

## A Revision of the Genus *Nosphistica* Meyrick (Lepidoptera, Lecithoceridae)

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**Kyu-Tek Park (2002)** A revision of the genus *Nosphistica* Meyrick (Lepidoptera, Lecithoceridae). *Zoological Studies* 41(3): 251-262. Genus *Nosphistica* Meyrick is revised, with the synonymization of *Philoptila* Meyrick, and descriptions of 5 new species: *N. acriella* sp. nov. and *N. undulata* sp. nov. from Thailand, and *N. bisinuata* sp. nov., *N. fuscolepis* sp. nov., and *N. tarokoensis* sp. nov. from Taiwan. Previously known species of *Philoptila* Meyrick are transferred to *Nosphistica* Meyrick: *N. metalychna* Meyrick, comb. nov., *N. effrenata* (Meyrick), comb. nov., and *N. fenestrata* Gozmány, comb. nov. *Athymoris praemecola* Wu is also transferred to *Nosphistica* Meyrick. A key to the species and illustrations of the genitalia are provided.

<http://www.sinica.edu.tw/zool/zoolstud/41.3/251.pdf>

**Key words:** Systematics, *Nosphistica*, *Philoptila*, Taiwan, Thailand.

The genus *Nosphistica* Meyrick, based on *N. erratica* Meyrick, 1911, which was described from India, is characterized by the following: Antenna heavily ciliated in the male, but moderate in the female; both wings usually with well-developed reniform stigmata or spots; a characteristic subbasal blackish shade of scales well represented near angle of base of hindwing; termen of hindwing usually bisinuated; a bridgelike structure connecting tegumen and valval costa of male genitalia not separately presented, but involving into the valva; hindtibia usually with scale-tuft. The type species of *Philoptila*, *P. effrenata* Meyrick, 1918, was described from Kanara, India, and this species is congeneric with that of *Nosphistica* Meyrick, according to its superficial characters, especially in the wing pattern and by having the characteristic subbasal shade of scales around anal angle of hindwing. As with other genera in the family Lecithoceridae, some variations in the venation of this group are also often recognized:  $M_2$  in the forewing is present in the type species of *Philoptila*, *P. effrenata* Meyrick, *P. fenestrata* Gozmány, and *N. fuscolepis* sp. nov., but it is coincident with  $M_3$  in *N. bisinuata* sp. nov., *N. undulata* sp. nov., and *N. acriella* sp. nov. Thus, I pro-

pose *Philoptila* Meyrick as a synonym of *Nosphistica* Meyrick. Since the type species of the two genera were described, four additional species; *P. metalychna* Meyrick, 1935, *P. fenestrata* Gozmány, 1978, *P. dolichina* Wu, 1966, and *P. minutispana* Wu, 1966 were described from China, but the last two species do not seem to belong to *Nosphistica*, according to the description of their superficial characteristics and the female genitalia. The first two species of *Philoptila* Meyrick and the type species are transferred to *Nosphistica* Meyrick: *N. metalychna* Meyrick, 1935, comb. nov., *N. fenestrata* Gozmány, 1978, comb. nov., and *N. effrenata* (Meyrick), 1918, comb. nov. Abbreviations for depositories: CIS - Center for Insect Systematics, Korea; USNM - US National Museum of Natural History, Washington DC; FSCA - Florida State Collection of Athropods, Gainesville, FL; ZMC - Zoological Museum, Copenhagen.

### Genus *Nosphistica* Meyrick, 1911

*Nosphistica* Meyrick, 1911: 733.

Type species: *N. erratica* Meyrick, 1911. [TL: Maskelia and Kandy, Sri Lanka].

*Philoptila* Meyrick, 1918: 111.

Type species: *P. effrenata* Meyrick, 1918 [TL: Nagody, Kanara, India], syn. nov.

### Key to species of the genus *Nosphistica* Meyrick

1. Both wings with sharply acute or moderate apices; termen of forewing concave or moderate; termen of hindwing strongly sinuate; 2nd segment of labial palpus thickened.....2
- Both wings with obtuse apices; termen oblique, nearly straight, or slightly sinuate; 2nd segment of labial palpus slender.....6
2. Forewing with strongly concave termen, aligned with blackish or yellowish white lines along margin; apex of hindwing extremely sharpened, with blackish or yellowish white lines along margin.....3
- Forewing with slightly concave termen, not distinctly aligned with such lines along margin; apex of hindwing not as sharpened, lacking distinct lines.....5
3. Forewing with  $M_3$  present; hindwing ground color grayish brown; dark brown triangular patch not strongly contrasting with ground color; with blackish line along termen and inner margin.....*acriella* sp. nov.
- Forewing lacking  $M_3$ ; hindwing ground color pale gray; brownish triangular patch strongly contrasting with ground color; with yellowish-white line along termen and inner margin.....*fuscolepis* sp. nov.
4. Hindwing with reniform stigma surrounded by white scales medially; postmedian line reaching tornus; hindtibia with well-developed tuft.....5
- Hindwing without such reniform stigma medially; postmedian line not exceeding 1/2; hindtibia without well-developed tuft.....*metalychna* Meyrick
5. Reniform stigma in forewing almost divided into 2 parts, inner margin W-shaped vertically;.....*undulata* sp. nov.
- Reniform stigma in forewing almost straight, inner margin slightly incurved.....*bisinuata* sp. nov.
6. Forewing with  $R_5$  present.....7
- Forewing lacking  $R_5$ .....9
7. Hindwing with creamy-white, somewhat transparent patch near end of cell.....*fenestrata* Gozmány
- Hindwing lacking such a whitish patch.....8
8. Forewing with  $M_3$  present.....*effrenata* Meyrick
- Forewing lacking  $M_3$ .....9
9. Hindwing with a large, white, triangular pickax-shaped costal patch preapically.....*tarokoensis* sp. nov.
- Hindwing with a relatively small costal patch.....*erratica* Meyrick

### *Nosphistica erratica* Meyrick, 1911

*Nosphistica erratica* Meyrick, 1911: 733; Meyrick, 1925: 233, pl. 4, fig. 89. TL: Sri Lanka.

**Diagnosis:** Wingspan 15-17 mm. This species is superficially similar to *N. fenestrata* Gozmány, but can be distinguished by the absence of  $R_5$ , the larger, white triangular costal patch, and the more distinct, whitish patch at the

tornus on the forewing. However, it is easily separable from the latter by the male genitalia, especially in the shape of the valva and juxta.

