

**Revision of the Subgenus *Limbusa* MOORE, [1897]  
(Lepidoptera, Nymphalidae, Adoliadini)  
Part3. Descriptions of species (3)**

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# Revision of the Subgenus *Limbusa* MOORE, [1897] (Lepidoptera, Nymphalidae, Adoliadini) Part 3. Descriptions of species (2)

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**ABSTRACT**— Forty-one species of *patala* group and *franciae* group are discussed and figured. Seven new taxa, i.e., *hisui* sp. nov., *intusfascia* sp. nov., *lao* sp. nov., *orientalis* sp. nov., *pauxilla* sp. nov., *takeru* sp. nov. and *wakoi* sp. nov. are described.

**KEY WORDS:** Rhopalocera, Nymphalidae, Limenitidinae, Adoliadini, *Euthalia*, *Limbusa*, *alpherakyi*, *amplifascia*, *aristides*, *bellula*, *brevifasciata*, *byakko*, *chayuensis*, *continentalis*, *duda*, *durga*, *formosana*, *franciae*, *haradai*, *heweni*, *hoa*, *insulae*, *isolata*, *kameii*, *koharai*, *masumi*, *monbeigi*, *nujiangensis*, *rickettsi*, *sakota*, *shinkaii*, *staudingeri*, *strephon*, *strephonida*, *thibetana*, *tsangpoi*, *yasuyukii*, *yunnana*, *yunnanica*, *zhaxidunzhui*, *hisui* sp. nov., *intusfascia* sp. nov., *lao* sp. nov., *orientalis* sp. nov., *pauxilla* sp. nov., *takeru* sp. nov., *wakoi* sp. nov., Oriental region, stat. nov., syn. nov., taxonomy.

## 12. LIST OF SPECIES AND SUBSPECIES (2)

In this chapter forty species of *patala* group (Table 2-4 in subtype A3) and one species of *franciae* group are discussed and described.

### II. *Patala* group Type A Subtype A3

Line combined with the discal white spot in space 6 and post-discal white spot in space 3 of the forewing towards the dorsum.

#### *Euthalia (Limbusa) byakko* UEHARA & YOSHIDA, 1995 (Figs. 21, 429, 430)

*Euthalia byakko* UEHARA & YOSHIDA, 1995. Trans. lepid. Soc. Jap. (Tyô to Ga) 45 (4): 251, figs. 1, 2♂, 3 (♂ genitalia). Holotype ♂, Laos: Oudomxay (JU), [examined (Fig. 21)].

**Distribution** (Fig. 343). Laos, Thailand.

**Length of Forewing.** ♂ 51–53 mm, ♀ 56–59 mm.

UEHARA & YOSHIDA (1995) first discovered this magnificent species in Oudomxay, northern Laos, and described it as new. After the discovery, it has become known that *byakko* is rather widely distributed throughout Laos. They are found in Pakse,

southern Laos, and even in Phetchabun, northwestern Thailand (EK-AMNUAY, 2006). Most of the *Limbusa* species fly from June to August (univoltine), but *byakko* flies in early May and September (bivoltine). It has usually been identified at an altitude of less than 1000 m in Laos, but at 1200–1300 m in Xieng Khouang, middle Laos (Norio NAKAMURA pers. comm.). This species is assigned to subtype A3 of Type A. Sexes are similar and large. Ground color of the wing upperside is rich greenish-blue. The discal series of patterns is distinct on both wings; each pattern of the series is not continuous but remains separated, especially on the hindwing. This character-state is present only on *byakko* in the *Limbusa* group. The ground color of the wing underside is not brown, as found in most species of the *patala* group, but instead is grayish-white tinged with green basally. In addition to the ground color, the distinct grayish-white series of patterns on the distal margin gives a more whitish impression to *byakko*. When UEHARA & YOSHIDA saw flying *byakko* first, they regarded it as *Parthenos sylvia*, not *Limbusa* species, because of this coloration. Mr. Naoyuki MISHIMA informed me that *byakko* flew rapidly straight when he was collecting it at Lac Sao, Laos. I collected six male specimens in early May 2008 in middle Laos. They were easily attracted by the trap of Kapi (traditional seasoning mainly using fermented shrimps) with ammonia and alcohol. I could not collect the female, and it is said that the female is not attracted by this trap.

**Antenna.** Upperside: Black through its length. Underside:

Table 2-4. Key to the species of the subgenus *Limbusa* (the subtype A3 of the Type A in *patala* group) (male)

1 (2) Discal series of patterns of hindwing is separated (not forming continuous band)	<i>E. (L.) byakko</i>
2 (3) Discal series of patterns of hindwing is forming continuous band	
3 (18) Bluish area present distally of discal band of hindwing upperside	
4 (15) Discal band of forewing upperside is white	
5 (6) Distal margin of discal band of hindwing is curved distally between each vein	<i>E. (L.) durga</i>
6 (7) Distal margin of discal band of hindwing is linear between each vein	
7 (8) Marginal white spots in cells 3 and 4 of forewing underside are more or less clear	<i>E. (L.) amplifascia stat. nov.</i>
8 (9) Marginal white spots in cells 3 and 4 of forewing underside are obscure or absent	
9 (14) Ground color of forewing upperside is deep brown tinged with green	
10 (13) Apex is pointed; angle between termen and dorsum is over 90°	
11 (12) Valva is rather wide; uncus is slender	<i>E. (L.) duda</i>
12 Valva is rather slender; uncus is thick basally	<i>E. (L.) tsangpoi</i>
13 Apex is rather round; angle between termen and dorsum is nearly 90°	<i>E. (L.) takeru sp. nov.</i>
14 Ground color of forewing upperside is brown tinged with red	<i>E. (L.) chayuenensis stat. nov.</i>
15 (16) Discal band of forewing upperside is not white	
16 (17) Length of forewing is approximately over 40 mm	<i>E. (L.) monbeigi stat. nov.</i>
17 Length of forewing is less than 40 mm	<i>E. (L.) sakota stat. nov.</i>
18 (19) Bluish area not present distally of discal band of hindwing upperside	
19 (22) Discal band of forewing upperside is white	
20 (21) Submarginal black band of hindwing underside is not close to discal band	<i>E. (L.) rickettsi stat. nov.</i>
21 Submarginal black band of hindwing underside is close to discal band	<i>E. (L.) intusfascia sp. nov.</i>
22 (23) Discal band of forewing upperside is not white	
23 (34) Coloration of discal bands of both wings upperside is different from each other (hindwing is paler than forewing)	
24 (27) Wing shape is rounded	
25 (26) Spot in cell 3 of forewing is just below the spot in cell 5	<i>E. (L.) koharai</i>
26 Spot in cell 3 of forewing is more distad from the spot in cell 5	<i>E. (L.) hoa</i>
27 (28) Wing shape is not rounded (apex of forewing is more or less pointed)	
28 (31) Discal band of hindwing is more or less wide	
29 (30) Grayish blue area close to distal margin of discal band of hindwing upperside is distinct	<i>E. (L.) yunnana stat. nov.</i>
30 Grayish blue area close to distal margin of discal band of hindwing upperside is indistinct	<i>E. (L.) yunnanica stat. nov.</i>
31 (32) Discal band of hindwing is narrower	
32 (33) Discal band of hindwing is slightly broadened in cells 4–6	<i>E. (L.) nujiangensis stat. nov.</i>
33 Discal band of hindwing is almost the same in cells 3–7	<i>E. (L.) bellula</i>
34 (34) Coloration in discal band is same on the both wings upperside	
35 (42) Discal band of both wings upperside is drab yellowish orange	
36 (37) Submarginal black band of hindwing underside shifted basally in cells 2–4	<i>E. (L.) kameii</i>
37 (38) Submarginal black band of hindwing underside not shifted basally in cells 2–4 and faintly curved distally	
38 (39) Termen of forewing is almost flat; apex of forewing is more or less pointed	<i>E. (L.) aristides</i>
39 (40) Termen of forewing is slightly pointed at vein 6; apex of forewing is more or less rounded	
40 (41) Spot in cell 1b of forewing is square	<i>E. (L.) thibetana</i>
41 Spot in cell 1b of forewing is rectangular	<i>E. (L.) alpherakyi</i>
42 (43) Discal band of both wings upperside is pale yellowish white	
43 (64) Distal margin of discal band is distinct in cells 5–7 of hindwing underside	
44 (49) Submarginal indistinct black band is close to discal band on the hindwing underside	
45 (48) Ground color of both wings upperside is brown tinged with bluish-green	
46 (47) Apex of forewing is more or less pointed	<i>E. (L.) orientalis sp. nov.</i>
47 Apex of forewing is rounded	<i>E. (L.) yasuyukii</i>
48 Ground color of both wings upperside is brown and not tinged with bluish-green	<i>E. (L.) masumi</i>
49 (50) Submarginal indistinct black band is not close to discal band on the hindwing underside	
50 (53) Valva of male genitalia is stout	
51 (52) Discal band of hindwing upperside is wider; the ground color of upperside is rich brown tinged with greenish-blue	<i>E. (L.) staudingeri</i>
52 Discal band of hindwing upperside is narrower; the ground color of upperside is rich brown scarcely tinged with greenish-blue	<i>E. (L.) wakoi sp. nov.</i>
53 (54) Valva of male genitalia is slender	
54 (59) Slender grayish blue line (area) present distally of discal band on hindwing upperside	
55 (56) Length of forewing is more than 40 mm	<i>E. (L.) isolata stat. nov.</i>
56 (57) Length of forewing is less than 40 mm	

Table 2-4. (continued)

57 (58) Ground color of underside is light yellowish brown.....	<i>E. (L.) hisui</i> <b>sp. nov.</b>
58 Ground color of underside is dark grayish brown.....	<i>E. (L.) heweni</i>
59 (60) Slender grayish blue line (area) absent distally of discal band on hindwing upperside	
60 (63) Apex of forewing is more or less rounded	
61 (62) Length of forewing is less than 40 mm.....	<i>E. (L.) pauxilla</i> <b>sp. nov.</b>
62 Length of forewing is more than 40 mm.....	<i>E. (L.) insulae</i>
63 Apex of forewing is more or less pointed.....	<i>E. (L.) continentalis</i>
64 Distal margin of discal band is indistinct in cells 5–7 of hindwing underside.....	<i>E. (L.) formosana</i>

Basally dark brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Fig. 384). Valva: Long and rather wide; apex round, twisted outwards at the right angle to valva and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus gently curved ventrally and pointed apically.

### *Euthalia (Limbusa) durga* (MOORE, [1858])

**Distribution** (Fig. 344). N. E. India, N. Myanmar.

**Length of Forewing.** ♂ 47–53 mm, ♀ 56–59 mm.

The sexes are similar, classified into subtype A3 of Type A. This is a large and magnificent species. This species has been regarded as very rare in every locality, but a number of specimens were reported in northern Kachin, Myanmar, recently. The ground color is dark greenish-blue basally and black-blue distally. There is a pure white discal band edged with a wide bluish area distally. The underside of the wings is pale bluish-green basally. On the hindwing, each distal margin of the discal band curves outward between veins, which is one of the characteristics of *durga*. The morphological differences among the eight similar species, which show an uninterrupted discal band edged with a wide bluish area on the hindwing, are listed in Table 10. Two subspecies, the nominotypical subspecies *durga* and *splendens* from Kachin, are known.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Almost dark brown, but blackish-brown laterally from segment around 50 to 60.

**Male Genitalia** (Fig. 385). Valva: Long and slender; apex not twisted, pointed sharply and with some 10 rough serrations. Phallus: Length about 1/2 of the valva. Uncus: Broad basally, tapering ventrally towards pointed apex.

### *Euthalia (Limbusa) durga durga* (MOORE, [1858])

(Figs. 34, 431–434)

*Adolias durga* MOORE, [1858]. Cat. lep. Ins. Mus. E. I. C. (1): 196. Syntypes ♂ ♀, India: Darjeeling, W. Bengal (BMNH), [examined (Fig. 34)].

**Distribution.** E. Nepal, Sikkim, Bhutan, Assam, S. E. Xizang. On the hindwing, the bluish region distal of the white discal band is slightly drab in coloration, and the underside is light green

on the margin. The specimens (Figs. 431, 433) are from Num, eastern Nepal, but the collecting work is hindered there. The type locality, Darjeeling, northeastern India, is cultivated because of the tea plantations, and the environment will have been drastically changed from MOORE's era. Thus, it is very difficult to examine new materials from the locality. The specimens (Figs. 432, 434) were collected by the late Lt. Col. J. ELIOT himself in 1934 near Darjeeling and kindly presented to me at his home.

### *Euthalia (Limbusa) durga splendens* (TYTLER, 1915)

(Figs. 92, 435, 436)

*Dophla durga splendens* TYTLER, 1915. J. Bombay nat. Hist. Soc. 23 (3): 505. Holotype ♂, India: Imphal, Manipur (BMNH), [examined (Fig. 92)].

**Distribution.** Naga Hills, Kachin.

This beautiful subspecies is distributed from Naga Hills, India, to northern Kachin, Myanmar. On the hindwing, the bluish region distal of the white discal band is bright and waved, and the black waved patterns on the distal margin underside are distinct. A new locality, northern Kachin, has been identified as mentioned above, and the examination of this subspecies was easier than before.

### *Euthalia (Limbusa) amplifascia* TYTLER, 1940 **stat. nov.**

(Figs. 11, 437, 438)

*Euthalia duda amplifascia* TYTLER, 1940. J. Bombay nat. Hist. Soc. 42 (1): 114. Holotype ♂, Myanmar: Sadon, Kachin (BMNH), [examined (Fig. 11)].

**Distribution** (Fig. 345). Kachin.

**Length of Forewing.** ♂ 41–46 mm, ♀ 49 mm.

The sexes are similar. The pure white discal bands are very broad on both wings (*amplifascia* = broad band in Latin) and characteristic of this species. It was described as the subspecies of *duda* (the holotype was housed in the Rh37232 of the BMNH), but it should be a distinct species as HUANG (2002) suggested. I examined only the holotype male (Fig. 11) and 5♂ 1♀ from northern Kachin, Myanmar (YOKOCHI Collection), and it is inferred to be a rare species from these scarce records. This species flies together with similar *duda* at Chudu Razi, northern

Kachin, but the number of collected species is far larger in *duda*. *Amplifascia* is distinguished from *duda* by the following: 1) The white patterns in spaces 4–1b on the forewing underside are more distinct, and 2) The white patterns on the distal region of the hindwing underside are also distinct. The morphological differences among the eight similar species are listed in Table 10.

**Antenna.** Upperside: Black through its length. Underside: Basally brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Fig. 386). Valva: Long and rather wide; apex not pointed, slightly twisted outwards, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and ended in pointed tip.

### *Euthalia (Limbusa) duda* STAUDINGER, 1886

(Figs. 33, 439–441, 541, 542)

*Euthalia duda* STAUDINGER, 1886. Exotische Tagfalter 1: 152, pl. 53♂. Lectotype ♂, India: Darjeeling, W. Bengal (ZMHU), [examined (Fig. 33)] [lectotype designated by YOKOCHI, 1999: 179].

**Distribution** (Fig. 346). Nepal, Sikkim, Bhutan, Khasi Hills.

**Length of Forewing.** ♂ 44–46 mm, ♀ 51–54 mm.

This species is distributed in the Himalayan region from Nepal to northeastern India. As with *iva* and *durga*, the broad-leaved forests were changed to tea plantations, and new materials of *duda* have not been recorded from these areas. Sexes are similar, and it is a marvelous species. The discal bands are pure white on both wings, a beautiful bluish band on the hindwing is present on the submarginal region distal of the discal band, and the ground color of the underside is brown tinged with bright bluish-green. The morphological differences among the eight similar species are listed (Table 10). The discal band on the forewing is pure white; however, the region around the 1 space appears grayish-green when looked at sideways. The smaller the pattern in the 1 space, the more the grayish-white is extended. The specimens by MOORE (1898: pl. 247) (Fig. 541) and NAKAHARA & KUROSAWA (1958: pl. 120, Fig. 1) (Fig. 542) seem to be drawn stressing this effect. Mr. Tetsuya YOSHIDA also asked me questions about these figures. The specimens from Jinghong, southern Yunnan (Figs. 442, 443), may be a new taxon related to *duda*. I have examined them only by photographs from Dr. LANG, but it is separable from the similar species shown in Table 10 by the twisted apex of the valva. This species will be described as new by Dr. LANG in the near future.

**Antenna.** Upperside: Black through its length. Underside: Basally brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Fig. 387). Valva: Long and rather wide; apex not pointed, slightly twisted outward, and with several numbers serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally towards pointed tip.

### *Euthalia (Limbusa) tsangpoi* HUANG, 1999

(Fig. 103)

*Euthalia tsangpoi* HUANG, 1999. Lambilliona XCIX: 643, figs. 6, 7 ♂; 79 (male genitalia). Holotype ♂, China: Metok, S. E. Xizang (HUHA), [examined (Fig. 103)] [synonymised by HUANG, 2002: 343].

**Distribution** (Fig. 347). S. E. Xizang.

**Length of Forewing.** ♂ 41 mm.

This species was described by HUANG (1999) based on the only male specimen (Fig. 103) from Metok, southeastern Tibet, female unknown. Subsequently, HUANG (2002) designated *tsangpoi* as the synonym of *duda* from the very similar faces between these species. However, based on the figure of male genitalia (l. c.: 670, Fig. 79), *tsangpoi* is clearly different from *duda* and assigned as a distinct species here. The differences in the male genitalia are as follows: 1) Valva long and slender in *tsangpoi*, while wider in *duda*; 2) uncus of *tsangpoi* broader than in *duda* and abruptly tapering to the apex, while gradually tapering in *duda*; 3) cornuti short in *tsangpoi*, while long and divided into two in *duda*; 4) on the distal margin of the valva, a number of short serrations in *tsangpoi*, while in *duda*, a few on the ventral region. The differences in the wing patterns are very limited between the holotype of *tsangpoi* and the lectotype of *duda*. The holotype ground color of the hindwing underside is brown and tinged with bluish-green only in spaces 2–1a, and different from the *amplifascia* and *takeru*, the undersides of which are uniformly brown tinged with bluish-green. Nevertheless, it is still uncertain that the different coloration is characteristic for *tsangpoi*. The ground color of the underside is usually uniformly brown tinged with bluish-green on the *duda* specimens in the BMNH and my collection (Figs. 439, 440), but the lectotype of *duda* (Fig. 33) shows the same character-state with *tsangpoi*, bluish-green tinge in spaces 2 to 1a of the hindwing. It may be possible that the lectotype of *duda* (Fig. 33) is a different species from the populations that have been recognized as *duda* by authors. However, taking into account the locality of the lectotype, Darjeeling, where many specimens of *duda* have been recorded, this inference may be incorrect. This problem will be solved through the detailed examination of the genitalia between the lectotype *duda* in the ZMHU and the holotype *tsangpoi* in future. So, *tsangpoi* is regarded here tentatively as a distinct species.

**Antenna.** Upperside: Black through its length. Underside: Basally brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Fig. 388). Valva: Long and slender; apex not pointed, twisted nor not unknown, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Broad basally, tapering ventrally towards pointed apex. These characteristics are judged by the figure in the original description (HUANG, 1999: 670, fig. 79).

Table 10. Character-states in *durga*, *amplifascia*, *duda*, *tsangpoi*, *takeru*, *chayuensis*, *monbeigi*, and *sakota* (male)

	<i>durga</i>	<i>amplifascia</i>	<i>duda</i>	<i>tsangpoi</i>	<i>takeru</i>	<i>chayuensis</i>	<i>monbeigi</i>	<i>sakota</i>
Wing size (Length of forewing)	47–53 mm (large)	41–46 mm (over 40 mm)	40–46 mm (over 40 mm)	41 mm	40–43 mm	37–41 mm (rather small)	41–45 mm (over 40 mm)	36–38 mm (less than 40 mm)
Shape of forewing apex	rather rounded	rather pointed	rather pointed; termen at over right angle to dorsum	rather pointed; termen at over right angle to dorsum	rather round; termen at almost right angle to dorsum	rather pointed	rather pointed	rather pointed
Ground color of upperside	blackish brown tinged with green	blackish brown tinged with dark green	blackish brown tinged with dark green	blackish brown tinged with dark green	blackish brown tinged with dark green	dark brown	blackish brown tinged with dark green	dark brown (tinged with more greenish in forewing than in hindwing)
Coloration of discal band on both wings	white on both wings	white on both wings	white on both wings	white on both wings	white on both wings	white on both wings	forewing pale yellow; hindwing white	forewing pale yellow; hindwing white
Position of spot in space 3 of forewing with spot in space 5	distal	distal	distal or just below	just below	just below	just below	just below	just below
Size of the spots in spaces 6, 5, 4 of forewing	almost same	almost same, or spot in space 4 larger than in 6, 5	almost same	almost same	almost same	almost same	almost same	spot in space 4 smaller than in 6, 5
Discal band on hindwing	broad; distal margin convex between each vein	broad; gradually tapering towards tornus	gradually tapering towards tornus	gradually tapering towards tornus	rather broad, especially in spaces 4, 5	broadened especially in spaces 4, 5	broad; waved distally	broadened especially in spaces 4, 5
Blue area distad of discal band on hindwing upperside	bright blue	purplish blue	purplish blue	purplish blue	purplish blue	fuscous blue	dark blue	fuscous blue
Ground color of underside	bluish grey tinged with brown	yellowish green tinged with brown	brown tinged with bluish green	brown; bluish green in spaces 2 to 1a	yellowish green tinged with brown	yellowish green tinged with brown	yellowish green tinged with brown	yellowish green tinged with brown
Marginal white spots on hindwing underside	absent	rather distinct	almost absent	almost absent	obscure	obscure	obscure	obscure

***Euthalia (Limbusa) takeru* sp. nov.**

(Figs. 444, 445)

**Distribution** (Fig. 348). Kachin.**Length of Forewing.** ♂ 40–43 mm, ♀ 47 mm.

The common characteristics of the wing shape, pattern, and the male genitalia have been described in section 7.

**Wing pattern.** ♂. Upperside of forewing: Ground color blackish (fuscous) brown tinged with green; discal band white from spaces 6 to 1a, broad and conspicuous; costa without white scales; subapical white spots in spaces 8 and 6, and spot in space 6 larger than in 8; black subterminal band obscure and running from costa to space 1b. Upperside of hindwing: Ground color blackish (fuscous) brown tinged with green as in forewing; a conspicuous white discal band running from spaces 7 to 1b; distal margin of the discal band slightly waved in spaces 7, 6 (occasionally in space 5), almost straight in spaces 5 to 2; bright blue area present distad of the band; wide and indistinct subterminal black band running from spaces 7 to 1b. Underside of forewing: Ground color brown tinged with bluish green; white spots same as the upperside; a series of black subterminal spots present, spots of which are large and distinct in spaces 2 and 1b. Underside of hindwing: Ground color brown tinged with bluish green as in forewing; a conspicuous white discal band running from spaces 7 to 1b; brownish black subterminal band running from spaces 7 to 1b; white marginal spots faint and running parallel to termen. ♀. Similar to male, but larger. **Wing pattern.** Though the sexual differences are slight, discal white band of hindwing is more waved distally than in male.

**Holotype.** ♂, Chudu Razi (30 miles west of Kawanglangpu), E. Kachin, Myanmar, 12, Jul. 2006, in KMNH (KMNH IR 200,297).

**Paratypes.** The locality is the same as the holotype. 1♂, 19, Jul.

2006; 1♂, 18, Jul. 2007; 2♂, 3, Jul. 2008; 1♂, 7, Jul. 2008; 1♂, 20, Jul. 2008; 1♂, 17, Jun. 2009; 1♂, 21, Jun. 2009; 22, Jun. 2009; 1♂, 2, Jul. 2009; 1♂, 20, Jul. 2009; 1♂, Jul. 2009; 1♀, 13, Jul. 2007; 1♀, 6, Jul. 2008; 1♀, 27, Jul. 2008. Paratypes are preserved in T. YOKOCHI collection.

**Etymology.** The new species name *takeru* means “samurai” in Japanese.

The population from northern Kachin, Myanmar, is named as the new species *takeru*. The sexes are similar. This species has a face similar to that of the related species *duda*, but different from it in the following: 1) Apex of the forewing rounded and the termen at an almost right angle to the dorsum, while at a greater than right angle in *duda*; 2) the broad discal band of the hindwing, especially in spaces 4 and 5, but which gradually narrows towards 1b in *duda*; and 3) bright blue distal of the discal band of the hindwing upperside, which is dull blue in *duda*.

**Antenna.** Upperside: Black through its length. Underside: Basally brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Fig. 389). Valva: Long and rather wide; apex not pointed, slightly twisted outward, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally towards pointed tip.

***Euthalia (Limbusa) chayuensis* HUANG, 2001 stat. nov.**

(Figs. 23, 446–448)

*Euthalia alpherakyi chayuensis* HUANG, 2001. Neue Entomologische Nachrichten 51: 87, fig. 75 (♂ genitalia); pl. V, fig. 38♀. Holotype ♀, China: Chayu, S. E. Xizang (HUHA), [examined (Fig. 23)].

**Distribution** (Fig. 349). S. E. Xizang, Kachin, W. Yunnan, S. Yunnan.

**Length of Forewing.** ♂ 37–41 mm, ♀ 42–44 mm.

HUANG found this species on a research trip to southeastern Tibet in 2000, and the male specimen was in very poor condition without the scales. Thus, he designated it as the paratype and another fresh female specimen as the holotype. Generally, it is very difficult to identify the female specimen in *Limbusa* correctly, and the exact combination of the male and female is difficult to make. Judging from the detailed examination of the type specimen of *chayuensis* with the related species, I regarded the fresh specimens (Figs. 446, 447) as the male of *chayuensis* based on the character-states of the valva: ventral lobe not produced ventrally and slender, which differs from the related species. The sexes are similar. It has been described as the subspecies of *alpherakyi*, but differing from it apparently by the bluish band distal of the discal band on the hindwing. It is distributed widely, from southeastern Tibet, middle and east Yunnan, and to western Guizhou. This species is similar to *sakota* on the characters of the hindwing that the discal band broadens in spaces 5–4 and the drab bluish scales on the submarginal region distal of the discal band, but differs from it by the reddish brown ground color upperside (on the forewing tinged with light green in *sakota*), white discal bands on both wings (pale yellow on the forewing and white on the hindwing in *sakota*), and almost the same-size patterns in spaces 5–4 of the forewing (pattern in space 4 smaller in *sakota*). The differences among the eight related species are listed in Table 10.

**Antenna.** Upperside: Black through its length. Underside: Basally brown, gradually darkened and black from the segment around 50 toward the tip.

**Male Genitalia** (Figs. 390, 391). Valva: Long and slender; ventral lobe of the valva not produced ventrally; apex not pointed, gently twisted outwards, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and ended in acute tip.

***Euthalia (Limbusa) monbeigi* OBERTHÜR, 1907 stat. nov.**

(Figs. 69, 105, 449–453, 543)

*Euthalia alpherakyi monbeigi* OBERTHÜR, 1907. Bull. Soc. ent. Fr. 1907 (15): 261. Syntypes, China: Tsekou, N. Yunnan (BMNH), [examined (Fig. 69)].

