

**Taxonomic notes on the *Plebeius christophi* (STAUDINGER, 1874) complex
with descriptions of new taxa**

(Lepidoptera, Lycaenidae)

by

SERGEI V. CHURKIN & VLADIMIR A. PLETNEV

received 11.IV.2012

Summary: Two new species of blues are described: *Plebeius aleremiticus* spec. nov. (Tadjikistan, Zeravshan river valley, Matcha v.) and *Plebeius arpa* spec. nov. (Kyrgyzstan, SW Tian-Shan, Arpa valley). Both species belong to the *Plebeius christophi* (STAUDINGER, 1874) complex. New important data on the taxonomy of the complex are given.

Резюме: В статье описаны два новых вида голубянок: *Plebeius aleremiticus* spec. nov. (Таджикистан, долина реки Зеравшан, п. Матча) и *Plebeius arpa* spec. nov. (Киргизия, ЮЗ Тянь-Шань, долина реки Арпа). Оба вида относятся к комплексу *Plebeius christophi* (STAUDINGER, 1874). Приведены новые важные данные по таксономии комплекса.

Introduction: The representatives of the *Plebeius christophi*-complex of species are widely distributed from the deserts of Kazakhstan to the Himalaya. However, the first serious review of it was published only recently (ZHDANKO & CHURKIN, 2001). It was shown that some taxa which had been previously considered as synonyms of *Plebeius christophi* (STAUDINGER, 1874) represent separate species. The complex was divided into two parts according to the food plants of larvae: *Alhagi*-group and *Hippophae*-group. Several new species were found, mainly in Tian-Shan (ZHDANKO, 2001; CHURKIN, 2003; CHURKIN & ZHDANKO, 2008).

In the course of the study of this complex, two new species were found, both in the river valleys - Zeravshan (Serafshan) valley in Ghissar, Tadjikistan and Arpa valley in SW Tian-Shan, Kyrgyzstan; the representatives of the complex had not been recorded from these territories in the past. In both cases the known populations are fully and widely isolated from the known distribution areas of other taxa. The food plants are supposed to be *Hippophae* (this needs confirmation, but the probability is very high because the butterflies were collected on/near *Hippophae* bushes). A careful examination of the genitalia and external characters leads to some very important conclusions, which will be presented below.

Worth to note that simple conceptions uniting practically all known taxa of the complex in one species have no sense. Such an idea looks attractive only for the scientists who can not find the logic and relations among the available specimens and populations. Moreover, usually it correlates with simple bad basical, taxonomic and geographical knowledge. As an example we can use the books prepared by TSHIKOLOVETS. CHURKIN pointed out for several times that this author simply ignored the fauna which he has "studied", and the *Plebeius* taxa are a good example of this. In TSHIKOLOVETS (2005: plate 47) under the name "*argivus*" the representatives of several species, distributed from West Tian-Shan to the upper stream of Naryn river and from the bottom of Fergana valley to the highlands of Kashgaria, are united. The author does not pay any attention to the fact that even the complexes of *Colias* and *Parnassius* are represented by different species - or at least, subspecies - in quite different zoogeographical districts. After this we are not surprised to find representatives of the *Plebeius argus*-complex among so-called "*argivus*": the specimens from 14 to 18 belong to *P. dzhizaki* ZHDANKO, 2000. By the way, this species has not been recorded from Kyrgyzstan, but the author of the book overlooked this serious fact. Unfortunately, the number of mistakes in identifications is too high, and they were found in all more or less difficult complexes of Rhopalocera. For example, TSHIKOLOVETS simply did not separate *M. humulata* STAUDINGER, 1901 from *M. fergana* STAUDINGER, 1882 (pl. CVI, where many butterflies are confused), while the *M. sultanesis*-taxa and *M. minerva*-taxa are named, all results of lectotype designations which are accepted as valid in the text of the same book are neglected (pl. CIV, CV).

The HTs of the new species are deposited in the Darwin State Museum (Moscow), the PTs are in the collections of the authors and of the Hermitage of Saint Alexius (Yaroslavl region, Russia).

Abbreviations: FW - forewings, HW - hindwings, HT - holotype, PT - paratype, TL - type locality.

***Plebeius arpa* spec. nov. (col. pl.: 7-12)**

HT ♂, Kyrgyzstan, Arpa river vall., west from Arpa v., 2700-2800 m, 2.-3.08.2011, S. CHURKIN & V. PLETNEV leg.

PTs: 34 ♂♂, 25 ♀♀, same data, S. CHURKIN & V. PLETNEV leg.

