BioOne COMPLETE

Taxonomy and Geographical Distribution of Macdunnoughia (Lepidoptera: Noctuidae: Plusiinae) of China

Authors: Hu, Yanqing, Xue, Shuang, and Hua, Baozhen

Source: Florida Entomologist, 97(2) : 392-400

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.097.0208

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

TAXONOMY AND GEOGRAPHICAL DISTRIBUTION OF *MACDUNNOUGHIA* (LEPIDOPTERA: NOCTUIDAE: PLUSIINAE) OF CHINA

YANQING HU, SHUANG XUE AND BAOZHEN HUA*
Key Laboratory of Plant Protection Resources and Pest Management, Ministry of Education, Entomological Museum, Northwest A&F University, Yangling, Shaanxi 712100, China

*Corresponding author; E-mail: huabzh@nwsuaf.edu.cn

ABSTRACT

Five species of *Macdunnoughia* Kostrowicki, 1961 have been recorded from China. Their distribution patterns indicate that the species richness of the genus was mainly concentrated in central China, and the number of species in southeastern and northwestern China was relatively small. A key to species of the genus in China is provided. Adults and male and female genitalia are illustrated.

Key Words: Glossata, Noctuoidea, Plusiini, species richness, China

RESUMEN

Se han registrado cinco especies de *Macdunnoughia* Kostrowicki, 1961 en China. Planteamos el patrón principal de la distribución geográfica y una separación regional clara entre las especies estrechamente relacionadas. Encontramos que la riqueza de especies de este género se manifiesta en el centro de China, pero es relativamente fragil en el Sureste y Noroeste de China. Se provee una clave para las especies y se ilustran los adultos y su genitalia.

Palabras Clave: Plusiinae, *Macdunnoughia*, variación interespecífica, riqueza de especies, China continental

Macdunnoughia Kostrowicki, 1961 (Lepidoptera: Noctuidae: Plusiinae) was erected for the French species, *Plusia confusa* Stephens, 1850 as its type species, and can be readily recognized by the claviform stigma coalesced or divided and a dark-colored medial area on the forewing, and the remarkable sacculus processus in male genitalia.

Often species of *Macdunnoughia* are serious pests in forests and cultivated farmlands. The eruciform larvae bear 2 pairs of prolegs on the fifth and sixth abdominal segments apart from 3 pairs of thoracic legs (Eichlin 1975). They are polyphagous insects, frequently damaging soybean (*Glycine max* (L.) Merr.; Fabaceae), various Asteraceae and Brassicaceae species. *Macdunnoughia confusa* (Stephens, 1850) and *M. crassisigna* (Warren, 1913) complete 2 or 3 generations per year, overwintering as larval stage in the soil (Lu et al. 1999; Ma et al. 2011).

Macdunnoughia consists of 6 described species (Ronkay et al. 2008; Kumar & Kumar 2013), and the genus is mainly distributed in China and the neighboring countries except *M. confusa* which is Trans-Palaearctic. Five species have been recorded from China to date (Chu & Chen 1963; Chu et al. 1964; Chen et al. 1991; Han et al. 2005).

However, species of *Macdunnoughia* are often confused because some cannot be distinguished by external features and their distributions overlap. The scientific names of the Chinese species are often erroneously or confusingly cited in scientific literature (Chen et al. 1991; Han et al. 2005; Ma et al. 2011). In order to avoid confusion, we herein summarize the taxonomy of this genus and present a key that effectively differentiates the species of *Macdunnoughia*. Also we briefly outline the distribution patterns of the component species.

MATERIALS AND METHODS

All the specimens were captured with light traps. Abdomens were macerated in 10% NaOH and temporarily mounted on glass slides in 75% glycerin. Photographs of adults were taken by a Nikon D90 digital camera. Photographs of genitalia were taken by a digital camera mounted on a Nikon SMZ1500 stereo microscope. Plates were assembled using Adobe Photoshop CS2 v9.0.

Specimens examined in this study are from the following institutions: Entomological Museum, Northwest A&F University, Shaanxi, China

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

(NWAU); China Agricultural University, Beijing, China (CAU); Shenyang Agricultural University, Shenyang, China (SYAU); Henan Agricultural University, Zhengzhou, China (HNAU); South China Agricultural University, Guangzhou, China (SCAU).

The specimens are kept in NWAU unless otherwise stated.

