

Some little known lycaenids from the Phang District of northern Thailand (Lepidoptera: Lycaenidae)

Stefan SCHRÖDER

Dr. Stefan SCHRÖDER, Auf dem Rosenhügel 15, D-50997 Köln, Deutschland; ste.schroeder@gmx.net

Abstract: Some poorly known species of lycaenid butterflies [*Tajuria illurgioides* DE NICÉVILLE 1890, *Heliophorus (Kulua) eventa* FRUHSTORFER 1918, *Orthomiella pontis rovorea* (FRUHSTORFER 1918)] are recorded from northern Thailand, and their relation to allied taxa is discussed. *Caerulea coeligena siamensis* ssp. n. is described as new (holotype male in ZFMK, Bonn, Germany).

Einige wenig bekannte Bläulinge vom Phang-Distrikt in Nordthailand (Lepidoptera: Lycaenidae)

Zusammenfassung: Aus dem Norden von Thailand werden einige bisher unzureichend bekannte Lycaenidenarten beschrieben und im Zusammenhang mit verwandten Taxa diskutiert: *Tajuria illurgioides* DE NICÉVILLE 1890, *Heliophorus (Kulua) eventa* FRUHSTORFER 1918, *Orthomiella pontis rovorea* (FRUHSTORFER 1918). *Caerulea coeligena siamensis* ssp. n. wird als neue thailändische Unterart abgetrennt (Holotypus Männchen in coll. ZFMK, Bonn).

Introduction

Thailand extends almost 1500 km in N–S direction, but lies entirely in the area between the Equator and the Tropic of Cancer, being thus completely within the tropical zone. Accordingly, it might be predicted that the butterfly fauna would be similar throughout the country, but in fact there are extreme differences in its composition. The fauna may be characterized by four different faunistic zones (ELIOT in PINRATANA 1981: vi): the Indo-Burmese, Kedawin, Malayan, and Indo-Chinese zones. These different zoogeographic regions illustrate that no uniform Siamese faunal zone exists, and that each area is characterized by the presence of “exotic” taxa basically ascribed to neighbouring regions. This is one reason for the extremely diverse butterfly fauna of the country (LECHNER 2004).

In particular, the northern part of Thailand, which is usually ascribed to the Indo-Burmese zone, is distinguished by some “unusual” faunal elements. The region, formed predominantly by mountain ridges reaching a height of more than 2000 m, is known for the distribution of numerous taxa that show a strong relation to forms occurring in the more temperate regions of Asia. As ELIOT (1987: 24) has pointed out, faunal affinities of the Mekong Basin, which includes the boundaries of Thailand, Burma, Laos and China, clearly lie with those of Yunnan (China). A good example for such a mixed fauna is also noted in the northern Thai district of Phang at Mae Ai (Doi Pha Hom Pok) located northwest of Chiang Rai. It includes numerous typically montane taxa such as *Bothrinia chennellii celastroides* DE NICÉVILLE 1884, *Celastrina argiolus iyntean* (DE NICÉVILLE 1884) and *Chrysozephyrus nigroapicalis philipi* ELIOT 1987. Other,

less well known taxa of the genera *Tajuria*, *Heliophorus*, *Orthomiella* and *Caerulea*, are not included in current publications on the Thai lycaenid fauna and require a more detailed discussion.

Taxonomy

All specimens figured are deposited in the collection of Zoologisches Forschungsinstitut und Museum Alexander Koenig in Bonn, Germany (ZFMK).

Family Lycaenidae LEACH 1815

Subfamily Theclinae SWAINSON 1831

Genus *Tajuria* MOORE [1881]

Type-species (by original designation): *Hesperia longinus* FABRICIUS 1798.

Remarks: *Tajuria* is a large genus comprising about 50 species almost entirely distributed in the Oriental tropics. A few taxa enter the more temperate zones of China or Pakistan. PINRATANA (1981: 128) lists 8 species for Thailand, and again, some Indo-Burmese elements (e.g. *T. diaeus* HEWITSON 1865 and *T. culta* DE NICÉVILLE 1896) appear to be distributed in the northern part of the country. A species rarely recorded from Thailand is *T. illurgioides*, which is however widely distributed from N India and Nepal (SMITH 1993) to Assam and Sikkim (D'ABRERA 1986), also entering “Indochina” (INAYOSHI 2001 [internet]).

