

## Genus *Tisis* Walker from Malaysia and Indonesia (Lepidoptera: Lecithoceridae), with Description of Three New Species

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**Chun-Sheng Wu (1998)** Genus *Tisis* Walker from Malaysia and Indonesia (Lepidoptera: Lecithoceridae), with description of three new species. *Zoological Studies* 37(3): 191-196. Nine species of the genus *Tisis* Walker from Malaysia and Indonesia are recognized. Among them, 3 species are described as new to science: *T. sandaradema* sp. n., *T. boleta* sp. n., and *T. plautata* sp. n. The male genitalia of *T. argyrophaea* and *T. seclusella*, and the male and female genitalia of *T. bicolorella*, *T. calybaeella*, and *T. luteella* are described and illustrated for the 1st time. A key to the species is given.

**Key words:** Taxonomy, Lepidoptera, Lecithoceridae, *Tisis*.

The genus *Tisis* Walker, 1864 comprises 21 species in the world. Its distributional range includes Malaysia, Indonesia, the Philippines, Burma, and China. The genus is characterized by the antennae widening spatulately at the base; the discal cell long, narrow, and curved in the forewing; and the abdominal tergites spinose.

This paper deals with 9 species, 3 species of which are described as new. The male genitalia of *T. argyrophaea* Meyrick and *T. seclusella* (Walker), and the male and female genitalia of *T. bicolorella* (Walker), *T. calybaeella* (Walker), and *T. luteella* (Snellen) are described and illustrated for the 1st time.

### MATERIALS AND METHODS

Specimens examined are from the collection made by J. F. G. Clarke in 1966. Some paratypes of the previously known species in the National Museum of Natural History (NMNH) were also examined to compare with new materials. Illustrations are made with a camera lucida. Methods of dissection, morphometric characters, and terminology follow Gozmany (1978) and Wu (1997).

All specimens, including the types of new spe-

cies, are deposited at the National Museum of Natural History, Smithsonian Institution (NMNH), Washington, D.C.

### SYSTEMATIC ACCOUNTS

#### Genus *Tisis* Walker, 1864

*Tisis* Walker, 1864, List Lepidop. Col. Br. Mus. 29: 204.

Type species: *Tisis bicolorella* Walker, 1864.

For extensive synonymy see Gozmany (1978: 183-184).

#### Key to the species of *Tisis* based on male and female genitalia

1. Male ..... 2  
Female ..... 9
2. Valva with protrusions or stout spines on ventral margin ..... 3  
Valva without protrusion or stout spine on ventral margin ..... 6
3. Valva with 3 stout spines on ventral margin .....  
..... *T. sandaradema* sp. n.
4. Valva with 1-2 protrusions on ventral margin ..... 4  
Valva with 2 big protrusions on ventral margin .....  
..... *T. seclusella*  
Valva with a fingered protrusion ..... 5
5. Juxta mushroom-shaped ..... *T. boleta* sp. n.  
Juxta shield-shaped with a pair of caudal processes .....  
..... *T. plautata* sp. n.
6. Valva widening apically ..... *T. bicolorella*

- Valva tapering apically ..... 7
7. Valva with a big spine at apex ..... *T. luteella*  
Valva without such a spine ..... 8
8. Caudal process of juxta longer than juxta .....  
..... *T. calybaeella*  
Caudal process of juxta shorter than juxta .....  
..... *T. argyrophaea*
9. Corpus bursae with an accessory sac ..... 10  
Corpus bursae without accessory sac ..... 11
10. Ductus bursae as wide as corpus bursae .....  
..... *T. argyrophaea*  
Ductus bursae narrower than corpus bursae .....  
..... *T. bicolorella*
11. Signum rounded ..... *T. luteella*  
Signum crescentic ..... 12
12. Ductus bursae narrow, as long as corpus bursae .....  
..... *T. eurylampis*  
Ductus bursae wide, shorter than corpus bursae .....  
..... *T. calybaeella*

***Tisis sandaradema* sp. n.**

*Holotype*: male. Malaysia: Sarawak, Semengoh For. Res. 24 km S of Kuching, 16 Sept. 1966 JFG Clarke, gen. slide 88257.