KEY TO THE CHINESE SPECIES OF *MACDUNNOUGHIA*

1. Forewings mostly brown or reddish brown, with a silvery streak or not over a claviform stigma and with a complex vesica (subgenus *Macdunnoughia*) 2

—. Forewings mostly gray or blackish gray, with a black streak over the claviform stigma and with a simple vesica (subgenus *Puriplusia*) 4

2. Forewings without silvery streak . . . . . *M. (M.) confusa* (Stephens)

—. Forewings with a silvery streak 3

3. Sacculus processus elongate, clavus rectangular . . . . . *M. (M.) crassisigna* (Warren)

—. Sacculus processus shortened, clavus triangular . . . . . *M. (M.) hybrida* Ronkay

4. Median area of forewings light in color, vesica without cornuti . . . . . *M. (P.) purissima* (Butler)

—. Median area of forewings dark in color, vesica with a row of cornuti . . . *M. (P.) tetragona* (Walker)

Macdunnoughia (*Macdunnoughia*) *confusa* (Stephens, 1850) 瘦银锭夜蛾
(Figs. 1, 2, 13, 13a and 19)

Plusia confusa Stephens, 1850: 291. Type-locality: Central France; Chu et al. 1964: 93.

Plusia gutta Guenée, 1852: 346. Type-locality: Austria, Hungary, France.

Macdunnoughia monosigna Chou & Lu 1979: 18. Type-locality: China, Shaanxi, Yan'an.

Macdunnoughia confusa: Chou & Lu 1974: 70; Han et al. 2005: 19; Ronkay et al. 2008: 23.

Diagnosis

This species can be easily distinguished from *M. crassisigna* and *M. hybrida* by the lack of a silvery streak over the claviform stigma, and by the latter's smaller size (26-35 mm vs. 30-36 mm in *M. hybrida* and 31-37 mm in *M. crassisigna*). In male genitalia, *M. confusa* has a wide sacculus, short triangular clavus, short vesica with 2 large dorsal diverticula, and small cornuti (Figs. 13 and 13a). In *M. crassisigna* the sacculus is more narrow, clavus is rectangular, vesica is longer with a small latero-basal diverticulum, and robust cornuti (Figs. 14-15a). Sacculus extends beyond the distal margin of the valva in *M. confusa* and does not extend beyond the distal margin of the valva as in *M. hybrida* (Figs. 13 and 16). In female genitalia, *M. confusa* has a shorter ductus bursae (Fig. 19) than *M. crassisigna* (Figs. 20 and 21).

Description

Males and Females. Wingspan 26-35 mm. Head grayish brown; antennae filiform; labial palpi short and upturned. Thorax densely covered with grayish brown scales. Abdomen grayish brown. On forewing, ground color grayish brown, claviform stigma white; basal and antemedial lines white; medial line faint; postmedial line brown with white at posterior part; subterminal line brown at front; terminal line brown. On hindwing, ground color grayish brown; veins highlighted (Figs. 1 and 2).