Tajuria illurgioides DE NICÉVILLE 1890 (Figs. 15–16)

Description of the ♀: Forewing length 17 mm. Upperside ground colour dark brown (as in the wet season form), with a wide extension of whitish patches and reduction of blue scales, which are almost completely restricted to the basal part of spaces 1a and 1b. White areas on the forewing extend from the upper part of space 1b to the lower half of space 3. As in the similar but allopatric *T. illurgis* (HEWITSON 1869), the white area is widest in cell 2, but does not enter the discal cell, which is brown. Basal part of space 1 and 1b faintly coloured with pale blue scales. Hindwing cells 6 to 8 brown with vein 6 marking a sharp boundary between spaces 4 and 5, which are whitish in median and marginal areas. Towards the basal area and the hindwing margin, as well as the hindwing tornus, the white gradually becomes pale blue. Black submarginal spots present. Underside wing markings typical for the species, ground colour greyish-white, with a series of fine angular shaped, black postmedian markings.

Remarks: *T. illurgioides* displays a considerable range of variation concerning geographical as well as seasonal variation. A ♀ specimen is figured here, since no illustration of the verso surface of this sex is known to me, in order to allow a more precise evaluation of its markings. The dry season form appears to have a generally wider extension of whitish scales, whereas the wing markings of the wet-season form are more restricted and are strongly suffused with bluish scales. Between these extreme phenotypes, intermediate forms are to be expected.

Subfamily Lycaeninae LEACH 1815

Genus *Heliophorus* GEYER [1832]

Type-species (by secondary designation by SCUDDER 1875): *Heliophorus belenus* GEYER [1832].

Subgenus *Heliophorus* (*Kulua*) ZHDANKO 1995

Type-species (by original designation): *Polyommatus tamu* KOLLAR 1844.

Although *Heliophorus* includes some striking beautiful species which are brightly metallic coloured, the genus was poorly known until recently. Following revisions by FRUHSTORFER (1918), RILEY (1929) and ELIOT (1963), fundamental new data were published by ZHDANKO (1995), HUANG (1999), YAGO et al. (2000) and YAGO (2002), collectively facilitating a more reliable classification as well as a subgeneric grouping of this genus.

Heliophorus (*Kulua*) *eventa* FRUHSTORFER 1918 (Figs. 7–8)

Description: The available – exclusively ♂ – specimens are almost completely dark brown on the upperside of their wings. Only the basal area is very faintly powdered with metallic green scales. Hindwings are completely brown, tailed at vein 2, without any metallic scales, with the typical orange submarginal lunules extending from the tornus to space 2. The underside is characteristic of the species of the “*tamu*-group” as defined by YAGO et al. (2000: 90): deep yellowish to pale golden brown with red submarginal borders. Forewing with a distinctive cell bar, and a continuous brown line reaching from the costa to vein 2. A small black spot is within the cell. A large black submarginal lunule in cell 1b; cell 1a + b whitish grey. Outer margin of forewing is weakly fringed by reddish scales. In the hindwing, discocellular bar, discal line and subbasal dots dark brownish; that in space 7 shaped as a bar; within the cell and space 1b as black spots. Red submarginal borders narrow, sometimes faintly developed, lined with a white marginal stripe at the outer margin and white submarginal lunules bordered with black. In the ♂ genitalia (YAGO 2002: figs. 27–29), tegumen without lateral process and dorsal inner margin of valvae weakly serrated as in *H. (Kulua) brahma* MOORE 1858.

Remarks: Of the numerous described species of *Heliophorus*, few taxa are distinguished by metallic green coloured wings in the ♂♂. According to recently proposed

taxonomy of the genus *Heliophorus*, these species are included in the “*tamu*-group” of the subgenus *Heliophorus* (*Kulua*) (ZHDANKO 1995). In addition to *H. (K.) androcles* DOUBLEDAY & HEWITSON 1852, this includes *H. (K.) tamu* KOLLAR 1844, *H. (K.) hybrida* TYTLER 1912, *H. (K.) smaragdinus* YAGO & MONASTYRSKII 2002 (Figs. 9–10) and *H. (K.) eventa*.

