

A classification of the genus *Lethe* HÜBNER, [1819] sensu D'ABRERA (1985) from China

2 - The *Lethe camilla* LEECH, 1891 group

(Lepidoptera, Nymphalidae)

by

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Abstract: A systematic and taxonomic review has been conducted on *Lethe camilla* LEECH, 1891, along with its allied species in China, namely *Lethe privigna* LEECH, 1892, *Lethe tengchongensis* LANG, 2016, *Lethe pingpingae* ZHANG & HU, 2018 **stat. nov.** (= *Lethe tengchongensis pingpingae* ZHANG & HU, 2018), and *Lethe luyanquani* HUANG, 2019. Additionally, two new taxa are described: *Lethe youjuni* HUANG & WU **spec. nov.** from Fujian and Guangdong, and *Lethe privigna wugui* HUANG **subspec. nov.** from Hubei, Shaanxi, Gansu and NE Sichuan. Both new taxa are supported by a molecular analysis, which indicates that the very little-known *Lethe kouleikouzana* YOSHINO, 2008 is phylogenitically closer to *Lethe camilla* Leech and its allies than to all others. The ♀ specimen of *Lethe kouleikouzana* YOSHINO is reported herein for the first time.

Introduction: This is the second of a series of papers dealing with the classification of the genus *Lethe* HÜBNER, [1819] (sensu D'ABRERA, 1985), and the first one (HUANG, 2025) should be consulted, especially the part on the molecular analysis.

This study was undertaken chiefly by the senior author, except for the following works. The junior author collected all the specimens of *Lethe youjuni* HUANG & WU **spec. nov.** from Fujian and a part of the specimens of other species used in this study. Mr. PENG YU purchased a ♀ specimen of *Lethe luyanquani* HUANG, 2019 from Tacheng, Weixi, which is confirmed to be the first record of the ♀. The species discussed in this study are grouped by the following morphological traits: 1) The upper side of the forewing in the ♂ is marked by a large ♂ brand filled with tadpole-shaped androconia; 2) The forewing underside in both sexes is marked by a complete transversal pale discal band, the lower end of which is fully developed in space 1b; 3) The hindwing underside in both sexes has extensive reddish or red-brownish coloring around the postdiscal series of eye-spots. This group is phylogenitically supported by both mt-DNA and nu-DNA trees.

The very little known *Lethe kouleikouzana* YOSHINO, 2008 is confirmed to belong to this group by molecular analysis. In the mt-DNA tree, the clade containing *Lethe kouleikouzana* YOSHINO and other members of the *Lethe camilla* LEECH, 1891 group is monophyletic but is not widely separated from the neighboring clade. However, in the nu-DNA tree [based on two fragments of the EF1-alpha gene (1114 bp) and one fragment of the Rps5 gene (575 bp)], this clade is rather widely separated from the neighboring *Lethe christophi* LEECH, 1891 by an apparent gap.

The mitochondrial COI, Rps5, and EF1-alpha gene sequences obtained from the specimens examined in this study have been deposited in GenBank. All sequenced specimens are accompanied by voucher numbers, which are clearly indicated with red labels in the corresponding figures.

Abbreviations:

BSNU:	Biological laboratory of Shanghai Normal University, Shanghai, P.R. China.
CHH:	Collection of HAO HUANG, Qingdao, Shandong.
CHSY:	Collection of Si-Yao Huang, Zhuhai.
CLSY:	Collection of Song-Yun Lang, Chongqing.
CWZJ:	Collection of ZHEN-JUN WU, Fuzhou.
CYP:	Collection of Peng Yu, Chongqing.
SCAU:	South China Agricultural University, Guangzhou.
TL:	Type locality.
ZFMK:	Leibniz Institute for the Analysis of Biodiversity Change, Museum Koenig, Bonn.

Molecular phylogeny, species boundary and morphological character analysis

It is worth noting that at least in the genus *Lethe* HÜBNER, [1819] (sensu lato), the already done molecular analysis (HUANG, unpublished data) shows that the nu-DNA tree is often incongruent with the mt-DNA tree. The KIMURA two-parameter distances in mt-DNA barcode sequences frequently have no absolute value in determining the species boundaries between *Lethe* species. In certain groups, a few species with very limited differences in mt-DNA sequences can be clearly separated in nu-DNA phylogeny that is congruent with the morphological analysis. And the mt-DNA tree frequently has only limited value in suggesting the phylogeny and the taxonomy.

L. kouleikouzana YOSHINO is widely separated from all other members of the group, characterized in morphology by the absence of ♂ brand on hindwing, the pure white forewing discal band in ♀, the much broader apex of valva in ♂ genitalia, and the extremely broad lateral view of uncus. This is in accordance with both the nu-DNA tree and the mt-DNA tree in which *L. kouleikouzana* YOSHINO is placed at the most basal clade of the entire group.

The remaining species are clearly separated into Subgroup A (*L. camilla* LEECH, 1891, *L. privigna* LEECH, 1892, *L. youjuni* HUANG & WU **spec. nov.** and *L. luyanquani* HUANG, 2019) and Subgroup B (*L. tengchongensis* LANG, 2016 and *L. pingpingae* ZHANG & HU, 2018 **stat. nov.**) by the following characters: 1) Androconia longer or shorter than 0.2 mm; 2) Valva longer and with a long needle-like projection or shorter and with a short projection; 3) Juxta wider or thinner; and 4) uncus in dorsal view strongly swollen at median portion or nearly parallel-sided. The species split is supported by the mtDNA tree (COI barcode data), which recovers *L. tengchongensis* LANG as sister to the entire Subgroup A. We are confident that this distinct morphological and genetic divergence will also be evident in future nuDNA studies.

On the mtDNA tree, *L. camilla* LEECH, *L. privigna*, LEECH and *L. luyanquani* HUANG are clustered into a clade, but none of them is monophyletic; their lineages are intermixed. However, analysis of the nuDNA tree supports the monophyly of each species, show-

ing clearly separated lineages without any admixture. The phylogeny inferred from nuDNA data is corroborated by morphology. Specifically, the clade of *L. camilla* LEECH and *L. luyanquani* HUANG is characterized by a large σ brand on the hindwing, whereas the clade of *L. privigna* LEECH and *L. youjuni* HUANG & WU **spec. nov.** shares a small σ brand.

The independence of *L. youjuni* HUANG & WU **spec. nov.** from *L. privigna* LEECH, and of *L. luyanquani* HUANG from *L. camilla* LEECH, is supported by the following evidence:

- 1) The Kimura 2-parameter (K2P) genetic distances in nuDNA sequences (EF1-alpha and RPS5) between each pair are comparable to those of other established sister-species pairs within *Lethe* HÜBNER, [1819] (sensu lato), such as the sympatric *Zophoessa burmana* (TYTLER, 1939) and *Z. lingnana* (LANG & DING, 2022), or the sympatric *Z. gelduba* (FRUHSTORFER, 1911) and *Z. nosei* KOIWAYA, 2000 (HUANG, unpublished data).
- 2) Small yet consistent gaps exist between these sister taxa on the nuDNA tree.
- 3) Significant and diagnostic morphological differences separate these taxa: *L. youjuni* **spec. nov.** differs from *L. privigna* LEECH in the σ genitalia by possessing a more curved valva-apex; *L. luyanquani* HUANG differs from *L. camilla* LEECH in the σ genitalia by having a more abruptly widened uncus in dorsal view, a more evenly tapered valva-apex, and stronger forewing discal band sexual dimorphism.