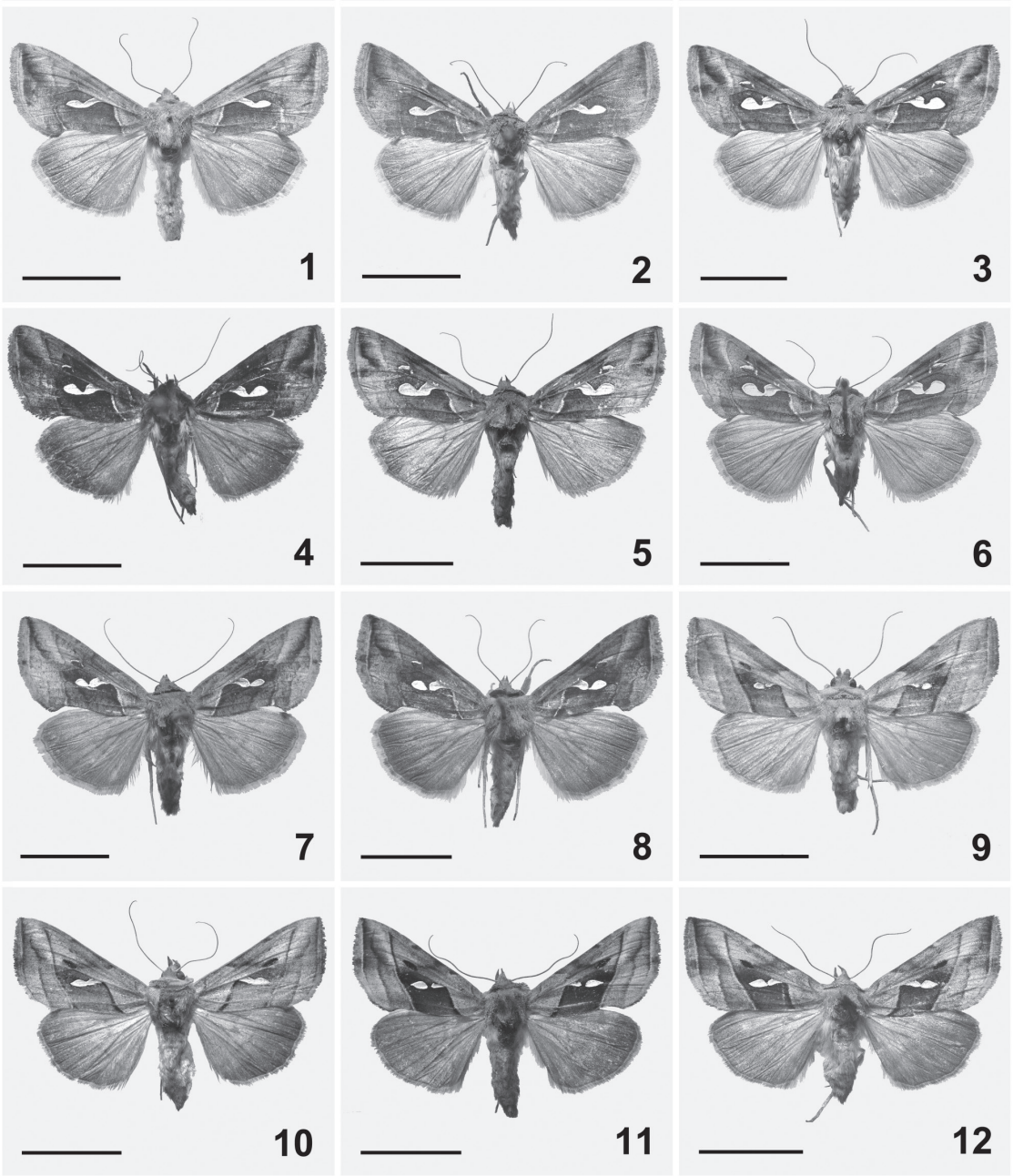
Male Genitalia. Uncus slender and long, sharp apically; tegumen relatively narrow; valva intermediate in size; cucullus arched; harpe slender and curved distally, shorter than uncus, sharp apically and bifurcate basally; sacculus intermediate in size, left processus blunt, right processus pointed; clavus triangular; saccus relatively broad (Fig. 13). Aedeagus shorter than vesica; vesica covered with 2 rows of large cornuti (Fig. 13a).

Female Genitalia. Papillae anales intermediate in size; apophyses anteriores and posteriores narrow and long; ostium sclerotized; ductus bursae sclerotized at middle; corpus bursae long with a remarkable signum (Fig. 19).

Specimens Examined

CHINA: Jilin: 1♂, Jingyuetan, 8-VII-1975; 1♀, Changbaishan, 6-VIII-1974; 1 specimen (abdomen missing), Gongzhuling, IX-1977. Liaoning: 1♂, Tieling, VII-1977. Inner Mongolia: 1♂, Zhemeng, 1977. Xinjiang: 1♀, Urumqi, 8-VIII-1979, T. Chen; 1♂, Kuqa, 1977, B.J. Li; 1♀, Chepaizi, 1977; 2♂♂, Shache, 10-VII-1977, R.L. Yu; 1♀, Changji, VIII-1977; 1♂,, Shawan, 1977, H. R. Xu; 1♂,, Turpan, 1977, W. J. Yang; 1♂,1♀, Ili, 20-VIII-1979, T.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use



Figs. 1-12. Species of *Macdunnoughia*. (1 and 2) *Macdunnoughia* (*Macdunnoughia*) *confusa*; (3-6) *M. (M.) crassisigna* ; (7 and 8) *M. (M.) hybrida*; (9 and 10) *M. (Puriplusia) purissima*; (11 and 12) *M. (P.) tetragona*; (1, 3, 5, 7, 9 and 11) Male; (2, 4, 6, 8, 10 and 12) Female. Scale bars = 10 mm.