*Description*: Wing expanse 14 mm. Antennae dark brown at base, yellowish brown on apical 2/3. Labial palpi brown. Head and thorax dark brown. Forewing grayish green on basal 2/3, orange yellow on apical 1/3; termen and cilia yellowish brown. Hindwing ochreous brown; cilia ochreous brown. Hindleg light ochreous.

*Male genitalia* (Fig. 1): Uncus-lobes short; gnathos narrow; costal bar short, apex obtuse; sacculus straight, 1/2 times as long as valva; valva emarginated medially, with 3 stout spines on ventral margin at apical 3/4, apex broadly rounded; juxta long, almost straight in caudal margin; aedeagus as long as valva, 1/3 times as wide as the latter, vesica with 2 spines apically.

*Etymology*: The name is derived from the Greek words "sandaracinos" (= orange-colored) and "dema" (= band).

*Distribution*: Malaysia.

*Diagnosis*: This new species is related to *T. hyacinthina*, but differs from the latter by the shape of the valva and the juxta. In *hyacinthina*, the sacculus terminates in a digitate protrusion and the juxta is arched in the caudal margin. In this new species, the sacculus is without a digitate protrusion, and the juxta is almost straight in the caudal margin.

***Tisis luteella* (Snellen, 1903)**

(Fig. 15)

*Cacogamia luteella* Snellen, 1903, Tijdschr. Ent., 46: 50, pl. 5, fig. 13.

*Tisis luteella*: Meyrick 1925, Genera Insect. p. 204.

*Materials examined*: 2 female, 2 male, Indonesia, Pulau Laut I., S.E. Borneo, Doherty, 1891, gen. slides: 88259, 88258.

*Description*: Wing expanse 20-25 mm. Antennae ochreous yellow. Labial palpi blackish brown in male, ochreous yellowish brown in female. Head and thorax yellowish brown. Forewing yellowish brown mixed with black; termen pale yellow, with a row of black dots; cilia blackish. Hindwing light yellowish brown to light brown; cilia light brown. Hind leg brown.

*Male genitalia* (Fig. 8): Uncus long; gnathos small; costal bar long, apex acute; sacculus narrow and long; valva emarginated on ventral margin medially, outer 1/2 tapering to a rounded apex which bears a large spine; juxta large, caudal process widened; aedeagus shorter than valva, without vesica cornuti.

*Female genitalia* (Fig. 9): Sternum VIII deeply concave at caudal margin medially; ductus bursae narrow and long; ductus seminalis wider than ductus bursae, originating at middle; corpus bursae large; signum large, rounded, with spines.

*Distribution*: Indonesia.

***Tisis calybaeella* (Walker, 1864)**

(Fig. 17)

*Tipha chalybaeella* Walker, 1864, List Lepidop. Col. Br. Mus., 29: 799.

*Tisis chalybaeella*: Meyrick 1925, Genera Insect., 184: 204.

*Materials examined*: 1 female, 1 male, Malaysia, Sarawak Semengoh For. Res. 24 km. S of Kuching, 13-17 Sept. 1966, JFG Clarke, gen. slide 88173.

*Description*: Wing expanse 18-20 mm. Antennae pale yellowish brown, but dark brown on base and apical 1/3. Labial palpi orange yellow. Head and thorax brown. Forewing blackish brown, pattern orange-colored: basal 1/2 with 2 longitudinal stripes; outer 1/2 with a large trigonal blotch extending to inner margin; cilia blackish brown. Hindwing coffee-color; cilia brown. Hindleg brownish yellow; tarsi brown.

