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

Changping DING, Yalin ZHANG

**Key Laboratory of Plant Protection Resources and Pest Management of the Ministry of Education; Entomological Museum, Northwest A&F University, Yangling, Shaanxi 712100, China**

**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

**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 synonym 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 Palaearctic 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
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 (NWAFU), Yangling, China.

Taxonomy

_Euchloe_ Hübner, 1819

_Euchloe_ Hübner, 1819: 94. (Type species: _Euchloe ausonia var. esperi_ Kirby, 1871).

_Phylocharis_ 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 R2+3, R4, R5 and M1 at the same point from the mostdiscal cell anterior apex; Cross vein between M1, M2 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. crameri_ 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, Mobgolia, 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. ziayani 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 Cu₁, 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 Cu₁, 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 R1 in the anterior vein of discal cell. R2+3, R4, R5 have the same stem which divided from apex of discal cell. R4 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+R1 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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**References**