Chen; 1♂, Hetian, IX-1979, T. Chen; 1♂, Moyu, 9-IX-1979, T. Chen; 1♀, Pishan, 7-IX-1979, T. Chen; 2♀♀, Turpan, 34.5 m, 25-VIII-1979, T. Chen; 1♀, Kashi, 30-VIII-1979, T. Chen; 1♀, Cele, 10-IX-1979, T. Chen; 1♀, Yutian, 1,427 m, 1-IX-1979, T. Chen; 1♀, Shihezi, VIII-1964; 1♂, Aksu, 10-VIII-1977, G. J. Fan. Qinghai: 1♀, Xining, 15-VII-1965. Gansu: 1 specimen (abdomen missing), Gannan, VIII-1952. Ningxia: 1♀, Yinchuan, 15-X-1964. Shaanxi: 1♀, Xi'an, 500 m, 23-X-1974, F. Yuan; 1♀, Nanwutaishan, 17-VI-1979, I. Chou & T. Chen; 1♀, Fengzhou, 900 m, 13-X-1973, J. S. Lu & C. Tian; 1♀, Xianyang, 11-VI-1973; 1♂, Wugong, 10-VIII-1965, I. Chou; 1♀, Qinling Mt., 1,100 m, 9-12-X-1973, J. S. Lu & C.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Tian; 2♀♀, Yan'an, 2-V-1974, J. H. Lu; 1♀, Liquan, 3-VI-1974; 2♂♂1♀, Yulin, 23-25-VII-1982; 1♀, Baoji, 14-V-1974; 2♂♂3♀♀, Heyang, 29-IV-1974; 1♀, Haopingsi, 200 m, Taibaishan, 7-VI-1982; 1♂, Zhouzhi, 9-V-1972, J. G. Tian; 1♂2♀♀, Qinling Station, 1-X-1980, I. Chou, S. M. Wang & J. R. Zhou; 1♂2♀♀, Luotuoshu, 2,100 m, Taibaishan, 9-VI-1983; 1♀, Huoditang, 16-VIII-1980; 2♀♀, Yangling, 28-VIII-2002; 1♀, Suide, 26-VII-1973, F. Yuan, S. R. Mi & J.R. Hui. Shanxi: 1♂, Taigu, VIII-1964, H.H. Zhou; 1♂, Taiyuan, 1964; 1 specimen (abdomen missing), Yuncheng, VII-1970, X.E Zhao. Henan: 1♂, Xinxiang, 9-VIII-1973. Sichuan: 1♂, Danba, 2,000 m, 27-VII-2006, S. Zhou.

Distribution

This species is Trans-Palearctic (Ronkay et al. 2008) and densely distributed in northeastern and central China and in Xinjiang. The distribution pattern may be disjunct because of natural boundaries: Tianshan and Kunlunshan (Xinjiang), Qinling Mt. and Taihangshan (central China) and Changbaishan (northeastern China) (Fig. 25).

The species occurs at altitude ranging from 34.5 m (Turpan, Xinjiang) to 2,100 m (Taibaishan, Shaanxi).

Macdunnoughia (Macdunnoughia) crassisigna (Warren, 1913) 银锭夜蛾
(Figs. 3-6, 14-15a, 20 and 21)

Phytometra crassisigna Warren, 1913: 352. Type-locality: Japan, Korea, India.

Phytometra rhopalosema Hampson, 1913: 513. Type-locality: India, Nilgiris.

Macdunnoughia crassisigna xizangensis Chou & Lu, 1982: 101. Type-locality: China, Tibet.

Plusia crassisigna: Chu & Chen,1963: 99.

Macdunnoughia crassisigna: Chou & Lu 1974: 71; Chen et al. 1991: 315; Han et al. 2005: 19; Ronkay et al. 2008: 24.

Diagnosis

This species is barely distinguished from *M. hybrida* by the forewing color pattern (Figs. 3-8). In male genitalia, *M. crassisigna* has a long, narrow sacculus (Figs. 14 and 15), long vesica, and robust cornuti (Figs. 14a and 15a) compared with a short, wide sacculus (Fig. 16), short vesica, and small cornuti (Fig. 16a) in *M. hybrida*. In female genitalia, *M. crassisigna* has a long ductus bursae and an accessory bursae that is longer than the corpus bursae (Figs. 20 and 21); in *M. hybrida* the ductus bursae is short and the accessory bursae is shorter than the corpus bursae (Fig. 22).

