On the wrong continent: The identity of *Catochrysops trifracta* Butler, 1884 (Polyommatinae, Lycaenidae), currently a synonym of *Euchrysops cnejus* (Fabricius, 1798)

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Abstract. It is shown that *Catochrysops trifracta* Butler, 1884, currently a synonym of the widespread old world *Euchrysops cnejus* (Fabricius, 1798) is a junior subjective synonym of the neotropical species *Hemiargus hanno* (Stoll [1790]). To fix the taxonomic identity of the name *Catochrysops trifracta* Butler, 1884, I designate a lectotype.

Butler (1884) wrote that he had received material from the Challenger expedition from the islands of St. Thomas, Bermuda, Rat Island, Ké Dulan, Ternate and Amobina, and mentioned that the first two are in the New World and the rest in the Old World. In this work he then described the species *Catochrysops trifracta* based on two damaged male specimens, and gave the type locality as "Rat Island, Strait of Malacca, 1st September, 1873". He provided the following description: "*Deep lilac, the thorax above blue-black; head white; palpi with the terminal joint and a dorsal line black; abdomen blackish grey: wings below much as in* C. cnejus*, but differing noticeably in the fact that the series of spots across the disk of the primaries, instead of forming one slightly irregular stripe, are broken into three parallel oblique bifid white-edged brown dashes, one below the other; the secondaries also have only one subanal black spot with pale yellow zone, and barely perceptibly touched with metallic scales. Expanse of wings 23–28 millim*". Later on, Butler moved *C. trifracta*, *C. cnejus* (Fabricius, 1798) and several other species with "eyes quite smooth instead of hairy" to his new genus *Euchrysops* (Butler 1900), with *C. cnejus* as the type species. *C. trifracta* was briefly mentioned in Lepidoptera Indica (Swinhoe 1910) as a Malayan species allied to Indian species. De Niceville (1890) and Seitz (1927) listed synonyms of *Euchrysops cnejus* (Fabricius, 1798), but *E. trifracta* was not among them. It was also not mentioned by Bethune-Baker (1923) in his revision of *Catochrysops* where *Euchrysops* also was revised, and synonyms for *E. cnejus* were listed. Additionally, it was not included in Corbet and Pendlebury (1934) and later versions of "Butterflies from the Malay Peninsula". The name disappeared from use and eventually reappeared as a synonym of *E. cnejus* in Seki et al. (1991), which was followed by Bridges (1994) and subsequently by most online databases.

The two syntypes of *Catochrysops trifracta* are in the Natural History Museum, London (**NHMUK**), and the specimen in the best condition is shown in Figs 1 and 2. The locality label

Figures 1–10. Specimens investigated for this paper. **1.** *Catochrysops trifracta* Butler, 1884 male lectotype, dorsal view; **2.** Same specimen in ventral view; **3.** Labels in dorsal view; **4.** Labels with locality label in ventral view; **5.** Labels of *Hemiargus hanno* (Stoll [1790]) male non-type; **6.** *H. hanno* male, non-type in dorsal view; **7.** Same specimen in ventral view; **8.** *Euchrysops cnejus* male, non-type in dorsal view; **9.** Same specimen in ventral view; **10.** Labels of *E. cnejus* specimen. Red arrows indicate important characters mentioned in the text. Scale bars: 1 cm.

of both specimens say "Rat Island" and do not mention the Malaccas (Figs 3, 4, labels of same specimen as above). Thomson and Murray (1885) in their report on the Challenger expedition mention in a footnote on page 214 that the locality information given by Butler is incorrect, and that the specimens are actually from Ilha Rata (Rat Island) in the Fernando de Noronha archipelago off the coast of Pernambuco, Brazil. However, they mention that *Catochrysops trifracta* seems to be of Malayan origin. Kirby in Ridley (1890) in their work on the natural history of Fernando de Noronha found *Hemiargus hanno* (Stoll [1790]) (as *Taurucus hanno*), a species widely distributed in South America, to be frequent on Rat Island and the Main Island. In fact, this seems to be the only butterfly species occurring in the archipelago (Alvarenga 1962). Kirby further acknowledged that they had not seen *C. trifracta* (as *Catachrysops* [sic] *trifracta*) found by the Challenger expedition, but that this could be due to mislabelling of the specimens since the genus is only known from the East Indies. Butler (1900) was apparently aware of neither Thomson and Murray nor Ridley when he moved *C. trifracta* into his new genus *Euchrysops.*