*Euthalia (Limbusa) bellula uedai* YOKOCHI, 2009b. Butterflies (*Teinopalpus*) 53: 20, figs. 1, 2♂, 3, 4♀. Holotype ♂, Myanmar: Chudu Razi, Kachin (KMNH), [examined (Fig. 105)]. **syn. nov.**

**Distribution** (Fig. 350). N. W. Yunnan, Kachin.

**Length of Forewing.** ♂ 41–45 mm, ♀ 46–53 mm.

The sexes are similar, but the female is larger than the male. The morphological differences among the eight related species are

listed in Table 10. This species was described as the subspecies of *alpherakyi* by OBERTHÜR (1907) without figures. He added a color figure (Fig. 543) of the type series five years later (OBERTHÜR, 1912). It is similar to *monbeigi* in the rounded wing shape and the structure of male genitalia, but clearly differs from *monbeigi* by the broader discal band and the pale blue region distal to the band on the hindwing. KOIWAYA (1996) discussed *monbeigi* again after FRUHSTORFER (1913) indicated it in SEITZ. He referred to the figure by OBERTHÜR (1912) and stated the “subspecies *monbeigi* has a whitish postmedial fascia defined on the outer side by pale blue broadly on the hindwing as well as *duda*” (l. c.: 246). However, the bluish coloration has faded away from the type series of *monbeigi* in the BMNH (1♂ : Rh37227; 1♂1♀ : Rh11775) as in Fig. 65, and it is probably caused by a natural change over a long time. The coloration of this subgenus tends to be lost, often leading to the misidentification of the species. I described *uedai* (the type locality is northern Kachin, Myanmar) as the subspecies of *bellula* in 2009, but *uedai* was found to be *monbeigi* through examination of the wing pattern and the structure of the male genitalia, and I regard *uedai* as the synonym of *monbeigi*.

**Antenna.** Upperside: Black through its length. Underside: Uniformly dark brown.

**Male Genitalia** (Figs. 392, 393). Valva: Long and slender; apex round, gently twisted outwards, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and ended in pointed tip.

***Euthalia (Limbusa) sakota* FRUHSTORFER, 1913 stat. nov.**

(Figs. 87, 454, 455)

*Euthalia duda sakota* FRUHSTORFER, 1913. Die Gross-Schmetterlinge der Erde, 9: 684. Syntypes, China: Tseku, N. Yunnan (BMNH), [examined (Fig 87)].

**Distribution** (Fig. 351). N. W. Yunnan, C. Yunnan.

**Length of Forewing.** ♂ 36–38 mm, ♀ 42 mm.

The sexes are similar, distributed in northern and western Yunnan, and small in the subtype A3. The ground color of the forewing upperside is brown tinged with light green, and on the hindwing, the region distal of the discal band is purplish drab blue. This species, from southwestern China, was described by FRUHSTORFER (1913) as the subspecies of *duda*, the nominotypical subspecies of which is distributed in northern India. However, it should be regarded as a distinct species as HUANG (2001) inferred from the following: The discal band of the forewing is not white only in *sakota* and *monbeigi* among the related eight species (Table 10); *sakota* is small, the forewing length less than 40 mm, but *monbeigi* is large and the forewing length more than 40 mm; the ground color of the forewing is brown and the tinge of light green is richer than the hindwing, while in *monbeigi*, the ground color of both wings is uniformly rich brown tinged with dark green; and among the wing patterns in spaces 6–4 of

the forewing, the pattern of space 4 is smaller, while in *monbeigi* they are all the same in size.

**Antenna.** Upperside: Black through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 394). Valva: Long and slender; apex round, gently twisted outwards, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and ended in pointed tip.

***Euthalia (Limbusa) rickettsi* HALL, 1930 stat. nov.**

(Figs. 84, 456–459)

*Euthalia undosa rickettsi* HALL, 1930. Entomologist 63: 159. Holotype ♂, China: Kuatun, N. W. Fujian (BMNH), [examined (Fig. 84)].

**Distribution** (Fig. 352). Fujian, Zhejiang, Anhui, Guangdong, Guangxi, Shaanxi, Sichuan.

**Length of Forewing.** ♂ 39–45 mm, ♀ 46–49 mm.

This species was described by HALL (1930) based on a male from Fujian, China. The holotype (Fig. 84) is housed in the BMNH (Rh37227). The sexes are similar. This species has long been regarded as a subspecies of *thibetana* from southeastern China, which shows white discal bands on both wings. However, it is also found from Sichuan and Shaanxi (Figs. 457, 459), and the following character-states differentiate it from *thibetana*, so here it is regarded as a species. This species is distinguished from *thibetana* by the white discal band (drab yellowish-orange in *thibetana*) and the ground color brown with rich bluish-green (brown tinged with green in *thibetana*).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 395). Valva: Long and slender; apex round, twisted outwards at a right angle to valva, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) intusfascia* sp. nov.**

(Figs. 460, 461)

**Distribution** (Fig. 353). Zhejiang.

**Length of Forewing.** ♂ 40 mm, ♀ 47 mm.

The common characteristics of the wing shape, wing patterns and the male genitalia have been discussed in section 7.

Wing shape. Apex of forewing is rather pointed, especially remarkable in male. Wing pattern. ♂. Upperside of forewing: Ground color brown tinged with green; a discal band consists of white spots from spaces 6 to 1a, broad and conspicuous; no white scales on costa; white spots in spaces 8 and 6 on the subapical area; the spot of space 8 larger than that of space 6; an obscure black subterminal band running from costa to space 1b. Upperside of hindwing: Ground color brown tinged with green as in forewing; a conspicuous white discal band running from space 7 to 1b; distal

margin of the discal band not so waved and indistinct; faint but glitter grayish blue scales present distad of the band; just beyond the discal band, wide and not defined subterminal black band running from spaces 7 to 1b. Underside of forewing: Ground color yellowish green slightly tinged with brown; white spots same as the upperside; outside of central band flat, not gathered, and rack of conspicuous hemming on border; a series of black subterminal spots present and large in spaces 2 and 1b. Underside of hindwing: Ground color yellowish green slightly tinged with brown as in forewing; a conspicuous white discal band running from spaces 7 to 1b and defined by indistinct, brownish black subterminal band, which are separated from discal band near tornus; white marginal band faint and running parallel to termen. ♀. Similar to male, but larger and the wing shape is rounder. Wing pattern. Though the sexual differences are slight, discal white band of hindwing is more waved distally, and the ground color of underside is blue-greenish gray tinged with brown.

**Holotype.** ♂, Lishui, Zhejiang, China, Jul. –Aug. 1993, in KMNH (KMNH IR 200,298).

**Paratype.** 1 ♀, same data as the holotype. Paratype is preserved in T. YOKOCHI collection.

**Etymology.** The new species name *intusfascia* means “interior band” The antenna and the male genitalia of *intusfascia* are similar to *rickettsi*, but the following features in wing patterns are different from it: 1) Apex of the forewing rather pointed (termen of the forewing incurved at 2 and 3 veins, consequently the wing shape more slender); 2) distal margin of the discal band more or less straight and not edged by black on the hindwing; and 3) brownish black subterminal band indistinct and running just beyond the discal band (see Table 11). The species from the Nanling area in Guangdong, which figured with the description of early stages by HARADA *et al.* (2010), is not *rickettsi* but *intusfascia*.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 396). Valva: Long and rather wide; apex round, twisted about at a right angle to valva, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) koharai* YOKOCHI, 2005**

(Figs. 57, 462, 463)

*Euthalia (Limbusa) koharai* YOKOCHI, 2005b. Trans. lepid. Soc. Jap. (Tyô to Ga) 56 (1): 6–9, figs. 1, 2♂, 3, 4♀, 9 (male genitalia). Holotype ♂, China: Yunnan, Binchuan (KMNH), [examined (Fig. 57)].

**Distribution** (Fig. 354). Yunnan, Guangxi, Hunan.

**Length of Forewing.** ♂ 43–48 mm, ♀ 48–51 mm.

This species was described as new in 2005 and recorded from Yunnan, Hunan, and Guangxi. It is probable that *koharai* is widely distributed in the southern area from Yangtze. The

Table 11. Character-states in *rickettsi* and *intusfascia* (male)

	<i>rickettsi</i>	<i>intusfascia</i>
Wing size (Length of forewing)	39–45 mm	40 mm
Shape of wing	apex of forewing rather pointed; termen of forewing almost straight	apex of forewing pointed; termen of forewing incurved at veins 3, 2; wing shape more slender
Ground color of upperside	brown slightly tinged with green	brown not tinged with green
Distal margin of the discal band on hindwing upperside	waved slightly; edged by black	almost straight; not edged by black
Dark bluish green area distad of discal band on hindwing upperside	lightly present	absent
Indistinct brownish black subterminal band on hindwing underside	separated from the discal band	adjacent to the discal band

identification of the species group classified into subtype A3 is usually difficult. From the underside wing patterns, in a transparent envelope or triangle, it is more difficult to get a correct result. This species is one that we could recognize through the setting work of many materials. The sexes are similar, with the female larger than the male. The male of this species is distinguished from the similar six species (Table 12) by the following: 1) Generally larger in size (forewing length over 45 mm) and slightly rounder in the wing shape; 2) ground color of the upperside deep greenish-blue; 3) the discal whitish band of the forewing pale yellow, and paler yellowish-white on the hindwing; 4) discal band of the hindwing edged by greyish-blue distally; 5) the lower part of the valva apex twisted almost at a right angle to the valva; and 6) on the forewing, the distal margin of the white spot in space 3 directed outward.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 397). Valva: Long and slender; apex round, twisted about at a right angle to valva, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

### *Euthalia (Limbusa) hoa* MONASTYRSKII, 2005

(Figs. 44, 464–466)

*Euthalia hoa* MONASTYRSKII, 2005. *Atalanta* 36 (1 / 2): 153 - 155, pl. 8, figs. 3, 4♂; fig. 7A, B (male genitalia). Holotype ♂, Vietnam: Khanh Hoa Province (BMNH), [paratype (MNHN) examined (Fig. 44)].

**Distribution** (Fig. 355). C. Vietnam.

**Length of Forewing.** ♂ 44 mm.

This species is endemic to the southern area of middle Vietnam. I examined only 1♂ (Fig. 465) from Nghe An and 1♂ (Fig. 466) from Kon Tum except for the 2♂ (Figs. 44, 464) of the type series. When we performed field research at the type locality, Hon Ba, Khanh Hoa Province, in April 2011, Dr. K. SAITO found a specimen similar to *hoa* but could not collect it. The female has been unknown but is inferred to be similar to the male. Most

of the species in *Limbusa* are univoltine (from June to August), but the record of the type series was made at the end of April, so this species may be bivoltine like *byakko* in Laos, the second generation of which flies in September. This problem will be solved from field research in this area. The characteristics of *hoa* are as follows: 1) Discal band of hindwing paler than that of forewing; 2) ground color upperside tinged with dark green; 3) submarginal series of pale yellowish-white patterns edged indistinctly on the hindwing underside; 4) distal black edge of the discal band indistinct on the hindwing upperside; and 5) pattern of space 3 shifted outward compared to the pattern of space 5 on the forewing. The morphological differences of the similar six species are listed in Table 12. Even though the paratype male (Fig. 44) and the male from Kon Tum (Fig. 466) are not so broken in the habitus, their coloration is greatly reduced, probably because of the aggressive flight manner. These specimens look like the different species from the male paratype (Fig. 464) and the male specimen from Nghe An (Fig. 465). Generally, the coloration of the wings tends to be faded away in *Limbusa*, often making it difficult to identify each specimen correctly.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Almost dark brown, but black laterally from segment around 50 to 60.

**Male Genitalia** (Fig. 398). Valva: Long and slender; ventral lobe of the valva not produced ventrally; apex round, twisted about at a right angle to valva, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Narrow at the base, gently curved ventrally and pointed apically.

### *Euthalia (Limbusa) yunnana* OBERTHÜR, 1907 stat. nov.

(Figs. 113, 467, 468)

*Euthalia thibetana yunnana* OBERTHÜR, 1907. *Bull. Soc. ent. Fr.* 1907 (15): 260. Syntype (s), China: Tsekou, N. Yunnan (BMNH), [examined (Fig. 113)].

*Euthalia neoterica* LEE, 1985. *Entomotaxonomia* 7(3): 193, pl. 2, figs. 13, 14♂, 15 (♂ genitalia). Holotype ♂, China: Binchuan, Yunnan (IZCAS), [not examined] [synonymised by HUANG, 2002: 341].

Table 12. Character-states in *koharai*, *hoa*, *yunnana*, *yunnanica*, *nujiangensis*, and *bellula* (male)

	<i>koharai</i>	<i>hoa</i>	<i>yunnana</i>	<i>yunnanica</i>	<i>nujiangensis</i>	<i>bellula</i>
Wing size (Length of forewing)	43–48 mm (rather large)	44 mm	36–39 mm (rather small)	40–42 mm	37–38 mm (rather small)	42–46 mm (rather large)
Shape of forewing apex	round	round	not so round (apex rather pointed)	not so round (apex rather pointed)	not so round (apex rather pointed)	not so round (apex rather pointed)
Ground color of upperside	blackish brown tinged with green	deep green tinged with brown	dark brown	blackish brown slightly tinged with green	blackish brown	blackish brown tinged with green
Sizes of spots in spaces 6, 5, 4 of forewing with spot in space 3	smaller	almost same	almost same	almost same	almost same	almost same
Position of spot in space 3 of forewing with spot in space 5	just below	distad	just below	just below	just below	just below
Discal band on hindwing	almost same width through	narrowing from spaces 7 to 1b	broad; almost same width through	rather broad; narrowing from spaces 7 to 1b	narrow; slightly widened in spaces 6, 5, 4	rather narrow; almost same width in spaces 7–3
Shape of distal margin of discal band on hindwing	gently waved	gently waved	gently waved in spaces 7–5	gently waved	gently waved	gently waved
Distad of discal band on forewing upperside	greysh white line	greysh green scattered	broadly suffused with greysh white	greysh white	dark green	broadly suffused with dark green
Ground color of underside	dark yellowish brown	bluish grey	pale brown slightly tinged with green	pale brown slightly tinged with blue	dark brown tinged with bluish green	brown tinged with bluish green
Marginal white spots on hindwing underside	absent	present	absent	absent	absent	absent
Shape of vala	slender	slender	stout	slender	stout	slender

**Distribution** (Fig. 356). Yunnan, S. E. Xizang, Hunan, Fujian.

**Length of Forewing.** ♂ 36–39 mm, ♀ 43–44 mm.

OBERTHÜR (1907) described *yunnana* as the subspecies of *thibetana* POUJADE from Tsekou, northern Yunnan. OBERTHÜR misidentified *staudingeri* LEECH as *thibetana* POUJADE as was discussed in detail in the part of *staudingeri*, and I raise *yunnana* to species here. The type locality of *neoterica* LEE (1985) is Binchuan, Yunnan. In 1999, I visited IZCAS (Beijing) but could not examine the type specimen of *neoterica*; however, it is housed in IZCAS by Dr. LANG (pers. comm.). As HUANG (2002) designated, *neoterica* is a synonym of *yunnana*. The sexes are similar; the female a little larger. This species seems to be rare in every locality. The morphological differences with *staudingeri* are listed below: 1) The apical region of the forewing more acute in *yunnana* than *staudingeri*; 2) ground color of male upperside greenish black-brown in *staudingeri* but dark brown in *yunnana*; male underside ochreous in *staudingeri* and brown tinged with green in *yunnana*; female underside bright yellowish-green in common; 3) the male discal band on both wings more whitish in *yunnana* than in *staudingeri*; 4) in both sexes, the discal band on the hindwing broader in *yunnana* than in *staudingeri*; and 5) blue scales mixed with gray and white only scattered in *staudingeri* but distinct in *yunnana* distal from the discal band

on the hindwing upperside. The morphological differences of the six species, which show the tone of the discal band paler on the hindwing than on the forewing, are listed in Table 12.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Dark brown basally; blackish-brown laterally from segment around 50 to 60; bright brown from segment around 60 to the tip.

**Male Genitalia** (Fig. 399). Valva: Stout and curved dorsally; the apex not pointed, not twisted, and with many rather long serrations. Phallus: Length is about 2/3 of the valva. Uncus: Broad basally and tapering towards pointed tip.

***Euthalia (Limbusa) yunnanica* KOIWAYA, 1996 stat. nov.**  
(Figs. 114, 469, 470)

*Euthalia insulae yunnanica* KOIWAYA, 1996. Studies of Chinese Butterflies, III: 244, figs. 1055, 1056, 1057, 1068, 1069 ♂, 1363 ♂ genitalia. Holotype ♂, China: Zhongdian, N. Yunnan (KMNH), [examined (Fig. 114)].

**Distribution** (Fig. 357). N. W. Yunnan.

**Length of Forewing.** ♂ 40–42 mm, ♀ 49 mm.

This species is rare and known only from Zhongdian, northwestern Yunnan. This area, from northwestern Yunnan

through northern Myanmar to southeastern Tibet, has yielded a rich and various butterfly fauna, where many high peaks, over 5000 m in altitude, and steep valleys are tucked in. In addition to *yunnanica*, *heweni* and *mingyieae* are also endemic to this area, and the number of specimens collected for each is scarce. More extensive research work in this region is greatly needed. The sexes are similar with the female rather larger. This species was described as the subspecies of *insulae*, but I regard it as an independent species here. The ground color of the upperside is slightly greenish-brown, the forewing not round, and the apex of the forewing rather pointed. The discal band of the hindwing is moderately wide but not broadened distally as in *formosana*, and gradually narrowed from spaces 7 to 1b. The discal band is outwardly shaded with grayish blue-white.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 400). Valva: Long and slender; the apex round, gently twisted outwards, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) nujiangensis* HUANG, 2001 stat. nov.**  
(Figs. 76, 471, 472)

*Euthalia alpherakyi nujiangensis* HUANG, 2001. Neue Entomologische Nachrichten 51: 87, pl. V, fig. 39 ♀. Holotype ♀, China: Genong, Nujiang valley, S. E. Xizang (HH), [examined (Fig. 76)].

*Euthalia staudingeri nujiangensis* HUANG, 2002. Atalanta 33 (3/4): 341.

**Distribution** (Fig. 358). S. E. Xizang, N. W. Yunnan, Kachin.

**Length of Forewing.** ♂ 37–38 mm, ♀ 41 mm.

This species was described as the subspecies of *alpherakyi* from the female specimen from Genong, southeastern Tibet first, then changed to the subspecies of *staudingeri* by the author (HUANG, 2002: 341). The male specimen has been unknown as *chayuensis*, and the assignment of the male specimens (Figs. 471, 472) to *nujiangensis* is not confirmed. I regard it as a distinct species here based on the specimens in the collections of HUANG and my own. The sexes are similar, with the female larger. The following characteristics are mentioned: 1) Small (forewing length is less than 40 mm) and the apex of the forewing rather pointed and not rounded; 2) the discal band of the hindwing paler than that of the forewing; 3) the discal band of the hindwing narrow, but slightly broadened at spaces 6–4; 4) the distal area from the discal band dark green on the hindwing upperside; and 5) ground color of the underside darkened (dark brown tinged with bluish-green) (see Table 12).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Dark brown basally; blackish-brown laterally from segment around 50 to 60; bright brown from segment around 60 to the tip.

**Male Genitalia** (Fig. 401). Valva: Stout and curved dorsally; the

apex not pointed, not twisted, and with many serrations. Phallus: Length long and beyond 2/3 of the valva. Uncus: Broad basally and tapering towards pointed apex.

***Euthalia (Limbusa) bellula* YOKOCHI, 2005**  
(Figs. 18, 473–475)

*Euthalia (Limbusa) duda bellula* YOKOCHI, 2005b. Trans. lepid. Soc. Jap. (Tyô to Ga) 56 (1): 9, 12, figs. 10, 11 ♂, 12, 13 ♀. Holotype ♂, Laos: Xamneua (KMNH), [examined (Fig 18)].

**Distribution** (Fig. 359). N. Laos, N. Vietnam.

**Length of Forewing.** ♂ 42–46 mm, ♀ 55 mm.

*Bellula* was described as the subspecies of *duda* first by YOKOCHI (2005b) but raised to an independent species (YOKOCHI, 2009b). This species is distinguished from the eight species (Table 10), each of which have a bluish region distally to the discal band of the hindwing, by the presence of a dark green area in that region. Other characteristics of this species are as follows (Table 12): 1) The discal band paler on the hindwing than on the forewing; 2) the discal band narrower than those of the similar species, *yunnana* and *yunnanica*, and almost equal width through its length; 3) ground color dark brown tinged with green; and 4) outer margin of the medial series of patterns gently waved on the hindwing. The female specimen is rare and from northern Vietnam (Fig. 475) only, as far as I know. This specimen bears the same wing patterns as the male, but larger and with the discal band of both wing uppersides white. *Uedai* was described as the subspecies of *bellula* from northern Myanmar (YOKOCHI, 2009), but it was found to be a synonym of *monbeigi* (p. 14).

**Antenna.** Upperside: Black through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 402). Valva: Long and slender; the apex not pointed, twisted outside, and with several numbers to some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) kameii* KOIWAYA, 1996**  
(Figs. 51, 476, 477)

*Euthalia kameii* KOIWAYA, 1996. Studies of Chinese Butterflies, III: 242, figs. 1037, 1038, 1039 ♂, 1040 ♀, 1043, 1044, 1045 ♂, 1046 ♀, 1354 ♂ genitalia. Holotype ♂, China: Zhouzhi, Shaanxi (KMNH), [examined (Fig. 51)].

**Distribution** (Fig. 360). S. Shaanxi, Fujian, Sichuan, Yunnan.

**Length of Forewing.** ♂ 38–40 mm, ♀ 45 mm.

This species was found in the large number of specimens of *Limbusa* from China after the middle of the 1990s. Some new localities have been found; however, the number of specimens is not sufficient to discuss the status of subspecies. Recently, no material seems to have been collected there. The sexes are

similar. It shares commonalities with *aristides*, *thibetana*, and *alpherakyi* in the drab yellowish-orange in the discal band on the forewing (differences with them are listed in Table 13). It bears quite a strong resemblance to *aristides* but differs from it by the following: 1) Wing shape wider and angulated; 2) ground color of the underside pale ochreous and not tinged with blue as *aristides*; and 3) the discal band on the hindwing underside shifted basally and the submarginal region without patterns wider.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 403). Valva: Long and slender; apex round, slightly twisted outwards with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) aristides* OBERTHÜR, 1907**

(Figs. 14, 478–480)

*Euthalia aristides* OBERTHÜR, 1907. Bull. Soc. ent. Fr. 1907 (15): 260.

Lectotype ♂, China: Tien-tsuen, Sichuan (BMNH), [examined (Fig. 14)]. [lectotype designated by YOKOCHI, 2010: 23].

**Distribution** (Fig. 361). Sichuan, S. Shaanxi, S. Gansu, Yunnan, Hunan, Hubei.

**Length of Forewing.** ♂ 36–46 mm, ♀ 43–51 mm.

The sexes are similar; female is larger than male. It is distributed in southwestern China (Sichuan, Shaanxi, southern Gansu, Yunnan, Hunan, and Hubei). In the original description, the holotype designation was not presented by OBERTHÜR (1907), and the specimens of *alpherakyi* are included in the type series of *aristides* housed in the BMNH; I therefore designated the

lectotype of *aristides* (YOKOCHI, 2010: 23) to clarify the name for stability in Part 1 of this paper. This species shows considerable variations as if they are distinct species from each other, i.e., size of the male from small (Fig 478) to large (Fig. 479) and coloration of the wing upperside from pale brown to dark brown. However, I should regard them as the same species because the wing patterns and the characters of male genitalia are stable among these various specimens. Most of the type series in the BMNH are small and large specimens are scarce. The lectotype specimen (Fig. 14) is small, and the length of the forewing is 37 mm. It is probable that the arrangement of the species will be changed again. This species resembles *kameii*, *thibetana*, and *alpherakyi* in having a drab yellowish-orange discal band on the forewing, but differs from *thibetana* and *alpherakyi* by an underside richness with less contrast and drab ground color, and from *kameii*, *thibetana*, and *alpherakyi* by the pointed apex of the forewing, respectively (Table 13). The female is large, and the pale ochreous medial series of patterns becomes whitish in space 7 of the hindwing.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 404). Valva: Long and slender; apex round, slightly twisted outside, and with small number of short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) thibetana* POUJADE, 1885**

(Figs. 100, 101, 107, 66, 481–485)

*Adolias thibetana* POUJADE, 1885. Bull. Soc. ent. Fr. (6) 5: 215.

Lectotype ♂, China: Mou-Pin, Sichuan (MNHN), [examined (Fig. 101)]. [lectotype designated by YOKOCHI, 2010: 31].

*Euthalia (Dophla) undosa* FRUHSTORFER, 1906. Insektenbörse 23

Table 13. Character-states in *kameii*, *aristides*, *thibetana*, and *alpherakyi* (male)

	<i>kameii</i>	<i>aristides</i>	<i>thibetana</i>	<i>alpherakyi</i>
Wing size (Length of forewing)	38–40 mm	36–46 mm	37–44 mm	41–46 mm (rather large)
Shape of wings; shape of forewing apex	wider and angulated; apex rather round; termen of forewing produced at vein 6	apex rather pointed; termen almost straight	termen of forewing slightly produced at vein 6	rounder and stout
Ground color of upperside	brown without greenish tinge	brown without greenish tinge	brown tinged with green	brown tinged with green
Discal band on hindwing	shifted basally in spaces 4, 3	almost in line	almost in line	almost in line
Greyish white area distad of discal band on forewing upperside	absent	absent	traceable	traceable
Ground color of underside	pale ochreous not tinged with blue; inconspicuous coloration	brown tinged with bluish grey; dull coloration	conspicuously yellowish brown	conspicuously yellowish brown
Indistinct brownish black subterminal band on hindwing underside	shifted basally in spaces 4, 3, 2	curved smoothly	curved smoothly	curved smoothly

- (5): 60. Syntype (s), China: Mou-Pin, Sichuan (MNHN), [examined (Fig. 107)] [synonymised by HUANG, 2002: 344].
- Euthalia themistocles* OBERTHÜR, 1907. Bull. Soc. ent. Fr. 1907 (15): 261. Syntypes, China: Siao-lou, Sichuan (BMNH), [examined (Fig. 100)]. **syn. nov.**
- Euthalia staudingeri* STICHEL, 1908 (nec LEECH, 1891). In SEITZ, A. (ed.) [1907-1909]. Die Gross-Schmetterlinge der Erde. vol. 1: 191.
- Euthalia undosa meridionalis* MELL, 1935. Deut. ent. Zeit. 1934: 247. Lectotype ♂, China: Tsahyuenshan, N. Guangdong (ZMHU), [examined (Fig. 66)] [lectotype designated by YOKOCHI, 1997: 12].
- Euthalia undosa melli* YOKOCHI, 1997. Futao 26: 12, pl. 2, figs. 1, 2. (nom. nov. pro *meridionalis* MELL, 1935 non FRUHSTORFER, 1906). **syn. nov.**

**Distribution** (Fig. 362). Sichuan, Yunnan, S. Shaanxi, S. E. Qinghai, S. Gansu, Hunan, Hubei, Guangdong, Fujian, Zhejiang.