Description

Males and Females. Wingspan 31-37 mm. Head brown or dark brown; antennae filiform; labial palpi short and upturned. Thorax densely covered with brown scales. Abdomen brown. On forewing, a silvery streak (or bifurcate silvery streak) over white claviform stigma; basal and antemedial lines white; medial line faint; postmedial line brown or dark brown with white at posterior part; subterminal line brown, dark color at front; terminal line brown. On hindwing, ground color grayish brown; veins highlighted (Figs. 3-6).

Male Genitalia. Uncus slender and long, sharp apically; tegumen broad; valva intermediate in size; cucullus arched; harpe slender and sharp apically, shorter than uncus; sacculus processus pointed apically; clavus rectangular; saccus intermediate in size (Figs. 14 and 15). Aedeagus shorter than vesica; vesica with 2 parallel rows of large cornuti or apically triple cornutus (Figs. 14a and 15a).

Female Genitalia. Papillae anales intermediate in size; apophyses anteriores and posteriores narrow and long; ostium slightly sclerotized; ductus bursae slightly sclerotized and wrinkled; corpus bursae shorter than accessory bursae, with a large signum; accessory bursae wrinkled (Figs. 20 and 21).

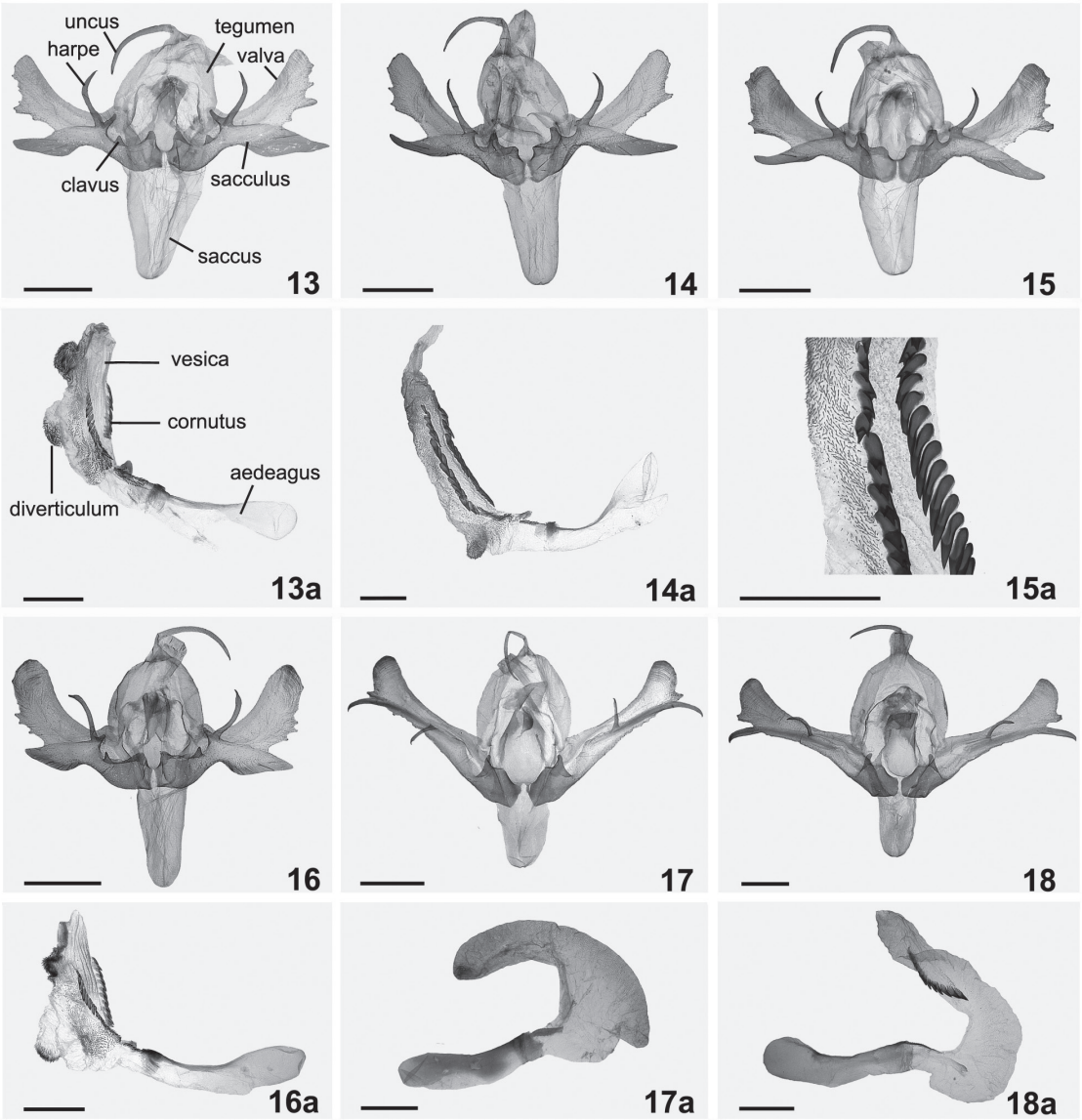
Specimens Examined

CHINA: Jilin: 2♂♂, Gongzhuling, IX-1977. Gansu: 1 specimen (abdomen missing), Bifenggou, 5-VI-2002. Shaanxi: 1♂, Yangpingguan, 4-X-1984, N. Ma; 1♂, Qinling Station, 1-X-1980, I. Chou, S.M. Wang & J. R. Zhou; 1♂, Ziyang, 5-VI-1973, F. Yang & C. Tian; 1♂, Wugong, V-1973. Shanxi: 1♂, Yuncheng, X-1976, X. E Zhao. Henan: 1♂, Zhengzhou (HNAU). Zhejiang: 1♂, Tianmushan, 4-V-1980, S.K. Liu. Hubei: 1♂, Wuchang, 12-VI-1964; 1♂, Shennongjia, 29-VIII-1980, T. Chen. Sichuan: 