* have been found in Iran corresponding to the description. On the other hand, last year we received from Fanskie Mts. (Tadjikistan) a series of butterflies close to *M. ambrisia* and two similar specimens from Kirgizia. The last two originated from the upper stream of Ak-Terek River on the northern slopes of Matcha, a mountain massif where Zeravshansky, Turkestansky and Alaisky ranges meet. Moreover, we had the chance to study a good series of unusual butterflies collected in the Turkestansky Mts. (northern slope) in the vicinity of the Kumbel Pass, which also belong to *M. ambrisia*.

Our investigation allows to conclude that the butterflies from Fanskie Mts. are identical to the type of *M. alrashid* while the butterflies from Kumbel Pass must be placed with *M. ambrisia* as a new subspecies. All differences revealed by HIGGINS are constantly present in our series. We have also found some other distinctions especially in the structure of the aedeagus. It is noteworthy, that HIGGINS did not provide an aedeagus figure of *M. alrashid*, that could mean that this sclerite was damaged or missed. Specimens from Matcha have been defined as *M. alraschid* but they probably represent a new subspecies. Of course, more material is required to

deal with this matter thoroughly. An important fact is that the northern slopes of Matcha are stretching to the areal of *M. ambrisia* between Dugoba River (Alai) and Kumbel Pass. In biological terms, *M. alraschid* occurs on distinctively higher altitudes and in biotopes other than those of *M. ambrisia*.

Thus, we came to the conclusion that *M. alraschid* stat. nov. is distributed in the Gissar mountain system, and so the old label of the first known specimen was wrong.

Type material will be deposited in the Zoological Museum of Moscow State University, State Darwin Museum and in the author's private collection.

Abbreviations

FW – forewing

HW – hindwing

Melitaea ambrisia HIGGINS, 1935

Melitaea ambrisia HIGGINS, 1935, Entomologist **68**: 112.

"*Melitaea ambrisia* HIGGINS" – HIGGINS (1941: 258, pl. 7, figs. 5, 11).

"[*Melitaea*] *ambrisia* HIGGINS, 1935" – KORSCHUNOV (1972: 355).

"*Didymaeformia ambrisia* (HIGGINS) comb. nov." – HIGGINS (1981: 166).

"[*Melitaea*] *ambrisia* HIGGINS, 1935" – D'ABRERA (1992: 298).

"[*Melitaea*] *ambrisia* HIGGINS, 1935" – Tuzov (1993: 48–partim).

Type locality

Alai Mts.

Material

25 ♂♂, 5 ♀♀, Kirgizia, Alai Range, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN, A. PETROV & L. SALMANOVA leg.; 3 ♂♂, 1 ♀, Alai Range, Aksu River, Kara-Shoro loc., 2100–2300 m, VII.1992, V. Tuzov leg.

Description

♂ (colour plate IV, figs. 1, 2, 10, 11): FW length 20–21.5 mm. The antenna is usually entirely black, very rarely with not clear tips of the bulbs. Ground colour of the upperside is orange-yellow. Both wings display a narrow black marginal border with some traces of the internervular spots.

FW upperside. There is a submarginal series of black marks but it is very small and not complete. Postdiscal series is complete, the mark between Cu2 and 2A lying more or less diametrically slantwise. The outward mark of the cell is orbicular or elliptical though very rarely. The fringes are usually whitish, without dark interruptions or only with traces thereof.

HW upperside with submarginal row of markings, they are sometimes more or less reduced but at least clearly visible on the apex between R1–R5 and R5–M1. The oval mark on the cell is developed.

FW underside is similar to the upperside, but paler and the black markings are more or less reduced while the discal series is usually complete. The inner side of the fringes displays thin black interruptions, they are variable and sometimes longer than the whitish parts.

HW underside is yellowish-gray. Discal row consists of oval spots with black borders while the inner surface of these spots is not blackened, as a rule. The marks between M3–Cu1 and Cu1–Cu2 stretch out along the Cu1 vein towards the marginal side, this distinction being presented only in the nominate subspecies.

The end of the abdomen with clearly visible orange hairs around the genitalia.

Genitalia

The valva (fig. 1a) with a single wide posterior process. The last one usually with a shortened thin distal tip, though it is necessary to note that the size of this tip is variable and sometimes it is elongated. Besides, the posterior process has a clearly visible widening at the proximal part—that is a specific distinction. The number of spines and their development are variable, usually spines are short and thin.