It is worth noting that a previous assessment by the senior author (HUANG, 2019) incorrectly considered genitalic differences between *L. privigna* LEECH and *L. camilla* LEECH to be significant. The previously mentioned variations in the uncus and valva are now understood to represent individual variation, with no diagnostic value, as confirmed by the examination of additional specimens. Consequently, these two species are hardly separable by σ genitalic characters alone.

Populations of *L. privigna* LEECH from Shaanxi and Hubei provinces differ from those in central Sichuan by possessing a more distinct σ brand on the forewing upperside and longer androconia. This morphological divergence is corroborated by mtDNA data. Therefore, the populations from Hubei and Shaanxi are herein described as a new subspecies.

L. pingpingae ZHANG & HU is considered distinct from *L. tengchongensis* LANG based on the following morphological differences:

- 1) a markedly narrower forewing discal band in both sexes; 2) longer androconia; 3) the σ hindwing brand positioned closer to the termen; 4) a more restricted σ forewing brand; and 5) a more sharply pointed valval apex in the σ genitalia.

Important morphological characters.

- A. Apex of valva in dorsal view:** 1) With a strongly curved needle-like projection; 2) With a straight and long needle-like projection; 3) With a short needle-like projection; 4) Blunt, with no needle-like projection.
- B. Uncus:** 1) Extremely broad and cockscomb-shaped in lateral view; 2) More or less fusiform in dorsal view, with the widest portion more distant from apex of uncus; 3) More or less fusiform in dorsal view, with the widest portion closer to apex of uncus; 4) More or less parallel-sided in dorsal view.
- C. Lateral branches of juxta:** 1) Wide; 2) Thin.
- D. Androconia:** 1) More than 0.25 mm long; 2) Less than 0.2 mm long.
- E. Hindwing σ brand:** 1) Absent; 2) Small and obscure; 3) Small and distinct; 4) Large and close to termen; 5) Large and more distant from termen.
- F. Forewing σ brand:** 1) Large and obscure; 2) Large and distinct; 3) Interrupted in space 1b and restricted around veins; 4) Interrupted in space 1b and filling the basal 1/3 of space 2.
- G. Forewing underside discocellular bar:** 1) Clearly defined; 2) Ill-defined or absent.
- H. σ forewing upper side discal band:** 1) Absent or entirely obscure; 2) Obscure but distinct at costa; 3) Distinct and narrow; 4) Distinct and wide.
- I. σ forewing upper side discal band:** 1) Obscure at lower half; 2) Complete but interrupted by veins; 3) Conjoined and narrow; 4) Conjoined and wide.
- J. Forewing underside:** 1) With four ocelli; 2) With three ocelli.

Key to σ of the *L. camilla* LEECH group.

1. Hindwing upper side with no σ brand. Forewing underside discal band partly white. Apical part of valva of σ genitalia broad in dorsal view. Uncus of σ genitalia very broad and cockscomb-shaped in lateral view.....*L. kouleikouzana*
- Hindwing upper side with a σ brand. Forewing underside discal band yellow. Apical part of valva narrow in dorsal view. Uncus not very broad in lateral view.....2
2. Forewing upper side with a complete pale discal band. Forewing underside with three postdiscal ocelli. Androconia less than 0.2 mm long. Apex of valva with no needle-like projection. Juxta with narrow lateral branches.....3
- Forewing upper side with no discal band. Forewing underside with four postdiscal ocelli. Androconia more than 0.25 mm long. Apex of valva with a long needle-like projection. Juxta with wide lateral branches.....4
3. Forewing discal band wide. Hindwing upper side σ brand more distant from termen. Forewing upper side σ brand filling basal 1/3 of space 2. Apex of σ valva with no needle-like projection.....*L. tengchongensis*
- Forewing discal band narrow. Hindwing upper side σ brand closer to termen. Forewing upper side σ brand restricted around veins. Apex of σ valva with a short needle-like projection.....*L. pingpingae*
4. Hindwing upper side σ brand larger, with its inner edge more distant from termen.....5
- Hindwing upper side σ brand smaller, with its inner edge closer to termen.....6
5. Forewing upper side with a more or less traceable discal band that is distinct at costa. Uncus in dorsal view with the widest portion closer to apex of uncus. Valva longer. Androconia relatively shorter.....*L. luyanquani*
- Forewing upper side with no trace of a discal band and with an obscure spot at costa. Uncus in dorsal view with the widest portion more distant from apex of uncus. Valva shorter. Androconia relatively longer.....*L. camilla*
6. Forewing underside with a distinct discocellular bar. Apical projection of valva strongly curved. Hindwing upper side with an obscure σ brand.....*L. youjuni*
- Forewing underside at most with an ill-defined discocellular bar. Apical projection of valva rather straight. Hindwing upper side with a distinct σ brand.....7 (*L. privigna*)
7. σ brand on forewing upper side more distinct, in greater contrast with pale ground color. Androconia longer.....*L. privigna wugui*

- . ♂ brand on forewing upper side less distinct, in weaker contrast with pale ground color. Androconia shorter.....*L. privigna privigna*
- Key to ♀♀ of the *L. camilla* LEECH group.**
1. Forewing discal band pure white.....*L. kouleikouzana*
 - . Forewing discal band yellowish.....2
 2. Forewing upper side discal band conjoined and not interrupted by black veins.....3
 - . Forewing upper side discal band incomplete or interrupted by black veins.....5
 3. Forewing underside with four ocelli.....*L. luyanquani*
 - . Forewing underside with three ocelli.....4
 4. Forewing discal band wider.*L. tengchongensis*.
 - . Forewing discal band narrower.....*L. pingpingae*
 5. Forewing upper side discal band orange-yellow.....*L. camilla*
 - . Forewing upper side discal band cream-yellow.....6
 6. Forewing underside with a distinct discocellular bar.....*L. youjuni*
 - . Forewing underside at most with an obscure discocellular bar.....7 (*L. privigna*)
 7. Forewing upper side discal band complete.....*L. privigna wugui*
 - . Forewing upper side discal band incomplete, with lower half ill-defined.....*L. privigna privigna*

Taxonomic account

Lethe camilla LEECH, 1891

Lethe camilla LEECH, 1891: 3 (TL: Chia-kou-ho = Jinkouhe, Sichuan); LEECH, 1892: 31-32, records from Chia-ting-fu (= Leshan) and Wa-shan, pl. 5, figs. 1-2 for ♂ and ♀; WU & HSU, 2017: 0489- fig. 01 for ♀ from Omeishan, fig. 02 for ♂ from Ebian; LANG, 2017: 87, pl. IX- fig. 7-8 for ♂ and ♀, fig. 105 for ♂ genitalia, record from Ebian, C Sichuan; HUANG, 2019: 221- fig. 44 for ♂ from Yingjing, 235- fig. 175-A for ♂ brand, fig. 176-A for androconia, figs. 177A-182A for ♂ genitalia.

Material. 1 ♂ (CHH), Long-cang-gou, Yingjing, Ya'an, Sichuan, 1500m, 9.VII.2016, H. HUANG leg.; 2 ♂♂ (CHH), on route from Xixinsuo to Jiulinggang, Omeishan, Sichuan, 1800 m, 20.VIII.2012, H. HUANG leg.; 1 ♀ (CLSY), Heizhugou, Ebian, Sichuan, 1800-2000 m, 18.VIII.2013, S.-Y. LANG leg.; 2 ♂♂ (CHH), Omeishan, Sichuan, 28.VII & 20.VIII.2025, H. HUANG leg.; 2 ♂♂ (CHH), Heizhugou, Sichuan, 29.VII.2025, H. HUANG leg.

