

## Lecithoceridae (Lepidoptera) of Taiwan (II): Subfamily Lecithocerinae: Genus *Lecithocera* Herrich-Schäffer and Its Allies

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**Kyu-Tek Park (2000)** Lecithoceridae (Lepidoptera) of Taiwan (II): subfamily Lecithocerinae: genus *Lecithocera* Herrich-Schäffer and its allies. *Zoological Studies* 39(4): 360-374. In the second part of a review of the subfamily Lecithocerinae in Taiwan, fourteen species belonging to *Lecithocera* Herrich-Schäffer, *Frisilia* Walker, *Lecitholaxa* Gozmány, *Spatulignatha* Gozmány, *Synersaga* Gozmány, *Carodista* Meyrick, *Dinochares* Meyrick, and *Tisis* Walker are recognized. Of these, three new species, *Carodista montana* sp. nov., *C. cultrata* sp. nov., and *Dinochares notolepis* sp. nov., are described. Five genera, *Quasstagma* Gozmány, *Recontracta* Gozmány, *Nyctocyрма* Gozmány, *Psamoris* Meyrick, and *Galoxestis* Wu, are synonymized with *Lecithocera*, and *Anamimnesis* Gozmány with *Synersaga* Gozmány. Five species, *Lecithocera glabrata* (Liu & Wu), *Frisilia chinensis* Gozmány, *Spatulignatha idiogena* Wu, *S. olaxana* Wu, and *Synersaga bleszynskii* (Gozmány), are reported for the first time from Taiwan.

**Key words:** Systematics, *Frisilia*, *Lecitholaxa*, *Spatulignatha* and their allies, Taiwan.

This article is the second part (for the first, see Park 1999) of a series of taxonomic studies of the Lecithoceridae in Taiwan. The materials examined for this study was largely based on collections in the Smithsonian Institution, US National Museum of Natural History (USNM), Washington DC; the Florida State Collection of Arthropods (FSCA), Gainesville, FL; Taiwan Forestry Research Institute (TFRI), Taipei, Taiwan, and on the author's recent collections (1996-1997) from Taiwan. For identification, all species were compared with figures of the genitalia of the type or related species illustrated by Clarke (1965). The author also examined type specimens or related species in the Natural History Museum (formerly the British Museum [Natural History]) (BMNH), London, UK; the Hungarian Museum of Natural History (HMNH), Budapest, Hungary; Museum de Istorie Naturala "Grigore Antipa" (MINGA), Bucharest, Rumania; the Australian National Insect Collection (ANIC), CSIRO, Australia; the Institute of Zoology, Academia Sinica (IZAS), Beijing, China. Types for the newly described species are deposited in different collections as noted under each species. Abbreviations of the depository for the types are: [USNM]-Smithsonian Institution, US National Mu-

seum of Natural History, Washington DC; [FSCA]-the Florida State Collection of Arthropods, Gainesville, FL, USA, and [CIS]-Center for Insect Systematics, Kangwon National University, Chunchon, Korea. Holotypes which are indicated as "on indefinite loan from Taiwan" will be placed in the National Taiwan Museum [NTM], Taipei or another institute in Taiwan. Original references for the previously known genera and species are cited with their abbreviations, sources of types and type specimens are provided, and type localities for the valid or invalid species are indicated in square brackets. Names of collecting localities are cited as same as in the specimen's labels, but some old invalid names are indicated with present ones in the parenthesis. The male genitalia of all available species are illustrated, but the female genitalia are illustrated in cases of the newly found or little known ones with brief descriptions. Also, available figures illustrated by previous authors are referred to for references.

### SYSTEMATICS

#### *Lecitholaxa* Gozmány, 1978

*Lecitholaxa* Gozmány, 1978: 122; Wu, 1997: 184.  
Type species: *Lecithocera thiodora* Meyrick, 1914 [Formosa (= Taiwan)].

The genus *Lecitholaxa* Gozmány is similar to *Lecithocera* in the venation and the male genital character. Gozmány (1978) stated that the forewing venation differs from that of the former by the  $M_3$  and  $CuA_1$  being coincident, and  $CuA_2$  arising far from  $M_3+CuA_1$ . However, the difference itself can not be a good separable character from *Lecithocera*, because it is highly variable within the genus, but it is defined by apomorphy: the 2nd segment of the labial palpus with a brushlike tuft densely on the dorsal surface. Thus, its taxonomic status should be reconsidered due to the similarity of the genital characters. Abdominal tergites have zones of spines. The distributional range of the genus extends from the Korean peninsula and Japan to northern India. Three species of this genus are known from the Palaearctic and Oriental regions.

#### ***Lecitholaxa thiodora* (Meyrick, 1914)**

(Figs. 1, 14, 14a, 14b, 27)

*Lecithocera thiodora* Meyrick, 1914(a): 51; Meyrick, 1925: 40; Gaede, 1937: 527; Kanazawa and Heppner, 1992: 69. Type: ♂, Sokutsu, Formosa, Gu-4348/Gozmány, Coll. HHNM.

*Lecithocera leucocerus* Meyrick, 1932: 204; Meyrick, 1934: 36; Issiki, 1957: 41; Clarke, 1965: 140 [Japan].

*Lecitholaxa thiodora* Gozmány, 1978: 124.

**Diagnosis:** Wingspan, 13.0-14.0 mm. One of the common species in Taiwan and widely distributed in eastern Asia. The species is characterized by the 2nd segment of the labial palpus of the male with a brushlike tuft dorsally and the coincident vein of  $M_3+CuA_1$ .

**Male genitalia** (Fig. 14, 14a, 14b): See also Gozmány (1978, pl. 34, fig. 70).

**Female genitalia** (Fig. 27): See also Clarke (1965, pl. 70, fig. 3), and Gozmány (1978, pl. 67, fig. 70).

**Materials examined:** 1 ♀, Sozan (= Yangmingshan), Taipei, 6 June 1935 (S Issiki), Issiki Coll. 1972; 1 ♂, Taihoku (=Taipei), 9 Apr. 1935 (S Issiki); 1 ♂, Kanshirei (= Kuantzuling), Tainan Co., 19 Oct. 1934 (S Issiki), USNM; 1 ♂, 2 ♀♀, Kenting Park, Pingtung Co., 1-5 Sept. 1983 (JB Heppner); 2 (?) (missing abdomens), same locality, 29 Apr.-3 May 1989 (JB Heppner); 1 ♂, same locality, 9-15 Mar. 1990 (JB Heppner and H Wang); 8 ♂♀, Tungpu 1150 m, Nantou Co., 1 July 1985 (JB Heppner and H Wang), gen. slide no. 4126/Park (♂), 4133/Park (♀), FSCA; 5 ♂♀. Shanpin For. Stn. 750 m, 10 km SE Liukuei, Kaohsiung Co., 5-6 July 1996 (KT Park and JS Lee); 22 ♂♀, Kukuan, 720 m, Taroko Natl.

Park, Taichung Co., 8 July 1996 (KT Park and JS Lee); 2 ♂♂, 2 ♀♀, Wulai, 550 m, Taipei Co., 29-30 June 1996 (KT Park and JS Lee); 1 ♀, Lienhuachih 990 m, Nantou Co., 4 July 1996 (KT Park and JS Lee), CIS. Further specimens from China preserved in HHNM: 1 ♀, Huangshan, Hunan Prov., China, 13 June 1933 (H Höne), gen. no. 4297/Gozmány; 1 ♂, West Tienmushan, Zhejiang Prov., China, 3 Sept. 1932 (H Höne); 1 ♂, same locality, 15 Sept. 1932 (H Höne); 1 ♂, same locality, 7 Sept. 1932 (H Höne); 2 ♂♂, same locality, 8 Sept. 1932 (H Höne), gen. no. 4289/Gozmány, HMNH; 1 ♂, Lungtan, Nanjing, Jiangsu Prov., China, 25 Sept. 1933 (H Höne).

**Distribution:** Taiwan, China (from south to north) Japan, Korea, India.

#### ***Lecithocera* Herrich-Schäffer, 1853**

*Lecithocera* Herrich-Schäffer, 1853: 11; Meyrick, 1925: 255; Janse, 1954: 342; Gozmány, 1978: 78; Wu, 1997: 108; Park, 1999: 242; Wu and Park, 1999: 3.