The harpe (figs. 1a, 2a) is thin, the proximal part is only slightly wider than the distal. The distal part is much longer than the proximal. The number of thin and slender spines is 1–3, rarely 4. Scaphium with stick-shaped elements (figs. 2d, e) visibly curved closer to the ends and without large widening towards the base. The tegumen is only slightly shorter than the scaphium elements and larger than the membranous part of the scaphium. The elements are placed close to the border of the sclerotized part of the scaphium. The size of the tegumen and the elements are variable but the structure of this system is very constant and absolutely specific. Saccus with two elements whose form is elongated-oval. The widening distal end of the aedeagus with a very short bifurcated tip and two triangular separate blades tightened (as opposite to the moved out position) to the tip of aedeagus (figs. 3a, c).

♀ (colour plate IV, figs. 3, 12): FW length is 20–22 mm. Similar to the male but the colouring is very variable: from light with reduced black pattern to dark. Even in light forms the submarginal row on the HW upperside is visible. The reddish band usually well visible between the submarginal series and marginal blackening.

Distribution and biology

The butterfly is known to occur practically only on the northern slopes of the Alai Mts. We have no records pertaining to Kichik-Alai Mts. or Transalai Mts. Specimens have been collected at an altitude of 2000–3000 m on dry stony slopes flying together with *Paralasa ali* and *Parassius charltonius romanovi*.

Melitaea ambrisia avicaena subspec. nov.

Holotype ♂: Uzbekistan, Turkestan Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15. VII.1997, O. LEGEZIN leg.

Paratypes: 3 ♂♂, 3 ♀♀, same data; 7 ♂♂, same loc., 26.VI.1996; 1 ♂, same loc., 14.VII.1974, V. GANSON leg.; 1 ♂, same loc., 3160 m, 20.VII.1976, ex.coll. SHAPIRO; 5 ♂♂, same loc., VII.1998, 3200 m, LEGEZIN leg.; 3 ♂♂, 1 ♀, same loc., 3200 m, 19.–21.VII.1975, V. GANSON leg.

Description

♂. Holotype (colour plate IV, figs. 4, 13) FW length is 21 mm, paratypes (colour plate I, figs. 5, 14) 20–21.5 mm. The antenna is blackened with orange tips of the bulbs. Ground colour of the

upperside is usually paler than in the nominate subspecies but not always. Black margins similar to the nominate subspecies but outward mark in the cell is not circular but elliptical with a distinctive widening at the median part. The discal series is developed but 1–2 median markings are usually reduced or even absent. The mark between Cu2 and 2A usually has a very interesting shape resembling the “>” symbol (rarely, when the black colour is more developed, this mark is bigger and not so clearly formed).

HW upperside without submarginal row of markings, only on the apex one small reduced marking rarely developed. The oval mark on the cell developed.

FW underside similar to the nominate subspecies but the postdiscal series is usually not complete. The inner side of the fringes with a distinctive black line across the whole wing with reduced and usually not distinctive whitish interruptions.

HW underside yellowish-gray with more or less dark suffusion. Discal row consists of elliptical and completely blackened spots. The marks between M3–Cu1 and Cu1–Cu2 do not stretch out along the Cu1 vein. The spot between M3 and Cu1 distinctively moved towards the base of the wing under the same spot between M2 and M3 in a way that the internal side of the last spot often lies above the external side of the M3–Cu1 spot. This distinction is absent in *M. a. ambrisia* where the M3–Cu1 spot is only slightly moved to the base of the wing. In *M. al-raschid* the arched shape of the discal row is even more right than in *M. a. ambrisia*.

The colour of the hairs on the abdomen as in the nominate subspecies.

Genitalia

The valva (fig. 1b) with a single wide posterior process with commonly more developed tip, but widening at the proximal part is developed. The spines usually larger than in the nominate subspecies. The harpe (fig. 2b), scaphium, tegumen, saccus (fig. 2g) and aedeagus (fig. 3d) are the same as in *M. a. ambrisia*.

