

Notes on some *Lethe* species from W. China with description of two new subspecies

(Lepidoptera, Nymphalidae, Satyrinae)

by

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Abstract: Some species of the genus *Lethe* HÜBNER, 1819 from China have been studied in this paper. The taxonomy of the *L. nigrifascia* LEECH, 1890-group is discussed. Two new subspecies, *L. nigrifascia lojishana* **subspec. nov.** and *L. armandina yanjianana* **subspec. nov.** from S.W. Sichuan, are described. *Lethe armandina jianqingi* LANG, 2016 is raised to specific status, viz. *L. jianqingi* LANG, 2016 **stat. nov.** *Zophoessa baoshana* HUANG, WU & YUAN, 2003 is transferred to the genus *Lethe* HBN., viz. *L. baoshana* (HUANG, WU & YUAN, 2003) **comb. nov.**, and it is the second known record of this poor known species. *Lethe baoshana* (HUANG, WU & YUAN, 2003) **comb. nov.** and *L. gregoryi* WATKINS, 1927 are recorded from the fauna of Sichuan for the first time.

Materials: Materials studied in this paper were mainly collected by the author from his trip to Sichuan Province (Shimian County, Puge County, Yanbian County, Nanjiang County) and S. Shaanxi Province (Ningshan County) in 2016 and are kept in SONG-YUN LANG's collection, Shuangliu, Chengdu, Sichuan, China (LSY). All type specimens in this study are also deposited in Coll. LSY. Some data in LANG & WANG (2016) and LANG (2016 a), including distributional records and measurement data of androconia, are shared in this paper.

Androconium: In this paper, androconia (figs: 18, 19) were prepared and measured using the methods in WAKEHAM-DAWSON & KUDRNA (2000) & WAKEHAM-DAWSON et al. (2007). The androconia from the specimens of the species group were measured, and lengths (AL = Androconium Length), breadths (AB = Androconium Breadth) and shape ratios (RLB = Ratio of AL/AB) are shown in table 1.

Abbreviations:

DFW	Dorsal forewing
DHW	Dorsal hindwing
HT, PT	Holotype, paratype
VFW	Ventral forewing
VHW	Ventral hindwing
TL	Type locality

Lethe luojiani LANG & WANG, 2016 (figs. 1, 2, 19 b, 20, 24 c)

Atalanta 47 (1/2): 225, figs. 1-3, 7, 8f, 9, 13a. TL: Fengxian, Shaanxi.

Lethe nigrifascia fasciata: NORDSTRÖM (nec SEITZ), 1934. Arkiv för Zoologi 27A (7): 20.

An additional specimen of this recently described species was collected from Ningshan, south slope of Mts. Qinling, S. Shaanxi in June, and at the same place in late July, the author collected several *L. nigrifascia* LEECH, 1890.

Material: HT ♂ of *Lethe luojiani* LANG & WANG, China: Shaanxi, Fengxian, Jialingjiang-yuan, road to the Mt. top, 2200 m, 3.VII.2009, leg. CHUN-HAO WANG, Ex. JIAN LUO Coll.; 1 ♂, China, Shaanxi, Ningshan, Xuyangba to Huangguan, 1900 m, 10.VI.2016, leg. SONG-YUN LANG.

Distribution: China (S. Shaanxi, S. Gansu).

Lethe baoshana (HUANG, WU & YUAN, 2003) **comb. nov.** (figs. 3, 4, 19 e, 22, 24 f-g)

Zophoessa baoshana HUANG, WU & YUAN, 2003, Neue Ent. Nachr. 55: 151. TL: Baoshan, W. Yunnan.

Following recent generic arrangement (BOZANO, 1999; HUANG, 2014; LANG, 2016b), *Zophoessa* DOUBLEDAY, [1849] is a subgenus of *Lehte* HBN. Thus, *Zophoessa baoshana* HUANG, WU & YUAN is transferred to the genus *Lehte* HBN., viz. *L. baoshana* (HUANG, WU & YUAN) **comb. nov.** *Lethe baoshana* (HUANG, WU & YUAN) was described basing upon a single ♂ from W. Yunnan, which is kept in the museum of Institute of Zoology, Chinese Academy of Sciences (IZCAS). In this study, this species is recorded from the fauna of Sichuan for the first time, furthermore it is also the second record of this species since its publication. More taxonomic notes will be discussed in the next part of this paper.

Material: 2 ♂♂, China, Sichuan, Yanbian, Gesala, 3000 m, 3-4.VII.2016, legs. YI LANG & SONG-YUN LANG.

Distribution: China (N.W. Yunnan, S. Sichuan).

Lethe nigrifascia lojishana **subspec. nov.** (figs. 7, 8, 19 d, 23, 24 e)

HT ♂: China, Sichuan: Puge, Mt. Luojishan, 2600 m, 29.VI.2016, leg. SONG-YUN LANG; PT 1 ♂, ditto, 27.VI.2016, leg. YI LANG. Coll. LSY.

Until now, the following taxa of the *Lethe nigrifascia* LEECH-group are known: *L. nigrifascia* LEECH, 1890, *L. nigrifascia ebiana* LANG, 2015 (= *L. nigrifascia* ab. *fasciata* SEITZ, 1907), *L. baoshana* (HUANG, WU & YUAN), *L. luojiani* LANG & WANG and *L. liyufei* HUANG, 2014 (HUANG, 2014; LANG, 2015A; LANG & WANG, 2016). It has been discussed that whether “*ebiana* LANG” or “*fasciata* SEITZ” is the valid name (LAMAS, per. comm; LANG & WANG, 2016), therefore, before resolving this problem, the present author still considers “*ebiana* LANG” as a subspecies of *L. nigrifascia* LEECH for avoiding further possible troubles just like: 1. Considering differences of superficial appearance, morphology of androconia and ♂ genitalia structure, *L. nigrifascia ebiana* LANG or “*fasciata* SEITZ” is indeed a distinct species against the typical *L. nigrifascia* LEECH, and this species needs a confirmed name in the future. 2. *L. baoshana* (HUANG, WU & YUAN) is a taxon closely related to *L. nigrifascia ebiana* LANG and more likely they are conspecific, if so, according to priority, “*ebiana* LANG” should be a subspecies of *L. baoshana* (HUANG, WU & YUAN), or “*baoshana* HUANG, WU & YUAN” should be a subspecies of “*fasciata* SEITZ”.

There are possibly four species in the *Lethe nigrifascia* LEECH-group, viz. *L. nigrifascia* LEECH, *L. liyufei* HUANG, *L. luojiani* LANG & WANG and the fourth species, viz. *L. nigrifascia ebiana* LANG (= *fasciata* SEITZ) + *L. baoshana* (HUANG, WU & YUAN). Furthermore, it is *L. luojiani* LANG & WANG, but not *L. nigrifascia* LEECH nor *L. liyufei* HUANG, which is phylogenetically closer to the fourth species, and *L. luojiani* LANG & WANG is a replacement species of the fourth species in Qin-Ling Mts. (S. Gansu, S. Shaanxi). The range of the fourth species (*baoshana* + *ebiana*) extends from W. Yunnan (east bank of Nujiang Valley, TL of “*baoshana* HUANG, WU & YUAN”) to C. Sichuan (lower Daduhe Valley, habitat of typical “*ebiana* LANG”), and in this study, three biogeographical populations of the fourth species have been recognised, viz. “*baoshana* HUANG, WU & YUAN”, “*ebiana* LANG” as well as an undescribed new taxon, viz. *L. nigrifascia lojishana* **subspec. nov.** Specimen of the new taxon was obtained from Puge in S.W. Sichuan which is a place between the ranges of *L. nigrifascia ebiana* LANG and *L. baoshana* (HUANG, WU & YUAN), and obviously it is a subspecies of the fourth species. The present author provisionally treats the new taxon as a subspecies of *L. nigrifascia* LEECH, like the arrangement of *L. nigrifascia ebiana* LANG. Further arrangement will be given after resolving the “*ebiana* LANG”-“*fasciata* SEITZ” debate. Biogeographically, it is worth to be mentioned that the range of typical *L. nigrifascia* LEECH are not overlapped with the range of the fourth species (*baoshana*+*lojishana*+*ebiana*) (fig. 17 A; table 2).