*Quassitagma* Gozmány, 1978: 132 [Taiwan], **syn. nov.**

*Recontracta* Gozmány, 1978: 148 [China] (monotypy), **syn. nov.**

*Nyctocyрма* Gozmány, 1978: 149 [Israel] (monotypy), **syn. nov.**

*Psamoris* Meyrick, 1906: 149 [Sri Lanka] (monotypy), **syn. nov.**

*Galoxestis* Wu, 1994: 136 [China], **syn. nov.**

For extensive synonymies, see Park (1999: 242).

The genus *Quassitagma* was erected by Gozmány (1978), separating it from *Lecithocera* by the forewing venation with  $M_2$  and  $M_3$  stalked from about 1/3 its length, however, it is synonymied with *Lecithocera* due to the similarity of the venation and the male genitalia. The forewing venation with the stalk of  $M_2$  and  $M_3$  can not be a good separable character, because the venation is so variable within the genus *Lecithocera*. The genus *Recontracta* Gozmány, 1978 was newly established by the difference of the veins  $CuA_1$  and  $CuA_2$  of the forewing being separated, and *Nyctocyрма* Gozmány, 1978 was also separated by the absence of  $R_5$ , and *Psamoris* Meyrick, 1906 and *Galoxestis* Wu, 1994 are also synonymized with *Lecithocera* by the similarity of the venations and the male genitalia.

#### ***Lecithocera indigens* (Meyrick, 1914)**

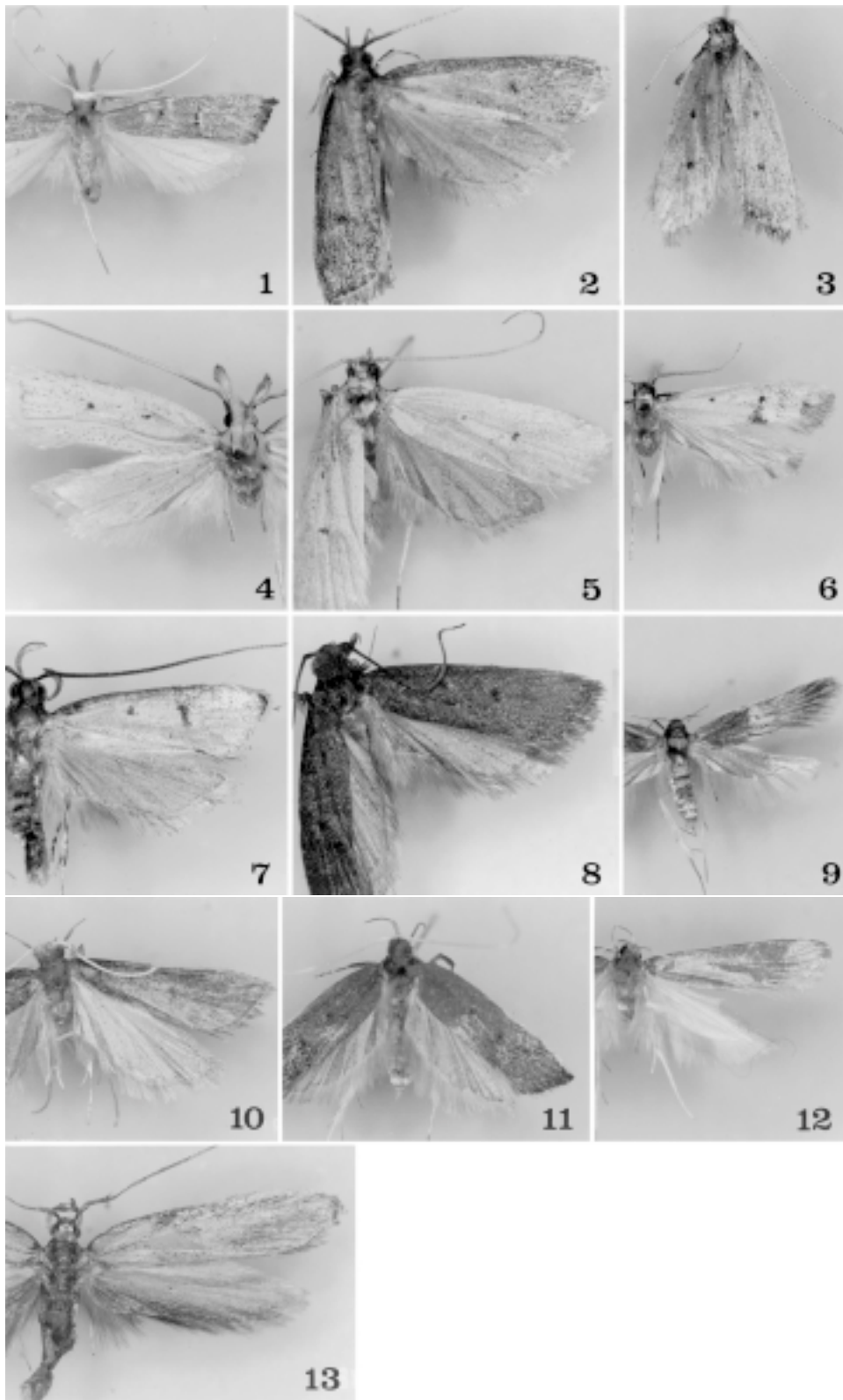
(Figs. 2, 15, 15a, 15b, 29)

*Frisilia indigens* Meyrick, 1914: 50; Gaede, 1937: 495. Lectotype: ♀, Suisharyo, Formosa, 4349/Gozmány, Coll. DEL.

*Quassitagma indigens* Gozmány, 1978: 133; Kanazawa and Heppner, 1992: 69; Wu, 1997: 210.

**Diagnosis:** Wingspan, 14.0-16.0 mm. The species is characterized by the basal 1/3 of the antenna blackish and thickened. The male is reported for the first time.

**Male genitalia** (Fig. 15, 15a, 15b): Valva



**Figs. 1-13.** Adults: 1. *Lecitholaxa thiodora* (Meyrick); 2. *Lecithocera indigens* (Meyrick); 3. *L. glabrata* (Wu and Liu); 4. *Frisilia homalastis* (Meyrick); 5. *Spatulignatha idiogena* (Wu); 6. *F. chinensis* (Gozmány); 7. *S. olaxana* (Wu); 8. *Synersaga bleszynskii* (Gozmány); 9. *Carodista notolychna* (Meyrick); 10. *C. montana* sp. nov.; 11. *C. cultrata* sp. nov.; 12. *Dinochaes notolepis* sp. nov.; 13. *Tisis mesozosta* (Meyrick).

elongated; distal part as long as basal, with round apex. Juxta with a median lobe on anterior margin. Aedeagus with several heavily sclerotized plates. Abdominal sclerite between 7th and 8th segments with a relatively short stem, shorter than 1/2 of width of abdomen, bearing a tuft of long hairs at anterior end of stem.

*Female genitalia* (Fig. 29): See also Gozmány (1978, pl. 7, fig. 77), and Wu (1997, pl. 69, fig. 77).

*Materials examined*: 1 ♀, Suisya (= Shuishe), Nantou Co., 20 Mar. 1943 (S Issiki), Issiki Coll. 1972; 1 ♂, no locality or date label, Issiki Coll., 1972. gen. slide no. 4110/Park; 1 ♀, Rengwati, 21 Mar. 1943 (S Issiki), Issiki Coll., 1972; 1 ♂, Tikusiko, E. June 1939 (S Issiki), Issiki Coll., 1972; 1 ♀, no locality or date label, (S Issiki), Issiki Coll., 1972, USNM; 1 ♂, Kuangwu For. Stn. 2000 m, 18-25 Aug. 1988 (JB Heppner and H Wang); 12 ♂ ♀, Fushan For. Stn., Ilan Co., 4-11. Apr. 1990 (JB Heppner and H Wang), gen. slide no. 4135/Park (♂), 4259/Park (♀), FSCA; 9 ♂ ♀, Shanpin For. Stn. 750 m, 10 km SE Liukuei, Kaohsiung Co., 5-6 July 1996 (KT Park and JS Lee), CIS; 1 ♀, "Suisharo, Formosa (Sauter, X. 11)", "*Frisilia indigena* Meyr. E. Meyrick det. in Meyrick Coll.," "Meyrick Coll., B. M. 1988-290," BMNH.

*Distribution*: Taiwan, China (Yunnan).