The status of *H. viridipunctata* DE NICÉVILLE 1890 has been variously interpreted by different authors. Although RILEY (1929: 399) recognized this species as synonymous with *H. tamu*, *H. eventa* was commonly misidentified as *H. viridipunctata* in the literature (YAGO 2002: 158). Following this usage, the recently described *H. viridipunctata naxi* YOSHINO 1997 was regarded as a synonym of *H. eventa* by BOZANO & WEIDENHOFFER (2001).

Comparison of genitalia structure is certainly the most reliable and simple way for separating the closely related taxa. All “green” species mentioned have – with the exception of *H. eventa* and *H. smaragdinus* – large spine like projections in the upper part of the tegumen. This character is clearly absent in the two latter species, suggesting a close relationship to sympatric *H. brahma* MOORE 1857 (Figs. 5–6), ♂♂ of which are a golden coppery colour. Differences in genitalia between *H. eventa* and *H. smaragdinus* are very slight, and may only represent separation at the level of subspecies. The upper half of the tegumen differs in being slightly more pointed in *H. smaragdinus* than in the Thai specimens belonging to *H. eventa*, but there is never a pair of long lateral process. However, compared to *H. eventa*, the valvae of *H. smaragdinus* have a more strongly serrated inner margin with a sharply pointed projection posteriorly (YAGO et al. 2002: 151, figs. 7, 28). There are no significant differences between the valvae of *H. eventa* from Jinkouhe, Sichuan, figured by HUANG (1999), and the Thai specimens. The distribution of *H. smaragdinus*, previously restricted to central Vietnam (Kon Tum Province), can now be extended to northern Vietnam (Ta Fin near Lao Cai, Bac Bo; Figs. 9–10).

According to HUANG (1999: 657), “*H. (K.) tamu eventa* ab. *rufa* RILEY” is synonymous with *H. viridipunctata naxi* YOSHINO 1997, and BOZANO & WEIDENHOFFER (2001: 52) regard ab. *rufa* and f. *verna* of RILEY as synonyms of *H. (K.) eventa*. These phenotypes correspond quite well to *tamu* as well as to *eventa/smaragdinus*, and differ only in having an orange discal patch on the upperside of the forewing in the ♂♂. Distribution of both forms is apparently restricted to western China.

Distribution: *H. (K.) eventa* ranges from Myanmar (Kachin; Shan States), across N Thailand, and enters western China (Yunnan; Sichuan).

Subfamily Polyommatainae SWAINSON 1827

Genus *Orthomiella* DE NICÉVILLE 1890

Type-species (by original designation): *Chilades pontis* ELWES 1887.

Remarks: *Orthomiella* is a small, predominantly subtropical genus, distributed from the eastern Himalaya to Taiwan, and typically occurs in montane regions. The genus is particularly widely distributed in China, and also enters “Indo-China” (INAYOSHI 1996–2001 [internet], OSADA et al. 1999). However, since the works of FRUHSTORFER (1918) and FORSTER (1941, 1942), little additional information on this group has been obtained, and the genus is generally regarded as poorly known. Recently, the ♂ genitalia for the Chinese taxa were figured by WANG & FAN (2002). It is remarkable that ♀ *Orthomiella* are only known from the type species *O. pontis* (ELWES 1887), the recently described subspecies *O. pontis khama* SUGIYAMA 2004 from Yunnan, and *O. ronkayana* BALINT 1997, a Tibetan species only known from a solitary ♀ specimen.

Taxonomic status of known specimens is highly disputed and there is no general agreement concerning the status of the various taxa. Some authors, including BALINT (1997), regard all described taxa as true species, whereas a more restricted approach was proposed by FORSTER, who preferred to separate several subspecies.

Based on their external appearance, *Orthomiella* may be placed in two different species groups, one – including the type species – with more or less complete blue wings, and a second group with completely brown forewings and hindwings that are blue only in an area between the costal margin and vein 5. *Orthomiella pontis pontis* belongs to the first group, and *O. p. rovorea* is regarded as a subspecies – despite being characterized by different colouration.

***Orthomiella pontis rovorea* (FRUHSTORFER 1918)**
(Figs. 1–4)

Remarks: The series available conforms very well with the description given by FRUHSTORFER (1918: 55) for specimens from the Chin Hills in northern Myanmar. The violet-blue area, restricted to the upper third of the hindwings, is highly characteristic of this species. *O. rantaizana* (WILEMAN 1910), known from Taiwan, is very similar, as both are characterized by the dark violet-blue hindwing colouration extending from the costa into the hindwing-cell and space 5.

