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## A new subspecies of *Parnassius (Kailasius) charltonius* GRAY, 1852 from Kyrghyz Kashgaria

(Lepidoptera, Papilionidae)

by

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**Summary:** A new subspecies *Parnassius charltonius aenigma* subsp. nov. is described from Kyrghyz Kashgaria, east of the Alai Valley. It is characterised by its large size, a distinct black pattern, a narrow submarginal band, the white space between the black spots in the forewing cell being narrower than the adjacent black spots, and by a wide marginal darkening, a large rounded red postdiscal spot with two white pupils and developed and noticeably lengthwise elongate submarginal spots suffused with blue scales on the hindwing. The new subspecies is most similar to *Parnassius charltonius anjuta*, *P. ch. mistericus*, and *P. ch. romanovi*, but clearly differs from them by a large proximal lengthwise extension towards the wing base of the red postdiscal spot on the hindwing underside which produces an acute-angled corner with a black V-shaped border.

### Introduction

In 2003 the authors were involved in field expeditional investigations of mountain insects of Kyrghyz Republic carried out within the Agreement on scientific cooperation between the Siberian Branch of Russian Academy of Sciences, the National Academy of Sciences of Kyrghyz Republic, and the Kyrghyz National Centre on Developing of Mountain Territories. During this expedition, in July, we found a new subspecies of *Parnassius charltonius* GRAY, 1852 in the ravine of the eastern Kyzylsuu river (the upper western part of Ulugchat – Tarim Basin east of the Alai Valley). This territory should be aptly considered as Kyrghyzstan's part of Kashgaria by its landscape and biota. The butterflies collected noticeably differ from other subspecies of *Parnassius charltonius* GRAY, 1852 known, but should be placed amongst the East Pamirs and Hindu-kush-Karakorum subspecies group (*deckerti*-group). The description of new subspecies is given below.

### *Parnassius (Kailasius) charltonius aenigma* subsp. nov.

(Colour plate XXIVa, figs. 1–4)

Holotype ♂: Kyrghyzstan Kashgaria, east from the Alai Valley, the right bank of the Kyzylsuu River at its confluence with the Koksuu River, loess-pebble bluff, 2900 m a.s.l., 19.VII.2003, V. V. DUBATOLOV leg., in collection of Siberian Zoological Museum, Institute of Animal Systematics and Ecology, Siberian Branch of Russian Academy of Sciences.

Paratypes: 1 ♂, 5 ♀♀, the same locality and data, collected by V. V. DUBATOLOV, D. A. MILKO, E. V. NIKOLAEVA, V. K. ZINCHENKO.

## Diagnosis

Wing expanse 62 (paratype) to 67 (holotype) mm in males, 68–74 mm in females; forewing length 39 (paratype) to 40 (holotype) mm in males, 41–43 mm in females. Almost all specimens, mainly females, have a relatively elongate forewing with a prominent apex. The semi-hyaline border along the wing's outer margin is quite wide and has a small protuberance at vein M<sub>2</sub> (weakly expressed in one female only). Submarginal band is blackish and more intensive dark in males; it is relatively narrow (1–2 mm in males and 2–3 mm in females) but contrasted and separated with a narrow light band from the marginal semihyaline border. The central band is composed by an oblong costal spot and a diffuse rounded spot between veins CuP and A. Between these two spots a black suffusion is developed which is curved towards the base of vein CuP. Black spots in the cell are large and divided by a white space noticeably narrower than the black spots. The cell base is sparsely covered with black scales almost up to the base of CuP vein. The fore wing underside pattern the same but paler; only central parts of the spots in the cell are intensive black.

Hindwing with a large red (orange in two paratype specimens, male and female) oval post-discal spot appreciably extended towards the wing base, that is especially expressed in females. The proximal side of this postdiscal spot is bordered by a wide strongly curved crescent-shaped black stripe. There are two whitish pupils within the red spot; they are blurred and to some extent vary in size. There is a small rounded triangular red spot near the fore margin. It is also black-rimmed and in females usually contains a white ocellus which also vary in size. In some cases there is a blackish or greyish line between these red spots. Another reddish elongate spot is situated between vein CuA and inner part of the tornal angle. There is often a blackish spot between this spot and the postdiscal red spot in space between veins CuA–M<sub>3</sub>; in females it is usually accompanied with reddish scales. Males have a small greyish spot of irregular shape in space between vein Sc and the cell, which lies slightly proximally from the origin of vein R<sub>s</sub>; this spot is more distinct on wing underside. The submarginal ocelli are oblong and appreciably elongate along veins, with relatively well-expressed blue suffusion inside. Between these submarginal ocelli there is a wide blackish space, that is separated from the red spots by a narrow white space. The hindwing base, up to the middle of the cell, as well as the entire anal margin up to vein CuP, are covered by black scales.