Diagnosis: The new subspecies can be distinguished from *L. nigrifascia ebiana* LANG (figs. 5, 6, 19 c, 21, 24 d) and *L. baoshana* (HUANG, WU & YUAN) by the combination of the following characters:

1. The new subspecies is somewhat larger in size than both *L. n. ebiana* LANG and *L. baoshana* (HUANG, WU & YUAN).
2. DFW subapical spots and postdiscal spots beyond the cell are paler than those in *L. n. ebiana* LANG.
3. VFW postdiscal area is paler than that in *L. baoshana* (HUANG, WU & YUAN).
4. VHW, violet white irises of postdiscal eyespots are somewhat weakly present, whereas they are more prominent in *L. n. ebiana* LANG.
5. Tip of valva in dorsal view (fig. 24 e) is protruding and pointed, whereas it is round in *L. n. ebiana* LANG (fig. 24 d).
6. Tip of valva in dorsal view is weakly serrated along the inner margin as that in *L. n. ebiana* LANG, whereas it has heavily serrate teeth along the inner margin in *L. baoshana* (HUANG, WU & YUAN) (fig. 24 f-g).
7. Androconia (fig. 19; table 1) of the new subspecies (AB = 22.60±0.97; RLB = 6.64±0.37) are much narrower in breadth than those of *L. n. ebiana* LANG (AB = 30.30 ± 4.82; RLB = 5.02 ± 0.68) and *L. baoshana* (HUANG, WU & YUAN) (AB = 27.15 ± 3.37; RLB = 5.32 ± 0.62).

Etymology: The subspecific name *lojishana* is named after the TL, Mts. Loji-shan in Puge county.

Distribution: China (S.W. Sichuan).

Lethe jianqingi LANG, 2016 **stat. nov.** (figs. 12-14, 19 f, 25, 28 A)

Lethe armandina jianqingi LANG, 2016. Ent. Z. **126** (1): 37, figs. 1-5, 11, 12. TL: Mt. Luojishan, Puge, Sichuan.

Lethe jianqingi LANG, 2016 **stat. nov.** from N. Yunnan and S.W. Sichuan was described as a geographic subspecies of *L. armandina* (OBERTHÜR, 1881) from C. Sichuan. However, some clues reveal that this taxon should be a distinct species. First, according to BOZANO (pers. comm.), one specimen of *L. jianqingi* LANG was also collected from Mianning (fig. 17 B), which is a place very near the range of the nominate *armandina* OBTH. Second, one specimen of *L. armandina* (OBTH.), without DFW ♂ brand, was collected by the present author together with *L. jianqingi* LANG from Yanbian, S. Sichuan.

Material: HT ♂ of *Lethe armandina jianqingi* LANG, China, Sichuan, Puge, Mt. Luojishan, 3000 m, 14.VIII.2014, leg. SONG-YUN LANG; PT 1 ♂ of *Lethe armandina jianqingi* LANG, China, Sichuan, Yanbian, Gesala, 3000 m, 9.VIII.2014, leg. SONG-YUN LANG; 1 ♂, ditto, 10.VII.2016, leg. SONG-YUN LANG.

Distribution: China (S.W. Sichuan, N. Yunnan).

Lethe armandina y a n b i a n a **subspec. nov.** (figs. 9, 10, 26, 28 B)

HT ♂: China, Sichuan, Yanbian, Gesala, 3000 m, 9.VIII.2014, leg. SONG-YUN LANG. Coll. LSY.

As mentioned above, one specimen of *Lethe armandina* (OBTH.) (figs. 11, 27, 28 C) was collected together with *L. jianqingi* LANG **stat. nov.** from Yanbian, S. Sichuan, and is described as a new subspecies in this paper.

Diagnosis: The new subspecies can be distinguished from the nominate *armandina* OBTH. by the combination of the following characters:

1. The new subspecies is smaller in size.
 2. DFW postdiscal band is very obscure, whereas it is distinguishable in the nominate *armandina* OBTH.
 3. VFW postdiscal band and discal cell bar are obscure, whereas they are creamy white in the nominate *armandina* OBTH.
- The new subspecies can be distinguished from *Lethe jianqingi* LANG **stat. nov.** by the combination of the following characters:

1. Ground colours of DFW & DHW are paler than *L. jianqingi* LANG.
2. DFW ♂ brand, which is present in *L. jianqingi* LANG, is absent.
3. Tip of valva in dorsal view is more pointed (fig. 28 B), whereas it is round in *L. jianqingi* LANG (fig. 28 A).
4. Dorsal ridge of uncus is thicker than that of *L. jianqingi* LANG.

Etymology: The subspecific name *yanbiana* is named after the type locality, Yanbian County in S.W. Sichuan.

Distribution: China (S.W. Sichuan).

Lethe gregoryi WATKINS, 1927 (figs. 15, 16)

Lethe (Magula) helle gregoryi WATKINS, 1927, Ann. Mag. Nat. Hist. (9) **19**: 323. TL: Yangtze Valley, E. of Janula, Yunnan.

Lethe gregoryi: LANG, 2015, Zootaxa **4048** (4): 576.

Lethe moelleri bitaensis YOSHINO, 1999, Neo Lepidoptera **4**: 7, f. 49-50. TL: Zhongdian, NW.Yunnan. [Synonymised by LANG (2015), Zootaxa 4048 (4): 576].

According to LANG (2015 b), *Lethe gregoryi* WATKINS is a species known from N. Yunnan and with its subspecies *L. gregoryi gesangdawai* HUANG, 2001 from N.W. Yunnan and S.E. Tibet. It is the first confirmed record of this species from C. Sichuan fauna.

Material: 1 ♂, China, Sichuan, Shimian, Menghuo-cheng, 2600-2770 m, 23.VI.2016, leg. SONG-YUN LANG.

Distribution: China (N.W. Yunnan, S. Sichuan).

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Taxon	AL (um)	AB (um)	RLB	N
<i>nigrifascia</i>	154.90 ± 7.26	20.85 ± 1.40	7.46 ± 0.55	10
<i>liyufei</i>	204.35 ± 16.46	21.00 ± 2.84	9.92 ± 1.64	10
<i>luojiani</i>	163.60 ± 5.55	14.50 ± 1.91	11.50 ± 1.67	10
<i>ebiana</i>	149.00 ± 6.91	30.30 ± 4.82	5.02 ± 0.68	10
<i>lojishana</i>	149.70 ± 2.32	22.60 ± 0.97	6.64 ± 0.37	5
<i>baoshana</i>	142.60 ± 8.15	27.15 ± 3.37	5.32 ± 0.62	10

Table 1. Measurement of Androconia of *Lethe nigrifascia* LEECH-group. AL = Androconium Length (means ± standard deviation, SD); AB = Androconium Breadth (means ± SD); Shape ratios RLB = Ratio of AL/AB (means ± SD); N = Number of androconia measured for each taxon.

Taxon	Share habitat with	Flight period
<i>nigrifascia</i>	<i>liyufei</i> , <i>luojiani</i>	late July - August
<i>liyufei</i>	<i>nigrifascia</i> and <i>luojiani</i> in S. Shaanxi, <i>ebiana</i> in C. Sichuan	late June - late July
<i>luojiani</i>	<i>nigrifascia</i> , <i>liyufei</i>	June - early July
<i>ebiana</i>	<i>liyufei</i>	June - middle July
<i>lojishana</i>	-	June
<i>baoshana</i>	-	June - early July

Table 2. Biology features of *Lethe nigrifascia* LEECH-group.