**Length of Forewing.** ♂ 37–44 mm, ♀ 43–50 mm.

The sexes are similar; the female is larger. It is widely distributed in southern China, and they are common judging from the large number of specimens from those areas. This species is very similar in the face to the related species, and it is the most probable to find of the new species from these areas. The related four species (*kameii*, *aristides*, *thibetana*, and *alpherakyi*) all show the series of dull ochreous discal band on the wing upperside. The morphological differences are listed in Table 13. POUJADE (1885) described *thibetana* based on 1♂2 ♀ specimens from Mou-Pin, Sichuan. While these specimens have been housed in the MNHN, the upperside of the wings has changed to brownish, and the original tone completely faded away. The correct identification of the female is harder than the male, and it is difficult to confirm morphologically whether all three specimens are identified as the same species. I therefore designated the male specimen (Fig. 101) as the lectotype in Part 1 (p. 31). FRUHSTORFER (1906) described *undosa* as a new species based on the specimen from Mou-Pin, where *thibetana* had been known. One male specimen (Fig. 107) is found in the MNHN, but it is uncertain whether other type-series specimens are present. In view of the stability of the name, this male specimen should be designated as the lectotype of *undosa*. OBERTHÜR (1907) described *themistocles* (Fig. 100) based on the specimens from Siao-lou, near Mou-Pin, the type-locality of both *thibetana* and *undosa*. The number of specimens was not mentioned in the original description of *themistocles*, but 25♂ 7♀ are preserved in the BMNH as the type-series (Rh11774, 37227). It is unknown whether all of them are the real type-series specimens. These three species, *thibetana*, *undosa*, and *themistocles*, belong to the same species from the same wing patterns and male genital structures, i.e., *undosa* and *themistocles* should be synonyms of *thibetana*. However, STICHEL (1908) assigned *thibetana* and *undosa* as different species on SEITZ, vol. 1 (STICHEL, l. c.:

191–192). Moreover, he misidentified the species with a narrow medial series of patterns on the hindwing, i.e., *staudingeri*, as *thibetana*. This system was also adopted by FRUHSTORFER (1913) on SEITZ vol. 9. In the drawer of the BMNH (Rh11774), *undosa* has been arranged as a distinct species and labeled (Fig. 545), so this arrangement has influenced authors for a long time. HUANG (2002) first designated *undosa* as the synonym of *thibetana* based on my suggestion, and this confusion was resolved. Although FRUHSTORFER (1913) designated *themistocles* as the synonym of *undosa*, it is in fact the synonym of *thibetana*. MELL (1935) described *meridionalis* as a new species, but it is the primary homonym and unavailable, and YOKOCHI (1997) proposed the replacement name *melli* for it. In those days, I described *melli* as the subspecies of *undosa* in accordance with MELL (1935) and change it to the synonym of *thibetana* here.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Figs. 405–408). Valva: Long and slender; the apex round, twisted outside at a right angle to valva, and with almost 10 serrations. Phallus: Length is about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

### *Euthalia (Limbusa) alpherakyi* OBERTHÜR, 1907

(Figs. 9, 486, 487)

- Euthalia alpherakyi* OBERTHÜR, 1907. Bull. Soc. ent. Fr. 1907 (15): 260. Syntypes, China: Ta-t sien-lou, Siao-lou, Tien-tsun, Moupin, Sichuan (BMNH), [examined (Fig. 9)].

**Distribution** (Fig. 363). Sichuan, Yunnan, S. Shaanxi, Hubei, Hunan, Fujian, Guangxi.

**Length of Forewing.** ♂ 41–46 mm, ♀ 51–55 mm.

The sexes are similar, and the female is larger than the male. This species is recorded from Sichuan, Yunnan, Hunan, Hubei, and Guangxi. I have not examined the specimens from Zhejiang, Jiangxi, Fujian, and Guangdong. The differences in this group (*kameii*, *aristides*, *thibetana*, and *alpherakyi*) are presented in Table 13. This species is quite similar to *thibetana* but differs from it by the round wing margin and distally extended hindwing, which gives a broadened wing shape. The distal margin of the white pattern in space 3 on the forewing is almost straight but a little pointed in *thibetana*. The differences from *yasuyukii*, which has a similar size and wing shape, are mentioned in the section describing it.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 409). Valva: Long and slender; the apex round, gently twisted outside, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) orientalis* sp. nov.**

(Fig. 488)

**Distribution** (Fig. 364). Zhejiang.**Length of Forewing.** ♂ 41–43 mm.

The common characteristics of the wing shape, wing patterns and the male genitalia have been discussed in section 7.

Wing shape. The apex of the forewing is more or less produced and it is remarkable in male. Wing pattern. ♂. Upperside of forewing: Ground color brown rich in dark green; a discal band wide, distinct and consists of pale yellow spots from space 6 to 1a; faint pale greenish area present distad of discal band (space 4 to 1a); costa without white scales; subapical yellowish-white spots in spaces 8 and 6, and spot in space 6 larger than that of in 8; blackish brown subterminal band obscure and running from costa to space 1b. Upperside of hindwing: Ground color as forewing; pale creamy yellow discal band extending from space 7 to 1b; distal margin of discal band slightly waved; faint pale greenish area distad of discal band (space 5 to 1a); blackish brown subterminal band wide, indistinct and running from space 7 to 1b. Underside of forewing: Ground color brown tinged with pale green; pale yellow spots same as upperside; black subterminal streak running parallel to termen and widened in spaces 2 and 1b. Underside of hindwing: Ground color as forewing underside; pale creamy yellow discal band extending from space 7 to 1b and slightly waved distally; brownish black subterminal band indistinct and running from space 7 to 1b approaching to discal band.

**Holotype.** ♂, Lishui, Zhejiang, China, Jul. –Aug. 1993, in KMNH (KMNH IR 200,299). The holotype is a paratype of *continentalis* KOIWAYA, 1996.

**Paratype.** 1♂, same data as the holotype. Paratype is preserved in T. YOKOCHI collection. The male is a paratype of *continentalis* KOIWAYA, 1996.

**Etymology.** The new species name *orientalis* means “eastern”.

I described *orientalis* from the specimens included in the type series of *continentalis* KOIWAYA (1996). It is distinguished from the *continentalis* by the following character-states: 1) Smaller than *continentalis*; 2) apex of the forewing more produced and the termen of the forewing curved inwards; and 3) brownish black subterminal band indistinct and more approaching to the discal band than in *continentalis*.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 410). Valva: Long and slender; apex less truncated, slightly twisted outwards, and with small number of short serrations. Phallus: Length about 1/2 of the valva, and the triangular sclerotized area not developed laterally as *continentalis* on the suprazonal sheath. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) yasuyukii* YOSHINO, 1998**

(Figs. 112, 489–492)

*Euthalia yasuyukii* YOSHINO, 1998. Neo Lepidoptera 3: 3, figs. 13(UP), 14(UN). Holotype ♂, China: Longshen county, Guangxi (MNHAH) [examined (Fig. 112)].

**Distribution** (Fig. 365). Guangxi, Guangdong, Zhejiang, Fujian, Jiangsu, Hubei, Yunnan, Hunan, Sichuan.

**Length of Forewing.** ♂ 41–49 mm, ♀ 48–53 mm.

This species is widely distributed in southern China. The discovery of a new locality, Nanjin, Jiangsu, was made through materials from Prof. Lixin ZHU, Experiment and Training Center, Chuzhou University, Dr. Guo-Hua HUANG, Institute of Entomology, College of Bio-Safety Science and Technology, Hunan Agricultural University, and Dr. Masaya YAGO, The University Museum, The University of Tokyo (Fig. 490). This record was outside my knowledge, and I added it to the distribution map of *Limbusa* (Fig. 124b) in part 2 (2011). The sexes are similar and classified to the subtype A3 of Type A. Some geographical variations are found but not enough for the descriptions of new subspecies from the specimens examined. The most characteristic diagnosis is the apical portion of the valva, which is twisted and completely turned over and dilating to the distal margin, and only known to this species among *Limbusa*. It is similar to *alpherakii* in size and wing shape, and often difficult to distinguish by the wing patterns. The morphological differences from *alpherakii* are summarized as follows: 1) Ground color of male monotonous pale green, while clearly yellowish-orange in *alpherakii*; 2) wing patterns in the 1a and 1b spaces of the forewing just below the pattern in space 2, while shifted basally in *alpherakii*; 3) terminal portion of the discal band of the hindwing bent more to tornus than in *alpherakii*; and 4) distal margin white pattern in space 3 of the forewing produced distally, but almost straight or slightly produced in *alpherakii*. The male specimen (Fig. 491) is from Gongshan, northwestern Yunnan. It looks like another species superficially from the monotonous ground color on the wing upperside, but the wing patterns and male genitalia place it with *yasuyukii*, so I regard it as the abnormal form of it. Other diagnostic characters are listed in Table 14.

**Antenna.** Upperside: Black through its length. Underside: Uniformly brown.

**Male Genitalia** (Fig. 411). Valva: Large, long and slender; the apex not pointed, strongly twisted and turned over, dilating toward distal margin and with many rough serrations. Phallus: Length about 1/2 of the valva. Uncus: Rather small, curved gently ventrally and pointed apically.

***Euthalia (Limbusa) masumi* YOKOCHI, 2009**

(Figs. 65, 493, 494)

*Euthalia (Limbusa) masumi* YOKOCHI, 2009a. Butterflies (*Teinopalpus*) 51: 23, figs. 1, 2♂, 3, 4♀, 5, 6 (male genitalia). Holotype ♂, China: Guangxi, Dayao-shan (KMNH), [examined (Fig. 65)].

**Distribution** (Fig. 366). Guangxi.

**Length of Forewing.** ♂ 35–44 mm, ♀ 48 mm.

The sexes are similar. This species is classified to subtype A3 of Type A and rather small. Each species of this group is very similar in wing patterns, but *masumi* bears a well-distinguished character on the wing underside, and the identification is rather easy even in the envelopes or triangles. The male character-states that confirm this species as distinct are as follows: 1) Small, forewing length almost 40 mm, and wing shape rounded in male; 2) ground color of the underside yellowish-brown; 3) indistinct black band on the submarginal region of the hindwing underside running close to the discal band; 4) ground color of upperside light brown not tinged with bluish-green; and 5) discal band pale yellowish-white on both wing uppersides, but slightly bluish on the hindwing. Female similar to male, but larger and more whitish with the discal band. I have not examined the specimens except for the type-series. It is probable that this species is distributed in areas other than Guangxi in southern China. The morphological differences of three species (*orientalis*, *yasuyukii*, and *masumi*) are listed in Table 14, which bear a pale yellowish-white discal band and indistinct black band on the submarginal region of the hindwing underside running close to the discal band.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 412). Valva: Long and slender; the apex round, twisted outwardly about at right angle to valva, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Moderate at the base, and gently curved ventrally and pointed apically.

***Euthalia (Limbusa) staudingeri* (LEECH, 1891)**

(Figs. 93, 495–498)

*Euthalia staudingeri* LEECH, 1891. Entomologist 24 (Suppl.): 4. Syntypes ♂ ♀, China: Chia-Kou-Ho, Sichuan (BMNH), [examined (Fig. 93)].

**Distribution** (Fig. 367). Sichuan, Yunnan, Hubei, Guangxi.

**Length of Forewing.** ♂ 36–40 mm, ♀ 42–43 mm.

LEECH (1891) described *staudingeri* based on the male and female specimens (the number of the specimens not stated) from Chia-Kou-Ho, Sichuan. As mentioned for the *thibetana*, STICHEL (1908) misidentified *staudingeri* as *thibetana* and designated *staudingeri* as the synonym of *thibetana* (STICHEL, l. c: 191). This arrangement was adopted into the system of the BMNH (Fig. 546 in Rh11773), and the confusion has been repeated by the authors following this system. In this paper, I indicated this misidentification and assigned *staudingeri* as a distinct species. The sexes are similar, and the female rather large. Differences from *thibetana* are mentioned as follows: 1) Outer margin produced at the vein 6 (M1) and slightly rounded at the apex of the forewing in *thibetana*, but almost straight and not so rounded in *staudingeri*; 2) ground color both on the upperside and underside light tinged with yellowish in *thibetana*, but darker in *staudingeri*; and 3) the discal band on the hindwing slightly angled basally at spaces 3–2 in *staudingeri*. The morphological differences of the related eight species are listed in Table 15.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Dark brown basally; blackish-brown laterally from segment around 50 to 60; bright brown from segment around 60 to the tip.

**Male Genitalia** (Fig. 413). Valva: Stout and curved dorsally; the apex not pointed, not twisted and with many rather long serrations. Phallus: Length long and beyond 2/3 of the valva. Uncus: Broad basally and tapering towards pointed apex.

Table 14. Character-states in *orientalis*, *yasuyukii*, and *masumi* (male)

	<i>orientalis</i>	<i>yasuyukii</i>	<i>masumi</i>
Wing size (Length of forewing)	41–43 mm	41–49 mm	35–44 mm
Shape of forewing apex	rather pointed	rather round	rather round
Ground color of upperside	brown tinged with bluish green	brown tinged with bluish green	brown (not tinged with bluish green)
Coloration of discal band on both wings	pale yellow	pale yellow	pale yellow, but slightly tinged with blue on hindwing
Grayish white area distad of discal band on forewing upperside	almost absent	obscure	present clearly
Ground color of underside	pale brown	pale brown; dull coloration with wing patterns	yellowish brown; wing patterns conspicuous
Apical portion of Valva	slightly twisted	strongly twisted and turned over	twisted outwardly about at right angle to valva



(IZCAS), [not examined].

**Distribution** (Fig. 369). Hainan.

**Length of Forewing.** ♂ 44 mm (♂ 49 mm, ♀ 51 mm in GU & CHEN, 1997: 187, fig. 190).

I have not examined this species, and the descriptions below are based on the literature by GU & CHEN (1997) and the photographs of specimens and male genitalia donated by Dr. LANG. This species was described as the subspecies of *hoa*, but I think it is quite certain that *isolata* is correctly placed as a species distinct from *hoa*. The apical portion of the valva being twisted at a right angle to the valva, LANG assigned it to the subspecies *hoa* (l. c.: 496); however, this character-state is also found among *koharai*, *thibetana*, *rickettsi*, and *masumi*. The discal band on the wing upperside is pale yellowish-white uniformly in *isolata*, while the coloration of the hindwing is paler than the forewing in *hoa*. *Koharai*, which is widely distributed in southern China, shares in common with *isolata* a similar male genital structure and clear submarginal bluish white scales but is separated from this at once by the moderately broad and uniformly creamy white discal band in *isolata*. (The discal band of *koharai* is light yellow on the forewing and pale yellowish-white.) *Isolata* differs from *thibetana* and *rickettsi* by the coloration of the discal band, and from *masumi* by the ground color underside. The female is larger than the male (judging from the figures in GU & CHEN, 1997: p. 187, Fig. 190), and the discal bands are white on both wings, as is common in *Limbusa*.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown. These characteristics are judged by the photos from Dr. LANG.

**Male Genitalia** (Fig. 415). Valva: Long and slender; apex pointed, twisted at a right angle outward, and with some 10 serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) hisui* sp. nov.**

(Figs. 501, 502)

**Distribution** (Fig. 370). N. Kachin.

**Length of Forewing.** ♂ 36–37 mm.

The common characteristics of the wing shape, pattern, and the male genitalia have been mentioned in section 7.

Wing pattern. ♂. Upperside of forewing: Ground color brown; discal band consists of pale yellow spots from spaces 6 to 1a, wide and conspicuous; the spot in space 4 smaller than others, and both of the edges strongly curved outwards; costa without white scales; pale yellowish white spots in spaces 8 and 6 on the subapical area; the spot in space 6 larger than that of space 8; black subterminal band from costa to space 1b curved inwardly at the middle. Upperside of hindwing: Ground color brown as in forewing; discal band very broad, pale yellow, extending from spaces 7 to 1b, and widely edged outwardly with drab grayish white; subterminal series of black

spots, not defined clearly on both sides, running from spaces 7 to 1b. Underside of forewing: Ground color pale yellowish green; pale yellowish spots same as upperside; subterminal streak indistinct from spaces 6 to 3, but clearly large black spots in spaces 2 and 1b. Underside of hindwing: Ground color pale yellowish green as in forewing; conspicuous discal band pale yellow defined by brown on both sides, extending from spaces 7 to 1b; indistinct subterminal black band running from spaces 7 to 1b. ♀. Unknown.

**Holotype.** ♂, around Putao, Kachin, Myanmar, 9, July, 1998, preserved in RIEB.

**Paratype.** 1 ♂, same data as the holotype, preserved in TY.

**Etymology.** The new name “*hisui*” is equivalent to jade, the special product in Myanmar, in Japanese. Mr. T. KATAYAMA and Mr. H. OZAWA gave me the idea of naming.

I named here the new species *hisui* from the materials from northern Kachin, Myanmar. The female is unknown. *Hisui* can be distinguished from allied species by the following characteristics: The wing shape is rather rounded and small (length of forewing is 36–37 mm); the ground color of the underside is pale yellowish-green and lighter than in the other *Limbusa* species; the discal bands of both wings are broad, and both edges are not waved but more or less in line.

**Antenna.** Upperside: Black through its length. Underside: Almost bright brown, but laterally black from segment 60 toward tip.

**Male Genitalia** (Fig. 416). Valva: Long and slender; apex round, not twisted, and with some 10 short serrations. Phallus: Length about 1/2 of the valva with distinct cornuti. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) heweni* HUANG, 2002**

(Figs. 43, 503)

*Euthalia (Limbusa) heweni* HUANG, 2002. *Atalanta* 33 (3 / 4): 340–348, pl. XIII, figs. 1, 3♂, 5, 7♀; fig. 1 (male genitalia). Holotype ♂, China: Dulongjiang valley, N. W. Yunnan (HH), [examined (Fig. 43)].

**Distribution** (Fig. 371). N. W. Yunnan.

**Length of Forewing.** ♂ 37 mm, ♀ 43 mm.

Only one pair of the type series has been known, which was collected at the northernmost Yunnan and housed in the personal collection of Mr. Hao HUANG, Shanghai, China (Figs. 43, 503). The sexes are similar, the female larger. This species bears a strong resemblance to *staudingeri* on the wing patterns and is barely separable from the latter by 1) the white pattern in space 3 of the forewing present just below the white pattern in space 5 in *heweni*, while shifted outwardly in *staudingeri*, and 2) on the ground color underside pale brown tinged with yellowish-green in both species, but a little darker in *heweni*. However, the shape of the valva is very different between them; short and stout in *staudingeri*, while long and slender in *heweni*. I follow HUANG (2002) from these character-states and regard *heweni* as

a distinct species here. HUANG (2002: 384) mentioned the habitat of *heweni* as different from other related species, i.e., “*Heweni* is allopatric with all the other species of the group. I have not encountered any other members of the group in its habitat.” The morphological differences among the eight species, which bear a pale yellowish-white discal band and an indistinct black band on the submarginal region of the hindwing underside not close to discal band, are listed in Table 15.

**Antenna.** Upperside: Black through its length. Underside: Almost bright brown, but laterally black from segment 60 toward tip.

**Male Genitalia** (Fig. 417). Valva: Long and slender; ventral lobe of the valva not produced ventrally; apex round, not twisted, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Broad basally, and tapering ventrally toward to pointed tip.

***Euthalia (Limbusa) pauxilla* sp. nov.**

(Fig. 504)

**Distribution** (Fig. 372). Shaanxi, Sichuan.

**Length of Forewing.** ♂ 35–36 mm.

The common characteristics of the wing shape, pattern, and the male genitalia have been described in section 7.

Wing shape. Rather round. Wing pattern. Upperside of forewing: Ground color brown; discal band distinct and consists of pale yellowish white spots from space 6 to 1a; costa without white scales; pale yellowish white spots in spaces 8 and 6 on subapical area; the spot in space 6 larger than that of space 8; a black subterminal band running from costa to 1b. Upperside of hindwing: Ground color brown as in forewing; discal band moderately broad, pale yellowish white and extending from spaces 7 to 1b; subterminal band blackish brown, the inner margin of which not defined clearly, and running from spaces 7 to 1b. Underside of forewing: Ground color bluish gray tinged with yellowish green; discal band dull white and distinct; subterminal line blackish brown, narrow but broadened in spaces 2 and 1b especially; the margins of them are not well defined. Underside of hindwing: Ground color bluish gray tinged with yellowish green as in forewing; conspicuous discal band dull white and extending from spaces 7 to 1b, not so waved and the inner margin strongly defined; indistinct subterminal band dark, the edges of which are broadly suffused and running from spaces 7 to 1b. ♀. Unknown.

**Holotype.** ♂, Tabai-shan (Mei Xian side), Shaanxi, China, 18–30, Jul. 1999, in KMNH (KMNH IR 200,301).

**Paratype.** 1♂, Emei-shan, Sichuan, China, Jun. –Jul. 1995. Paratype is preserved in T. YOKOCHI collection.

**Etymology.** The new species name *pauxilla* means “small”.

Only two males have been recorded from Shaanxi and Sichuan, China. The characteristics of this species are as follows: 1) The smallest in the subtype A3 (the length of the forewing 35–36 mm); 2) the bluish-green area absent distal of the discal band on the hindwing upperside; and 3) the ground color of the underside is bluish-gray tinged with yellow-green.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 418). Valva: Long and slender; apex round, twisted at a right angle outward, and with some 10 short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) insulae* HALL, 1930**

(Figs. 46, 108, 505, 506)

*Euthalia thibetana insulae* HALL, 1930. Entomologist 63: 159. Holotype ♂, China: Horisha, Taiwan (BMNH), [examined (Fig. 46)].

*Euthalia thibetana uraiana* MURAYAMA & SHIMONOYA, 1962. Trans. lepid. Soc. Jap. (Tyô to Ga) 13 (4): 89, figs. 9, 10♂. Holotype ♂, China: Urai, Taiwan (LBM), [examined (Fig. 108)]. **syn. nov.**

**Distribution** (Fig. 373). Taiwan.

**Length of Forewing.** ♂ 38–47 mm, ♀ 43–54 mm.

The sexes are similar. This species has been well known among Japanese enthusiasts of butterflies as being distributed Taiwan and given Japanese name “Sugitani Ichimonji.” The morphological differences among the eight similar species are listed in Table 15. HALL described *insulae* as the subspecies of *thibetana*, and the holotype is housed in the BMNH (Rh37227); however, I regard it as a distinct species following KOIWAYA (1996). MURAYAMA & SHIMONOYA (1962) described the subspecies *uraiana* based on five males from Urai, northern Taiwan, but lately SHIMONOYA thought it was appropriate to be regarded as a form of *insulae*, which has a broad discal band (SHIMONOYA pers. comm.), and I designate *uraiana* as the synonym of *insulae* here. The egg of *insulae* is shown in Fig. 4 (upper) (UCHIDA, 1991), and his related statement was cited in “8. EARLY STAGES; Ovum” (part 2: 10).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 419). Valva: Long and slender; apex round, slightly twisted outside, and with several short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

***Euthalia (Limbusa) continentalis* KOIWAYA, 1996**

(Figs. 27, 56, 507–509)

*Euthalia insulae continentalis* KOIWAYA, 1996. Studies of Chinese Butterflies, III: 244, figs. 1051, 1052, 1053, 1054, 1064, 1065, 1066, 1067♂, 1362♂ genitalia. Holotype ♂, China: Wuyishan, Fujian (KMNH), [examined (Fig. 27)].

*Euthalia (Limbusa) aristides kobayashii* YOKOCHI, 2005b. Trans. lepid. Soc. Jap. (Tyô to Ga) 56 (1): 13, figs. 26, 27♂, 28, 29 ♀. Holotype ♂, China: Lishui, Zhejiang (KMNH), [examined (Fig. 56)]. **syn. nov.**

**Distribution** (Fig. 374). Fujian, Guangxi, Zhejiang.

**Length of Forewing.** ♂ 43–48 mm, ♀ 51–54 mm.

I regard *continentalis*, the type locality of which is Fujian, as a distinct species, though it was described as the subspecies of *insulae* first (KOIWAYA, 1996). HUANG (2002) regarded *continentalis* as a synonym of *alpherakyi*, but the wing shape is apparently different between them, and his assignment is incorrect. The sexes are similar; the female is considerably larger than the male. It distributes in southeastern China (Fujian, Guangxi, and Zhejiang). In the male, the ground color is slightly pale green and the discal band on the hindwing rather broad. The characteristics of the wings, i.e., a rather pointed apex of the forewing and drab ground color on the underside, and the male genitalia, are similar to *aristides*. Therefore, *continentalis* may represent *aristides* in the southern coastal area of China. The female is large, the ground color of the upperside tinged with bluish-green, the discal band on the hindwing white, and the underside bluish-white. *Kobayashii* (YOKOCHI, 2005b) is regarded as a synonym of *continentalis* here.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 420). Valva: Long and slender; apex round, slightly twisted outside, and with small number of short serrations. Phallus: Length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

### *Euthalia (Limbusa) formosana* FRUHSTORFER, 1908

(Figs. 36, 510, 511)

*Euthalia formosana* FRUHSTORFER, 1908a. Ent. Zeit., Stuttgart 22 (25): 102. Syntypes, 6♂, China: Kosempo, Taiwan (MNHN), [examined (Fig. 36)].

**Distribution** (Fig. 375). Taiwan.

**Length of Forewing.** ♂ 40–43 mm, ♀ 46–50 mm.

FRUHSTORFER (1908a) described *formosana* from Kosempo, Taiwan, and it has been well known to Japanese entomologists as well as *insulae* with the Japanese name “Takasago Ichimonji.” The number of type-series was cited as six males in the original description, but the specimens labeled as “type” are five males and one female in the MNHN. After FRUHSTORFER passed away, the specimens of Nymphalidae in his collection were removed to the MNHN in 1934. All type-series specimens should be housed in the MNHN, if they were not removed to others. This difference might result from the misidentification by FRUHSTORFER himself on the determination of the sexes. However, true type-specimens are often untraced in the species described by FRUHSTORFER. The other specimens of *formosana* without “type” labels were captured after 1908. Therefore, it is obvious that these specimens are not the real type. The sexes are similar and assigned to the subtype A3 of Type A. This species is easily distinguished from the other species of subtype A3 by the following: 1) Wing shape round as the margin extends and the forewing not acute apically; 2) on both wings, discal band yellowish-white, broad, especially in spaces 6–5; and 3) discal

series of patterns in spaces 7–5 indistinct outwardly on the hindwing underside. The egg of *formosana* is shown in Fig. 4 (lower-right) (UCHIDA 1991) through the courtesy of Mr. UCHIDA and his family. His statement was cited in “8. EARLY STAGES: Ovum” (part 2: 10).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 421). Valva: Long and slender; apex round, not twisted, and with some 10 serrations, of which are various in size. Phallus: Slender and length about 1/2 of the valva. Uncus: Gently curved ventrally and pointed apically.

### Type B

Post-discal band (or trace) of the hindwing runs from costa to dorsum parallel to the termen.

The taxa in Type B had not been reported for a long time subsequent to *strephon* in 1893, but several taxa, such as *brevifasciata*, *zhaxidunchui*, *haradai*, and *shinkaii*, were published at the end of the 20<sup>th</sup> century. However, the records of the Type B group were scarce, and a comprehensive systematic revision was not available in those days. Even in the BMNH, some amount of *strephon* specimens from rather limited localities in Sichuan are housed, and I could not find any specimens of *strephon* in the other museums of Europe. Holotype examination of all described species is necessary for the comprehensive systematic work, but such examinations have not been carried out on the two taxa, *brevifasciata* and *hainanana*. Thus, the table key to the species is not presented for this group Type B. The seven taxa, which have been described (*strephon*, *brevifasciata*, *hainanana*, *zhaxidunchui*, *haradai*, *shinkaii*, and *strephonida*) and one new species, i.e., eight taxa, are rearranged into seven species tentatively as follows.

