

# A newly recorded species, *Euchloe belemia* (Lepidoptera: Pieridae) from China

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**Abstract:** The species *Euchloe belemia* (Esper, 1800) of Pieridae is recorded for the first time from China. Characteristics of the genus and the species are revised, and detailed photos/illustrations of male adult are given. A checklist of the species in this genus is provided.

**Key words:** butterflies; Papilionoidea; taxonomy; checklist

中国新纪录种——绿纹荣粉蝶 *Euchloe belemia* 记述（鳞翅目：粉蝶科）

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**摘要：**记述中国粉蝶科荣粉蝶属 *Euchloe* 1 新纪录种：绿纹荣粉蝶 *Euchloe belemia* (Esper, 1800)。并对该属、种进行了描述，提供了该属的物种名录。

**关键词：**蝴蝶；凤蝶总科；分类；名录

## Introduction

The genus *Euchloe* was established by Hübner (1819), with the type species *Euchloe ausonia* var. *esperi* Kirby, 1871 designated later by the International Commission on Zoological Nomenclature (ICZN) (Francis Hemming, 1954–1955). *Euchloe ausonia* var. *esperi* Kirby, 1871 was proposed as a synonymy of *Euchloe crameri* Butler, 1869 (Back, 1990, 2001) but not accepted. The genus comprises 25 species, which can be divided into two subgenera (*Euchloe* and *Elphinstonia*), distributed in Palearctic and Nearctic regions (Bridges 1988; Back *et al.* 2006). This genus has been recorded by D'Abrera (1990, 1997), Winhard (2000), Shou (2006) and Wu (2010).

In this study, the species *Euchloe belemia* (Esper, 1800) is recorded for the first time from China and both the genus and species redescribed with photos/illustrations. A species checklist of the genus is also provided.

## Material and methods

External morphology was observed using a Leica Zoom 2000 microscope, and

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photographs of adults were taken with a digital camera SAMSUNG S730. After being broken off and soaked in 10% KOH at room temperature for about 24 hours, the abdomen was dissected under a Leica Zoom 2000 microscope. The genitalia was photographed using a Scientific Digital micrography system equipped with an Auto-montage imaging system and a QIMAGING Retiga 4000R digital camera (CCD), and illustrated using a compound light microscope (Nikon SMZ-10). Terminology of wing venation follows the Comstock-Needham System (Comstock 1918), and that of the genitalia is based on Klots, 1970.

The specimens observed are deposited in the Entomological Museum, Northwest A&F University (NWAUFU), Yangling, China.

## Taxonomy

### *Euchloe* Hübner, 1819

*Euchloe* Hübner, 1819: 94. (Type species: *Euchloe ausonia* var. *esper* Kirby, 1871).

*Phyllocharis* Schatz, [1886]: 71. (Type species: *Papilio tagis* Hübner, [1886]).

*Elphinstonia* Klots, 1930: 87. (Type species: *Anthocharis charlonia* Donzel, 1842).

Adult (Fig. 1). Body small. Wing generally white or yellow in dorsal view. Forewing: apex slightly acute, with a black spot at distal margin of discal cell; a few black scales occurring solidly basally and black scales apically and subapically on the dorsum. On the ventral, green stripes or patches on the apex and white or yellow in the rest of area. Hindwing: green “marbling” on the ventral surface.

Venation (Fig. 2). Forewing: 11 venations; Position of  $R_{2+3}$ 、 $R_4$ 、 $R_5$  and  $M_1$  at the same point from the mostdiscal cell anterior apex; Cross vein between  $M_1$ 、 $M_2$  curved smoothly. Hindwing: h vein short, inclined to the outer wing and reach to the front wing.

Male genitalia (Fig. 3): valva broad, strongly produced posteriorly, with an internal process; Uncus shorter than tegumen, lateral margins becoming convergent distally (dorsal view); Saccus short and strong; Penis arched ventrally; Juxta V-shaped or Y-shaped.

Distribution. Palearctic and Nearctic Regions.