Specimens from southern China, formerly regarded by FORSTER (1941: 627) as belonging to *O. rantaizana*, were subsequently – after a direct comparison with Taiwanese specimens – transferred to a new taxon, described as *O. lucida* (FORSTER 1942). They differ significantly from *O. rantaizana* in having a more restricted extension of shining blue (and not dark-violet) scales on the costal third of the hindwing. In spite of this obvious difference and the geographic separation of both taxa, WANG & FAN (2002: pl. 20, figs. 26–27) synonymized *O. lucida* with *O. rantaizana*, but figure a specimen from southern China that appears very similar to the holotype of *O. lucida* under the name of *O. rantaizana*.

Specimens from Laos figured as *Orthomiella pontis* from

Lak Sao and Xam Neua by OSADA et al. (1999: pl. 112) differ considerably from *O. pontis rovorea* figured here from northern Thailand. The ♂ corresponds very well to *O. lucida* in lacking the violet-blue scales of *pontis* s. str., and the ♀ specimen is distinguished by a very wide extension of light blue scales, almost reaching the postdiscal area on the upperside of both wings, rather than being as dark as in the figure provided by D'ABRERA (1986: 637). Upperside wing colour of the ♀ of *O. pontis rovorea* from northern Thailand is almost uniformly dark brown, but with violet-blue scales basally, reaching the discal area in space 1b.

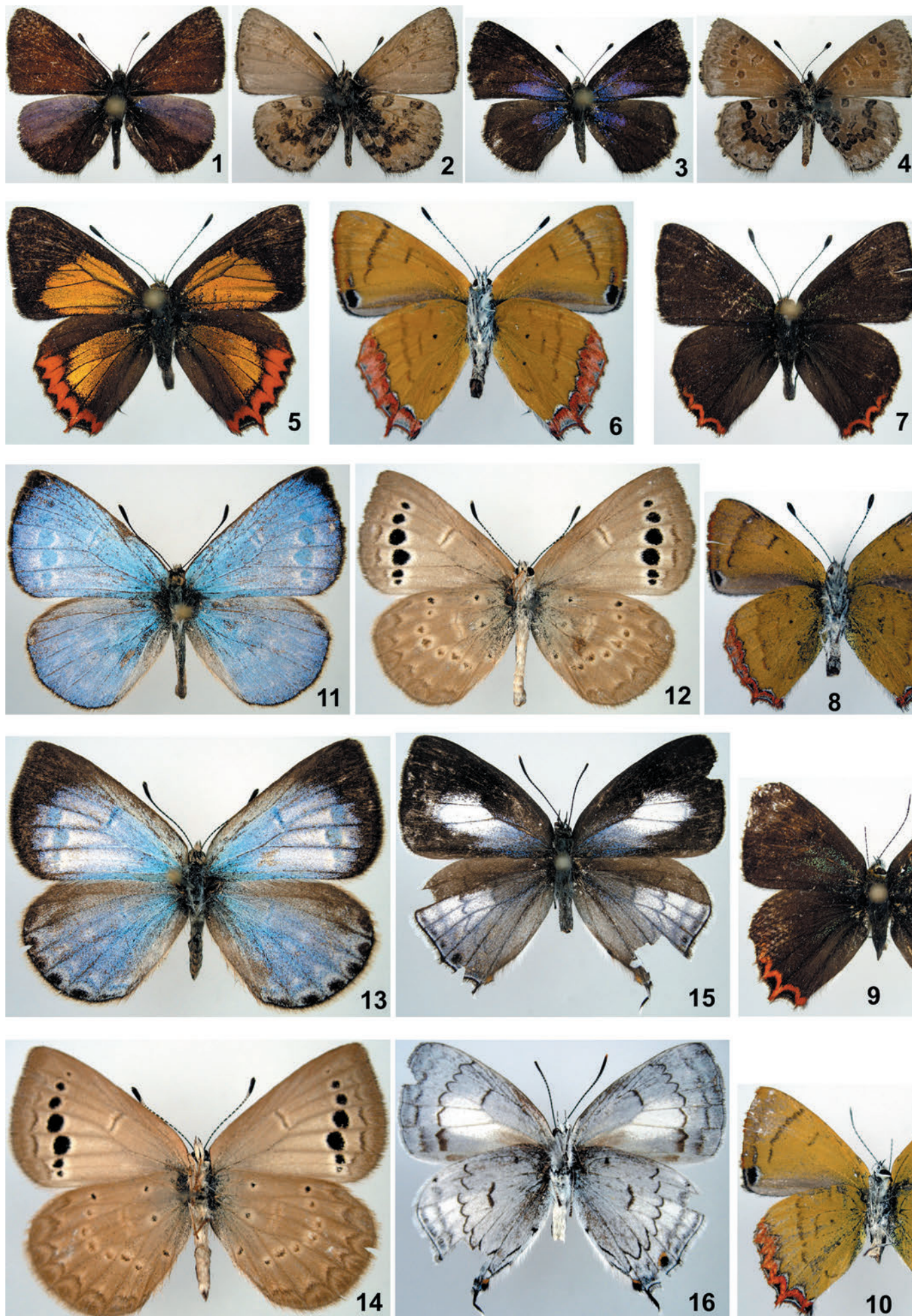
Distribution: Known from Myanmar and Thailand. PINRATANA (1981: 68) listed a record of a *Orthomiella pontis* subspecies from Chiang Mai.

