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● A new species of *Symbrenthia* Hübner, [1819] from Guizhou, China (Lepidoptera: Nymphalidae)

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Abstract: A new species of *Symbrenthia* Hübner, [1819], namely *S. cryptica* sp. nov., is described from Guizhou, China based on morphological, molecular, and zoogeographical differences. Photos, genitalia, diagnoses, phylogenetic trees, and a distributional map of the subgenus *Brensymthia* Huang, 2000, to which the new species belongs, are provided.

Keywords: *COI*, *EF-1α*, new species, Nymphalinae, Nymphalini

● 中国贵州盛蛱蝶属一新种（鳞翅目：蛱蝶科）

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摘要: 根据形态学、分子及动物地理上的差异，本文描述了来自中国贵州的盛蛱蝶属 *Symbrenthia* Hübner, [1819] 一新种，即隐盛蛱蝶 *S. cryptica* sp. nov.。同时提供了该新种所在亚属 *Brensymthia* Huang, 2000 的照片、外生殖器、鉴别特征、系统发育树和分布图。

关键词: *COI*, *EF-1α*, 新种, 蛱蝶亚科, 蛱蝶族

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● Introduction

The nymphalid genus *Symbrenthia* Hübner, [1819] (Type species: *Symbrenthia hippocle* Hübner, [1819]) is distributed mainly in the Oriental region, reaching the southeastern borders of the Palearctic region (de Nicéville 1902; Bozano & Floriani 2012). Currently, no more than 20 species are recognized in this genus (Fric *et al.* 2004, 2022). The majority of them have been recorded in China, several of which bear superficial resemblances, with their taxonomic status recently clarified through molecular evidence (Wu 2017; Fric *et al.* 2022; He *et al.* 2022; Hsu *et al.* 2023).

Based on certain synapomorphies, Huang (2000) established the genus *Brensynthia* Huang, 2000 to include a small species group of *Symbrenthia*, namely *S. niphanda* Moore, 1872, *S. silana* de Nicéville, 1885, and *S. sinoides* Hall, 1935. However, the placement of *silana* in *Brensynthia* was later questioned by Lang & Han (2009) due to its distinct genital structures, leading to the synonymization of *Brensynthia* under *Symbrenthia* (Lang 2012; Kunte 2010; Fric *et al.* 2004, 2022). Nevertheless, all *Brensynthia* species share some key characteristics highlighted by Holloway (1973) and Huang (2000), and the monophyly of this group is well supported in phylogenetic analyses (Gillham 1956; Huang & Xue 2004; Fric *et al.* 2004, 2022). Considering that *Symbrenthia* can be divided into four groups, the present study treats these groups as subgenera, with *Brensynthia* defined to include all species as originally proposed by Huang (1999, 2000).

Recently, the population of *Symbrenthia* from Guizhou, S. China was noted for its peculiar markings. It clearly belongs to the subgenus *Brensynthia* but it is not conspecific with *S. silana*, as indicated by the presence of the basal spot in spaces 1b and 12 on the forewing underside (Huang 2000; Lang 2012). Other wing-marking features of the focal population also differ from those of the remaining known species in *Brensynthia*. Therefore, the present study aims to review the historical literature, conduct molecular and morphological analyses, and to describe this peculiar population as a new taxon.

● Material and methods

A series of *Symbrenthia* spp. were examined (Collection of H-Z Li, CHZL; Collection of Z Liu, CZL; Collection of H Huang, CHH): *S. sinoides*: 3 ♂♂, 25.III.2020, 25.VII.2019, Mt. Emei, Sichuan, leg. H-Z Li (SBS1–SBS2; CHZL); 1 ♀: 14.VII.2023, Dayi, Sichuan (CHH); 1 ♀: 26.VII.2018, Mt. Qingcheng, Sichuan, leg. H-Z Li (SBS3; CHZL). *S. silana*: 1 ♀: 22.VII.2025, Mt. Wuzhi, Hainan, leg. Z Liu (CZL); *S. niphanda*: 1 ♂: 3.VIII.2023, Gongshan, Yunnan (CHH); 1 ♀: 9.VIII.2017, Pailong Bridge, Bomê, Nyingchi, Xizang (CHH). *S. sp.*: 1 ♀: Maolan NNR, Libo, Guizhou, 3.IV.2023 (CHZL; voucher number SBC1); 1 ♂: Liming Guan, Libo, Guizhou, China, 27.VII.2008, leg. Ye Liu (CHH). The dates on publications of Hübner (1816–1826), Moore (1900), Seitz (1908), and Fruhstorfer (1912) are demonstrated by Hemming (1943), Sherborn (1901), and Griffin (1936). The nomenclature of wing markings and venation refers to the work of Bozano & Floriani (2012). Terminology for genitalia follows Klots (1970).