*Male genitalia* (Fig. 2): Uncus small; gnathos narrow; costal bar narrow and long, apex rounded; sacculus narrow and long; valva contracted at middle, outer 1/2 with a row of bristles along ventral margin; apex rounded; juxta large, caudal process narrow and long; aedeagus as long as valva, vesica with a scrobiculation.

*Female genitalia* (Fig. 11): Sternum VIII almost straight in caudal margin; ductus bursae wide and long; ductus seminalis narrow; corpus bursae

small, slightly wider than ductus bursae; signum small, crescentic, with big spines on anterior margin.

*Distribution:* Malaysia.

***Tisis eurylampis* Meyrick, 1910**

*Tisis eurylampis* Meyrick, 1910, Trans. Ent. Soc. Lond., 1910: 438.

*Tisis eurylampis*: Clarke 1965, 5: 248, pl. 124, fig. 3-3c.

*Material examined:* 1 female, Malaysia, Sarawak Semengoh For. Res. 24 km S of Kuching, 17 Sept. 1966, JFG Clarke, gen. slide 88256.

*Description:* Wing expanse 17 mm. Antennae yellowish brown. Labial palpi light yellow, terminal segment brown. Head and thorax brown. Forewing brown with a luster at base and apical 1/3, orange yellow from 1/6 to 3/5; with a light brown dot on basal 1/3 near inner margin; cilia brown. Hindwing brown; cilia brown. Hindleg pale yellow.

*Female genitalia* (Fig. 10): Sternum VIII slightly concave on caudal margin; ductus bursae short; ductus seminalis wider than ductus bursae; corpus bursae large; signum crescentic, with spines which

are biggest along margins.

*Distribution:* Malaysia.

***Tisis argyrophaea* Meyrick, 1910**

(Fig. 14)

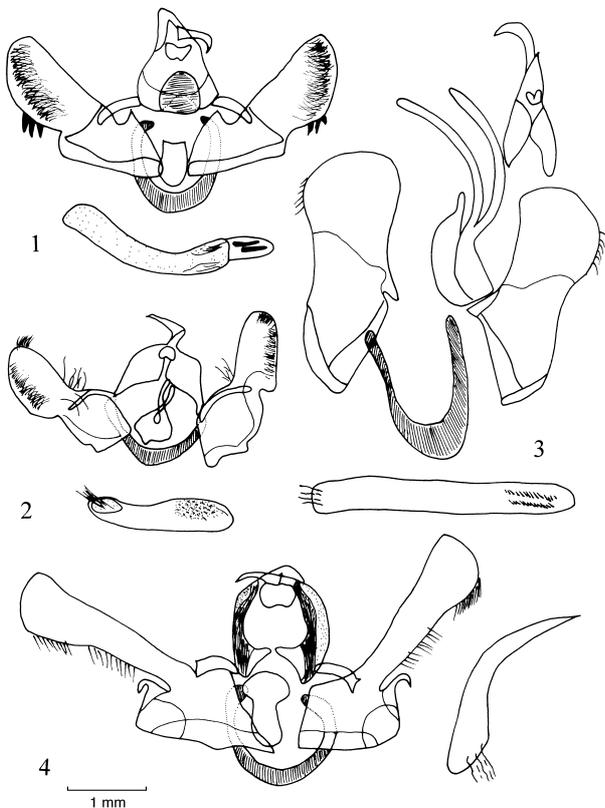
*Tisis argyrophaea* Meyrick, 1910, Trans. Ent. Soc. London, 1910: 439.

*Tisis argyrophaea*: Clarke 1965, 5: 248, pl. 124, fig.1-1b.