NOTE. The closest relatives are distributed in the Naryn river valley (*P. churkini* ZHDANKO, 2001, *P. exterius* ZHDANKO, 2001) and in NW Kashgaria [*P. rogneda* (GRUM-GRSHIMAILO, 1890); *P. rogneda nura* ZHDANKO & CHURKIN, 2005]. Theoretically, contacts are possible only with *P. churkini* ZHDANKO (Arpa river represents the upper stream of Ala-Buka river, the tributary of the upper part of Naryn river; thus, direct contacts with *P. exterius* ZHDANKO are impossible, and simple comparison with this species is not necessary - and the distinctions are obvious) and *P. r. nura* ZHDANKO & CHURKIN - the latter represents a highland subspecies of *P. rogneda* (Gr.-Gr.), while the nominate subspecies is distributed in the lowlands of Chinese Kyzyl-Su river). The new species is easily distinguished from both neighbours by the wide and dense bluish suffusion on the HW underside, developed metallic spots in the HW submarginal pattern, always developed black submarginal HW dots on the upperside of the ♂♂. In addition, *P. r. nura* ZHDANKO & CHURKIN is larger, the FW underside has another version of the pattern, while *P. churkini* ZHDANKO has contrasting whitish underside and totally bluish ♀♀.

Description and diagnosis: FW length 13,5 mm in the HT, 13-14 mm in the ♂♂ PTs and 13-15 mm in the ♀♀ PTs: the butterflies are definitely smaller than *P. r. nura* ZHDANKO & CHURKIN (14-16,5 mm) and statistically smaller than *P. churkini* ZHDANKO.

♂: Upperside violet-blue, typical for the complex, slightly deeper than in related species.

FW with narrow black margins with unclear inner border, the ends of the veins are sometimes slightly blackened. HW has the same black margins, a series of small black submarginal dots is always developed (the ♂♂ of *P. r. nura* ZHDANKO & CHURKIN are always

without these dots while in *P. churkini* ZHDANKO these dots are present only rarely).

FW underside: postdiscal spots are not greatly enlarged (the d-spot is not sharply smaller than the postdiscal spots), the postdiscal row as a whole is slightly but distinctly curved in the Cu-zone (in both related species it is straight, as a rule, with very rare exceptions; in the new species the situation is opposite). The submarginal (antemarginal) row is fully developed [in *P. rogneda* (Gr.-Gr.) this row is reduced at the apical side], as it is in *P. churkini* ZHDANKO but the orange spots are small, not bright but yellowish and often not distinct. On the contrary, the dark parts (elements) of the submarginal spots are developed and enlarged (in *P. churkini* ZHDANKO the orange parts of the spots are brighter while the dark parts are thin, small and delicate).

HW underside with dense bluish suffusion with greenish hue, it is widened up to the discal spot (both neighbouring species have this suffusion not widened, not dense but faint and expressed only at the bases of the wings). The postdiscal spots are only slightly smaller or even not smaller than those of the FW (in contrast to *P. r. nura* ZHDANKO & CHURKIN). This character is similar to that of *P. churkini* ZHDANKO but the latter has whitish-grey underside ground colour, while the new species has true deep grey (steel-grey) ground colour. The whitish spots between the postdiscal and submarginal rows are not contrasting and developed only near the submarginal spots. The submarginal spots have a distinctly different pattern than in *P. churkini* ZHDANKO: the colour of the inner parts (elements) is not bright orange but yellowish while the metallic parts are enlarged forming obvious metallic "plates" in all spots of the row (except the costal spot) - while in all other known species they are really developed only in two Cu-spots, as a rule.

♂ genitalia (fig.1: d, d1, d2; fig. 2: d, k): with relatively small uncus with short distal parts and flattened bases; dorsal (upper) blade of the valva is narrower than in both related species; aedeagus with very short distal part (some other details of the structure see below).

