Eckweiler, W.: Neue Taxa des Subgenus Agrodiaetus Hübner, 1822 aus Iran und China (Lepidoptera: Lycaenidae, Gattung Polyommatus)

Peigler, R. S.: New and reinterpreted observations on Actias luna (Linnaeus, 1758) (Lepidoptera: Saturniidae)

Köstler, W.: Außergewöhnliche Raupenzeichnung bei einer Population von Parnassius mnemosyne (Linnaeus, 1758) in Griechenland (Lesitse-Gebirge, Anatolische Rhodopen) (Lepidoptera, Papilionidae, Parnassiinae)


Kudena O., & Fric, Z. F.: On the identity and taxonomic status of Lycaena alcon rebeli Hirschke, 1905 — a long story of confusion and ignorance resulting in the fabrication of a “ghost species” (Lepidoptera: Lycaenidae)

De Freina, J. J.: Synanthedon angolana sp. n., eine neue Glasflüglerart aus Angola (Lepidoptera: Sesidae, Sesoinae, Synanthedonini)

De Freina, J. J., & Fischer, H.: Zur Verbreitung und Morphologie von Europlema semibrunnea (Pagenstecher, 1884) mit Erstnachweis für die Malediven und Bemerkungen zur Besiedlungsgeschichte des Archipels (Lepidoptera: Uraniidae, Epipleminae)

Koren, T., Crne, M., & Spanic, R.: On the questionable record of the Balkan Grayling, Hipparchia senthes (Fruhstorfer, 1908), in Croatia (Lepidoptera: Nymphalidae, Satyrinae)

Cassidy, A.: On some type specimens of Lycaenidae from South East Asia (Lepidoptera)
On the identity and taxonomic status of *Lycaena alcon rebeli* HIRSCHKE, 1905 — a long story of confusion and ignorance resulting in the fabrication of a “ghost species” (Lepidoptera: Lycaenidae)

Otakar KUDRNA and Zdenek F. FRIC

Dr. Otakar KUDRNA, Geldersheimer Strasse 64, D-97424 Schweinfurt, Germany; kudrna.meb@t-online.de
Dr. Zdenek F. FRIC, Institute of Entomology, Biology Centre of the Academy of Sciences of the Czech Republic, Braníkovská 31, CZ-37005 České Budějovice, Czechia; frie@entu.cas.cz

Abstract: The present paper describes the identity and taxonomic status and explains the taxonomic history of the butterfly originally named *Lycaena alcon rebeli* HIRSCHKE, 1905 and generally misidentified and/or confused with *Maculinea rebeli xerophila* BERGER, 1946. It is shown that *Lycaena alcon rebeli* HIRSCHKE, 1905, is a rare individual form confined to higher altitudes of the Alps. It is not closely related to *Maculinea rebeli xerophila* BERGER, 1946, or to any known lowland population of *Phengaris alcon* [SCHIFFERMÜLLER], 1775.

Keywords: Lepidoptera: Lycaenidae; *Phengaris alcon*. Taxonomy, nomenclature, variation, distribution.

Über Identität und taxonomischen Status von *Lycaena alcon rebeli* HIRSCHKE, 1905 — eine lange Historie von Verwechslungen und Fehlidentifikationen, resultierend in einer „Geisterart“ (Lepidoptera: Lycaenidae)


Aims and scope

The purpose of the present paper is to explain the identity, taxonomic status and history of a butterfly discovered more than 100 years ago and named *Lycaena alcon rebeli* HIRSCHKE, 1905. *Lycaena alcon rebeli* has been misidentified in almost all subsequent publications from 1907 (Seitz 1907–1909) to the present day. The case of this butterfly demonstrates both the importance of taxonomy as basic research and the damage caused by ignorance of facts, in this specific case leading to a fabrication of a ghost species combined with nomenclatorial confusion. Curiously, this “ghost species”, not the true *Lycaena alcon rebeli* HIRSCHKE, 1905, has been intensively studied by a number of research teams all over Europe (e.g. research projects MacMan and CLIMIT, cf. SETTLE et al. 2005). The present paper constitutes a contribution towards stabilisation of the classification and nomenclature of European butterflies.