#### ***Lecithocera glabrata* (Wu and Liu, 1992)**

(Figs. 3, 16, 16a, 16b)

*Quassitagma glabrata* Wu and Liu, 1992: 445; Wu, 1997: 209.  
Type: ♂, Mt. Jiulian, Jiangxi (20 May 1977), IZAS.

*Diagnosis*: Wingspan, 12.0-13.0 mm. This species is similar to *L. comparata* Gozmány, **comb. nov.** which is known from Sichuan, China, but it can be distinguished by the shape of the signum in the female genitalia.

*Male genitalia* (Fig. 16, 16a, 16b): See also Wu and Liu (1992, fig. 1; 1997, pl. 23, fig. 3). Abdominal sclerite between 7th and 8th segments with a long stem, as long as width of abdomen, bearing a tuft of long hairs at the anterior end of stem.

*Female genitalia*: See Wu (1997, pl. 36, fig. 3).

*Material examined*: 1 ♂, Lienhuachih 690 m, Nantou Co., 4 July 1996 (KT Park and JS Lee), gen. slide no. 4257/Park, CIS.

*Distribution*: Taiwan (new record), China (Jiangxi, Fujian, Hunan, Yunnan, Guizhou).

*Remarks*: The specimen collected in Taiwan is much smaller than those of China, which are 18.0-20.0 mm in the length of the forewings. Further study is needed with more material.

#### ***Frisilia* Walker, 1864**

*Frisilia* Walker, 1864: 795; Gozmány, 1978: 126; Wu, 1997: 167; Wu, 1998: 191; Park, 1999(b): 2; Wu and Park, 1999: 2  
Type: *Frisilia nesciatella* Walker, 1864 [Ceylon].

= *Tipasa* Walker, 1864: 804. Type: *T. basaliella* Walker, 1864 [Ceylon].

= *Macrernis* Meyrick, 1887: 275. Type: *Macrernis beliapta* Meyrick, 1887 [Ceylon].

The genus is well characterized by the following characters: labial palpus of the male atypical, not up-turned and curved downwardly with dense erect hairs, but that of female normal with rather long hair-like scales anteroventrally; forewing with sharply defined and conspicuously darkened costal area, with clearly visible discal dots, sometimes also with plical spot; male genitalia often with well-developed median or lateral lobes on juxta. Abdominal tergites without zones of spines. The distributional range of the genus lies in the Palearctic and Oriental regions (including Taiwan, S. China, Nepal, India, Sri Lanka), and a species is also known from South Africa. In the Palearctic and Oriental regions, twenty-five species have been known.

#### ***Frisilia homalistis* Meyrick, 1935**

(Figs. 4, 17, 17a)

*Frisilia homalistis* Meyrick, 1935: 563; Gaede, 1937: 495; Clarke, 1965: 59; Gozmány, 1978: 128; Kanazawa and Heppner, 1992: 69; Wu, 1997: 171. Lectotype: ♀, Sozan, Formosa, BMNH-8665/Clarke.

*Diagnosis*: Wingspan, 15.0-17.0 mm. Forewing is light yellow with two clearly visible discal dots.

*Male genitalia* (Fig. 17, 17a): See also Gozmány (1978, pl. 35, fig. 73), and Wu (1997, pl. 14, fig. 6).

*Female genitalia*: See Clarke (1965, pl. 29, fig. 2), Gozmány (1978, pl. 68, fig. 73), and Wu (1997, pl. 33, fig. 9).

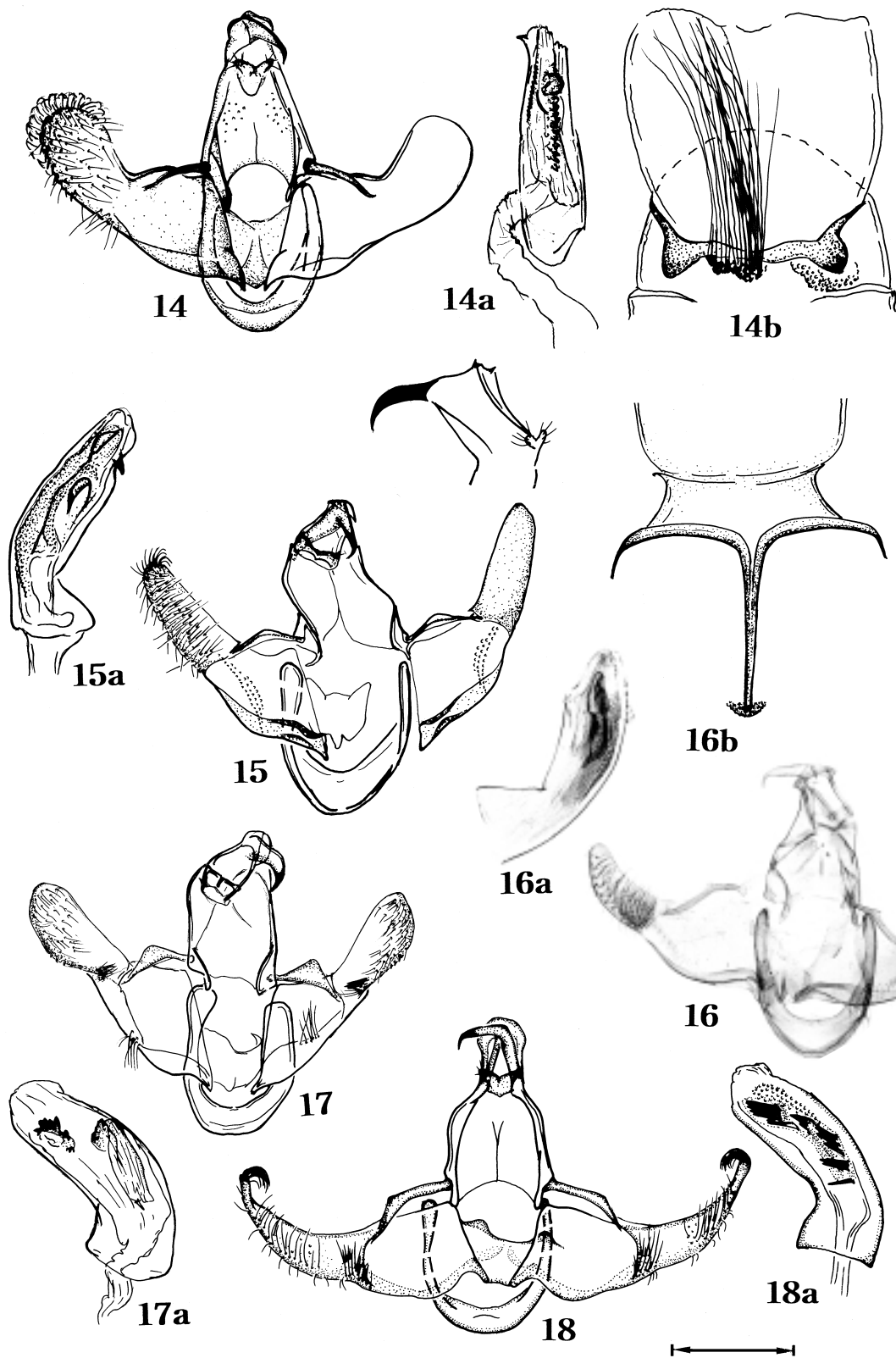
*Materials examined*: 2 ♂ ♂, Sozan (= Yangmingshan), 13 May 1935 (S Issiki), Issiki Coll., 1972, abdomen missing; 1 ♂, Suiryuto (= Sanming), Taoyuan Co., 5 May 1935 (S Issiki), Issiki Coll., 1972, gen. slide no. 4290/Park. Further specimens in BMNH: a lectotype, Sozan (= Yangmingshan), sl. 13. 9. [19]33, gen. slide no. 8665; 1 ♂, abdomen missing, Sozan (= Yangmingshan), 6 May 1935 (S Issiki), Issiki Coll., 1972, gen. slide no. 18866; 1 ♀, Kappansan(?), 25 May 1935 (S Issiki), Issiki Coll., 1972; 1 abdomen missing, "Tikusiko, Formosa, sl. 6. 8. [19]33; *Frisilia homalistis* Meyr., E. Meyrick det. in Meyrick Coll."

*Distribution*: Taiwan (endemic).

#### ***Frisilia chinensis* Gozmány, 1978**

(Figs. 6, 18, 18a)

*Frisilia chinensis* Gozmány, 1978: 129; Wu, 1997: 170. Type: ♀.



