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A systematic study on the genus *Crypsithyris* Meyrick, 1907 from China (Lepidoptera: Tineidae)*

Y. L. Xiao & H. H. Li

Abstract

Five species of the genus *Crypsithyris* Meyrick, 1907 are treated from China in this paper, including three species new to science (*Crypsithyris introflexa* Xiao & Li, sp. n., *Crypsithyris obtusangula* Xiao & Li, sp. n. and *Crypsithyris hebeiensis* Xiao & Li, sp. n.) and one species (*Crypsithyris spelaea* Meyrick) newly recorded for China. The photographs of the adults, the wing venations and the genital structures of the new species are provided. Keys to the Chinese species are given.

KEY WORDS: Lepidoptera, Tineidae, *Crypsithyris*, systematics, new species, new record, China

Un estudio sistemático del género *Crypsithyris* Meyrick, 1907 de China (Lepidoptera: Tineidae)

Resumen

En este trabajo se tratan cinco especies del género *Crypsithyris* Meyrick, 1907 de China, incluyendo tres especies nuevas para la ciencia (*Crypsithyris introflexa* Xiao & Li, sp. n., *Crypsithyris obtusangula* Xiao & Li, sp. n. y *Crypsithyris hebeiensis* Xiao & Li, sp. n.) y una especie (*Crypsithyris spelaea* Meyrick) se cita nueva para China. Se dan las fotografías de los adultos, de la venación alar y de la estructura genital de las nuevas especies. Se dan claves de las especies chinas.

PALABRAS CLAVE: Lepidoptera, Tineidae, *Crypsithyris*, sistemática, nuevas especies, nuevas citas, China

Introduction

The genus *Crypsithyris* Meyrick is characterized by the presence of a subhyaline spot and absence of the vein R_1 in the forewing, and the presence of a bundle of thick bristles on the female 8th abdominal segment. It currently comprises 35 named species, which are mainly distributed in the Afrotropical, Oriental, Palearctic and Australia regions. In China only one species, *Crypsithyris hoenei* Petersen & Gaedike, was reported from Yunnan Province (PETERSEN & GAEDIKE, 1993). The present paper describes three new species and newly reports one species from China. All the studied specimens, including the types, are deposited in the Department of Biology, Nankai University, Tianjin, China.

Crypsithyris Meyrick, 1907

Crypsithyris Meyrick, 1907, J. Bombay. Hist. Soc., **17**: 752.

Type species: *Crypsithyris mesodyas* Meyrick, 1907, ibidem, **17**: 753.

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Biology: Larvae of *Crypsithyris japonica*, *C. saigusai* and *C. cana* are lichenophagous (FLETCHER, 1933; SAKAI & SAIGUSA, 2002). Larvae of *C. spelaea* probably feed on bat-guano, *C. thamnomyphila* on rodent hairs and vegetable detritus, and *C. crococomma* on litter (ROBINSON & NIELSEN, 1993; SAKAI & SAIGUSA, 2002).

Distribution: China, Korea, Japan, Indonesia, India, Sri Lanka, Sierra Leone, Uganda, Congo, Mozambique, Rhodesia, South Africa, Australia, Samoa.

Key to the Chinese species of *Crypsithyris* Meyrick based on external characters

- 1 - Wingspan no more than 13.0 mm 2
 Wingspan 15.0 mm *C. hoenei*
- 2 - R_{4+5} long-stalked 3
 R_4 and R_5 separated *C. obtusangula* Xiao & Li, sp. n.
- 3 - Hindwing with M_1 and M_2 separated 4
 Hindwing with M_1 and M_2 stalked *C. introflexa* Xiao & Li, sp. n.
- 4 - Head and forewing dark ochreous *C. spelaea*
 Head ochreous, forewing ochreous white *C. hebeiensis* Xiao & Li, sp. n.