### Checklist of *Euchloe* Hübner worldwide

- E. aegyptiaca* Verity, 1911—Egypt, Jordan, Libya, Saudi Arabia
- E. ausonia* (Hübner, [1804])—South Europe, North Africa, Crimea, Russia
- E. ausonides* (Lucas, 1852)—Canada, America
- E. bazae* Fabiano, 1993—Spain
- E. belemia* (Esper, 1800)—China, North Africa, Canary Islands, Southwestern Europe to Iran, Baluchistan
- E. charlonia* (Donzel, 1842)—Canary Islands, Morocco Algeria, Tunisia, Egypt, Sudan, Iran, India, Pakistan
- E. cramer*i Butler, 1869—South Europe, North Africa, Italy
- E. creusa* (Doubleday, [1847])—China, Rocky Mountains
- E. daphalis* (Moore, 1865)—West Pamir, Afghanistan, Pakistan, India
- E. falloui* (Allard, 1867)—North Africa, Sudan, Somalia
- E. guaymasensis* Opler, 1986—Mexico
- E. hyantis* (Edwards, 1871)—California

- E. insularis* (Staudinger, 1861)—Italy  
*E. lessei* Bernardi, 1957—Iran  
*E. lotta* Beutenmüller, 1898—America  
*E. lucilla* Butler, 1886—Afghanistan  
*E. naina* Kozhanchikov, 1923—Altai, Mongolia, Transbaikalia  
*E. olympia* (Edwards, 1871)—Arizona, Virginia  
*E. penia* (Freyer, 1852)—Southeastern Europe  
*E. pulverata* (Christoph, 1884)—Turkey, Transbaikalia, Iran, Afghanistan, Kyrgyzstan, Russia  
*E. simplonia* (Bloisduval, 1828)—France, Italy, Switzerland  
*E. tagis* (Hübner, [1803–1804])—France, Toscana, Spain, Italy, Algeria, Morocco  
*E. tomyris* Christoph, 1884—Turkmenia, Uzbekistan, Tajikistan, Iran  
*E. transcaspica* (Staudinger, 1891)—Iran, Turkmenia  
*E. ziyani* Leestmans & Back, 2001—Iran

***Euchloe belemia* (Esper, 1800) (Figs. 1–3), new record to China**

*Papilio belemia* Esper, 1800: 92, Fig. 2.

*Euchloe belemia* (Esper); Turati, 1905: 25; Winhard, 2000: 6.

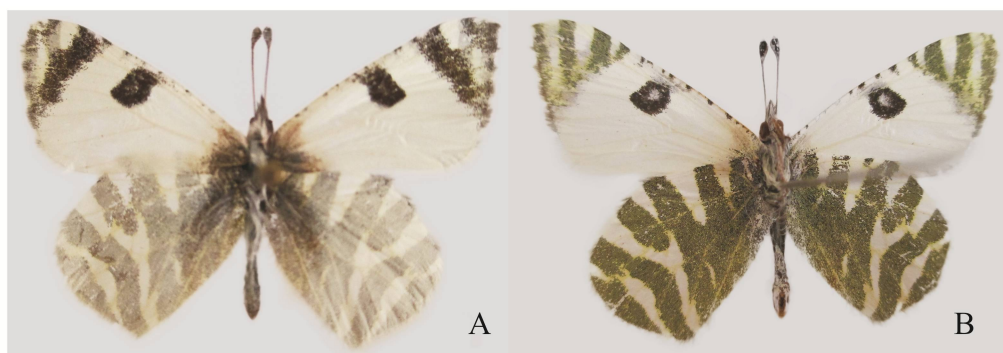


Figure 1. *Euchloe belemia* (Esper, 1800), ♂ adult. A. Dorsal view; B. Ventral view.

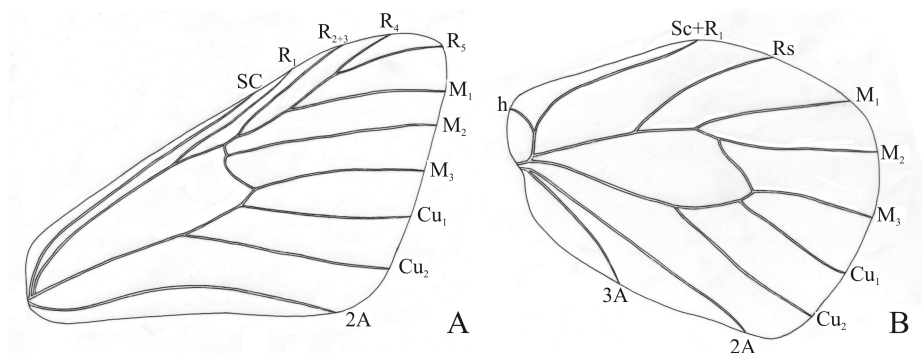


Figure 2. *Euchloe belemia* (Esper, 1800), veins. A. Forewing veins; B. Hindwing veins.