Genus *Caerulea* FORSTER 1938

Type-species (by original designation): *Lycaena coelestis* ALPHERAKY 1897.

Remarks: According to the current taxonomic treatment (MATTONI & FIEDLER 1991, D'ABRERA 1993, WANG & FAN 2002), *Caerulea* contains two species with a distribution restricted to China: *C. coeligena* (OBERTHÜR 1867) (Hunan, Shaanxi, Hubei, Sichuan, Yunnan) and *C. coelestis* (ALPHERAKY 1897) (Sichuan, Henan, Yunnan, Xizang). Only BRIDGES (1988) regards the genus as monotypic, consisting only of *C. coeligena*. Originally described as infrasubspecific form of *C. coeligena*, *C. coelestis* was raised to specific status by FORSTER (1938: 108) and simultaneously designated as type species of *Caerulea*, which was at that time regarded as subgenus of *Glauropsyche* SCUDDER 1872.

Even in recent literature, morphological characters and wing markings believed to be important in the separation of the two species are equivocal. However, it becomes clear that the taxa cannot be separated by the development and number of forewing spots alone, and species separation based exclusively on this character must be rejected. More reliable seems to be a combination of characters discussed by ALPHERAKY (1897: 113). According to his description, *C. coelestis* is, in comparison to *C. coeligena pratti*, characterized as follows: “blue more brilliant, black border at apex very narrow, black spots on forewing underside very large, elongate and bordered by a very narrow white rim.” WANG & FAN (2002) suggested that the existence of a forewing spot in cell M1 (= 6) is a diagnostic character of *C. coelestis*. However, all specimens of *C. coelestis* figured by them are lacking these spots. Conversely, such spots are developed in specimens determined as *C. coeligena* (WANG & FAN 2002: pl. 24, figs. 9–18), and LI & HSIAU (1996: 269) illustrate a ♂ specimen of *C. coeligena* with numerous forewing spots. Specimens of both species from Tibet (Xizang) display a more or less constant and identical development with regard to the number of spots (MATTONI & FIEDLER 1991: fig. 1), although they appear slightly elongate in *C. coelestis*. It seems that *C. coelestis* usually has a more complete



development of the postdiscal spots than *C. coeligena*, a feature also recognizable in *C. coelestis sora* SUGIYAMA (1999: pl. 1 figs. 15–18). ♀♀ of *C. coelestis* are almost uniformly brownish on the upperside of the wings (especially so in *C. coelestis sora*), with only weak blue dusting basally, whilst the blue is much more extensive in *C. coeligena* ♀♀. Obviously D'ABRERA (1993: 482) follows this treatment in his Palearctic volume.

Genitalia structure is rather similar, but as HEMMING (1931: 329) has pointed out, valvae show some slight differences between the species. Margins of the valvae are more parallel in *C. coelestis* and the terminal spine is thicker, more irregular and tapers more towards the tip (compare with AOYAMA 1998: 351).