♀ (colour plate IV, figs. 6, 15). FW length is 20–22 mm. Similar to the female of the nominate subspecies, but not so variable and usually blackened (we might have no light form). The submarginal row on the HW upperside is absent. The reddish band between the submarginal series and the marginal blackening are forming distinctive red lunules. Underside of the HW with developed dark suffusion; the blackening of the postdiscal row is more developed than in the males.

Differential diagnosis

The new subspecies is easily distinguished from the nominate one by the elongated mark in the cell on the FW underside and the practically absent submarginal row of markings on the HW upperside. The darkened underside has a visibly blackened line across the inner side of the fringes. The moved spot between M3 and Cu1 in the discal series of the spots and the complete blackening of all this series provides a very good distinction, too. All these differences are so evident that they allow to treat *M. a. avicaena* as a species, but the structure of genitalia displays all characteristics of *M. ambrisia*.

Distribution and biology

This butterfly has been recently known only from the Kumbel Pass. We presume that it will be found in the future across the whole length of the Turkestansky Range. There is no true information about the biotope.

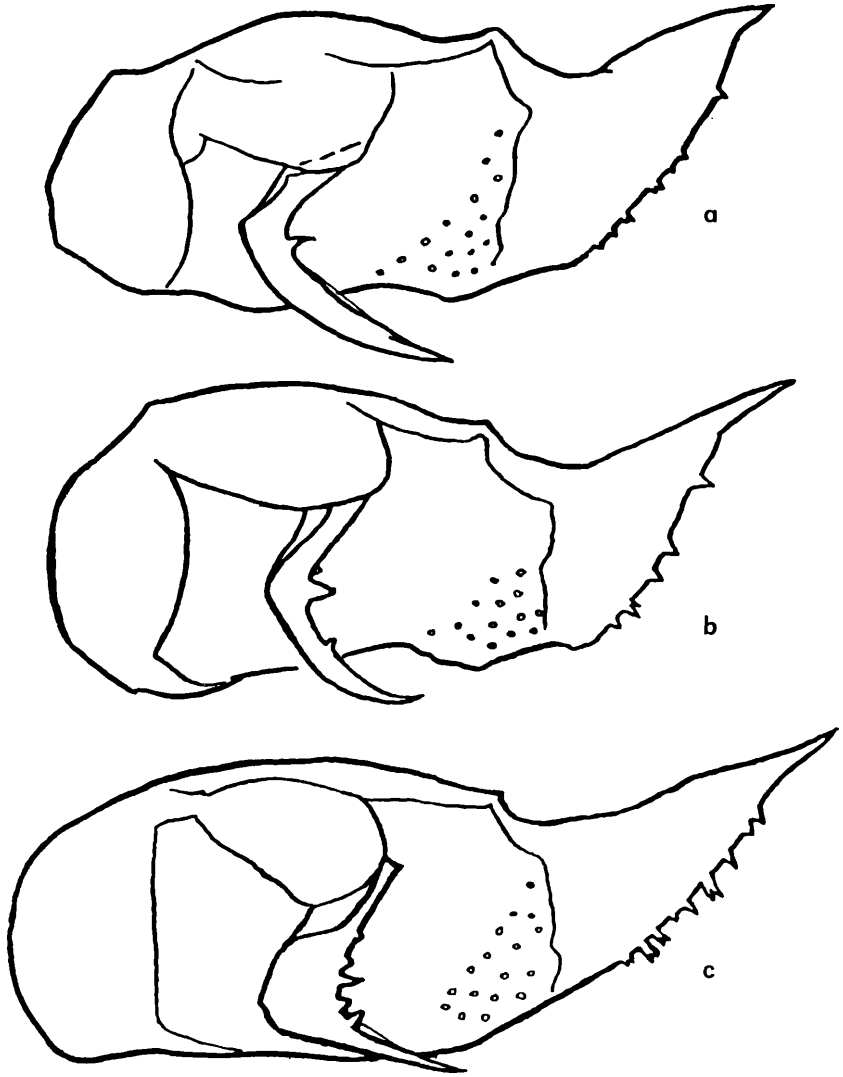


Fig. 1: Male genitalia, partim (valva and harpe). a - *M. a. ambrisia* (Alai, Dugoba R.); b - *M. a. avicaena* (Turkestan sky Mts., Kumbel Pass); c - *M. alrashid* (Tadjikistan, Fanskie Mts.).

