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NOTES ON *HALPE NEPHELE* LEECH, 1893 AND *HALPE DIZANGPUSA* HUANG, 2002 (LEPIDOPTERA: HESPERIIDAE: AEROMACHINI)

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New synonymy is established: *Halpe nephele* Leech, 1893 = *Halpe concavimarginata* Yuan, Yuan et Wang, 2007, **syn. n.** Two species, *H. nephele* and *H. dizangpusa* Huang, 2002, are found sympatric in Fujian Province, China for the first time. The differences between both species are discussed.

KEY WORDS: Butterfly, *Halpe*, new synonymy, male genitalia, intraspecific variability, distribution, China.

Г.С. Сюэ^{1,2)}, Ф. Юань²⁾, С.Ц. Юань²⁾. Заметки о *Halpe nephele* Leech, 1893 и *Halpe dizangpusa* Huang, 2002 (Lepidoptera: Hesperidae: Aeromachini) // Дальневосточный энтомолог. 2011. N 224. С. 1-6.

Устанавливается новая синонимия: *Halpe nephele* Leech, 1893 = *Halpe concavimarginata* Yuan, Yuan et Wang, 2007, **syn. n.** Два вида (*H. nephele* и *H. dizangpusa* Huang, 2002) впервые обнаружены обитающими совместно в провинции Фуцзянь, Китай. Обсуждаются различия между этими видами.

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INTRODUCTION

Yuan, Yuan & Wang (2007) described *Halpe concavimarginata* as a new species, with two male specimens from Lushan County, Sichuan Province as its types. They compared *H. concavimarginata* with *H. nephele* Leech, 1893, and discussed their differences in body size, outer margins of forewing discal spots, ciliae and distal valva. After an examination of the specimens deposited in the Entomological Museum of Northwest A & F University (EMNWAFU), the senior author of the present paper found that the specimens listed under *H. nephele* by Yuan et al. (2007) are actually misidentifications of *H. dizangpusa* Huang, 2002, and both external and genital differences between *H. concavimarginata* and *H. nephele* are individually variable. So *H. concavimarginata* should be synonymized to *H. nephele*. Though, Huang (2002, 2003, 2004) discussed the differences between *H. dizangpusa* and *H. nephele* in external feature, male genitalia and distribution, here the senior author concludes that these two species can only be accurately distinguished by male genitalia.

MATERIALS AND METHOD

Materials in this study are deposited in the Entomological Museum of Northwest A & F University. Specimens were examined using a Leica ZOOM 2000 stereomicroscope. Images of adults were taken with a Nikon D100 digital camera. Genitalia images were taken through a Qimaging Retiga 2000R and combined using Auto-Montage Pro 5.02. Image post-processing was accomplished with Adobe Photoshop CS 8.0.1. Terminology of morphological characters mainly follows Evans (1949).

RESULTS AND DISCUSSION

Halpe nephele Leech, [1893]