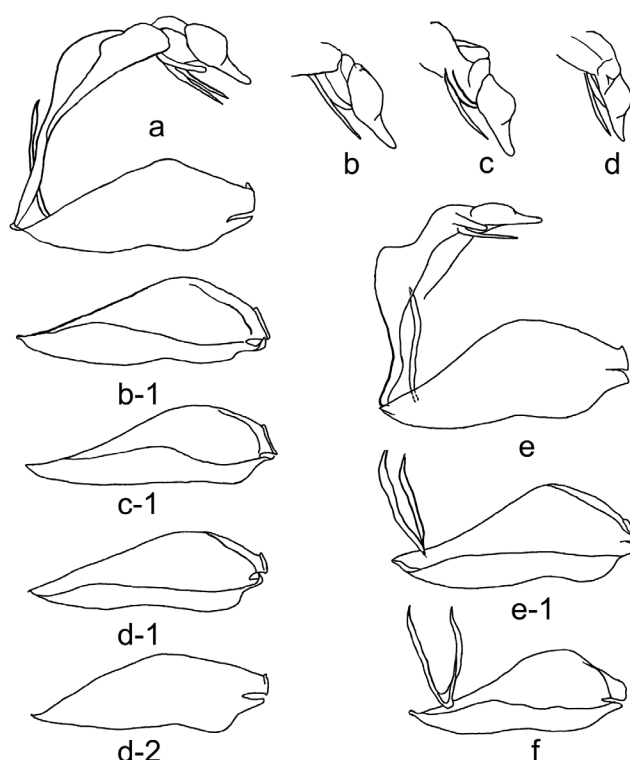


Fig.1: *Plebeius* spp., genitalia. a: *P. rogneda micropuctulatus* SHCHETKIN, 1975, Tadjikistan, Muksu r.; b, b-1: *P. rogneda nura* ZHDANKO & CHURKIN, 2005, Kyrgyzstan, Nura, PT; c, c-1: *P. churkini* ZHDANKO, 2001, Kyrgyzstan, Aktal, PT; d, d-1, d-2: *P. arpa* **spec. nov.**, Kyrgyzstan, Arpa val., PT; e, e-1: *P. aleremiticus* **spec. nov.**, Tadjikistan, Matcha, PT; f: *P. argivus* (STAUDINGER, 1886), Fergana valley (a, e: genitalia, lateral view; b, c, d: uncus, lateral view; b-1, c-1, d-1, e-1, f: valva, inside lateral view; d-2: valva, lateral view).

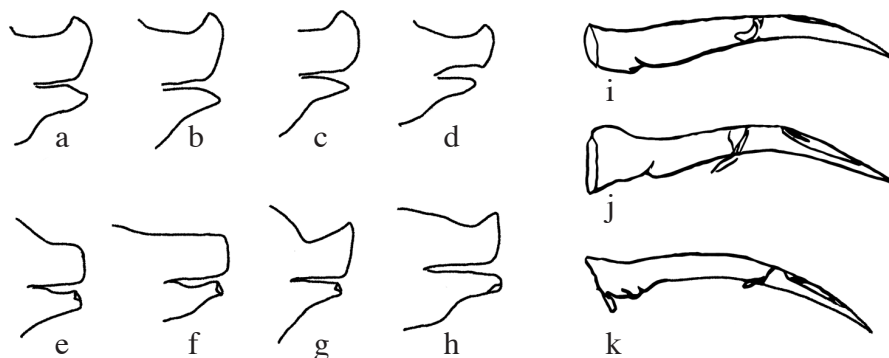


Fig.2: *Plebeius* spp., genitalia, partly. a, j: *P. rogneda micropuctulatus* SHCHETKIN, 1975, Tadjikistan, Muksu r.; b: *P. rogneda nura* ZHDANKO & CHURKIN, 2005, Kyrgyzstan, Nura, PT; c: *P. churkini* ZHDANKO, 2001, Kyrgyzstan, Aktal, paratype; d, k: *P. arpa* **spec. nov.**, Kyrgyzstan, Arpa val., PT; e: *P. argivus* (STAUDINGER, 1886), Fergana valley; f: *P. christophi* (STAUDINGER, 1874), Kazakhstan, Sauskan sands; g: *P. roxane* GRUM-GRSHIMAILO, 1887, Tadjikistan, Karabulok v.; h, i: *P. aleremiticus* **spec. nov.**, Tadjikistan, Matcha, PT (a-h: distal end of the valva, flattened; i-k: aedeagus).

♀: The upperside is deep violet-blue with blackish suffusion at the costal side of the HW and FW as well as in the marginal half of the FW. Such a colouration is very different from the ♀♀ of *P. churkini* ZHDANKO which are totally bluish with simple black margins; the main colour is much lighter than in the new or all other species. However, rare ♀♀ of *P. arpa spec. nov.* with reduced blackish upperside suffusion are found (see colour plate; the ground colour is deep being very different from that of *P. churkini* ZHDANKO). The underside pattern differs from *P. r. nura* ZHDANKO & CHURKIN very sharply, even more sharply than in the ♂♂: the coloured elements of the submarginal spots are yellowish, the difference in size between the postdiscal spots on the FW and HW is even less than in the ♂♂, the metallic “plates” are enlarged.

Distribution and biology: Arpa valley - a relatively large and isolated mountain valley situated west of Chatyr-Kel Lake. Topographically it is placed close to At-Bashi river valley but separated from the latter by a high and wide watershed (3300 m a.s.l.). Arpa river represents the upper stream of Ala-Buka river but the main valley of Ala-Buka is separated from Arpa valley by a long, high and narrow rocky canyon. Worth to note that the representatives of the *christophi*-complex had not been found in Ala-Buka and At-Bashi valleys in spite of serious efforts during 5 years. Arpa valley is bordered by Dzhaman-Too range, Fergansky range and Torugart Range - all rivers situated southward from the valley are the tributaries of Tarim basin, Kashgaria.