1♀, Wolong, 1,920 m, 10-VIII-1983, J. G. Yang; 1 specimen (abdomen missing), Guangyuan. Tibet: 1♀, Lhasa, 3,700 m, 9-IX-1978, F. S. Li (CAU); 4♂♂, Shigatse, 8-VII-1978, F. S. Li (CAU); 1♂, Shigatse, 3,950 m, VII-1978, F. S. Li (CAU); 1♂, Yanggong, 29-VII-1978, F. S. Li (CAU); 1♂3♀♀, Nêdong, VIII-1976, F. S. Wang; 1♀, Zhamu, 21-VII-1978, F. S. Li (CAU); 1♂, Zhamu, 23-VII-1978, F.S. Li (CAU); 1♀, Tongmai, 25-VII-1978, F.S. Li (CAU); 1♀, Mainling, 30-V-1984; 1♂, Bomê, 13-IX-1984, B. Jiang; 1♀, Yadong, 27-VIII-1984, S.C. Hu; 1♀, Pengbo, 7-VI-1975. Guizhou: 1♂, Guiyang. Yunnan: 1♂, Luopingshan, 2,668 m, Eryuan, 10-V-1980; 1 specimen (abdomen missing), Weishan, 2,500 m, 26-VIII-1980.

Distribution

This species is distributed in the Himalayan-Pacific Region. It is widely distributed from northeastern China through central China to the Tibetan plateau (Ronkay et al. 2008). The distribution of *M. crassisigna* extends from north-

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use



Figs. 13-18. Male genitalia of *Macdunnoughia*. (13 and 13a) *Macdunnoughia (Macdunnoughia) confusa*; (14-15a) *M. (M.) crassisigna* ; (16 and 16a) *M. (M.) hybrida*; (17 and 17a) *M. (Puriplusia) purissima*; (18 and 18a) *M. (P.) tetragona*; (13, 14, 15, 16, 17 and 18) Genitalia; (13a, 14a, 15a, 16a, 17a and 18a) Aedeagus. Scale bars = 1 mm.

eastern China to southwestern and southeastern China (Fig. 25).

The highest altitude record where *M. crassisigna* has been collected is 3,950 m (Shigatse, Tibet).

Macdunnoughia (Macdunnoughia) hybrida Ronkay, 1986 拟瘦银锭夜蛾
(Figs. 7, 8, 16, 16a and 22)

Macdunnoughia hybrida Ronkay 1986: 205. Type-locality: North Korea, Province North Pyongan, Myohyang Mt.; Han et al. 2005: 19; Ronkay et al. 2008: 23.