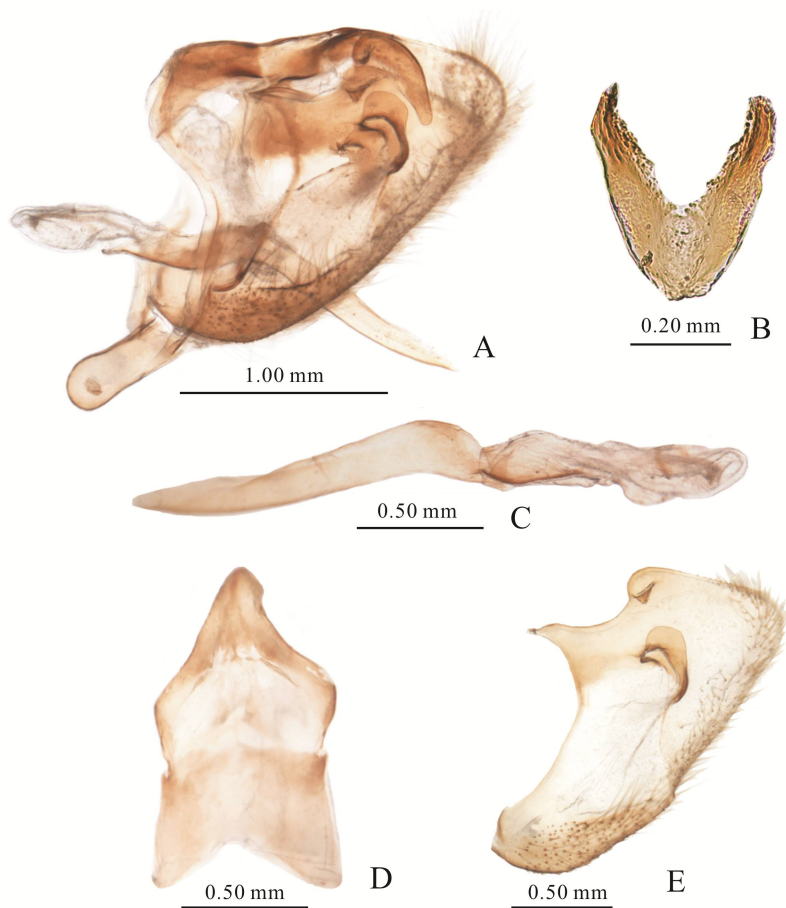


Figure 3. *Euchloe belemia* (Esper, 1800). A. Male genitalia, lateral view; B. Juxta, ventral view; C. Penis, lateral view; D. Tegumen, dorsal view; E. Left valve, inside.

Male (Fig. 1). Forewing length 21 mm. Coloration white. Antennae brownish, long, clavate, outer surface clothed with black and white scales, white predominating, the end of flagellum dilated sharply. Head black, frons with long black hair-like scales. Thorax clothed with white hair-like scales in dorsal view. Wing: dorsal (Fig. 1A): forewing: apex of the forewing sharp, black flattened scales solidly on costa and outer margin end  $Cu_1$ , black stripes on the sub-apex, in middle of rectangular black spot with a thin white longitudinal and inconspicuous line on discocellular, a few black scales occurring solidly on basal one-tenth of forewing; hindwing entirely white, leaving translucent green bands characteristic of reverse, and more black scales on basal than forewing. Ventral (Fig. 1B): forewing: more clear black spots on costal margin, three perpendicularly green-yellow stripes on apex and subapex, green-yellow flattened scales occurring from one-third of costal margin to the terminus of  $Cu_1$ , similar circular black patch at distal end of cell with perceptibly light scales in center, no black scale at base; regularly bright green stripes running through the hindwing except the shortest

one. Venation (Fig. 2): forewing (Fig. 2A): subcosta longer than discal cell. Position of  $R_1$  in the anterior vein of discal cell.  $R_{2+3}$ 、 $R_4$ 、 $R_5$  have the same stem which divided from apex of discal cell.  $R_4$  was longer or equal to the length of its stem. Upper discocellular smooth, shorter than oblique discocellular. Hindwing (Fig. 2B): humeral cross vein inclined to base, end from costa.  $Sc+R_1$  as long as posterior vein of discal cell.

Male genitalia (Fig. 3). Lateral view: the lateral edges of tegumen parallel, not converge until the point of juncture with the uncus (Fig. 3A); uncus curved sharply (Fig. 3A); Valva wide, gradually narrowing to the end, with an internal process in the middle of valve (Fig. 3E); saccus clavate, regular in outline (Fig. 3A); penis long, curved ventrally, acute in the end (Fig. 3C). Tegumen broad in dorsal view (Fig. 3D), and Juxta V-shaped in posterior view (Fig. 3E).

**Specimens examined.** 2♂, China, Xinjiang, Yili, 1800 m, 29-VII-2006, Qing ZHAI.

Distribution. China; North Africa; Canary Islands; South Western Europe to Iran and Baluchistan.

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