A very local species inhabiting high altitudes. As a rule, the Tianshanian taxa live not higher than 2000 m a.s.l. (usually less than 1500 m) because they prefer hot conditions and live only in flattened and hot valleys even in the southern Tian-Shan. *Hippophae* bushes occur in the Arpa valley, too but the fauna of these bushes is eliminated each year because of spring floods - so that we have not found any *Plebeius* species in the main Arpa river valley. However, a very small population was found at a small unnamed tributary; the biology of this population seems very unusual. The ♂♂ and ♀♀ were found on a steep grassy slope visiting the flowers (the ♀♀ usually flew separately from the ♂♂!), while single ♂♂ patrolled small *Hippophae* bushes along the spring. The ♀♀ were also sometimes collected at the stones near the bushes (as it is known for the ♀♀ of some other representatives of the complex). We have not seen ♀♀ laying eggs; thus, we can not exclude that the actual food plant grows on the slope, while the behaviour of the patrolling ♂♂ has another explanation. However, such a hypothesis seems doubtful and *Hippophae* seems to be a true food plant of the larvae. The number of the generations is unknown. The collected series may represent the second generation appearing very late because of the cold conditions.

Etymology: Toponymic name.

***Plebeius aleremiticus spec. nov.* (colour plate:13-18)**

HT ♂: Tadzhikistan, Turkestansky Mts. (southern slopes), Matcha r., 14.07.2011, 2400-2500 m a.s.l., S. SALUK leg.

PTs: 15 ♂♂, 9 ♀♀, Turkestansky Mts. (southern slopes), Matcha r., 14.07.2011, 2400-2500 m a.s.l., S. SALUK leg.

NOTE. The representatives of the complex are not known from Zeravshan river valley and Ghissar as a whole zoogeographical district. Situation with *P. bactrianus* GRUM-GRSHIMAILO, 1890 (TL: West Ghissar) is discussed in the first review (ZHDANKO & CHURKIN, 2001). The genitalia show that this new species is close to *P. christophi* (STGR.) (see below) while the external colouration is similar to that of “true” *Hippophae*-species, for example, *P. exterius* ZHDANKO or *P. mellarius* CHURKIN. The combination of the characters shows a very distinct “strong” species which cannot be confused with all other relatives.

Description and diagnosis: FW length 14,3 mm in the HT, 13-15 mm in the ♂♂ PTs and 13-15,5 mm in the ♀♀ (usually 14 mm in the ♂♂ and 15 in the ♀♀); the butterflies are definitely larger than *P. christophi* (STGR.) or *P. argivus* (STAUDINGER, 1886) (the latter is distributed in Fergana Valley) and not smaller than *P. r. micropuctulatus* SHCHETKIN, 1975, known from Kysyl-Su-Surkhob-Vakhsh basin (Muksu r., Obikhingou r.).

♂♂: Upperside violet-blue, much deeper than in *P. christophi* (STGR.), similar to *P. rogneda* (GR.-GR.).

FW with narrow black margins [even more narrow than in *P. christophi* (STGR.)] with slightly unclear inner border, the ends of the veins are sometimes slightly blackened [in *P. christophi* (STGR.) the inner border of the black margins is distinct]. HW has the same black margins, the series of small black submarginal dots is totally absent.

FW underside: postdiscal spots large but not greatly enlarged, the postdiscal row as a whole is moderately curved in Cu-zone (but this character is much more variable than in true *Hippophae*-species). The submarginal (antemarginal) row is fully developed [*P. rogneda* (GR.-GR.) has this row strongly reduced near the apex, *P. christophi* (STGR.) has this pattern reduced as a whole], but the orange elements are small and normally developed only in two cubital spots.

The HW underside is whitish-grey as a whole with faint and not dense bluish suffusion near the base. The postdiscal spots are very small, much smaller than on the FW, with not contrasting but developed whitish rings around (differing from the *rogneda*-pattern); the whitish triangular spots between this row and submarginal pattern are developed but also not very distinct and contrasting. The submarginal spots are similar to those of *P. churkini* ZHDANKO, but the orange elements are small, the metallic elements are distinct only in the Cu-spots.

♂ genitalia (fig. 1: e, e1; fig. 2: h, i): with thin and short branches of gnathos [similar to those of *P. christophi* (STGR.)], uncus much shorter than in all neighbouring species (view from above). Unfortunately, it is difficult to show both these distinctions in the figures. Aedeagus almost straight (for more details see below).