Key to the Chinese species of *Crypsithyris* Meyrick based on male genitalia

- 1 - Aedeagus with two sclerotised club-shaped cornuti 2
 Aedeagus without such cornuti 3
- 2 - Distal half of valva obviously narrower than basal half, about $\frac{2}{3}$ width of basal half *C. obtusangula* Xiao & Li, sp. n.
 Distal half of valva about equal to basal half in width *C. spelaea*
- 3 - Distal end of valva wide and round 4
 Distal end of valva with a hooked process at middle *C. introflexa* Xiao & Li, sp. n.
- 4 - Valva with basal and distal portion slightly wider than median portion, aedeagus with numerous small spine-like cornuti *C. hebeiensis* Xiao & Li, sp. n.
 Valva with basal and distal portion obviously wider than median portion, aedeagus without cornuti *C. hoenei*

Crypsithyris introflexa Xiao & Li sp. n. (Figs. 1-A, 2-A, 3-A)

Holotype: ♂, China: Chishui (28.34° N, 105.42° E), Guizhou Province, alt. 390 m, 30-V-2000, leg. Du Yanli, genitalia slide No. XYL03367.

Male (Fig. 1-A): Wingspan 8.0 mm. Head light ochreous. Inner side of labial palpi ochreous white, outer side dark brown except for third segment ochreous white on end. Antennae pale ochreous, scape with length about three times of its width. Thorax ochreous white. Tegulae dark brown, posterior margin ochreous white.

Wings (Fig. 2-A): Forewing with R_4 and R_5 long-stalked, M_2 and M_3 long-stalked; ochreous white, scattered sporadically with dark brown scales; costal margin dark brown at base, cell with a large dark brown spot at distal end; hyaline spot small and inconspicuous; cilia ochreous white. Hindwing with M_1 and M_2 short-stalked; pale white; cilia ochreous white, longer than width of the wing.

Male genitalia (Fig. 3-A): Uncus short triangular, distally pointed. Gnathos arms curved, somewhat club-shaped, slightly narrower at middle. Valva with median portion about $\frac{1}{2}$ as wide as basal portion, gradually broadened toward distal; distal end about $\frac{3}{4}$ width of basal portion, medially with long process curved inward; costa concave, ventral margin projected near middle and somewhat forming

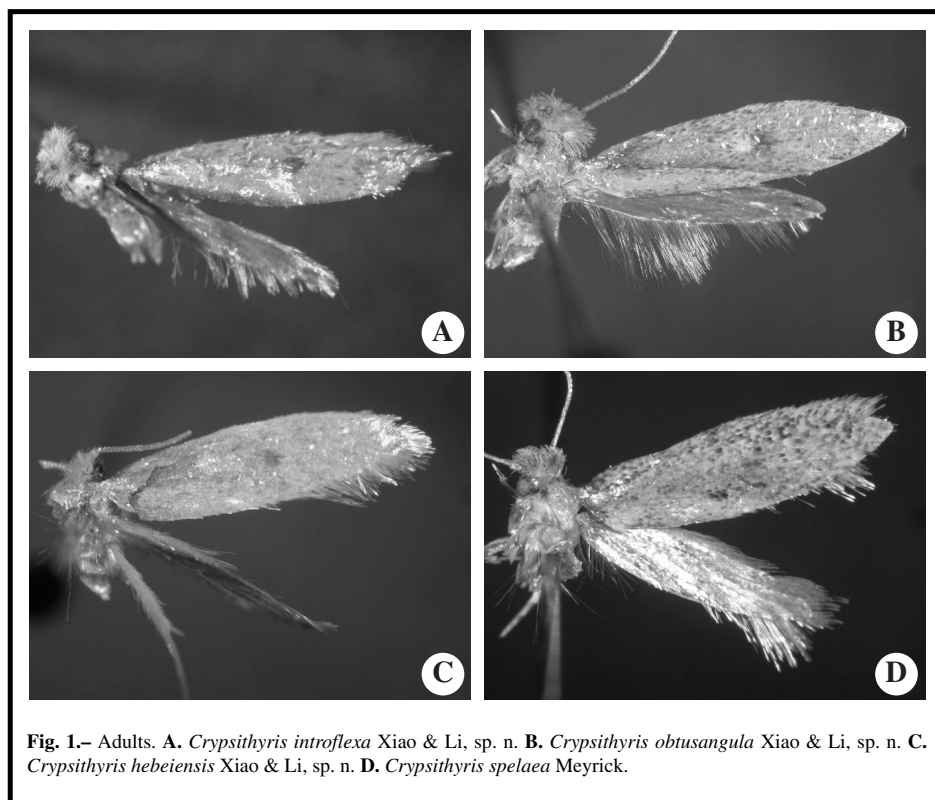


Fig. 1.— Adults. **A.** *Crypsithyris introflexa* Xiao & Li, sp. n. **B.** *Crypsithyris obtusangula* Xiao & Li, sp. n. **C.** *Crypsithyris hebeiensis* Xiao & Li, sp. n. **D.** *Crypsithyris spelaea* Meyrick.

subtriangular process. Transtilla very narrow. Saccus somewhat subtriangular, distal portion long and narrow. Aedeagus slender and curved, somewhat S-shaped, cornuti composed of numerous small spines spreading in the distal half.