**Male genitalia:** See Clarke, 1965, pl. 93, fig. 1c-d.

**Material examined:** No further specimen was found.

**Distribution:** Sri Lanka.

**Remarks:** This species is the type species of the genus *Nosphistica* Meyrick, which was described from Maskeliya and Kandy, Sri Lanka, based on two specimens of both sexes. The type (lectotype, 17 mm) is deposited in the Natural History Museum, London.

### *Nosphistica fenestrata* (Gozmány, 1978), comb. nov.

(Figs. 1, 8, 8a, 15, 15a)

*Philoptila fenestrata* Gozmány, 1978: 189, t. 10, fig. 114; Wu, 1996: 131.

**Diagnosis:** This species is superficially similar to the preceding species, *N. erratica* Meyrick, which is the type species of this genus, but it can be distinguished from the latter as noted above. Male genitalia greatly differ from those of the latter.

**Description:** Male and female. Wingspan 14.0-19.5 mm. Head, thorax and tegula dark brown. Antenna with long cilia on flagella. Second segment of labial palpus somewhat stout, pale grayish white, densely speckled with dark brown scales on outer surface; 3rd segment relatively thick, slightly shorter than 2nd. Forewing elongate, with an orange-white, triangular costal patch near 5/6; apex rather acute; reniform stigma surrounded by pale orange-white scales, often indistinct; a weak orange-white patch near tornus; termen slightly concave; fringe concolorous;  $R_4$  and  $R_5$  stalked beyond middle;  $R_3$  stalked with  $R_{4+5}$  at about basal 1/5,  $R_5$  to apex,  $M_2$  almost parallel to  $M_3$ ,  $M_3$  stalked with  $CuA_{1+2}$ , almost parallel. Hindwing somewhat trapezoidal, dark grayish brown; apex rather obtuse; termen slightly sinuate; costa with rough, dark brown scale-like projections before middle and 2/3; a large, semioval, creamy-white patch at middle of costa and a small, sickle-shaped creamy-white streak before apex; a quadrate, somewhat transparent, creamy-white patch at end of cell, preceded by a same-length white streak; fringe grayish brown; subbasal shade with long dark brown scales subbasally and along inner margin before basal 1/4. Abdominal tergite with strong spines along anterior margins.

**Male genitalia** (Fig. 8, 8a): Male genitalia are

known and illustrated for the first time. Uncus with a pair of basal lobes; gnathos relatively strong, long, sickle-shaped. Valva quadrate; costa almost straight, with a long, digitate apical process, bearing setae; lower apical angle forming a short rounded process. Vinculum broad without lateral lobes. Juxta almost pentagonal, with rather triangular, heavily sclerotized lateral lobes and a relatively large protrusion anteriorly. Aedeagus long, slightly bent, as long as vinculum+tegumen; cornutus needle-like, almost straight, about 3/5 length of aedeagus.

*Female genitalia* (Fig. 15, 15a): Caudal margin of 8th sternite emarginate medially. Apophyses anteriores relatively strong, about 1/2 size of posteriores. Ostium bursae rounded.



**Figs. 1-7.** Adults: 1. *Nosphistica fenestrata* (Gozmány); 2. *N. paramecola* (Wu); 3. *N. acriella* sp. nov.; 4. *N. tarokoensis* sp. nov.; 5. *N. fuscolepis* sp. nov.; 6. *N. undulata* sp. nov.; 7. *N. bisinuata* sp. nov.

Antrum membranous, broadly developed into a sac shape. Ductus bursae long, about twice length of corpus bursae; ductus seminalis arising from just beyond antrum. Corpus bursae semi-ovate; signum somewhat rounded, spiculate.

**Material examined:** 2 ♂♂, 1 ♀, Fushan Exp. For. 650 m, Ilan Co., Taiwan, 14-15 Oct. 2000 (KT Park, MS Ko), genital preparation no. CIS-4705; 2 ♂♂, Shanpen For. Stn. 750 m, Liukuei 10 km SE, Kaohsiung Co., 5-6 July 1996 (KT Park, HK Lee); 1 ♀, Hueisun Exp. For., Nantou Co., Taiwan, 22-24 Oct. 1998 (Mey, Evert), gen. prep. no. CIS-4678; 1 ♂, 1-2 km W Meishan, Kaohsiung Co., 29 June-2 July 1980 (D Davis), gen. prep. no. USNM-92200; 4 ♀♀, Meifeng 30 km S Tayuling 2200 m, Nantou Co., 1-8 June 1980 (D Davis), gen. prep. no. USNM-92443, -92465; 1 ♂, Raisya (= Juisui Hot Spring), Hualien Co., 24 Nov. 1934 (S Issiki).

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

**Remarks:** The uncus of the male genitalia has well-developed basal lobes as well as do ordinary members of the Lecithocerinae, but the absence of a costal bar is related to the Torodorinae.

***Nosphistica tarokoensis* Park, sp. nov.**

(Figs. 4, 17, 17a)

**Diagnosis:** This species is superficially similar to the preceding species, *N. fenestrata* Gozmány, but it can be distinguished from the latter by the absence of  $M_3$  in the forewing and by a white pick-ax-shaped patch on the costa preapically in the hindwing.

**Description:** Female. Wingspan 13.0 mm. Head, thorax, and tegula dark brown. Basal segment of antenna relatively slender, dark brown dorsally; flagellum lacking cilia in female. Second segment of labial palpus relatively long, outer surface pale grayish white on basal 2/3 and dark brown on distal 1/3, but pale grayish white on inner surface; 3rd segment dark brown on both sides, as long as 2nd, grayish brown. Forewing elongate; ground color dark brown, sparsely speckled with creamy-white scales before 2/3 length, with an orange-white costal patch near 5/6; apex somewhat obtuse; reniform stigma rounded, near end of cell, surrounded by pale orange-white scales; a weak orange-white patch near tornus; termen nearly straight; fringe concolorous;  $R_5$  absent. Hindwing somewhat trapezoidal, dark grayish brown; apex somewhat acute; termen slightly sinuate; costa with rough, dark brown

scale-like projections before middle and at 2/3; a long costa with creamy-white fascia exceeding halfway across wing and another triangular white fascia near middle, reaching across wing; somewhat transparent, round stigma near end of cell; a large, sickle-shaped, creamy-white patch preapically, extending to middle of wing; fringe grayish brown; subbasal shade with long dark brown scales subbasally and along inner margin before basal 1/4. Abdominal tergite with strong spines along anterior margins.

