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ORIGINAL ARTICLE

Taxonomic study of the genus *Etiella* Zeller (Lepidoptera: Pyralidae: Phycitinae) in China

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Abstract The genus *Etiella* Zeller, 1839 is reviewed in China. *Etiella brevis* **sp. nov.** is described as new; *E. grisea* Hampson, 1903 and *E. walsinghamella* Ragonot, 1888 are newly recorded for China. Images of adults and genitalia are provided, along with a key to all the known Chinese species of this genus.

Key words Lepidoptera, Pyralidae, Phycitinae, *Etiella*, new species, China.

Introduction

Etiella was established by Zeller (1839) with *Phycis zinckenella* Treitschke, 1832 as the type species. Subsequent authors who have involved in the taxonomic study of this genus include Inoue (1959, 1982), Whalley (1973), Roesler & Küppers (1979), Roesler (1983) and Bae *et al.* (2008).

Etiella consists of eight known species distributed mostly in the Oriental and Australian Regions. *Etiella zinckenella* that is distributed globally has long been confused with *Etiella behrii* (Zeller, 1848) from Australia. The two species can not be reliably separated on external characters, so genitalia are often used in identification. Larvae of this genus feed on leguminous seeds and pods (Natito, 1961).

Prior to this study, three species were known from China. This paper describes one new species and records two species for the first time in China. All the specimens, including the types of the new species, are deposited in the Insect Collection, College of Life Sciences, Nankai University, Tianjin, China.

Etiella Zeller, 1839

Etiella Zeller, 1839: 179. Type species: *Phycis zinckenella* Treitschke, 1832.
Rhamphodes Guenée, 1845: 319. Type species: *Phycis etiella* Treitschke, 1835.
Mella Walker, 1859: 1017. Type species: *Mella dymnusalis* Walker, 1859.
Alata Walker, 1863: 108. Type species: *Alata anticalis* Walker, 1863.
Arucha Walker, 1863: 201. Type species: *Arucha indicatalis* Walker, 1863.
Modiana Walker, 1863: 82. Type species: *Modiana scitivittalis* Walker, 1863.
Ceratamma Butler, 1881: 689. Type species: *Ceratamma hobsoni* Butler, 1881.

Diagnostic characters. Vertex with scale tufts. Male antennae with scape elongate, with a basal dentate projection on inner side; flagellae with shallow sinus covered with two lines of long cylindrical scales arranged opposite to each other. Labial palpi usually longer than two times length of compound eyes diameter; second segment in male obliquely upturned, in female slightly curved. Forewing narrowly elongate, usually with a yellow spot at about basal 1/3 that extends from

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below costa to dorsum, edged with a scale ridge along its inner margin; discal spot separated or connected.

Male genitalia. Valva with clasper absent; costa with a strongly sclerotized process arising from base, symmetrical or asymmetrical, apart from valva distally; juxta narrowly U-shaped, with stout lateral arms; aedeagus with one to three curnuti; culcita one pair.

Female genitalia. Ductus bursae sclerotized or partly sclerotized, with longitudinal ridges; corpus bursae with an appendix bursae, signum located at posterior part of corpus bursae; ductus seminalis originating from middle of corpus bursae.

Etiella is similar to *Pima* Hulst, 1888 in the forewing usually having a white subcostal streak and the labial palpi upturned obliquely. It can be distinguished by the forewing having a yellow spot edged with a scale ridge, the costa not furcate distally but with a heavily sclerotized basal process in the male genitalia, and the ductus bursae shorter than the corpus bursae and with an appendix bursae in the female genitalia. In *Pima* the forewing does not have a spot with scale ridge; the costa is furcated distally but has no basal process in the male genitalia; the ductus bursae is longer than the corpus bursae, and the corpus bursae lacks an apependix bursae.

Key to the Chinese species of *Etiella* Zeller.