History, identity and taxonomic status of *Lycaena alcon rebeli* HIRSCHKE, 1905

Over 100 years ago, Hans HIRSCHKE (1850–1921: [ANONYMUS] 1921), then a retired Austrian army captain (i.e. Hauptmann a.D.) spent the whole summer of 1904 in the Alps of Steiermark (Styria) collecting butterflies and moths in the Hochschwab mountains. There, at the altitude of approximately 1700 m, he found a striking and — to his opinion — in its features constant form of a ‘blue’ that he identified as “*Lycaena alcon F.*” — according to the present classification *Phengaris alcon* ([SCHIFFERMÜLLER], 1775) (photos of the neotype see in Figs. 7–9). Later, back in Vienna, he consulted H. Rebel at the Naturhistorisches Museum and compared his series of at least 8 specimens with 4 ♂♂ and 1 ♀ of *Phengaris alcon monticola* (STAUDINGER, 1901), apparently identified by H. REBEL. H. HIRSCHKE and H. REBEL considered that the Hochschwab series constitutes a then nameless “variety”. HIRSCHKE (1905) subsequently described and figured (see Figs. 10–11) the new form and named it after H. Rebel *Lycaena alcon var. rebeli* (Figs. 1–6), now referable to the genus *Phengaris Doherty*, 1892.

This form was diagnosed to be easily distinguished by the presence of a band of whitish or silver-greyish spots in the blue ground colour in the submarginal band adjacent to the marginal black line on the upper side of wings, particularly well pronounced on the hind wings and especially in the ♀ (see lectotype and paralectotype, Figs. 1–6). We note that similar spots are quite common in *Phengaris teleius* (BERGSTRÄSSER, 1779). We are not aware of the genesis of such forms, but we know now that they are very rare in *Phengaris alcon* ([SCHIFFERMÜLLER], 1775). HIRSCHKE (1905) made no precise reference to the specific site within the type locality of the “Hochschwab”, a mountain crest in Nordsteiermark (northern Styria), about 30 km long, the peak of which is a mountain of the same name, Hochschwab, of an elevation of 2277 m. The type series was, according to the label data, found at about 1700 m on the southern slopes of this ridge. HIRSCHKE (1905) failed to state what he meant under the term “form” or “variety”, nothing unusual at his life time. According to the valid Code (ICZN 1999) the name is available and is to be regarded as of subspecific rank.

The first reference to *rebeli* as a form found in Steiermark in a standard handbook was made apparently by SEITZ (1909: 320). The wing pattern has not been cor-
rectly described and the taxon’s characteristic “whitish spots” have been overlooked. We are convinced that this is almost certainly the first of a long series of misidentifications of rebeli.

After Hirschke’s death in 1921, at least a substantial part of his Lepidoptera collection came to the Natural History Museum in Vienna, where Hirschke’s conspicuous form remained more or less “forgotten” or “overlooked” for the following about 40 years. We do not know if all eight specimens of the original type series, all syntypes, have originally been deposited in the NHMW, probably not all. We know that a few specimens, almost certainly syntypes, are now in the Zoological Museum in Berlin (ZMHB) and in the Zoological Museum of the Kiev University (ZMKU).

After the Second World War, the Belgian lepidopterist L. A. Berger (1907–2000) observed that Phengaris alcon, treated then in the genus Maculinea van Eecke, 1915, utilizes two different larval food plants and frequents two different types of habitat – wet meadows on one hand and dry meadows on the other. Having subsequently examined the ♂ genitalia in the ♂♂, he took the apparently distinct genitalia for the confirmation of the species rank of what he deemed to be Hirschke’s rebeli; the majority of Berger’s specimens lack these spots, particularly, and are indistinguishable from nominotypical alcon. What Berger (1946) observed was a simple variation of the valva; he took the apparently distinct genitalia for the confirmation of the species rank of what he deemed to be rebeli. However, the ♂ genitalia in alcon are by no means constant; on the contrary, the variable shape of the valva is quite usual in the genus (Ebert 1961, Schulte 1958).