**Female genitalia** (Fig. 17, 17a): Apophyses anteriores about 1/2 length of apophyses posteriores. Antrum weakly sclerotized, short and wide; followed by membranous bursae, then forming sclerotized sac; ductus bursae very long, about twice as long as corpus bursae. Corpus bursae membranous; signum trihedral, angled plate with a strong tail-like spine anteriorly.

**Type:** Holotype: female, Taroko Natl. Park, Hualien Co., Taiwan, 16-17 Oct. 2000 (KT Park, MS Ko), gen. prep. no. CIS-4706.

**Distribution:** Taiwan.

**Etymology:** The specific name refers to the collection locality of the type species.

***Nosphistica paramecola* (Wu, 1996), comb. nov.**

(Figs. 2, 9, 9a, 16, 16a)

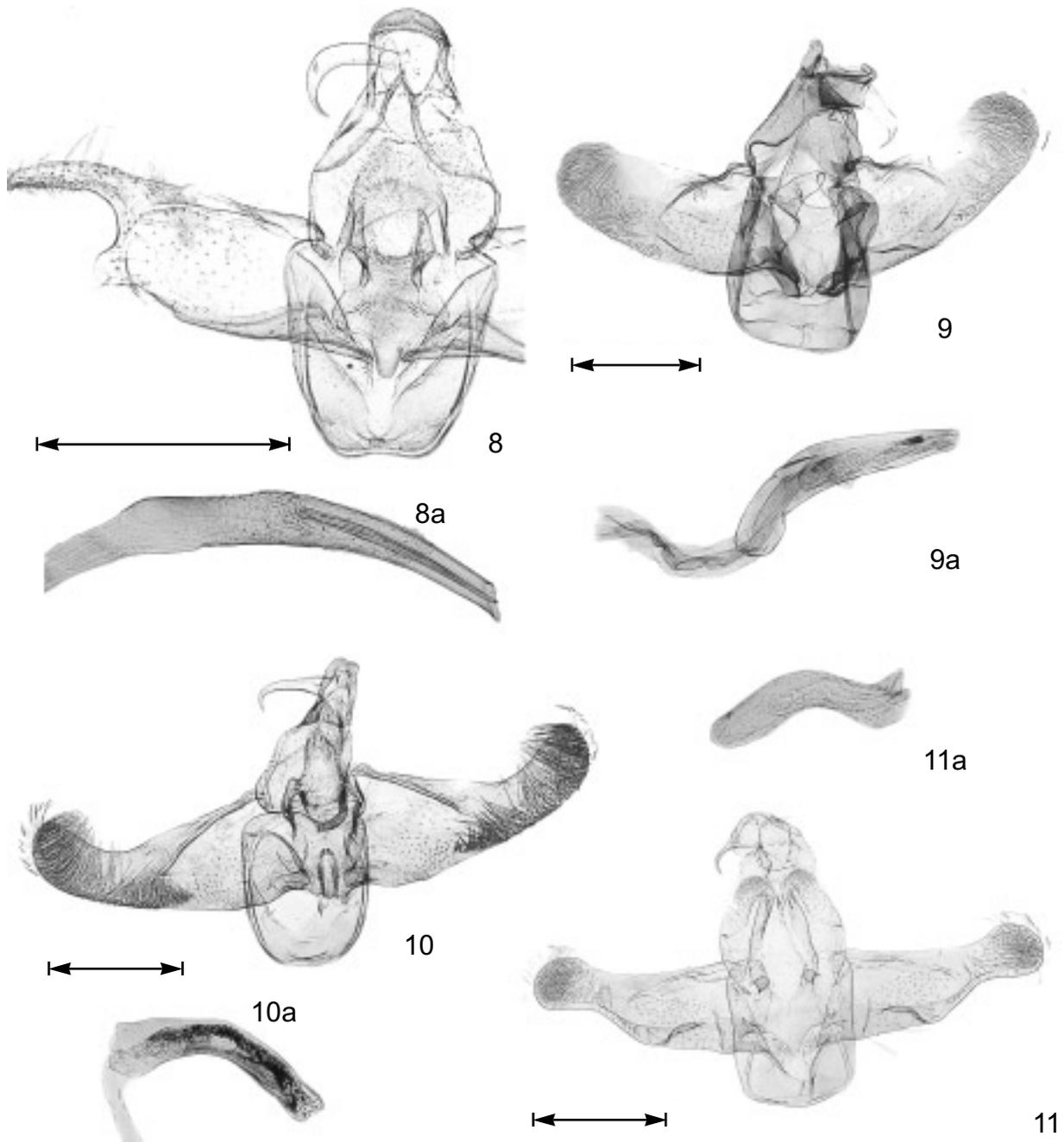
*Athymoris paramecola* Wu, 1996: 307, fig. 2; Wu, 1997: 88; Park, 2000: 7, fig. 2A- C.. TL: China (Hainan).

**Diagnosis:** This species is superficially similar to *Nosphistica effrenata* (Meyrick), but can be differentiated by the absence of  $M_3$  on the forewing.

**Description:** Male and female. Wingspan 14.0-19.5 mm. Head dark brown, with light orange erect scales laterally. Thorax and tegula dark brown. Basal segment of antenna relatively short, dark brown dorsally, lacking pecten; flagella with long cilia, shorter toward middle, well visible before middle in male but not in female; brownish annulations on flagella distinct. Labial palpus long; 2nd segment moderate, pale grayish orange, sparsely speckled with dark brown scales on basal 2/3 and dark brown on distal 1/3; 3rd segment relatively thick, slightly shorter than 2nd, grayish brown on both sides. Forewing elongate; ground color dark brown, sparsely speckled with creamy-white scales before 2/3 of length, with an orange-white costal mark near 5/6; apex rather acute; reniform stigma rounded, near end of cell, surrounded by pale orange-white scales, often indistinct; a weak orange-white patch near tornus; termen almost straight; fringe concolorous;  $R_4$  and  $R_5$

stalked beyond middle;  $R_3$  stalked with  $R_{4+5}$  at about basal 1/5,  $M_1$  remote from  $R_{3+4+5}$ ,  $M_3$  absent,  $CuA_1$  and  $CuA_2$  stalked near base. Hindwing somewhat trapezoidal, dark grayish brown; apex rather obtuse; termen slightly sinuate; costa with rough, dark brown scaly projections before middle and at 2/3; large, quadrate, creamy-

white, somewhat transparent spots at middle of costa and a sickle-shaped or sometimes straight creamy-white streak before the cell spot; preapical spot near apex on costa, with this spot sometimes being enlarged and extending to middle of wing, a streak visible at middle of inner margin, shapes of these creamy-white markings highly variable;