Diagnosis

Macdunnoughia hybrida and *M. crassisigna* are confused in China because of the nearly identical forewing pattern (Figs. 3-8). Accurate identification can be made by examining genitalia.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Description

Male and female. Wingspan 30-36 mm. Head brown; antennae filiform; labial palpi short and upturned. Thorax densely covered with brown scales. Abdomen brown. On forewing, a silvery streak over white claviform stigma; basal and antemedial lines white; medial line faint; postmedial line brown with white at posterior part; subterminal line brown, dark color at front; terminal line brown. On hindwing, ground color grayish brown and dark color near outer margin; veins highlighted (Figs. 7 and 8).

Male Genitalia. Uncus slender and long, sharp apically; tegumen intermediate in size; valva relatively broad; cucullus arched; harpe slender, sharp apically and bifurcate basally, shorter than uncus; sacculus processus short and pointed apically; clavus triangular; saccus intermediate in size (Fig. 16). Aedeagus shorter than vesica; vesica with 2 rows of large cornuti (Fig. 16a).

Female Genitalia. Papillae anales intermediate in size; apophyses anteriores and posteriores narrow and long; ostium sclerotized; ductus bursae short, broad at middle, sclerotized; corpus bursae slender and long, with a large signum (Fig. 22).

Specimens Examined

CHINA: Heilongjiang: 1♂1♀, Harbin, 14-VII-1963; 1♂, Harbin, 5-IX-1963; 1♂, Nenjiang, 1977. Jilin: 1♂, Jingyuetan, 9-VII-1975. Liaoning: 1♂, Shenyang, IX-1973; 1♂, Tieling, 9-VI-1977 (SYAU); 1♀, Tieling, 11-VII-1977 (SYAU). Inner Mongolia: 1♂, Zhemeng, 1977. Shandong: 1♂, Ji'nan, 4-VI-1950; 1♂, Tai'an, 8-IV-1965. Jiangsu: 1♂, Nanjing, VIII-1965; 2♂♂, Ganyu, 1977, M. Hu.

Distribution

Macdunnoughia hybrida is distributed in northeastern China (Ronkay et al. 2008). This study showed the distribution to extend southwards along the coast in eastern China (Fig. 25).

Macdunnoughia (Puriplusia) purissima (Butler, 1878)
淡银纹夜蛾
(Figs. 9, 10, 17, 17a and 23)

*Plusia purissim*a Butler, 1878: 202. Type-locality: Japan, Yokohama; Chu et al. 1964: 96.

Puriplusia purissima: Chou & Lu 1974: 72.

Macdunnoughia purissima: Han et al. 2005: 19; Ronkay et al. 2008: 25.

Diagnosis

It is related to *M. tetragona* and can be distinguished from the latter by the light-colored medial area and the visible postmedial line on forewing (Figs. 9 and 10). Cornuti are absent in male genitalia (Fig. 17a) and the ductus bursae is 1.5 times as long as that of *M. tetragona* (Figs. 23 and 24).

Description

Male and Female. Wingspan 28-31 mm. Head gray; antennae filiform; labial palpi short and upturned. Thorax densely covered with gray scales. Abdomen gray. On forewing, ground color gray, medial area brown, a black streak over white claviform stigma; basal, antemedial, postmedial and terminal lines brown or reddish brown; medial line faint; subterminal line grayish brown. On hindwing, ground color grayish brown and dark color near outer margin; veins highlighted (Figs. 9 and 10).

