ON THE GENUS KAILASiUS F. MOORE (LEPIDOPTERA, PAPILIONIDAE)
IN THE MIDDLE ASIA1

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Three species of Kailasius are known from Kyrgyzstan and Tajikistan – K. charltonius, K. loxias and K. autocrator. All the three species occur in a wide range of altitudes from 2700 m (river banks) to 4200 m (subnival rocky slopes), following the distribution of their host plants, mainly the xerophilous species of Corydalis (sect. Strictae), the populations are never abundant. Distribution and ecology of the subspecies known from the region is discussed. Flight of K. autocrator and K. charltonius was observed biannually.

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One of the most rare and exotic subdivisions of the Apollo butterflies is the so-called “charltonius”-group that consists of five systematically close species. Some authors (1) separate these species into a different genus Kailasius F. Moore. Three species of the genus – K. loxias Püng., K. autocrator Avinov and K. charltonius G. R. Gray, – are widespread in the mountains of the Middle Asian countries (Tajikistan and Kyrgyzstan).

The species of the genus Kailasius are usually found at the elevation of 2700 – 4200 meters above the sea level. The butterflies are never numerous, the highest densities can be observed on places where caterpillars’ food plants grow, or where nectar sources abound. Larval food plants are typically perennial xerophiles from the genus of Corydalis Vent., subsection Strictae. These plants are primarily distributed in arid continental and ultra-continental climate zones of the mountains. Suitable habitats can be divided into two types: 1) deluvial slopes composed of reddish gravelly and clayey sediments, cliffs, alluvial terraces at elevations of 2700 – 3000 meters, covered by alpine xerophilic vegetation; 2) gravel slopes and rocks with petrophilic plants, at elevations of 3000 – 3900 meters. The Corydalis plants often establish independent formations in both habitats. Usually the “lower” habitat is connected to the “upper” habitat and forms a vegetation zone which is spread over a wide range of altitudes from desert to the subnival belt. The two habitats can also be separated from each other. As the occurrence of the butterflies is largely determined by the presence of their host plants, Kailasius spp. show similar interzonal altitudinal distribution patterns, with the ranges of the butterflies and the relevant Corydalis spp. largely overlapping.

The butterflies fly only during the sunny hours, in the mornings they prefer rocky slopes with an eastern exposition which are heated up by the rising sun. In the afternoon, the butterflies migrate to slopes with a western exposition. When the weather is unfavourable, and at night, the butterflies hide between stones or in rock crevices. The flight is fast, usually the butterflies glide above gravel slopes or close to cliffs, making use of rising air currents. It is characteristic of male butterflies to patrol particular areas. Female butterflies are more mobile.

The biology and habitat of three Kailasius species which occur in Middle Asia is described below.

1 The present article was first published in Estonian in 1994 (Pototski, A., Salo, S. 1994. Apolloliblikatest Kailasius F. Moore (Lepidoptera, Papilionidae) Kesk-Aasias. – Lepinfo 9: 54-56). The interest toward Apollo butterflies in general and the taxa belonging to the charltonius-group (often treated as separate genus or subgenus Kailasius) in particular remains high which is the reason why we decided to publish the article of year 1994 in English translation. The present translation of the 1994 article is published in its original form, without additions or corrections. Nevertheless, we replaced the term Central Asia by Middle Asia which appears more appropriate when referring to the countries in question (Tajikistan and Kyrgyzstan).

The present English translation will serve as background for a forthcoming publication summarizing recent advances in the study of Apollo butterflies from the charltonius-group. In particular, in the course of 18 years which have passed since the publication of the article in 1994, a new species belonging to the charltonius-group has been described, Parnassius (K.) davydovi Churkin, 2006. Moreover, several new subspecies from the charltonius-group have been described and new data about the distribution and biology of these butterflies have been accumulated.
Fig. 1. *Kailasius charltonius* G. R. Grey ♂ (wingspan 64 mm) – Kyrgyzstan, Transalai Mts., Aram-Kungei Valley, 3500-3770 m, 23.-25.07.1998, A. Pototski leg./det.

Fig. 2. *Kailasius charltonius* G. R. Grey ♀ (59 mm) – Kyrgyzstan, Transalai Mts., Aram-Kungei Valley, 3800 m, 16.07.1988, A. Pototski leg./det.
Kailasius charltonius G. R. Grey, 1852 (Fig. 1, Fig. 2) is distributed in Pamir-Alay, Pamir, Hindu Kush, Karakoram and Himalayas mountains (1).

The abundance varies among years (6). In particular years, the population density may be high but close to minimum in some others. The cause of the fluctuations is most likely in the semivoltine life cycle: in the rough climate of high mountains, the larvae are unable to complete the development in one year. From more than twenty subspecies only four have been described from the Middle Asian mountains.

Kailasius charltonius romanovi Grum-Grshimailo, 1885 (=princeps Hornath, 1887) was described from the central part of the Alay mountain ridge.