Female: Unknown.

Diagnosis: This new species can be easily distinguished from other described species of *Crypsithyris* by the male genitalia: valva apically with a long and curved inward process at middle; aedeagus somewhat S-shaped.

Etymology. The specific name is derived from the Latin *introflexus* = curved inward, referring to the curved process at middle of apex in valva.

***Crypsithyris obtusangula* Xiao & Li, sp. n. (Figs. 1-B, 2-B, 3-B)**

Holotype: ♂, China: Mojiang (23.25° N, 101.41° E), Yunnan Province, 11-XI-1987, leg. Li Houhun, genitalia slide No. XYL03550. Paratype: 1 ♂, Huaxi district, Guiyang City, Guizhou Province, 25-VI-1999, leg. Du Yanli.

Male (Fig. 1-B): Wingspan 10.0-12.0 mm. Head ochreous. Labial palpi with inner side ochreous whitie, outer side dark brown or dark ochreous; third segment ochreous white on end. Antennae ochreous or ochreous brown, scape with length about 2.5 times of its width. Thorax ochreous. Tegulae with anterior half ochreous brown, posterior half ochreous.

Wings (Fig. 2-B): Forewing with R_2 and R_3 fused and formed a long and narrow accessory cell,

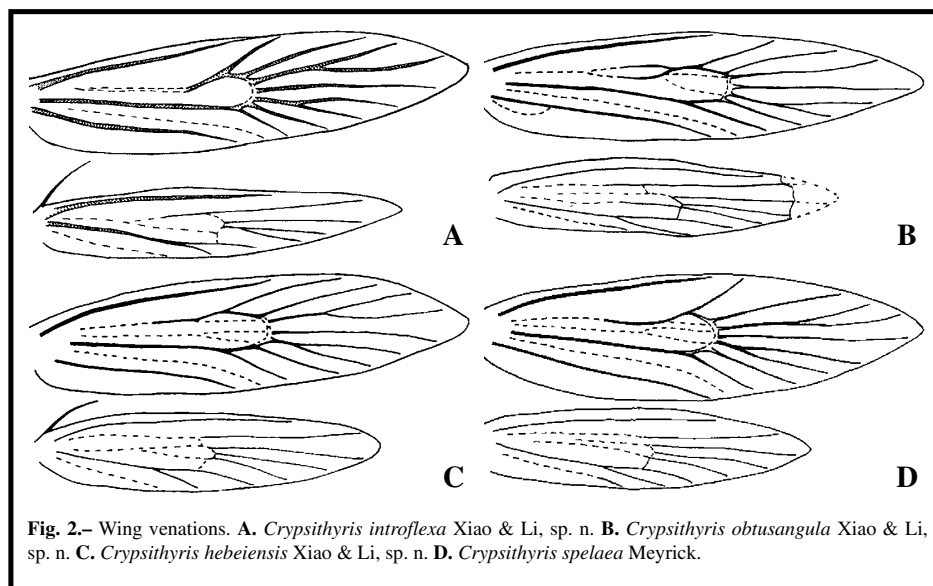


Fig. 2.— Wing venations. **A.** *Crypsithyris introflexa* Xiao & Li, sp. n. **B.** *Crypsithyris obtusangula* Xiao & Li, sp. n. **C.** *Crypsithyris hebeiensis* Xiao & Li, sp. n. **D.** *Crypsithyris spelaea* Meyrick.

M₂ and M₃ stalked; ground colour ochreous, scattered with dark brown scales becoming denser at base of costal margin and anal fold; dark brown spot set at distal end of cell; hyaline spot small and white; cilia ochreous. Hindwing with M₁ and M₂ separated; pale brown; cilia pale white, about equal to width of the wing.