**Figs. 8-11.** Male genitalia and aedeagus (a): 8. *Nosphistica fenestrata* (Gozmány); 9. *N. paramecola* (Wu); 10. *N. bisinuata* sp. nov.; 11. *N. acriella* sp. nov. (Scale: 0.5 mm).

fringe grayish brown; subbasal shade with long dark brown scales subbasally and along inner margin before basal 1/4. Abdominal tergite with strong spines along anterior margin.

**Male genitalia** (Fig. 9, 9a): Uncus relatively short, digitate. Gnathos relatively strong, long, sickle-shaped. Valva quadrate, almost parallel, with rounded distal margin; costa almost straight. Juxta with large digitate lateral arms, as big as those of *N. metalychna* Meyrick or *N. fuscolepis* sp. nov. Vinculum broad. Aedeagus slightly bent before basal 1/3; cornutis short, nail-shaped, with numerous spiculates.

**Female genitalia** (Fig. 16, 16a): Apophyses anteriores longer than 1/2 of apophyses posteriores. Eighth sternite sclerotized, with deep emargination at middle. Antrum long, as long as apophyses anteriores. Ductus bursae more than twice length of corpus bursae; ductus seminalis arising from conjunction with antrum and ductus bursae. Corpus bursae with crescent signum.

**Material examined:** 1 ♂, 1-2 km W Meishan, Kaohsiung Co., 29 June-2 July 1980 (D Davis), gen. prep. no. USNM-92199. Paratypes: 2 ♀ ♀, same data as the holotype, gen. prep. no. USNM-

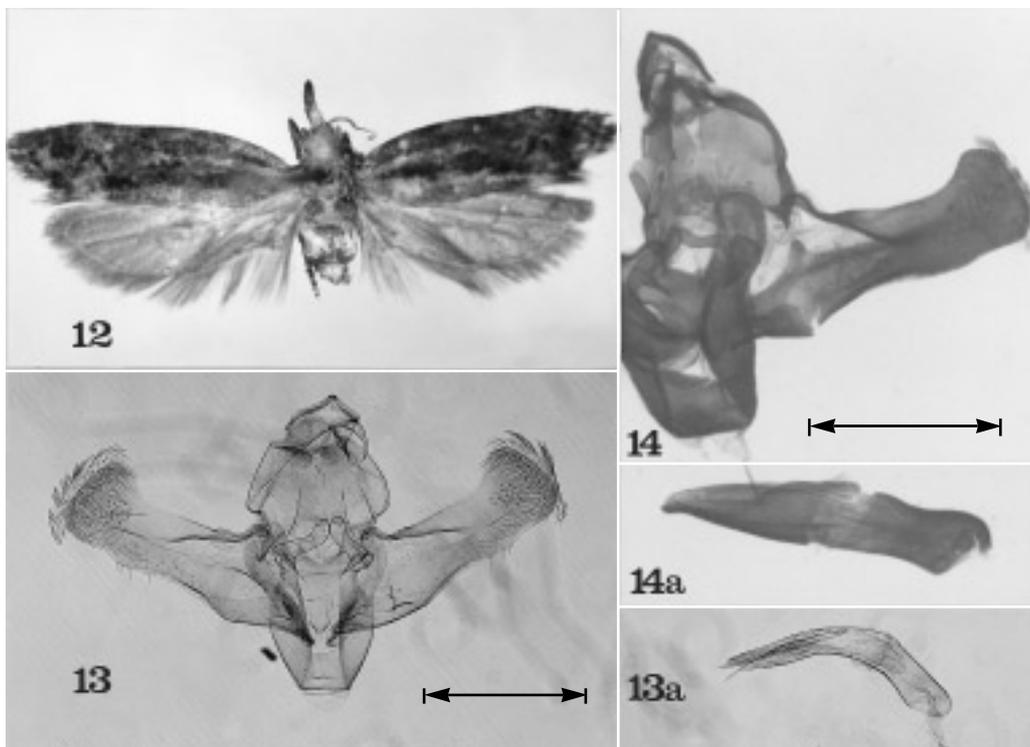
92444; 1 ♂, 10-11 km NE Chiahsien, ca. 300 m, Kaohsiung Co., 3-8 July 1980 (D Davis); 1 ♀, Hassenzan (= Pahsienshan), Taichung Co., 4 June 1942 (S Issiki), gen. prep. no. USNM-92445; 1 ♂, Fushan, Ilan Co., 27 July 1995, light trap, site A-2001 (WJ Jou), gen. prep. no. CIS-4550; 1 ♂, same data, light trap, site B-2000 (JJ Hsiao); 1 ♂, Upper Palin 2260 m, Ilan Co., 11-12 July 1996 (KT Park, JS Lee), gen. prep. no. CIS-4184.

**Distribution:** Taiwan, China (Hainan).

**Remarks:** Wu (1996) placed this species originally in the genus *Athymoris*, based on its similar venation. However, venation in the hindwing differs from that of *Athymoris*:  $M_2$  is connate with  $M_3+CuA_1$ , whereas  $M_2$  is remote from  $M_3+CuA_1$  at the base in *Athymoris*. It somewhat differs from ordinary members of *Nosphistica*, but its superficial and genitalic characters are much related to the latter.

***Nosphistica effrenata* (Meyrick, 1918), comb. nov.**

*Philoptila effrenata* Meyrick, 1911: 111; Meyrick, 1925: 233; Clarke, 1965: 20; Gozmány, 1978: 187, fig. 133A (venation); Wu, 1996: 130. TL: Kanara, India.



**Figs. 12-14.** 12. Holotype of *Nosphistica metalychna* (Meyrick); 13. Male genitalia of *N. fuscolepis* sp. nov.; 13a. ditto, aedeagus; 14. Male genitalia of *N. metalychna* (gen. prep. no. 3676/Gozmány); 14a. ditto, aedeagus (Scale: 0.5 mm).