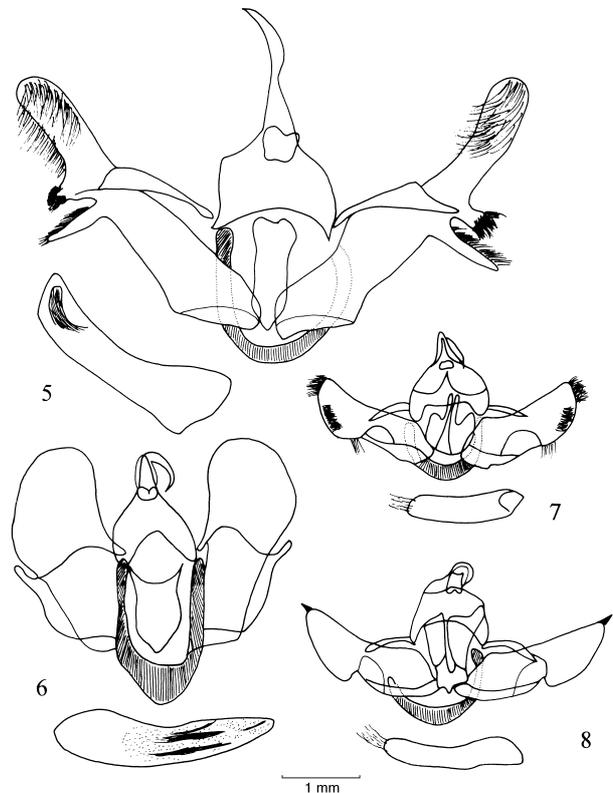
*Materials examined:* 1 female, 1 male, Malaysia, Sarawak, Semengoh For. Res. 24 km S of Kuching, 11-17 Sept. 1966, JFG Clarke, gen. slides 88260W, 88260X.

*Description:* Wing expanse 19-21 mm. Antennae blackish brown on basal 1/2 and apex, yellowish white on other part. Labial palpi dark brown in male, ochreous in female. Head and thorax ochreous, with a silvery luster. Forewing yellow on basal 1/2, yellowish brown on apical 1/2; with a fascia at base, another one at basal 1/3, both grayish silver; cilia yellowish brown. Hindwing yellowish brown in female; upper 1/2 grayish ocher, lower 1/2 yellowish brown, with erect scales in male.

*Male genitalia* (Fig. 7): Uncus small; gnathos



**Figs. 1-4.** Male genitalia. 1. *Tisis sandaradema* sp. n.; 2. *Tisis calybaeella* (Walker); 3. *Tisis bicolorella* Waker; 4. *Tisis boleta* sp. n.



**Figs. 5-8.** Male genitalia. 5. *Tisis seclusella* (Walker); 6. *Tisis plautata* sp. n.; 7. *Tisis argyrophaea* Meyrick; 8. *Tisis luteella* (Snellen).

narrow; costal bar narrow and short, apex acute; sacculus wide and short; valva even in basal 2/3, apex slightly pointed; juxta large, caudal process narrow, about as long as juxta; aedeagus as long as valva, vesica without cornuti.

**Female genitalia** (Fig. 13): Sternum VIII divided into 2 trigonal sternites; ductus bursae wide and long; corpus bursae relatively small, slightly wider than ductus bursa, with an accessory sac which is smaller than corpus bursae; signum crescentic, with spines.

**Distribution:** Malaysia.

### ***Tisis seclusella* (Walker, 1864)**

*Tonosia seclusella* Walker, 1864, List Lepidop. Col. Br. Mus., 29: 796.

*Tisis seclusella*: Meyrick 1925, Genera Insect. 184: 204.

**Material examined:** 1 male, Malaysia, Sarawak, Semengoh For. Res. 24 km S of Kuching, 16 Sept. 1966, JFG Clarke, gen. slide 88260.

**Description:** Wing expanse 16 mm. Antennae black. Labial palpi blackish brown. Head and thorax blackish brown. Forewing light black, veins obvious; cilia light black. Hindwing black, with long ochreous hairs along costal margin; cilia light black. Hindleg light black, with long grayish-white hairs.