Two molecular markers, the mitochondrial *COI* and nuclear *EF-1 α* , were analyzed as independent partitions with unlinked edge parameters. DNA extraction and primers used followed the author's previous methodology (Li *et al.* 2025; Huang 2025). The best-fit substitution models, TIM2+F+G4 for *COI* and JC+I for *EF-1 α* , were selected using ModelFinder under the BIC criterion. The voucher and accession numbers for specimens used in the molecular analysis were listed in Fig. 5, which were sourced primarily from Fric *et al.* (2022).

● Results

In molecular analyses, the DNA barcode is highly diagnostic for most species in the genus *Symbrenthia*, as its resulting tree highly matched those constructed by additional markers (Fric *et al.* 2022) (Fig. 5). Similarly, Hsu *et al.* (2023) further support the reliability of DNA barcoding in this genus since two similar sympatric species can be

dependably separated by this method. Although the *COI*-based phylogeny provides sufficient resolution for taxonomic decisions in this group, nuclear *EF-1 α* is also included as an independent line of evidence. As a result, the phylogenies inferred from *COI* and *EF-1 α* are topologically similar. Therefore, only the concatenated tree is presented, in which the Guizhou specimen forms a clearly distinctive lineage (Fig. 5). The only taxon not sampled in this subgenus is *hysudra* Moore, 1874, regarded here as a valid species following Holloway (1973) and Fric *et al.* (2022).

Although the little-known taxon *hysudra* had historically been treated differently by various authors (Seitz 1908; Fruhstorfer 1912), it is now classified within *S. (Brensymthia)* based on its genital structures (Doherty 1886; Holloway 1973). Externally, the Guizhou population can be distinguished from both *S. hysudra* and *S. niphanda* by the reduced metallic bands on the hindwing underside. In the dry season form, where the metallic bands are degenerate overall, the submarginal band in the space 2 remains relatively developed in *S. hysudra* and *S. niphanda*, while it is less distinct in *S. sinoides* and the Guizhou population (Moore 1874, 1900; Kunte 2010; Sondhi & Kunte 2018; Bhakare *et al.* 2019; Fric *et al.* 2022; Kunte *et al.* 2025) (Figs 1, 3). In the wet season form, the metallic spots are fully developed in *S. niphanda* and *S. hysudra* (D’Abrera 1985; Singh & Sondhi 2016; Inayoshi 2021; Garlani 2024), but fainter in the Guizhou population and *S. sinoides* (Bozano & Floriani 2012; Lang 2012; Chen 2016; Wu 2017) (Figs 1, 3). Furthermore, *S. hysudra* is also characterized by yellowish coloration in certain areas of the underside and is restricted to the W. Himalayas (de Nicéville 1886; Bingham 1905; Evans 1927, 1932) (Figs 3–4).