**Diagnosis:** Wingspan 14 mm. Antenna with long cilia in male, but not ciliate in female. Forewing elongate, almost parallel;  $R_2$ ,  $R_3$ , and  $R_{4+5}$  on same stalk,  $R_4$  and  $R_5$  stalked at 1/2;  $R_5$  reaching to apex,  $M_1$  and  $M_2$  parallel;  $M_2$  remote from  $M_3+CuA_1+CuA_2$ ; apex somewhat acute. Hindwing broader than forewing, trapezoidal;  $M_2$  and  $M_3$  coincident.

**Material examined:** No further specimen has been found since it was described.

**Distribution:** India.

**Remarks:** This species is the type species of the genus *Philoptila* Meyrick, 1918.

***Nosphistica acriella* Park, sp. nov.**

(Figs. 3, 11, 11a)

**Diagnosis:** The new species is similar to the following new species, *N. fuscolepis* sp. nov., but can be distinguished by absence of a whitish basal line of fringe along the termen, by the arch-stigma near the end of the cell, by not being strongly convex at the middle of the postmedian line of the forewing, and by the grayish ground color of the hindwing.

**Description:** Male. Wingspan 16.0 mm. Head orange white, speckled with brown scales. Thorax orange white; tegula orange white, speckled with dark brown scales on upper 1/2. Basal segment of antenna moderately elongate, dark brown dorsally; flagella with long cilia ventrally. Second segment of labial palpus long, thickened, orange white, sparsely speckled with dark brown scales, especially on basal 1/3; 3rd segment slender, slightly shorter than 2nd, pale orange. Forewing ground color orange white, scattered with dark brown scales throughout, golden-yellow scales along costa; apex sharply acute; reniform stigma arched, surrounded by creamy-white scales; submarginal line white, curved outwardly; termen strongly concave, aligned with dark brown line along termen; fringe light orange, dark brown at apex, but dark brown near tornus;  $R_4$  and  $R_5$  stalked at about 4/5,  $R_5$  to termen,  $R_3$  stalked with  $R_{4+5}$  beyond middle,  $M_2$  coincident with  $M_3$ ,  $CuA_1$  and  $CuA_2$  stalked beyond middle. Hindwing somewhat trapezoidal, gray; reniform stigma oblique, surrounded by creamy-white scales; postmedian line almost straight, almost reaching inner margin; apex sharply acute; termen bisinuate, angled at 1/3 and near tornus, aligned with dark brown line along margin; fringe relatively long, orange white, brown at apex; dark brown subbasal shade of scales well developed in subbasal area

and along inner margin before basal 1/4.

**Male genitalia** (Fig. 11, 11a): Uncus short, broad, with round distal margin. Gnathos sickle-shaped, much shorter than that of *N. bisinuata* sp. nov. Valva elongate; costa almost straight with somewhat clavate distal part, with dense setae on distal part and few strong setae along ventral margin medially. Juxta with V-shaped caudal margin, with rather sharply protruding convex anteriorly; lateral arms long, sclerotized, connected with weakly sclerotized plate caudally, extending to 2/3 of tegumen; with semiovalate flap basally. Aedeagus bent medially, with two short protrusions apically.

**Type:** Holotype: male, Nakhon Nayok Prov., Khao Yai Natl. Park, ca. 700 m, Thailand, 29 Sept.-6 Oct. 1984 (leg. Karsholt, Lomholdt, Nielsen), gen. prep. no. ZM/Park-3. Holotype to ZMC on indefinite loan from Taiwan.

**Distribution:** Thailand.

**Etymology:** The specific name is derived from Latin *acri* (= acute), referring to the sharply acute apex of the hindwing.

***Nosphistica fuscolepis* Park, sp. nov.**

(Figs. 5, 13, 13a)

**Diagnosis:** The new species is very similar to the preceding species in appearance, but it can be distinguished from *N. acriella* sp. nov. by the presence of  $M_3$ , with whitish basal line of fringe on termen, strongly convex postmedian line of forewing, and pale grayish orange of hindwing; and from *N. metalychna* Meyrick by the strongly concave termen, comma-shaped discal spots on the forewing, and also the ground color of the hindwing. The male genitalia are very similar to those of *N. metalychna* Meyrick, but can be distinguished as described under male genitalia.

**Description:** Male. Wingspan 16.0 mm. Head and thorax orange white, speckled with brown scales; tegula orange white, speckled with dark brown scales on upper 1/2. Antenna with long cilia ventrally, dark brown annulations on flagella. Second segment of labial palpus thickened, brownish orange, evenly speckled with dark brown scales; 3rd segment slender, shorter than 2nd, speckled with dark brown scales. Forewing ground color orange white, with irregularly scattered dark brown scales; apex sharply pointed; reniform stigma comma-shaped, surrounded by creamy-white scales; postmedian line white, strongly convex at middle, followed by orange area; termen strongly concave, aligned with dark

brown line along termen; fringe light orange, with white basal line, dark brown beyond middle of termen;  $R_4$  and  $R_5$  stalked beyond 2/3,  $R_5$  to termen,  $M_2$  present, close to  $M_3$  at base,  $M_3$  approximately at  $CuA_{1+2}$ ,  $CuA_1$ , and  $CuA_2$  stalked near base. Hindwing somewhat trapezoidal, pale grayish orange, with large, triangular brown blotch beyond middle above 1/2; postmedian line nearly straight, white, followed by orange area; apex sharply acute; termen bisinuated, strongly angled at 1/3, reaching tornus; fringe relatively long, orange white, with white basal line; dark brown subbasal shade of scales well-developed on subbasal area and along inner margin at basal 1/4.

**Male genitalia** (Fig. 13, 13a): Uncus very short, with round distal margin. Gnathos with strong, broad lateral arms; median process relatively short. Valva broadly elongate; distal part expanded, bearing dense setae inwardly and numerous broad scales outwardly; apex rounded; ventral margin expanded at basal 1/3 and convex at distal 2/3; sacculus broad, extending to 1/3. Juxta large, convex anteriorly; lateral arms relatively long, elbowed, digitate, with rounded apex. Vinculum broad. Aedeagus bent medially, with 3-5 needle-like cornuti. Aedeagus very similar to that of *metalychna* Meyrick, but much more slender and bent medially, and lateral arms of juxta stouter than those of the latter.