### *Euthalia (Limbusa) strephon* GROSE-SMITH, 1893

(Figs. 94, 512–516)

*Euthalia strephon* GROSE-SMITH, 1893. Ann. Mag. nat. Hist. (6) 11: 216. Syntypes, 5♂, China: Omei-shan, Sichuan (BMNH), [examined (Fig. 94)].

**Distribution** (Fig. 376). Sichuan, N. Yunnan, Fujian.

**Length of Forewing.** ♂ 33–38 mm, ♀ 46–47 mm.

This species was described by GROSE-SMITH (1893) first in the species of Type B. The type series was written as five males in the original description, but now only one male housed in Rh37228 is present in the BMNH, and the other four males have not been traced through my research. In the general collection of the BMNH, 28♂ are housed in Rh11788; however, the female specimens are absent. The label written as “Oberthur describes a *strephon* ♀ in Bull. Soc. Ent. Fr. 1907 p. 260, but I found no specimen marked *strephon* ♀ in his collection or anything quite agreeing with the description. a. N.” (Fig. 547) is attached to this drawer, and the curator in those

days could not find the female specimens. In fact the seven female specimens of *strephon* are housed in the BMNH. They are arranged not in Rh11788 but instead are 5 ♀ identified as *khama* in Rh11784, 1 ♀ of the type series of *occidentalis* (Rh37228), and the larger specimen (LFW: 49 mm) of 2 ♀ in Rh11782, identified as *pratti* (*occidentalis*). The species is sexually dimorphic, the forewing length less than 40 mm; *strephon* is one of the smallest species in the *patala* group. I examined only the specimens from Sichuan, Yunnan, and Fujian, but this species is probably distributed in the localities south of Yangtze including Hunan; however, they are not common in each locality. The female bears a strong resemblance to *occidentalis* but is separable from it by the smaller pattern in space 4 than those in 3 and 5 on the forewing. The specimen from Sanming, Fujian, China (Fig. 514), shows a little different character-state from the syntype specimen (Fig. 94) and the specimen (Figs. 512, 513): the pale yellow discal band shifted to tornus in space 1b on the hindwing underside. Only this specimen has been known, and the examination of male genitalia is not available, so this character-state will require further research on specimens showing the same state.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 422). Valva: Slightly stout; the ventral lobe well developed; the apex pointed, not twisted, and with few serrations. Phallus: Large; length almost same as the valva. Uncus: Short, slender, horizontal and pointed apically.

***Euthalia (Limbusa) brevifasciata* CHOU & GU, 1994  
stat. nov.**

*Euthalia nara hainanana* GU, 1994. Monographia Rhopalocerorum Sinensium: 488, 762, figs. ♀. Holotype ♀, China: Tongshi, Hainan (ITF), [not examined]. **syn. nov.**

*Euthalia strephon brevifasciata* CHOU & GU, 1994. Monographia Rhopalocerorum Sinensium: 492, 763, figs. ♂ (UP, UN). Holotype ♂, China: Jianfengling, Hainan (EMNAU), [not examined].

**Distribution** (Fig. 377). Hainan.

**Length of Forewing.** Exactly unknown (♂ 35 mm in CHOU & GU, 1994: 491; ♂ 36 mm in GU & CHEN, 1997: 186, fig. 189. These figures seem to be same material. ♀ 43 mm in GU, 1994: 489).

*Brevifasciata* was described as a new subspecies of *strephon* based on the male holotype specimen from Hainan in Monographia Rhopalocerorum Sinensium (1994). *Hainanana* was also described as a new subspecies of *nara* based on the female holotype specimen in the same literature. They are considered to belong to the same species from the figures in the original descriptions, so I give the precedence to *brevifasciata* based on the male and synonymized *hainanana* with it. As I have had no chance to examine both holotypes, this decision was made using the photographs from the original description (CHOU & GU, 1994) and the book (GU & CHEN, 1997). The related species or probably *brevifasciata* itself would have been found from

southern China and the Indochina Peninsula. The differences among the related species of *brevifasciata* are rather subtle on the wing coloration and the male genitalia. The type-examination including these character-states is the most appropriate way to solve the species problems in these regions.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown. These characteristics are judged by the figures of the original description.

**Male Genitalia.** Not examined.

***Euthalia (Limbusa) haradai* YOKOCHI, 1996 stat. nov.  
(Figs. 40, 517–520)**

*Euthalia (Limbusa) strephon haradai* YOKOCHI, 1996. Futao 22: 14, figs. 1, 2♂. Holotype ♂, Thailand: Fang (YH), [examined (Fig. 40)]. **syn. nov.**

**Distribution** (Fig. 378). N. Thailand, Kachin, N. Laos, N. Vietnam.

**Length of Forewing.** ♂ 36–42 mm, ♀ 53 mm.

The taxon *haradai* was described as a subspecies of *strephon* from Fang, northern Thailand (YOKOCHI, 1996), but it is regarded as a distinct species here. If the status of *brevifasciata* from Hainan is clear, it is probable that *haradai* is assigned to a subspecies or synonym of *brevifasciata* as mentioned in the explanation of Type B (p. 26). The records are as follows: 2 ♂ (Figs. 40, 517) including the holotype from Fang, northern Thailand; a large number of males (Fig. 518) from Kachin, Myanmar; 1♂1♀ (Figs. 519, 520) from Sapa, Lao Cai, northern Vietnam; 1♂ (housed in the MNHN) from Bu Hong, Vietnam; and several males from Xam Neua, Laos. Only one female (Fig. 520) has been examined, which was from Sapa, Lao Cai, northern Vietnam. It is characterized by the equal width of the oblique band through its length on the forewing, while in *shinkaii*, the white pattern of this band in space 4 is smaller than others.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 423). Valva: Slightly stout; the ventral lobe well developed beyond the middle of valva; apex pointed, not twisted, and with several serrations. Phallus: Large; length about 2/3 of the valva. Uncus: Short, slender, horizontal and pointed apically.

***Euthalia (Limbusa) zhaxidunzhui* HUANG, 1998  
stat. nov.**

(Figs. 115, 521, 522)

*Euthalia strephon zhaxidunzhui* HUANG, 1998. Neue ent. Nachr. 41: 227, pl. 5, figs. 3a, 3b, 4a, 4b; fig. 9d (male genitalia). Holotype ♂, China: Metok, S. E. Xizang (HH), [paratype (HH) examined (Fig. 115)].

**Distribution** (Fig. 379). S. E. Xizang, N. Sagain.

**Length of Forewing.** ♂ 42–45 mm.

Although *zhaxidunchui* was described as the subspecies of *strephon* by HUANG (1998), I regard it as a distinct species. The male is large; the forewing length is more than 40 mm. Wing shape is rounded, the pale yellow pattern in space 3 of the forewing is conspicuous, and the pale yellow discal band on the hindwing is clear, especially in spaces 7, 6, and 5. The female is unknown. If *shinkaii* (mentioned below) is not separable from *zhaxidunchui* after the re-examination of Type B, the two females from Tam Dao, central Vietnam (Fig. 525) and Dayao Shan, Guangxi, China (Fig. 526), which are now tentatively classified in *shinkaii*, will belong to *zhaxidunchui*. The record except for the type locality, Metok, southeastern Tibet, is only one ♂ from northern Sagain, Myanmar (Fig. 522), and this specimen is now housed in RIEB. This specimen is so damaged that it does not show the original coloration in the wings. No decisive character-states with *zhaxidunchui* are available, so it is arranged as *haradai* at present.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 424). Valva: Slightly stout; the ventral lobe well developed beyond the middle of valva; the apex pointed, not twisted, and with few serrations. Phallus: Large; length almost same as the valva. Uncus: Short, slender, horizontal and pointed apically.

***Euthalia (Limbusa) shinkaii* YOKOCHI, 2004**

(Figs. 89, 523–526)

*Euthalia (Limbusa) shinkaii* YOKOCHI, 2004. Wallace 9: 1–6, pl. 2, No. 1, 2♂, 3, 4 ♀, 11, 12 (♂ genitalia). Holotype ♂, N. Vietnam: Tamdao, Vinh Phu (TY), [examined (Fig. 89)]. **syn. nov.**

**Distribution** (Fig. 380). C. Vietnam, Guangxi.

**Length of Forewing.** ♂ 42–45 mm, ♀ 52–56 mm.

This species was described as a new species from Tam Dao (altitude 1300–1400 m), central Vietnam, by YOKOCHI (2004). Another male (Fig. 524) from Nghe An, central Vietnam, was recorded except for the type locality. One female (Fig. 526) from Guangxi Zhuang may be assigned to this species, although the male specimen has not been found. This species is so similar to *zhaxidunchui* in the size of wings and wing patterns that it may be designated as the subspecies or synonym of *zhaxidunchui* through the re-examination of Type B in the future. Based on the examination of limited specimens, *shinkaii* is distinguishable from *zhaxidunchui* by the following characteristics: 1) Ground color is greenish brown in *shinkaii*, while a little reddish brown in *zhaxidunchui*; and 2) in the male genitalia, the ratio of length between phallus and valve is nearly 0.75 in *shinkaii*, whereas it is almost 1.00 in *zhaxidunchui*. The female is very large, the oblique series of white patterns on the forewing not in line, and the pattern in space 3 is smaller than allied species *haradai*.

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 425). Valva: Slightly stout; the ventral lobe

well developed beyond the middle of valva; the apex pointed, not twisted, and with few serrations. Phallus: Large; length beyond 2/3 of the valva. Uncus: Short, slender, horizontal and pointed apically.

***Euthalia (Limbusa) strephonida* MONASTYRSKII, 2005**

(Fig. 95)

*Euthalia strephonida* MONASTYRSKII, 2005. Atalanta 36 (1 / 2): 156–158, pl. 8, figs. 5,6♂; fig. 8A (male genitalia). Holotype ♂, Vietnam: Khanh Hoa Province, Vietnam (MNHN), [examined (Fig. 95)].

**Distribution** (Fig. 381). C. Vietnam.

**Length of Forewing.** ♂ 42 mm.

This species belongs to the Type B in the *patala* group, and only the male holotype (housed in the MNHN) has been known, which was collected on 21. iv. 2003, at Hon Ba, Khanh Hoa, middle Vietnam, altitude 1200 m. This area is a national park, and the collection of insects is strictly prohibited. I obtained permission to perform field research at this locality through the courtesy of Messrs. Cuong DO and Thai NGUYEN of the University of Hanoi, and Messrs. Hanh NGUYEN, Nong LUU, and Gioi TRAN of the Hon Ba National Park Office from the end of April to the beginning of May 2011, but I could not get additional specimens of *strephonida* and *hoa* mentioned before. The holotype was collected at the end of April, and most species in *Limbusa* fly in June, so this species may be bivoltine as is *byakko* in Laos. More field research is needed to resolve these problems. This species *strephonida* is distinguishable from the allied species by the following characteristics: 1) It is larger than *strephon* (length of forewing is 42 mm); 2) the apex is pointed, and termen of the forewing is slightly concave; 3) the angle formed between the line combined with spots in spaces 6, 5, and 4 of the forewing and dorsum is wider; 4) spots in spaces 6, 5, and 4 are in line; and 5) the ground color of the underside is bright yellowish-brown (allied species are dull yellowish-brown tinged with green).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 426). Valva: Slightly stout; the ventral lobe well developed beyond the middle of valva; the apex round, not twisted, and serrations rudimentary. Phallus: Large; length almost same as the valva. Uncus: Short, slender, horizontal and pointed apically.

***Euthalia (Limbusa) lao* sp. nov.**

(Fig. 527)

**Distribution** (Fig. 382). Laos.

**Length of Forewing.** ♂ 37–38 mm.

The common characteristics of the wing shape, wing patterns, and the male genitalia have been described in section 7.

Wing pattern. ♂. Upperside of forewing: Ground color fuscous brown tinged with yellowish green; discal pale yellow spots

in spaces 6, 5, 3 clear, obscure in space 2; costa without white scales; subapical fuscous white spots in spaces 8 and 6, and spot in space 6 larger than in 8; black subterminal band obscure and running from costa to space 1b. Upperside of hindwing: Ground color fuscous brown tinged with yellowish green as in forewing; pale yellowish band conspicuous in spaces 7, 6, 5, obscure in spaces 4, 3, 2; black subterminal band obscure and running from costa to space 1b, especially wide in costal side. Underside of forewing: Ground color pale brown tinged with bluish green; subapical fuscous white spots in spaces 8 and 6, and spot in space 6 larger than in 8; discal conspicuous pale yellow spots in spaces 6, 5, 3, 2; subterminal black band present, in spaces 2 and 1b distinct. Underside of hindwing: Ground color pale brown tinged with bluish green as in forewing; pale yellowish band conspicuous in spaces 7, 6, 5, obscure in spaces 4, 3, 2; obscure and black subterminal band present. Female unknown.

**Holotype.** ♂, Phou Samsoum 12 km East of Ban Nah Mouang (2030–2060 m), Xiang Khoang, Laos, 20, Jun. 2007, in N. NAKAMURA collection.

**Paratype.** 1♂, 20, Jun. 2007, in N. NAKAMURA collection. The locality is same as the holotype.

**Etymology.** The new species name *lao* means the country of Laos. The population from Ban Nah Mouang, Xieng Khoang state, Laos, which was discovered by Mr. Norio NAKAMURA, is named here as the new species *lao*. This is similar to allied species in Type B, but it is distinguishable by the following characteristics: 1) Apex pointed, termen slightly concave; and 2) ventral lobe not so developed beyond the middle of the valva (this characteristic is similar to *strephon*, but the ventral lobe is well developed beyond the middle of the valva in other species).

**Antenna.** Upperside: Blackish-brown through its length. Underside: Uniformly bright brown.

**Male Genitalia** (Fig. 427). Valva: Slightly stout; the ventral lobe not so developed beyond the middle of valva; apex rather pointed, not twisted, and with several serrations. Phallus: Large; length almost same as the valva. Uncus: Short, slender, horizontal and pointed apically.

### III. *Franciae* group

The *Franciae* group consists of *francae* only and is distinguishable from the *nara* and *patala* groups by the ground color of the underside, i.e., glittery silver in *francae* while brown in *nara* and *patala*. MOORE (1897) proposed the genus *Cupala* and designated *francae* as the type species, but this generic name has not been used by subsequent authors. In this paper, I tentatively classified this group as a member of the subgenus *Limbusa*; however, the differences from the *nara* and *patala* groups are present on the venations as mentioned before (Part 1: Figs. 1–3, Part 2: 9–10). Considering the other morphological differences, i.e., the ground color of the underside and the male genitalia, it may be appropriate to classify the *francae* group as another distinct subgenus. The detailed morphological examination of the female

genitalia with other species will help resolve this problem.

### *Euthalia (Limbusa) francae* (G. R. GRAY, 1846)

(Figs. 16, 37, 38, 49, 83, 528–540, 544)

*Aconthea francae* G. R. GRAY, 1846 [1833]. Descriptions and figures of some new lepidopterous insects, chiefly from Nepal: 12, pl. 14, figs. 1, 2♂. Syntype(s), Nepal, [not located (Fig. 37)].

*Adolias raja* C. & R. FELDER, 1859 Wien. ent. Monatschr. 3 (12): 397, pl.9, fig. 2♀. Syntype(s) ♀, India: Assam, [not located (Fig. 83)]. **syn. nov.**

*Euthalia francae attenuata* TYTLER, 1911. J. Bombay nat. Hist. Soc. 21: 59. Syntype(s), India: Jakama, Naga Hills (BMNH), [examined (Fig. 16)]. **syn. nov.**

*Euthalia francae raja* f. *galara* FRUHSTORFER, 1913. Die Gross-Schmetterlinge der Erde, 9: 679. Syntypes, ♂ ♀, India: Khasia Hills (MNHN), [examined (Fig. 38)]. **syn. nov.**

*Euthalia japroa* TYTLER, 1915. J. Bombay nat. Hist. Soc. 23 (3): 507, pl. 3, fig. 22♂. Holotype ♂, India: Phesima, Naga Hills (BMNH), [examined (Fig. 49)]. Abnormal form.

**Distribution** (Fig. 383). Nepal, Sikkim, Bhutan, Khasi Hills, Naga Hills, S. E. Xizang, Kachin, Shan, N. Thailand, W. Thailand, N. Laos, S. Yunnan, Vietnam.

**Length of Forewing.** ♂ 34–42 mm, ♀ 41–48 mm.

This species is widely distributed from the Indo-Himalayan region to southern China and the Indochina Peninsula. It is bivoltine, a characteristic of this species and *byakko* among this subgenus. It is seasonally dimorphic with dry season generation occurring from March to April, when they are small and show a pale ground color of the upperside wings and broad median line. The wet season generation occurs from June to September. These are large and show a dark ground color and narrow median line. FRUHSTORFER (1913) also stated that they are various according to the season in the same area. The five taxa described before are discussed: 1) The type-specimens of *francae* (type locality is Nepal) are uncertain and probably deposited in the BMNH. Many specimens of *francae* from northern India, i.e., Sikkim, Assam, and Nepal, are housed in the BMNH (Rh11788, 11789). According to this museum's arrangement, *francae* is rather small (forewing length of the male is less than 40 mm), with a pale ground color and the discal band on both wings broad. However, the discal band drawn in the original description (Fig. 37) was not broad. 2) Type-specimens of *raja* (type locality is Assam) are also untraced as *francae*. The discal band is narrow from the original description (Fig. 83). According to the BMNH arrangement, *raja* is large (forewing length of the male is more than 40 mm), the discal band variable in size, and the ground color darker. They were collected at the same localities as *francae*. 3) The type locality of *attenuata* (Fig. 16) is Naga Hills. No distinctive differences are found between *francae* and *attenuata* in the BMNH. 4) The type-specimens of *galara* (the

type locality is Khasi Hills), 2♂1♀ (1♂ shown in Fig. 38), are in the MNHN. It was described as a dry season form of *raja*, and the male is small with pale ground color upperside wings and broad discal band. The specimens with similar faces have been collected from Sikkim and Bhutan, and no remarkable differences are found with *franciae*. 5) *Japroa* (the type locality is Naga Hills) (Fig. 49) is the abnormal specimen with dissolved wing patterns. The distribution areas of these five taxa are from the Himalayan region of northern India to Nagaland of northeastern India. This species is also found widely in other regions, i.e., from southeastern Tibet, through Tibet, Myanmar, Thailand, Yunnan, and Laos to Vietnam. Traditionally, these populations are assigned to *attenuata*. Although they show great seasonal variations as with the populations of Himalayan regions, it is difficult to consider them as good subspecies, respectively. So, this species is treated as only the nominotypical subspecies *franciae* without any subspecies here. The specimen shown in NAKAHARA & KUROSAWA (1958; pl. 120, Fig. 3) is yellowish-green on the distal region from the discal band of the hindwing (Fig. 544). The coloration of this region is differentiated by the angle of the light. This figure was used to represent this effect artificially, and no true population or specimen is known with such a special coloration. The specimens (Figs. 536, 540) are collected by Tamamitsu & Kotaro SAITO at Lam Dong, Vietnam. They showed a beautiful structural bluish-green in the fresh condition, but this color decreased over the years (K. SAITO pers. comm.).

**Antenna.** Upperside: Black through its length. Underside: Basally bright brown, gradually darkened from the segment around 55 toward the tip.

**Male Genitalia** (Fig. 428). Valva: Long and slender; the ventral lobe not projected; the apex slightly curved ventrally with several large serrations. Phallus: Stout and about 2/3 of length of the valva. Uncus: Broad at the base and tapering towards pointed apex.

### 13. DISCUSSION

In this paper, the subgenus *Limbusa* is revised into 78 species and 17 subspecies with the descriptions of 16 new taxa. I mentioned the systems by MOORE ([1897]) and FRUHSTORFER (1913) in the 5th chapter, SYSTEMATIC ARRANGEMENT AND GROUPING, of Part 1. The other systems of the subgenus *Limbusa* have been presented by D'ABRERA (1985 & 1993) and MORISHITA (1989–1992). The comparison of those systems and the present study is shown in Table 16.

In the latter half of the 19<sup>th</sup> century, many taxa were described by MOORE, LEECH, and the others; therefore, well-known species (i.e., widely distributed and common ones) have been described until the era of OBERTHÜR and FRUHSTORFER in the early 20<sup>th</sup> century. Although World War II stopped this entomological work, many taxa have been described since the end of the 20<sup>th</sup> century, especially Chinese fauna with the issue of Monographia Rhopalocerorum Sinensium edited by CHOU (1994). Access to the Indochina

countries, such as Laos, Vietnam, and Myanmar, has become easier, and new entomological research and study have been carried out there. Thus, except for Northeastern India, we have enough information for new revised work from those localities.

In the present work, I classified the subgenus *Limbusa* into *nara*, *patala*, and *franciae* groups based on the characteristics among the ground color of the underside, the wing shape, and the form of the yellowish-white spots in space 7 of the male hindwing upperside. The *nara* group is characterized by the pale brown ground color of the underside without glittered silver and a yellowish wide spot covering more than half of space 7 of the hindwing upperside. The *patala* group is characterized by a ground color without glittered silver like the *nara* group, but differed from it by the absence of a yellowish spot in space 7 of the hindwing upperside. The pale yellow or white discal band (or reduced series of spots) from costa to dorsum on the hindwing upperside is another character for the *patala* group. I divided the *patala* group based on the position of spots on the male hindwing into two types, A and B. I subdivided Type A into three subgroups based on the angle of the oblique line on the forewing, which consists of the discal white spot in space 6 and postdiscal white spot in space 3. However, there is an exception to this subdivision. From the characteristics of the wing shape, antenna, and male genitalia, *malapana* is closely related to *pratti*, *occidentalis*, *cooperi*, and *monastyrskiyi*. Judging from the angle of the oblique line from the discal white spot in space 6 to the postdiscal white spot in space 3 on the forewing, *malapana* should be classified into A1 and the other four species to subtype A2. There will be different opinions on this problem; for example, it is only an exceptional example or the angle of the oblique line is not the important character for the subdivision. I still consider that this angle of the line is an important character for the *patala* group.

*Franciae*, the underside ground color of which shows glittered silver, and a monotypic group, is classified as a member of the subgenus *Limbusa*. However, *franciae* shows different features from other *Limbusa* species groups in the morphological characteristics of valva and ring in the male genitalia. The detailed examination of the female genitalia or further investigation of the larval stages may confirm *franciae* as a different subgenus in the future. In such a case, *Cucappa* MOORE, 1897, will be used as the sub-generic name.

I divided the distribution area of this subgenus into four regions, i.e., Northeast Himalaya, North India, Indochina, and South China, from the geographical point of view. In Table 17, I list the species according to their presumed centers of distribution.

Tibet, Yunnan, and Kachin are adjacent to each other in the Northeast Himalaya, and the area is the so-called "Three Parallel Rivers of Yunnan." It was formed by the collision of the Indian subcontinent with the Eurasian continent. The upper reaches of the three rivers, i.e., Chang, Mekong, and Salween, flow parallel through North Yunnan.

Table 16. Comparative table of the systematic arrangements in the subgenus *Limbusa*

Species, subspecies & synonyms	MORISHITA, 1989–1992 Sino-Himalayan Region	D'ABRERA, 1985 & 1993 Oriental & Holarctic Region	FRUHSTORFER, 1913 Indo-Australian Region	MOORE, [1897] India & Burma
<b><i>patala</i> KOLLAR, 1844</b>	sp.	sp.	sp.	sp.
= <i>doubledayi</i> BOISDUVAL, 1844				
= <i>epiona</i> G. R. GRAY, 1846				
<i>taoana</i> MOORE, 1879	ssp. of <i>patala</i>	ssp. of <i>patala</i>	ssp. of <i>patala</i>	sp.
= <i>longi</i> VITALIS DE SALVASA, 1924				
= <i>kikuoi</i> K. OKANO, 1988				
<b><i>franciae</i> G. R. GRAY, 1846</b>	sp.	sp.	sp.	sp.
= <i>raja</i> C. & R. FELDER, 1859	ssp. of <i>franciae</i> , as <i>rajah</i> [sic !]	ssp. of <i>franciae</i>	ssp. of <i>franciae</i>	
= <i>attenuata</i> TYTLER, 1911		ssp. of <i>franciae</i>		
= <i>galara</i> FRUHSTORFER, 1913			form of <i>franciae</i>	
= <i>japroa</i> TYTLER, 1915				
<b><i>confucius</i> WESTWOOD, 1850</b>	sp.	sp.	sp.	
<i>sadona</i> TYTLER, 1940				
= <i>gibbsi</i> MONASTYRSKII & DEVYATKIN, 2003				
<b><i>durga</i> MOORE, [1858]</b>	sp.	sp.	sp.	sp.
<i>splendens</i> TYTLER, 1915	ssp. of <i>durga</i>			
<b><i>iva</i> MOORE, [1858]</b>	sp.	sp.	sp.	sp.
<i>buensis</i> MONASTYRSKII, NGUYEN & YOKOCHI, 2000				
<b><i>nara</i> MOORE, 1859</b>	sp.	sp.	sp.	sp.
= <i>anyte</i> HEWITSON, 1862				
= <i>shania</i> EVANS, 1924	ssp. of <i>nara</i>			
= <i>nagaensis</i> TYTLER, 1940				
= <i>kalawrica</i> TYTLER, 1940				
<b><i>kardama</i> MOORE, 1859</b>	sp.	sp.	sp.	
= <i>armandiana</i> POUJADE, 1885				
= <i>miao</i> SUGIYAMA, 1996				
<b><i>sahadeva</i> MOORE, 1859</b>	sp.	sp.	sp.	sp.
<b><i>thibetana</i> POUJADE, 1885</b>	sp.	sp. as <i>undosa</i>	sp.	
= <i>undosa</i> FRUHSTORFER, 1906	sp.		sp.	
= <i>themistocles</i> OBERTHÜR, 1907	syn. of <i>undosa</i>			
= <i>melli</i> YOKOCHI, 1997 ( <i>meridionalis</i> MELL, 1935)	ssp. of <i>undosa</i> , as <i>meridionalis</i>			
<b><i>duda</i> STAUDINGER, 1886</b>	sp.	sp.	sp.	sp.
<b><i>omeia</i> LEECH, 1891</b>	ssp. of <i>nara</i>	syn. of <i>nara</i> ?	ssp. of <i>nara</i>	
= <i>consobrina</i> LEECH, 1891				
= <i>alutoya</i> FRUHSTORFER, 1913			ssp. of <i>nara</i>	
<i>xamneuana</i> YOKOCHI, 2011				
<b><i>narayana</i> GROSE-SMITH &amp; KIRBY, 1891</b>	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	sp.
= <i>nadaka</i> FRUHSTORFER, 1913	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	
<i>yanagisawai</i> SUGIYAMA, 1996				
<i>dongvanensis</i> YOKOCHI, 2011				
<i>dalatensis</i> YOKOCHI, 2011				
<b><i>hebe</i> LEECH, 1891</b>	sp.	sp.	sp.	
<b><i>pratti</i> LEECH, 1891</b>	sp.	sp.	ssp. of <i>patala</i>	
<b><i>staudingeri</i> LEECH, 1891</b>		sp. as <i>thibetana</i>		
<b><i>pyrrha</i> LEECH, 1892</b>	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	ssp. of <i>sahadeva</i>	
= <i>leechi</i> OBERTHÜR, 1907			sp.	
<i>ueharai</i> YOKOCHI, 2005				
<b><i>strephon</i> GROSE-SMITH, 1893</b>	sp.	sp.	sp.	
<b><i>khama</i> ALPHÉRAKY, 1895</b>	sp.	sp.	sp.	
= <i>sinica</i> MOORE, 1898				
= <i>perlilla</i> CHOU & WANG, 1994				
<i>huangi</i> YOKOCHI, 2011				
<b><i>alpherakyi</i> OBERTHÜR, 1907</b>	sp.	sp.	sp.	
<b><i>aristides</i> OBERTHÜR, 1907</b>	form of <i>alpherakyi</i>	sp.	sp.	
<b><i>dubernardi</i> OBERTHÜR, 1907</b>	ssp. of <i>khama</i>	form of <i>khama</i>	ssp. of <i>khama</i>	
<i>tonegawai</i> YOKOCHI, 2009				
<b><i>monbeigi</i> OBERTHÜR, 1907</b>	ssp. of <i>undosa</i>		ssp. of <i>alpherakyi</i>	
= <i>uedai</i> YOKOCHI, 2009				
<b><i>yunnana</i> OBERTHÜR, 1907</b>	ssp. of <i>thibetana</i>	ssp. of <i>thibetana</i>	ssp. of <i>thibetana</i>	
= <i>neoterica</i> CHOU & WANG, 1985	ssp. of <i>duda</i> (?)			
<b><i>formosana</i> FRUHSTORFER, 1908</b>	sp.	sp.	sp.	
<b><i>kosempona</i> FRUHSTORFER, 1908</b>	sp.	ssp. of <i>hebe</i>	ssp. of <i>sahadeva</i>	
= <i>shinin</i> FRUHSTORFER, 1908	syn. of <i>kosempona</i>		sp.	
= <i>daïtoensis</i> MATSUMURA, 1919				
<i>albescens</i> MELL, 1923	ssp. of <i>kosempona</i>	form of <i>hebe</i>		
<b><i>sakota</i> FRUHSTORFER, 1913</b>	ssp. of <i>duda</i>	ssp. of <i>duda</i>	ssp. of <i>duda</i>	
<b><i>curvifascia</i> TYTLER, 1915</b>				
= <i>anaea</i> NIEPELT, 1927				
<i>nosei</i> YOKOCHI, 2000				
<b><i>cooperi</i> TYTLER, 1926</b>	ssp. of <i>pratti</i>	ssp. of <i>iva</i> ?		
<b><i>occidentalis</i> HALL, 1930</b>	ssp. of <i>pratti</i>	ssp. of <i>pratti</i>		