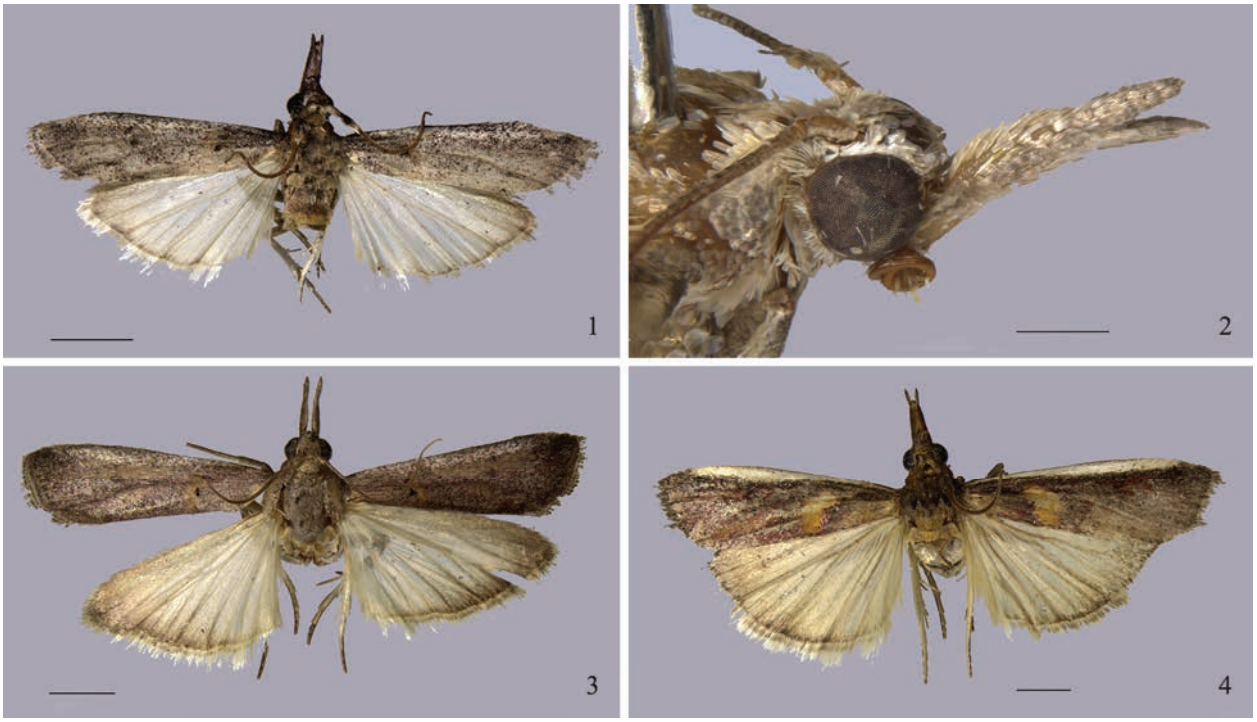
1. Forewing with a conspicuous white subcostal streak …….. 2
   Forewing without or with an obscure white subcostal streak …….. 4
2. Sinus in male antennae with greyish black scales ventrally …… ***E. walsinghamella***
   Sinus in male antennae with slivery white scales ventrally ……. 3
3. Juxta swollen distally in male genitalia, appendix bursae narrowed basally in female genitalia ……***E. behrii* (Zeller)**
   Juxta not swollen distally in male genitalia, appendix bursae widened basally in female genitalia …….. ***E. zinckenella* (Treitschke)**
4. Forewing without white subcostal streak, left costal process longer than valva, lateral arms of juxta flat apically …….....
   …… ***E. hobsoni* (Butler)**
   Forewing with an obscure white subcostal streak, left costal process shorter than valva, lateral arms of juxta rounded apically …….. 5
5. Left costal process 5/6 length of right one, ductus seminalis not helical ……..…….... ***E. brevis* sp. nov.**
   Left costal process 1/2 length of right one, ductus seminalis helical ……..…….. ***E. grisea* Hampson**

***Etiella brevis* sp. nov.** (Figs 1–2, 5, 8)

Holotype ♂, China, Botanical Garden of Xiamen University (24º26'N, 118º06'E; alt. 85 m), Xiamen, Fujian Province, 17 September 2011, coll. Jin Zhang and Xiao-Fei Yang, genitalia slide No. LHX11027. Paratypes 6♀♀, Mt. Tianzhu (24º06'N, 117º55'E; alt. 220 m), Xiamen, Fujian Province, 3–6 August 2011, coll. Jin Zhang and Zhi-Bo Wang, Jin Zhang and Bing-Bing Hu.

Description (Figs 1–2). Wingspan 15–18 mm. Vertex in male yellowish brown, in female greyish brown. Male antennae with scape yellowish brown on dorsal surface, slivery white on ventral surface, length about 3 times of its width; flagellae greyish white on dorsal surface, yellowish brown on ventral surface, sinus with scales greyish black dorsally, silvery white ventrally; female antennae filiform, greyish white with brown rings. Labial palpi in male with first segment greyish white, second segment greyish brown, upturned obliquely, third segment grey, porrect, about 1/5 length of second; in female (Fig. 2) with first segment white, second and third segments greyish white inside, yellowish brown outside, second segment curved, third segment about 2/5 length of second. Patagium greyish white mixed with brown scales; tegulae and thorax greyish white, deep brown basally. Forewing greyish black mixed with greyish white scales; subcostal streak obscure, greyish white mixed with greyish black; spot at basal 1/3 pale yellow, rectangular, scale ridge on its inner margin black, somewhat separated; fringe grey. Hindwing pale grey, costa, termen and veins brown; fringe grey. Legs white dorsally, blackish brown ventrally, tarsus with each segment white distally, inner spurs 1.8 times length of outer spurs.