Characters. A2, B2, C1, D1, E4, F2, G1, H1, I2, J1.

Remarks. *Lethe camilla rufa* MELL, 1939 from Fujian was originally described as having: 1) ♂ hindwing underside ocelli individually outlined in violet; 2) ♂ hindwing underside postdiscal area distally bordered by a narrow violet line approximately 1 mm wide, e.g., a violet submarginal line well marked; 3) ♂ hindwing underside post-median line on veins 2 and 4 distally jagged, strongly receding between them; 4) ♀ forewing white band continuous, with its origin at costa brownish. Such description does not match any members of the *Lethe camilla* LEECH group in wing-pattern, thus *Lethe camilla rufa* MELL is not a member of the group. Dr. S.-Y. HUANG (personal communication, 2023) located the type material of *Lethe camilla rufa* MELL and confirmed that it belongs to *Lethe guansia* SUGIYAMA, 1999 (TL: Guangxi); this result will be published in detail by Dr. S.-Y. HUANG (2025, in press).

D'ABRERA (1990: 129) illustrated a pair of specimens from "Ta tsien lu" under *Lethe camilla* LEECH. However, this pair of specimens represents an unnamed population of *Lethe luyanquani* HUANG, ranging from Kangding and its adjacent areas where no member of this group has been collected in recent years. The ♀ specimen (reproduced herein as fig. 17-I) possesses a wider and more oblique discal band on the forewing than that in *Lethe camilla* LEECH (fig. G- reproduced from LEECH, 1892). LEECH's (1892) illustration is somewhat misleading in some details due to the inaccuracy of hand drawing, but the interrupted forewing upperside discal band in the ♀ is clearly shown in the original figure.

Range. A small area around Jinkouhe, Yingjing, Ebian and Omeishan, Sichuan.

Lethe privigna LEECH, 1892

Characters. A2, B2, C1, D1, E3, F1&2, G2, H1, I1&2, J1.

Lethe privigna privigna LEECH, 1892

Lethe camilla var. *privigna* LEECH, 1892: 32 (TL: Moupin and Wa-ssu-kow; now Baoxing and Wasigou), pl. 5, figs. 3-4 for ♂ and ♀. *Lethe privigna*: D'ABRERA, 1990: 129, 128- figs. for ♂ upper side and ♀ underside, both from Moupin (probably syntypes?).

Material. 1 ♂ (CHH), Huya, Pingwu, N Sichuan, 1500m, 9.VIII.2021, C. CHEN leg.; 1 ♂ (CWZJ), Huya, Pingwu, N Sichuan, 1500m, 25.VII.2017, C. CHEN leg.

Characters. A2, B2, C1, D1, E3, F1, G2, H1, I1, J1.

Remarks. This taxon is allopatric with *Lethe camilla* LEECH with no sympatric record known, though their ranges are close; an examination of more specimens has proved that there is no genitalic difference between them. The KIMURA two-parameter distances in mt-DNA barcode sequences between *L. camilla* LEECH and *L. privigna privigna* LEECH is only 0.003, suggesting a very close relationship. However, phylogenetic analysis of nuclear DNAs resolves the two species as genetically distinct, belonging to separate lineages.

Range. Area from Luding to Pingwu, Sichuan.

Lethe privigna wugui HUANG subsp. nov.

Lethe laodamia: WANG & ZHAO, 2000: 38, partim on right bottom fig. for living ♂ from Qinling, Shaanxi; CAI, 2011: 103, record from Xiaolongshan, Gansu, fig. 1 for ♂.

Lethe privigna: WU & HSU, 2017: 0489- fig. 03 for ♀ from Fengxian, Shaanxi, fig. 04 for ♀ from Kangxian, Gansu; LANG, 2017: 87, pl. IX- figs. 9-10 for ♂ & ♀, fig. 106 for ♂ genitalia, records from Shaanxi (Foping, Fengxian, Ningshaan), Hubei (Shennongjia) & NE Sichuan (Micangshan); HUANG, 2019: 221- fig. 45 for ♂ from Hubei, 235- fig. 175-D for ♂ brand, fig. 176-D for androconia, figs. 177D-182D for ♂ genitalia.

Holotype ♂: Hongping, Shennongjia, Hubei, 12.VIII.2003, H. HUANG leg. (to be deposited in BSNU).

Paratypes: 6 ♂♂, 1 ♀ (CHH), Hongping, Shennongjia, Hubei, 12.-15.VIII.2013, H. HUANG leg.; 1 ♀ (CLSY), Yanzia, Shennongjia,

Hubei, 31.VII.2013, G.-X. XUE leg.; 3 ♂♂, 3 ♀♀ (CHH, CLSY, CHSY), Xiao-nan-gou, Fengxian, Baoji, Shaanxi, 3.-5.VIII.2015, S.-Y. HUANG leg.; 1 ♂ (CLSY), Foping, Shaanxi, 15.VII.2014, C.-S. ZHANG leg.; 16 ♂♂ (CLSY), Ningshaan, Shaanxi, 1900 m, 31.VII.2016, S.-Y. LANG leg.; 1 ♀ (CWZJ), Qinghelinchang, Kangxian, S Gansu, 1500 m, 7.VII.2015, Y. GU leg.; 1 ♂ (CLSY), Mt. Micangshan, Nanjiang, 1850 m, 1.VIII.2016, S.-Y. LANG leg.; 1 ♂ (CHH), Sanguanmiao, Foping, Shaanxi, 1500 m, 26.VII.2025, YU-FEI LI leg.; 1 ♂ (ZFMK), Tapaishan (Taibaishan) im Tsinling (Qinling), S Shaanxi, ca. 1700 m 9.VIII.1936, H. HONE leg.

Etymology. The subspecies name is the nickname of Dr. SI-YAO HUANG, who has finished a study on *Lethe camilla rufa* MELL, making this work possible.

Diagnosis. The new subspecies can be distinguished from the nominotypical subspecies in ♂♂ by the more distinct ♂ brand on forewing upper side and the longer androconia, and in ♀♀ by the more complete discal band on forewing upper side.

Characters. A2, B2, C1, D1, E3, F2, G2, H1, I2, J1.

Remarks. The KIMURA two-parameter distance in mt-DNA barcode sequences between *L. privigna wugui* HUANG **subspec. nov.** and *L. privigna privigna* LEECH is 0.013, larger than that between *L. privigna privigna* LEECH and *L. camilla* LEECH (0.003). The difference in ♀ wing-pattern (forewing upper side discal band complete or incomplete) seems to be rather constant between the two subspecies of *L. privigna* LEECH. However, there is no constant difference in ♂ genitalia between *L. privigna wugui* HUANG **subspec. nov.** and *L. privigna privigna* LEECH.

Range. W Hubei, S Shaanxi, SE Gansu, NE Sichuan.

Lethe youjuni HUANG & WU **spec. nov.**

Lethe insana: LI, 2021: 33- fig. 74 for ♀ upper side and ♂ underside, both from Shun-huang-shan, Hunan.

Holotype ♂: Huang-gang-shan, Wuyishan Nature Reserve, Fujian, 1400-1800m, 2.VIII.2022, Z.-J. WU leg., dissected (to be deposited in BSNU).