Table 16. (continued)

Species, subspecies & synonyms	MORISHITA, 1989–1992 Sino-Himalayan Region	D'ABRERA, 1985 & 1993 Oriental & Holarctic Region	FRUHSTORFER, 1913 Indo-Australian Region	MOORE, [1897] India & Burma	
<i>rickettsi</i> HALL, 1930	ssp. of <i>undosa</i>				
<i>insulae</i> HALL, 1930 = <i>uraiana</i> MURAYAMA & SHIMONOYA, 1962	ssp. of <i>thibetana</i>	ssp. of <i>thibetana</i>			
<i>pacifica</i> MELL, 1935 = <i>xilingensis</i> YOSHINO, 1997	ssp. of <i>nara</i>				
<i>linpingensis</i> MELL, 1935 = <i>ehuangensis</i> WANG, LI, & NIU, 2004	sp.				
<i>thawgawa</i> TYTLER, 1940					
<i>lengba</i> TYTLER, 1940					
<i>amplifascia</i> TYTLER, 1940		syn. of <i>duda</i> ?			
<i>malapana</i> SHIRÔZU & CHUNG, 1958	sp.	sp.			
<i>pulchella</i> LEE, 1979 = <i>niwai</i> YOKOCHI, 2005 <i>ebbe</i> YOSHINO, 2002					
<i>guangdongensis</i> WU, 1994 = <i>behe</i> SUGIYAMA, 1996 = <i>wuyishana</i> KOIWAYA, 1996 <i>dayiana</i> KOIWAYA, 1996					
<i>brevifasciata</i> CHOU & GU, 1994 = <i>hainanana</i> GU, 1994					
<i>byakko</i> UEHARA & YOSHIDA, 1995					
<i>bunzoi</i> SUGIYAMA, 1996 <i>taiensis</i> SUGIYAMA, 1996 <i>vietnamica</i> YOKOCHI, 2011					
<i>haradai</i> YOKOCHI, 1996					
<i>kameii</i> KOIWAYA, 1996					
<i>yunnanica</i> KOIWAYA, 1996					
<i>continentalis</i> KOIWAYA, 1996 = <i>kobayashii</i> YOKOCHI, 2005					
<i>yasuyukii</i> YOSHINO, 1998					
<i>zhaxidunzhui</i> HUANG, 1998					
<i>colinsmithi</i> HUANG, 1999					
<i>tsangpoi</i> HUANG, 1999					
<i>khambounei</i> UEHARA & YOKOCHI, 2001					
<i>suprema</i> UEHARA & YOKOCHI, 2001					
<i>chayuana</i> HUANG, 2001					
<i>chayuensis</i> HUANG, 2001					
<i>nujiangensis</i> HUANG, 2001					
<i>heweni</i> HUANG, 2002					
<i>mingyiae</i> HUANG, 2002					
<i>shinkaii</i> YOKOCHI, 2004					
<i>masaokai</i> YOKOCHI, 2005					
<i>koharai</i> YOKOCHI, 2005					
<i>bellula</i> YOKOCHI, 2005					
<i>tsuchiyai</i> YOKOCHI, 2005					
<i>hayashii</i> YOKOCHI, 2005					
<i>strephonida</i> MONASTYRSKII, 2005					
<i>hoa</i> MONASTYRSKII, 2005					
<i>masumi</i> YOKOCHI, 2009					
<i>isolata</i> LANG, 2009					
<i>pseudonara</i> YOKOCHI, 2011					
<i>pseudomeia</i> YOKOCHI, 2011					
<i>kuriyamai</i> YOKOCHI, 2011					
<i>monastyrskiyi</i> YOKOCHI, 2011					
<i>takeru</i> YOKOCHI sp. nov.					
<i>intusfascia</i> YOKOCHI sp. nov.					
<i>wakoi</i> YOKOCHI sp. nov.					
<i>hisui</i> YOKOCHI sp. nov.					
<i>pauxilla</i> YOKOCHI sp. nov.					
<i>orientalis</i> YOKOCHI sp. nov.					
<i>lao</i> YOKOCHI sp. nov.					
species	78	20	19	19	9
subspecies	17	20	12	13	0
form	0	1	2	1	0
synonyms	37	2	2	0	0
total	132	43	35	33	9

Forty-six species, which are equivalent to nearly 60% of 78 species in this subgenus, are distributed in this area, and 16 of them are endemic. If we assume that 32 species not found in Northeast Himalaya have spread in all directions except for north and have accomplished secondary divergences (reaching different specific status relative to each other), this area would be the origin of the subgenus *Limbusa* (Fig. 548). The species group including *nara*, *narayana*, and *confucius* extends widely from this center of origin, and it is inferred to be the ancestral group of *Limbusa*. The group extending westwards (in the north Indian area) consists of 12 species, 8 species of which belong to subtype A1 of the *patala* group, and reach Kumaon on the westernmost edge. The Indochine broad-leaf forest still flourishes in Kumaon, but the flora is gradually changing to those of the Ethiopian region westwards (Toshihiko KATAYAMA pers. comm.).

The group extending southwards comprises 26 species, 13 of which are distributed in north and east Indochina, and especially 8 species (*pseudomeia*, *kuriyamai*, *tsuchiya*, *suprema*, *hoa*, *bellula*, *strephonida*, and *lao*) are endemic to Vietnam and Northern Laos, respectively. They are the *nara* group and the subtypes A and B of the *patala* group. This area almost corresponds to the Trans Vietnam Orogenic Belt (TVOB) (the area that has been formed by a collision between the South China and Indochina cratons 230 Ma) (OSANAI *et al.*, 2008), and it shows geologically unique features (Fig. 548, yellow area). It is possible that the geological features are related to the distribution of the plants and produce the present diversity of *Limbusa*. This group reaches to around 11° north at its southernmost, and it is concordant with the southern border of the TVOB. It is most remarkable that *Limbusa* reaches to such a tropical region. (The geological peculiarity may influence the distribution of this subgenus.)

The group extending eastward broadly to southern China is the largest one and includes 39 species. In southeastern China, the geographical features, the big river Yangtze, and rather low mountain ranges allow for species group richness (and rather easy access to the east). The species *insulae*, *formosana*, and *malapana* are endemic to Taiwan, as are *brevifasciata* and *isolata* in Hainan. These islands produce diverse species (from the related species on the continent). *Limbusa* could not extend northwards as the host plants do not grow in such a cold area. From the lack of faunal information about this area, the accurate north border of *Limbusa* cannot be presented here.

The following problems should be resolved for the phylogenetic system of this group. In addition to the systematic position of the *franciae* group, 1) the systematic arrangement of Type B in the *patala* group which includes *strephon*; 2) the systematic arrangement of *duda* and the group, on the hindwing upperside of which the bluish region is present on the distal area from the discal band; 3) the cryptic species; and 4) the unknown species from uninvestigated areas. The first problem is the most difficult one to solve. For this group, I have not been able to carry out an examination of the *brevifasciata* holotype and its male genitalia, so the relationship of this group and the system

of Type B is proposed to be inferred insufficiently. The second is mainly based on the scarcity of material from the regions where research is not carried out. As mentioned in *duda*, a new species from southern Yunnan was found, but no description has been made. The relationship between *duda* and *tsangpoi* still remains unclear. The third problem arises from the groups similar to *thibetana*, including *masumi* and *koharai*. The morphological differences of this group are very small and difficult to recognize from the wing patterns at present. For sorting the many specimens of this group, especially in the envelopes, the correct identification of each species requires experience and knowledge. Frankly speaking, a number of specimens among the *thibetana* group remain unassigned even in my collection. More materials and detailed examination will help to identify their correct position in the system. Regarding the fourth problem, many new species have been found from the TVOB area, and additional records will be expected. New species will be found from the northeastern Himalaya, which is the origin of the *Limbusa* group. High mountains and deep valleys yield rich fauna, and there are untouched fields that are insufficiently researched. Bhutan has long been closed to foreigners. *Bhutanitis ludlowi* was rediscovered, however, and a memorandum of understanding for research was made between Japan and Bhutan, so new information on *Limbusa* will come from this region in the future.

I revised the subgenus *Limbusa* from the recent information mainly on adult morphology and distribution pattern on parts 2–3 with the historical review of their classification, including a detailed type-materials examination in Part 1. Seventy-three type-specimens are featured in this paper. However, many problems impairing ideal classification remain unsolved in this work, and our research in the field is still insufficient. The female specimens are generally very rare, and the females of *pseudomeia*, *hisui*, *mingyiae*, *strephonida*, *pauxilla*, *orientalis*, and *hoa* are still unknown. Therefore, a table of diagnosis for females could not be presented in this paper. More stable and informative classification on *Limbusa* will be available in the future through the examination of the above-mentioned characters that I could not use here and through molecular analysis, and the present system can work as a reference for the new classification.

The YOKOCHI collection will be preserved in KMNH in the future.

#### 14. ADDENDA

The following sentence has been added to Part 1, 5. SYSTEMATIC ARRANGEMENT AND GROUPING, after the 2nd paragraph in the right column (p. 21), “On the hind discocellular veins of *omeia* specimens from Danba in Sichuan (China) (Fig. 3b), Xichang in Sichuan (Fig. 3c), and Wuyishan in Fujian (Fig. 3d), the conditions are different between the two close localities (3b and 3c). On the other hand, they are the same between the remote localities (3c and 3d).”

Table 17. Comparison of the species with the distribution area of the subgenus *Limbusa*

	Northeast Himalaya area Origin	North India area Westwards extending	Indochina area Southwards extending	South China area Eastwards extending
I. <i>nara</i> group				
<i>nara</i>	○	○	○	○
<i>chaywana</i>	● (endemic)			
<i>pseudonara</i>	● (endemic)			
<i>colinsmithi</i>	● (endemic)			
<i>bunzoi</i>	○		○	○
<i>omeia</i>	○		○	○
<i>pseudomeia</i>			● (endemic to TVOB)	
<i>pacifica</i>	○			○
<i>masaokai</i>			● (endemic)	
<i>kuriyamai</i>			● (endemic to TVOB)	
II. <i>patala</i> group				
Type A				
subtype A1				
<i>iva</i>	○	○	○	
<i>malapana</i>				● (endemic to Taiwan)
<i>kosempona</i>	○		○	○
<i>narayana</i>	○	○	○	○
<i>sahadeva</i>	○	○		
<i>thawgawa</i>	○	○	○	
<i>kardama</i>				○
<i>mingyiae</i>	● (endemic)			
<i>tsuchiyai</i>			● (endemic to TVOB)	
<i>hebe</i>	○			○
<i>pulchella</i>	● (endemic)			
<i>curvifascia</i>	○	○		
<i>suprema</i>			● (endemic to TVOB)	
<i>pyrrha</i>			○	○
<i>guangdongensis</i>				○
<i>confucius</i>	○	○	○	○
<i>patala</i>	○	○	○	
<i>lengba</i>	○	○		
<i>lipingensis</i>				○
<i>khambounei</i>			● (endemic)	
<i>hayashii</i>	● (endemic)			
<i>khama</i>	○			○
<i>dubernardi</i>	○			○
subtype A2				
<i>pratti</i>	○			○
<i>occidentalis</i>	○			○
<i>cooperi</i>			● (endemic to Central Myanmar)	
<i>monastyrskiyi</i>			● (endemic)	
subtype A3				
<i>byakko</i>			● (endemic)	
<i>durga</i>	○	○		
<i>amplifascia</i>	● (endemic)			
<i>duda</i>		○		
<i>tsangpoi</i>	● (endemic)			
<i>takeru</i>	● (endemic)			
<i>chayuensis</i>	○			○
<i>monbeigi</i>	● (endemic)			
<i>sakota</i>	● (endemic)			
<i>rickettsi</i>				○
<i>intusfascia</i>				● (endemic)
<i>koharai</i>	○			○
<i>hoa</i>			● (endemic to TVOB)	
<i>yunnana</i>	○			○
<i>yunnanica</i>	● (endemic)			
<i>nujiangensis</i>	● (endemic)			
<i>bellula</i>			● (endemic to TVOB)	
<i>kameii</i>				○
<i>aristides</i>	○			○
<i>thibetana</i>	○			○
<i>alpherakyi</i>	○			○
<i>orientalis</i>				● (endemic)
<i>yasuyukii</i>	○			○
<i>masumi</i>				○
<i>staudingeri</i>	○			○
<i>wakoi</i>				● (endemic)
<i>isolata</i>				● (endemic to Hainan)
<i>hisui</i>	● (endemic)			
<i>heweni</i>	● (endemic)			

Table 17. (continued)

	Northeast Himalaya area Origin	North India area Westwards extending	Indochina area Southwards extending	South China area Eastwards extending
<i>pauvilla</i>				● (endemic)
<i>insulae</i>				● (endemic to Taiwan)
<i>continentalis</i>				● (endemic)
<i>formosana</i>				● (endemic to Taiwan)
Type B				
<i>strephon</i>	○			○
<i>brevifasciata</i>				● (endemic to Hainan)
<i>haradai</i>	○		○	
<i>zhaxidunzhui</i>	● (endemic)			
<i>shinkaii</i>			○	○
<i>strephonida</i>			● (endemic to TVOB)	
<i>lao</i>			● (endemic to TVOB)	
III. <i>franciae</i> group				
<i>franciae</i>	○	○	○	
Total	78	46	12	26
				39

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### Additional Abbreviations

In addition to the list in Part 1, the following abbreviations are used for the museums and institutions where the specimens are preserved. Public Institution (Museum, University). RIEB: The Research Institute of Evolutionary Biology, Tokyo, Japan; UMUT: The University Museum, The University of Tokyo. Personal collectors. AA: Azuma ABE, Aomori, Japan; KM: Kiyoshi MIURA, Tokyo, Japan; TKS: Tamamitsu & Kotaro SAITO, Tokyo, Japan.

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- YOSHINO, K. 2002. New Butterflies from China 7. *Futao* **40**: 2–5, figs. 1–16.

## 16. ERRATA

## Part 1.

- p. 21. Line 21 in the right column: Change “*Limbusa*” to “*Limbusa*” (in italic)
- p. 22. Table 1: In the description of Number of species included of *Limbusa*, × “58” → ○ “59”
- p. 22. Table 1: In the description of Distribution of *Limbusa*, delete a word “only”
- p. 22. Table 1: In the description of Distribution of *Dophla*, add a word “Sulawesi” after the word “Philippines”.
- p. 25. Change “*duda* STAUDINGER, 1886” to “*duda* STAUDINGER, 1886” (in italic)
- p. 26. Line 2 in the right column: Change “*dubernardi*” to “*dubernardi*” (in italic)
- p. 27. Change “*linpingensis* MELL, 1935” to “*linpingensis* MELL, 1935” (in italic)
- P. 34. In the explanation of Fig. 3, read “*omeia*” instead of “*nara*”.
- p. 60. As the figure 86b in plate 20 is the same as 85b, it should be replaced by the figure 86b in plate 89.

## Part 2.

- p. 11. The first sentence in *nara* group: × “This group consists of five species, *nara*, *omeia*, *pacifica*, *bunzoi*, and *masaokai*.” → ○ “This group consists of ten species as shown in Table 2-1.”
- p. 14. Table 3: In the description of Ground color of upperside of *nara*, *chaywana*, and *colinsmithi*, × “black” → ○ “brown”
- p. 14. Table 3: In the description of Ground color of upperside of *colinsmithi*, *omeia*, and *pseudomeia*, delete the words “scare”
- p. 14. Table 3: In the description of Antenna tip of upperside of *masaokai*, × “blackis-brown” → ○ “blackish-brown”
- p.22. Table 5: In the description of Color of oblique spots of forewing of *kosempona*, *narayana*, and *pyrrha*, × “whie” → ○ “white”
- p.22. *Euthalia pyrrha* var. *daitoensis* MATSUMURA in the synonymic list of *Euthalia (Limbusa) kosempona kosempona* FRUHSTORFER, 1908 × “Ent. Zeit., Stuttgart 23(19)” → ○ “Thousand Insects of Japan. Addit. 3”
- p. 23. Distribution in *dalatensis*: × “S. Vietnam” → ○ “C. Vietnam”
- p. 24. Distribution in *thawgawa*: “S. Laos” → Delete.
- p. 25. Table 6: In the description of Wing shape of *kardama*, add the words “around” before the words “vein 4”.
- p. 29. Subspecies title in line 21: × “*Euthalia (Limbusa) pyrrha* LEECH, 1892” → ○ “*Euthalia (Limbusa) pyrrha pyrrha* LEECH, 1892”
- p. 32. Table 8: In the description of Spots in space 6 of hindwing upperside of *confucius*, *patala*, *lengba*, and *linpingensis*, × “tornus” → ○ “terminal”
- p. 32. Table 8: In the description of Discal spots of hindwing underside of *confucius* and *patala*, × “tornus” → ○ “terminal”
- p. 34. Table 9: In the description of Ground color in male of *khama*, add the words “dark brown” after the words “upperside fuscous”.
- p. 44. Caption of Fig.154 (*khambounei*): Delete “*Ssp. khambounei*

(●) : ” and “*Ssp. hayashii* (▲): Myikina [TL], Keradap.”

- p. 48. Fig.140 (map in thawgawa): Delete “4. ● and 5. ●”
- pp. 71, 72. In explanations of plates, add the words with under line.
- Fig. 226. *E. (L.) pseudonara* sp. nov. ♂, FW: 34 mm. Chudu Razi, Kachin, Myanmar. Holotype, KMNH.
- Fig. 236. *E. (L.) omeia xamneua* ssp. nov. ♂, FW: 33 mm. Xamneua, Laos. Holotype, KMNH.
- Fig. 237. *E. (L.) omeia xamneua* ssp. nov. ♀, FW: 41 mm. Xamneua, Laos. Paratype, TY.
- Fig. 238. *E. (L.) pseudomeia* sp. nov. ♂, FW: 36 mm. Sa Thay, Kon Tum, Vietnam. Holotype, KMNH.
- Fig. 244. *E. (L.) kuriyamai* sp. nov. ♂, FW: 39 mm. Di Linh, Lam Dong, Vietnam. Holotype, KMNH.
- Fig. 245. *E. (L.) kuriyamai* sp. nov. ♀, FW: 51 mm. Sa Thay, Kon Tum, Vietnam. Paratype, TY.
- Fig. 268. *E. (L.) narayana dongvanensis* ssp. nov. ♂, FW: 40 mm. Dong Van, Ha Giang, Vietnam. Holotype, TY.
- Fig. 269. *E. (L.) narayana dongvanensis* ssp. nov. ♀, FW: 44 mm. Dong Van, Ha Giang, Vietnam. Paratype, TY.
- Fig. 270. *E. (L.) narayana dalatensis* ssp. nov. ♂, FW: 39 mm. Ta Nung (near Dalat), Lam Dong, Vietnam. Holotype, TKS.
- Fig. 271. *E. (L.) narayana dalatensis* ssp. nov. ♀, FW: 43 mm. Tiger Falls (near Dalat), Lam Dong, Vietnam. Paratype, TKS.

## Distribution maps

Fig. 343. *E. (L.) byakko*.

1. Oudom Xay [TL]; 2. Muang Sing; 3. Lak Sao, Nakai (Nam Theun), Upper Koun Kham, Nhahin; 4. Sekong, Thateng; 5. Pakse; 6. Phetchabun; 7. Xieng Khouang.

Fig. 344. *E. (L.) durga*.

*durga* (●) : 1. Darjeeling [TL]; 2. Num; 3. [Bhutan]; 4. Metok; 5. [Assam].

*splendens* (▲) : 1. Imphal [TL]; 2. Putao, Chudu Razi.

Fig. 345. *E. (L.) amplifascia*.

1. Sadon [TL]; 2. Putao, Chudu Razi.

Fig. 346. *E. (L.) duda*.

1. Darjeeling [TL]; 2. Kathmandu; 3. [Bhutan]; 4. Khasi Hills.

Fig. 347. *E. (L.) tsangpoi*.

1. Metok [TL].

Fig. 348. *E. (L.) takeru*.

1. Chudu Razi [TL].

Fig. 349. *E. (L.) chayuensis*.

1. Chayu [TL]; 2. Dali; 3. Kunming; 4. Puan; 5. Wenshan.

Fig. 350. *E. (L.) monbeigi*.

1. Tsekou [TL]; 2. Chudu Razi; 3. Fugong.

Fig. 351. *E. (L.) sakota*.

Tsekou [TL], Zhongdian; 2. Weishan (Dali).

Fig. 352. *E. (L.) rickettsi*.

1. Kuatun [TL] (= Wuyi shan); 2. Sanming; 3. Lishui; 4. Xitianmu shan, Linan; 5. Nanling; 6. Dayao shan; 7. Huangshan; 8. Tabai shan; 9. Luding.

Fig. 353. *E. (L.) intusfascia*.

1. Lishui [TL].

Fig. 354. *E. (L.) koharai*.

1. Binchuan [TL], Jizu shan; 2. Zhongdian; 3. Zhangjiajie; 4. Dayao shan.

Fig. 355. *E. (L.) hoa*.

1. Hon Ba [TL]; 2. Sa Thay.

Fig. 356. *E. (L.) yunnana*.

1. Tsekou [TL], Zhongdian; 2. Kunming; 3. Wenshan; 4. Zhangjiajie; 5. Beifeng, Wuyi shan; 6. Zayu.

Fig. 357. *E. (L.) yunnanica*.

1. Zhongdian [TL].

Fig. 358. *E. (L.) nujiangensis*.

1. Genong [TL]; 2. Chudu Razi; 3. near Tsekou.

Fig. 359. *E. (L.) bellula*.

1. Xam Neua [TL]; 2. Sa Pa.

Fig. 360. *E. (L.) kameii*.

1. Zhouzhi [TL]; 2. Daba shan; 3. Chengkou; 4. Jinfo shan; 5. Wenshan; 6. Wuyi shan.

Fig. 361. *E. (L.) aristides*.

1. Ta-Tsien-Lu (= Kangding) [TL], Moupin (= Baoxing) [TL], Siao lou (between Yaan and Kanding) [TL], Tien Tsuen (= Tianquan) [TL], Emei shan, Qionglai shan; 2. Zhongdian; 3. Lijiang; 4. Daibu, Luoxue; 5. Qujing; 6. Dali; 7. Jizu shan; 8. Wulian Feng; 9. Tabai shan; 10. Wenxian; 11. Yongshun; 12. Shennongjia Linq; 13. Wufeng; 14. Bazhong; 15. Chengkou.

Fig. 362. *E. (L.) thibetana*.

1. Moupin (= Baoxing) [TL], Emei shan, Leshan, Siao lou (between Yaan and Kanding), Qionglai shan, Qingcheng shan, Erlang shan, Luding, Shimian; 2. Bazhong; 3. Jizu shan, Dali; 4. Zhongdian, Lijiang; 5. Hongshan; 6. Qujing; 7. Daibu, Luoxue; 8. Wenshan; 9. Tabai shan; 10. Wenxian; 11. Daba shan; 12. Jigzhi; 13. Shennongjia Linq; 14. Zhangjiajie; 15. Lishui; 16. Wuyi shan; 17. Shaoguan, Tsahyuen shan; 18. Longlin.

Fig. 363. *E. (L.) alpherakyi*.

1. Moupin (= Baoxing) [TL], Ta-Tsien-Lu (=Kangding) [TL], Siao lou (between Yaan and Kanding) [TL], Emei shan, Qionglai shan, Erlang shan, Dayi; 2. Zhiziluo; 3. Zhongdian; 4. Bazhong; 5. Jizu shan, Dali; 6. Dahei shan; 7. Qujing; 8. Zhangjiajie, Yongshun; 9. Wufeng; 10. Shennongjia Linq; 11. Tabai shan; 12. Dayao shan; 13. Wuyi shan.

Fig. 364. *E. (L.) orientalis*.

1. Lishui [TL].

Fig. 365. *E. (L.) yasuyukii*.

1. Longshem (= Longsheng) [TL]; 2. Dayao shan; 3. Nanling; 4. Wuyi shan; 5. Lishui; 6. Zhangjiajie; 7. Shennongjian Linq; 8. Bazhong; 9. Emei shan; 10. Gongshan; 11. Zhongdian; 12. Binchuan, Jizu shan; 13. Nanjing.

Fig. 366. *E. (L.) masumi*.

1. Dayao shan [TL].

Fig. 367. *E. (L.) staudingeri*.

1. Chia-Kou-Ho [TL] (= Jinkou he) , Emei shan, Ziyun, Erlang shan, Leshan, Siao lou (between Yaan and Kanding), Tien Tsuen (= Tianquan) ; 2. Hongshan; 3. Lijiang, Xue shan; 4. Jizu shan; 5. Luoxue; 6. Shennongjia Linq; 7. Dayao shan.

Fig. 368. *E. (L.) wakoi*.

1. Danba shan [TL]; 2. Emei shan, Baoxing.

Fig. 369. *E. (L.) isolata*.

1. Hainan [TL].

Fig. 370. *E. (L.) hisui*.

1. around Putao [TL].

Fig. 371. *E. (L.) heweni*.

1. Dulongjiang valley [TL].

Fig. 372. *E. (L.) pauxilla*.

1. Tabai shan [TL]; 2. Emei shan.

Fig. 373. *E. (L.) insulae*.

