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Review of the genus *Crocidolomia* Zeller, 1852 from China (Lepidoptera: Crambidae)

N. Chen & S. X. Wang

Abstract

The species of the genus *Crocidolomia* Zeller, 1852 from China are reviewed. A total of three species are recorded, of which *C. subhirsutalis* Schaus, 1927 is newly recorded for this country and its female is described for the first time in science. Images of adults and illustrations of genital structures are provided, along with a key to all the known species of the genus.

KEY WORDS: Lepidoptera, Crambidae, *Crocidolomia*, new record, China.

Revisión del género *Crocidolomia* Zeller, 1852 en China (Lepidoptera: Crambidae)

Resumen

Se revisan tres especies del género *Crocidolomia* Zeller, 1852 de China. Se registran un total de tres especies, entre ellos, *C. subhirsutalis* Schaus, 1927 es registrado nuevo para este país, y su hembra se describe por primera vez para la ciencia. Se proporcionan imágenes de los adultos e ilustraciones de las estructuras genitales, así como con una clave de todas las especies conocidas del género.

PALABRAS CLAVE: Lepidoptera, Crambidae, *Crocidolomia*, nuevo registro, China.

Introduction

ZELLER (1852) erected the genus *Crocidolomia* with *C. binotalis* Zeller, 1852 as its type species. MARION (1952) included *Crocidolomia* in the subfamily Evergestinae, and REGIER *et al.* (2012) synonymized Evergestinae with Glaphyriinae. Thus *Crocidolomia* currently belongs to the subfamily Glaphyriinae.

SHAFFER *et al.* (1996) synonymized *C. binotalis* with *C. pavonana* (Fabricius, 1794). HAMPSON (1893) referred *Pionea comalis* Guenée, 1854, the type species of the genus *Godara* Walker, 1859, to *Crocidolomia*, and *Godara* Walker became a synonym of *Crocidolomia* Zeller. SHIBUYA (1928) treated *Pseudopisara* Shiraki, 1913 as a synonym of *Crocidolomia* Zeller. AMSEL (1951) erected the genus *Tchahbaharia* Amsel for the type species *T. dentalis* Amsel, 1951. However, he subsequently regarded *Tchahbaharia* as a synonym of *Crocidolomia* Zeller (AMSEL, 1961). To date, *Crocidolomia* consists of four species: *C. pavonana* was described from India, *C. suffusalis* (Hampson, 1891) from India, *C. subhirsutalis* Schaus, 1927 from Philippines, and *C. luteolalis* Hampson, 1893 from Ceylon. Except *C. luteolalis*, other three species all occur in China.

We review the three species in China in this paper, with *C. subhirsutalis* Schaus newly recorded for this country, and its female described for the first time in science. All the specimens are deposited in the Insect Collection, College of Life Science, Nankai University, Tianjin, China.

Taxonomy

Crocidolomia Zeller, 1852

Crocidolomia Zeller, 1852: 65. Type species: *Crocidolomia binotalis* Zeller, 1852 (= *Pyrallis pavonana* Fabricius, 1794).

Godara Walker, 1859: 546. Type species: *Pionea comalis* Guenée, 1854.

Pseudopisara Shiraki, 1913: 429. Type species: *Pseudopisara quadripunctata* Shiraki, 1913.

Tchahbaharia Amsel, 1951: 549. Type species: *Tchahbaharia dentalis* Amsel, 1951.

General characters: Frons rounded. Labial palpus obliquely upturned, first segment longest, third segment shortest. Maxillary palpus fairly prominent. Fore wing broad, apex nearly right-angled; dorsal margin with a tuft of scales at middle; antemedial and postmedial lines distinct; discocellular stigma conspicuous; male with a large raised scale tuft on upperside near base of costa; male with a retinaculum, female with two retinacula; cell slightly longer than half length of wing; R₁ from middle of cell on anterior margin, R₂ free, R₃ and R₄ anastomosed for nearly 2/3 length from anterior angle of cell to apex, R₅ free, CuA₁ from posterior angle of cell, CuA₂ from 2/3 length of posterior margin of cell; with fringe of hair below cell. Hind wing with cell shorter than half length of wing; Sc+R₁ anastomosed for nearly 1/3 of length of Rs, M₂ and M₃ anastomosed for half length of M₂, CuA₁ and M₂+M₃ anastomosed for 1/3 of length of M₂; male with a large fovea near base of CuA₂ on underside below cell, with a membranous ridge or bar at end of fovea. Fore and mid tibiae with large tufts of hair; hind tibiae with outer spurs half length of inner ones.