The current taxonomic treatment of the genus is as follows:

Caerulea coeligena (OBERTHÜR 1876)

C. coeligena coeligena (OBERTHÜR 1876) [Hubei; Sichuan; Yunnan; Henan; Shaanxi]

C. coeligena pratti (HEMMING 1931) [Ichang and Chang-Yang, Hubei]

C. coeligena siamensis ssp. n. [N Thailand]

Caerulea coelestis (ALPHERAKY, 1897)

C. coelestis coelestis (ALPHERAKY, 1897) [Kham, W Sichuan; Xizang]

C. coelestis dubernardi (HEMMING 1931) [Tsekou, NW Yunnan]

C. coelestis sora SUGIYAMA, 1999 [Qujing, E Kunming, E Yunnan]

Description of the new subspecies

Caerulea coeligena siamensis ssp. n. (Figs. 11–14)

Holotype ♂: Northern Thailand, Phang District, Doi Pha Hom Pok, Mae Ai, Chiang Mai, 2200 m, III. 2003, leg. IHLE. In ZMFK, Bonn, Germany. Figs. 11, 12.

Paratypes: 5 ♂♂, 3 ♀♀, same data as holotype; deposited in ZFMK (3 ♂♂, 2 ♀♀) and in coll. S. SCHRÖDER (2 ♂♂, 1 ♀).

Etymology: The new subspecies is named after the old name of Thailand: Siam. The taxon's name is to be treated as a noun in apposition.

Diagnosis: Forewing length variable, maximally reaching 20–22 mm. The new subspecies differs from its closest relative *C. c. pratti* especially in underside markings. The underside is uniformly warm brown, especially so in the ♀♀. The row of black postdiscal spots on the forewing is complete (from space 1b to 5, sometimes even to space 6). Cell end bar not differently coloured, but surrounded by white scales. On the hindwing postdiscal spots are not

black as in *C. coeligena pratti*, but only slightly darker brown than the underside colour. Only spots in space 7 are black, and all are only weakly outlined by light whitish scales. Discocellular bars brownish, not black. Upperside of ♂♂ similar to *C. c. pratti*, but with a black submarginal spot close to the apex in cell 6 of the hindwing. ♀♀ differ from *pratti* in having more extensive whitish/blue scaling which extends to the forewing costa. Black submarginal lunules on the hindwing prominent and, unlike *pratti*, open towards the outer margin. In the ♂ genitalia, valvae are more bulbous with a long, very thin, spine like end when viewed laterally (Fig. 17).

Distribution: So far as it is presently known, restricted to northern Thailand (Phang District).

Acknowledgements

I am very much indebted to the following persons: D. STRÜNING (Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn) for allowing the use of collections under his care as well as for free access to the museum library. Y. SEKI (Tokyo) provided an image of a ♀ of *T. illurgioides* for comparison and J. TENNENT (Dereham) improved the English.