Male genitalia (Fig. 3-B): Uncus triangular, slightly hooked at apex. Gnathos arms slender, strongly curved, pointed at apex. Valva with distal half about $\frac{2}{3}$ as wide as basal half, apex broad and round; costa gently concave, ventral margin roundly protruded near middle. Transtilla long and narrow. Saccus elongate, gradually pointed to distal end. Aedeagus somewhat stout, curved at distal quarter and formed an obtuse angle about 120°, apex obliquely truncate, with two cornuti ranging from $\frac{1}{2}$ to $\frac{3}{4}$.

Female: Unknown.

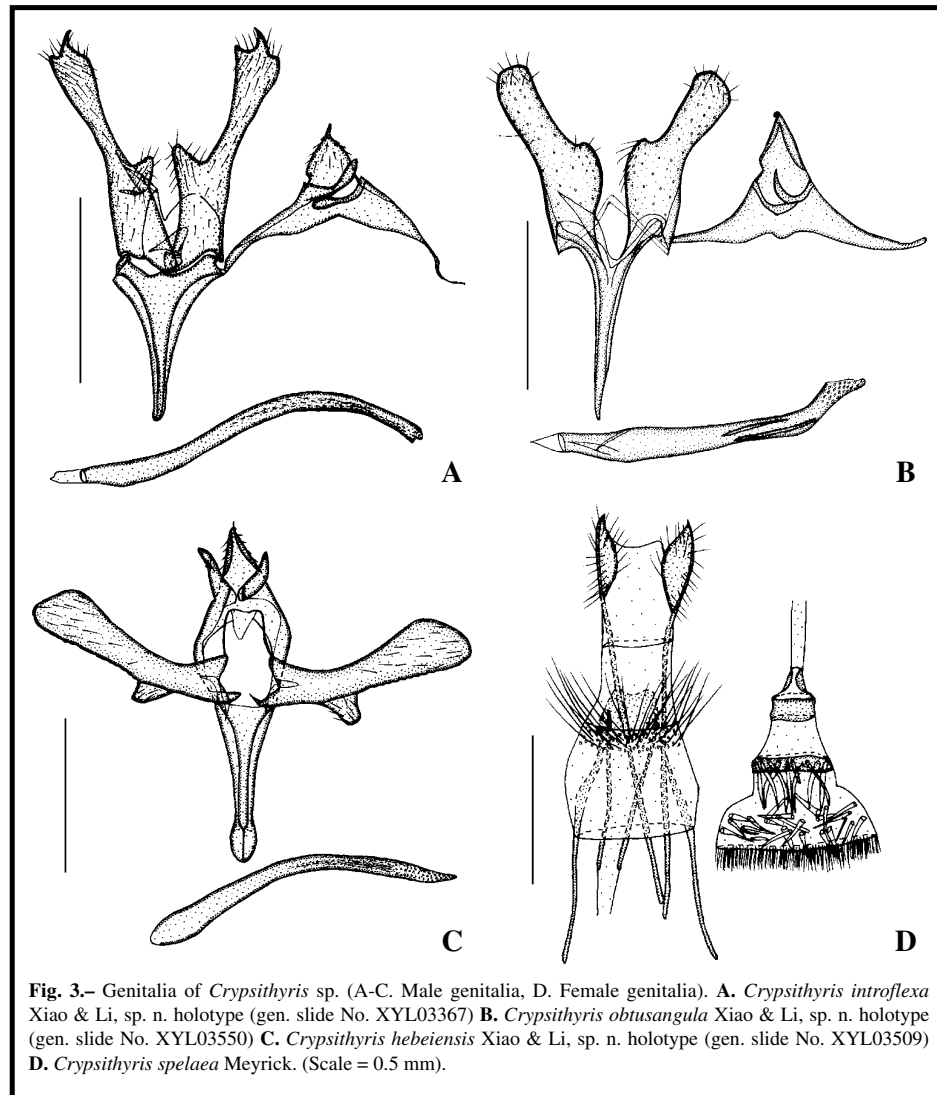
Diagnosis: This new species resembles *Crypsithyris japonica* Petersen & Gaedike from Japan, but can be distinguished from it by the following four aspects: R₂ and R₃ fused at base and distal, R₄ and R₅ separated; gnathos curved but not acute-angled, apex pointed but not extended; distal portion of valva about $\frac{2}{3}$ times of basal portion; aedeagus curved to an obtuse angle of about 120° at the distal quarter.