The [holo-]type of xerophila as figured by Berger (1946) does not appear to differ from alcon. However, the specimen deposited now in Berger’s collection and labelled “[holo-]type”, a ♀, strongly reminds of rebeli, but it is not a part of the type series as it has not come from the type locality. The label data of this specimen are: “Belgique: Tellin C.: 21.06.1942”. It appears that the true [holo-]type of xerophila is lost. Phengaris alcon is now extinct in Belgium; the site believed to be formerly inhabited by alcon (apparently including the type locality) of xerophila have been “improved” and grassland management intensified (S. Cuvelier, pers. com.).

Berger’s (1946) discovery of a supposedly new European butterfly species prompted Henri Beuret (1901–1960) to examine extensive material of both supposed species (Beuret 1949). Beuret’s meticulous comprehensive study of a long series of specimens from a range of localities failed to establish any constant taxonomic characters enabling the separation of what he then called “Maculinea rebeli” from “Maculinea alcon”. This has not prevented Beuret (1949) from naming one new subspecies of alcon and five new subspecies of rebeli:

- Maculinea alcon pseudoroboris Beuret, 1949 (CH: Tessin: Ascona: wetland form)
- Maculinea rebeli alpicola Beuret, 1949 (CH: Wallis: Zermatt: 2000 m)
- Maculinea rebeli magnalpícola Beuret, 1949 (CH: Tessin: Aïntanca, Fusciò)
- Maculinea rebeli macroconia Beuret, 1949 (CH: Appenzell: Narwie)
- Maculinea rebeli gudmensis Beuret, 1949 (CH: Bern: Gedmen)
- Maculinea rebeli cruciata Beuret, 1949 (CH: Jura: Südfalke des Blauen)

From Beuret’s (1949) description it is clear that his “rebeli” was not the true rebeli of Hirschke as none of the specimens he illustrated has the whitish submarginal spots (cf. Beuret 1957 pl. 12). The specimens of the type-series of his new “subspecies” are inevitably individually variable specimens from different localities. Because the specimens were of different provenience, Beuret (1949) afforded the specimens from each locality a subspecies rank. The above names proposed by Beuret (1949) are available from a nomenclatorial point of view, but the taxa erected by him are not worthy of recognition as distinct subspecies.

Following Beuret (1949) and probably influenced by his extensive paper, Forster & Wohlfahrt (1952–1955) treated what they called “Maculinea rebeli (Hirschke, 1905)” as a distinct species and figured it from “[Austria]: Steiermark: Hochschwab” (pl. 24, figs. 28, 33, 35). Wohlfahrt’s precise illustrations agree well with the true rebeli; the illustrated specimens originated from the same locality as the type series, but do not constitute a part of it.

Commencing in 1970 (Higgins & Riley 1970) and in the following decades a species called Maculinea rebeli or a subspecies called Maculinea alcon rebeli has been included practically in all European butterfly field guides. The name was accompanied by various descriptions and illustrations, all of which — so far as we have been able to examine — have failed to show or point out the whitish submarginal spots characteristic of the true Hirschke’s rebeli. However, these taxa were always attributed to Hirschke and usually dated 1904 instead of the true date of publication 1905. It is interesting to observe that the authors of the field guides have overlooked or ignored Wohlfahrt’s precise illustrations (Forster & Wohlfahrt 1952–1955). Thus we have to do with two taxa: Hirschke’s forgotten true rebeli on one hand and the misidentified “rebeli” of various authors on the other, erroneously attributed to Hirschke by all authors concerned. Most recently Tshikolovets (2011: 199) as one of the few authors since Forster & Wohlfahrt (1952–1955) figured a specimen of “Glaucopsyche alcon rebeli” (Hirschke, 1904 – 1905).
“AT: Hochschwab” now deposited in the Zoological Museum of the National Shevchenko University, Kiev, (ZMKU). This specimen may have originated from the type series and is now probably a paralectotype by implication; it is a ♂ showing weak whitish submarginal spots.