Etymology

This subspecies was named after ABU ALI KHUSSAIN IBN ABDULLA IBN SINA (980-1037), a famous scientist, physician and poet who is known in Europe under the name AVICAENA.

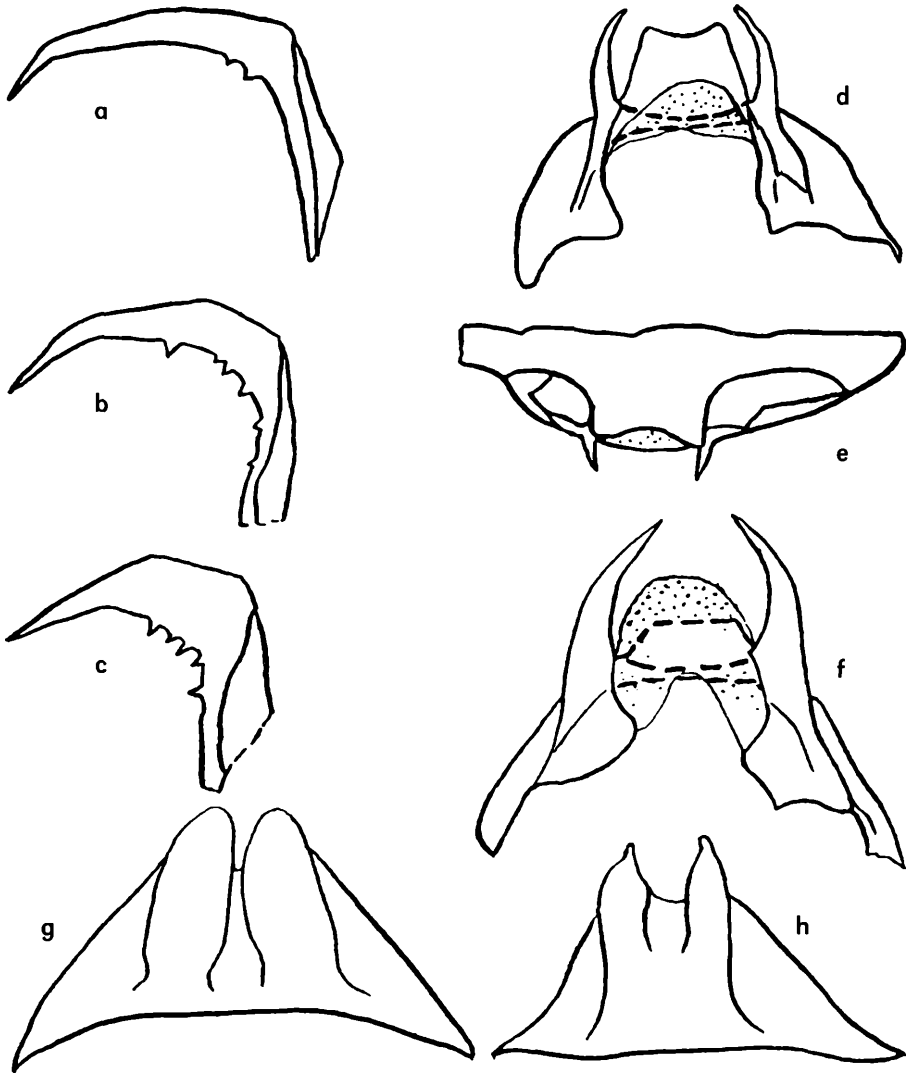


Fig. 2: Male genitalia, partim. Harpe (a, b, c), scaphium and tegumen (d, e, f), saccus (g, h);
a, d, e - *M. a. ambrisia* (Alai, Dugoba R.); b, g - *M. a. avicaena* (Turkestansky Mts., Kumbel Pass);
c, f, h - *M. a. alrashid* (Tadjikistan, Fanskie Mts.).