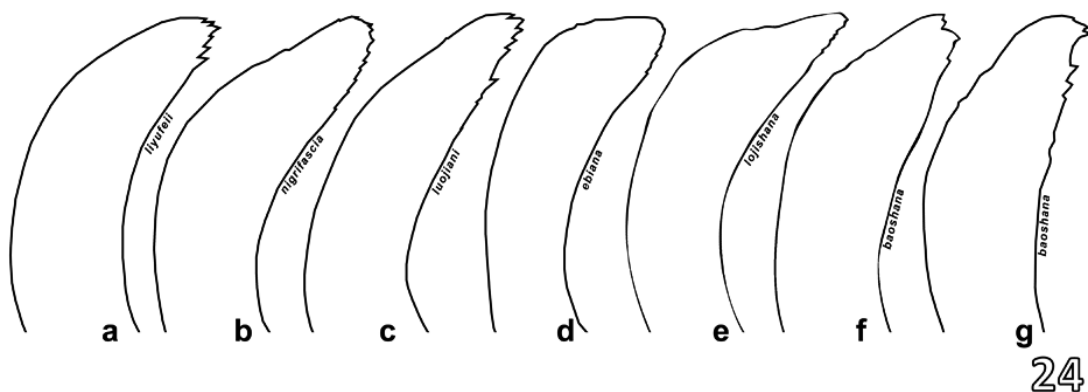


Fig. 24: Tip of the σ valva in dorsal view. a - *Lethe liyufei* HUANG, 2014, China, Sichuan, Ebian; b - *L. nigrifascia* LEECH, 1890, China, Shaanxi, Ningshan; c - *L. luojiani* LANG & WANG, 2016, HT, China, Shaanxi, Fengxian; d - *L. nigrifascia ebiana* LANG, 2015, HT, China, Sichuan, Ebian; e - *L. nigrifascia lojishana* subspec. nov., HT, China, Sichuan, Puge; f - *L. baoshana* (HUANG, WU & YUAN, 2003), China, Sichuan, Yanbian; g - *L. baoshana* (HUANG, WU & YUAN, 2003), HT, China, Yunnan, Baoshan, IZCAS.

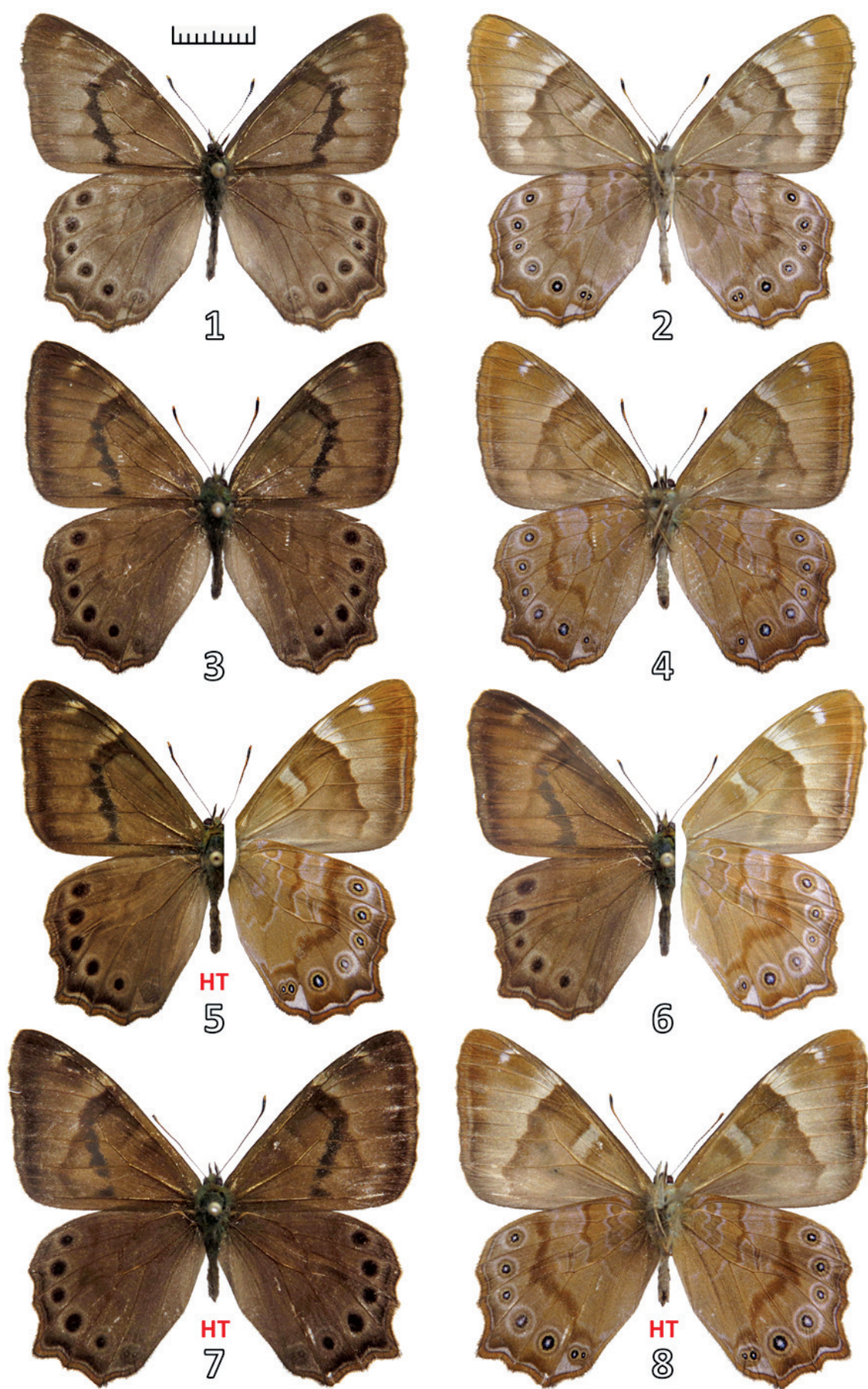


Fig. 1, 2: *Lethe luojiani* LANG & WANG, 2016, ♂, China, Shaanxi, Ningshan, dorsal- and ventral side.
 Fig. 3, 4: *Lethe baoshana* (HUANG, WU & YUAN, 2003) **comb. nov.**, ♂, China, Sichuan, Yanbian, dorsal- and ventral side.
 Fig. 5: *Lethe nigrifascia ebiana* LANG, 2015, HT ♂, China, Sichuan: Ebian, dorsal- and ventral side.
 Fig. 6: *Lethe nigrifascia ebiana* LANG, 2015, ♂, China, Sichuan: Shimian, dorsal- and ventral side.
 Fig. 7, 8: *Lethe nigrifascia lojishana* **subspec. nov.**, HT ♂, China, Sichuan: Puge, dorsal- and ventral side.