**Figs. 14-18.** Male genitalia: 14. *Lecitholaxa thiodora* (Meyrick); 14a, ditto, aedeagus; 14b, ditto, 7-8th segments; 15. *Lecithocera indigens* (Meyrick); 15a, ditto, aedeagus; 15b, ditto, gnathos; 16. *L. glabrata* (Wu and Liu); 16a, ditto, aedeagus; 16b, ditto, 7-8th segments; 17. *Frisilia homalastis* (Meyrick); 17a, ditto, aedeagus; 18. *F. chinensis* (Gozmány); 18a, ditto, aedeagus. (scale: 0.5 mm).

Kwanhsien, Sichuan Prov., China, 14053/Gozmány, Coll. BM.

**Diagnosis:** Wingspan, 12.5-13.5 mm. Superficially it is hardly distinguishable from *F. crossophaea* Meyrick, which is known from Sikkim, but the female genitalia differ. The male is reported for the first time.

**Male genitalia** (Fig. 18, 18a): Valva extremely elongated, tapered apically. Aedeagus relatively stout, with two bundles of naillike spines, bearing 6-8 spines each.

**Female genitalia:** See Clarke (1965, 123, fig. 3a-c), Gozmány (1978, pl. 7, fig. 74), and Wu (1997, pl. 33, fig. 8).

**Materials examined:** 1 ♂, Taihoku (= Taipei), 21 Apr. 1933 (S Issiki), Issiki Coll., 1972; 1 ♂, without date or locality label, (S Issiki); 1 ♂, Hsintien, Taipei Co., 3 May 1934 (S Issiki), USNM; 1 ♂, Shanpin For. Stn. 750 m, 10 km SE Liukuei, Kaohsiung Co., 16-23 Mar. 1990 (JB Heppner and H Wang), FSCA; same locality, 5-6 July 1996 (KT Park and JS Lee), CIS. Further specimens examined in BMNH; 1 ♀, Taihoku, sl. 21. Apr. [19]23. "*Lecithocera corsso-phaea* Meyr. 4/4 E. Meyrick det. in Meyrick, Coll."

**Distribution:** Taiwan (new record), China (Sichuan).

**Remarks:** The record of *F. crossophaea* Meyrick from Taiwan by Kanazawa and Heppner (1992) is probably due to a misidentification of this species.

### ***Spatulignatha* Gozmány, 1978**

*Spatulignatha* Gozmány, 1978: 146; Wu, 1997: 171. Type: *Lecithocera hemichrysa* Meyrick, 1910 [India].

The genus is characterized by the third segment of the labial palpus of the male which is extremely thickened or expanded distally. Four species have been known from China, one of which occurs in Taiwan.

### ***Spatulignatha idiogena* Wu, 1994** (Figs. 5, 19, 19a, 19b)

*Spatulignatha idiogena* Wu, 1994: 198; Wu, 1997: 173. Type: ♂, Fujian, China, Coll., IZAS.

**Diagnosis:** Wingspan, 19-20 mm. The ground colour of the forewing is yellowish white, and the discal dot at the end of the cell is larger than the median one. Hindwing gray.

**Male genitalia** (Fig. 19, 19a, 19b): See also Wu (1997, pl. 20, fig. 2). Female is unknown.

**Materials examined:** 1 ♂, Upper Palin 2,260 m, Taoyuan Co., 11-12 July 1996 (KT Park and JS Lee), gen. slide no. 4173/Park, CIS. Paratype: 1 ♂, same data for the preceding species, slide no. 4170/Park.

**Distribution:** Taiwan (new record), China (Fujian, Sichuan).

### ***Spatulignatha olaxana* Wu, 1994** (Figs. 7, 25, 25a)

*Spatulignatha olaxana* Wu, 1994: 197; Wu, 1997: 173. Type: ♂, Zhejiang, China, Coll. IZAS.

**Diagnosis:** Wingspan, 17.0-18.0 mm. The species is characterized by the blackish antenna, the dark brown costa of the forewing, and dark brown fascia which runs obliquely from about 2/3 length of costa to before tornus.

**Male genitalia** (Fig. 25, 25a): See also Wu (1997, pl. 20, fig. 1). Female is unknown.

**Materials examined:** 3 ♂♂, Fushan For. Stn., 650 m, Ilan Co., sites A-0500, C-0400, C-0500, 27 July 1995 (A. Warneke), gen. slide no. 4549/Park, TFRI.

**Distribution:** Taiwan (new record), China (Zhejiang, Jiangxi, Fujian).

### ***Synesarga* Gozmány, 1978**

*Synesarga* Gozmány, 1978: 141; Wu, 1997: 174. Type species: *Lecithocera pseudocathara* Diakonoff, 1978 [Burma]. *Anamimnesis* Gozmány, 1978: 143. [China], **syn. nov.**

*Anamimnesis* Gozmány is synonymized with this genus due to the similarity of the wing venation and the male genitalia, especially in the modified uncus and the dilated valva distally. Two species are known from Myanmar and Taiwan.

### ***Synesarga caradjai* Gozmány, 1978**

*Synesarga caradjai* Gozmány, 1978: 143; Kanazawa and Heppner, 1992: 69; Wu, 1997: 174. Type: ♂, Kosempo, Taiwan, 3415/Gozmány. Coll., MGAB, Bucharest.

**Diagnosis:** Wingspan, 30.0 mm. It is one of the largest species in the family.

**Male genitalia:** See Gozmány (1978, pl. 37, fig. 85, ♂), and Wu (1997, pl. 20, fig. 5). Female unknown.

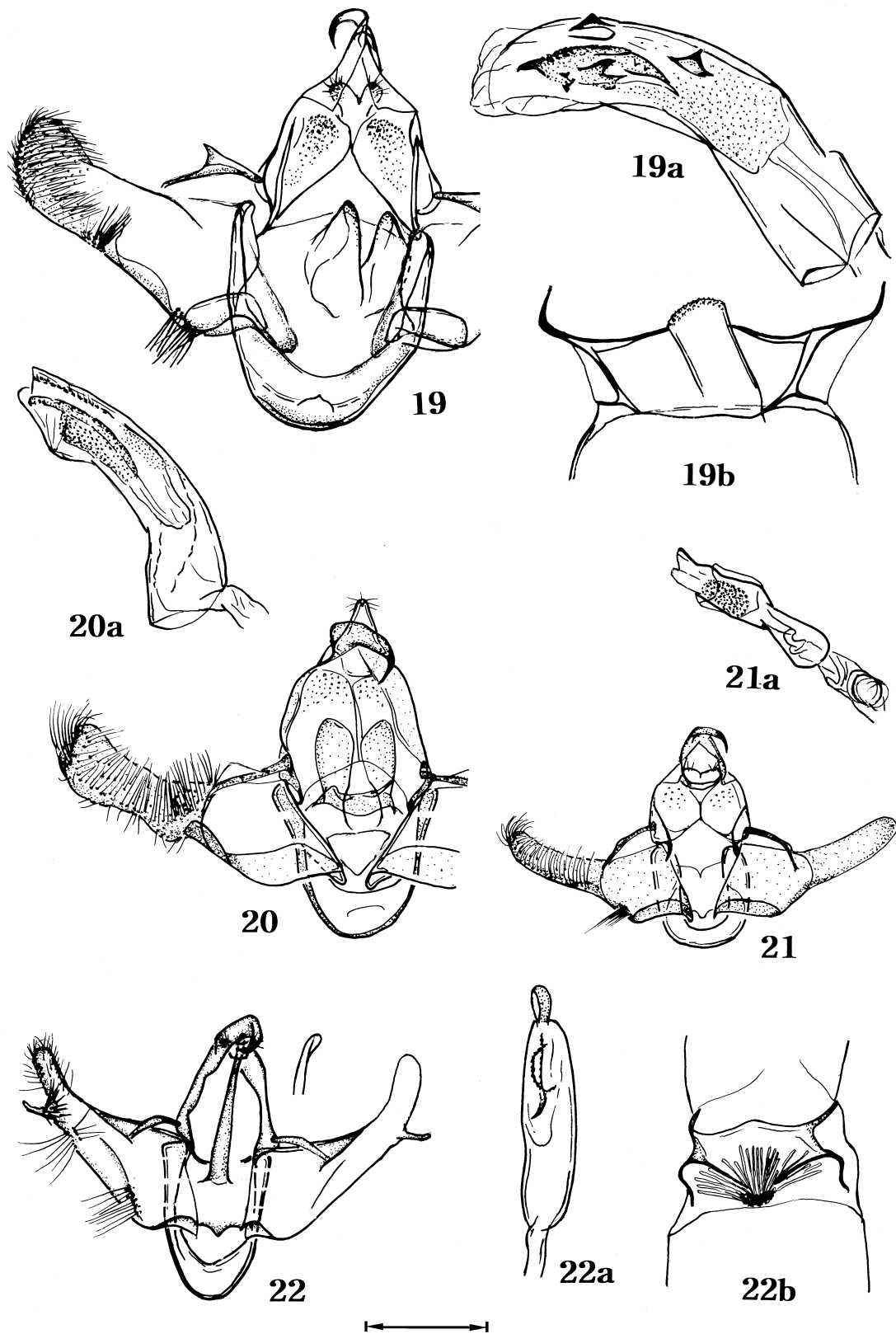
**Material examined:** Lectotype, ♂, in "Grigore Antipa" Museum of Natural History Bucharest, Rumania. No further specimen, except the holotype, has been found.