Male genitalia (Fig. 5). Uncus length about 1.3 times of its basal width, sparsely setose dorsally. Gnathos horn-shaped, about 5/8 length of uncus, slightly incurved. Valva narrowed basally, widened to middle, then again narrowed to apex, with long bristles; left costal process shorter than valva, its basal 2/3 wide, distal 1/3 apart from valva, narrowed to a distal spine; right costal process as long as valva, about 1.2 times length of left one, its basal half equal in width, distal half narrowing. Juxta U-shaped, lateral arms with distal 1/3 bulbously dilated, densely setose. Vinculum U-shaped, anterior margin slightly concave on right side. Aedeagus cylindrical, 1.7 times length of valva, with sclerotized wrinkles extending



Figs 1−4. Adults of *Etiella* spp. 1. *E. brevis* **sp. nov.**, holotype, ♂. 2. Head of *E. brevis* **sp. nov.**, paratype, ♀. 3. *E. grisea* Hampson, ♀. 4. *E. walsinghamella* Ragonot, ♂. Scale bars: 1, 3−4 = 2.0 mm, 2 = 0.5 mm.

from basal 1/5 to middle, distal half with sclerotized granules; cornutus one, rod-like.

Female genitalia (Fig. 8). Papillae anales triangular, length about 1.3 times of basal width, densely setose. Eighth abdominal segment length about 1.4 times of width. Apophyses posteriores 1.3 times length of apophyses anteriores. Ductus bursae about 1/4 length of corpus bursae, posterior 1/7 with transverse wrinkles, anterior part with longitudinal wringkles. Corpus bursae long bag-shaped, membranous, inner wall with small spines; signum at posterior half of corpus bursae, near appendix bursae, its posterior 1/5 with conical spines. Appendix bursae bag-like, arising from junction of ductus bursae and corpus bursae, about 1/2 length of corpus bursae; basal 1/3 with a rectangular plate, covered with microspines. Ductus seminalis from between posterior 1/4 of corpus bursae and middle, open widely; a triangular plate situated at junction of corpus bursae and ductus seminalis.

Diagnosis. This species is similar to *E. grisea* Hampson, 1903, but can be distinguished from the latter by the right costal process nearly equal to length of valva, about 1.2 times length of the left costal process in the male genitalia; and the ductus seminalis not helical in the female genitalia. In *E. grisea*, the right costal process is about 1.6 times length of the valva and 2 times length of the left costal process, and the ductus seminalis is helical.

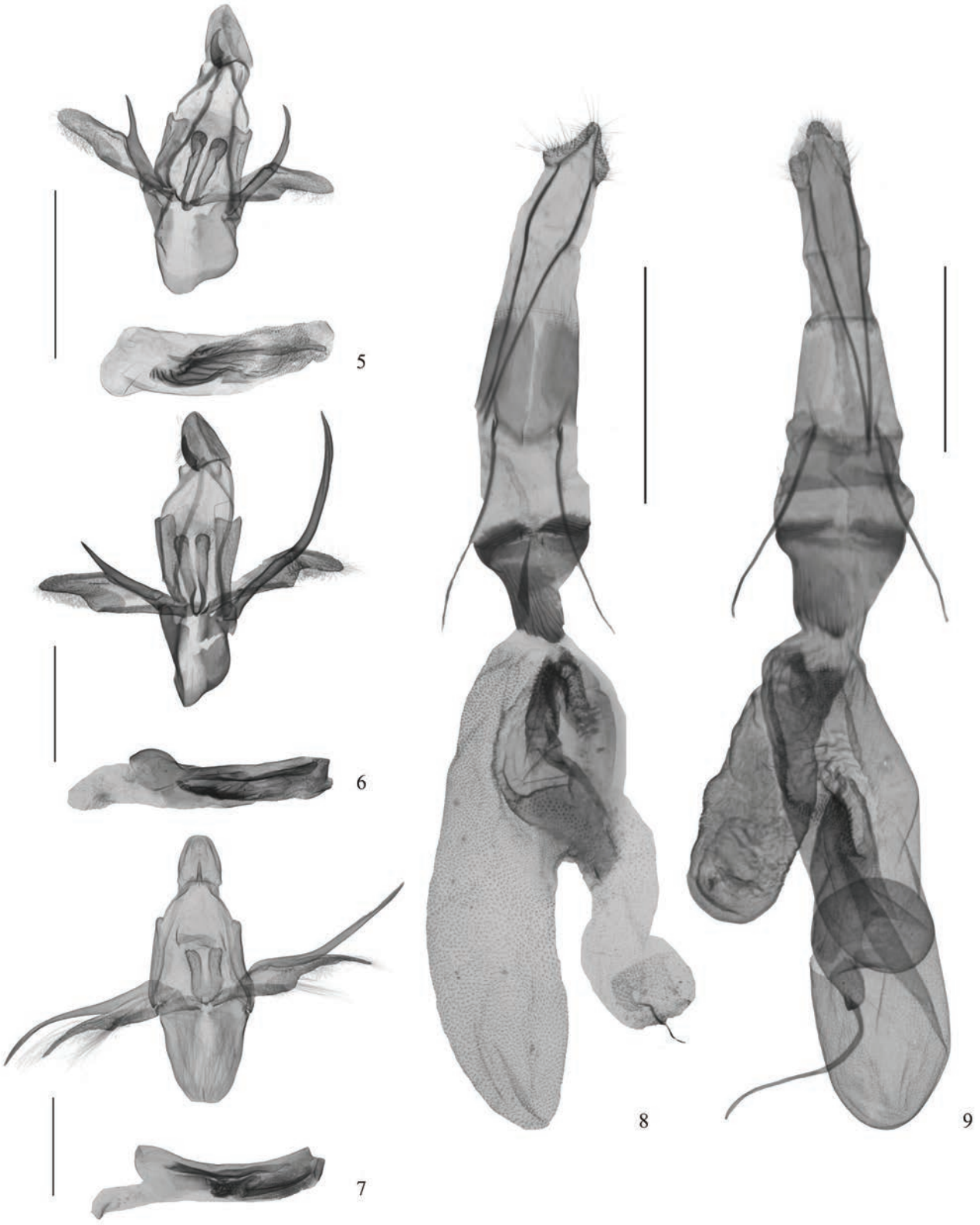
Distribution. China (Fujian).