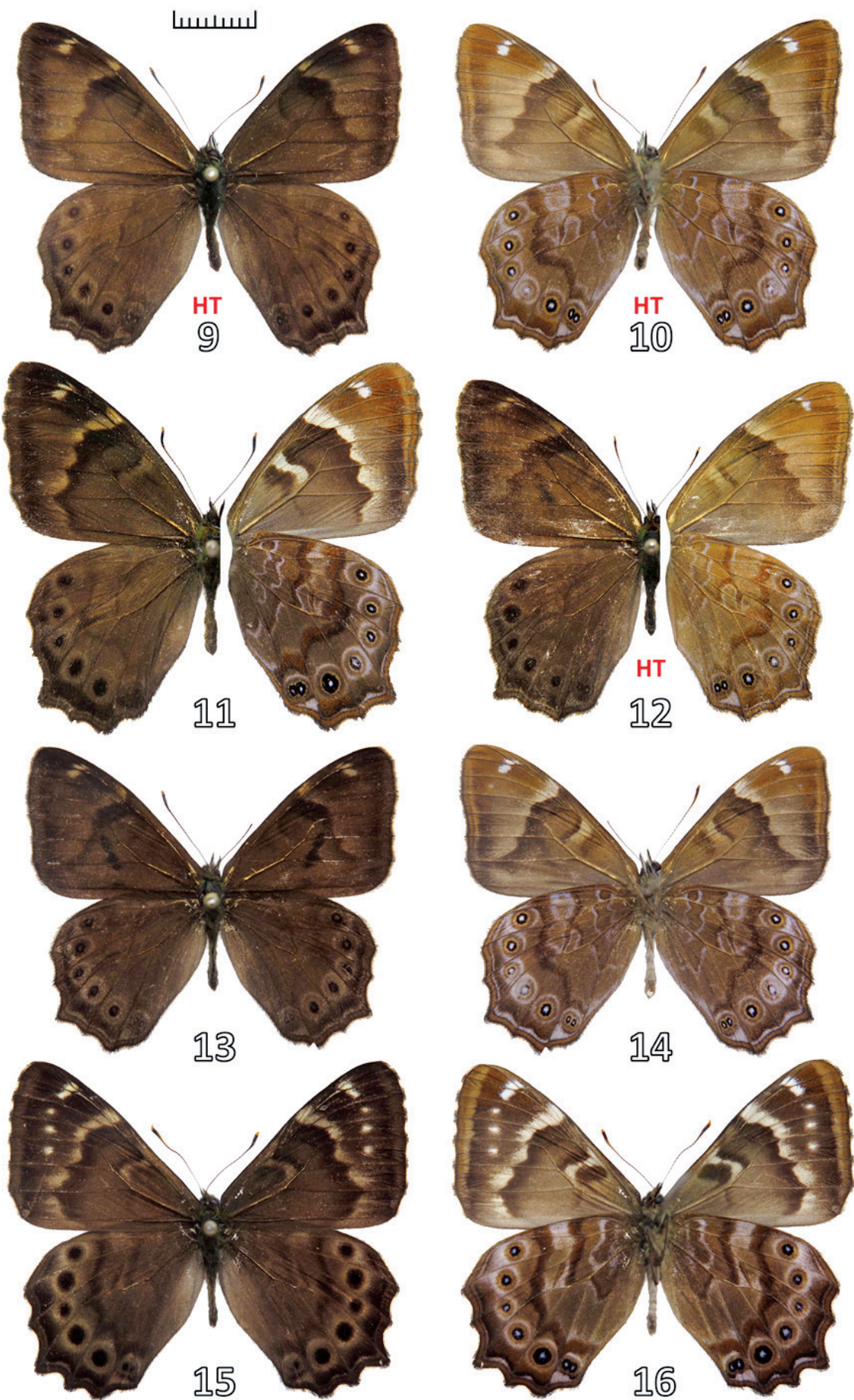


Fig. 9, 10: *Lethe armandina yanbiana* subsp. nov., HT ♂, China, Sichuan, Yanbian, dorsal- and ventral side.
 Fig. 11: *Lethe armandina* (OBERTHÜR., 1881), ♂, China, Sichuan: Ebian, dorsal- and ventral side.
 Fig. 12: *Lethe jianqingi* LANG, 2016 stat. nov., HT ♂, China, Sichuan, Puge, dorsal- and ventral side.
 Fig. 13, 14: *Lethe jianqingi* LANG, 2016 stat. nov., ♂, China, Sichuan, Yanbian, dorsal- and ventral side.
 Fig. 15, 16: *Lethe gregoryi* WATKINS, 1927, ♂, China, Sichuan, Shimian, dorsal- and ventral side.

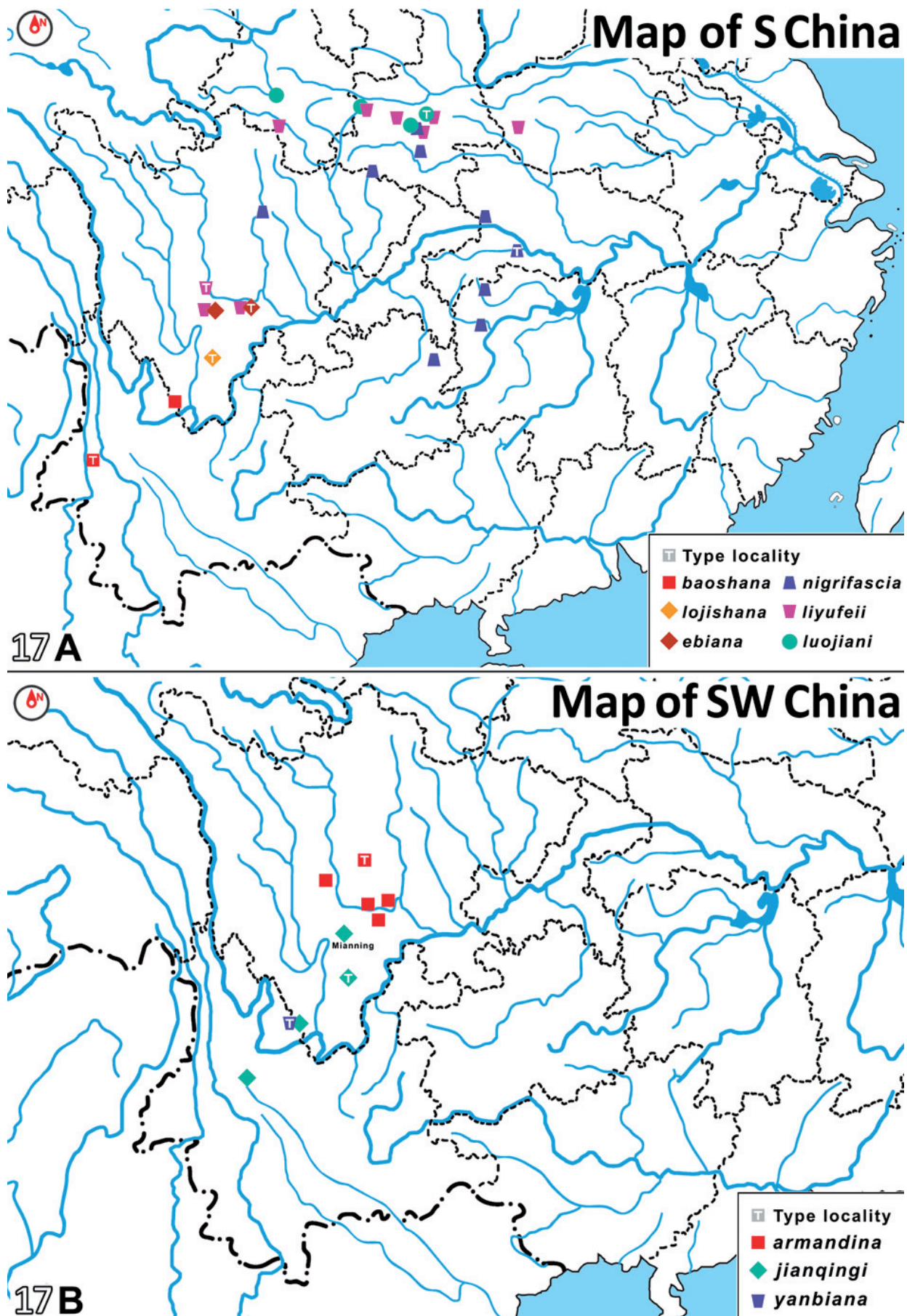


Fig. 17: Map. A - Distribution map of the *Lethrinus nigrifascia* LEECH, 1890-group; B - Distribution map of *L. armandina* (OERTHÜR, 1881) and *L. jianqingi* LANG, 2016 stat. nov.