Both syntypes are in relatively poor condition but it is clearly seen that these represent *H. hanno.* and not *E. cnejus*, nor any other *Euchrysops*. A non-type specimen of *H. hanno* from Venezuela (at the McGuire Centre for Lepidoptera and Biodiversity, MGCL) is shown in Figs 6, 7 since no type material of that taxon exists and no neotype of *H. hanno* has been formally designated (G. Lamas, pers. comm.). As in *H. hanno*, the *C. trifracta* specimens only have one black tornal spot (noted also by Butler as "only one subanal black spot") with blue scaling towards the margin, and with a small amount of orange on the inner margin. In *E. cnejus* (Figs 8, 9, non-type specimen from the Philippines at MGCL) there are two black tornal spots with blue scaling, and both have a larger amount of orange on the inner margin. In *E. cnejus* these tornal spots are also visible on the upper side in both sexes, whereas in *H. hanno* and *C. trifracta* the single black tornal spot is hardly discernible. Furthermore, *E. cnejus* has a tail in the tornal area of the hindwing, which is lacking in *H. hanno* and *C. trifracta*. Finally, both *H. hanno* and *C. trifracta* have a grey sub-basal spot not present in *E. cnejus*, at the base of ventral hindwing cell Cu_2-2A. In the genus *Euchrysops* this spot is present in the widespread Afrotropical species *E. malathana* (Boisduval, 1833) and its sister species *E. nilotica* (Aurivillius, 1904) restricted to more arid parts of tropical Africa.

On these grounds, I place *Catochrysops trifracta* Butler, 1884 (syn. rev.) as a junior subjective synonym of *Hemiargus hanno* (Stoll [1790]). To fix the taxonomic identity of the name *Catochrysops trifracta* Butler, 1884 I hereby designate the following lectotype:

Lectotype male (Figs 1–4) in the Natural History Museum, London (NHMUK) with the following labels: Type; Rat Island 84 · 10 / Catochrysops trifracta type Butler; NHMUK010588635. An additional label "Lectotype *Catochrysops trifracta* Butler, 1884, male, M. Espeland 2022" will be added in due course.

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References

Alvarenga M (1962) A entomofauna do arquipélago de Fernando de Noronha, Brasil–I. Archivos do Museu Nacional do Rio de Janeiro 52: 21–26. https://www.biodiversitylibrary.org/page/57389021

Bethune-Baker GT (1923) A monograph of the genus *Catochrysops* Boisduval (Auctorum). Transactions of the Royal Entomological Society of London 70: 275–366. https://www.biodiversitylibrary.org/page/14708744

Bridges CA (1994) Catalogue of the family-group, genus-group and species-group names of the Riodinidae & Lycaenidae (Lepidoptera) of the world. C.A. Bridges. Urbana, Ill, 1113 pp. https://doi.org/10.5962/bhl.title.15814

Butler AG (1884) XXIII.—The Lepidoptera collected during the recent expedition of H.M.S. 'Challenger.'—Part II. The Annals and Magazine of Natural History 13: 183–203. https://www.biodiversitylibrary.org/page/27554337

Butler AG (1900) On a new genus of Lycaenidae hitherto confounded with *Catochrysops*. Entomologist 33(440): 1–2. https://doi.org/10.5962/bhl.part.3887

Corbet AS, Pendlebury HM (1934) The butterflies of the Malay Peninsula. Kyle, Palmer & Co, Kuala Lumpur, 252 pp.

de Nicéville L (1890) The butterflies of India, Burmah and Ceylon. A descriptive handbook of all the known species of rhopalocerous Lepidoptera inhabiting that region, with notices of allied species occurring in the neighbouring countries along the border; with numerous illustrations. Vol. 3. Central Press Co, Calcutta, 337 pp. https://www.biodiversitylibrary.org/item/41670

Ridley HN (1890) The natural history of the island of Fernando de Noronha based on the collections made by the British Museum Expedition in 1887. Academic Press, London, 570 pp. https://doi.org/10.5962/bhl.title.12388

Seitz A (1927) The Macrolepidoptera of the world: a systematic account of all the known Macrolepidoptera. Vol. 9. The Indo-Australian Rhopalocera. Stuttgart: Fritz Lehmann Verlag, 1197 pp. https://www.biodiversitylibrary.org/item/251760

Seki Y, Takanami Y, Otsuka K (1991) Butterflies of Borneo Vol.2, Part 1: Lycaenidae. Tobishima Corporation, Tokyo, 113 pp.

Swinhoe C (1910) Lepidoptera Indica vol. VIII Rhopalocera. Family Lycænidæ. London: Lovell Reeve & CO., Limited, 293 pp. https://www.biodiversitylibrary.org/item/104151

Thomson CW, Murray J (1885) The Voyage of H.M.S. Challenger 1873–1876. Narrative Vol. I. First Part. Chapter VI, 192–236.