**Male genitalia** (Fig. 5): Uncus wide; gnathos

long; costal bar long, widening trigonally in middle; sacculus short; valva narrow and very long, even to a rounded apex, ventral margin with 2 fingered protrusions bearing hairs; juxta very long, caudal 1/4 widening slightly; aedeagus shorter than valva, vesica with a bar apically.

**Distribution:** Malaysia.

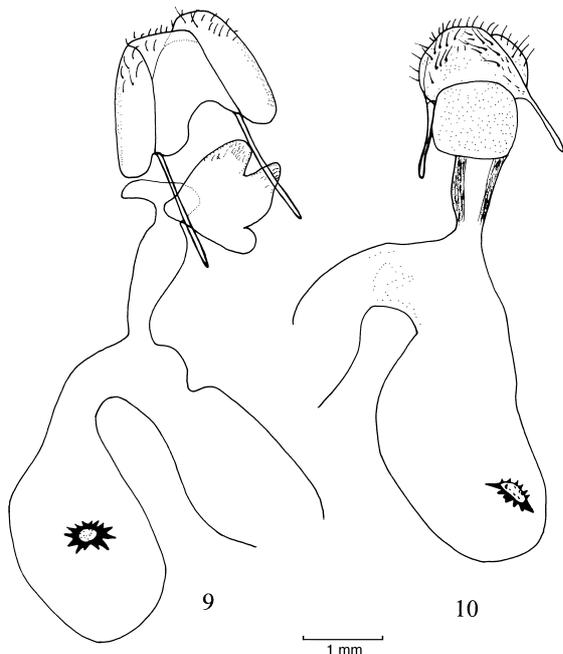
### ***Tisis bicolorella* Walker, 1864**

*Tisis bicolorella* Walker, 1864, List Lepidop. Col. Br. Mus., 29: 793.

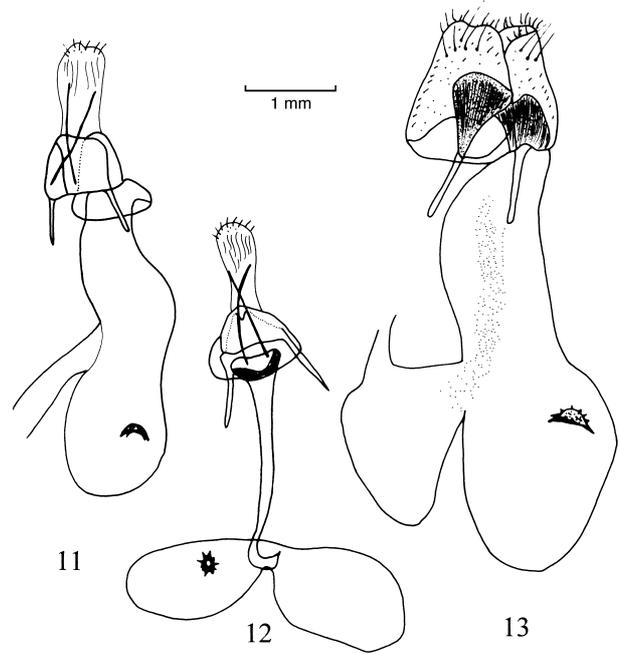
**Materials examined:** 2 female, 1 male, Malaysia, Sarawak, Semengoh For. Res. 24 km S of Kuching, 13 Sept. 1966, JFG Clarke, gen. slides: 88122, 88125, 88126.

**Description:** Wing expanse 17-19 mm. Antennae thickening, blackish brown on basal 1/6; grayish white, ringed with brown on apical 5/6. Labial palpi orange yellow, terminal segments darker. Head and thorax ochreous. Forewing ochreous brown, with a green metallic luster on basal 2/3; cilia ochreous. Hindwing ochreous, with erect brown hairs in anal area; cilia brown.