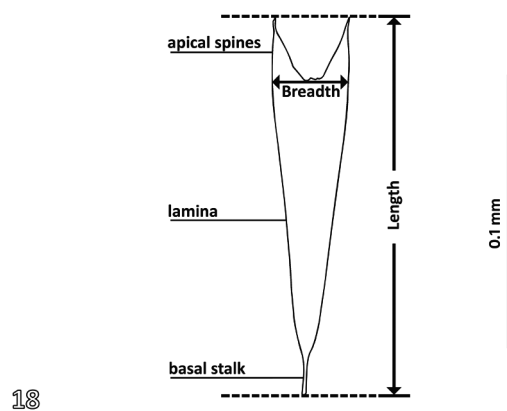


Fig. 18: Androconium of *Lethe nigrifascia* LEECH, 1890-group.

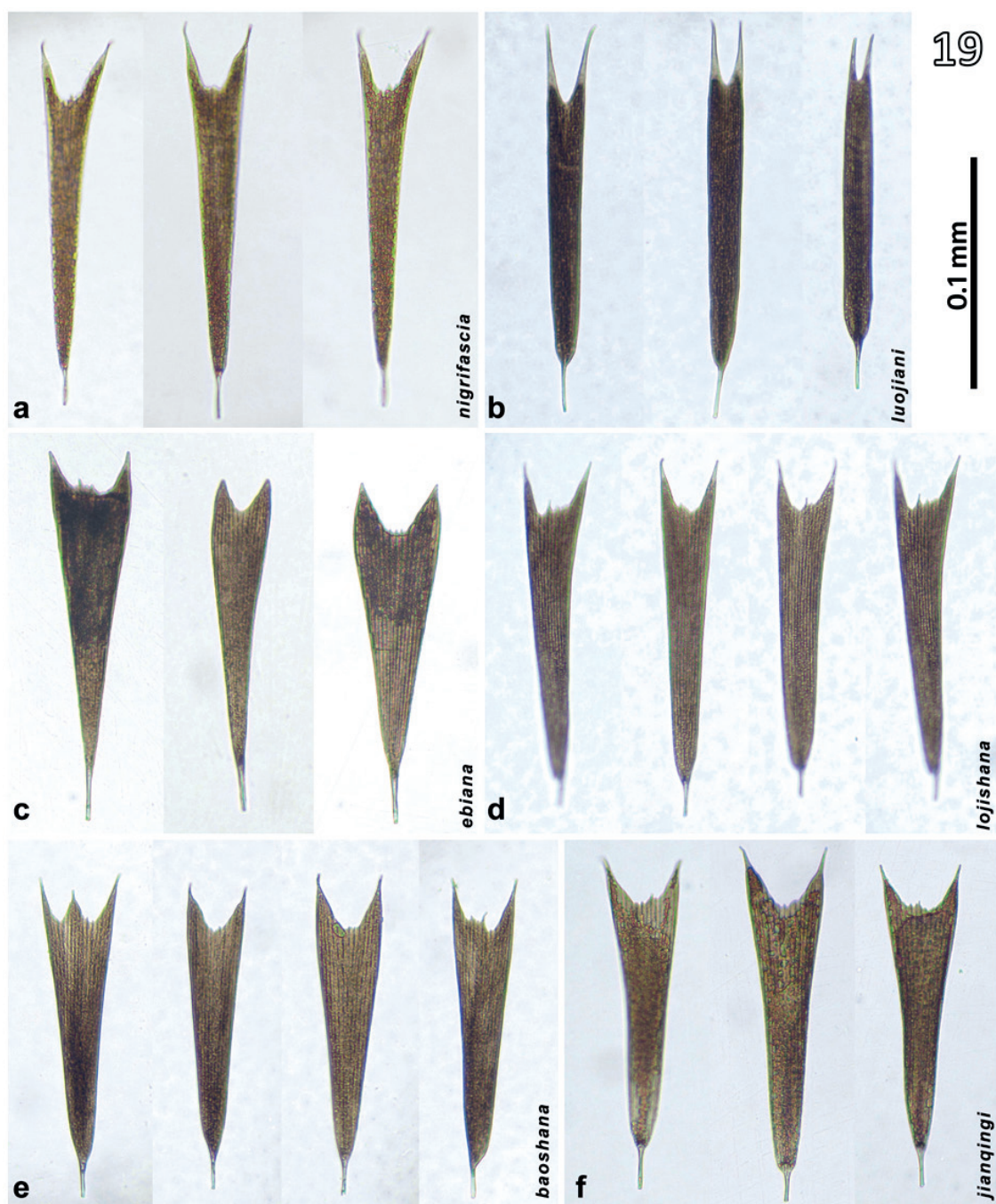


Fig. 19: Androconia. a - *Lethe nigrifascia* LEECH, 1890, China, Hunan, Guzhang; b - *L. luojiani* LANG & WANG, 2016, China, Shaanxi, Ningshan; c - *L. nigrifascia ebiana* LANG, 2015, PT, China, Sichuan, Ebian; d - *L. nigrifascia lojishana* **subspec. nov.**, HT, China, Sichuan, Puge; e - *L. baoshana* (HUANG, WU & YUAN, 2003) **comb. nov.**, China, Sichuan, Yanbian; f - *L. jianqingi* LANG, 2016 **stat. nov.**, HT, China, Sichuan, Puge.

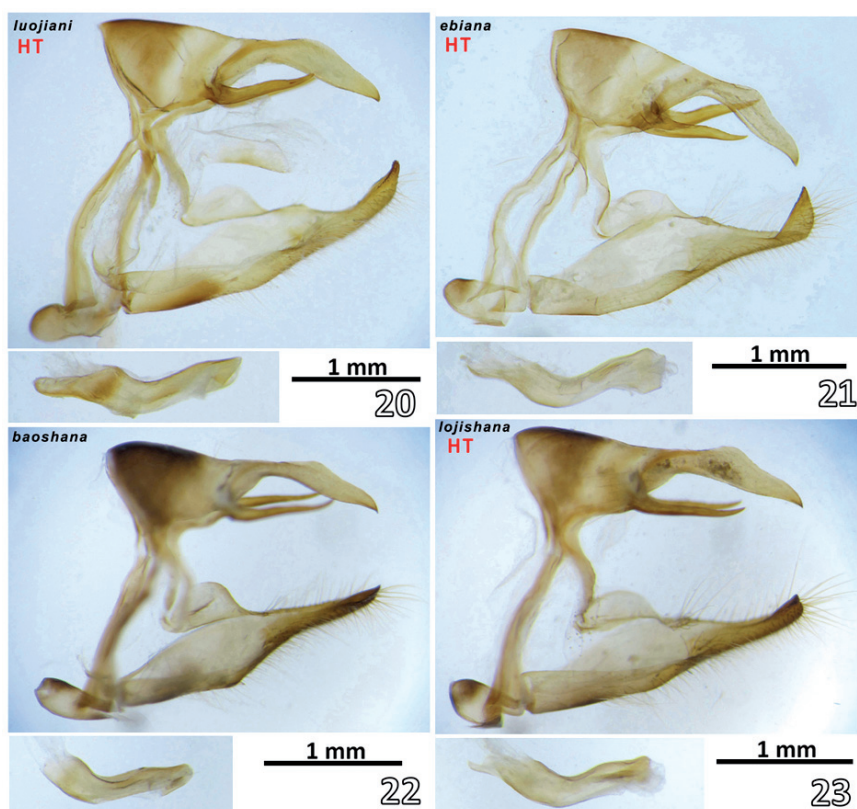


Fig. 20: ♂ genitalia of *Lethe luojiani* LANG & WANG, 2016 in lateral view with left valva removed, HT, China, Shaanxi, Fengxian.
 Fig. 21: ♂ genitalia of *Lethe nigrifascia ebiana* LANG, 2015 in lateral view with left valva removed, HT, China, Sichuan, Ebian.
 Fig. 22: ♂ genitalia of *Lethe baoshana* (HUANG, WU & YUAN, 2003) in lateral view with left valva removed, China, Sichuan, Yanbian.
 Fig. 23: ♂ genitalia of *Lethe nigrifascia lojishana* subsp. nov. in lateral view with left valva removed, HT, China, Sichuan, Puge.