Z. Bálint has found the type series of *Lycaena alcon rebeli* Hirschke, 1905, in the Naturhistorisches Museum, Wien (NHMW), and designated the lectotype, a ♂, bearing the following label data: “*Lycaena alcon rebeli*, Lectotypus: [Austria]: Steiermark: Hochschwab: 1700 m: vii. 1904: Type: Hirschke [leg.]: det. Z. Bálint, 1990” (Bálint 1994: 73). The lectotype bears a label “type” of an unknown origin; since no type designation was published in the original paper (Hirschke 1905) the whole type series consisted of syntypes according to the Code (ICZN 1999), until the lectotype was designated. Bálint’s (1994) lectotype designation established the true identity of *rebeli*, but was overlooked by almost all subsequent authors. The exceptions are few and far between, e.g. Kudrna (2001, 2002) and Kudrna & Belicek (2005). The last named authors have subsequently designated the neotype of *Papilio alcon* [Schiffermüller], 1775, deposited in the Naturhistorisches Museum, Wien (Vienna); the type locality is “Austria: Burgenland: Zitzmannsdorfer Wiesen: 14.07.2002, Rachinger leg.” (Kudrna & Belicek 2005).

In his recent publication Habeler (2008) claims again a species rank for a butterfly he calls *Maculinea rebeli* (Hirschke, 1904 [*sic*]); the author is aware of the origi-
nal description of rebeli and its various illustrations, but he fails to draw attention to the whitish submarginal spots on the dorsal surface of hind wings, the most characteristic feature of rebeli. The aforementioned whitish spots constitute the single character distinguishing rebeli from any other form (s.l.) of Phengaris alcon ([Schiffermüller], 1775). Thus, in fact, Habeler’s (2008) considerations are not referable to Lycaena alcon rebeli Hirschiike, 1905, but to Phengaris alcon referred to as P. rebeli [aut. nec Hirschiike]. We hasten to add that Habeler (2008) has failed to find both the form rebeli and alcon in Hochschwab. Also our colleagues Z. Bálint and A. Pavlicko have searched for and failed to find Lycaena alcon rebeli on two occasions in 2010 and 2011.

Habeler’s (2008) view concerning the taxonomic status of what he calls Maculinea rebeli is based solely on indications. His Phengaris rebeli auct., nec Hirschiike, is the species known under its valid name as Phengaris alcon ([Schiffermüller], 1775). Habeler’s (2008) considerations on the distribution and ecological preferences, however interesting they are, do not describe the “true” rebeli, a form which he has not found. His failure to find the true rebeli supports, in fact, our view on the status of rebeli as expressed further in this paper.

Material examined

In the course of this study, we have examined over 1200 specimens of Phengaris alcon deposited in the following museum collections: Naturhistorisches Museum, Wien (NHMW), Zoologische Staatssammlung, München (ZSM), Zoologisches Museum der Humboldt-Universität, Berlin (ZMHB), Koninklijk Belgisch Institut voor Natuurwetenschappen, Bruxelles/Brussel (KBIN), Biologizezentrum des Oberösterreichischen Landesmuseums, Linz (BOLL), Tiroler Landesmuseum Ferdinandeum, Innsbruck (TLFI), Museum Haus der Natur Salzburg (ZMHUB) and Naturmuseum Südtirol, Bozen (NMSB).

Results

Phengaris alcon is a variable species. This makes selecting an exact figure of “true rebeli” impossible; there are transitional forms. The rebeli phenotype is more common in ♀♀ than in ♂♂. We estimate the number of “true” rebeli phenotypes examined in the course of this study at about 20 specimens. Approximately the same number of specimens may be regarded as “transitional”, showing only traces of whitish spots characteristic of the rebeli phenotype. We have not come across recently collected specimens. At least some specimens of rebeli might be associated with limestone substrate, but for the lack of precise data, this observation is inconclusive.