Male genitalia: Uncus beak-shaped, apex with paired hair tufts on dorsal surface. Gnathos slender, with dents on dorsal surface. Valva tapered from base to apex. Juxta bottle-shaped. Phallus nearly straight, with cornutus. Abdomen with a pair of coremata between the seventh and the eighth segments.

Female genitalia: Oviscapt lobes oval. Apophyses anterior longer and robuster than apophyses posterior, with a triangular branch expansion medially. Antrum funnel-shaped. Ductus bursae often short and wide, usually with colliculum anterior to antrum. Ductus seminalis arising from posterior part of ductus bursae near colliculum. Corpus bursae usually with two small, spinulose signa.

Biology: Larvae are pests of *Brassica* spp. (Cruciferae) (ROBINSON *et al.*, 1994)

Diagnosis: *Crocidolomia* is similar to *Evergestis* Hübner, 1825 in genitalia, but can be separated from the latter by the stout labial palpus segmented conspicuously, the broad fore wing with apex nearly right-angled, the conspicuous discocellular stigma, and the male having a large raised scale tuft near the base of the costa on the upperside of the fore wing and having a pair of coremata between the seventh and the eighth segments. In *Evergestis*, the slender labial palpus is segmented less obviously, the triangular fore wing is more or less pointed at apex, the discocellular stigma is inconspicuous, and the male fore wing lacks the raised scale tuft on the upperside and the abdomen lacks the coremata.

Key to species of *Crocidolomia* Zeller based on adults

- 1 Fore wing with a black patch between CuA₂ and posterior margin *C. suffusalis*
- Fore wing without black patch between CuA₂ and posterior margin.....2
- 2 Fore wing with a discocellular stigma *C. subhirsutalis*
- Fore wing with two discocellular stigmata3
- 3 Fore wing pale yellow..... *C. pavonana*
- Fore wing bright ferruginous red..... *C. luteolalis*

Crocidolomia subhirsutalis Schaus, 1927 (Figs. 1, 2, 7, 10)

Crocidolomia subhirsutalis Schaus, 1927: 324.

TL: Philippines, deposited in The National Museum of Natural History, Washington.

Materials examined: 4 ♂♂, 1 ♀, China: Mt. Lala, Taoyuan County (24° 59' 20.00" N, 121° 18' 40.00" E), Taiwan Province, 1800 m, I-VIII-2006, leg. Hou-hun Li and Xi-cui Du, genitalia slide Nos. CN12106, CN12107.

Redescription: Adult (Figs. 1-2): Male (Fig. 1) wingspan 30.0-36.0 mm. Frons pale yellowish white, with scattered yellowish brown scales medially. Vertex mixed with pale yellow scales. Labial palpus with basal and second segments white basally, grayish brown distally; third segment dark grayish brown; each segment white at tip. Antenna yellowish brown. Collar and thorax pale yellow tinged with dark brown scales on dorsal surface, pearly white on ventral surface. Forewing yellowish brown, with a large raised scale tuft arising from near base of costa on upperside, its inner margin blackish brown, outer margin pale yellowish brown; antemedial line white, from basal 1/3 of costa outcurved to middle of cell, dentate to basal 1/3 of 1A, then extending outwardly to about basal 1/2 of dorsum; a black line between 1A and posterior margin extending outwardly along antemedial line; discocellular stigma white, dumbbell-shaped; postmedial line white, scattered with several small black irrorations along veins, from basal 2/3 of costa, approximately parallel to termen, excurved to basal 2/3 of dorsum and connected with antemedial line at middle on dorsum, forming a triangular process; distinct black spot at basal 3/4 of M_2 ; subterminal line reddish brown, consisting of interrupted olivary spots; terminal line consisting of discontinuous small black spots; apex suffused with pale yellow; cilia yellowish brown basally, bright blackish brown distally; underside having a vesicle near base of Sc , beyond it with short dark yellowish brown hair; fringe below cell yellowish brown, emitting three strong spines, a pale yellow tuft of sparse long hair set beyond fringe. Hindwing pale yellow, termen grayish brown; terminal line pale yellow; cilia pale yellow, grayish brown near apex basally; underside with a membranous ridge from end of fovea at base of CuA_2 . Legs white; fore and mid tibiae with tuft of hair, the former grayish brown, the latter longer and white.