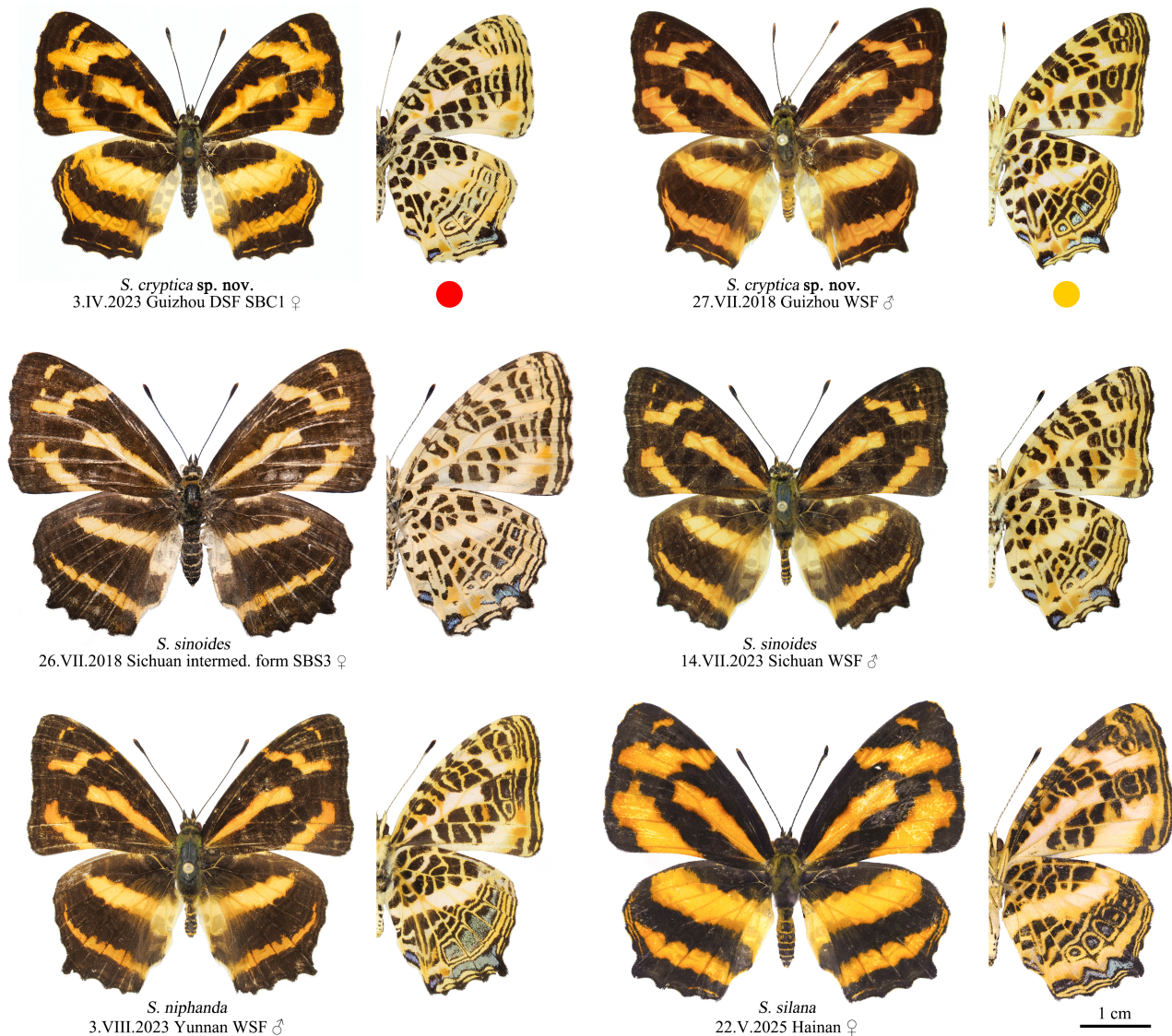


FIGURE 1. Habitus of *Symbrenthia (Brensymthia)* from China.

Etymology. The genus name likely derives from the prefix *syn-* and *brenthia*, which comes from the masculine βρένθος and has been given a latinized feminine suffix (Chou 1994). Thus, the new name *cryptica* (sing., Nom., adj.) is also feminine and refers to the cryptic nature of the new species.