With the exception of the type series of Lycaena alcon rebeli Hirschiike, 1905 itself and Maculinea rebeli xerophila Berger, 1946, all specimens of the rebeli phenotype were found singly at altitudes ranging between 1600 and 1800 m in the Austrian Alps. We do not rule out the possibility of the occurrence of rebeli in the Swiss Alps but we have not found any Swiss specimens of the rebeli phenotype in museum collections we have examined. The occurrence of the rebeli phenotype in Belgium is unexpected and deserves comments. There are 20 ♂♂ and 15 ♀♀ bearing type-labels in Berger’s collection. Of these only up to 10 ♂♂ have the characteristic whitish submarginal spots, there are no ♂♂ of the typical rebeli phenotype. The whole series of xerophila in Berger’s collection consists of 110 ♂♂ and 60 ♀♀. One could argue that such heavy overcollecting could have negatively influenced the survival of a small isolated colony. However, the presumed habitat is known to have been destroyed many years ago (S. Cuvelier pers. comm.).

Conclusion

Closing the taxonomic history of Lycaena alcon rebeli Hirschiike, 1905, we conclude that Hirschiike’s “Lycaena alcon rebeli” is a rare individual form found occasionally at high altitudes, probably restricted to the altitudes ranging from 1600 to 1800 m, in the Austrian Alps; it may be in some way associated with limestone substrate. Most of the specimens we have examined have been found in the Hochschwab mountains, but there are no recent records from the locality (s.l.). We cannot offer any rational explanation of the unexpected appearance of a rebeli-like form in Belgium, which is now extinct.

Four taxa, nomenclaturally of subspecies rank, have occasionally been regarded as taxonomically closely related to Lycaena alcon rebeli Hirschiike, 1905:

- Lycaena alcon monticola Staudinger, 1901 (syntypes in ZMHUB), Mountains in Switzerland and Caucasus.

Although we have not examined the type material of the last named taxon, we regard all four as junior subjective synonyms of P. alcon, as they are not worthy of recognition at the rank of subspecies on taxonomic grounds.

Four Euro-Siberian species of the genus Phengaris Doherty, 1892, live in Europe and are more or less widespread in Central Europe: Phengaris alcon ([Schiffermüller], 1775), P. arion (Linnaeus, 1758), P. naisithous (Bergsträsser, 1775) and P. teleius (Bergsträsser, 1775). Since the extinction and successful re-establishment in Great Britain of Phengaris arion they are considered threatened. Their ecology and conservation biology has been intensively studied almost all over Europe, particularly in the EU, for more than the last 20 years thanks to generous funding made available by the EU and some national authorities (e.g. MacMan, CLIMIT and related major international projects, cf. Settele et al. 2005). It is strange that one species has been studied
under two different names — *P. alcon* and *P. rebeli* —, the latter misidentified in two respects including authorship, although KUDRNA (2001, 2002) pointed out its true identity, questionable taxonomic status and authorship.

**Discussion**

We anticipate that a number of specific questions may be asked by readers, conservationists and ecologists. We offer the following answers in advance:

**Are the whitish submarginal spots the only constant taxonomic character of *rebeli***?

Yes, they are. All features attributed to *rebeli* in all descriptions in any publication we have consulted constitute simple individual variation of *alcon*. This pattern of variation is quite characteristic of several “blue” genera of the family Lycaenidae. Incidentally, the lectotype shows whitish submarginal spots poorly pronounced. It might have been better to select a ♀ as the lectotype.

There is an additional feature characteristic of *rebeli* ♀♀: The apex of the forewings is extensively suffused with black scales; this applies to a slightly lesser degree also to the hindwings.