Figs 1–20

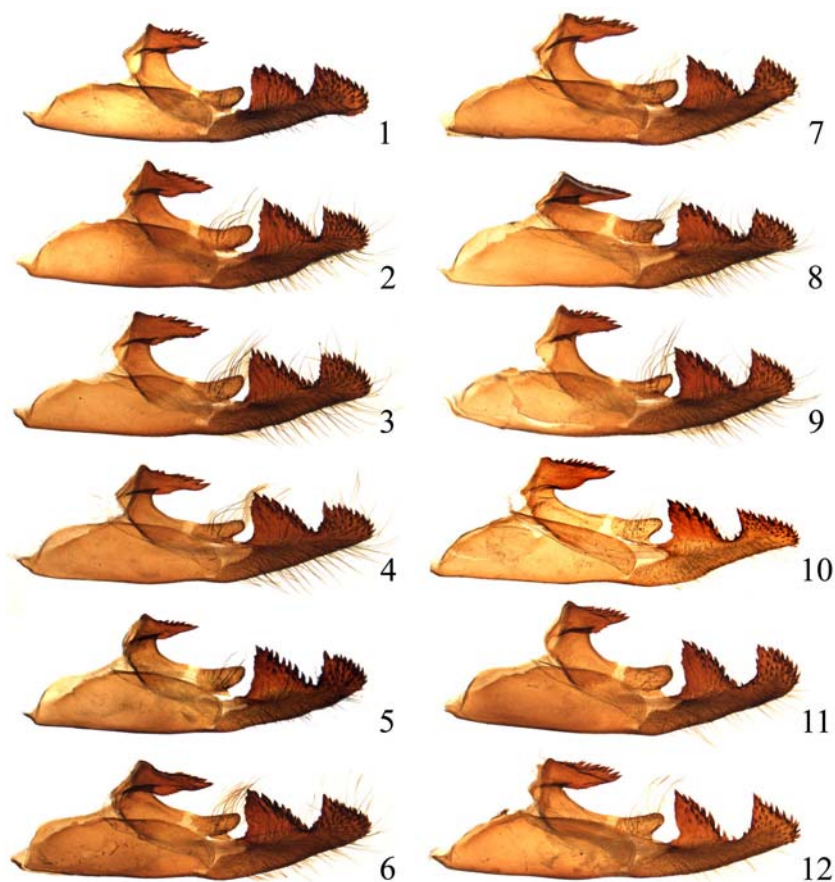
Halpe nephele Leech, 1893, Butt. China Jap. Cor.: 622. (lectotype – ♂, China: Sichuan, Omei Shan; designated by Huang & Xue, 2004: 175; deposited in NHM, UK; not examined); Huang, 2002, Atalanta 33 (1/2): 109; Huang, 2004, Neue Ent. Nachr. 57: 175; Yuan, Yuan & Wang, 2007, Acta Zootax. Sin. 32 (2): 309.

Halpe homolea nephele Leech: Evans, 1949, Cat. Hesp. Eur. Asia Aus.: 263; Chou, 1994, Mon. Rhop. Sin.: 122.

Halpe homolea (Hewitson): Gu & Chen, 1997, Butt. Hainan Island: 316.

Halpe concavimarginata Yuan, Yuan & Wang, 2007, Acta Zootax. Sin. 32 (2): 309 (holotype – ♂, China: Sichuan, Lushan County; deposited in EMNWAFU, China; examined), **syn. n.**

MATERIAL. CHINA, Fujian: Wuyi Mountain, 16-25.VII 2006, 11 ♂ (coll. X.Q. Yuan); Sichuan: Lushan County (date unknown), 2 ♂ (holotype and paratype of *H. concavimarginata*) (coll. B.H. Wang).



Figs. 1-12. Right valva of *Halpe nephele* Leech, 1893, inner view. Show the gradient variation of the distal portion. 1-9, 11) Fujian: Wuyi Mountain; 10, 12) Sichuan: Lushan County (holotype and paratype of *H. concavimarginata* Yuan, Yuan et Wang, 2007).

DISTRIBUTION. China (West Sichuan, Zhejiang, Fujian).

NOTES. In the original description of *H. concavimarginata*, its male genitalia was described as “Cuiller bilobate, concavity between 2 lobi is U-like, no serrations in the concavity, the outer margins of upper and distal lobi serrate, but their inner margins not serrate.” (Yuan et al. 2007: 309) But the truth is both the holotype and paratype have serrations in the concavity between two divergent branches (Fig. 10, 12). And from fig. 1 to fig. 12, a gradual change from V-like to U-like of the gap between dorsal and distal branches is clearly shown. So the genitalic character of *H. concavimarginata* is in the intraspecific variation range of *H. nephele*, and could not be utilized to distinguish it from the later.

Another feature of *H. concavimarginata* considered by its authors as important is “the outer margins of 2 discal spots on forewing are concave inwards”, that is also why it was named *concavimarginata*. Because there were only two specimens examined when this specie was published, its authors could not realize the individual variation as shown herein from fig. 13 to fig. 20. So this character is actually an unreliable one.

The specimens misidentified as *H. nephele* by Yuan et al. (2007) were examined by the senior author of the present paper, and they were found to be *H. dizangpusa*. True *H. nephele* was also found in the series of specimens and examined, which were collected from Fujian Province, a new distribution record of this species. It shows that forewing length and ciliae of *H. concavimarginata* and *H. nephele* are not as conspicuously different as stated by Yuan et al. (2007: 310). Therefore, *H. concavimarginata* is a synonym of *H. nephele*.