♀: The shape of the wings is more rounded compared to *P. rogneda* (GR.-GR.), the ground colour is violet-blue but densely suffused by blackish scales except the discal area of the FW and anal half of the HW. FW with distinctive d-spot which is more clear than it is usually in *P. rogneda* (GR.-GR.) or *P. churkini* ZHDANKO being more similar to *P. christophi* (STGR.). In addition, the submarginal row of spots is often slightly visible on the FW upperside - also similar to the character of *P. christophi* (STGR.).

Underside pattern with main distinctions known for the ♂♂ and with the same variability (the postdiscal row is sometimes straight, for example). The metallic “plates” (elements) of the submarginal spots on the HW are often enlarged forming unusual colouration compared to all relatives.

Distribution and biology: The series was collected within a small area with *Hippophae*-bushes. The species must be more widely distributed along Zeravshan river. The distribution area is far away and isolated from the areas of all other species by high mountain ranges. *P. christophi* (STGR.) populates the deserts near the mouth of Zeravshan river but has no biotops within the territory of the

valley.

The species flies almost alone, only *Turanana* sp. was collected nearby at a steep mountain slope.

Etymology: The name is derived from the name of the Hermitage of Saint Alexius (Yaroslavl region, Russia), where a considerable entomological collection is being created [Alexis (Latin) - Alexius and Eremiticus (Latin) - anchoritic, living in the hermitage].

The characters of the genitalia and the taxonomic situation: A detailed examination of the σ genitalia leads to several conclusions important not only for the status of new taxa but for the taxonomy of the complex as a whole.

The main investigations on the genitalia of this complex were done by ZHDANKO and published in a corresponding review (ZHDANKO & CHURKIN, 2001). It was stated that the genitalia have some specific characters in the shape of the uncus and (sometimes) the shape of the valva. Later, some more taxa were described; and it was found that some genitalia figures published in the review were too superficial or even wrong. As a result, new correct figures of the σ genitalia of *P. churkini* ZHDANKO, 2001 and *P. exterius* ZHDANKO, 2001 were prepared (CHURKIN & ZHDANKO, 2008).

Now we can state that the σ genitalia provide much more serious specific distinctions than it was suggested before.

1. The complex as a whole can be divided into two parts not basing on the food-plants but basing on the width and length of the branches of the gnathos (falces): *P. christophi* (STGR.), *P. argivus* (STGR.) and some other species have these branches smaller and shorter than *P. rogneda* (GR.-GR.), *P. churkini* ZHDANKO, etc. ("true" *Hippophae*-species). *Plebeius aleremiticus spec. nov.* belongs to the *christophi*-group according to this character while *P. arpa spec. nov.* is a true representative of the *rogneda*-group. We suppose that *P. tillo* ZHDANKO & CHURKIN, 2001 also belongs to the *christophi*-group, while all Chinese species (*P. choltagi* ZHDANKO & CHURKIN, 2001; *P. maidantagi* ZHDANKO & CHURKIN, 2001, etc.) belong to the *rogneda*-group, but this needs confirmation. Unfortunately, it is nearly impossible to figure this character - which is easy to compare having two real genitalia preparations under magnification but which is practically not obvious in the comparison of the figures (fig. 1: a, e). We suppose that photographs will be much more valuable in this case, but the angle of vision must be not usual.

2. The "lips" of the valva - two blades situated at the distal end of this sclerite - have much more serious taxonomic weight than it has been stated above, especially in the *christophi*-group. It is necessary to spread and flatten these blades to see their actual shape (using the small special thin glass, for example).

P. christophi (STGR.) has the dorsal blade ("upper lip") more or less rectangular with slightly rounded angles (fig. 2: f), while *P. argivus* (STGR.) has this blade shorter, practically square-shaped but with more rounded angles (fig. 2: e). *P. roxane* (GR.-GR.), 1887 shows a very different shape of the "upper lip" - it is gradually widened from the dorsal side (fig. 2: g). At the same time, the ventral blade is less curved in *P. christophi* (STGR.), so that the distal hook is more obvious after spreading. *Plebeius aleremiticus spec. nov.* has the dorsal blade abruptly widened at the dorsal end. Worth to add that the ventral part of the valva is abruptly widened near the ventral blade, while in other species the valva is widened only gradually.

These blades are also different in the studied species of the *rogneda*-group. The differences between the taxa are not so serious, but seem to be constant: *P. rogneda* (GR.-GR.) (all studied specimens from Muksu r., Alai Valley and the types of *P. r. nura* ZHDANKO & CHURKIN from Eastern Transalai) has the distal margin of the dorsal blade more or less straight and gradually but distinctly sloped inward, the ventral blade does not look conspicuously shorter than the dorsal blade (fig. 2: a, b). *Plebeius churkini* ZHDANKO and *P. arpa spec. nov.* (fig. 2: c, d) have the ventral blade shorter than the dorsal one, while the distal margin of the latter is convex. In addition, *P. arpa spec. nov.* has the dorsal blade obviously thinner than in other species.