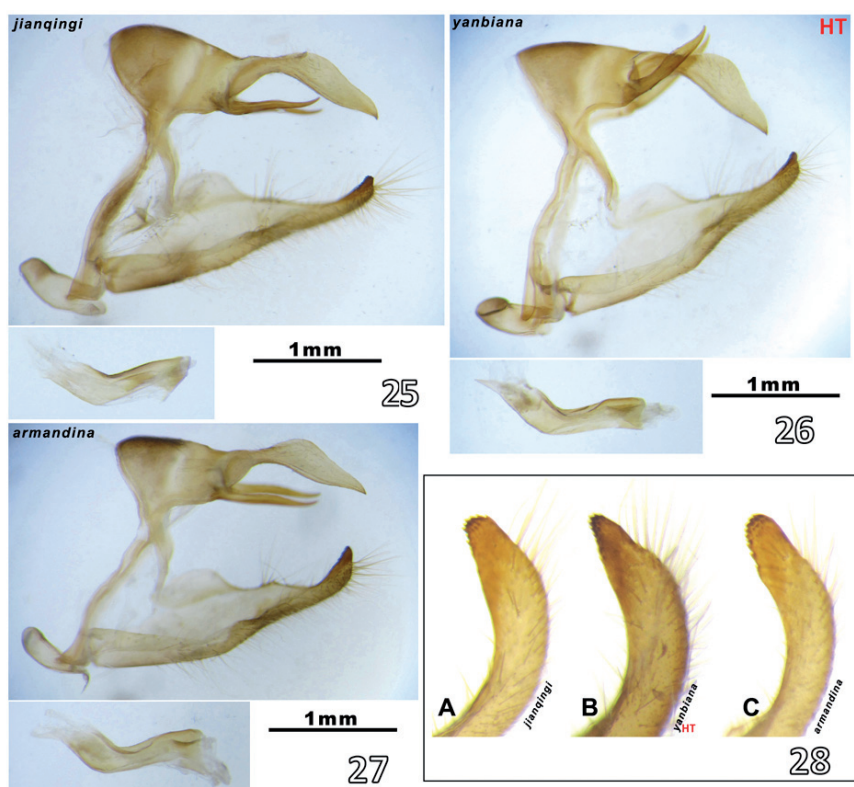


Fig. 25: ♂ genitalia of *Lethe jianqingi* LANG, 2016 stat. nov. in lateral view with left valva removed, China, Sichuan, Yanbian.
 Fig. 26: ♂ genitalia of *Lethe armandina yانبiana* subsp. nov. in lateral view with left valva removed, HT, China, Sichuan, Yanbian.
 Fig. 27: ♂ genitalia of *Lethe armandina* (OBERTHÜR., 1881) in lateral view with left valva removed, China, Sichuan, Ebian.
 Fig. 28: Tip of the ♂ valva in dorsal view. A - *Lethe jianqingi* LANG, 2016 stat. nov., China, Sichuan, Yanbian; B - *Lethe armandina yانبiana* subsp. nov., HT, China, Sichuan, Yanbian; C - *Lethe armandina* (OBERTHÜR., 1881), China, Sichuan, Ebian.

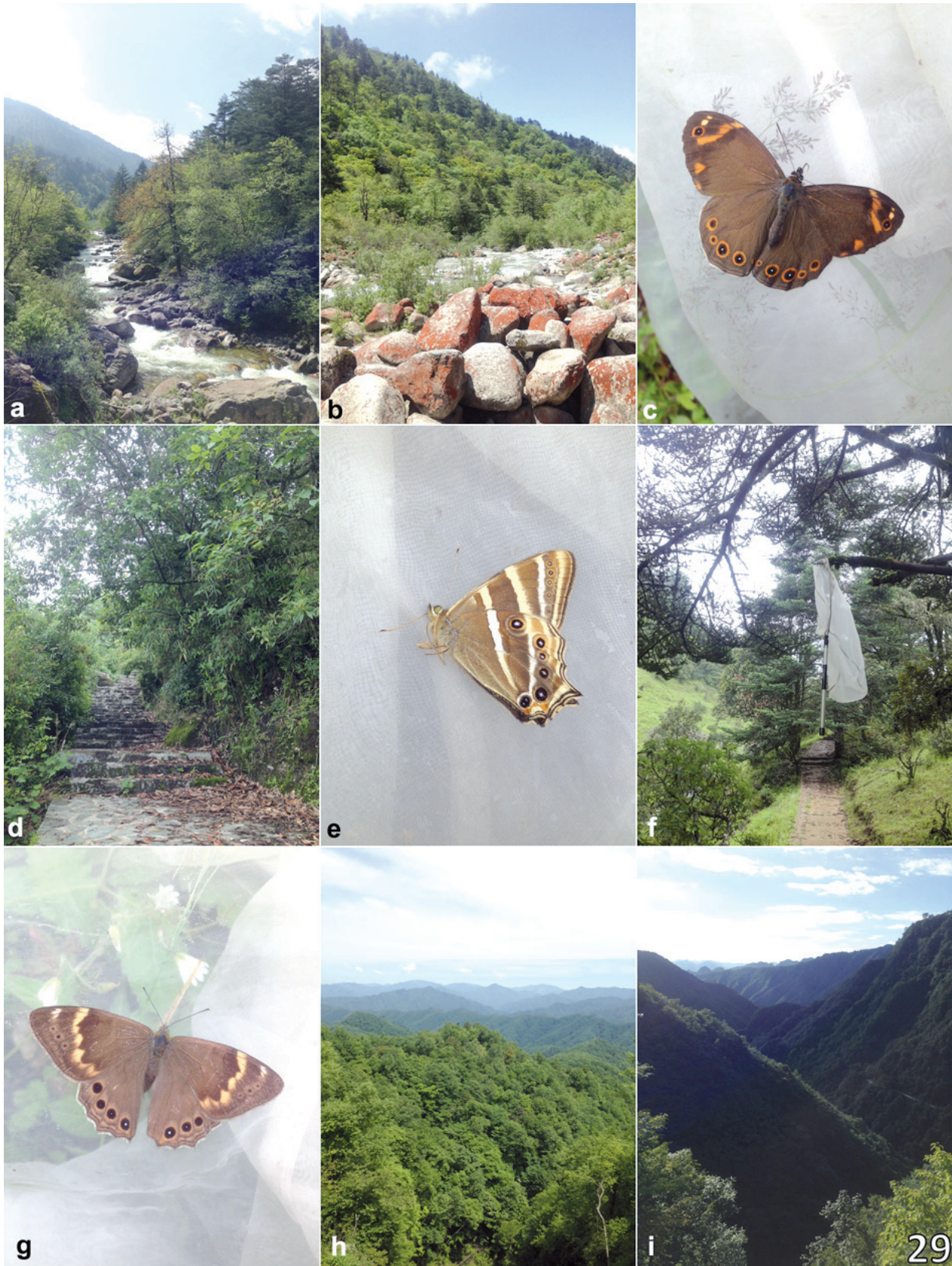


Fig. 29: Biotopes and several interesting butterflies collected in 2016. a - Liziping, 2700 m, Shimian, C. Sichuan; b - Menghuo-cheng, 2770 m, Shimian, C. Sichuan; c - *Chonala irene* BOZANO & DELLA BRUNA, 2006, ♂, in net, Liziping, 2500 m, Shimian, C. Sichuan; d - Mt. Luojishan, 2600 m, Puge, S.W. Sichuan; e - *Lethe ramadeva* (DE NICEVILLE, 1887), ♂, in net, Mt. Luojishan, 2600 m, Puge, S.W. Sichuan; f - Gesala, 3000 m, Yanbian, S.W. Sichuan; g - *Lethe gracilis* (OBERTHÜR, 1886), ♀, in net, Gesala, 3000 m, Yanbian, S.W. Sichuan; h - South slope of Mts. Qinling, 1900 m, Ningshan, S. Shaanxi; i - South slope of Mts. Dabashan, 1700 m, Nanjiang, N. Sichuan .