The main feature of the hindwing underside pattern is the shape of the large red spot which is strongly extended towards the wing base by its quite acute-angled corner, so that the wide proximal black bordering of the spot is almost V-shaped. The hindwing underside pattern is relatively paler than that of the upperside and all its whitish-in-red pupils are considerably larger than above.

## Comparison

With the presence of large red rounded spots and a wide submarginal darkening on the hindwings, the new subspecies is related to the Himalayan-East Pamirs group of subspecies (or *deckerti*-group): *P. ch. anjuta* JU. JU. STSHETKIN & KAABAK, 1985 (Mynkhadjyr Mts., Eastern Pamirs), *P. ch. mistericus* KAABAK, SOTSHIVKO & TITOV, 1996 (Sarykolsky Range, Eastern Pamirs), *P. ch. robertjan* EISNER, 1959 (Northern Chitral, Vakhansky and Ishkashimsky Ranges, South-Western Pamirs), *P. ch. deckerti* VERITY, 1907 (Ladakh and Zaskar) and others. From the first one, *P. ch. aenigma*, it differs by larger size of the red spots on the hindwing upperside and also by invariable presence of two white pupils. The second subspecies, *P. ch. mistericus*, has noticeably smaller red spots, which even are slightly transverse, and also by a more diffuse

lack pattern on the forewing. In *P. ch. deckerti*, the female has large red eyes quite of the same size as in the new subspecies, but also has the submarginal dark band considerably wider, so by its width this band is comparable with the spots near the costal margin even in the cubital area. Moreover, *P. ch. deckerti* and *P. ch. robertjan* have a white space between the black spots in the cell on the forewing wider than each of them, while in *P. ch. aenigma* subspec. nov. this space is considerably narrower than the adjacent black spots. However, the most distinctive feature of the new subspecies, that is practically not expressed in another subspecies, is a strong proximal extension of the red postdiscal spot towards the wing base on the hindwing underside, so that an acute-angled corner is formed. In spite of this, the distance between this corner and the discal vein along vein  $M_2$  is almost 1.5 times greater than the width of the proximal V-shaped black border of the red spot. In other subspecies this distance is considerably longer even if there is some proximal corner of the black border of the red spot.

At present time there is not any adopted opinion on the number, volume and composition of the group of subspecies within *Parnassius (Kailasius) charltonius* (BRYK, 1984; WEISS, 1991; etc.). Several features intermediate between the *deckerti*- and *romanovi-vaporosus*-groups are displayed in *P. ch. robertjan* as well as in large series of specimens from many parts of the species area (TSHIKOLOVETS, 1994 [1996]).

Other Alai-Pamirian subspecies of *P. charltonius* are characterised first of all by a wider light band which separates the large red spot from the marginal darkening on the hindwing upper-side and also by the shape of the red spot which is slightly transversal but never lengthwise elongated. The following subspecies are known in the Alai-Pamirs: *P. ch. romanovi* GRUM-GRSHIMAILO, 1885 (including *princeps* HONRATH, 1887; Alai and Transalai Ranges), *P. ch. vaporosus* AVINOV, 1913 (Western and North-Western Pamirs) and *P. ch. ljudmilae* LESIN & ZABABAK, 1991 (western part of the Hissar Range). Between them the first one is more related to the new subspecies by a narrow and contrasted dark pattern on the forewing and by presence of two white pupils in each of the large postdiscal spots on the hindwing and also by the geographic distribution. *P. ch. romanovi*, according to our data, usually has only one white ocellus in the red spot on the hindwing while the typical *P. ch. vaporosus* completely lacks white pupils and, besides, has a very pale dark pattern on the wings. The new subspecies differs from these three subspecies by a wider marginal darkening on the hindwing and by a specific shape of the proximal edge of the red postdiscal spot on the hindwing underside.

#### Habitat

Quite fresh specimens of the new subspecies were collected near the edge of steep loess-ebble bluff (col. pl. XXIVa, fig. 5) of NW exposition. They were flying along it shortly after noon. The type locality is quite low (2900 m a.s.l.) for the species, while the altitudes of the main habitats of *P. charltonius* are between 3400–4200 m a.s.l. (BOGDANOV et al., 1997), although populations (imagines!) were recorded at the lowest limits of 2500–3000 m a.s.l. at Jordan kishlak *P. ch. romanovi*, the northern slope of the Alai Range (TSHIKOLOVETS, 1994 [1996]) and Shawa Pass, 2800 m a.s.l. (North-Western Afghanistan, *P. ch. woigti* BANG-HAAS, 1927; WEISS, 1991) and 2600 m a.s.l. (*P. ch. vaporosus*, the Vanch Range (TSHIKOLOVETS, 1994 [1996])). But anyway, the type locality of *P. ch. aenigma* is situated quite far from high rocky biotopes.

#### Etymology

This subspecies name is derived from the Greek „aenigma“ – enigma, riddle.