***Halpe dizangpusa* Huang, 2002**

Halpe dizangpusa Huang, 2002, Atalanta 33 (1/2): 109 (holotype – ♂, China: Anhui, Qingyang County; deposited in Qingdao Education College, China; not examined); Huang & Wu, 2003, Neue Ent. Nachr. 55: 136; Huang, 2004, Neue Ent. Nachr. 57: 175; Yuan, Yuan & Wang, 2007, Acta Zootax. Sin. 32 (2): 310.

MATERIAL. CHINA, Sichuan: Lushan County, 2 ♂ (coll. B.H. Wang); Hunan: Jishou, 8.VIII 1998, 24.VIII 1999, 2 ♂ (coll. F.Y. Xie); Fujian: Sanming, 27.V 2006, 4 ♂ (collector unknown); Fujian: Sanming, Geshikao, 2.VIII 2006, 1 ♂ (coll. X.Q. Yuan); Hainan: (date unknown), 2 ♂ (coll. M.B. Gu).

DISTRIBUTION. China (West Sichuan, Anhui, Zhejiang, Fujian, Jiangxi, Hunan, Guizhou, Guangxi, Hainan).

NOTES. Huang (2002) described *H. dizangpusa* as new to science, and discussed the external and genital characters distinguishing from *H. nephele*. Then after examining more specimens, Huang & Wu (2003) provided the individual variation of *H. dizangpusa* including nudum number, forewing length, wing pattern and ciliae. When making lectotype designation of *H. nephele*, Huang & Xue (2004) stated that *H. nephele* is restricted to W. Sichuan and allopatric with *H. dizangpusa* which is distributed in the South and East China, and these two species are different from each other in body size, number of apical spots on forewing upperside, and male genitalia. The senior author of the present paper checked specimens of 13 ♂ *H. nephele* and 11 ♂ *H. dizangpusa*, compared with data given in literature, and found that: 1) these two externally resembled species are sympatric in Fujian Province; 2) forewing length of the two species overlaps between 17 mm and 17.5 mm; 3) spot in space 8 on forewing upperside of *H. nephele* may vestigial and hardly visible; 4) although the variation of distal valva in *H. nephele* is remarkable (as shown in Figs. 1-12), it is still prominently different from that of *H. nephele* (see Huang, 2002: fig. 1), which is constant among individuals examined. So the senior author here concludes that *H. nephele* and *H. nephele* can only be differentiated with certainty by examining the male genitalia.



Figs. 13-20. Adults of *Halpe nephele* Leech, 1893, dorsal view. Show the variation of outer margins of discal spots. 13) Sichuan: Lushan County (holotype of *H. concavimarginata* Yuan, Yuan et Wang, 2007); 14-20) Fujian: Wuyi Mountain.

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REFERENCES

- Chou, I. 1994. *Monographia Rhopalocerorum Sinensium 1 & 2*. Zhengzhou: Henan Scientific and Technological Publishing House. 853 p.
- Evans, B.W.H. 1949. A Catalogue of Hesperidae from Europe, Asia and Australia in the British Museum (Natural History). London: The British Museum. 502 p.
- Gu, M.B. & Chen, P.Z. 1997. *Butterflies in Hainan Island*. Beijing: China Forestry Publishing House. 355 p.
- Huang, H. 2002. Some new butterflies from China – 2 (Lepidoptera, Hesperidae). *Atalanta*, 33(1/2): 109–122.
- Huang, H. & Wu, C.S. 2003. New and little known Chinese butterflies in the collection of the Institute of Zoology, Academia Sinica, Beijing – 1. *Neue Entomologische Nachrichten*, 55: 115–143.
- Huang, H. & Xue, Y.P. 2004. A contribution to the butterfly fauna of southern Yunnan. *Neue Entomologische Nachrichten*, 57: 135–154.
- Leech, J.H. 1892-1894. *Butterflies from China, Japan, and Corea*. London. 681 p.+43 pls.
- Yuan, F., Yuan, X.Q. & Wang, Z.Q. 2007. Checklist of the genus *Halpe* (Lepidoptera, Hesperidae) from China with description of a new species. *Acta Zootaxonomica Sinica*, 32(2): 308–311.