**Male genitalia** (Fig. 3): Tegumen small; uncus small, lobes obvious; gnathos big, curved; costal bar short; sacculus short; valva wide, emarginated on middle, apex broadly rounded; juxta long, caudal process very long; aedeagus longer than valva,



**Figs. 9-10.** Female genitalia. 9. *Tisis luteella* (Snellen); 10. *Tisis eurylampis* Meyrick.



**Figs. 11-13.** Female genitalia. 11. *Tisis calybaeella* (Walker); 12. *Tisis bicolorella* Walker; 13. *Tisis argyrophaea* Meyrick.

vesica apically with a group of minute spines.

**Female genitalia** (Fig. 12): Sternum caudally narrow, medially concave on caudal margin; antrum funnel-shaped, sclerotized near ductus bursae; ductus bursae very narrow and long; corpus bursa large, with a same-sized accessory sac; signum astral-shaped.

**Distribution:** Malaysia.

***Tisis plautata* sp. n.**

**Holotype:** Male. Indonesia: West Java, Mts. Gede-Panggrango Tjibodas 1400 m, 5 Oct. 1966, JFG Clark, gen. slide 86857.

**Description:** Wing expanse 14 mm. Antennae ochreous on inner surface, dark brown on outer surface. Labial palpi ochreous yellow on inner surface, ochreous brown on outer surface. Head ochreous, face ochreous yellow. Thorax ochreous. Forewing ochreous, with only a vague cell-dot; cilia ochreous. Hindwing ochreous; cilia ochreous.

**Male genitalia** (Fig. 6): Uncus-lobes small;

gnathos narrow and long; costal bar short, apically incorporating with valva; sacculus wide, terminating in a digitate protrusion; valva broad foot-shaped, apex broadly rounded; juxta long, caudal process narrow, pointed; aedeagus as long as valva, 1/2 times as wide as the latter, vesica with 3-4 thin bars and a scrobiculation.

**Etymology:** The name is derived from the Latin word "plautus" (= flat, level).

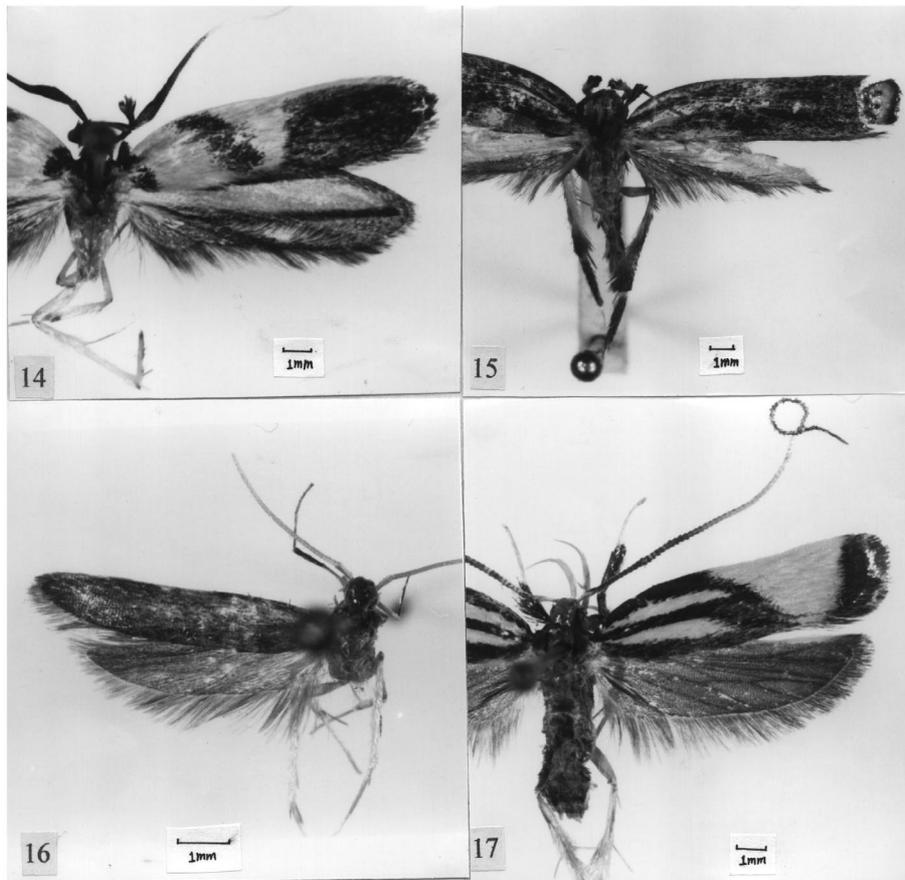
**Distribution:** Indonesia.