**Is *Lycaena alcon rebeli* an ecological race?**

Not according to our present knowledge. MAYR (1971) called clearly distinguishable phenotypes linked to and exclusive of a specific environment (e.g. habitat type or geological substrate) and constant within it “ecological races”. LORKOVIC (1974) attributed certain types of constant variation to the substrate dependent adaptability, as exemplified by *Hipparchia stasilinus* (HUFNAGEL, 1766). KUDRNA (1977) described similar phenomena, too, and, named them “pseudopolytymism” to distinguish them from truly polytypical species. Whitish submarginal spots in *rebeli* are not present in all individuals of any known population, and no link to a to specific environment is evident at present.

**What is the distribution of the form *rebeli***?

The form *rebeli* has no definite range and therefore it can not be a subspecies by definition. Since *rebeli* is according to our present knowledge not a form exclusive and dominating of a certain substrate or habitat type, it cannot be regarded as an ecological race (cf. MAYR 1971). Nonetheless, it would be interesting to study the variation of *P. alcon* at high altitudes in the Alps with special reference to the sites with limestone substrate.

**What is the larval host plant of the form *rebeli***?

We do not know. The field guides generally claim that it is *Gentiana cruciata* whereas G. (Gentianella) germanica is only occasionally mentioned. However, the butterfly called “rebeli” in the field guides is a misidentified xerophilous *alcon*; the vast majority of records of *rebeli* is based in the false assumption that *alcon* found in dry habitats is *rebeli*, which is not true, as we have shown. HABERLE (2008) and his friends failed to find *G. cruciata* in the Hochschwab mountains. We have consulted a botanical expert. J. GREIMLER (pers. comm.) informed us that *G. cruciata* does not grow in the Hochschwab at the altitudes of 1600–1800 m where the form *rebeli* has been found, but it is confined to low altitudes, usually below 1200 m, where it is rare. The following *Gentiana* resp. *Gentianella* species have been recorded in the Hochschwab mountains: *G. verna*, *G. stiriaca* *G. asclepiadea*, *G. pannonica*, *G. clusii*, *G. pumila*, *G. bavarica*, *G. orbicularis*, *G. nivalis* and possibly *G. punctata*. Some of these species are referable to the subgenus *Gentianella*, which is currently being regarded as a distinct genus by some botanists.

**Does supposed utilisation of a different larval food plant justify a taxonomic rank?**

No! Utilisation of different host plants in different parts of the species range is not unusual and does not justify separating butterfly taxa at species or subspecies rank. The same applies to habitat preferences. The selection of different food plants and utilisation of different habitats are preconditions of the expansion of any species (cf. ecological valency).

**What is the host ant of *rebeli***?

In the course of myrmecological research in the Hochschwab mountains, carried out by H. C. WAGNER (pers. comm.) in 2009, four *Myrmica* species have been recorded. Three species are abundant at the altitudes ranging from 1600–1800 m: *Myrmica scabrinodis*, *M. ruginodis* and *M. lobulicornis*. The fourth species is *M. scabrinodis*; it is rare – only one nest has been found at the altitude of about 1700 m. Furthermore, as a fifth species *M. lobulicornis* might be expected, being probably the rarest species of this genus in this area.

**What is the true date of publication of *Lycaena alcon rebeli* HIRSCHKE?**

It is 1905! The original description was published in the volume scheduled for 1904, but it was published in the following year 1905. The true date of publication, not necessarily the date printed on the wrapper, is decisive for all nomenclatural and taxonomic purposes (ICZN 1999).

**What is the taxonomic value of male genitalia in *Phengaris alcon***?

BERGER (1946) claimed to be able to distinguish *alcon* from *xerophila* according to the length of a hook and small teeth on the outer distal margin of the valva in *rebeli* *xerophila*. KORN (2011) claimed that *rebeli* is an alpine subspecies of *Phengaris alcon*, distributed in Central and South Europe, and that the diagnostic character is a short tooth on distal part of valva with broad basal part. We have genitalised *alcon* specimens from several
parts of its range, from Switzerland to Kazakhstan. These characters, i.e. the length of the tooth and the shape of its base, are highly variable (Fig. 13). We are unable to confirm the presence of small teeth on the outer angle of the distal margin of one of Berger’s paratypes. However, we note that such teeth are present in several wetland specimens of *alcon*, for instance from the Ural Mountains and from S. Bohemia (Czechia).