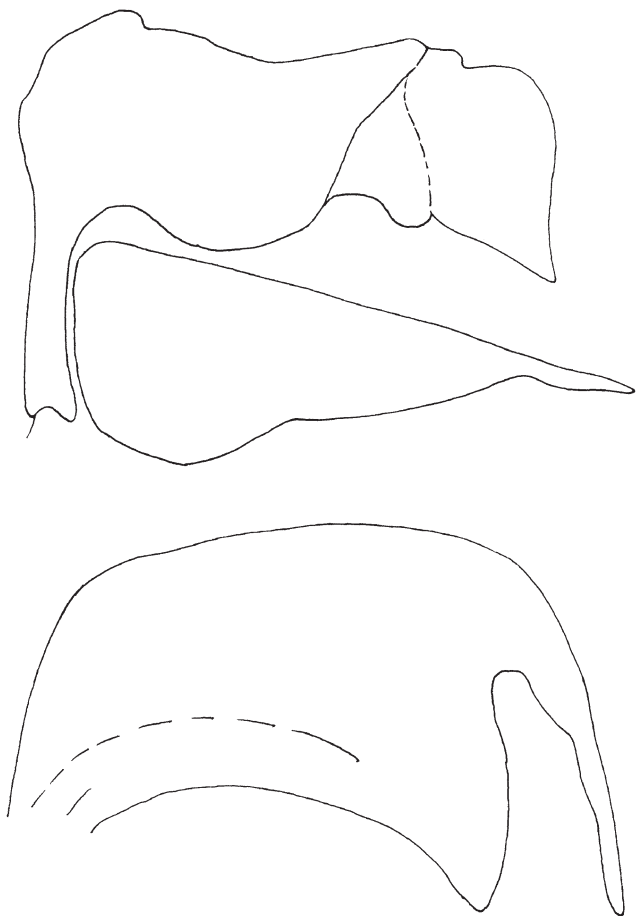


Fig. 17: ♂ genitalia of *Caerulea coeligena siamensis* ssp. n. (genitalia no. 65/2004, from paratype) in lateral view and valve in dorsal view.

Color plate: Lycaenidae from Thailand. All specimens northern Thailand, Phang District, Doi Pha Hom Pok, Mae Ai, Chiang Mai, 2200 m, III. 2003; except Figs. 9–10: northern Vietnam, Ta Fin near Lao Cai, Song Nhi Ha valley, IX.–X. 2001. — Figs. 1–4: *Orthomiella pontis rovea* (FRUHSTORFER 1918). Figs. 1, 2: ♂, Figs. 3, 4: ♀. — Figs. 5–6: *Heliophorus (Kulua) brahma* MOORE 1857, ♂. Figs. 7–8: *Heliophorus (Kulua) eventa* FRUHSTORFER 1918, ♂. Figs. 9–10: *Heliophorus (Kulua) smaragdinus* YAGO & MONASTYRSKII 2002, ♂. — Figs. 11–14: *Caerulea coeligena siamensis* n. ssp. Figs. 11, 12: ♂ holotype, Figs. 13, 14: ♀ paratype. — Figs. 15–16: *Tajuria illurgioides* DE NICÉVILLE 1890, ♀. — Magnification ×2.