The authors encountered butterflies of this subspecies in July 1988 in the western part of the Trans-Alay mountain range, in a river valley at an elevation of 2700 – 4000 meters.

The butterflies are rare in the lower habitat where they fly on gravelly and clayey deluvial slopes with southerly aspect, washed off by spring water, i.e. at the lower limit of the distribution of the alleged food plant, Corydalis stricta Steph. et Fish. The butterflies fly higher on the slopes with a northern exposition, on scree slopes and rocks inhabited by another species of Corydalis: C. gortschakovii Schrenk. It is interesting to note the difference in the morphology between the populations of the different elevations.

Kailasius charltonius vaporosus Avinov, 1913 was described from the Darvaz mountain ridge, Vishavar pass. This subspecies occurs in the Darvaz, Vantsh, Jazgulem, Peter the Great, Rushan, Shugnan, Shakhdara and Ishkashim ranges.

Kailasius charltonius anjuta Ju. Ju. Stshtekin et Kaabak, 1985 was discovered in 1983 in East Pamir, on the left bank of the Aksu (= Oksu) River in the Mynkhadzhir mountains at an elevation of 4000 – 4200 meters. Butterflies were flying on scree slopes next to cliffs in the first half of August (6, 12).

Fig. 3. Kailasius loxias Püng. ♂ (61 mm) – Kyrgyzstan, Kaindy-Katta Mts., Sary-Dzhaz River Valley, 3500-3800 m, 12.07.1986, A. Pototski leg./det.
Fig. 4. *Kailasius autocrator* Av. ♂ (59 mm) – Tajikistan, Rushan Mts., lower course of Murghab River, 2900 m, 21.07.1988, A. Pototski leg./det.

Fig. 5. *Kailasius autocrator* Av. ♀ (57 mm) – Tajikistan, Rushan Mts., lower course of Murghab River, 2900 m, 21.07.1988, A. Pototski leg./det.
Kailasius charltonius ljudmilae Lesin et Kaabak, 1991 was found for the first time on August 10th, 1985 in the Gissar (=Hissar) mountain ridge, at the upper course of the Diakhan-Dara River by V. Lesin. A permanent population was found in the same place in 1989 in the middle of August, on steep scree slopes with scarce herbaceous vegetation, and on rocks at an elevation of 3700 – 3800 meters (11).

In the Middle Asian mountains, the caterpillars of *K. charltonius* feed on *C. gortschakovii* and apparently also on *C. stricta*, which grow on scree slopes and in rock crevices.

*Kailasius loxias* Püngeler, 1901 (Fig. 3) was discovered in 1900 by V. Rückbeil in China, in the valley of the Aksu River (in Kyrgyzstan, this river is called Sary-Dzhaz). This species has been reported only from the eastern part of the Tian Shan Kokshaaltau mountain ridge. In Kyrgyzstan, this butterfly was discovered as recently as in 1980. Until now, only two subspecies have been described, one of them – ssp. *tashkorensis* Kreuzberg, 1984 – can be found in tributary valleys of the Sary-Dzhaz in Kaindy and Inylochek mountain chains (3, 8).

According to the authors’ observations, the butterflies fly from the end of June to the end of July at an elevation of 2800 – 4000 meters. Butterflies can be found both in the rills, where their caterpillars’ food plants grow, as well as higher, next to the cliffs. The caterpillars are known to feed on *Corydalis krasnovii* Michailova (7, 8, 9).

*Kailasius autocrator* Avinov, 1913 (Fig. 4, Fig. 5) is distributed in Tajikistan and Afghanistan, in the Badakhshan mountains. The species was described on the basis of a single female which was caught by A. Hohlbeck in 1911 in the Vanch mountain range, Gushon pass. For the second time in Tajikistan, this species was found only in 1971, in Vanch, Kashtiga valley. In 1985, a permanent population was discovered on the northern slopes of the North Alichur mountain ridge, next to Sarez lake, and also on the Vanch and Rushan ranges at the elevations of 3350 – 3900 meters (5).

A. Avinov (4) described this taxon as a subspecies of *K. charltonius*, and it was first considered as a separate species by H. Kotzch (2).

Larval food plants are *Corydalis fimbrillifera* Korsh. and *C. bucharica* M. Pop. (10).

In 1988, in the second half of July, this species was observed by the authors on the northern slopes of the Rushan mountain ridge, at the lower course of the Murghab River. The butterflies were flying at an elevation of 2800 – 3100 meters above gravel slopes and next to the rocks. Single specimens were also found on clayey slopes in the habitat of *C. fimbrillifera*. We observed a female butterfly flying next to the food plants of the species on the shores of Shadau lake.

Urmas Jürivete, Tiit Marnot, Aare and Rein Lindt observed this species between 1988 – 1991 on the northern slopes of the Vanch valley, at an elevation of 2800 – 3300 meters. The butterflies have been flying at sites with the species’ host plant *C. bucharica* growing, next to the rocks and above the gravel slopes.

References