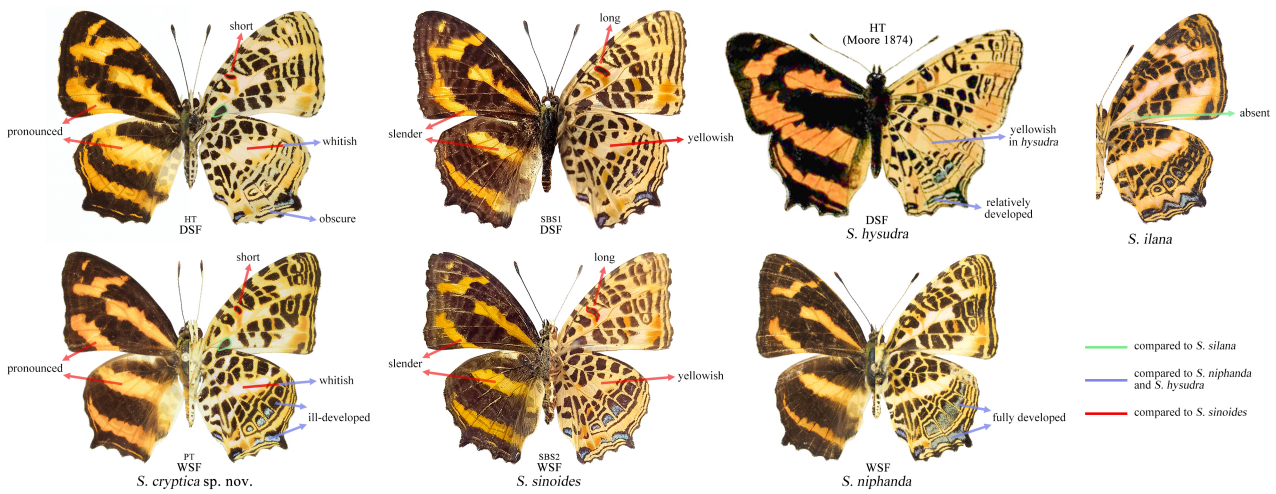


FIGURE 3. Diagnoses of *Symbrenthia cryptica* sp. nov.



审图号：GS(2019)1652号

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FIGURE 4. Distribution of *Symbrenthia* (*Brensymthia*). TL of *S. sinoides* is simply labeled. Source from references in this study.

Distribution. Guizhou, China; N.E. Vietnam.

Remarks. The specimen identified as “*S. niphanda*” by Monastyrskii (2019) from N.E. Vietnam is here assigned to the new species by its similar external markings. The male paratype and the female holotype are considered conspecific since they share an overall wing pattern that is easily distinguished from that of *S. sinoides* (Fig. 3).

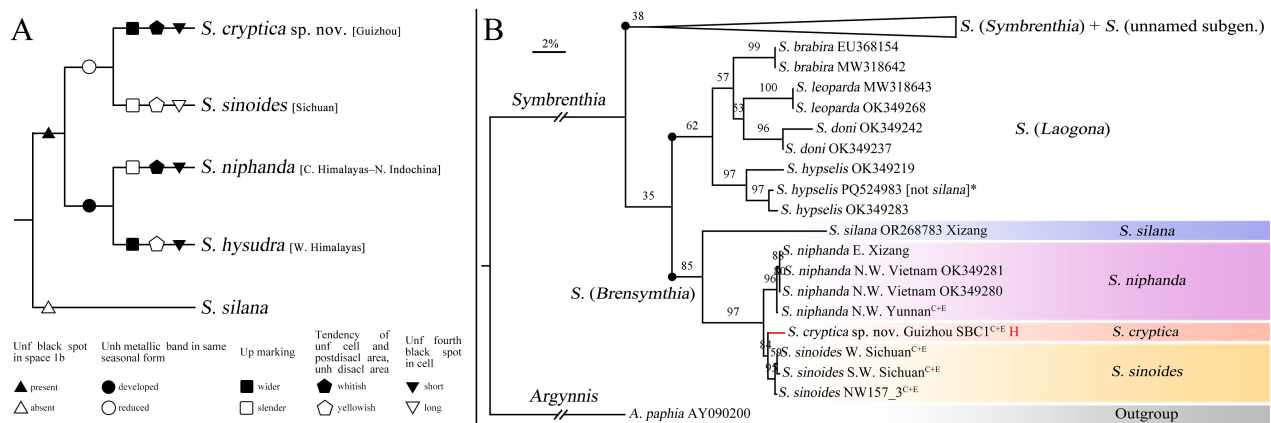


FIGURE 5. Phylogenetic tree of *Symbrenthia* (*Brensymthia*): **A** species tree constructed by morphological traits **B** molecular tree inferred from ML analysis of *COI* and partial *EF-1α*. C+E indicates that both *COI* and *EF-1α* data are available. Mainly modified from Frick *et al.* (2022). * = misidentification.

● Discussion

In the male genitalia, the uncus of the new species is identical to that of *S. sinoides*, whereas the gnathos is narrower (Huang & Xue 2004; Lang 2012) (Fig. 2). Although this difference is subtle, it still hardly allows a confident assessment of the taxonomic status of the new taxon, as interspecific differences can sometimes be such slight (Hsu *et al.* 2023). Therefore, molecular evidence is regarded as the primary basis for taxonomic judgment, given its high diagnostic value within the subgenus *Brensymthia*. Considering that the genetic divergence between the Guizhou population and *S. sinoides* is comparable to that between *S. sinoides* and *S. niphanda*, the present study prefers to treat this new taxon at the species level rather than as a subspecies of *S. sinoides* (Fig. 5).

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Photo Gallery



杜贝粉蝶 *Pieris dubernardi* Oberthür, 1884
Bayi Gou, Jinchuan, Sichuan
photograph by Hua-Zhao LI [李华钊]