References

- ALPHÉRAKY, S. N. (1897): Lépidoptères des provinces chinoises Sé-Tchouen et Kham recueilles, en 1893, par M-r. G. N. POTANINE. — Mémoires sur les Lépidoptères, St.-Petersbourg (ed. N. M. ROMANOFF), 9: 83–149, 5 pls.
- AOYAMA, J. (1998): Butterflies of China. — Tokyo (Tokai Univ. Press), 392 pp.
- BÁLINT, Z. (1997): A new *Ortomiella* species from Nepal (Lepidoptera: Lycaenidae). — Folia entomologica Hungarica, Budapest, 58: 5–8.
- BOZANO, G. C., & WEIDENHOFFER, Z. (2001): Lycaenidae, part I. Subfamily Lycaeninae. — In: BOZANO, G. C. (ed.), Guide to the butterflies of the Palaearctic region. — Milano (Omnes Artes), 62 pp.
- BRIDGES, C. A. (1988): Catalogue of Lycaenidae & Riodinidae (Lepidoptera: Rhopalocera). — Introduction, Parts I–VI, Appendix I–II, ca. 816 pp. — Urbana, Ill. (the author).
- D'ABRERA, B. (1986): Butterflies of the Oriental region. 3. Lycaenidae, Riodinidae. — Hill House (Victoria), pp. ix–xv + 535–672.
- (1993): Butterflies of the Holarctic region. 3: Nymphalidae (concl.), Libytheidae, Riodinidae, Lycaenidae. — Hill House (Victoria), pp. vii + 335–524.
- ELIOT, J. N. (1963): The *Heliophorus epicles* (GODART, 1823) (Lepidoptera: Lycaenidae) complex. — The Entomologist, London, 96 (1203): 169–180.
- (1987): On some butterflies from Nepal, Bhutan and Thailand. — Tōyō to Ga, Kyoto, 38 (1): 21–29.
- FORSTER, W. (1938): Das System der paläarktischen Polyommata. (Lep. Lycaen.). — Mitteilungen der Münchner Entomologischen Gesellschaft, Munich, 28 (2): 97–118.
- (1941): Neue Lycaeniden-Formen aus China. II. — Mitteilungen der Münchner Entomologischen Gesellschaft, Munich, 31 (2): 593–627.
- (1942): Neue Lycaeniden-Formen aus China. III. — Mitteilungen der Münchner Entomologischen Gesellschaft, Munich, 32 (2): 579–580.
- FRUHSTORFER, H. (1918): Revision der Lycaenidengruppe *Heliophorus* auf Grund der Morphologie der Klammerorgane. — Tijdschrift voor Entomologie, Amsterdam, 61: 45–53.
- (1918): Eine neue Rasse aus der bisherigen „Gattung“ *Orthomiella*. — Tijdschrift voor Entomologie, Amsterdam, 61: 54–56.
- HEMMING, A. F. (1931): Revision of the genus *Iolana*, BETHUNE-BAKER (Lepidoptera, Lycaenidae). — Transactions of the Entomological Society of London, 79 (2): 323–333.
- HUANG, H. (1999): Some new butterflies from China — 1. — Lambillionea, Brussels, 99 (4): 642–676.
- LECHNER, K. (2004): Faunistische Anmerkungen zur Tagfalterfauna Südthailands (Lepidoptera: Rhopalocera). — Entomologische Zeitschrift, Stuttgart, 114 (6): 265–275.
- LI C. & HSIAU Y.-W. (1996): Lepidoptera of China 2. Butterflies in Sichuan Province. Nymphalidae, Libytheidae, Riodinidae, Lycaenidae. — Taipei (The Taiwan Museum), 287 pp.
- MATTONI, H. T., & FIEDLER, K. (1991): On the functional foreleg tarsus in *Caerulea* males (Lepidoptera: Lycaenidae: Polyommata). — Journal of Research on the Lepidoptera, Arcadia, 30 (3/4): 289–296.
- OSADA, S., UÉMURA, Y., & UEHARA, J. (1999): An illustrated checklist of the butterflies of Laos P.D.R. — Tokyo (Mokuyō-sha), 240 pp., 140 pls.
- PINRATANA, A. (1981): Butterflies in Thailand. Vol. 4. Lycaenidae. — Bangkok (Viratham Pr.), viii + 216 pp., 36 pls.
- RILEY, N. D. (1929): Revisional notes on the genus *Heliophorus* (Lycaenidae) with descriptions of new forms. — Journal of the Bombay Natural History Society, Bombay, 33: 384–402.
- SCUDDER, S. H. (1875): Historical sketch of the generic names proposed for butterflies, A contribution to systematic nomenclature. — Proceedings of the American Academy of Arts and Sciences, Boston, 10 [= 2 (2)]: 91–293.
- SMITH, C. (1993): Illustrated checklist of Nepal's Butterflies. — Bangkok (Craftsman Pr.), 126 pp., 122 pls.
- SUGIYAMA, H. (1999): New butterflies from Western China (IV). — Pallarge, Gifu (Japan), 7: 1–14.
- WANG M. & FAN Y.-L. (2002): Butterflies fauna Sinica: Lycaenidae. — [no city] (Henan Science and Technology Publishing House), 440 pp., 22 figs., 28 pls.
- YAGO, M. (2002): Comparative morphology and identification of the subgenus *Kulua* (Lepidoptera, Lycaenidae, *Heliophorus*). — Tijdschrift voor Entomologie, Amsterdam, 145 (2): 145–171.
- , SAIGUSA, T., & NAKANISHI, A. (2000): Rediscovery of *Heliophorus yunnani* D'ABRERA and its systematic position with intrageneric relationship in the genus *Heliophorus* (Lepidoptera: Lycaenidae). — Entomological Science, Mito, 3 (1): 81–100.
- ZHDANKO, A. B. (1995): On the systematics of the genera *Lycaena* F. and *Heliophorus* GEYER (Lepidoptera: Lycaenidae). — Entomologicheskoye Obozreniye, Moscow, 74 (3): 652–661.

Internet citation

- INAYOSHI, Y. (1996–2001): A check list of butterflies in Indo-China. Chiefly from Thailand, Laos & Vietnam. — <http://yutaka.it-n.jp> (last visit: 14. ix. 2006).

Received: 5. ix. 2005

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Nachrichten des Entomologischen Vereins Apollo](#)

Jahr/Year: 2006

Band/Volume: [27](#)

Autor(en)/Author(s): Schröder Stefan

Artikel/Article: [Some little known lycaenids from the Phang District of northern Thailand 97-102](#)