Etymology. The specific name is derived from Latin *brevis*, meaning short, referring to the relatively shorter costal process.

***Etiella grisea* Hampson, 1903 New recorded to China** (Figs 3, 6, 9)

Etiella grisea Hampson, 1903: 33.
Etiella drososcia Meyrick, 1929: 158.
Etiella zinckenella (Treitschke) sensu Tams, 1935: 254 [misidentification].
Etiella grisea drososcia (Meyrick, 1929): Whalley, 1973: 13.

Material examined. 1♀, China, Mt Tianzhu (24º06'N, 117º55'E; alt. 220 m), Xiamen, Fujian Province, 1 August 2011, coll. Jin Zhang and Bing-Bing Hu; 1♂, 1♀, Yongxing Farm, Lanyu Town (22º03'N, 121º32'E; alt. 20 m), Taiwan, 20 August 2006, coll. Hou-Hun Li and Xi-Cui Du.



Figs 5−9. Genitalia of *Etiella* spp. 5−7. Male. 8−9. Female. 5. *Etiella brevis* **sp. nov.**, holotype, slide No. LHX11027. 6. *E. grisea* Hampson, slide No. LHX12338. 7. *E. walsinghamella* Ragonot, slide No. LHX12131. 8. *E. brevis* **sp. nov.**, paratype, slide No. LHX12129. 9. *E. grisea* Hampson, slide No. LHX12339. Scale bars = 1.0 mm.

Diagnosis. Adult (Fig. 3) with wingspan 16–22 mm. This species can be distinguished from its congeners by the male genitalia with the left process about 1/2 length of the right one (Fig. 6), and the helical ductus seminalis in the female genitalia (Fig. 9).

Biology. This species was bred from the pods of *Vigna* (Leguminosae) and *Crotalaria* (Leguminosae) (Whalley, 1973).

Distribution. China (Fujian, Taiwan), Indonesia, Australia, New Guinea, Fiji.

***Etiella walsinghamella* Ragonot, 1888 New recorded to China** (Figs 4, 7)

Etiella walsinghamella Ragonot, 1888: 27; Ragonot, 1893: 577; Whalley, 1973: 14.
Etiella flavofasciella Inoue, 1959: 299.

Material examined. 1♂, Datian Nature Reserves (19º06'N, 108º48'E; alt. 100 m), Dongfang, Hainan Province, 27 April 2009, coll. Qing Jin and Bing-Bing Hu.

Diagnosis. Adult (Fig. 4) with wingspan 22 mm. This species is similar to *E. zinckenella* (Treitschke, 1832) in the male genitalia, but can be distinguished by the sinus of the male antennae greyish brown on the ventral surface, and the lateral arms of the juxta weakly sclerotized distally and straight apically (Fig. 7). In *E. zinckenella*, the sinus of the male antennae is slivery white on the ventral surface, and the lateral arms of the juxta are heavily sclerotized distally and rounded apically.

Distribution. China (Hainan), Japan, Korea, Australia, New Guinea.

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