What is the taxonomic value of the wing pattern in *Phengaris alcon*?

The wing pattern in *Phengaris alcon* is highly variable, although the species does not appear much variable from a molecular point of view. The dots and shades of blue are not constant taxonomic characters. It was repeatedly shown that wing pattern can be strongly affected by environmental conditions (cf. Otaki et al. 2010). For instance, it is established that cooler conditions can produce darker phenotypes (Karl et al. 2009). The forms *haurii*, *tolistus* and *sevastos* are not worthy of recognition as distinct subspecies, not to mention the species rank. All the supposed differences between populations attributed to “*Phengaris rebeli*” auct., nec Hirschke, on one hand and the rest of *Phengaris alcon* populations on the other are likely to be caused by various microhabitat adaptations: “alcon” to wet grassland and “rebeli” to dry grassland (Bereczki et al. 2005 and references therein).

The characteristic whitish spots can sometimes also be observed in other *Phengaris* species, e.g. in *P. teleius*.

Can *Phengaris alcon* be split into two distinct species on account of molecular or phylogenetic data?

The phylogenetic analysis shows that there is no sound argument for retaining xerophilous populations of *P. alcon* (incorrectly referred to as *P. rebeli*) as a separate species (Als et al. 2004, Pech et al. 2004). Furthermore, the data available (Als et al. 2004) suggest that the “hygrophilous phenotype” is ancestral and that the “xerophilous phenotype” originated independently several times. In no analysis of any data combinations do *alcon* and “*rebeli*” form monophyletic sister-groups. The polyphyly is more evident from the work of Bereczki et al. (2005): Different lineages of “*rebeli*” are genetically closer to “*alcon*” than to other populations of “*rebeli*”. However, it has to be stressed that no true Alpine *rebeli* sensu Hirschke (1905) has been phylogenetically examined since no suitable recent specimens have been available. The same applies to “barcoding”, not to mention thorough molecular examination. Samples of *Phen- garis alcon* from different parts of its distribution range show very small molecular variation and no clear pattern related to geographical origin or habitat type. Even high alpine specimens from the Gruppo di Brenta, an isolated mountain group situated in Trentino (N. Italy) about 500 km SWW of the Hochschwab, fall within the remaining *alcon* samples (Fig. 14, voucher no. AB9 12).

What is the valid generic name: *Phengaris Doherty, 1892*, or *Maculinea van Eecke, 1915*?

It is opportune to repeat briefly a recent statement concerning the classification of the genus *Phengaris* (cf. Fric et al. 2010). Doherty (1892) proposed the genus *Phengaris* for *Lycaena arroguatata* Oberthür, 1876 (type species by monotypy). Bethune-Baker (1914) established the genus *Iolana* and included the following four species: *Lycaena idas* Ochsenheimer, 1816 (type species by original designation), *Lycaena gigantea* Grum-Grshimailo, 1885, *Lycaena coeligena* Oberthür, 1876, and *Lycaena astraea* Freyer, 1852. Furthermore, Doherty (1892) discussed the classification of the remaining blues and assumed that *Papilio arion* Linnaeus, 1758, is the type species of the genus *Lycaena* Fabricius, 1807; he also noted that these butterflies are taxonomically related to the *Glaucopsyche* Scudder, 1872 (type species *Polyommatus lygdamus* Doubleday, 1841).

Van Eecke (1915) proposing the genus *Maculinea* (type species *Papilio alcon* [Schiffermüller], 1775) took only European species into account and included also *Papilio cyllarus* Rottemburg, 1775 (= *Papilio alexis* Poda, 1761). Thus Van Eecke (1915) in fact created a junior subjective synonym of both Scudder’s *Glaucopsyche* and Bethune-Baker’s *Iolana*. The only difference was that Van Eecke designated *Papilio alcon* as the type species.
After WWII the use of the generic name Maculinea for the species group consisting of Papilio alcon [Schiffermüller], 1775, Papilio arion Linnaeus, 1758, Lycæa arionides Staudeinger, 1887, Papilio nausithous Bergsträsser, 1779, and Papilio teletus Bergsträsser, 1779 has become dominant, probably following Verity (1943).