Female (Fig. 2) wingspan 30.0 mm. Fore wing with neither vesicle at base of Sc on underside nor tuft of long hair or spines below cell, with fringe yellowish brown below cell. Tibia with a tuft of shorter hair on both fore and mid legs, the former pale grayish brown, the latter pale yellow.

Male genitalia (Fig. 7): Uncus covered with slender setae, distal 1/4 with about seven pairs of nearly diamond-shaped tufts of scales and three pairs of lunular-shaped tufts of scales directed backwardly on dorsal surface, apex with a large tuft of fan-shaped scales on dorsal surface. Gnatho with basal 4/5 same width, then rapidly tapered to rounded apex, concave to middle at distal 1/4 ventrally; dorsal surface medially with fourteen teeth directed backwardly. Valva elongate, broad basally, slightly narrowed distally; costa thickened and sclerotized, projected and with sparse long setae basally, rounded apically; ventral margin suffused with long setae on distal half; sacculus short, not well defined. Aedeagus with three densely clustered cornuti: one cluster placed medially consisting of fine spines; two clusters placed distally, one of which is strong and root-shaped, and the other consists of fine and strong spines.

Female genitalia (Fig. 10): Apophyses anterior nearly 2.5 times length of apophyses posterior. Colliculum anterior to antrum sclerotized laterally. Ductus bursae weakly sclerotized and with dense crimples on posterior half, without prominent boundary with corpus bursae. Corpus bursae with two nearly bud-shaped signa.

Diagnosis: *Crocidolomia subhirsutalis* is similar to *C. suffusalis*, but can be differentiated by the forewing without black round patch between CuA_2 and posterior margin, the dumbbell-shaped discocellular stigma, and the male with three spines arising from the fringe below cell; the gnathos with fourteen teeth backwardly directed at middle on dorsal surface, rounded at apex in the male genitalia; and the corpus bursae without conspicuous boundary with the ductus bursae in the female genitalia. In *C. suffusalis* the fore wing has a large black round patch between CuA_2 and posterior margin, the discocellular stigma is lunular, and the male has four spines rising from the fringe below cell; the distal 2/3 of the gnathos bears eleven teeth on dorsal surface, with acute apex; and the corpus bursae is subrounded.

Distribution: China (Taiwan); Philippines.

Notes: This species is newly recorded for China, and its female is described for the first time for science.

Crocidolomia suffusalis (Hampson, 1891) (Figs. 3, 4, 8, 11)

Godara suffusalis Hampson, 1891: 135.

Godara illustris Lucas, 1892: 91.

Crocidolomia suffusalis sinensis Caradja, 1925: 354.

Crocidolomia suffusalis (Hampson, 1891): Hampson, 1893: 46.

TL: India, deposited in The Natural History Museum, London.

Materials examined: 1 ♂, China: Rui Li Rare Botanical Garden (24° 00' 46.00" N, 97° 51' 06.79" E), Yunnan Province, 1000 m, 7-VIII-2005, leg. Ying-dang Ren, genitalia slide No. CN11240. 1 ♀, China: Mt. Lala, Taoyuan County (24° 59' 0.00" N, 121° 18' 40.00" E), Taiwan Province, 1800 m, leg. Hou-hun Li and Xi-cui Du, genitalia slide No. CN12109.