**Types:** Holotype: male, 1-2 km W Meishan, Kaohsiung Co., Taiwan, 29 June-2 July 1980 (D Davis), gen. prep. no. USNM-92403. Paratype: 1 ♂, Kansirei (= Kuantzuling), Chiayi Co., 18 Oct. 1934 (S Issiki). Holotype and paratype in USNM.

**Distribution:** Taiwan.

**Etymology:** The specific name is derived from *fusco* (= blackish) and *lepis* (= scale), referring to the fuscous scale tuft in the anal area of the hindwing.

***Nosphistica metalychna* (Meyrick, 1935), comb. nov.**

(Figs. 12, 14, 14a)

*Philoptila metalychna* Meyrick, 1935: 73; Meyrick, 1925: 233; Clarke, 1964: 20; Gozmány, 1978: 187, fig. 113 (head part); Wu, 1996: 130. TL: China (Jiangsu).

**Diagnosis:** The male genitalia are barely distinguishable from those of *N. fuscolepis* sp. nov., but can be easily distinguished by the stouter aedeagus. According to the original description and figure by Gozmány (1978), the general appearance is as follows: Wingspan 14 mm.

Forewing elongate, with 2 fuscous spots near end of cell; apex somewhat acute; termen oblique, slightly concave;  $R_5$  to termen. Hindwing dark fuscous, with a suffused orange apical blotch, almost preceded by a somewhat sinuous white line on costa at 2/3, reaching halfway across wing; rough projecting blackish and whitish scales on basal 1/4 of inner margin; apex sharply acute; termen strongly sinuate. Hindtibia without tuft. Female unknown.

**Male genitalia** (Fig. 14, 14a): See Gozmány, 1978, t. 44, fig. 113. According to the genital slide GU-3676-Gozmány which is deposited in the Grigore Antipa Museum of Natural History, Bucharest, the shape is very similar to that of *N. fuscolepis* sp. nov., but can be separated by the more-slender arms of the juxta and the stouter aedeagus.

**Material examined:** The photo (Fig. 12) of the holotype was examined. No further specimen has been found since it was described.

**Distribution:** China (Jiangsu).

**Remarks:** This species was described, based on a single male collected from Lungtan, Nanjing, China (22 July 1922, H Höne, gen. prep. 3676/Gozmány), and the holotype is preserved in the Grigore Antipa Museum of Natural History in Bucharest, Rumania. According to the photo (Fig. 12) of the holotype which Dr. Mihai Stanescu (Grigore Antipa Museum of Natural History, Bucharest) prepared for me, it looks somewhat different from the figure by Gozmány (1978, fig. 113), in not having such a heavily sinuate termen and a somewhat obtuse apex of the hindwing, but this may be due to the positioning of the specimens.

***Nosphistica bisinuata* Park, sp. nov.**

(Figs. 7, 10, 10a, 18, 18a)

**Diagnosis:** This new species is very similar to the following new species, *N. undulata* sp. nov., in appearance, but it can be distinguished from the latter by the female genitalia. The type species of *Philoptila* Meyrick (*effrenata* Meyrick) and *N. fenestrata* Gozmány have  $M_2$  in the forewing, but  $M_2$  is coincident with  $M_3$  in this new species.

**Description:** Male and female. Wingspan 15.0-16.0 mm. Head pale gray, speckled with brown scales. Thorax and tegula pale brownish gray, speckled with brown scales. Basal segment of antenna moderately elongate, dark brown dorsally; flagella with long cilia in the male, well visible before middle; cilia shorter toward middle. Labial palpus relatively long; 2nd segment creamy white,

rather thick, sparsely speckled with brown scales, more brown scales on basal 1/3 and near apex; 3rd segment slender, slightly shorter than 2nd, dark brown ventrally. Forewing somewhat narrow; brownish gray; apex somewhat obtuse; basal stigma indistinct; reniform stigma near end of cell, surrounded by white scales; postmedian line white, angled outwardly at middle; with orange-white area beyond postmedian line on costa;  $R_4$  and  $R_5$  stalked,  $R_3$  stalked with  $R_{4+5}$  at about basal 1/3,  $M_3$  absent,  $CuA_1$  and  $CuA_2$  stalked beyond middle. Hindwing somewhat trapezoidal, gray; apex sharply acute; termen bisinuate, angled at 1/3 and near tornus; reniform stigma well developed, elongate; postmedian line extending to 2/3 across wing, but not reaching inner margin; fringe relatively long, representing an orange-white line along margin; subbasal shade with long, dark brown scales subbasally and along inner margin before basal 1/4. Abdominal tergites with broad spine zones.

*Male genitalia* (Fig. 10, 10a): Uncus short, somewhat triangular. Gnathos sickle-shaped. Valva elongate; costa concave beyond middle. Juxta with U-shaped, heavily sclerotized distal margin; lateral arms stout, connected with weakly