Conservationists, who object to the use of the name _Phengaris_ and request its suppressing in favour of _Maculinea_, overlook that this is not a mere nomenclatural change of a name as such but a change of taxonomic status following new research results that make the change of the name necessary. The purpose of the Code and the ICZN is not suppressing the advancement of zoological research. Furthermore, most conservationists perceive _Maculinea_ as a European genus; they overlook that _Phengaris_ is a Euro-Asiatic genus and the species they know from Europe are also widespread throughout Siberia to the Far East.

The taxonomic history of this case can thus be summarized as follows: Fiedler (1998: 3 [footnote]) and Pierce et al. (2002) pointed out that species referable to _Maculinea_ s. str. are closely related to _Phengaris_. Pich et al. (2004) published results of morphologically based phylogenetical analysis of _Maculinea_ and _Phengaris_. A few weeks later Als et al. (2004) published a molecular analysis of both former genera. Although the position of species of _Phengaris_ s. str. and _Maculinea_ s. str. differed between these two works, in both of them _Maculinea_ was classified as paraphyletic relative to _Phengaris_. Finally Fric et al. (2007) published a combined analysis of molecular and morphology characters and concluded that _Maculinea_ is a junior subjective synonym of _Phengaris_.

**Acknowledgements**

We have studied material, including types, deposited in the following museums and institutes: Naturhistorisches Museum Wien (Vienna, NHMW), Zoologische Staatsammlung München (Munich, ZSM), Museum für Naturkunde Berlin (ZMHB), Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels (KBIN), Biologiedepartment des Oberösterreichischen Landesmuseums Linz (BOLL), Tiroler Landesmuseum Ferdinandeum Innsbruck (TLFI), Museum Haus der Natur Salzburg (MHNS) and Naturmuseum Südtirol, Bozen (NMSB). We greatly appreciate kind help received from their scientific and curatorial staff, especially Dr. W. Dekoningck (KBIN), Dr. S. Gaa-Hassler (NHMW), Mag. F. Guenleitner (BOLL), S. Kerkhof (KBN), P. Limbourg (KBN), Dr. P. Gros (MHNS), Dr. M. Lölzl (NHMW), Dr. W. Mey (ZMHB). C. van Nieuwenhove (KBN), Dr. A. Segerer (ZSM), R. Zarre (BOLL). We thank Dr. M. Lödl (NHMW) who has made for us photographs of the types of Papilio alcon [Schiffermüller], 1775 and _Lycæa alcon rebeli_ Hirschke, 1905 (the latter set on very thin old and bend “white” pins). We also thank S. Limbourg (KBN) for photographs of the type material of _Maculinea rebeli xerophilia_ Berger, 1946.

It is our particular pleasure to thank Dr. Z. Bálint who re-discovered the types of _Lycæa alcon rebeli_ Hirschke, 1905 in the collections of the Naturhistorisches Museum, Wien, and designated the lectotype; we value the exchange of opinions on the classification of the group and respect his views, although we do not share them.

We have a great pleasure to thank our colleagues Dr. K. Černý, S. Cuvelier, Univ.-Prof. Dr. J. Greimler, H. Habeler, Dr. A. Pavlicko, H. C. Wagner and Dr. M. Wie-
mers; their help has been most useful for the successful completion of this paper.

The research leading to this publication constitutes a part of CLIMIT (www.climit-project.net), an internationally funded project of the Helmholtz Centre for Environmental Research – UFZ). The project funds covered a substantial part of the expenses involved with visits of the above mentioned museums in search of material including the examination of type material. A smaller proportion of the expenses had to be covered by one of the authors (O.K.) from his pension.

References