Description: Adult wingspan 32.0 mm in male (Fig. 3), 30.0 mm in female (Fig. 4). Male genitalia (Fig. 8) and female genitalia (Fig. 11) are as illustrated.

Diagnosis: *Crocidolomia suffusalis* can be easily distinguished from its congeners by the fore wing having a large round black patch between CuA₂ and posterior margin.

Distribution: China (Guangdong, Guangxi, Hainan, Taiwan, Yunnan); Australia, Brunei, India, Indonesia, Malaysia, New Guinea, Philippines, Sikkim, Sri Lanka, Thailand.

Crocidolomia pavonana (Fabricius, 1794) (Figs. 5, 6, 9, 12)

Pyralis pavonana Fabricius, 1794: 275.

Crocidolomia binotalis Zeller, 1852: 66.

Pionea comalis Guenée, 1854: 368.

Pionea incomalis Guenée, 1854: 369.

Tchahbaharia dentalis Amsel, 1951: 549.

Crocidolomia pavonana (Fabricius, 1794): Robinson *et al.*, 1994: 175.

TL: Tranquebariae (Madras, India), deposited in Zoological Museum, Copenhagen.

Materials examined: 3 ♂♂, China: Guangxi University (22° 50' 19.27" N, 108° 17' 16.51" E), Guangxi Province, 29-XII-2005, leg. Hua Gao, genitalia slide Nos. CN12114, CN12115. 1 ♀, China: Mt. Diaoluo (18° 39' 35.20" N, 109° 54' 57.48" E), Hainan Province, 100 m, 16-IV-2008, leg. Bing-bing Hu and Hai-yan Bai, genitalia slide No. CN11166. 2 ♀♀, China: Shuiman Xiang (18° 52' 54.88" N, 109° 40' 01.88" E), Mt. Wuzhi, Hainan Province, 31-V-2010, 1-VI-2010, leg. Bing-bing Hu and Jing Zhang, genitalia slide No. CN12201.

Description: Adult wingspan 32.0 mm in male (Fig. 5), 30.0 mm in female (Fig. 6). Male genitalia (Fig. 9) and female genitalia (Fig. 12) are as illustrated.

Diagnosis: This species is similar to *C. luteolalis* Hampson, 1893, but differs in the pale yellow fore wing; the male with fringe of hair terminating in a tuft of long hair below the cell, but without spines arising from it or without vesicle near base of Sc on underside. While the fore wing of *C. luteolalis* is almost entirely suffused with bright ferruginous red; the male has a membranous vesicle near base of Sc on underside and a thick tuft of hair beyond it, and bears much shorter fringe of hair with four spines but lacks tuft of long hair at end of fringe below cell.

Distribution: China (Guangdong, Guangxi, Hainan, Hongkong, Sichuan, Taiwan, Yunnan); Australia, Burma, Brunei, Denmark, India, Indonesia, Iran, Japan, Malaysia, New Guinea, Philippines, Sri Lanka, South Africa, Thailand.

Discussion: *Crocidolomia* is a small genus of four valid species, distributed in the Oriental, Australian, Afrotropical and Palearctic regions. *Crocidolomia pavonana* is one of the most widely distributed species of all. The three species recorded in China are all distributed in the south part of the country, where the climate is humid and warm, and the temperature is relatively higher than in the north.