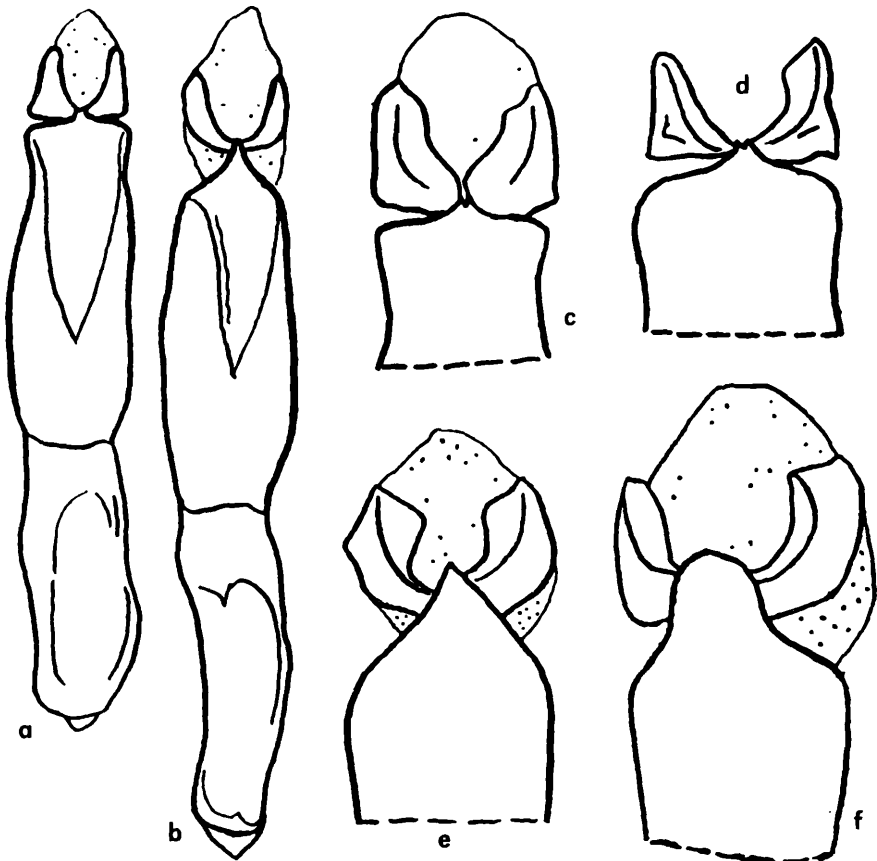


Fig. 3: Aedeagus (a, b) and the tip of the aedeagus (c-f).

a, c - *M. a. ambrisia* (Alai, Dugoba R.); d - *M. a. avicaena* (Turkestansky Mts., Kumbel Pass); b, e, f - *M. alarashid* (Tadjikistan, Fanskie Mts.).

Melitaea alarashid HIGGINS, 1941

Melitaea ambrisia alarashid HIGGINS (1941: 259-260).

Type locality

Persia is wrong, probably the West part of the Gissar system close to Samarkand.

Areal

Gissar mountain system, Matcha mountain massif.

Material

7 ♂♂, 2 ♀♀, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.; 2 ♂♂, Kirgizstan, Matcha, Eastern edge of Turkestansky Mts., upper stream of Ak-Terek River, 3500 m, 7.–10.VII.1998, A. PETROV leg.

Description

♂ (colour plate IV, figs. 7, 8, 16, 17). FW length is 19–21.5 mm. From the underside the antenna is usually yellowish-orange or at least with orange tips of the bulbs. Ground colour of the upperside is usually paler than in *M. ambrisia* and yellowish. The markings are mostly as in *M. ambrisia* but less definite. The mark on the outward part of the cell is not elliptical or orbicular and has a practically elongated rectangular shape without widening at the medium part. Sometimes this mark is reduced or even absent what never occurs in the case of *M. ambrisia*. The postdiscal series of spots is also partly absent and always not so well developed as in *M. ambrisia*. The mark between Cu2 and 2A is not large consisting of two separate spots, sometimes disjoined. The fringes as in *M. a. ambrisia*.

HW upperside without any traces of a submarginal series of spots. The mark on the cell is not developed and visible only as a translucent from the under surface of the wing.

FW underside is similar to the upperside, but paler and the black markings are so reduced that the discal series is usually developed only on the costal side.