Paratypes: 4 ♂♂, 1 ♀ (CWZJ), Huang-gang-shan, Wuyishan, Fujian, 1700-1900 m, 8.-9.VII.2022, Z.-J. WU leg.; 1 ♂, 1 ♀ (CWZJ), Huang-gang-shan, Wuyishan, Fujian, 24.VII.2024, Z.-J. WU leg.; 1 ♂ (CHH), Huang-gang-shan, Wuyishan, VIII.2025, Z.-J. WU leg.; 1 ♂ (CHH), Nanling, Ruyuan, Shaoguan, Guangdong, 1200-1500 m, 2.VIII.2003, C.-H. ZHAN leg., dissected; 1 ♂ (SCAU), Huang-gang-shan, Wuyishan, 29.VII.2022, M. WANG & JUN-RU HE leg., dissected by S.-Y. HUANG.

Etymology. The species is named after Mr. JUN YOU, the cousin of the junior author.

Diagnosis. The new species can be distinguished from other members of the group as indicated in the above keys.

Characters. A1, B2, C1, D1, E2, F1, G1, H1, I1, J1.

Remarks. As outlined initially, the status of this new species is supported by both remarkable genitalic differences (specifically in the valval apex) and a nuclear DNA phylogeny from EF1-alpha and RPS5 sequences that establishes its distinct lineage.

This new species was erroneously considered as *Lethe camilla rufa* MELL, 1939, representing a subspecies of *L. camilla* LEECH (LANG, 2017) or *L. privigna* LEECH (LANG, 2017; ZHANG & HU, 2018; HUANG, 2019). However, the wing characters stated in the original description (MELL, 1939) do not support *Lethe camilla rufa* MELL being a member of the *L. camilla* LEECH group. A detailed study on the type material of *Lethe camilla rufa* MELL will be published by Dr. S.-Y. HUANG (2025, in press).

Range. Fujian, Guangdong, Hunan.

Lethe luyanquani HUANG, 2019

Lethe luyanquani HUANG, 2019: 207 (TL: Weixi, Yunnan), 221- figs. 41-43 for ♂♂, 235- fig. 175-B for ♂ brand, fig. 176-B for androconia, figs. 177B-182B for ♂ genitalia; HUANG, S. Y. & YU, 2025: 685, fig. 4 for ♀.

Material. 6 ♂♂ (CHH; the type series), N Weixi, NW Yunnan, 2700-2900 m, 25.VII.-4.VIII.2018, H. HUANG leg.; 1 ♀ (CYP), Tacheng, N Weixi, 15.VII.2022, anonymous collector leg., purchased by P. YU., 1 ♂ (CHH), N Weixi, 3000 m, 5.VIII.2025, H. HUANG leg.

Characters. A2, B3, C1, D1, E4, F2, G2, H2, I4, J1.

Remarks. Both molecular and morphological data indicate a close relationship between *Lethe luyanquani* HUANG and *L. camilla* LEECH. However, the taxonomic independence of *L. luyanquani* HUANG is firmly established by significant genitalic differences and, crucially, by a recently discovered ♀ specimen (S.Y. HUANG & YU, 2025) which exhibits a diagnostic, wide, and continuous discal band on the forewing upperside.

Range. Weixi area, NW Yunnan.

Lethe tengchongensis LANG, 2016

Lethe tengchongensis LANG in LANG & DUAN, 2016: 297 (TL: Tengchong), figs. 1-14, 14-15 for ♂, ♀ and ♂ genitalia; WU & HSU, 2017: 0489- fig. 05 for ♂, fig. 06 for ♀, both from Tengchong; LANG, 2017: 88, pl. IX- figs. 11-12 for ♂ and ♀, fig. 107 for ♂ genitalia; HUANG, 2019: 221- fig. 46 for ♂ paratype, 235- fig. 175-E for ♂ brand, fig. 176-E for androconia, figs. 177E-182E for ♂ genitalia

Material. 1 ♂, 1 ♀ (CHH; paratypes), Qushi, Tengchong, on west slope of Gaoligongshan Mts., 2200-2500 m, 8.-9.VIII.2016, S.-Y. LANG leg.; 1 ♂ (CWZJ), Diantan, west of Tengchong, 1800-2000m, 7.VII.2016, R. SUN leg.

Characters. A4, B4, C2, D2, E5, F4, G2, H4, I4, J2.

Range. West slope of southern part of the Gaoligongshan Mts., W Yunnan.

Lethe pingpingae ZHANG & HU, 2018 **stat. nov.**

Lethe tengchongensis pingpingae ZHANG & HU, 2018: 139 (TL: Shuanglong, Kunming, Yunnan), fig. 1 for ♂♂, fig. 2 for ♂ genitalia; HUANG, 2019: 221- figs. 47-49 for ♂♂, 235- fig. 175-H for ♂ brand, fig. 176-H for androconia, figs. 177H-182H for ♂ genitalia; S.Y. HUANG & YU, 2025: 686, fig. 5 for ♀.

Material. 3 ♂♂, 1 ♀ (CHH), Shuanglong, Anning, Kunming, C Yunnan, 1900-2200m, 21-24.VII.2018, S.-Y. HUANG leg.; 1 ♂, 1 ♀ (CWZJ), Shuanglong, Anning, Kunming, 20.VII.2018, Z.-J. WU leg.

Characters. A3, B4, C2, D2, E4, F3, G2, H3, I3, J2.

Remarks. The differences in ♂ brand, androconia and apex of ♂ valva support the separation of this taxon from *Lethe tengchongensis* LANG in specific level.

Range. Kunming, N Yunnan.

Lethe kouleikouzana YOSHINO, 2008

Lethe kouleikouzana YOSHINO, 2008: 9 (TL: Gaoligongshan, N Yunnan), pl. 2, figs. 2-4 for ♂ and ♂ genitalia; LANG, 2017: 90, pl. IX- fig. 18 for holotype.

Material. 1 ♂ (CHH), on road from Gongshan to Dulongjiang, on east slope of Gaoligongshan Mts., NW Yunnan, 2900 m, 1.VIII.2023, H. HUANG leg.; 1 ♀ (CHH), on road from Gongshan to Dulongjiang, 2900m, 14.VIII.2023, H. HUANG leg.; 1 ♂ (CWZJ), on road from Lushui to Pianma, on east slope of Gaoligongshan Mts., 2700-2900 m, VIII.2022, M. YE leg.

Characters. A4, B1, C2, D2, E1, F1, G2, H1, I4, J2.

Remarks. For a long time, only the single ♂ holotype was known for this enigmatic species. Additional ♂ specimens and the first ♀ specimen are reported here for the first time.

Range. East slope of Gaoligongshan Mts., NW Yunnan.

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Fig. 1: Dorsal habitus of the *Lethe camilla* LEECH, 1891 group ♂♂ and ♀♀ under same scale (The dark red character codes next to the specimen images indicate that the specimen is a DNA sample, and these codes correspond one-to-one with the DNA sample numbers on the phylogenetic tree).



Fig. 2: Ventral habitus of the *Lethe camilla* LEECH, 1891 group ♂♂ and ♀♀ under same scale.