Study on *Lethe helle* (LEECH, 1891) and *L. uemurai* (SUGIYAMA, 1994) with description of a new subspecies from S.W. China

(Lepidoptera, Nymphalidae, Satyrinae)

by

SONG-YUN LANG

received 26.VIII.2016

Abstract: *Lethe helle* (LEECH, 1891) and its closely related species *L. uemurai* (SUGIYAMA, 1994) are studied in this paper. A new subspecies, *L. helle yii* **subspec. nov.** from S.W. Sichuan Province, China, is described and illustrated. Androconia of *L. uemurai* (SUGIYAMA, 1994) are studied and illustrated for the first time. A distribution map of the above mentioned taxa is provided.

Introduction: *Lethe* (*Zophoessa*) *helle* (LEECH, 1891), with only the nominate subspecies, has been known from Sichuan Province, SW China, and a former subspecies *L. helle gregoryi* WATKINS, 1927 (WATKINS, 1927; D'ABRERA, 1990; BOZANO, 1999) from N. Yunnan Province was raised to a specific status by LANG (2015 b). The typical form of *L. helle* (LEECH) resides in C. Sichuan, an area including Wa-shan, Omei, Ebian and Dayi, and a disjunct population from Gesala, Yanbian, S.W. Sichuan, which is contiguous with N. Yunnan, was mentioned by LANG (2015 b). According to LANG (2015 b), *L. helle* (LEECH) from S.W. Sichuan is apparently quite different from *L. gregoryi* WATKINS and yet exhibits some subspecific differences from the nominotypical *L. helle* (LEECH) from C. Sichuan. In this paper, the author describes the disjunct population of *Lethe helle* (LEECH,) from S.W. Sichuan as a new subspecies.

Lethe uemurai (SUGIYAMA, 1994) is superficially very similar to *L. helle* (LEECH), but it has visible ♂ brands on veins 1, 2 and 3 on the forewing upperside, which are absent on forewing of *L. helle* (LEECH). The ♂ brand is composed of dense androconia, and according to WAKEHAM-DAWSON & KUDRNA (2000), androconia are used currently as a morphological indicator of taxonomic status and appears to be relatively consistent in overall size and shape within species. In this paper, the morphology of androconia of *L. uemurai* (SUGIYAMA) is studied for the first time, but androconia cannot be found on the wings of *L. helle* (LEECH), in which a ♂ brand is absent.

Materials: Terminology of androconia follows WAKEHAM-DAWSON & KUDRNA (2000) and KOIWAYA & SHIZUYA (2011). The material examined is deposited in SONG-YUN LANG's collection, Chengdu, China.

Lethe helle (LEECH, 1891) (figs: 3, 4, 8, 10 b)

Zophoessa helle LEECH, 1891, Entomologist 24 (Suppl.): 1. Type locality: Wa-shan.

Material: 34 ♂♂, 1 ♀, China, Sichuan, Ebian, Heizhugou, 1800-3000 m, 21.VI.2014, 14.-18.VII.2014, leg. YI LANG & SONG-YUN LANG; 2 ♂♂, China, Sichuan, Omei, Leidongping, 2430 m, 6.VIII.2014, leg. SI-YAO HUANG; 5 ♂♂, China, Sichuan, Shimian, Liziping, 2500-2700 m, 22.VI.2016, leg. SONG-YUN LANG; 3 ♂♂, China, Sichuan, Shimian, Menghuo-cheng, 2600-2770 m, 23.VI.2016, leg. SONG-YUN LANG; 1 ♂, China, Sichuan, Dayi, Xiling Xueshan, 1500 m, 22.VII.2014, leg. SI-YAO HUANG.

Distribution: China (C. Sichuan).

Lethe helle yii **subspec. nov.** (figs: 1, 2, 7, 10 a)

Holotype ♂: China, Sichuan, Yanbian, Gesala, 3000 m, 10.VII.2016, leg. SONG-YUN LANG. Paratypes: 3 ♂♂, ditto, 2700-3000 m, 6-9.VIII.2014, leg. YI LANG & SONG-YUN LANG; 29 ♂♂, ditto, 3.-13.VII.2016, leg. YI LANG & SONG-YUN LANG.

Diagnosis: The new subspecies can be distinguished from *L. h. helle* LEECH by the combination of the following characters:

1. Both surfaces of the forewing, the yellowish postdiscal spots in spaces 3 and 4 have their inner edges straight, whereas in *L. h. helle* LEECH they form sharp regular angles towards the base.
2. Both surfaces of forewing, the yellowish postdiscal spots in spaces 3 and 4 are fused together, whereas in *L. h. helle* LEECH they are well separated.
3. Under surface of both wings, the ground colours are deeper than those of *L. h. helle* LEECH.
4. Under surface of hindwing, violet lines and markings are deeper than those of *L. h. helle* LEECH.
5. The uncus is thin, whereas in *L. h. helle* LEECH its dorsal ridge is rather swollen.

Etymology: The specific name *yii* is named after Mr. LANG Yi, my father, patron and companion of many interesting surveys in W. China.

Habitat: The habitat, alt. 2700-3000 m, is mountainous woodland of tall conifers, rhododendrons, alpine oaks (*Quercus*) and dwarf bamboos, the food plants of larvae of the genus *Lethe* HÜBNER, 1819. From July to early August, *L. helle yii* **subspec. nov.** flies together with the following congeneric taxa in this habitat, including *L. procne* (LEECH,

1891), *L. armandina* (OBERTHÜR., 1881), *L. shirozui* (SUGIYAMA, 1997), *L. gracilis* (OBERTHÜR., 1886), *L. serbonis gesala* LANG, 2015, and *L. ramadeva* (DE NICÉVILLE, 1887) (LANG, 2015 a).

Distribution: China (S.W. Sichuan).

Lethe uemurai (SUGIYAMA, 1994) (figs: 5, 6, 9, 10 c, 11)

Zophoessa uemurai SUGIYAMA, 1994, Pallarge 4: 5, figs. 13-16, 21. Type locality: Mongbi Mts. (N. Qionglai Mts.), Sichuan.

Androconia (fig: 11): Each androconium of this species consists of three parts, from top down: the apical spines, the lamina and the basal stalk. Apical spines are mostly four and occasionally five in number. The lamina is long and narrow, nearly fusiform shaped.