HW underside. Postdiscal row of spots consists of oval or elliptical spots with black borders; the inner surface of these spots is sometimes blackened. This row is similar mostly to *M. a. ambrisia* but the external line of spots between M3–Cu1 and Cu1–Cu2 is not stretched out along the Cu1 vein. When the series is completely blackened—never so much as in *M. a. avicaena*—it looks similar to the last subspecies but, of course, the spot between M3–Cu1 is not moved. An important fact is that the black suffusion on the under surface is not developed. The hairs on the end of the abdomen are not clearly orange. The tergite has dark hairs; the sternite has mixed dark and darkened orange hairs.

Genitalia

The valva (fig. 1c) with a single posterior process which is narrower than in *M. ambrisia* with a well developed long tip. This process is narrowing equally across the whole length without widening at the proximal part. Spines usually more coarse and longer than in *M. ambrisia*.

The distal part of the harpe (figs. 1c, 2c) has an abrupt widening towards the proximal part. This widening forms a visible angle on the basal side of the harpe, so that the harpe looks like consisting of 3 parts. The proximal part is also distinctively wider than in *M. ambrisia*. In total the distal part is shorter; the spines are more numerous, coarse and bigger.

The scaphium (fig. 2f) has a distinctively different structure. The elements are equally curved toward the ends with widening bases. The tegumen is much shorter than the scaphium elements and smaller than the membranous part of the scaphium, so that the last one is well visible. The elements are placed not so close to the border of the sclerotized part of the scaphium and turned to the tegumen under the angle another than in *M. ambrisia*. For this reason the elements are better visible and have even bigger and wider appearance than in reality when regarded from the usual view points, and so these differences between species appear to be even more evident. It is important to note that all figures of scaphium and tegumen have been made after this system was separated from the genitalia to show the differences in structure. The size of tegumen and elements is variable but the structure of this system is very constant.

The saccus (fig. 2h) with two elements is not so visible, especially in the basal part and has narrowed small distal tips.

The distal end of the aedeagus without widening, the tip is long, wide and blunt. The blades are narrowed at the bases, not triangular and deeply moved out of the tip forming a very nice pattern (figs. 3b, e, f).

♀ (colour plate IV, figs. 9, 18). FW length is 22 and 23 mm. We have only two females—one is light, the other is darker than the male. In total similar to the male but the HW underside has a well developed submarginal row of markings conversely the male. Moreover, markings are V-shaped and all nerves on the marginal side of the wing are blackened. These two distinctions are absolutely absent in *M. ambrisia*, including the new subspecies.

Diagnosis

This species is easily distinguished from *M. ambrisia* by the rectangular mark in the cell, the reduced discal row of markings on the FW upperside and the reduced mark in the cell on the HW upperside. The structure of tegumen and scaphium is quite different. The harpe and aedeagus reveal available distinctions for practical identification while the differences between valvas are not so useful.

Biology

The butterflies have been collected at an altitude of 3500 m, i.e. on higher altitudes than where *M. ambrisia* occurs. *M. alraschid* inhabits the stony slopes (in most cases the stones were reported to be coloured black!) together with *Paralasa hades* and *Thersamonolycaena aeolides*.

Acknowledgments

We thank our colleagues who worked with us in the expeditions or collected butterflies for us, namely Dr. A. PETROV, YU. & A. VASILCHENKO, and O. LEGEZIN.

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All photos were taken by A. SOTCHIVKO.

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Explanation of colour plate IV (p. 389):

Fig. 1: *M. ambrisia ambrisia*, ♂, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 2: *M. ambrisia ambrisia*, ♂, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 3: *M. ambrisia ambrisia*, ♀, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 4: *M. ambrisia avicaena* subsp. nov., holotype ♂, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 5: *M. ambrisia avicaena* subsp. nov., paratype ♂, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 6: *M. ambrisia avicaena* subsp. nov., paratype ♀, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 7: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

Fig. 8: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

Fig. 9: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

Figs. 10–18: the same as 1–9, undersides.

1	4	7
2	5	8
3	6	9
10	13	16
11	14	17
12	15	18

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Colour plate IV

CHURKIN, S. V.: Taxonomical notes on *Melitaea ambrisia* HIGGINS, 1935 and *Melitaea alraschid* HIGGINS, 1941, stat. nov. from Central Asia (Lepidoptera, Nymphalidae). – *Atalanta* **31** (1/2): 113–122.

Fig. 1: *M. ambrisia ambrisia*, ♂, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 2: *M. ambrisia ambrisia*, ♂, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 3: *M. ambrisia ambrisia*, ♀, Kirgizstan, Alai, Dugoba River, 2700–3000 m, 18.–19.VII.1995, S. CHURKIN leg.