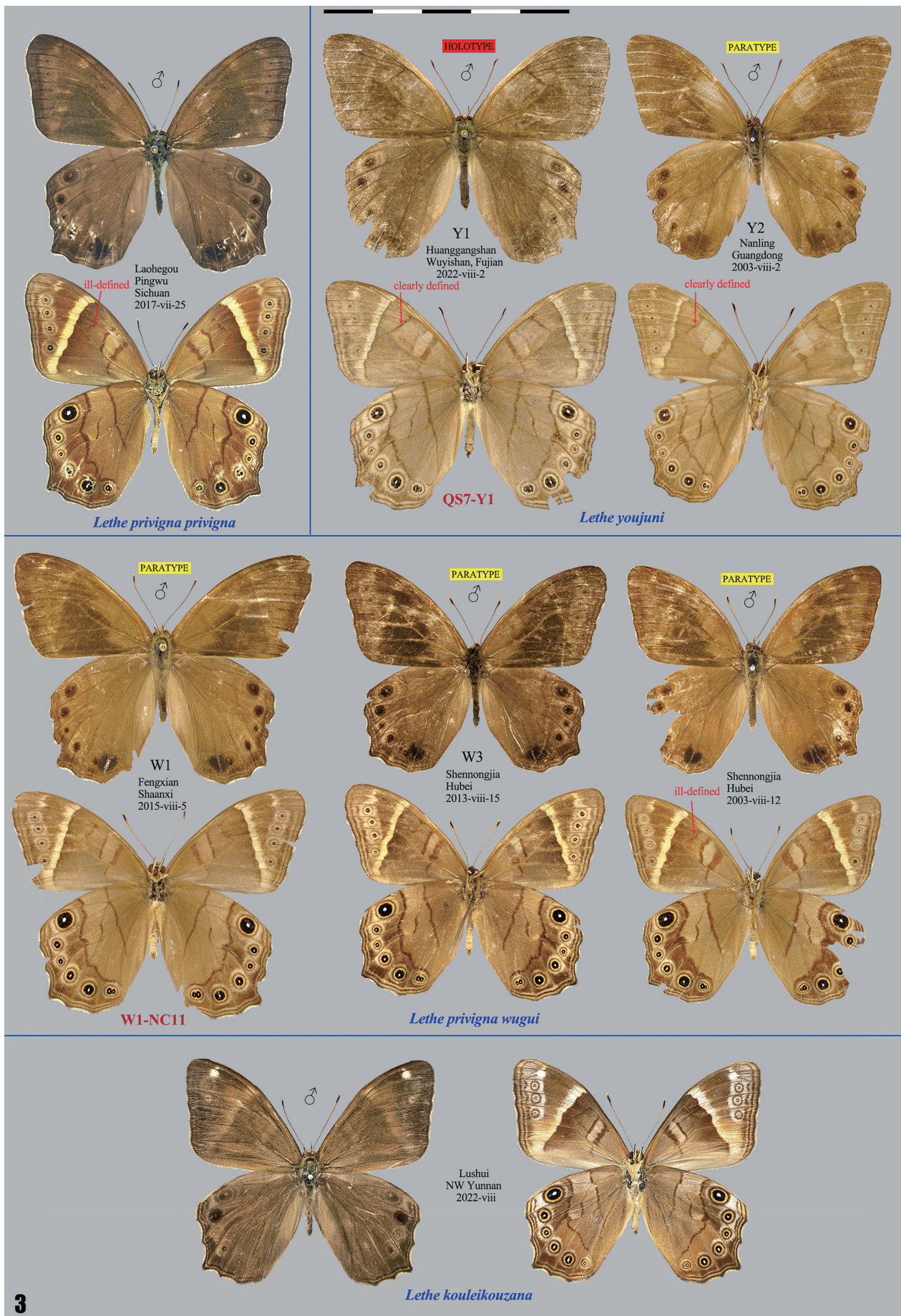


Fig. 3: Dorsal and ventral habitus of the *Lethe camilla* LEECH, 1891 group under same scale.

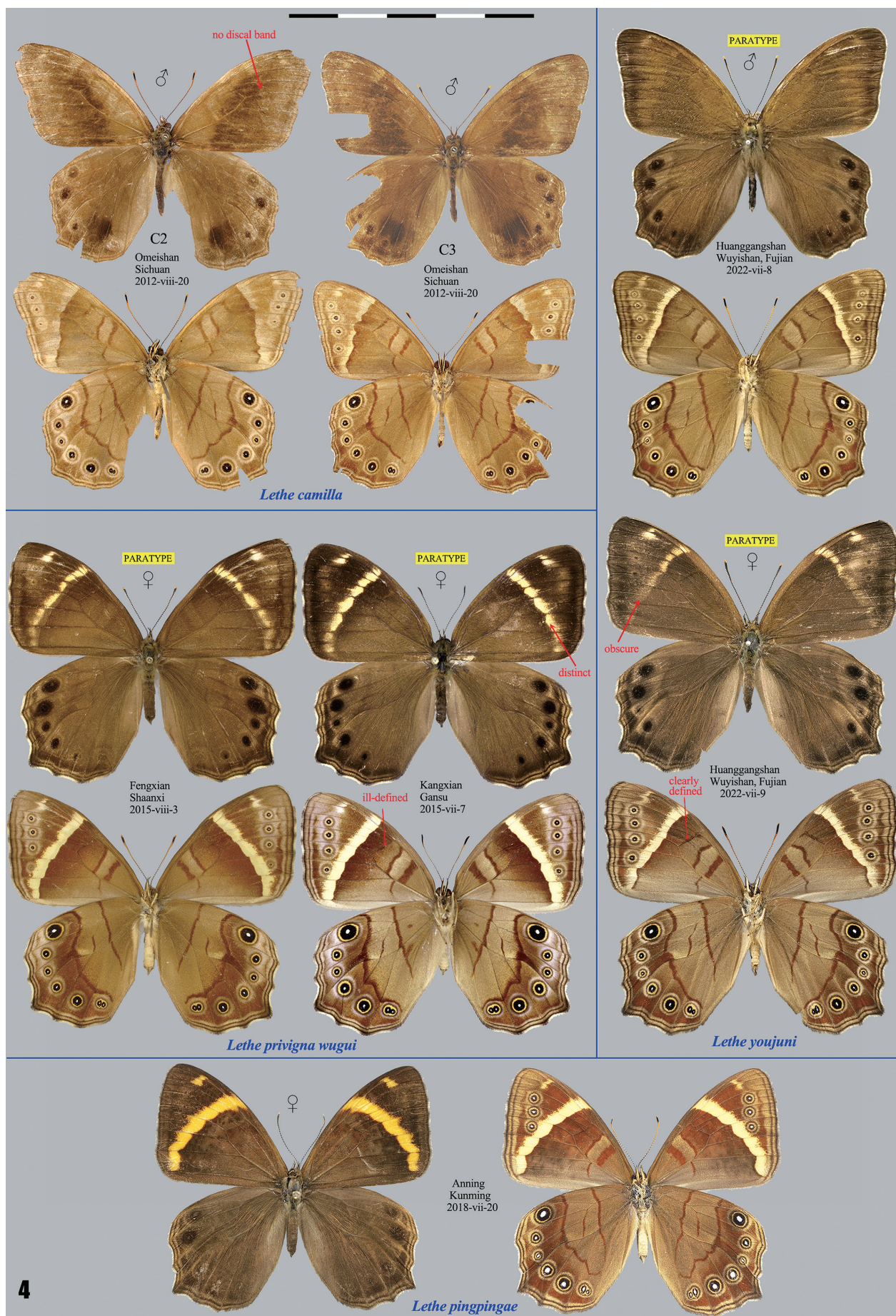


Fig. 4: Dorsal and ventral habitus of the *Lethe camilla* LEECH, 1891 group under same scale.