Material: 1 ♂, 1 ♀, China, Shaanxi, Fengxian, 1800-2200 m, 29.VII.2010, leg. YU-FEI LI; 1 ♂, China, Shaanxi, Fengxian, Jialingjiang-yuan, 15.VII.2014, leg. SI-YAO HUANG; 1 ♀, China, Shaanxi, Ningshan, 2200-2400 m, 16.VII.2006, leg. YU-FEI LI; 1 ♂, China, Shaanxi, Foping, 16.VII.2014, leg. WEN-HAO SUN; 1 ♂, China, Gansu, Tewo, Lazikou, Meilu-gou, 2600 m, 21.VII.2015, leg. GUO-XI XUE; 2 ♂♂, China, Gansu, Wenxian, Qiujiaba, 2200 m, 5.VII.2015, leg. ZI-HAO LIU; 1 ♀, China, Gansu, Tanchang, Guan-e-gou, 2100 m, 4.IX.2015, leg. SONG-YUN LANG; 1 ♀, China, Sichuan, Jiuzhaigou, Zhangzha, 2210 m, 30.VIII.2015, leg. SONG-YUN LANG.

Distribution: China (S. Shaanxi, S.E. Gansu, N. Sichuan).

Discussion: Biogeographically, N. Sichuan Province shares a similar fauna with S.E. Gansu and S. Shaanxi Provinces, and S. Sichuan Province shares the same fauna with N. Yunnan Province. The distribution of *Lethe helle* (LEECH) and *L. uemurai* (SUGIYAMA) also accords with this faunistic pattern. According to the distribution map (fig: 12), *L. helle helle* (LEECH) occurs only in C. Sichuan with its subspecies *L. helle yui subspec. nov.* from S. Sichuan, while *L. uemurai* (SUGIYAMA) is a replacement species of *L. helle* (LEECH) in the fauna of N. Sichuan, S.E. Gansu and S. Shaanxi. Moreover, the distribution of *L. helle yui subspec. nov.* in N. Yunnan is also expected.

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Fig. 1, 2: *Lethe helle yui* subspec. nov., HT ♂, China, Sichuan, Yanbian, dorsal- and ventral side.
 Fig. 3, 4: *Lethe helle helle* (LEECH, 1891), ♂, China, Sichuan, Ebian, dorsal- and ventral side.
 Fig. 5, 6: *Lethe uemurai* (SUGIYAMA, 1994), ♂, China, Shaanxi, Fengxian, dorsal- and ventral side.

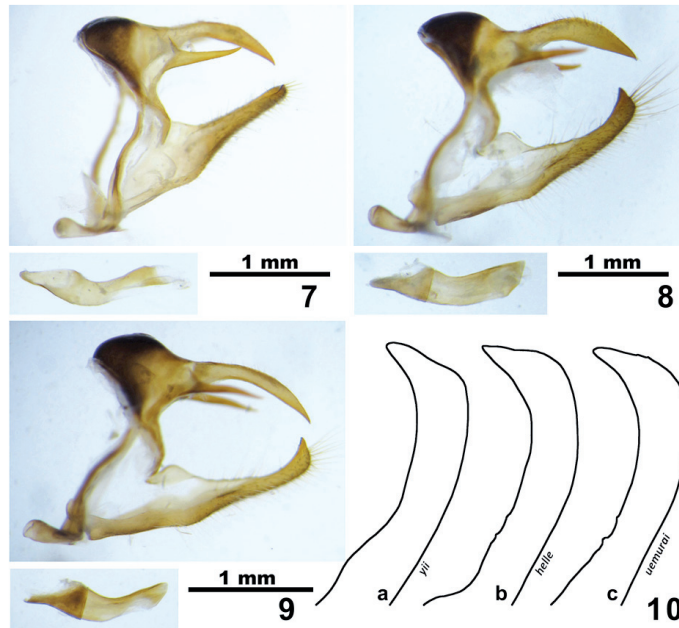


Fig. 7: ♂ genitalia of *Lethe helle yui* subsp. nov., in lateral view with left valva removed, PT, China, Sichuan, Yanbian.
 Fig. 8: ♂ genitalia of *Lethe helle helle* (LEECH, 1891) in lateral view with left valva removed, China, Sichuan, Ebian.
 Fig. 9: ♂ genitalia of *Lethe uemurai* (SUGIYAMA, 1994) in lateral view with left valva removed, China, Shaanxi, Fengxian.
 Fig 10: Tip of the male valva in dorsal view. a: *Lethe helle yui* subsp. nov., PT, Sichuan, Yanbian; b: *Lethe helle helle* (LEECH, 1891), Sichuan, Ebian; c: *Lethe uemurai* (SUGIYAMA, 1994), Shaanxi, Fengxian.

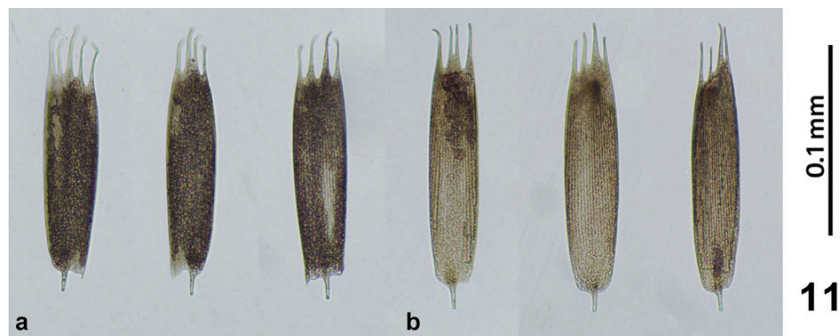


Fig. 11: Androconia of *Lethe uemurai* (SUGIYAMA, 1994). A: Tewo, Gansu; b: Fengxian, Shaanxi.

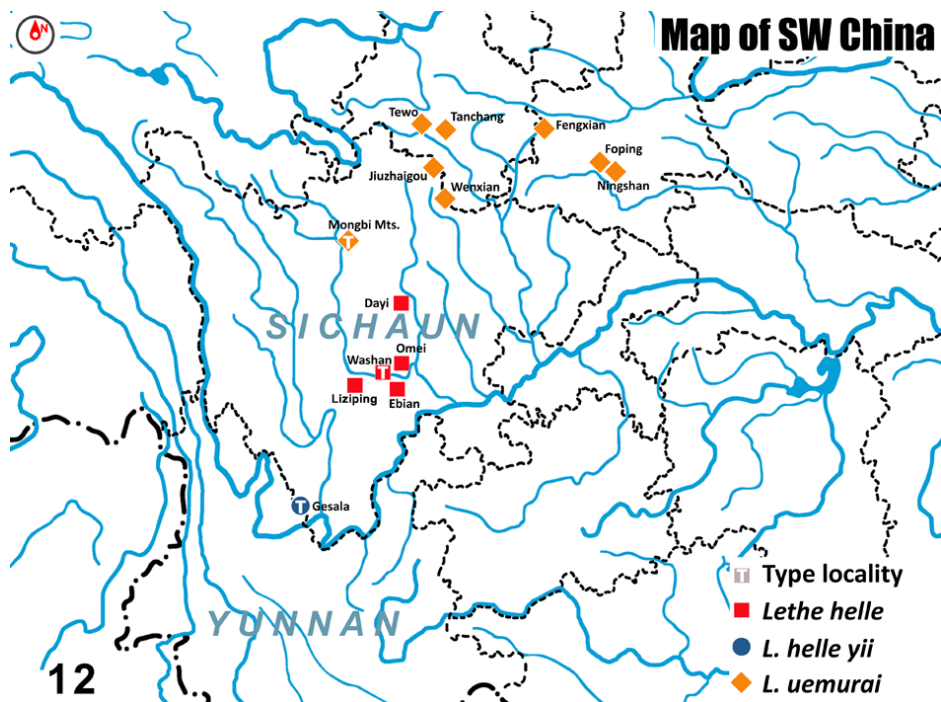


Fig. 12: Map of S.W. China with distribution records of *Lethe helle* (LEECH, 1891) and *Lethe uemurai* (SUGIYAMA, 1994).

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