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Explanation of colour plate XXIVa (p. 473):

Fig. 1: *Parnassius charltonius aenigma* subsp. nov., holotype ♂, Kyrghyzstan Kashgaria, east from the Alai Valley, the right bank of the Kyzylsuu River at its confluence with the Koksuu River, loess-pebble bluff, 2900 m a.s.l., 19.VII.2003, V. V. DUBAROLOV leg., upperside.

Fig. 2: Id., underside.

Fig. 3: *Parnassius charltonius aenigma* subsp. nov., paratype ♀, the same locality and data, upperside.

Fig. 4: Id., underside.

Fig. 5: The type habitat of *Parnassius charltonius aenigma* subsp. nov.: Kyrghyzstan Kashgaria, east of the Alai Valley, the right bank of the Kyzylsuu River at its junction with the Koksuu River.

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Colour plate XXIVa

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Colour plate XXIVb

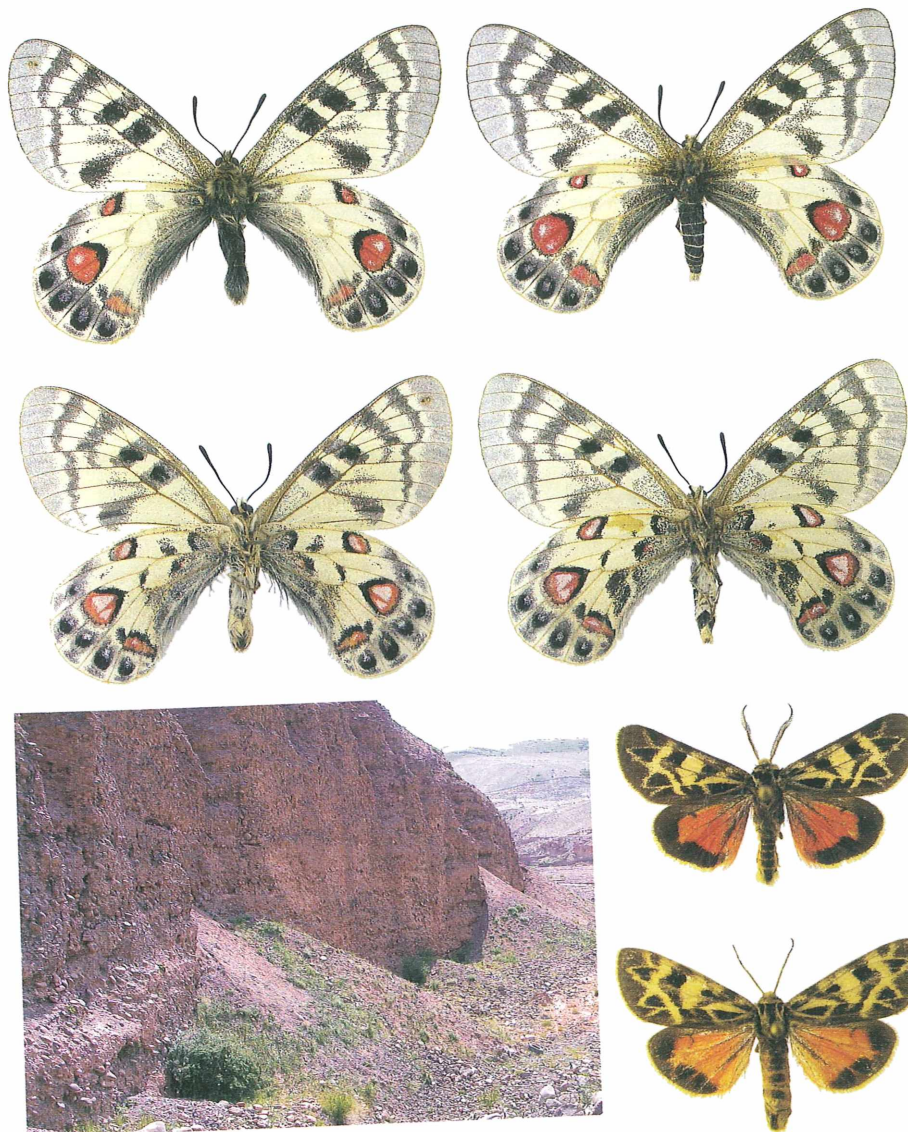
DUBATOLOV, V. V. & V. O. GURKO: A new subspecies of *Paelearctia gratiosa* (GRUM-GRSHIMAILO, 1890) from the Pamirs (Lepidoptera, Arctiidae). – *Atalanta* **34** (3/4): 440–442.

Fig. 1: *Paelearctia gratiosa sarezica* subspec. nov., holotype ♂, Tadjhikistan, the Pamirs, Rushan District, the Rushan Range near the Lake Sarez, 5 km N of Irkht meteorological station (towards the Usoi Goaf), on a dark scree, h = 3700 m a.s.l., 10.–20.VII.1996, V. GURKO leg.

Fig. 2: *Paelearctia gratiosa sarezica* subspec. nov., paratype ♀, same data.

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Colour plate XXIVa / XXIVb



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