Etymology: The specific name is derived from the Latin *obtusangulus* = obtuse, in reference to the aedeagus curved to an obtuse angle.

***Crypsithyris hebeiensis* Xiao & Li, sp. n.** (Figs. 1-C, 2-C, 3-C)

Holotype: ♂, China: Mt. Xiaowutai (39.57° N, 115.02° E), Weixian County, Hebei Province, alt. 1200 m, 26-VII-2000, leg. Du Yanli and Li Zhendong, genitalia slide No. XYL03509. Paratype: 1 ♂, Shangsi, Mt. Xiaowutai, Weixian County, Hebei Province, alt. 1200 m, 27-VII-2000, leg. Du Yanli and Li Zhendong.

Male (Fig. 1-C): Wingspan 9.0-10.0 mm. Head ochreous. Inner side of labial palpi light ochreous, outer side dark brown. Antennae ochreous, scape with length about 2.5 times of its width. Thorax light ochreous, Tegulae with anterior half dark brown, posterior half ochreous.



Wings (Fig. 2-C): Forewing with R_4 and R_5 long-stalked, M_2 and M_3 short-stalked; ochreous white, sporadically scattered with dark brown scales becoming denser at base of costal margin; a bigger dark brown spot set at distal end of cell and an inconspicuous dark brown spot set at $\frac{2}{3}$ of anal fold; hyaline spot small and inconspicuous; cilia ochreous white. Hindwing with M_1 and M_2 separated, ochreous white; cilia ochreous white, about equal to width of the wing.

Male genitalia (Fig. 3-C): Uncus triangular, hooked at apex. Gnathos arms long and slightly curved, gradually pointed to apex. Valva wide at base, narrower at middle, expanded distally, somewhat truncate at apex; costa gently concave in median portion; ventral margin covered with small teeth from

about $\frac{2}{3}$ to distal end, with large somewhat tongue-shaped process at about $\frac{1}{3}$. Saccus long, with distal end roundly expanded. Aedeagus arched; cornuti consisting of numerous small spines spreading in the distal half.

Female: Unknown.

Diagnosis: This new species is allied to *Crypsithyris enixa* Meyrick, but can be differentiated from the latter by the following points: forewing ochreous white, sporadically scattered with dark brown scales, M_2 and M_3 short-stalked; hindwing with M_1 and M_2 separated; valva with distal end broader than that of *C. enixa*; saccus with distal end expanded.

This new species also resembles *Crypsithyris cana* Sakai & Saigusa, but can be separated from it by forewing ochreous white, with only two spots; hindwing with M_1 and M_2 separated; uncus with apex hooked but not bifurcate, gnathos gradually pointed to apex, valva with a tongue-like process at about $\frac{1}{3}$ of ventral margin, and aedeagus with inner side not sinuated.

Etymology: The specific name is from the type locality.

Crypsithyris spelaea Meyrick, 1908 (Figs. 1-D, 2-D, 3-D)

Crypsithyris spelaea Meyrick, 1908, Rec. Ind. Mus., **2**: 399; MEYRICK, 1916, Exot. Microlep., **1**: 602; ROBINSON, 1980, Trans. Br. Cave Res. Ass., **7**(2): 104; ROBINSON & NIELSEN, 1993, Tineid genera of Australia, 179; ROBINSON & TUCK, 1996, Occ. Pap. Syst. Ent., **9**: 15; ROBINSON, 2001, Global taxonomic database of Tineidae (Lepidoptera).

Wingspan 10.0-13.0 mm (Fig. 1-D).

Venation (Fig. 2-D): As illustrated.

Female genitalia (Fig. 3-D): As illustrated.

Material examined: 2 ♀♀, China: Simao City, Yunnan Province, alt. 1320 m, 24-25-VI-1995, leg. Yan Guangyun.

Distribution: China (Yunnan), Burma.

Note: The species is a new record to China.

Crypsithyris hoenei Petersen & Gaedike, 1993

Crypsithyris hoenei Petersen & Gaedike, 1993, Bonn. Zool. Beit., **44**(3-4): 246.

Type material: Holotype ♂, deposited in Museum A. Koenig, Bonn.

Distribution: China (Yunnan).

Note: We have not examined the type specimens of this species, but studied the adult photograph of the holotype kindly transmitted to us by Dr. Dieter Stünig.

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