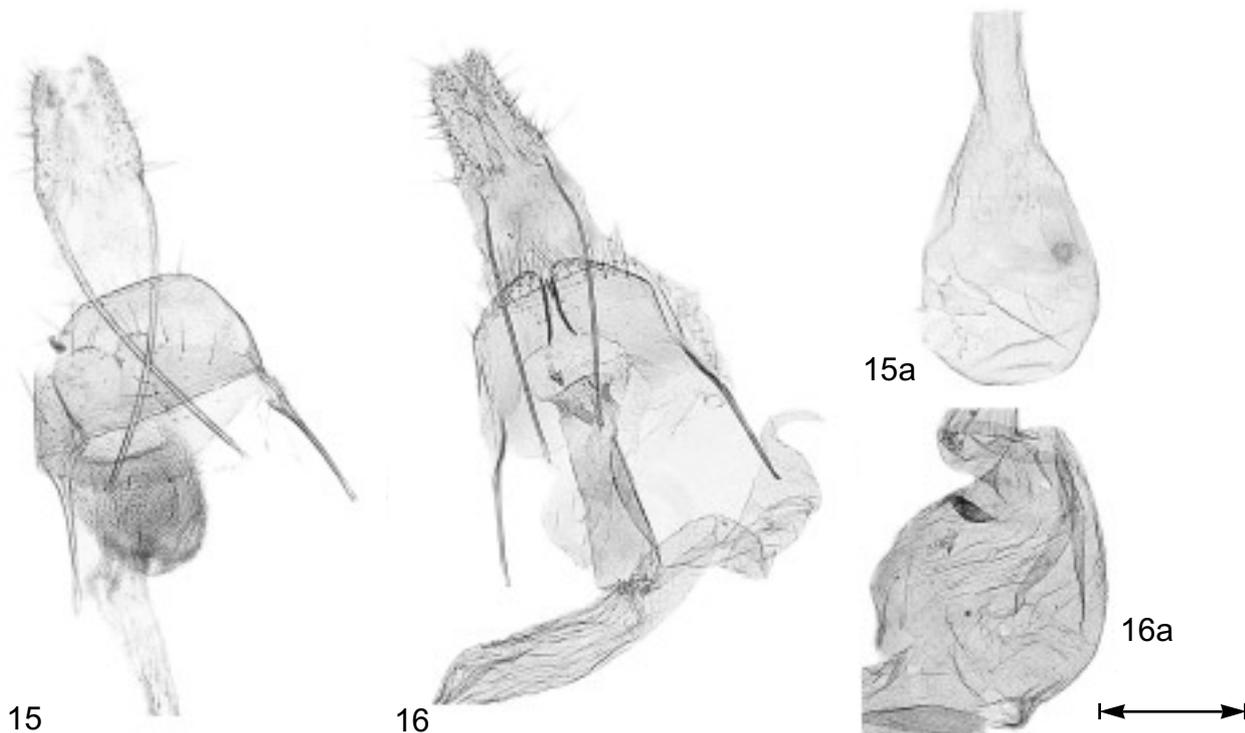
sclerotized plate caudally. Aedeagus bent medially, a long row of numerous short spines and a short row in series, 4-5 denticles preapically on dorsal margin.

*Female genitalia* (Fig. 18, 18a): Caudal margin of 8th sternite concave medially; antrum short, band-like, followed by ductus bursae, densely spiculate on inner surface. Corpus bursae large, ovate; signum crescentic, heavily sclerotized.

*Types*. Holotype: male, Kukuan, Taichung Co., Taiwan, 8 July 1996 (KT Park, JS Lee), gen. prep. no. CIS-4719. Paratypes: 1 ♂, same data as the holotype, CIS; 2 ♀♀, Kenting Park, Pingtung Co., 29-31 Aug. 1980 (D Davis), gen. prep. no. USNM-92447, USNM; 2 ♀♀, Kenting Park, Pingtung Co., 1-5 Sept. 1983 (JB Heppner), FSCA; 1 ♀, Kenting Park 255 m, Pingtung Co., 9-15 Mar. 1990 (Heppner & Wang), gen. prep. no. USNM-92446, -92448, FSCA: 1?, Kansirei (= Kuantzuling), Chiayi Co., 24 Mar. 1935 (Issiki), USNM. Holotype to CIS (Center for Insect Systematics, Korea) on indefinite loan from Taiwan, and paratypes to USNM and FSCA.

*Distribution*: Taiwan.

*Etymology*: The specific name is derived from the bisinuate termen of the hindwing.



**Figs. 15-16.** Female genitalia and corpus bursae with signum (a): 15. *Nosphistica fenestrata* (Gozmány); 16. *N. paramaecola* (Wu) (Scale: 0.5 mm).

***Nosphistica undulata* Park, sp. nov.**

(Figs. 6, 19, 19a)

**Diagnosis:** This new species is barely distinguishable from the preceding new species, *N. bisinuata* sp. nov. in the superficial characters, but it can be easily separated from the latter by the female genitalia, and by having a broadly specialized antrum.

**Description:** Female. Wingspan 15.0 mm. Reniform stigma in forewing with orange-white border, elongated or almost divided into 2 parts, inner margin somewhat W-shaped; termen sinuate; venation of wings similar to that of the preceding species, *N. bisinuata* sp. nov. Abdominal tergites with broad spine zones.

**Female genitalia** (Fig. 19, 19a): Caudal margin of 8th sternite emarginate medially. Antrum broad, heavily sclerotized, emarginate on caudal margin medially, followed by broad densely spiculate ductus bursae. Corpus bursae with a large crescentic signum.

**Type:** Holotype: female, Leoi Prov., Phu Luang Wildlife Sanctuary 700-900 m, Thailand, 8-14 Oct. 1984 (Karsholt, Lomholdt Nielsen), gen. prep. no. ZM/Park-1. Holotype to Zoological Museum, Copenhagen on indefinite loan from Thailand.

**Distribution:** Thailand.

**Etymology:** The specific name is derived from the Latin, *undulat*, referring to the strongly waved termen of the hindwing.

**DISCUSSION**

The genus *Philoptila* Meyrick, 1918 has been differentiated from the monotypic *Nosphistica* Meyrick, 1911 by the absence of  $R_5$  in the forewing (Meyrick 1918, Gozmány 1978). However, there is no doubt that these 2 genera are congeneric, because they have very similar superficial characters, and the genital characters are also closely related. The characteristically developed subbasal shade of dark brown scales on the anal area of the hindwing in these two genera is considered to be an autapomorphic character of the genus. The venation of this family is sometimes highly variable within a genus, as referred to by Park (2000). Even though *Nosphistica* Meyrick (type species: *erratica* Meyrick) has no  $R_5$  in the forewing, other characters are closely related to *Philoptila* Meyrick (type species: *effrenata* Meyrick). The condition of the

$M_2$  and  $M_3$  veins in the forewing is also variable in this group:  $M_2$  and  $M_3$  are present in the type species, *N. effrenata* (Meyrick), *N. fuscolepis* sp. nov., and in *N. fenestrata* Gozmány, but  $M_2$  is coincident with  $M_3$  in other species: *N. bisinuata* sp. nov., *N. undulata* sp. nov., *N. acriella* sp. nov., and *N. paramecola* (Wu). Vein  $R_5$  is also somewhat variable: it is absent in *N. erratica* Meyrick and *N. tarokoensis* sp. nov. According to the wing pattern, species can be distinctly grouped into the *acriella*-group (characterized by a strongly sinuate termen and a sharply acute apex of the hindwing): *N. acriella* sp. nov., *N. fuscolepis* sp. nov., *N. metalychna* (Meyrick), *N. bisinuata* sp. nov., *N. undulata* sp. nov., and the *fenestrata*-group (termen slightly sinuate or just oblique with an obtuse apex in the hindwing): *N. fenestrata* (Gozmány), *N. effrenata* (Meyrick), *N. tarokoensis* sp. nov., *N. erratica* Meyrick, and *N. paramecola* (Wu). In this context, I synonymized *Philoptila* Meyrick, 1918 with *Nosphistica* Meyrick, 1911 by the principle of priority (ICZN, Article 23).