**Distribution:** Taiwan (endemic).

### ***Synesarga bleszynskii* (Gozmány, 1978)** (Figs. 8, 20, 20a, 28)

*Anamimnesis bleszynskii* Gozmány, 1978: 143-4; Wu, 1997: 177. Type: ♂, Tienmushan, Zhejiang, China, GU-4288-Gozmány, Coll. ZFMK.

**Diagnosis:** Wingspan, 30.0 mm. Forewing pattern is extremely similar to that of *Torodora forsteri*



**Figs. 19-22.** Male genitalia: 19. *Spatulignatha idiogena* (Wu); 19a, ditto, aedeagus; 19b, ditto, 7-8th segments; 20. *Synersaga bleszynskii* (Gozmány); 20a, ditto, aedeagus; 21. *Carodista notolychna* (Meyrick); 21a, ditto, aedeagus; 22. *C. cultrata* sp. nov.; 22a, ditto, aedeagus; 22b, ditto, 7-8th segments. (scale: 0.5 mm).

Gozmány, but it can be separable by the venation and male genitalia. The species was described based on a male, and the female is reported for the first time.

*Male genitalia* (Fig. 22, 22a): See also Gozmány (1978, pl. 8, fig. 86), and Wu (1997, pl. 20, fig. 6).

*Female genitalia* (Fig. 28): Ductus bursae slender, longer than twice that of corpus bursae; ductus seminalis arising from near 1/3 distally; corpus bursae ovate, with rather triangular plate of signum.

*Materials examined*: 14 ♂ ♀, Kenting Park, Pingtung Co., 50 m, 1-5 Sept. 1983 (JB Heppner); 11 ♂ ♀, same locality, 29-31 Aug. 1983 (JB Heppner); 4 ♂ ♂, same locality, 255 m, 23-28 Apr. 1989 (JB Heppner and H Wang), gen. slide no. 4100 and 4250/Park; 3 ♂ ♂, same locality 255 m, 9-15 Mar. 1990 (JB Heppner and H Wang), FSCA.

*Distribution*: Taiwan (new record), China (Zhejiang).

### ***Carodista* Meyrick, 1925**

*Carodista* Meyrick, 1925: 10; Gozmány, 1978: 172; Wu, 1997: 186; Wu and Park, 1999: 133.

Type species: *Homaloxestis flagitiosa* Meyrick, 1914: 198 [Nyassaland].

*Catacreagra* Gozmány, 1978: 167; Wu, 1997: 187.

Type species: *Catacreagra gracilis* Gozmány, 1978 [N. Afghanistan].

The genus is defined by the following characters: Forewing with CuA<sub>1</sub> and CuA<sub>2</sub> shortly stalked, clearly visible; hindwing with M<sub>3</sub> and CuA<sub>1</sub> stalked, about 1/4-1/6 length; male genitalia lacking an outwardly directed tooth in middle of lower margin of valva; female genitalia with spinose plate or atypical/horseshoe-like or cap-shaped signum. Abdominal tergites with spine zones. The genus *Catacreagra* Gozmány was separated from *Carodista* by the character of R<sub>5</sub> reaching apex, instead of R<sub>5</sub> reaching termen in the latter, but both genera were considered to be congeneric and synonymized with this genus by Wu and Park (1999c). The genera, *Plagiocrossa* Janse and *Synersaga* Gozmány, are also related to this genus, thus a further discussion for the taxonomic status of these genera is needed. Sixteen species have been reported; thirteen species from the Oriental, and 4 species from the Palaearctic region and its southern border.

### ***Carodista notolychna* (Meyrick, 1936), comb. nov.** (Figs. 9, 21, 21a, 29)

*Homaloxestis notolychna* Meyrick, 1936: 48; Clarke, 1965: 92.

*Catacreagra notolychna* Gozmány, 1978: 170; Wu, 1997: 188; Kanazawa and Heppner, 1992: 69. Type: ♂, Sozan,

Formosa, BMNH-8714/Clarke, Coll., BM.

*Diagnosis*: Wingspan, 12.0-18.0 mm. The species is variable in size. Female is reported for the first time.

*Male genitalia* (Fig. 21, 21a): See also Clarke (1965, pl. 4 and 4b, fig. 4), Gozmány (1978, pl. 42, fig. 102), and Wu (1997, pl. 21, fig. 4).

*Female genitalia* (Fig. 29): Ventrodistal margin of 8th segment emarginate medially; antrum shortly developed; ductus bursae relatively short, about 1.5 times length of corpus bursae; signum plate oblong.

*Materials examined*: 1 ♂, 1 ♀, Ranrun (= Jenho), Nantou Co., 10 Mar. 1926 (S Issiki), Issiki Coll., 1972, gen. slide no. 4287/Park (♂); 1(?) Taihoku (= Taipei), 17 Apr. 1935 (S Issiki), Issiki Coll., 1972; 1 ♂, no date or locality, (S Issiki), Issiki Coll., 1972; 1 ♂, Baibara (= Meiyuan), Taichung Co., 24 Mar. 1942 (S Issiki), Issiki Coll., 1972; 1 ♀, Rengwati (= Lienhauchih), Nantou Co., 21 Mar. 1943 (S Issiki), Issiki Coll., 1972; 1 ♀, no collecting date, Taiwan (S Issiki), Issiki Coll., 1972, gen. slide no. 4134/Park, USNM; 1 ♂, Kuangwu For. Stn. 2,000 m, Hsinchu Co., 18-25 Aug. 1988 (JB Heppner and H Wang), gen. slide no. 4136/Park, FSCA.

*Distribution*: Taiwan, Japan.