**Diagnosis:** This new species differs from all known species by the broad foot-shaped valva bearing a digitate protrusion, and the juxta with a pair of pointed caudal processes.

***Tisis boleta* sp. n.**  
(Fig. 16)

**Holotype:** male. Indonesia: West Java, Mts. Gede-Panggrango Tjibodas 1400 m, 5 Oct. 1966, JFG Clarke, gen. slide 88132.

**Description:** Wing expanse 12 mm. Antennae



**Figs. 14-17.** Adults. 14. *Tisis argyrophaea* Meyrick; 15. *Tisis luteella* (Snellen); 16. *Tisis boleta* sp. n.; 17. *Tisis chalybaeela* Walker.

ochreous yellow. Labial palpi ochreous yellow, terminal segment blackish brown. Head and thorax ochreous brown. Forewing ochreous, without pattern. Hindwing light ochreous.

**Male genitalia** (Fig. 4): Uncus wide; gnathos small; costal bar short, apex level; sacculus wide, terminating in a hooked protrusion; valva wide on basal 1/3, greatly emarginated on basal 1/3, then widening gradually to a broadly rounded apex, with 2 rows of stout spines along ventral margin on outer 2/3; juxta long, mushroom-shaped, without caudal process; aedeagus shorter and narrower than valva, tapering to a pointed apex, without vesica cornuti.

**Etymology:** The name is derived from the Latin word "boletus" (= mushroom).

**Distribution:** Indonesia.

**Diagnosis:** This new species is closely related to *T. hyacinthina*, but differs from the latter by the longer valva bearing stout spines along the ventral margin on the outer 1/2.

**Acknowledgments:** This study was based on materials from the collection at the U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C. I wish to express my sincere thanks to Dr. Donald R. Davis, Curator of Lepidoptera, for his kind support enabling me to examine the materials in the collection. Without his help this study would not have been possible. I would like to thank Mr. Vichai Malikul and the other curators in the Entomology Department for their hospitality during my visit from December 1996 to June

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## 馬來西亞和印度尼西亞產彩祝蛾屬 (*Tisis*) 之分類綜論， 兼記該屬之三新種（鱗翅目：祝蛾科）

武春生<sup>1</sup>

本文重新整理馬來西亞和印尼產彩祝蛾屬 (*Tisis* Walker) 之分類，共記述 9 種。其中有 3 個新種：橘帶彩祝蛾 (*T. sandaradema* sp. n.)、菇環彩祝蛾 (*T. boleta* sp. n.)、平環彩祝蛾 (*T. plautata* sp. n.)。銀灰彩祝蛾 (*T. argyrophaea* Meyrick) 和隱帶彩祝蛾 *T. seclusella* (Walker) 的雄性外生殖器，雙色彩祝蛾 (*T. bicolorella* Walker)、華麗彩祝蛾 *T. calybaeella* (Walker) 及淺黃彩祝蛾 *T. luteela* (Snellen) 的雌、雄外生殖器均是首次進行描述和繪圖。文中提供了該屬的種檢索表。

**關鍵詞：**分類學，鱗翅目，祝蛾科，彩祝蛾屬。

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