3. The uncus presents the most important characters which, however, are not so easy to compare and to figure. The view from above provides some additional and very important distinctions, but it is hard to prepare a figure (it is logical to prepare it for a new review of the group).

From this point of view, the uncus of *P. aleremiticus spec. nov.* is much shorter than in all other relatives (fig. 1: e). Moreover, *P. roxane* (GR.-GR.) has the longest uncus, much longer than in *P. argivus* (STGR.) and *P. christophi* (STGR.).

In the other group, *P. rogneda* (GR.-GR.) has the uncus much longer than *P. churkini* ZHDANKO (it is obvious even from the lateral view - fig. 1: a, b, c). In addition, the uncus of *P. arpa spec. nov.* is not so inflated compared to *P. churkini* ZHDANKO, the bases of the uncus are more flattened (fig. 1: d).

4. The visible shape of the valva is dependent on the degree of de-chitinization and differs in the flattened and not-flattened versions (i.e. dependent on the time of preparation in alkaline solution). However, it is confirmed that *P. rogneda* (GR.-GR.) (all subspecies) has more widened and "hunchbacked" valva than *P. churkini* ZHDANKO (fig. 1: a, b1, c1, d1, d2). The valva of *P. arpa spec. nov.* is similar to that of *P. churkini* ZHDANKO, but obviously more prominent distally from the ventral side - the same character is found in *P. aleremiticus spec. nov.* as compared to his relatives (fig. 1: e, e1).

5. The aedeagus, as it was found before, also has some specific characters, which have not been studied for the *christophi*-group, but known for *P. rogneda* (GR.-GR.) and *P. churkini* ZHDANKO. In comparison to the last two species, *P. arpa spec. nov.* has the shortest aedeagus with shortened and small distal part (fig. 2 - i, j, k).

Discussion: Summarizing, it is clarified that the σ genitalia need a new and detailed study which can not be done in the present article. A new review is wanted, but the division of the complex into two groups basing on the genitalia features, and not on the food plants, is more logical. In addition, zoogeographical considerations confirm the new version of the division: western/northern and eastern/southern parts of Central Asia with correspondent mountain valleys.

Thus, if this hypothesis is true, we must accept that the representatives of both groups have changed the original food plants to *Hippophae* separately and independently.

Moreover, as we know now, *P. lepidus* ZHDANKO, 2000 has the food plant *Halimodendron halodendron* (DOVGAILO, K., pers. comm.; TOROPOV & ZHDANKO, pers. comm.). It means that the food plants might be different depending on the territory, and the distribution of the plants is not fully correlated with the distribution of different species of the complex. It confirms the hypothesis of the independent origination of different *Hippophae*-species.

The distribution of *P. r. micropunctulatus* SHCHETKIN, 1975 seems to be important. This taxon is only slightly different from *P. r. nura* ZHDANKO & CHURKIN from Chinese Kysyl-Su river. The similarity of these two taxa can be explained only if the species became widespread only recently, not far in the past - thus, the new population had no time to accumulate the differences. Now we can prove

that exactly *P. r. micropunctulatus* SHCHETKIN was settled recently - because it is only one true representative of the *rogneda*-group ("true- *Hippophae*" species) in the western part of Central Asia.

The newly found differences in the genitalia confirm also the species status of *Plebeius roxane* (GRUM-GRSHIMAILO, 1887). At the same time, the relations between *P. argivus* (STGR.) and *P. christophi* (STGR.) seem to be more close than it could be expected; we can not exclude that *P. argivus* (STGR.) represents only a subspecies distributed in Fergana valley (the probability of it is not high, however). Some authors used the name *submontanus* SHCHETKIN, 1960 instead of *roxane* (GRUM-GRSHIMAILO, 1887). This situation was discussed in the review (ZHDANKO & CHURKIN, 2001: 58); an important note must be added.

GRUM-GRSHIMAILO (1890) published some comments and figures of this taxon in his Pamirian book, outlining the differences from *P. christophi* (STGR.). It is absolutely clear that he distinguished the latter species and *P. roxane* (GR.-GR.)/*P. argivus* (STGR.). This fact is well known but nobody has paid attention that he had published a separate paragraph about *P. christophi* (STGR.) where he noted that he collected a large series of this butterfly in the vicinity of Shirabad, South Tadjikistan. But Shirobad is the type locality of *P. roxane* (GR.-GR.). Moreover, *P. christophi* (STGR.) was not mentioned in the first list of species collected at Shirabad (published together with the description) - and at the same time this town is surrounded by sandy deserts and sandy semideserts, the habitats of *P. christophi* (STGR.).