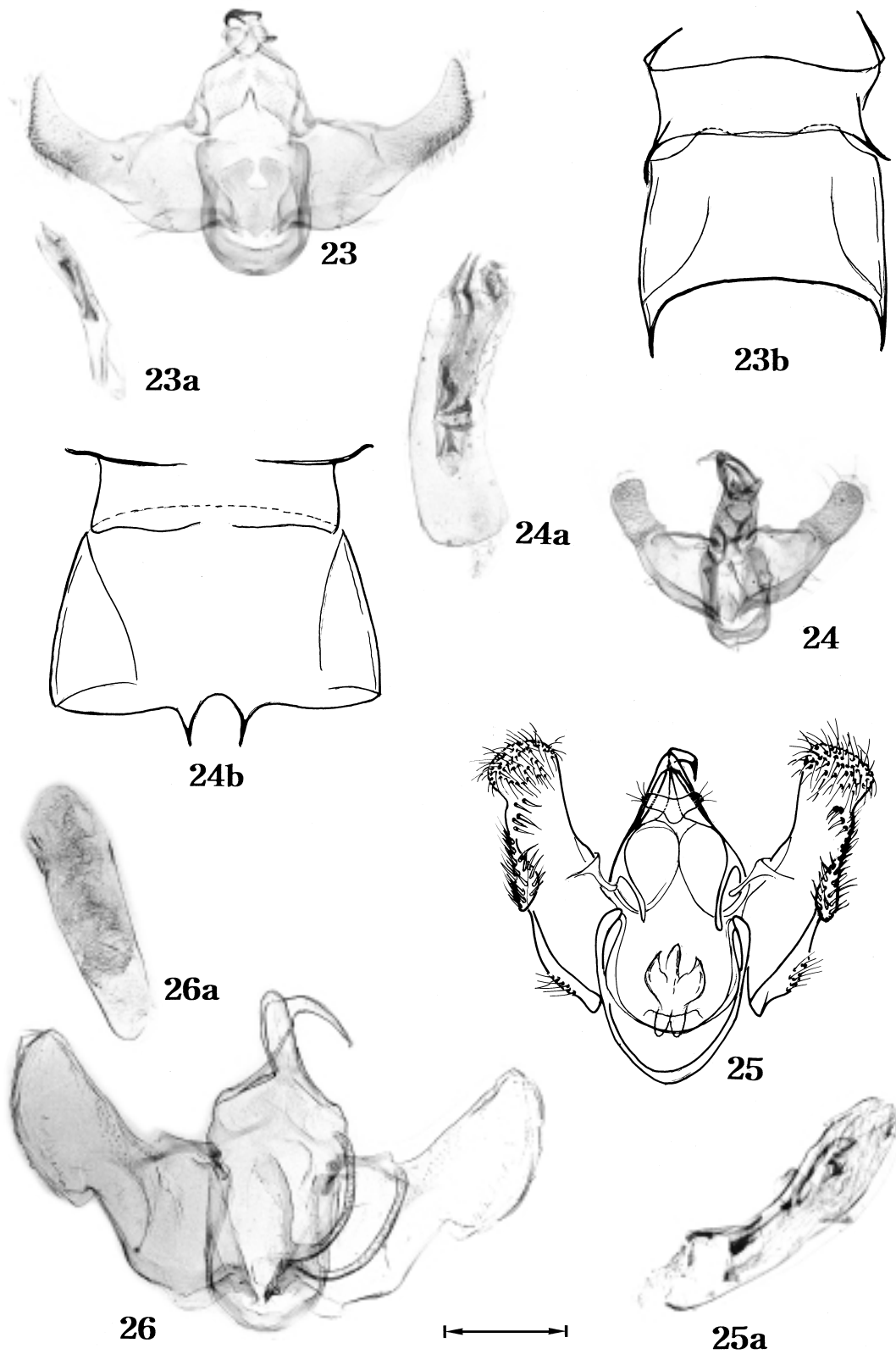
*Remarks*: Male agrees well with that of the type specimen (gen. slide no. 8714/Clarke, BM, described from Taiwan) in external characters, including the venation of both wings. The species is newly combined into the genus *Carodista* Meyrick.

### ***Carodista montana*, sp. nov.** (Figs. 10, 23, 23a)

*Diagnosis*: This species is very close to *C. niphomitra* Meyrick described from Sikkim, N India, based on a female, but the hindwing is shiny whitish-gray, whereas that of the latter is only gray. No comparison of the opposite sex was done, because a male of the former is not available.

*Description*: Male and female. Wingspan, 16.0-18.0 mm. Head yellowish orange anteriorly and brown dorsally. Thorax and tegula brown. Antenna yellowish white, annulations on flagella weakly present only in distal part. Second segment of labial palpus yellowish brown on both surfaces, slightly suffused with brown scales dorsally; 3rd segment as long as 2nd, gently upturned, dark brown ventrolaterally. Forewing covered with dark gray scales throughout, broader towards termen; inner discal spot inconspicuously marked, outer one large, dark gray; apex obtuse; R<sub>3</sub> free, R<sub>4</sub> and R<sub>5</sub> stalked near middle, M<sub>2</sub> and M<sub>3</sub> almost parallel, CuA<sub>1</sub> and CuA<sub>2</sub> connate. Hindwing gray; apex more or less obtuse;





**Figs. 23-26.** Male genitalia: 23. *Carodista montana* sp. nov.; 23a, ditto, aedeagus; 23b, ditto 7-8th segments; 24. *Dinochares notolepis* sp. nov.; 24a, ditto, aedeagus (magnified); 24b, ditto, 7-8th segments; 25. *Spatulignatha olaxana* (Wu); 25a, ditto, aedeagus; 26. *Tisis mesozosta* (Meyrick); 26a, ditto, aedeagus. (scale: 0.5 mm).

M<sub>2</sub> free, M<sub>3</sub> and CuA<sub>1</sub> stalked near 1/3 in length; cell closed.

*Male genitalia* (Fig. 23, 23a, 23b). Basal lobes of uncus almost ovate. Gnathos relatively short. Valva with broad basal 1/2 and elongate distal 1/2; costa heavily curved inwardly; ventral margin expanded at basal 1/3 and then slightly incurved beyond; outer margin slightly concave; apex rather tapered, but obtuse. Juxta with jar-shaped emargination on distal margin with broadly developed lateral lobes; anterior margin sharply convex at middle. Aedeagus relatively slender, about 3/4 of valva in length, with a pair of club-shaped, different-sized cornuti. Abdominal sclerite between 7th and 8th is shown in fig. 23b.

*Types*: Holotype: ♂, Kuanyuan Hohuan Mt. Lodge, Hualien Co., 3 July 1996 (KT Park and JS Lee), gen. slide no. 4193/Park, CIS. Paratypes: ♂, Hassenzan (= Pahsienshan), 5 June 1942 (S Issiki), Issiki Coll., 1972, gen. slide no. 4279/Park, USNM. 1 ♂, Kuangwu, 2000 m, Hsinchu Co., 24-25 June 1985 (JB Heppner and H Wang), gen. slide no. 4142/Park, FSCA. Holotype to CIS on definite loan from Taiwan, and paratypes in USNM and FSCA.

*Distribution*: Taiwan.

*Remarks*: The female type of *C. niphomitra* (gen. slide no. 8779/Clarke, BM) has more darkish forewing and almost dark gray hindwing. It is also compared with *C. citrostrota* Meyrick, *C. trichorpa* Meyrick, and *C. melicrata* Meyrick from Khasis, N India, by the male genitalia, but it is easily differentiated from those of the latter.

### ***Carodista cultrata*, sp. nov.**

(Figs. 11, 22, 22a, 22b, 31)

*Diagnosis*: This species is not easily separable from *Lecitholaxa thiodora* in superficial appearance, but it can be easily distinguished from the latter by the venation and labial palpus of the male which is normally slender.

*Description*: Male and female. Wingspan 13.0-15.0 mm. Head yellowish brown on frons and on dorsal surface, but space between antennae appressed with shiny white scales. Tegula and thorax brown, concolorous with head. Antenna with relatively elongated scape, expanded apically; flagellum shiny white dorsally, but ventral surface pale brown, serrated ventrally, not ciliate. Labial palpus strongly upturned; 2nd relatively slender; 3rd as long as 2nd or slightly longer. Forewing relatively narrow, elongate, heavily covered with brown scales throughout, with a visible fuscous streak at end of cell vertically; costa yellowish orange beyond 1/3; venation with

CuA<sub>1</sub> and CuA<sub>2</sub> shortly stalked. Hindwing extremely oblique, pale gray, broader towards base; termen sinuate; venation M<sub>3</sub> and CuA<sub>1</sub> on a long stalk. Abdominal tergites without zones of spines.

*Male genitalia* (Fig. 22, 22a, 22b): Gnathos relatively small. Valva elongate with round apex; costa gently incurved; ventral margin with a digitate lobe at 3/4. Juxta with a long, median lobe, about 3/4 of valva in length; anterior margin convex medially. Aedeagus as long as valva, with two rows of serrated chain in vesica; apex clubbed.

*Female genitalia* (Fig. 31): Lamella postvaginalis with large, knife-shaped median lobe, inner margin with 2-3 denticles. Ostium bursae large. Antrum bowl-shaped. Ductus bursae broad, with numerous spicules medially, anterior 1/3 narrow; ductus seminalis arising from half length. Corpus bursae ovate, with round plate of signum.