1. Horisha [TL], Urai, Kukuan, Baling, Wushe, Jinai, Lala shan, Meiyuan, Gewang shan, Meifeng, Xumuzhongxin.

Fig. 374. *E. (L.) continentalis*.

1. Wuyi shan [TL]; 2. Lishui; 3. Dayao shan.

Fig. 375. *E. (L.) formosana*.

1. Kosempo [TL], Baling, Kukuan, Wushe, Gewang shan, Xumuzhongxin.

Fig. 376. *E. (L.) strephon*.

1. Emei shan [TL], Qionglai shan, Siao lou (between Yaan and Kanding), Moupin (= Baoxing), Ta-Tsien-Lu (=Kangding); 2. Jiulong; 3. Miyi; 4. Wulian Feng; 5. Zhongdian; 6. Wuyi shan; (7. Sanming).

Fig. 377. *E. (L.) brevifasciata*.

1. Tongshi [TL], Jianfengling.

Fig. 378. *E. (L.) haradai*.

1. Fang [TL]; 2. Putao, Chudu Razi, Naung Mon; 3. Sa Pa; 4. Xam Neua; 5. Bu Huong.

Fig. 379. *E. (L.) zhaxidunzhui*.

1. Metok [TL]; 2. Angpawng Bum.

Fig. 380. *E. (L.) shinkaii*.

1. Tam Dao [TL]; 2. Pu Mat (Nghe An); 3. Dayao shan.

Fig. 381. *E. (L.) strephonida*.

1. Hon Ba [TL].

Fig. 382. *E. (L.) lao*.

1. Ban Nah Mouang [TL].

Fig. 383. *E. (L.) francaiae*.

1. [Nepal] [TL], Kathmandu; 2. [Sikkim]; 3. [Bhutan]; 4. Khasi Hills; 5. Naga Hills; 6. Metok; 7. Naung Mon, Chudu Razi, San Kaung, Longon; 8. [N.Sagain]; 9. Tiddim; 10. Loi Kaw; 11. Simao; 12. Mengla; 13. Dong Van; 14. Xian Khoang; 15. Wiang Pa Pao; 16. Doi Inthanon; 17. Nan; 18. Tak; 19. Di Linh.



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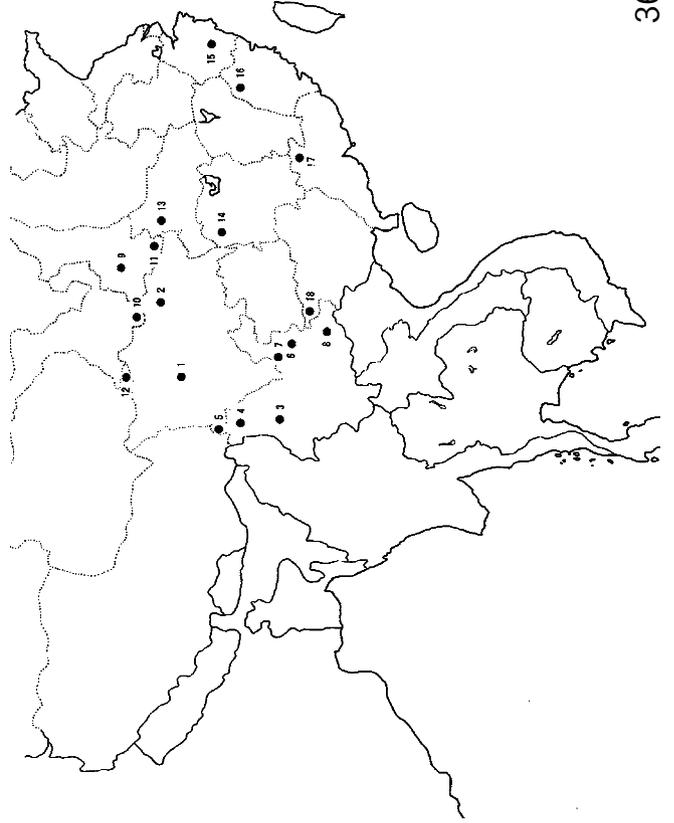
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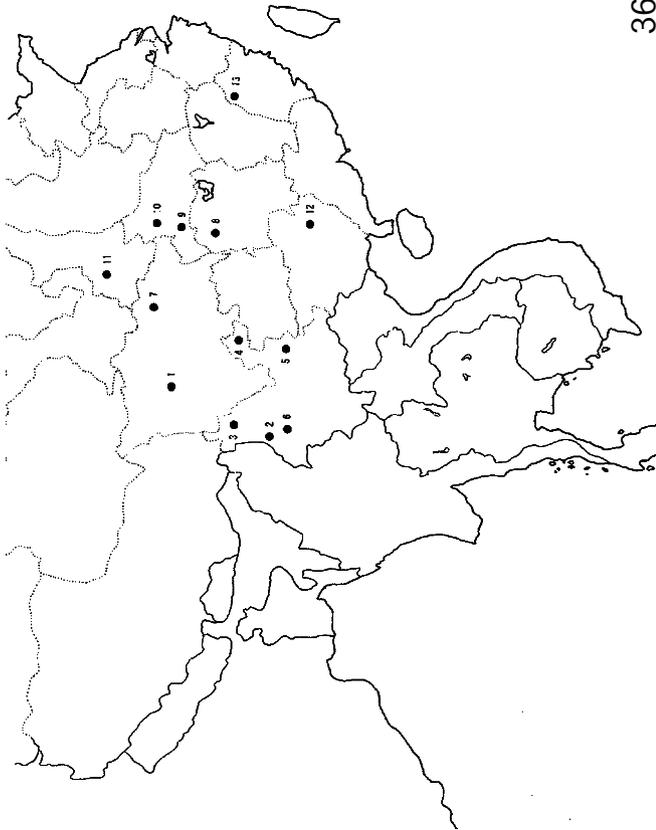
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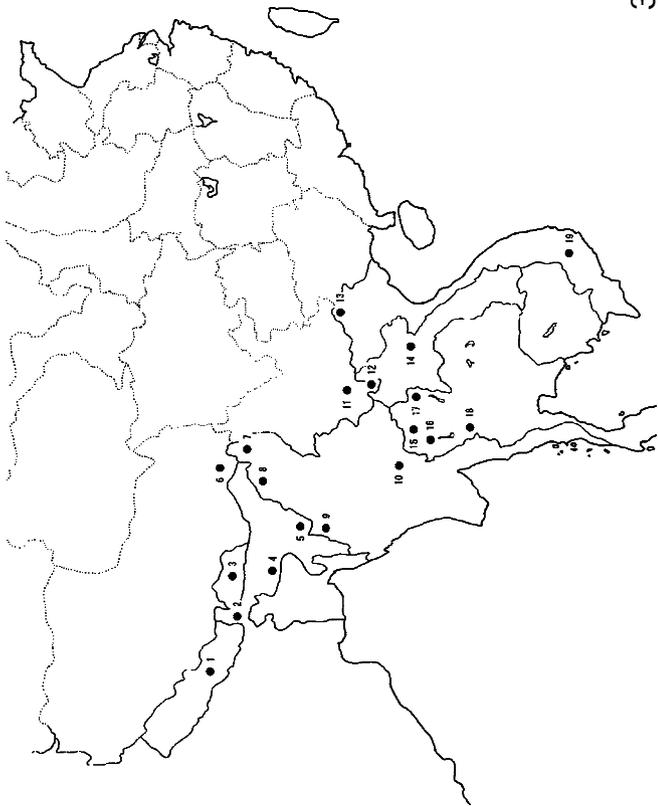
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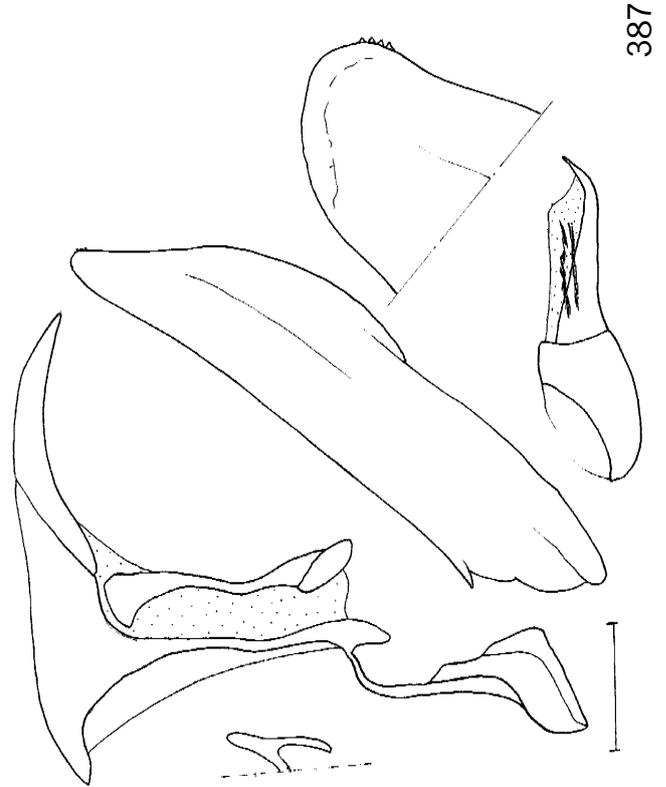
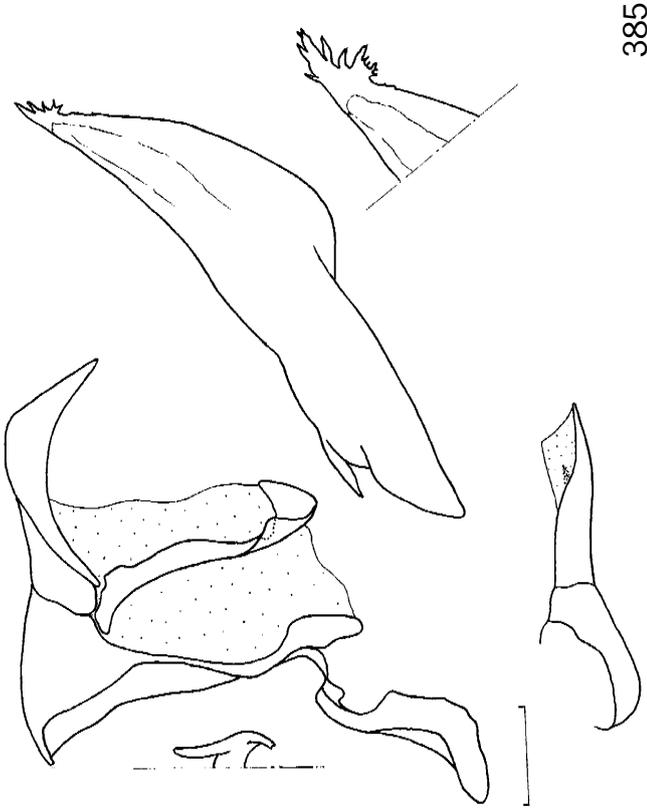
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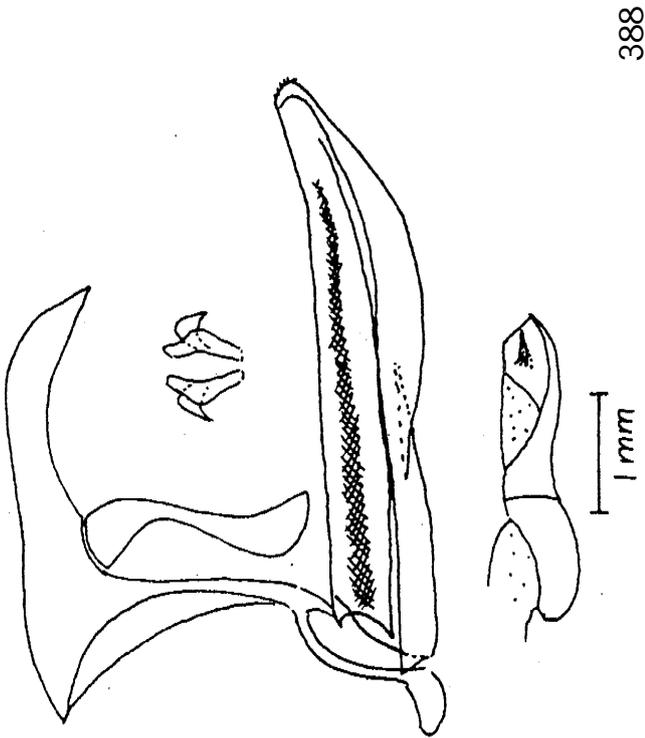
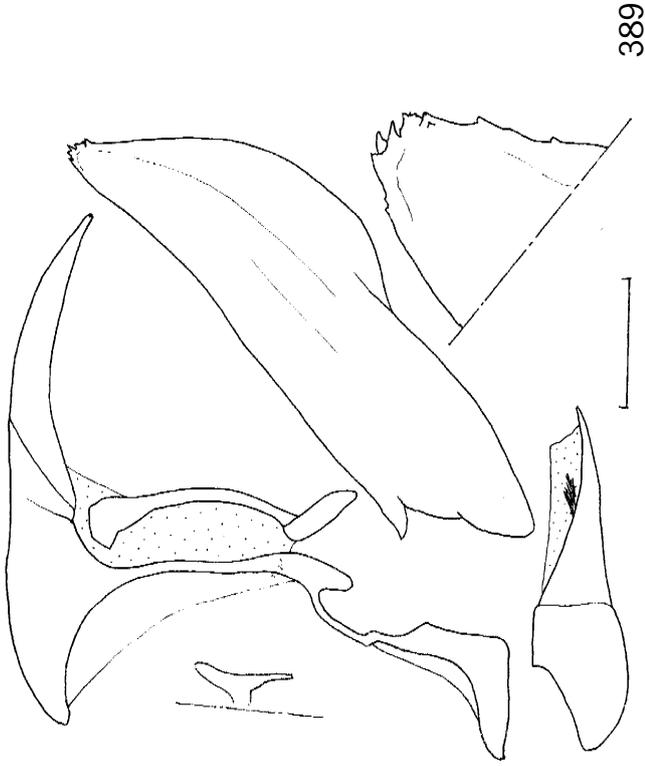


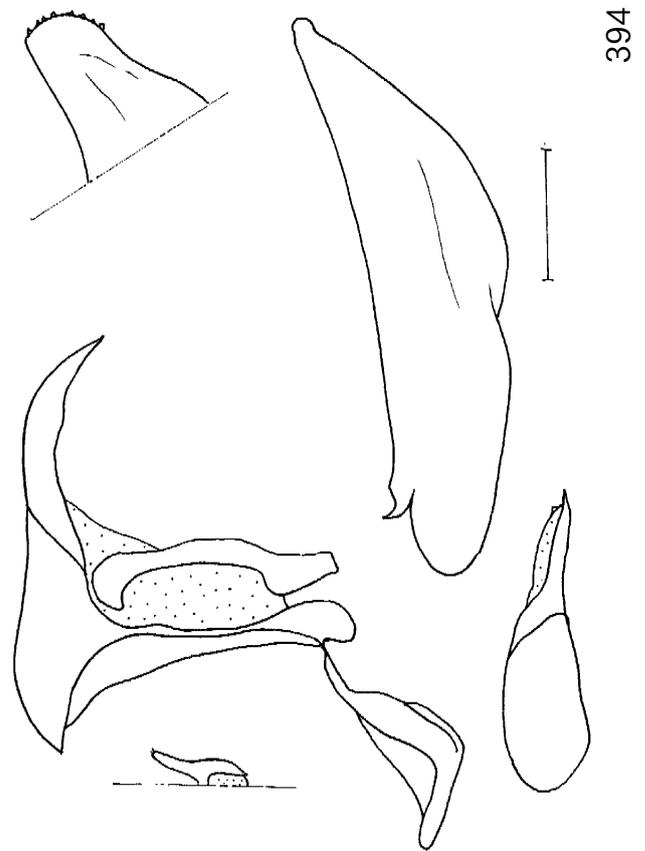
## Figures of male genitalia

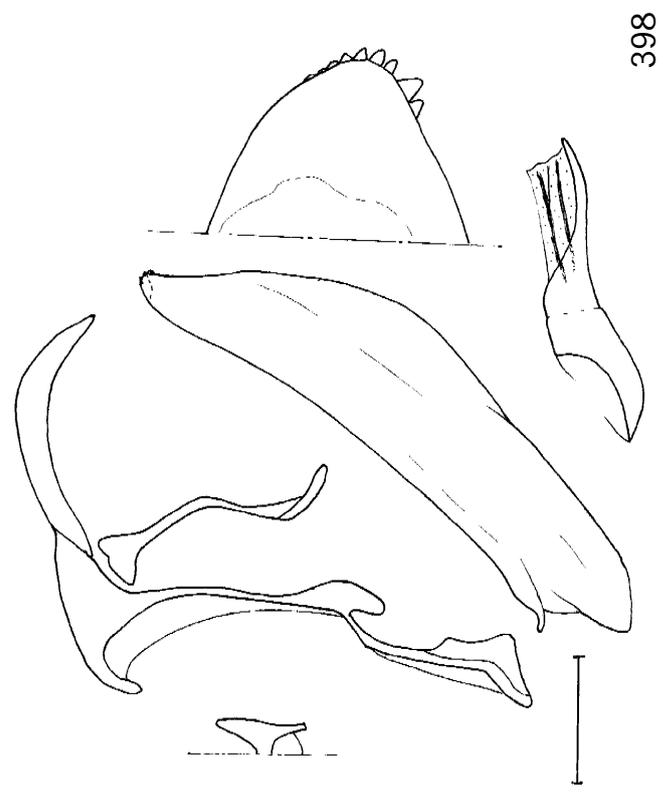
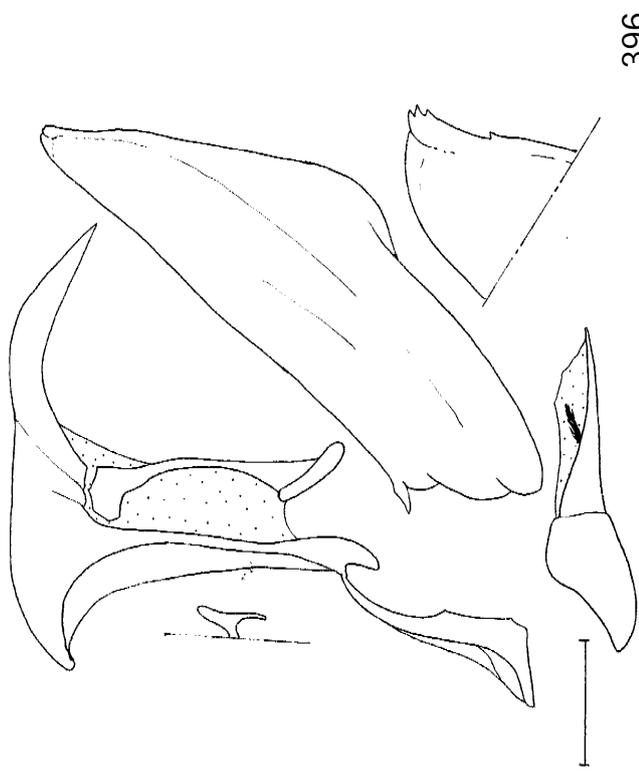
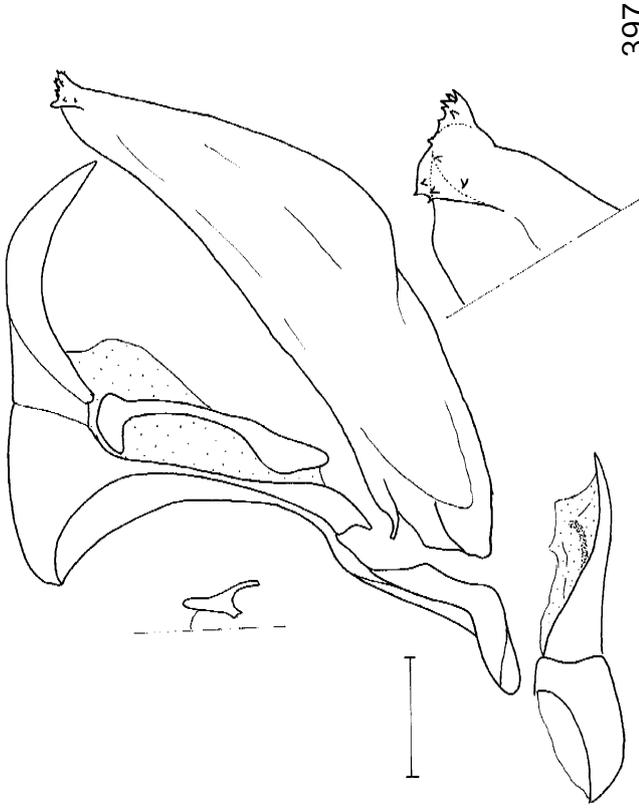
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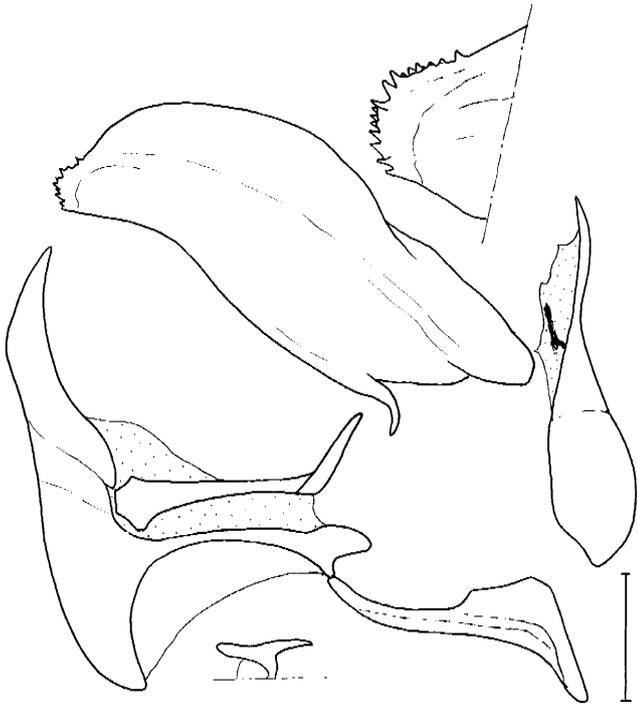
- Fig. 384. Sp. *byakko*. Boli Kham Xay, Laos. TY.  
 Fig. 385. Sp. *durga*. Sikkim, India. Syntype of *durga*, BMNH (E): 29862.  
 Fig. 386. Sp. *amplifascia*. Kachin, Myanmar. Holotype of *amplifascia*, BMNH (E): 29855.  
 Fig. 387. Sp. *duda*. Khasi Hills, India. BMNH.  
 Fig. 388. Sp. *tsangpoi*. From the original description (HUANG, 1999: 670, fig. 79).  
 Fig. 389. Sp. *takeru*. Kachin, Myanmar. Paratype of *takeru*, KMNH.  
 Fig. 390. Sp. *chayuensis*. Xizang, China. Paratype of *chayuensis*, HH.  
 Fig. 391. Sp. *chayuensis*. Yunnan, China. TY.  
 Fig. 392. Sp. *monbeigi*. Yunnan, China. Syntype of *monbeigi*, BMNH (E): 29836.  
 Fig. 393. Sp. *monbeigi*. Kachin, Myanmar. Paratype of *uedai*, TY.  
 Fig. 394. Sp. *sakota*. Yunnan, China. Syntype of *sakota*, BMNH (E): 29845.  
 Fig. 395. Sp. *rickettsi*. Fujian, China. Holotype of *rickettsi*, BMNH (E): 29835.  
 Fig. 396. Sp. *intusfascia*. Zhejiang, China. Holotype of *intusfascia*, KMNH.  
 Fig. 397. Sp. *koharai*. Yunnan, China. Holotype of *koharai*, KMNH.  
 Fig. 398. Sp. *hoa*. Khanh Hoa, Vietnam. Paratype of *hoa*, MNHN.  
 Fig. 399. Sp. *yunnana*. Yunnan, China. Syntype of *yunnana*, BMNH (E): 29833.  
 Fig. 400. Sp. *yunnanica*. Yunnan, China. Paratype of *yunnanica*, TY.  
 Fig. 401. Sp. *nujiangensis*. Yunnan, China. TY.  
 Fig. 402. Sp. *bellula*. Lao Cai, Vietnam. TY.  
 Fig. 403. Sp. *kameii*. Sichuan, China. Paratype of *kameii*, TY.  
 Fig. 404. Sp. *aristides*. Sichuan, China. Lectotype of *aristides*, BMNH (E): 29822.  
 Fig. 405. Sp. *thibetana*. Sichuan, China. Lectotype of *thibetana*, MNHN.  
 Fig. 406. Sp. *thibetana*. Sichuan, China. Syntype of *themistocles*, BMNH (E): 29834.  
 Fig. 407. Sp. *thibetana*. Sichuan, China. Syntype of *undosa*, MNHN.  
 Fig. 408. Sp. *thibetana*. Guangdong, China. Lectotype of *melli*, ZMHU.  
 Fig. 409. Sp. *alpherakyi*. Sichuan, China. Syntype of *alpherakyi*, BMNH (E): 29838.  
 Fig. 410. Sp. *orientalis*. Zhejiang, China. Holotype of *orientalis*, KMNH.  
 Fig. 411. Sp. *yasuyukii*. Guangxi, China. TY.  
 Fig. 412. Sp. *masumi*. Guangxi, China. Paratype of *masumi*, TY.  
 Fig. 413. Sp. *staudingeri*. Sichuan, China. Syntype of *staudingeri*, BMNH (E): 29821.  
 Fig. 414. Sp. *wakoi*. Sichuan, China. Paratype of *wakoi*, TY.  
 Fig. 415. Sp. *isolata*. Hainan, China. Holotype of *isolata*, IZCAS.  
 Fig. 416. Sp. *hisui*. Kachin, Myanmar. Paratype of *hisui*, TY.  
 Fig. 417. Sp. *heweni*. Yunnan, China. Holotype of *heweni*, HH.  
 Fig. 418. Sp. *pauxilla*. Shaanxi, China. Holotype of *pauxilla*, KMNH.  
 Fig. 419. Sp. *insulae*. Taiwan, R. China. Holotype of *insulae*, BMNH (E): 29839.  
 Fig. 420. Sp. *continentalis*. Zhejiang, China. Holotype of *kobayashii*, KMNH.  
 Fig. 421. Sp. *formosana*. Taiwan, R. China. TY.  
 Fig. 422. Sp. *strephon*. Sichuan, China. Syntype of *strephon*, BMNH (E): 29853.  
 Fig. 423. Sp. *haradai*. Kachin, Myanmar. TY.  
 Fig. 424. Sp. *zhaxidunzhui*. Xizang, China. Paratype of *zhaxidunzhui*, KMNH.  
 Fig. 425. Sp. *shinkaii*. Vinh Phu, Vietnam. Paratype of *shinkaii*, TY.  
 Fig. 426. Sp. *strephonida*. Khanh Hoa, Vietnam. Holotype of *strephonida*, MNHN.  
 Fig. 427. Sp. *lao*. Xiang Khoang, Laos. Paratype of *lao*, NN.  
 Fig. 428. Sp. *franciae*. Nagaland, India. Syntype of *attenuata*, BMNH (E): 29902.