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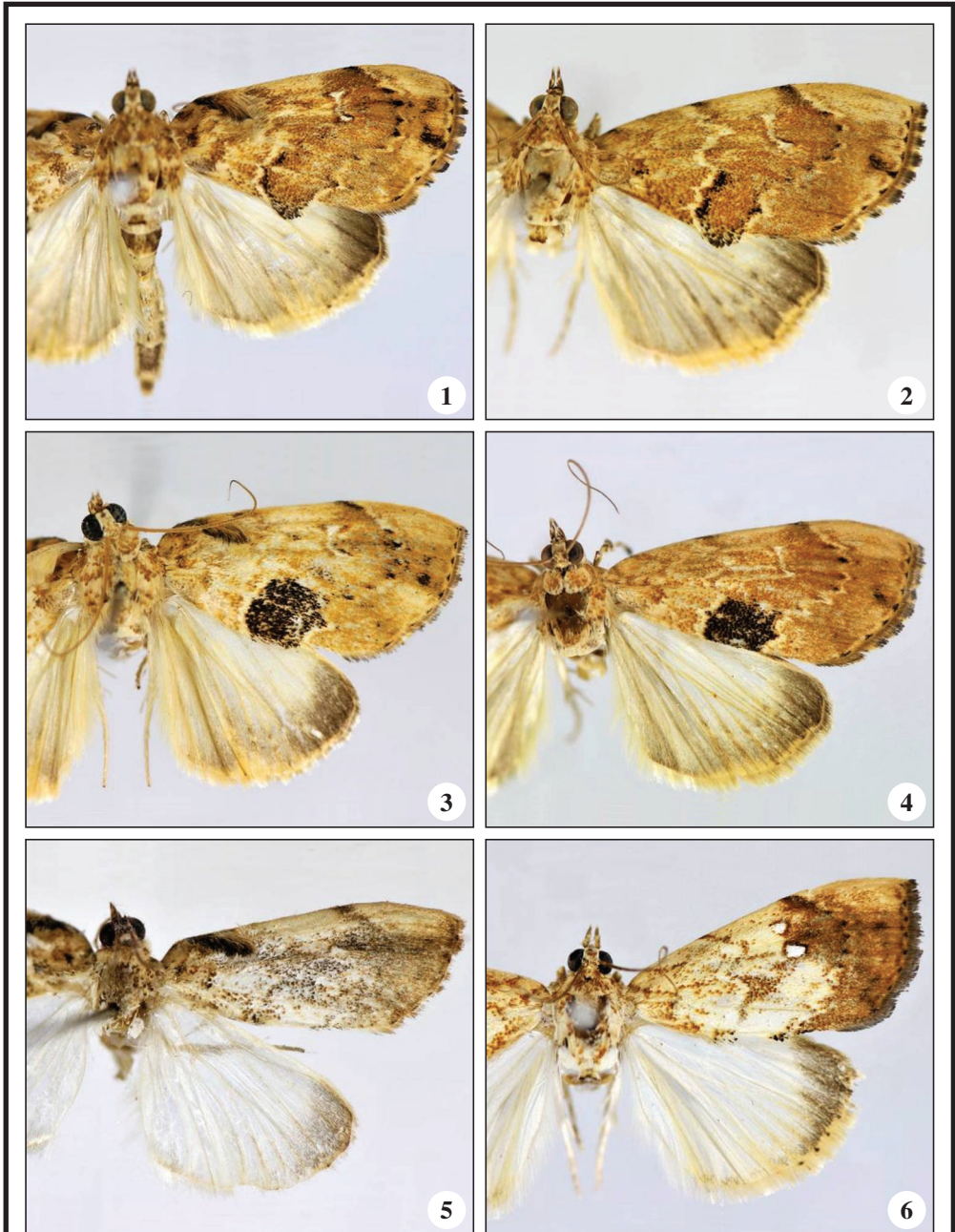
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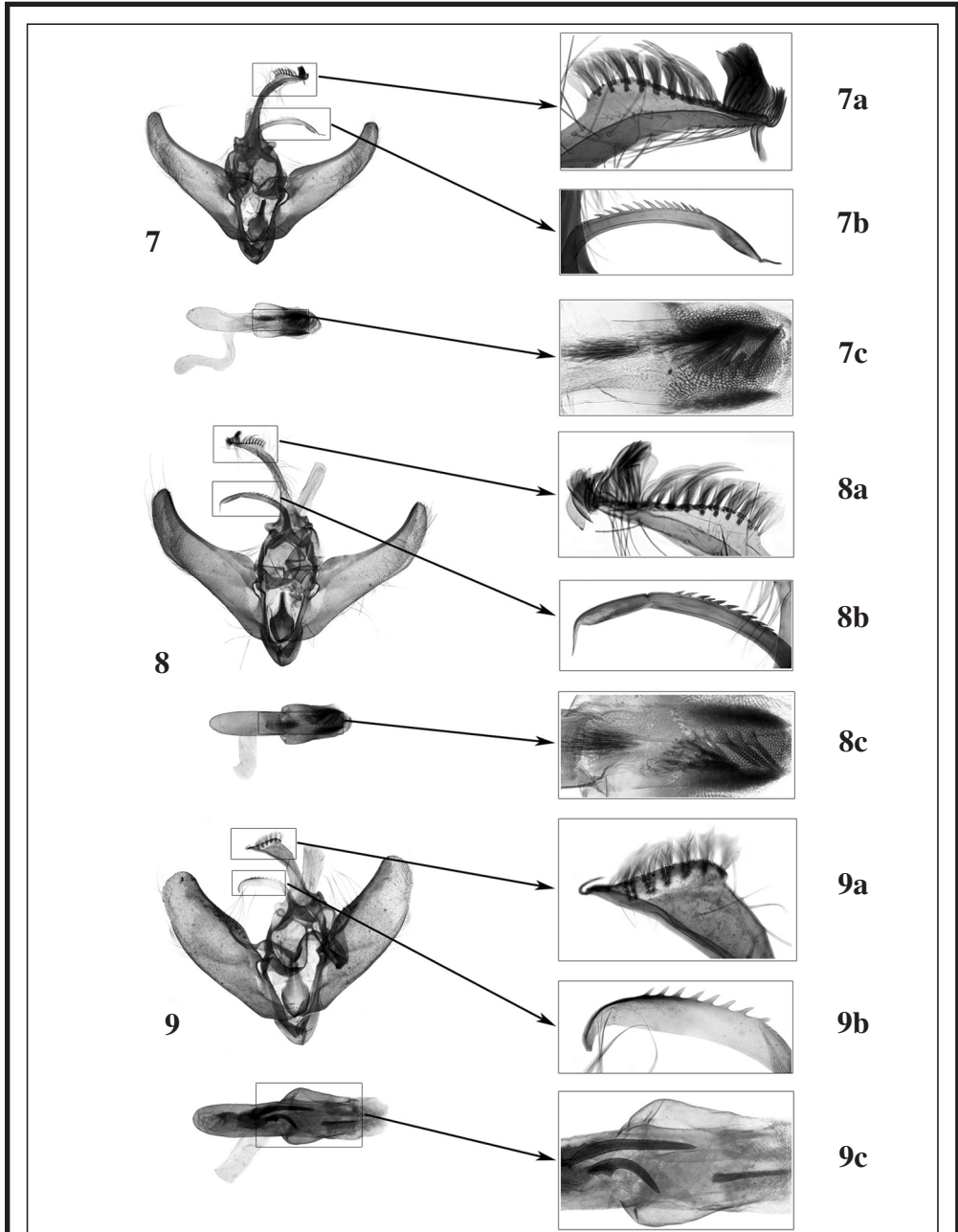
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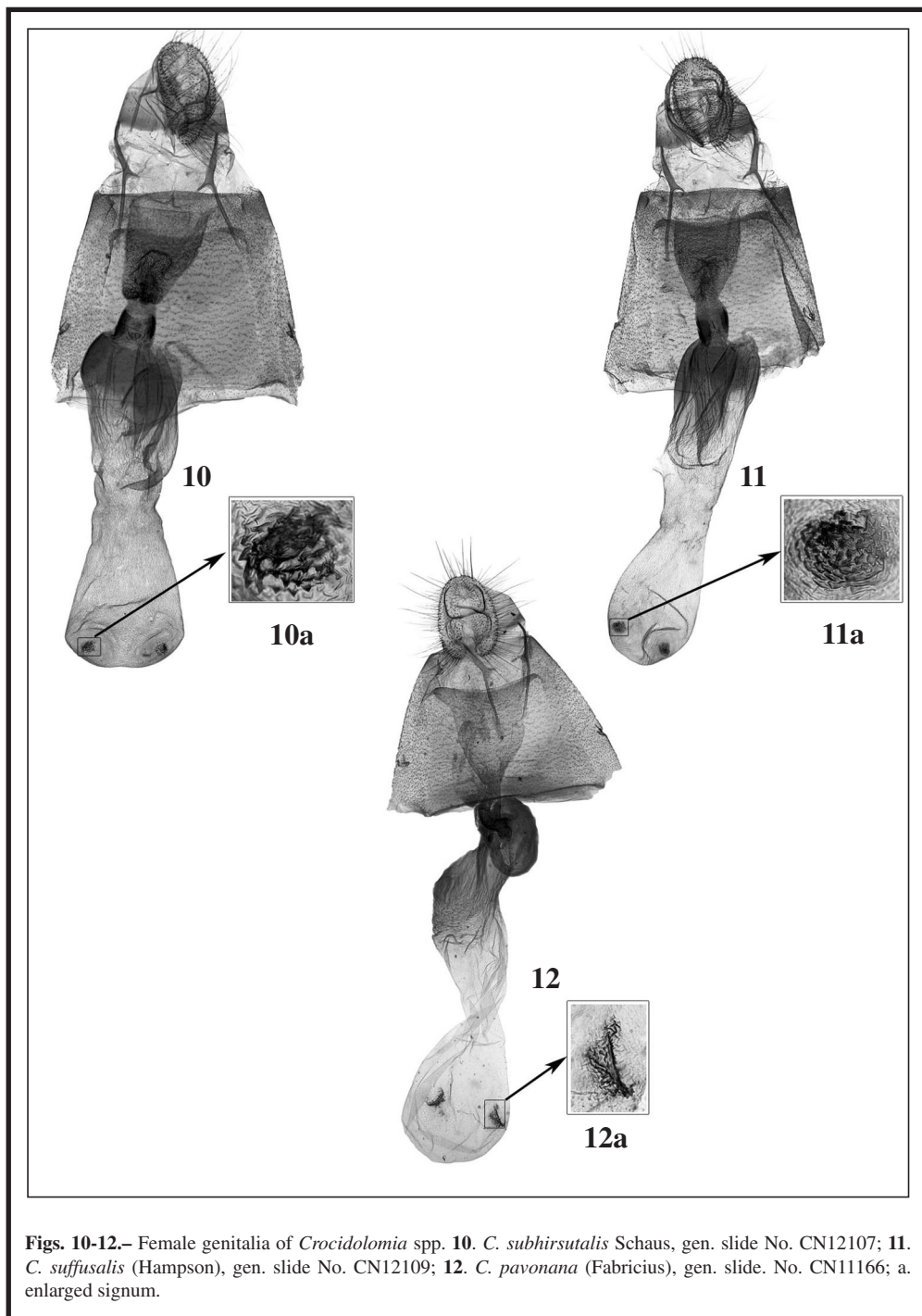
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Figs. 1-6.— Adults of *Crocidolomia* spp. 1. *C. subhirsutalis* Schaus, ♂. 2. *C. subhirsutalis* Schaus, ♀. 3. *C. suffusalis* (Hampson), ♂. 4. *C. suffusalis* (Hampson), ♀. 5. *C. pavonana* (Fabricius), ♂. 6. *C. pavonana* (Hampson), ♀.



Figs. 7-9.— Male genitalia of *Crocidolomia* spp. **7.** *C. subhirsutalis* Schaus, gen. slide No. CN12106; **8.** *C. suffusalis* (Hampson), gen. slide No. CN11240; **9.** *C. pavonana* (Fabricius), gen. slide No. CN12115; a. enlarged uncus, b. enlarged gnathos, c. enlarged cornuti.



Figs. 10-12.— Female genitalia of *Crocidolomia* spp. **10.** *C. subhirsutalis* Schaus, gen. slide No. CN12107; **11.** *C. suffusalis* (Hampson), gen. slide No. CN12109; **12.** *C. pavonana* (Fabricius), gen. slide. No. CN11166; a, enlarged signum.