*Types*: Holotype: ♂, Liukuei For. Stn. 750 m, Kaohsiung Co., 29 Apr.-3 May 1989 (JB Heppner and H Wang), gen. slide no. 4124/Park. Paratypes: 1 ♂, same data as holotype, gen. slide no. 4095/Park; 1 ♂, 3 ♀♀, same data as holotype; 1 ♀, Chingshan 1,100 m, Taichung Co., 8-11 May 1989 (JB Heppner and H Wang), gen. slide no. 4141/Park; 1 ♀, Kuangwu 2000 m, Hsinchu/Miaoli, 24-25 June 1985 (JB Heppner and H Wang), gen. slide no. 4127; 1 ♂, Fushan For. Stn., Ilan Co., 4-11 Apr. 1990 (JB Heppner), gen. slide no. 4140/Park; 1 ♀, Fuyan, Hualien Co., 400 m, 7 Mar. 1990 (JB Heppner and H Wang), gen. slide no. 4096; 1 ♀, Kenting Park 255 m, Pintung Co., 23-28 Apr. 1989 (JB Heppner and H Wang), FSCA. Holotype in FSCA on an indefinite loan from NTM, Taipei.

*Distribution*: Taiwan.

*Etymology*: The species name refers to the Latin, "culter" (knife-shaped) for the median lobe in the lammella postvaginalis of the female genitalia.

### ***Dinochares* Meyrick, 1925**

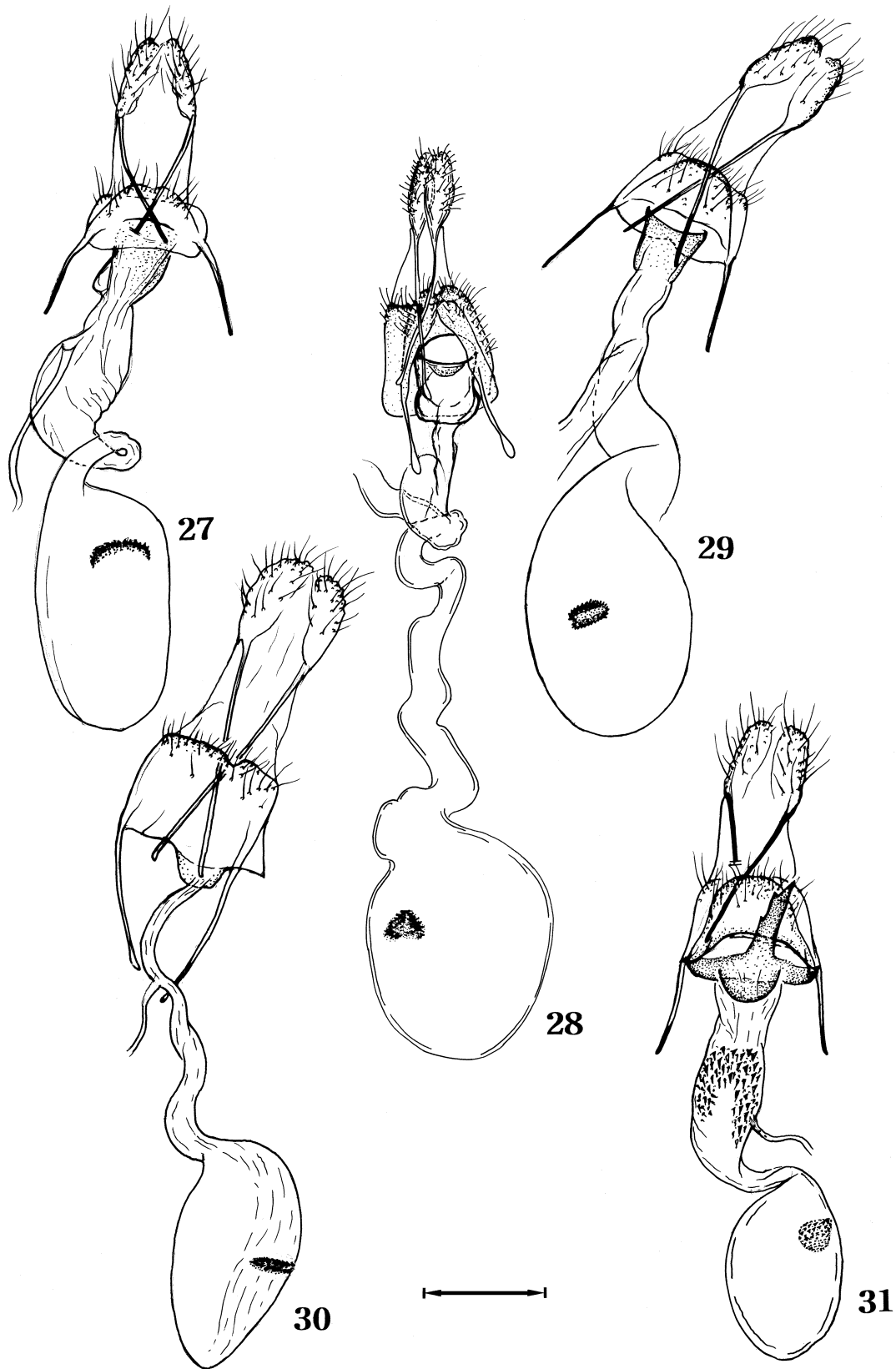
*Dinochares* Meyrick, 1925: 205; Clarke, 1965: 44; Wu and Park, 1999: 139.

Type species: *Tingentera conotoma* Meyrick, 1908: 4553 [Sri Lanka: Maskeliya, Kandy, Maturatta, Diyatalawa].

Since the genus was established by Meyrick (1925), based on *D. conotoma* Meyrick from Sri Lanka, no additional species has been recognized. The genus is characterized by the hindwing with long hair-tuft arising from near the base of the stem of M-vein, M<sub>2</sub> almost vestigial, and CuA<sub>1</sub> absent.

### ***Dinochares notolepis*, sp. nov.**

(Figs. 12, 24, 24a, 24b, 32)



**Figs. 27-31.** Female genitalia: 27. *Lecitholaxa thiodora* (Meyrick); 28. *Synersaga bleszynskii* (Gozmány); 29. *Lecithocera indigens* (Gozmány); 30. *Carodista notolychna* (Meyrick); 31. *C. cultrata* sp. nov. (scale: 0.5 mm).

**Diagnosis:** The wing venation of this species differs from that of any known genera of Lecithocerinae, and is close to that of *Dinochares* Meyrick, *D. conotoma* Meyrick which was described from Sri Lanka. However, the male genitalia is very close to those of the latter.

**Description:** Wingspan, 12-18 mm. Head light brown dorsally; face appressed with shiny yellowish-white scales. Tegula and thorax light brown. Antenna light ochreous, without annulations, not ciliate; scape relatively slender, long. Labial palpus gently upturned; 2nd segment slender, brownish orange, with appressed scales; 3rd slender without typical band. Forewing elongated, rather lanceolate, no characteristic pattern; apex obtuse; termen heavily oblique;  $R_3$  free or stalked with  $R_4+R_5$ ,  $M_1$  originating far from stalk of  $R_{3+4+5}$  or  $R_{4+5}$ ,  $M_3$  closer to  $M_2$ ,  $M_3$  and  $CuA_1$  remote, or that of some specimens stalked near end,  $CuA_2$  arising from near angle of cell; cell open. This condition shows some intraspecific variation. Hindwing silvery white; apex relatively obtuse;  $M_2+M_3+CuA_1$  coincident,  $CuA_2$  arising from about basal 1/3, only 3 median and cubital systems present; with a row of characteristic shiny silvery-white scales appressed in basal 1/3 of the cell and with a long hair-tuft at base below vein  $CuA_2$ ; cell open (Fig. 32). Distal margin of 8th sternite also characteristically emarginated at middle as figured (Fig 24b). Ventral surface of legs shiny brownish orange; hind tibia with hairlike scales above, longer one of inner spur about 1/3 length of tibia. Abdominal tergites without zones of spines. Female is unknown.

**Male genitalia** (Fig. 24, 24a, 24b): Basal part of valva broad, about 2/3 length; distal part spatulate, densely covered with hairs and hairlike scales distally; sacculus heavily sclerotized; bridgelike band connecting tegumen angled at basal 1/4. Aedeagus stout, as long as valva; two pairs of spines at apex, one long and large, the other very small; with 5-6 spines in vesica, Distal margin of 8th sternite with typical emargination (Fig. 24b), which agrees well with that of *Issikiapteryx* Moriuti.

**Types:** Holotype: ♂, Rengwati (Lienhauchih), Nantou Co., 24 Mar. 1943 (S Issiki), Issiki Coll., 1972, gen. slide no. 4507/Park. Paratypes: 1 ♂ Suisha (= Shuishe), Nantou Co., 20 Mar. 1943 (S Issiki), Issiki Coll., 1972, gen. slide no. 4509/Park; 1 ♂, Higashinoko (= Tungnunkao), Hualien Co., 3 June 1943 (S Issiki), Issiki Coll., 1972, gen. slide no. 4508; ♂, no locality or date label, Taiwan, (S Issiki), Issiki Coll., 1972. Holotype and paratypes in USNM.