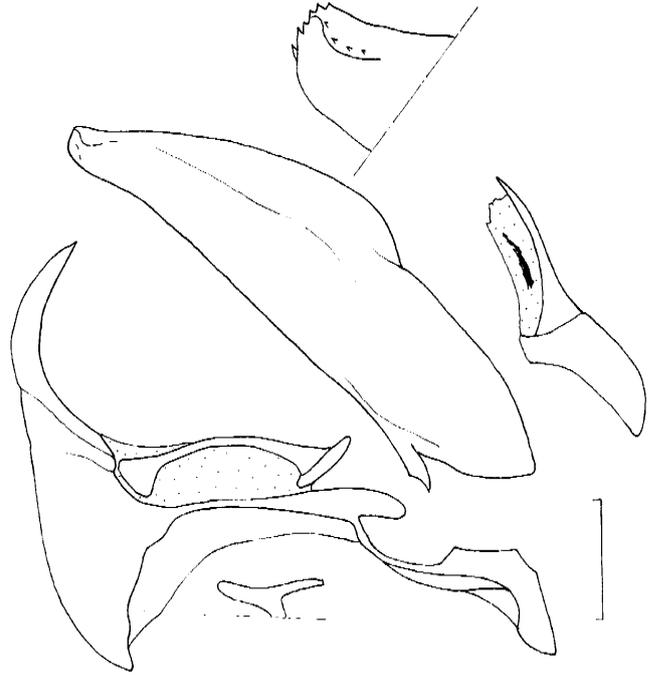








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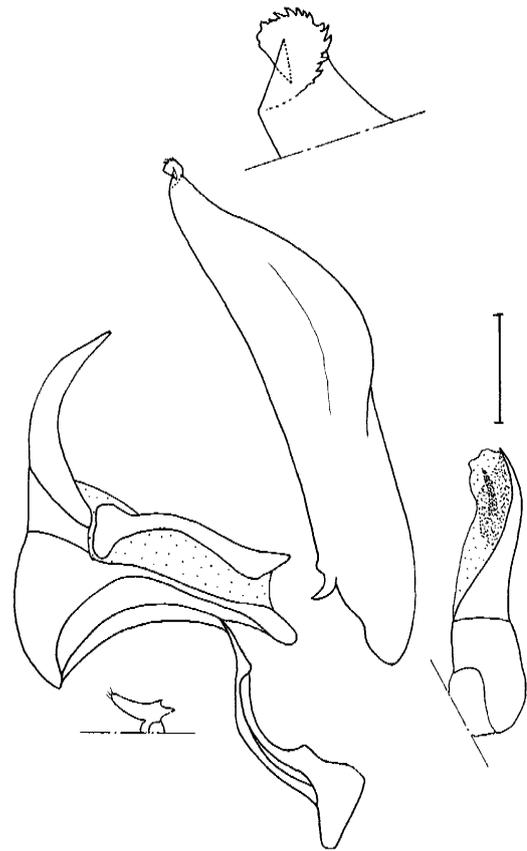


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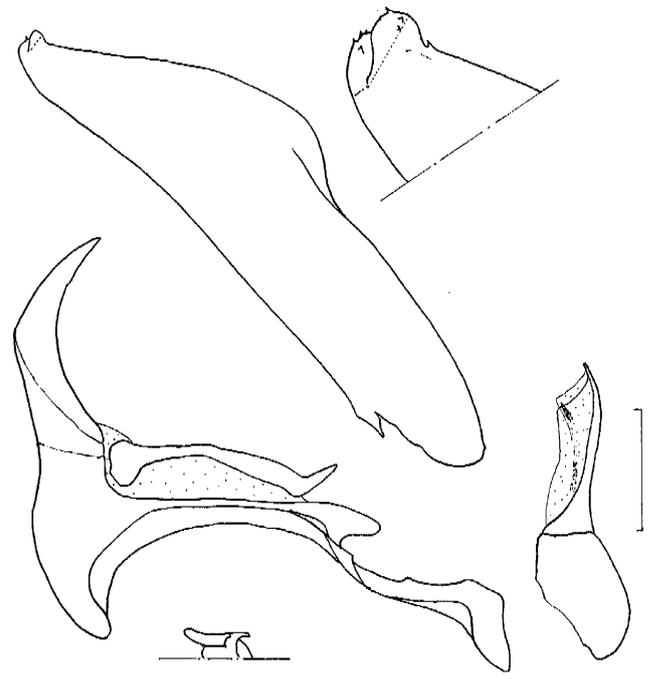
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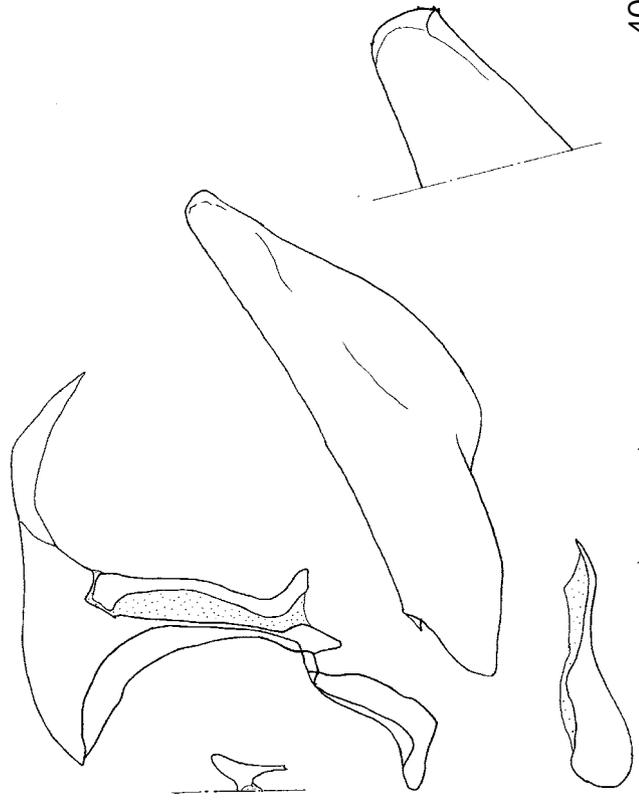
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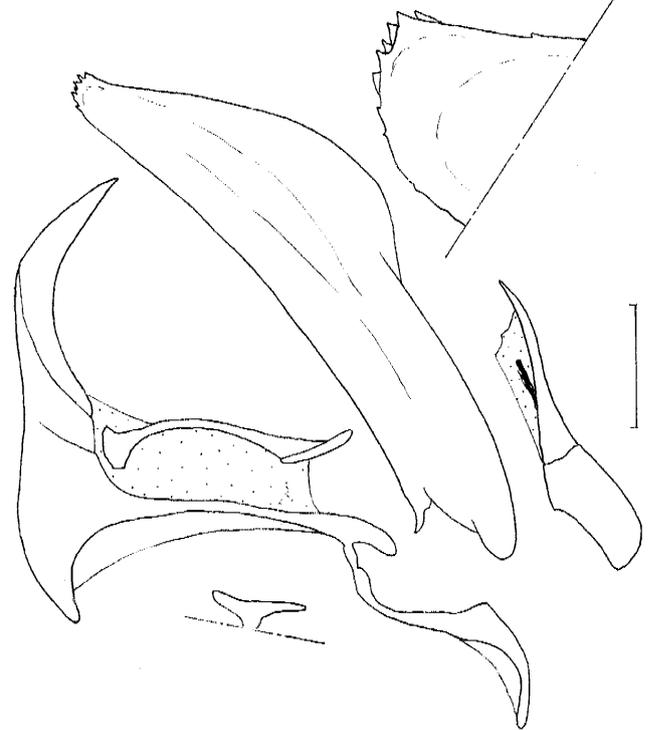
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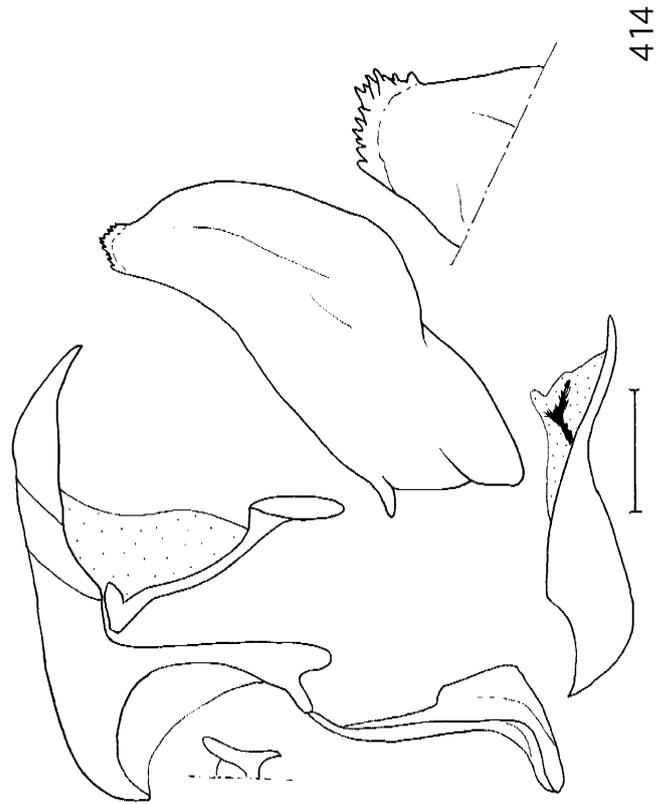
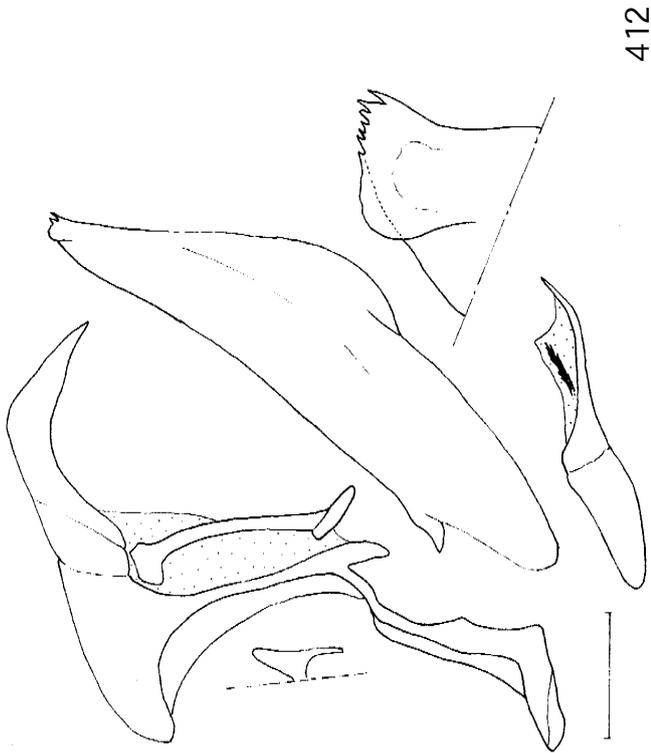
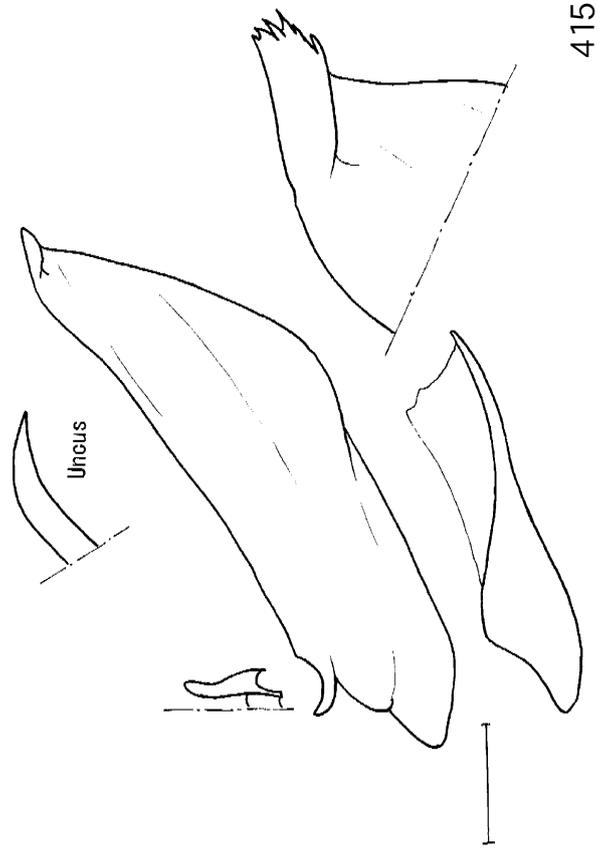


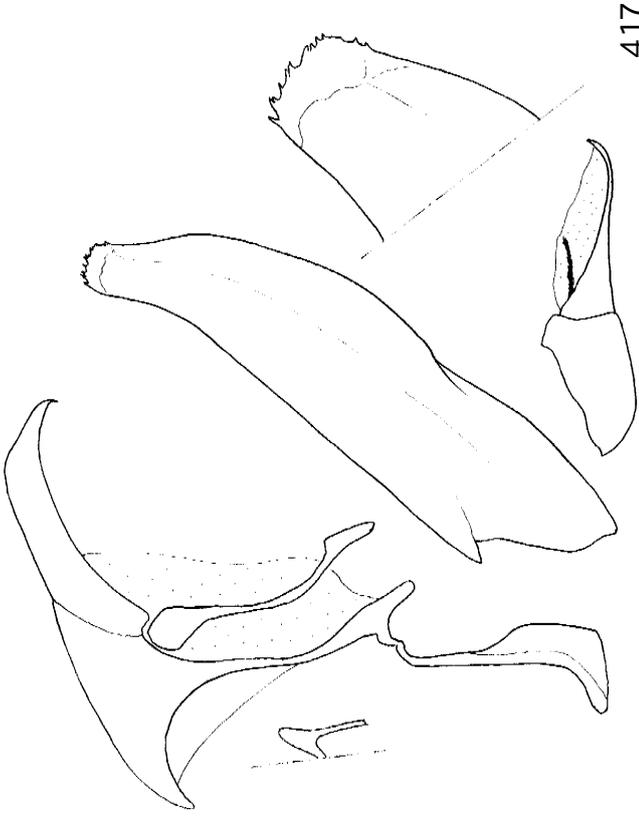
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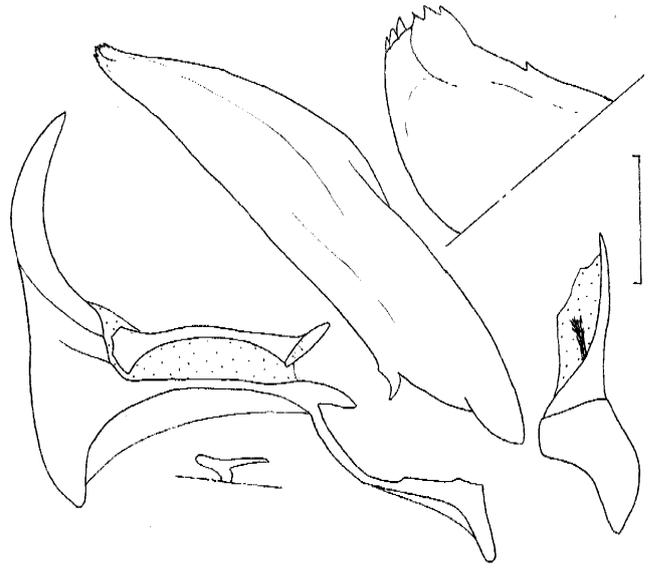
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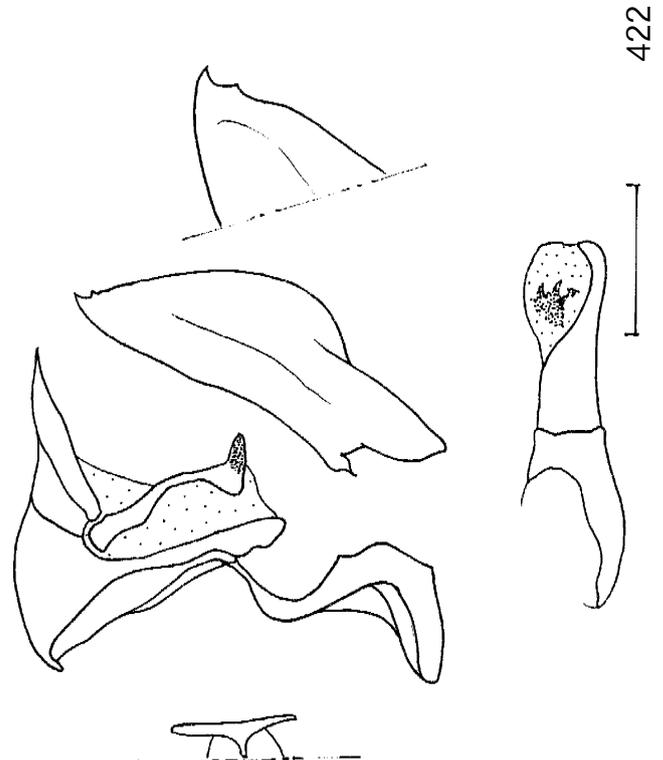
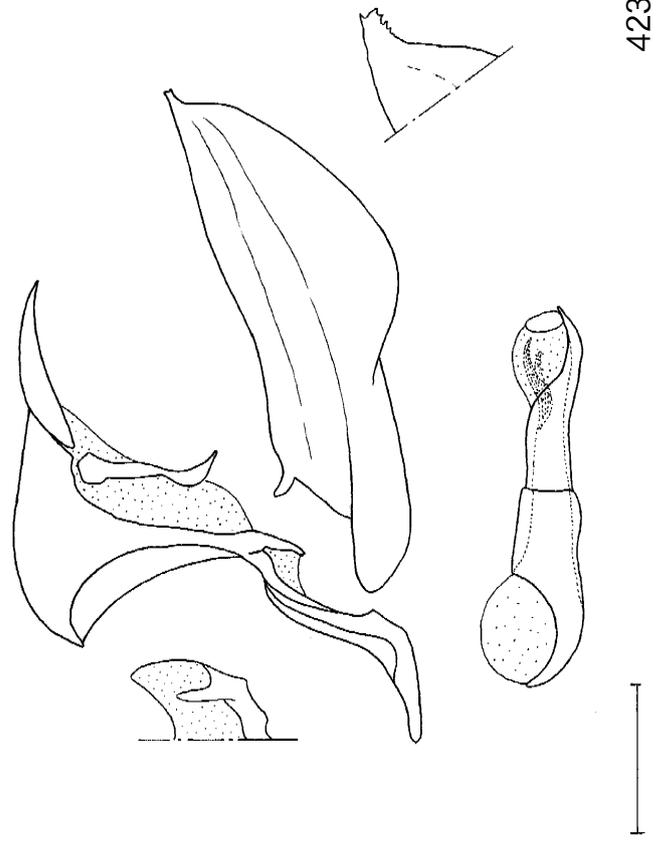
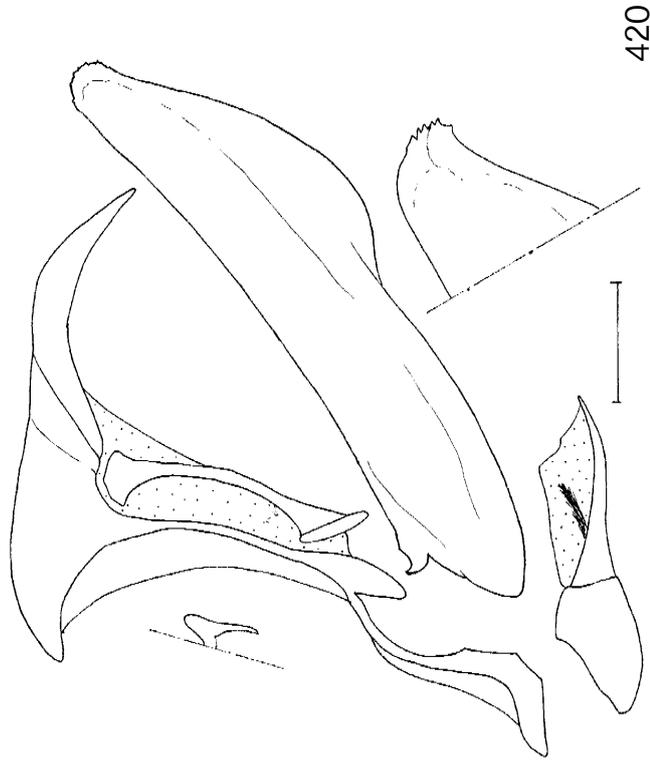
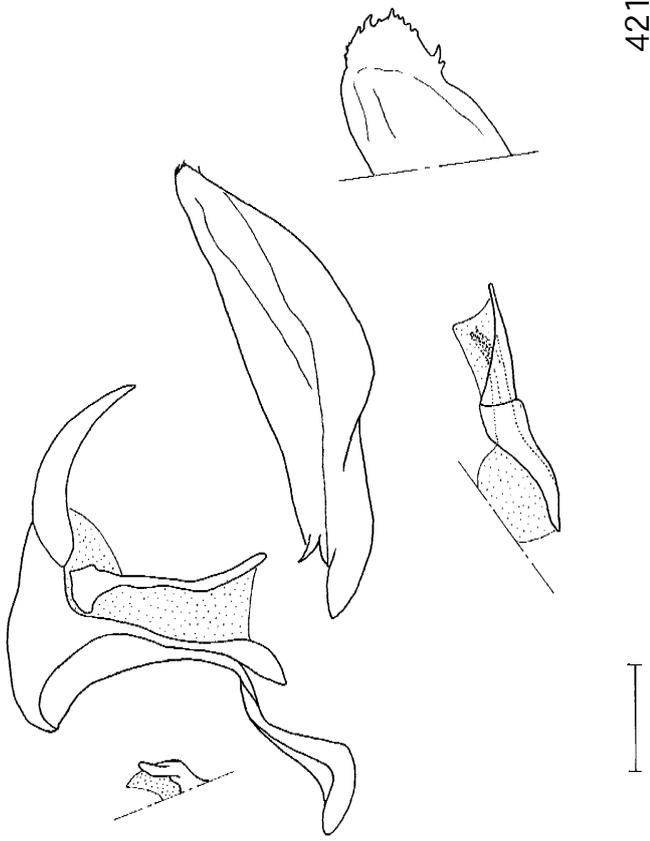
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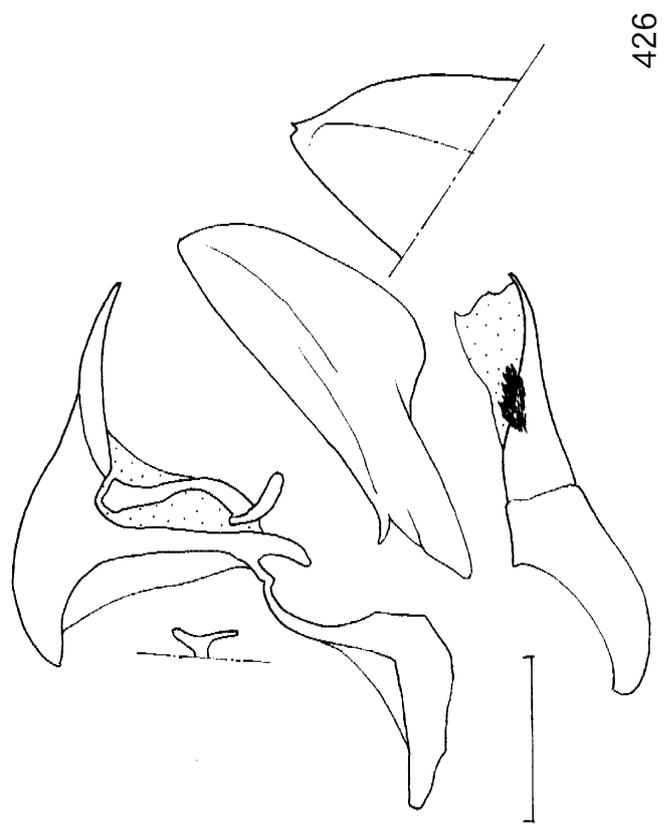
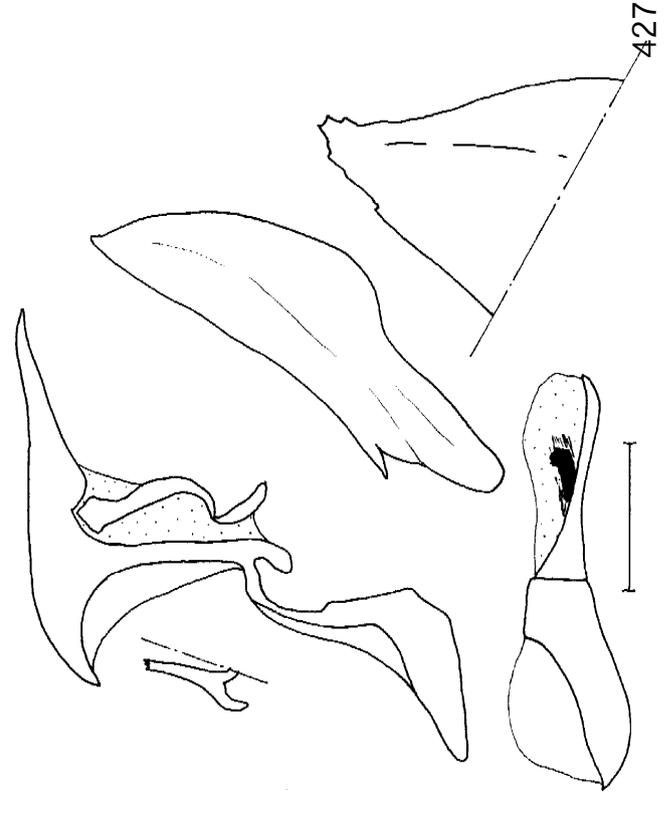
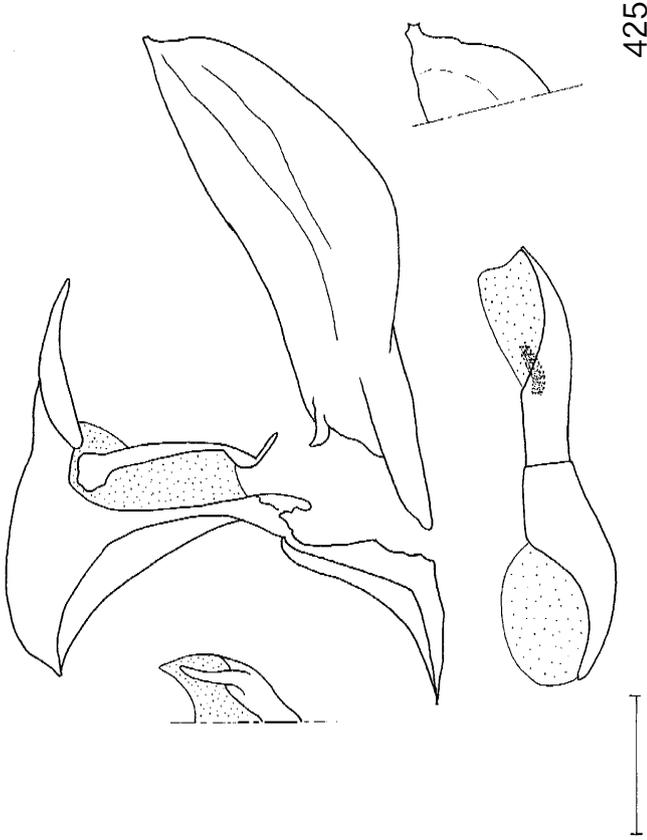


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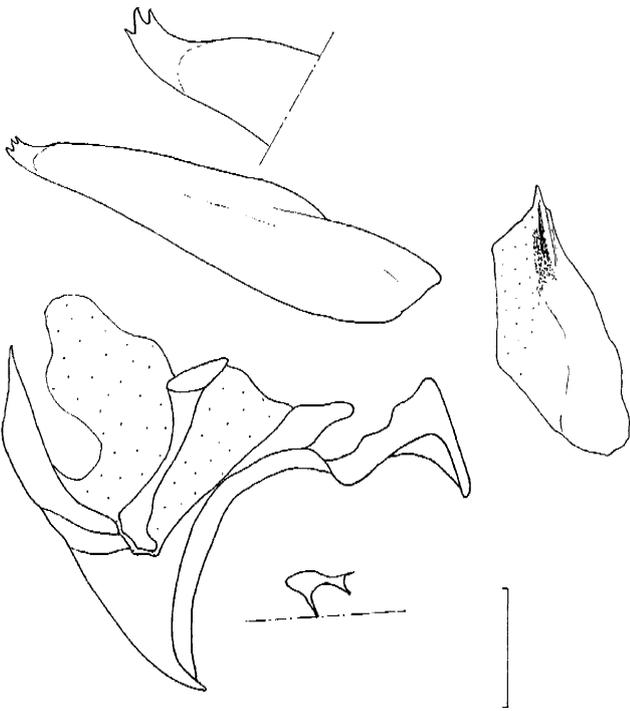


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## Explanations of plates

(a: upperside of the wings, b: underside of the wings)

### Plate 60

Fig. 429. *E. (L.) byakko* ♂, FW: 52 mm. Nakai, Kham Mouan, Laos. TY.