Theoretically, another species ("roxane") could be collected here (where it must be very local and rare), but all specimens which we have seen from the southern border of Tadjikistan belong exactly and only to *P. christophi* (STGR.). These facts confirm the hypothesis that GRUM-GRSHIMAILO changed his opinion about *P. roxane* (GR.-GR.) in 1890 and applied this name to another species compared to his first opinion and original description (see about this hypothesis in the review). He tried to "save" his name. In this case, *P. roxane* GR.-GR. must be placed as a synonym of *P. christophi* (STGR.) while *P. submontanus* SHCHETKIN, 1960 represents the bona species inhabiting the foothills and semideserts of the Tadjik depression. However, all this logical ideas can not be the base for the final conclusion: the study of the existing lectotype is wanted. Without this study we prefer to keep the name "roxane" for the species.

The taxa belonging to this complex are often very local and fully isolated from the neighbours living in the big or medium-sized river valleys. The southern taxa (Pakistan, Afganistan, India) seem to be not so local and isolated because *Hippophae* may live at the slopes and high altitudes, so, the borders of the valleys do not represent true barriers for the genetic exchange. On the contrary, the genetic exchange between the populations inhabiting different valleys in Russian Central Asia has been absolutely impossible during very long time. This results in more rich and complicated fauna, especially in Ghissar and Alai. Thus, we expect some more discoveries in the future.

Acknowledgements: We should like to express our gratitude to the friends who helped us in the expeditions: S. SALUK (Minsk), N. MAXIMOV (MOSCOW), V. KOROSTELEV (MOSCOW), E. URKUMBAEV (Dzhalal-Abad), T. GAZIEV (Gyshkhun, Vanch). Special thanks are also to A. L. DEVYATKIN for assistance with the English version of this article.