**Distribution:** Taiwan.

**Remarks:** Considerable variations of wing venation in the subfamily Lecithocerinae are recognized,

but the hindwing venation is characteristic with coincidence of  $M_2+M_3+CuA_1$ , and with a row of very specific scales between R and M-veins basally on ventral surface of hindwing. No same venation with this species can be found in any known genera in Lecithocerinae, but the male genital character and the characteristic long hair-pencil below M-vein are much related to *Dinochares* Meyrick. Thus, the author tentatively places this new species in the genus. A further study on the generic status of this species is also needed.

**Etymology:** The species name is derived from the Greek, "notos" (= back), and lepis (= scale), corresponding to scales on the ventral surface of the hindwings.

### *Tisis* Walker, 1864

*Tisis* Walker, 1864: 793; Gozmány, 1978: 183; Wu, 1997: 167.

Type: *Tisis bicolorella* Walker, 1864, *ibid.* [Sarawak, Borneo].

- = *Tonosia* Walker, 1864: 796 [Sarawak].
- = *Tingentera* Walker, 1864: 798 [Sarawak].
- = *Tipha* Walker, 1864: 798 [Sarawak].
- = *Tirallis* Walker, 1864: 806 [Sarawak].
- = *Togia* Walker, 1864: 791 [Sarawak].
- = *Decuaria* Walker, 1864: 797 [Ceylon].
- = *Cacogamia* Snellen, 1903: 48 [W. Java].

The genus is well defined by the 2nd segment of the labial palpus in the male, with a long hair tuft at apical part, but 3rd very short and concealed by terminal tuft of 2nd segment; antenna of male expanded near base. Forewing with very narrow discal cell, about as wide as distance of  $M_1$  and  $M_2+CuA_1$ , cell often strikingly curved; median and cubital systems unusual with  $M_{2+3}$  and  $CuA_1$  coincident; termen of both wings round; hindwing with  $M_2$  and  $M_3$  often coincident, sometimes  $CuA_1$  also coincident with  $M_{2+3}$  as in type species, *T. bicolorella* Walker. The distributional range of the genus includes Borneo, Sumatra, the Philippines, Myanmar, and Taiwan, with 13 known species. Only *T. mesozosta* Meyrick

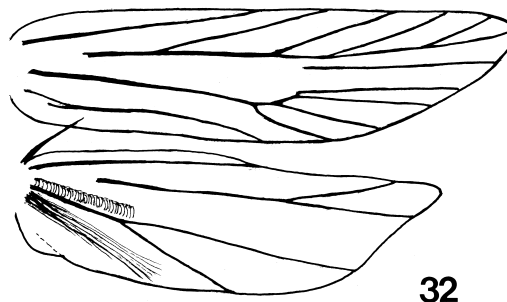


Fig. 32. Wing venation of *Dinochares notolepis* sp. nov.

is known in Taiwan.

***Tisis mesozosta* Meyrick, 1914**  
(Figs. 13, 29, 29a)

*Tisis mesozosta* Meyrick, 1914(b): 50; Meyrick, 1925: 204; Gozmány, 1978: 185; Wu, 1997: 183. Type: Suisharyo, Formosa, GU-4351-Gozmány, Coll. DEL.

**Diagnosis:** Wingspan 19-21 mm. This species is easily separable from other species of the genus, due to its characteristic marking on the forewing.

**Male genitalia** (Fig. 29, 29a): See also Wu (1997, pl. 21, fig. 2).

**Female genitalia:** See Gozmány (1978, pl. 75, fig. 111), and Wu (1997, pl. 35, fig. 1).

**Materials examined:** 1 ♂, Fushan, Ilan Co., 26 July 1995, light trap C-2000 (A. Warneke); 1 ♂, same date and locality, light trap, B-2200 (JJ Hsiao); 1 ♂, same locality, 27 July 1995, light trap C-0000 (JJ Hsiao), TFRI. Several in FSCA.

**Distribution:** Taiwan, China (Anhui, Fujian, Jiangxi, Hainan, Yunnan).

## DISCUSSION

Due to only few workers (Janse 1954, Clarke 1965, Gozmány 1978) for the lecithocerid-moths throughout the world, since Meyrick (1887-1935) described numerous species of them in his "Exotic Microlepidoptera" and some other publications, a poor resolution on the taxonomic status of the generic level of these moths has been made. Most of the generic status of these tropical longhorned moths were mainly based on the venations of the both wings and the shape of labial palpus, which was basically proposed by Meyrick, rather than genitalic character. *Lecithocera* Herrich-Schäffer is the largest genus in the family, with about 300 known species worldwide, and many related genera and species have been known. As author stated in the first article (Park 1999), many of these related genera of *Lecithocera* should be discussed for their generic status, because considerable variations of wing venations are found within genus, and the male genitalia and the abdominal sclerite between 7th-8th segments show a distinguished morphological character. For these reasons, as he stated in the previous first article and this text (venation is no more stable character to define the generic status in this group), as well as the synonymization of *Patoussa* (Walker 1864), and *Sarisophora* (Meyrick 1905), with *Lecithocera* by author (1999), further 5 genera: *Quassitagma* (Gozmány 1978), *Recontracta* (Gozmány 1978), *Nyctocyrra* (Gozmány 1978),

*Psamoris* (Meyrick 1906), and *Galoxestis* (Wu 1994) are proposed to synonymize with the genus *Lecithocera*. Gozmány (1978) also established the genus *Lecitholaxa* separating from *Leithocera* by the 2nd segment of labial palpus with brushlike tuft dorsally as well as some differences of the venation. At this moment, *Lecitholaxa* is treated as a good genus, but it also is needed a further study for its generic status with more materials from the wide range of the distribution. The identification of species of these genera often makes confusions because many external morphological characters are highly homoplastic. The new species, *Dinochares notolepis* is some doubt to belong to this monotypic genus, because the venation of this new species slightly differs from that of the type species *Dinochares conotoma* Meyrick from Sri Lanka:  $R_4$  and  $R_5$  of the forewing stalked but free in the latter, and  $M_2+M_3+CuA_1$  being coincident, whereas  $M_2$  visible at extremity. However, the author placed it in this genus because of the similarity of the male genitalia, and personally want to avoid to describe any more monotypic genus. In the family Lecithoceridae, more than 40 genera are known as monotypy. To define the generic status of these genera, a cladistic analysis should be undertaken with more informations, including distributional and morphological data. Some biological or ecological informations, and the relationships between species and hosts can be helpfully discussed for the analysis of the phylogenetic study, if they are available, however, larvae of most lecithocerids, except species belonging to Odithinae, commonly feed on debris.

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## 臺灣祝蛾科 (鱗翅目)(II) : 祝蛾亞科中之 *Lecithocera* Herrich-Schäffer 屬與其近緣種

朴奎澤<sup>1</sup>

本文為臺灣祝蛾亞科第二部的增訂，共計有 14 個種類，分屬於 *Lecithocera* Herrich-Schäffer 屬、*Frisilia* Walker 屬、*Lecitholaxa* Gozmány 屬、*Spatulignatha* Gozmány 屬、*Synersaga* Gozmány 屬、*Carodista* Meyrick 屬、*Dinochares* Meyrick 屬與 *Tisis* Walker 屬。其中 *Carodista montana*、*C. cultrata* 與 *Dinochares notolepis* 為三新種；*Quasstagma* Gozmány 屬、*Recontracta* Gozmány 屬、*Nyctocyrra* Gozmány 屬、*Psamoris* Meyrick 屬和 *Galoxestis* Wu 屬為 *Lecithocera* 屬之異名，*Anamimnesis* Gozmány 屬為 *Synersaga* Gozmány 屬之異名。*Lecithocera glabrata* (Liu & Wu)、*Frisilia chinensis* Gozmány、*Spatulignatha idiogena* Wu、*S. olaxana* Wu 與 *Synersaga bleszynskii* (Gozmány) 為臺灣新記錄種。

**關鍵詞：**系統分類，*Frisilia*，*Lecitholaxa*，*Spatulignatha* 與其近緣種，臺灣。

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