Fig. 4: *M. ambrisia avicaena* subsp. nov., holotype ♂, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 5: *M. ambrisia avicaena* subsp. nov., paratype ♂, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 6: *M. ambrisia avicaena* subsp. nov., paratype ♀, Uzbekistan, Turkestansky Range, Kumbel Pass, Zaaminsky res., 3000 m, 10.–15.VII.1997, LEGEZIN leg.

Fig. 7: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

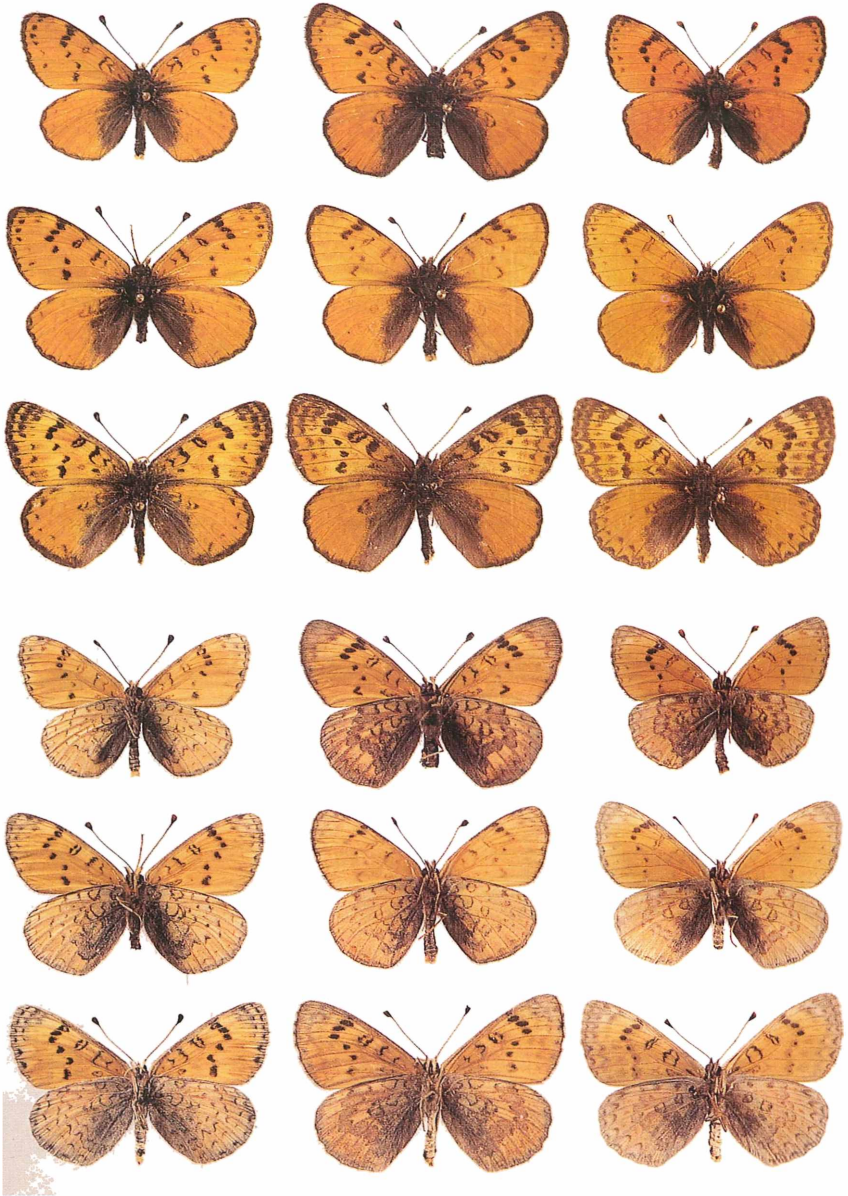
Fig. 8: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

Fig. 9: *M. alraschid*, ♂, Tadjikistan, Fanskie Mts., Kulikalon L., 3300–3500 m, 23.VII.1998, Yu. & A. VASILCHENKO leg.

Figs. 10–18: the same as 1–9, undersides.

1	4	7
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Colour plate IV



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