Gozmány (1978) and Wu (1997) have placed the genus *Nosphistica* Meyrick as well as *Philoptila* Meyrick in the Lecithoceridae, but the male genitalic characters are closer to those of the Torodorinae, rather than to those of the Lecithocerinae, in not having the typical bridge-like structure (= costal bar) connecting the tegumen and the valva. In the case of *N. fenestrata* Gozmány, the shape of the valva is related to Torodorinae, but the presence of the basal lobes of the uncus is more related to that of the Lecithocerinae; in *N. paramecola* Wu, the uncus is developed as well as those of the Torodorinae, but the costal bar of the valva seems to have originated from the Lecithocerinae. For these reasons, I considered the genus *Nosphistica* Meyrick to be an intermediate group between the 2 subfamilies, and the subfamily to which it belongs needs to be discussed.

Recently Wu (1996) described two new species of *Philoptila* Meyrick, *P. minutispina* Wu and *P. dolichina* Wu from China, based only on females, but there is still doubt as to whether these should be placed in this genus, based on the poor descriptions of the superficial and female genitalic characteristics. Thus, they are not included in this revision. Wu (1996) also described *N. paramecola* (Wu) as a member of the genus *Athymoris*, based on the venation, but it greatly differs from the latter by the  $M_2$  in the hindwing and male genital characteristics. The venation of *N. paramecola* Wu also is somewhat different from

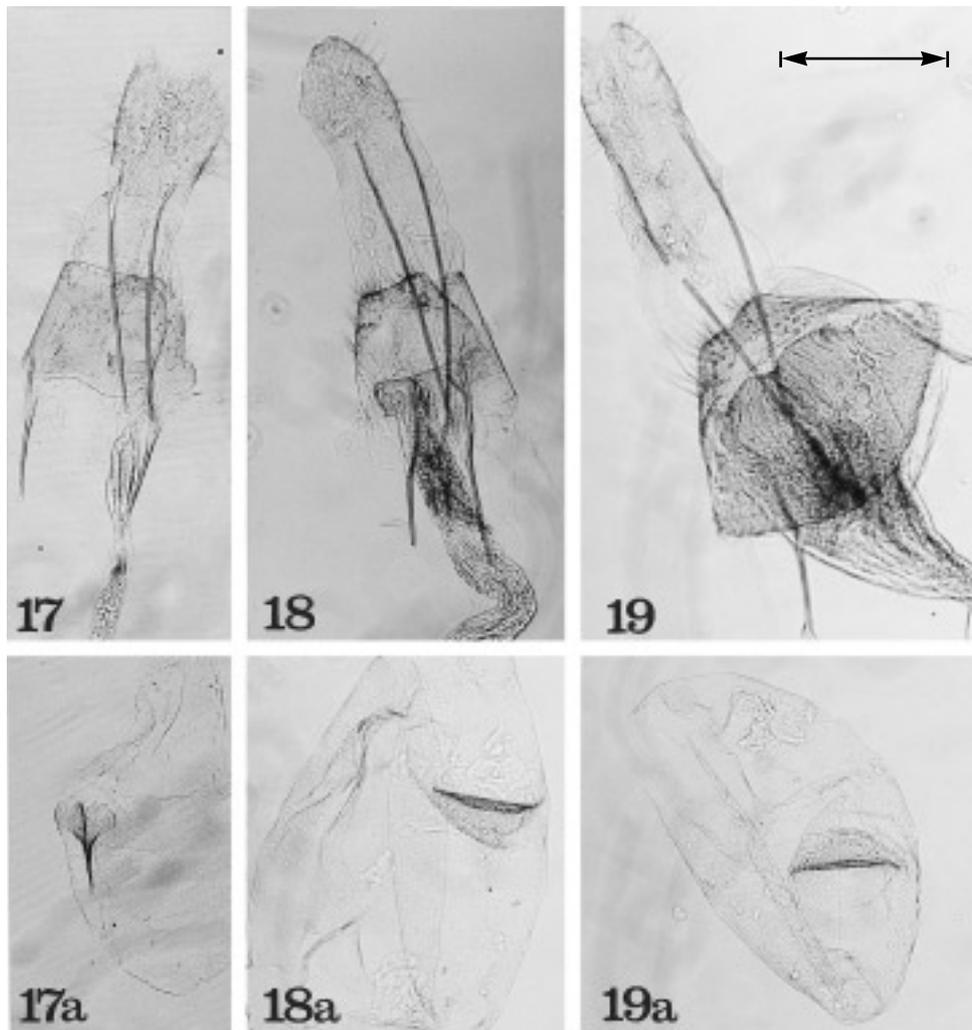
that of *Nosphistica* Meyrick, but there is no doubt that it belongs to this genus, based on its superficial appearance.

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**Figs. 17-19.** Female genitalia and corpus bursae with signum (a): 17. *N. tarokoensis* sp. nov.; 18. *N. bisinuata* sp. nov.; 19. *N. undulata* sp. nov. (Scale: 0.5 mm).

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## 祝蛾科 (鱗翅目) *Nosphistica* 屬之分類研究

朴奎澤

本研究增訂 *Nosphistica* 屬之種類，包括 *Philoptila* 屬的同名化與 *N. acriella*、*N. undulata*、*N. bisinuata*、*N. fuscolepis* 和 *N. tarokoensis* 等五新種之描述；前二新種產於泰國，後三新種則採集自臺灣。*Philoptila* 內所有種類經同名化後全部轉入 *Nosphistica*，因此新組合為 *N. metalychna* (Meyrick)、*N. effrenata* (Meyrick) 和 *N. fenestrata* (Gozmány)，*Athymoris praemecola* Wu 也被轉入 *Nosphistica* 屬中。本文並製有種的檢索和性器圖。

**關鍵詞：**系統分類，*Nosphistica*，*Philoptila*，臺灣，泰國。

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