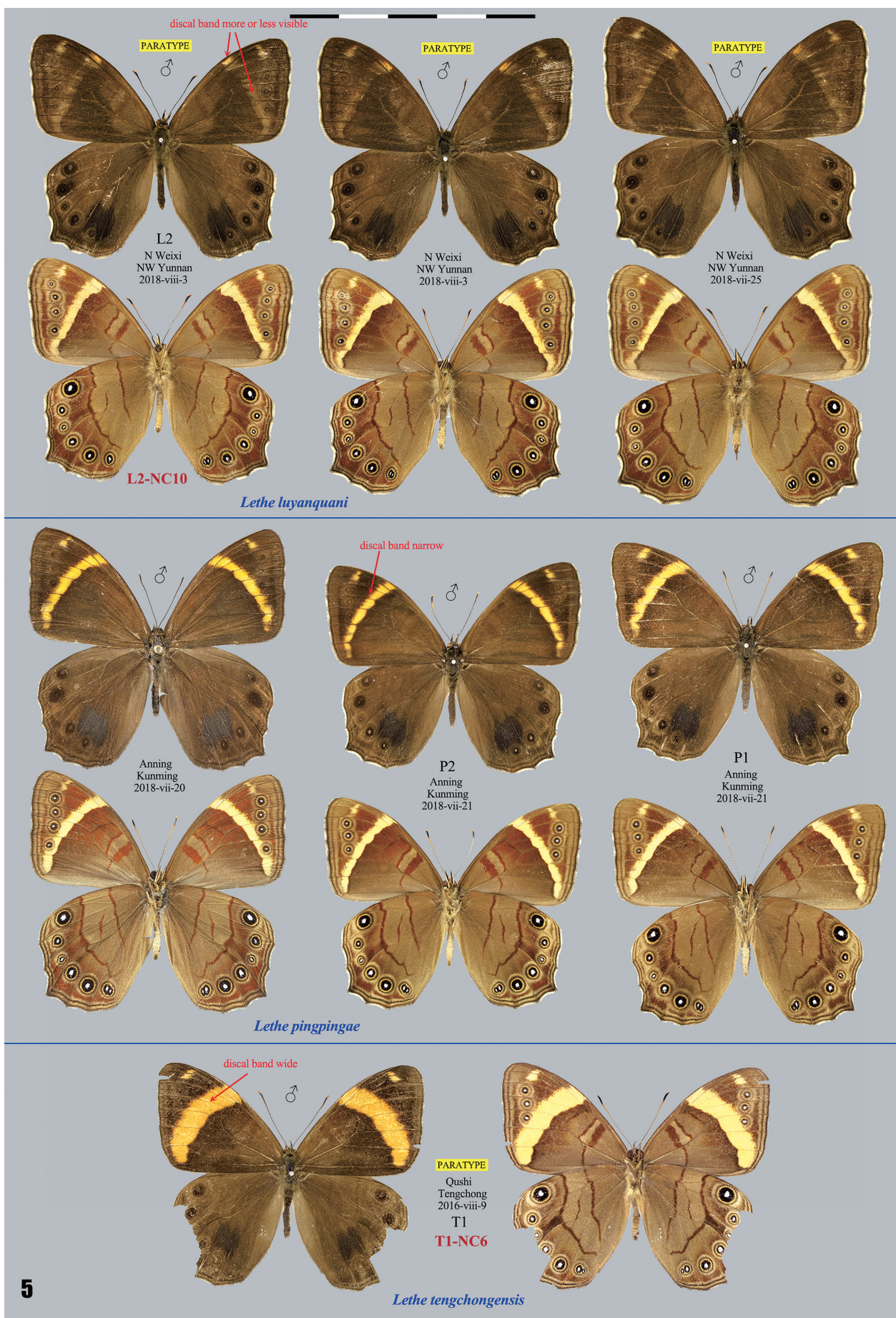


Fig. 5: Dorsal and ventral habitus of the *Lethe camilla* LEECH, 1891 group under same scale.

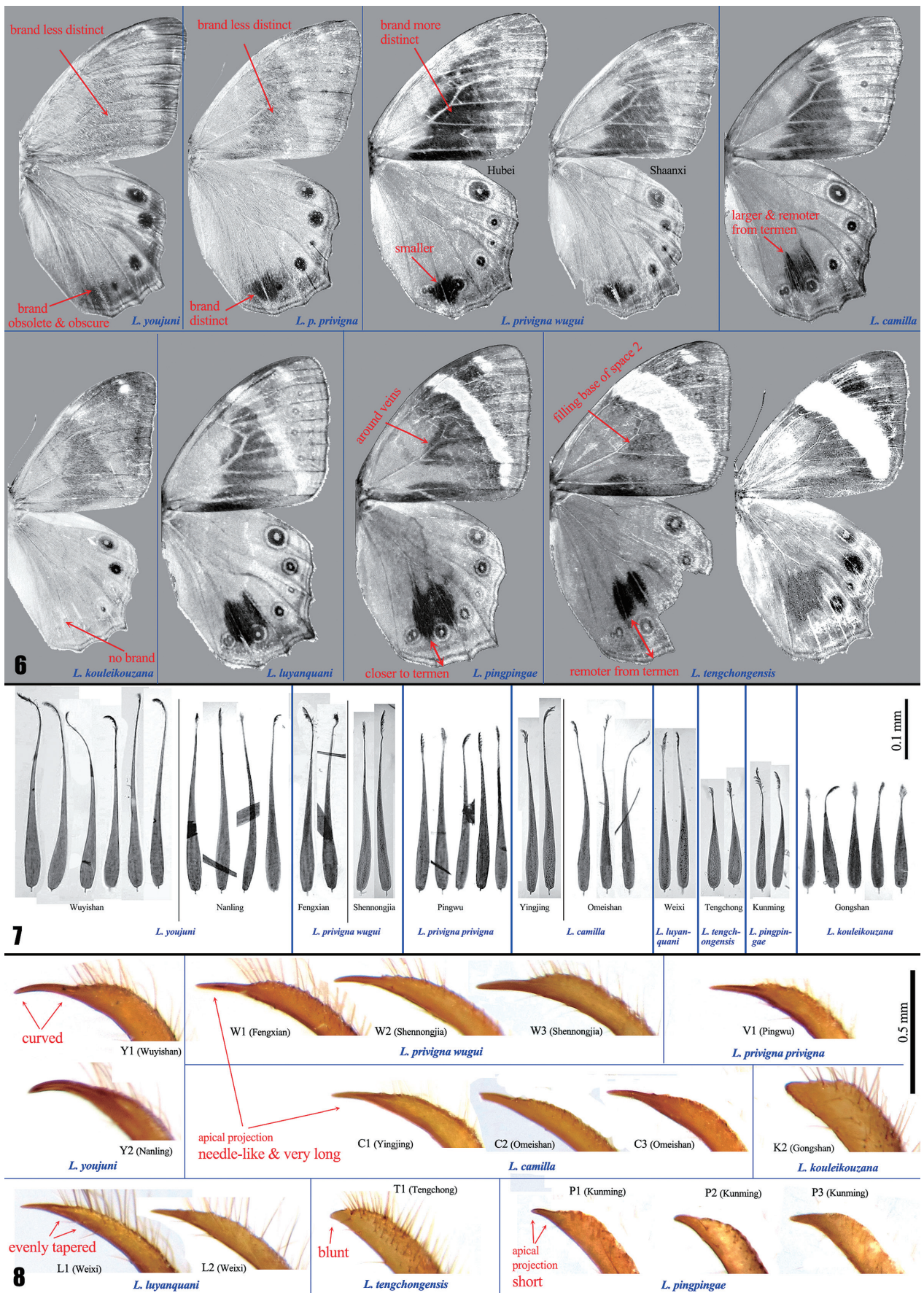


Fig. 6: Diagnostic characters of wings used for species differentiation.