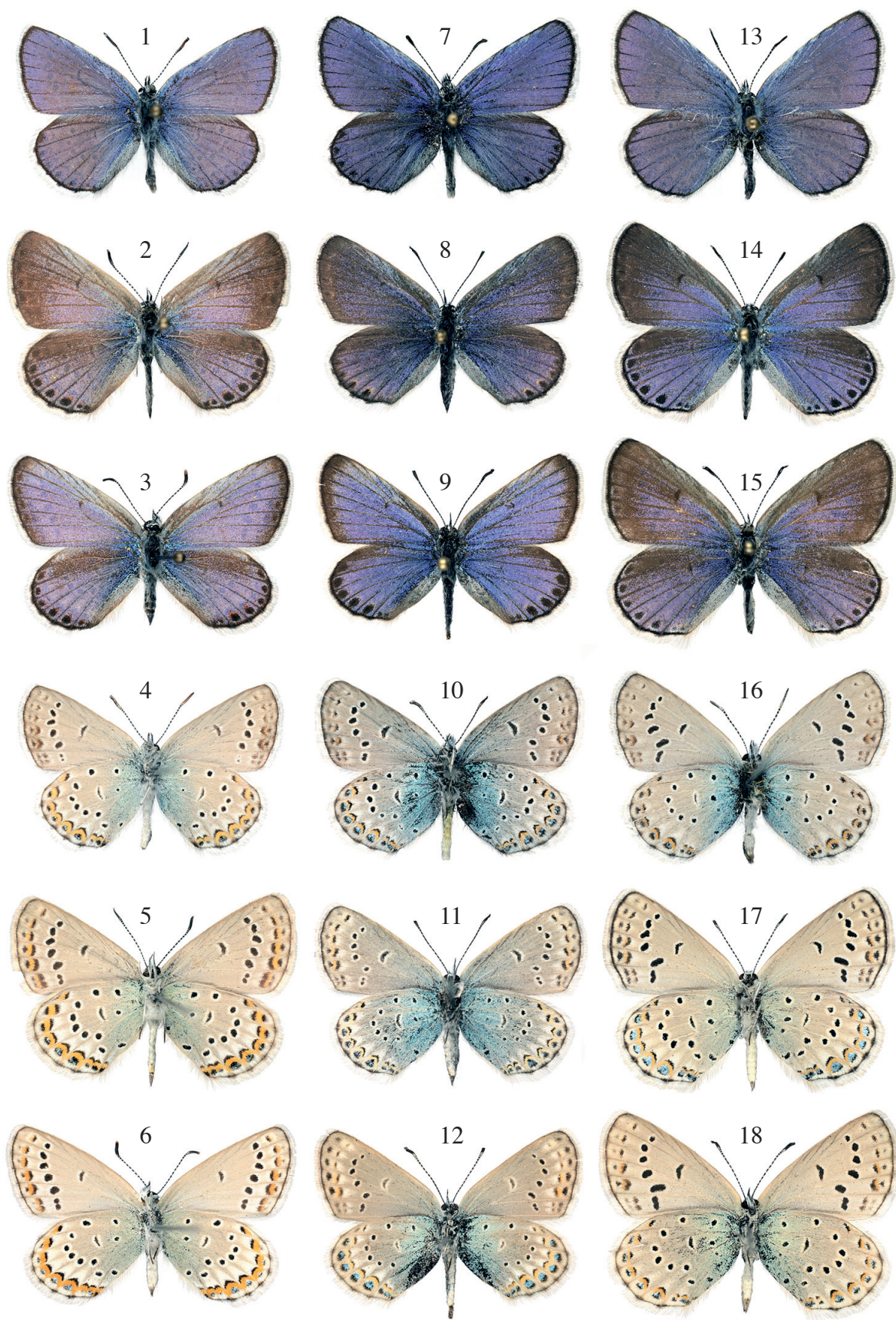
References

- CHURKIN, S. (2002): A new species of blues, *Plebejus zhdankoi* sp. n. (Lepidoptera, Lycaenidae) from West Tian-Shan. - *Helios* **3**: 121-127, Moscow.
- CHURKIN, S. & A. ZHDANKO (2001): A review of the *Plebejus idas-subsolanus* complex of the Asian part of Russia and Mongolia with the descriptions of new taxa (Lepidoptera, Lycaenidae). - *Helios* **4**: 3-74, pls. 1-4, Moscow.
- CHURKIN, S. & A. ZHDANKO (2008): New taxa of blues (Lepidoptera, Lycaenidae) from Tian-Shan.- *Atalanta* **39** (1/4): 297-310, pl. 416-417, Würzburg.
- GRUM-GRSHIMAILO, G. E. (1887): Bericht über meine Reise in das östliche Buchara. - In ROMANOFF, Mém. Lép. **3**: 387-402, St. Petersburg.
- GRUM-GRSHIMAILO, G. E. (1890): Le Pamir et sa faune lepidopterologique. - In ROMANOFF, Mém. Lép. **4**: 577, Taf. 21, St. Petersburg.
- KORB, S. (2004): Eine neue Colias-Unterart und eine neue Paralsa-Art aus Kirgizien (Lepidoptera, Pieridae und Nymphalidae). - *Alexandor* **23** (2): 115-117, Abb. 2, Paris.
- ZHDANKO, A. (2001): A new species of blues, *Plebejus churkini* sp.n., (Lepidoptera, Lycaenidae) from Inner Tian-Shan. - *Helios* **2**: 74-78, Moscow.
- ZHDANKO, A. & S. CHURKIN (2001): A review of the *Plebejus christophi*- complex (Lepidoptera, Lycaenidae) from Central Asia with the descriptions of new taxa. - *Helios* **2**: 50-73, Moscow.
- ZHDANKO, A. & S. CHURKIN (2005): A new name for *Plebejus rogneda grumi* ZHDANKO & CHURKIN, 2001 (Lepidoptera, Lycaenidae). - *Helios* **6**: 87-88, Moscow.
- TSHIKOLOVETS, V. (2005): The butterflies of Kyrgyzstan. - Brno-Kiev.

Addresses of the authors

SERGEI V. CHURKIN
Jubileinyi pr., 14-168
Reutov, 143952, Moscow reg., Russia
serghelios2007@yahoo.com

VLADIMIR A. PLETNEV
All-Russian Institute of Plant Protection
Chemicals,
Ugreshskaya str. 31
Moscow, 115088, Russia



1, 4: *Plebeius churkini* ZHDANKO, 2001, PT ♂, Inner Tian-Shan,
Naryn R. valley, Aktal vicinity, 1750 m, 23.07.2000, S. CHURKIN leg.
2, 5: *Plebeius churkini* ZHDANKO, 2001, PT ♀, same data.
3, 6: *Plebeius churkini* ZHDANKO, 2001, ♀, rare form, same loc., 20.07.2001.
7, 10: *Plebeius arpa* spec. nov., HT ♂, data in the text.

8, 11: *Plebeius arpa* spec. nov., PT ♀, data in the text.
9, 12: *Plebeius arpa* spec. nov., PT ♀, data in the text.
13, 16: *Plebeius aleremiticus* spec. nov., HT ♂, data in the text.
14, 17: *Plebeius aleremiticus* spec. nov., PT ♀ data in the text.
15, 18: *Plebeius aleremiticus* spec. nov., PT ♀, data in the text.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Atalanta](#)

Jahr/Year: 2012

Band/Volume: [43](#)

Autor(en)/Author(s): Churkin Sergei V., Pletnev Vladimir A.

Artikel/Article: [Taxonomic notes on the *Plebeius christophi* \(Staudinger, 1874\) complex with descriptions of new taxa 108-113](#)