Fig. 430. *E. (L.) byakko* ♀, FW: 59 mm. Nakai, Kham Mouan, Laos. JU.

Fig. 431. *E. (L.) durga durga* ♂, FW: 47 mm. Num, Nepal. TY.

Fig. 432. *E. (L.) durga durga* ♂, FW: 49 mm. Teesta, Darjeeling, India, captured by the late J. N. ELIOT in August, 1934. TY.

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Fig. 433. *E. (L.) durga durga* ♀, FW: 58 mm. Num, Nepal. TY.

Fig. 434. *E. (L.) durga durga* ♀, FW: 56 mm. Teesta, Darjeeling, India, captured by the late J. N. ELIOT in August, 1934. TY.

Fig. 435. *E. (L.) durga splendens* ♂, FW: 52 mm. Chudu Razi, Kachin, Myanmar. TY.

Fig. 436. *E. (L.) durga splendens* ♀, FW: 59 mm. Chudu Razi, Kachin, Myanmar. TY.

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Fig. 437. *E. (L.) amplifascia* ♂, FW: 44 mm. Chudu Razi, Kachin, Myanmar. TY.

Fig. 438. *E. (L.) amplifascia* ♀, FW: 49 mm. Chudu Razi, Kachin, Myanmar. TY.

Fig. 439. *E. (L.) duda* ♂, FW: 48 mm. Assam, India. TY.

Fig. 440. *E. (L.) duda* ♂, FW: 43 mm. Cherrapunji, Bengal, India. MNHN.

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Fig. 441. *E. (L.) duda* ♀, FW: 51 mm. Khasi Hills, Meghalaya, India. BMNH.

Fig. 442. *E. (L.)* sp. ♂, FW: 45 mm. Jinghong, Yunnan, China. IZCAS, through the courtesy of Dr. LANG.

Fig. 443. *E. (L.)* sp. ♀, FW: 45 mm. Jinghong, Yunnan, China. IZCAS, through the courtesy of Dr. LANG.

Fig. 444. *E. (L.) takeru* sp. nov. ♂, FW: 42 mm. Chudu Razi, Kachin, Myanmar. Holotype, KMNH.

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Fig. 445. *E. (L.) takeru* sp. nov. ♀, FW: 47 mm. Chudu Razi, Kachin, Myanmar. Paratype, TY.

Fig. 446. *E. (L.) chayuensis* ♂, FW: 38 mm. Kunming, Yunnan, China. TY.

Fig. 447. *E. (L.) chayuensis* ♂, FW: 38 mm. Dali, Yunnan, China. MT.

Fig. 448. *E. (L.) chayuensis* ♀, FW: 42 mm. Kunming, Yunnan, China. TY.

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Fig. 449. *E. (L.) monbeigi* ♂, FW: 42 mm. Tse kou, Yunnan, China. Syntype of *monbeigi*, BMNH.

Fig. 450. *E. (L.) monbeigi* ♂, FW: 44 mm. Chudu Razi, Kachin, Myanmar. TY.

Fig. 451. *E. (L.) monbeigi* ♀, FW: 48 mm. Tse kou, Yunnan, China. Syntype of *monbeigi*, BMNH.

Fig. 452. *E. (L.) monbeigi* ♀, FW: 46 mm. Chudu Razi, Kachin, Myanmar. TY.

### Plate 66

Fig. 453. *E. (L.) monbeigi* ♀, FW: 53 mm. Fugong, Yunnan, China. MT.

Fig. 454. *E. (L.) sakota* ♂, FW: 39 mm. Zhongdian, Yunnan, China. TY.

Fig. 455. *E. (L.) sakota* ♀, FW: 42 mm. Zhongdian, Yunnan, China. TY.

Fig. 456. *E. (L.) rickettsi* ♂, FW: 44 mm. Lishui, Zhejiang, China. TY.

### Plate 67

Fig. 457. *E. (L.) rickettsi* ♂, FW: 45 mm. Tabai shan, Shaanxi, China. TY.

Fig. 458. *E. (L.) rickettsi* ♀, FW: 49 mm. Lishui, Zhejiang, China. TY.

Fig. 459. *E. (L.) rickettsi* ♀, FW: 48 mm. Tabai shan, Shaanxi, China. TY.

Fig. 460. *E. (L.) intusfascia* sp. nov. ♂, FW: 40 mm. Lishui, Zhejiang, China. Holotype, KMNH.

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- Fig. 461. *E. (L.) intusfascia* sp. nov. ♀, FW: 47 mm. Lishui, Zhejiang, China. Paratype, TY.  
Fig. 462. *E. (L.) koharai* ♂, FW: 46 mm. Jizu shan, Yunnan, China. Paratype of *koharai*, TY.  
Fig. 463. *E. (L.) koharai* ♀, FW: 50 mm. Jizu shan, Yunnan, China. Paratype of *koharai*, TY.  
Fig. 464. *E. (L.) hoa* ♂, FW: 44 mm. Hon Ba, Khanh Hoa, Vietnam. Paratype of *hoa*. BMNH.

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- Fig. 465. *E. (L.) hoa* ♂, FW: 44 mm. Pu Mat, Nghe An, Vietnam. TY.  
Fig. 466. *E. (L.) hoa* ♂, FW: 44 mm. Sa Thay, Kon Tum, Vietnam. TY.  
Fig. 467. *E. (L.) yunnana* ♂, FW: 39 mm. Kunming, Yunnan, China. TY.  
Fig. 468. *E. (L.) yunnana* ♀, FW: 43 mm. Kunming, Yunnan, China. TY.

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- Fig. 469. *E. (L.) yunnanica* ♂, FW: 42 mm. Zhongdian, Yunnan, China. Paratype of *yunnanica*, TY.  
Fig. 470. *E. (L.) yunnanica* ♀, FW: 49 mm. Zhongdian, Yunnan, China. Paratype of *yunnanica*, TY.  
Fig. 471. *E. (L.) nujiangensis* ♂, FW: 38 mm. near Tsekou, N. W. Yunnan, China. TY.  
Fig. 472. *E. (L.) nujiangensis* ♂, FW: 37 mm. Chudu Razi, Kachin, Myanmar. TY.

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- Fig. 473. *E. (L.) bellula* ♂, FW: 43 mm. Xamneua, Houa Phan, Laos. Paratype of *bellula*, TY.  
Fig. 474. *E. (L.) bellula* ♂, FW: 46 mm. Sapa, Lao Cai, Vietnam. TY.  
Fig. 475. *E. (L.) bellula* ♀, FW: 55 mm. Sapa, Lao Cai, Vietnam. Paratype of *bellula*, TY.  
Fig. 476. *E. (L.) kameii* ♂, FW: 40 mm. Jinfo shan, Sichuan, China. TY.

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- Fig. 477. *E. (L.) kameii* ♀, FW: 45 mm. Daba shan, Sichuan, China. TY.  
Fig. 478. *E. (L.) aristides* ♂, FW: 38 mm. Jizu shan, Yunnan, China. TY.  
Fig. 479. *E. (L.) aristides* ♂, FW: 44 mm. Jizu shan, Yunnan, China. TY.  
Fig. 480. *E. (L.) aristides* ♀, FW: 45 mm. Emei shan, Sichuan, China. TY.

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- Fig. 481. *E. (L.) thibetana* ♂, FW: 43 mm. Erlang shan, Sichuan, China. TY.  
Fig. 482. *E. (L.) thibetana* ♂, FW: 40 mm. Lishui, Fujian, China. TY.  
Fig. 483. *E. (L.) thibetana* ♂, FW: 41 mm. Zhangjiajie, Hunan, China. TY.  
Fig. 484. *E. (L.) thibetana* ♀, FW: 41 mm. Mou-Pin, Sichuan, China. Paralectotype of *thibetana*, MNHN.

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- Fig. 485. *E. (L.) thibetana* ♀, FW: 46 mm. Emei shan, Sichuan, China. TY.  
Fig. 486. *E. (L.) alpherakyi* ♂, FW: 45 mm. Emei shan, Sichuan, China. TY.  
Fig. 487. *E. (L.) alpherakyi* ♀, FW: 50 mm. Leshan, Sichuan, China. TY.  
Fig. 488. *E. (L.) orientalis* sp. nov. ♂, FW: 40 mm. Lishui, Zhejiang, China. Holotype (paratype of *continentalis*), KMNH.

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- Fig. 489. *E. (L.) yasuyukii* ♂, FW: 47 mm. Dayao shan, Guangxi, China. TY.  
Fig. 490. *E. (L.) yasuyukii* ♂, FW: 45 mm. Nangjing, Jiangsu, China, UMUT.  
Fig. 491. *E. (L.) yasuyukii* ♂, FW: 46 mm. Gongshan, Yunnan, China. TY.  
Fig. 492. *E. (L.) yasuyukii* ♀, FW: 55 mm. Dayao shan, Guangxi, China. TY.

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- Fig. 493. *E. (L.) masumi* ♂, FW: 41 mm. Dayao shan, Guangxi, China. Paratype of *masumi*, TY.  
Fig. 494. *E. (L.) masumi* ♀, FW: 48 mm. Dayao shan, Guangxi, China. Paratype of *masumi*, TY.  
Fig. 495. *E. (L.) staudingeri* ♂, FW: 41 mm. Jizu shan, Yunnan, China. TY.  
Fig. 496. *E. (L.) staudingeri* ♂, FW: 38 mm. near Tsekou, Yunnan, China. TY.

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- Fig. 497. *E. (L.) staudingeri* ♀, FW: 45 mm. Emei shan, Sichuan, China. TY.  
 Fig. 498. *E. (L.) staudingeri* ♀, FW: 42 mm. Zhongdian, Yunnan, China. TY.  
 Fig. 499. *E. (L.) wakoi* sp. nov. ♂, FW: 38 mm. Danba shan, Sichuan, China. Holotype, KMNH.  
 Fig. 500. *E. (L.) wakoi* sp. nov. ♀, FW: 45 mm. Danba shan, Sichuan, China. Paratype, TY.

## Plate 78

- Fig. 501. *E. (L.) hisui* sp. nov. ♂, FW: 37 mm. Near Putao, Kachin, Myanmar. Holotype, RIEB.  
 Fig. 502. *E. (L.) hisui* sp. nov. ♂, FW: 36 mm. Near Putao, Kachin, Myanmar. Paratype, TY.  
 Fig. 503. *E. (L.) heweni* ♀, FW: 43 mm. Dulongjiang Valley, Yunnan, China. Paratype of *heweni*, HH.  
 Fig. 504. *E. (L.) pauxilla* sp. nov. ♂, FW: 35 mm. Tabai-shan, Shaanxi, China. Holotype, KMNH.

## Plate 79

- Fig. 505. *E. (L.) insulae* ♂, FW: 42 mm. Meiyuan, Taiwan, R. China. TY.  
 Fig. 506. *E. (L.) insulae* ♀, FW: 49 mm. Meifeng, Taiwan, R. China. TY.  
 Fig. 507. *E. (L.) continentalis* ♂, FW: 48 mm. Wuyi shan, Fujian, China. TY.  
 Fig. 508. *E. (L.) continentalis* ♀, FW: 54 mm. Lishui, Zhejiang, China. Paratype of *kobayashii*, TY.

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- Fig. 509. *E. (L.) continentalis* ♀, FW: 51 mm. Lishui, Zhejiang, China. Paratype of *kobayashii*, TY.  
 Fig. 510. *E. (L.) formosana* ♂, FW: 41 mm. Baling, Taiwan, R. China. TY.  
 Fig. 511. *E. (L.) formosana* ♀, FW: 46 mm. Xumuzhongxin, Taiwan, R. China. TY.  
 Fig. 512. *E. (L.) strephon* ♂, FW: 37 mm. Qionglai shan, Sichuan, China. TY.

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- Fig. 513. *E. (L.) strephon* ♂, FW: 37 mm. Wuyi shan, Fujian, China. TY.  
 Fig. 514. *E. (L.) strephon* (?) ♂, FW: 36 mm. Sanming, Fujian, China. MT.  
 Fig. 515. *E. (L.) strephon* ♀, FW: 47 mm. Qionglai shan, Sichuan, China. TY.  
 Fig. 516. *E. (L.) strephon* ♀, FW: 47 mm. Wuyi shan, Fujian, China. TY.

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- Fig. 517. *E. (L.) haradai* ♂, FW: 40 mm. Fang, Thailand. TY.  
 Fig. 518. *E. (L.) haradai* ♂, FW: 36 mm. Chudu Razi, Kachin, Myanmar. TY.  
 Fig. 519. *E. (L.) haradai* ♂, FW: 40 mm. Sapa, Lao Cai, Vietnam. TY.  
 Fig. 520. *E. (L.) haradai* ♀, FW: 53 mm. Sapa, Lao Cai, Vietnam. TY.

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- Fig. 521. *E. (L.) zhaxidunzhui* ♂, FW: 43 mm. Metok, S. E. Xizang, China. TY.  
 Fig. 522. *E. (L.) zhaxidunzhui* ♂, FW: 43 mm. Angpawng Bum, Sagain, Myanmar. RIEB.  
 Fig. 523. *E. (L.) shinkaii* ♂, FW: 45 mm. Tam Dao, Vinh Phu, Vietnam. Paratype of *shinkaii*, TY.  
 Fig. 524. *E. (L.) shinkaii* ♂, FW: 42 mm. Pu Mat, Nghe An, Vietnam. TY.

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- Fig. 525. *E. (L.) shinkaii* ♀, FW: 56 mm. Tam Dao, Vinh Phu, Vietnam. Paratype of *shinkaii*, TY.  
 Fig. 526. *E. (L.) shinkaii* ♀, FW: 52 mm. Dayao shan, Guangxi, China. TY.  
 Fig. 527. *E. (L.) lao* sp. nov. ♂, FW: 38 mm. Ban Nah Mouang, Xiang Khoang, Laos. Holotype, NN.  
 Fig. 528. *E. (L.) francaiae* ♂, FW: 40 mm. Kathmandu, Nepal. TY.

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- Fig. 529. *E. (L.) francaiae* ♂, FW: 36 mm. Sikkim, India. MNHN.  
 Fig. 530. *E. (L.) francaiae* ♂, FW: 43 mm. Sikkim, India. MNHN.  
 Fig. 531. *E. (L.) francaiae* ♂, FW: 41 mm. Khasi Hills, Meghalaya, India. TY.  
 Fig. 532. *E. (L.) francaiae* ♂, FW: 40 mm. Khasi Hills, Meghalaya, India. TY.

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- Fig. 533. *E. (L.) franciae* ♂, FW: 41 mm. Khamti, Sagain, Myanmar. TY.  
 Fig. 534. *E. (L.) franciae* ♂, FW: 37 mm. Wiang Pa Pao, Chiang Rai, Thailand. TY.  
 Fig. 535. *E. (L.) franciae* ♂, FW: 37 mm. Dong Van, Ha Giang, Vietnam. TY.  
 Fig. 536. *E. (L.) franciae* ♂, FW: 34 mm. near Di Linh, Lam Dong, Vietnam. TKS.

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- Fig. 537. *E. (L.) franciae* ♀, FW: 48 mm. Khasi Hills, Meghalaya, India. TY.  
 Fig. 538. *E. (L.) franciae* ♀, FW: 46 mm. Khasi Hills, Meghalaya, India. TY.  
 Fig. 539. *E. (L.) franciae* ♀, FW: 48 mm. Khamti, Sagain, Myanmar. TY.  
 Fig. 540. *E. (L.) franciae* ♀, FW: 41 mm. near Di Linh, Lam Dong, Vietnam. TKS.

## Plate 88

- Fig. 541. *Duda*, ♂, from *Lepidoptera Indica* by MOORE (1898). Through the courtesy of Profs. O. TADAUCHI and S. KAMITANI in the Entomological Laboratory, Kyushu University.  
 Fig. 542. *Duda*, ♂, from NAKAHARA & KUROSAWA (1958) (pl. 120, 1). KMNH, through the courtesy of Dr. K. UEDA.  
 Fig. 543. *Monbeigi*, ♂, from OBERTHÜR (1912) (pl. XCVIII, 951). Through the courtesy of Mr. K. OKANO.  
 Fig. 544. *Franciae*, ♂, from NAKAHARA & KUROSAWA (1958) (pl. 120, 3). KMNH, through the courtesy of Dr. K. UEDA.  
 Fig. 545. Attached label of “*undosia*” in the drawer Rh11774 (BMNH).  
 Fig. 546. Attached label of *staudingeri* in the drawer Rh11773 (BMNH).  
 Fig. 547. Attached label of *strephon* in the drawer Rh11788 (BMNH).

## Plate 89

The following two figures 31 and 37 in part 1 are shown here again in color (figure 83 is originally in monochrome); the figure 86 in Part 1 should be replaced by the correct figure shown in Part 3 (errata).

- Fig. 31. *Adolias doubledayi*, syntype, ♂, from BOISDUVAL (1844). Through the courtesy of Mr. Y. UEMURA.  
 Fig. 37. *Aconthea franciae*, syntype, ♂, from G. R. GRAY (1846). Through the courtesy of Mr. Y. UEMURA.  
 Fig. 86. *Adolias sahadeva*, syntype, ♂, FW: 41 mm, BMNH.

Figs. 86, 441, 449, 451, 464: © The Natural History Museum, London.



429a



429b



430a



430b



431a



431b



432a



432b





437a



437b



438a



438b



439a



439b



440a



440b



441a



441b



442a



442b



443a



443b



444a



444b



445a



445b



446a



446b



447a



447b



448a



448b







457a



457b



458a



458b



459a



459b



460a



460b









473a



473b



474a



474b



475a



475b



476a



476b







485a



485b



486a



486b



487a



487b



488a



488b







497a



497b



498a



498b



499a



499b



500a



500b



501a



501b



502a



502b



503a



503b



504a



504b

















533a



533b



534a



534b



535a



535b

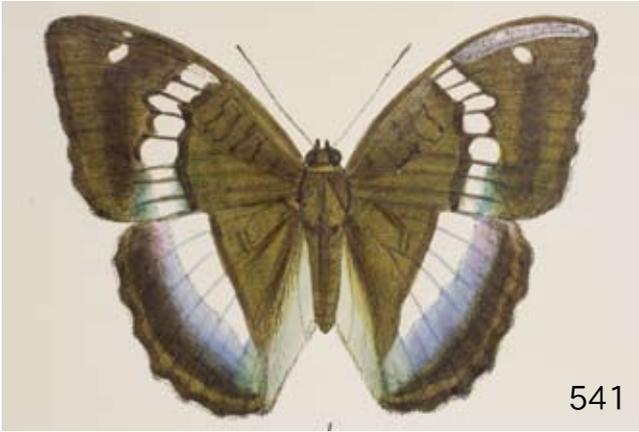


536a



536b

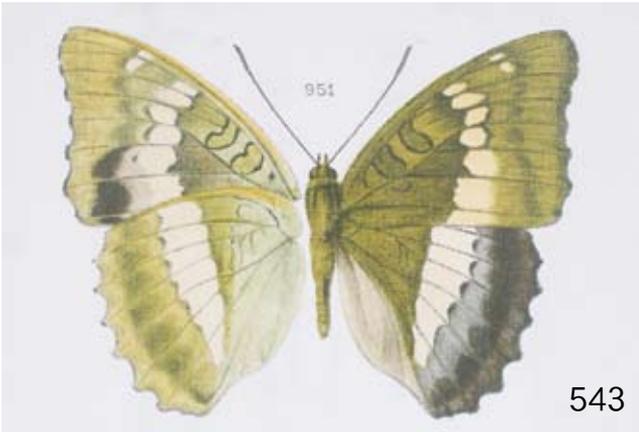




541



542



543



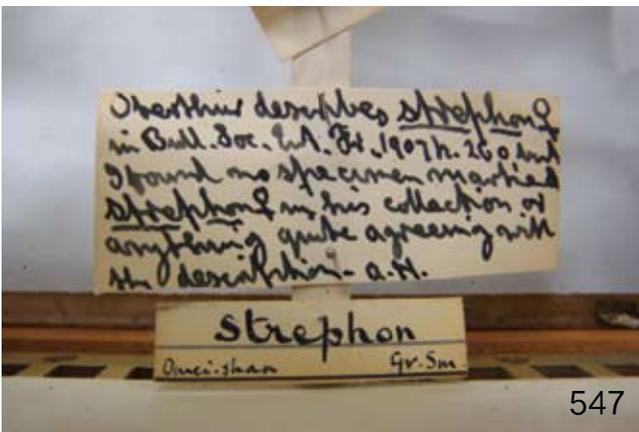
544



545



546



547

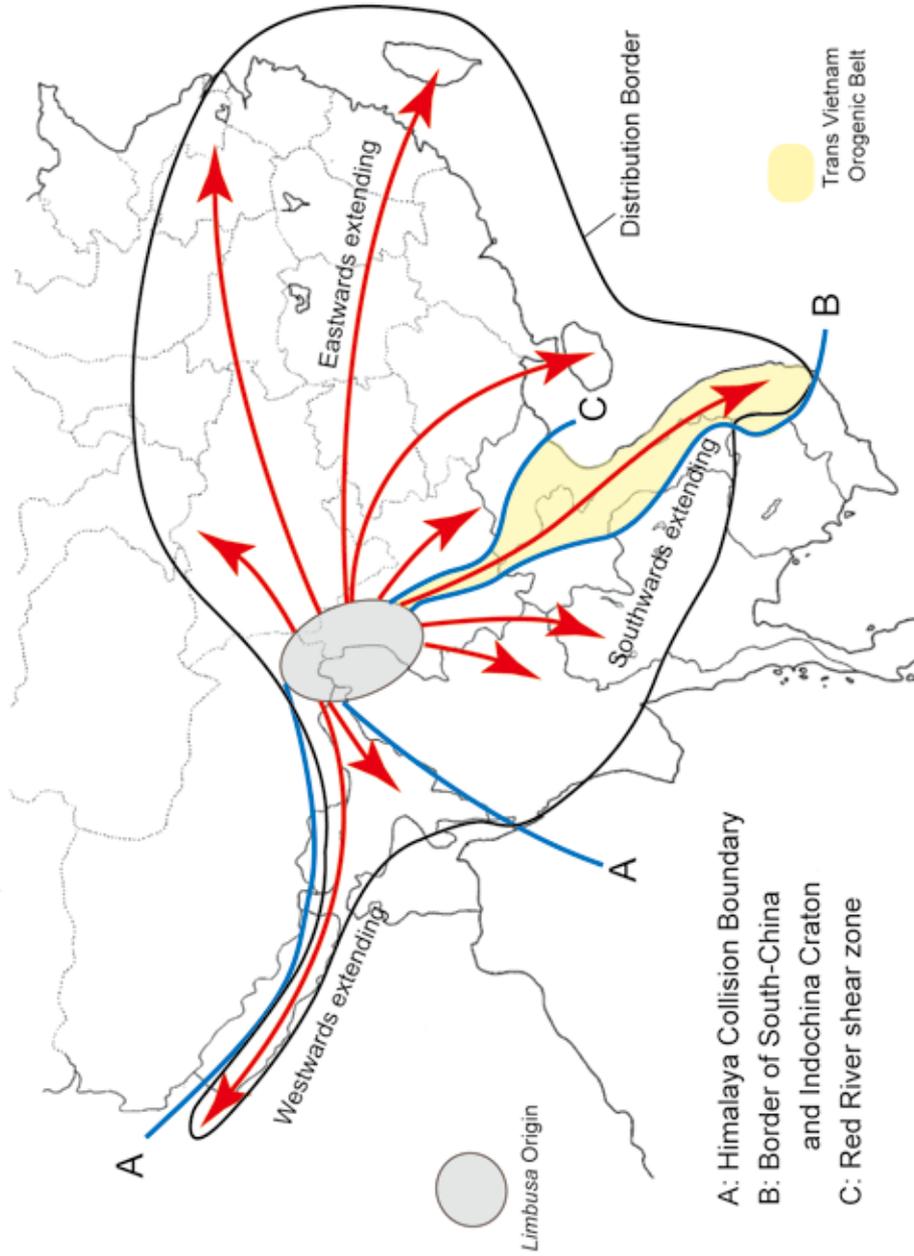
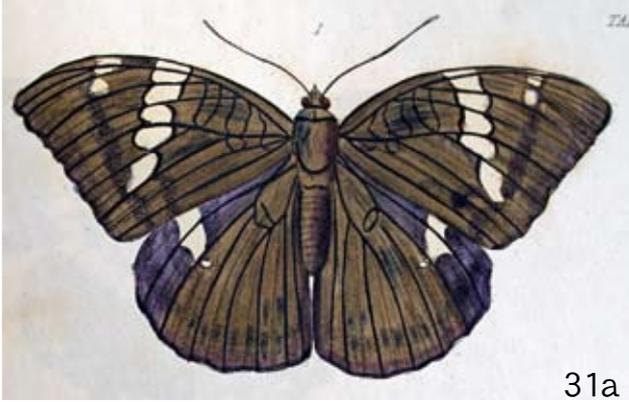


Fig. 548. Presumed dispersal of the species of *Limbusa* in the Oriental region. Through the courtesy of Dr. K. ENTO.



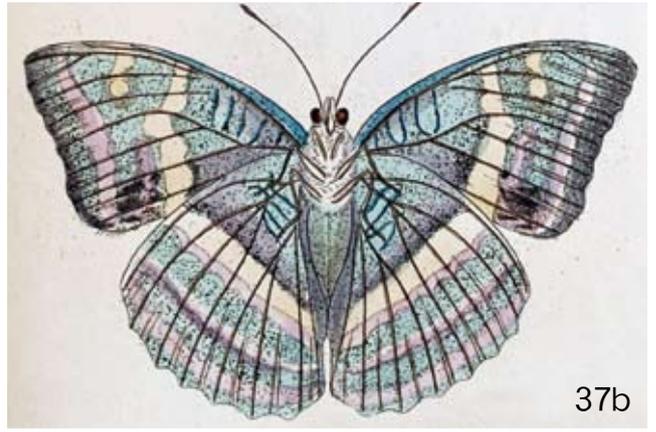
31a



31b



37a



37b



86a



86b