Fig. 7: Androconia under same scale.

Fig. 8: Diagnostic characters of ♂ genitalia used for species differentiation: apex of left valva in dorsal view (full face view) under same scale.



Fig. 9: Left valva in dorsal view under same scale.

Fig. 10: Uncus in dorsal view under same scale.

Fig. 11: Aedoeagus in left lateral view under same scale.

Fig. 12: Juxta and manica in posterior or anterior view under same scale.

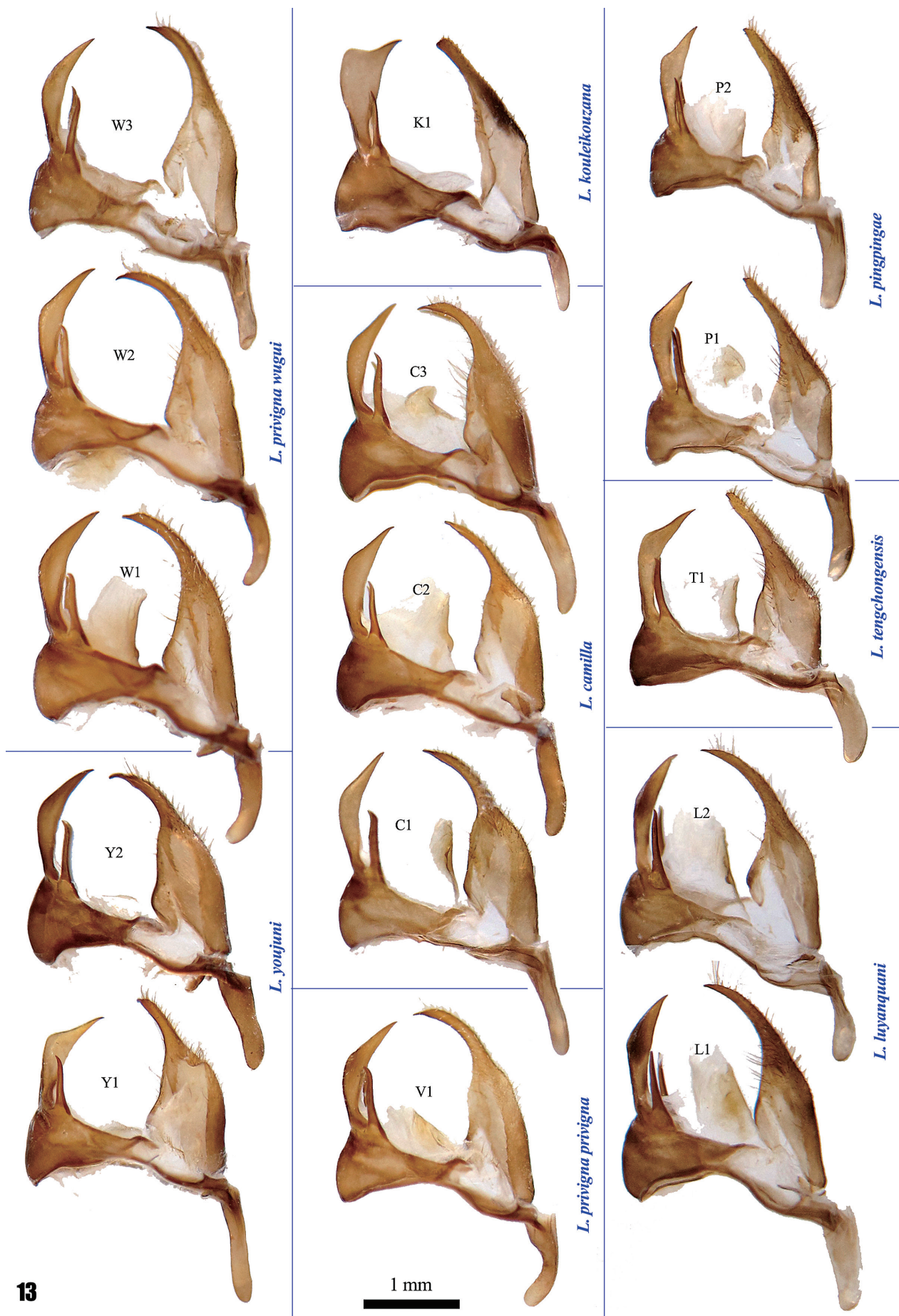
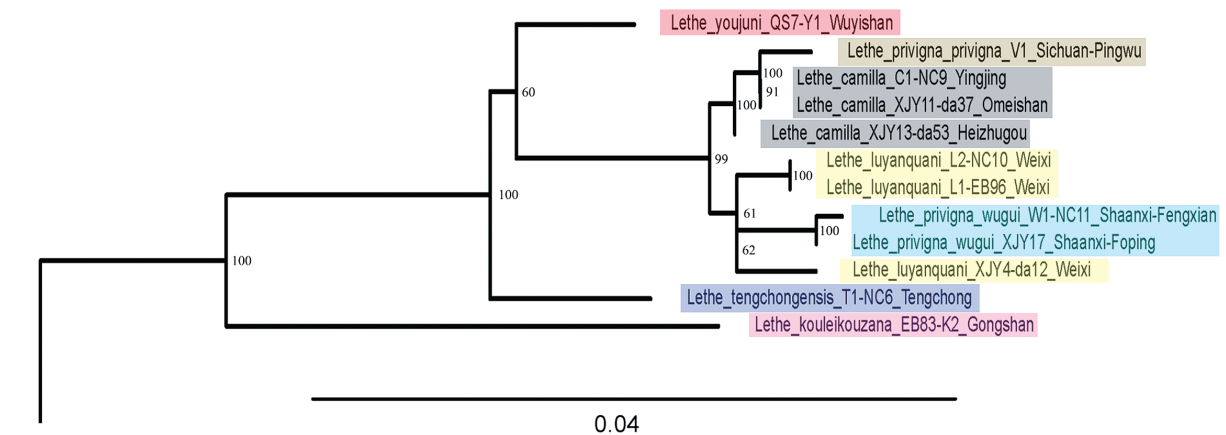
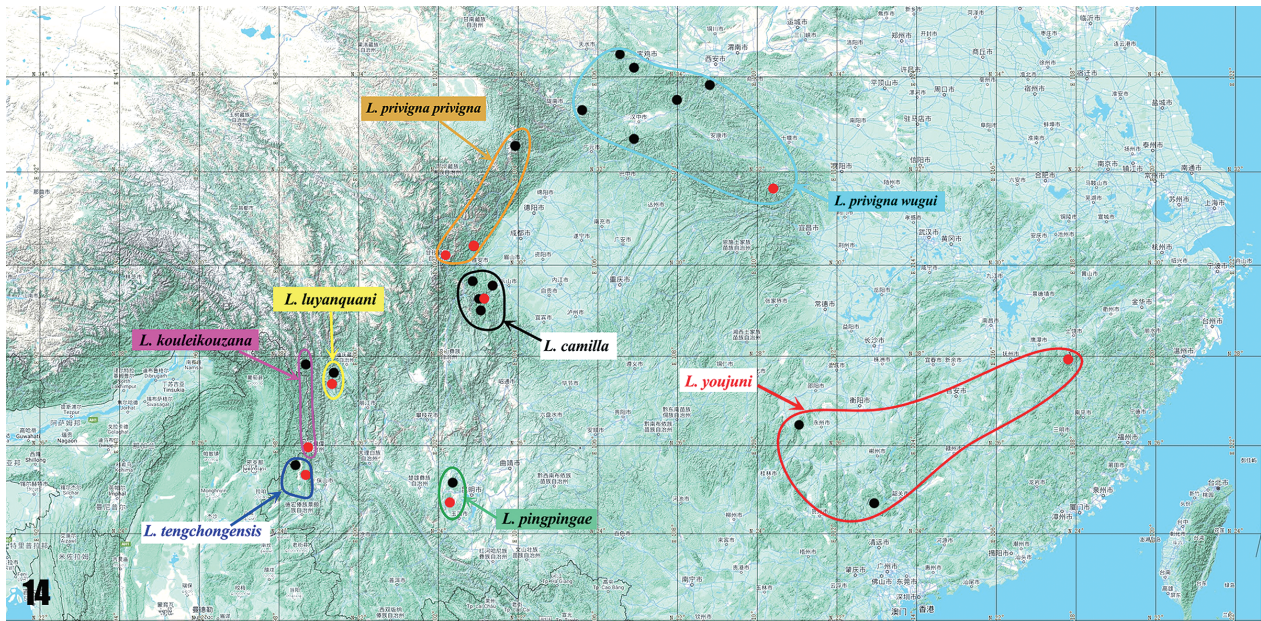
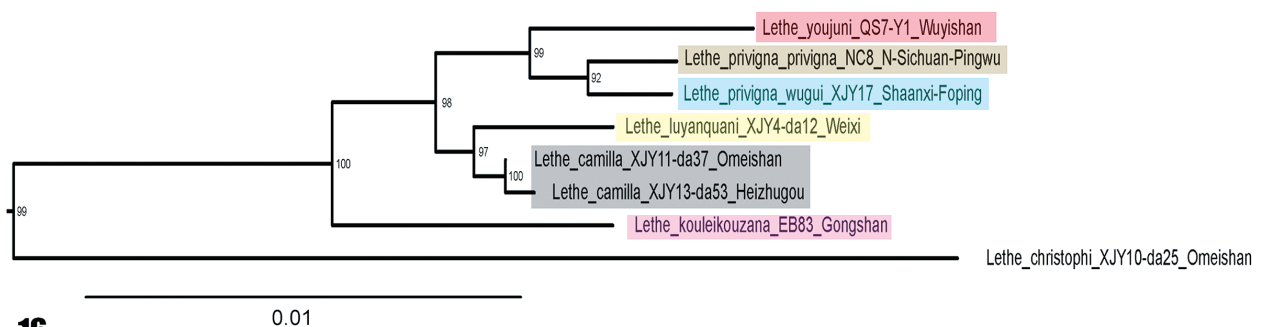


Fig. 13: ♂ genitalia in lateral view under same scale with left valva and aedoeagus removed.



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Fig. 14: Distribution of the *Lethe camilla* LEECH, 1891 group (red circles = type localities; black circles = other localities).

Fig. 15: mtDNA gene tree of the *Lethe camilla* LEECH, 1891 group reconstructed by ML method using IQ-TREE based on COI barcode fragment (688 bp) with bootstrap support values (ultrafast bootstrap support).

Fig. 16: nuDNA gene tree of the *Lethe camilla* LEECH, 1891 group reconstructed by ML method using IQ-TREE based on one Rps5 fragment (575 bp) and two EF1-alpha fragments (1114 bp in total) with bootstrap support values (ultrafast bootstrap support) and Auto substitution model.

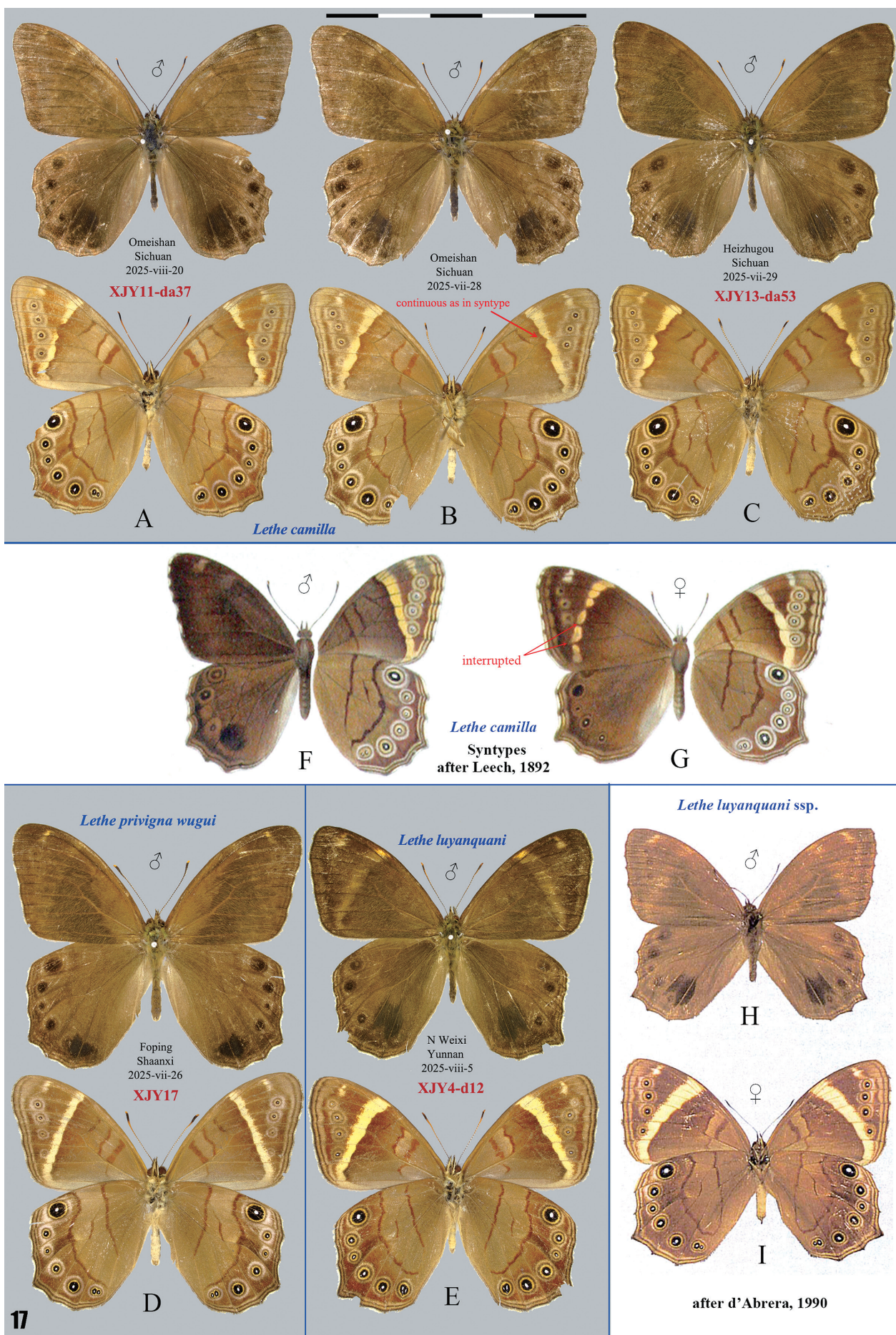


Fig. 17: Additional DNA samples and historical specimens of the *Lethe camilla* LEECH, 1891 group from the literature.

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