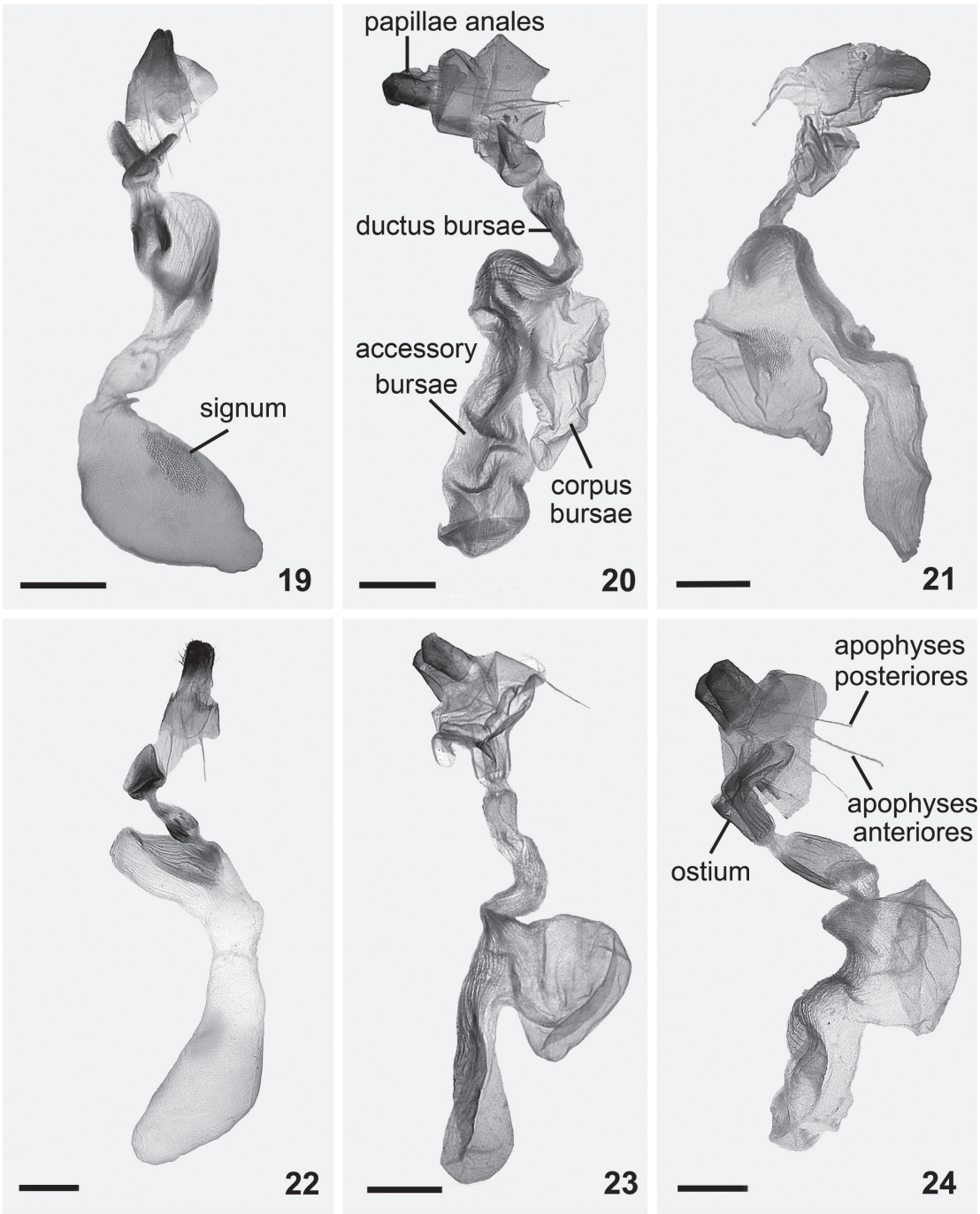
Male Genitalia. Uncus narrow, sharp apically, 1.5 times as long as harpe; tegumen intermediate in size; valva slender; cucullus arched; harpe short, sharp apically, almost as long as sacculus processus; sacculus processus sharp apically; clavus finger-shaped; saccus short (Fig. 17). Aedeagus shorter than vesica; vesica with many small dots (Fig. 17a).

Female Genitalia. Papillae anales intermediate in size; apophyses anteriores and posteriores narrow and long; ostium broad and slightly sclerotized; ductus bursae long and wrinkled; corpus bursae similarly rounded; accessory bursae long and wrinkled (Fig. 23).

Specimens Examined

CHINA: Shaanxi: 1♀, Qinling Station, 1-X-1980, I. Chou, S.M. Wang & J. R. Zhou; 1♀, Hanzhong, 2-II-1974, Q. Z. Cheng & S. Y. Lu; 1♂, Yangling, 5-VI-2002; 1♂, Xixiang, 400 m, 19-21-X-1973, J. S. Lu & C. Tian; 1♀, Yangxian, 28-IX-1980, S. Y. Liu; 1♂, Qinling Mt., 11-IX-1987, S. M. Wang & J. R. Zhou; 1♀, Huoditang, 19-VI-1985, L. Liu; 1♀, Haopingsi, 1,200 m, Taibaishan, 10-VIII-1981. Henan: 1♂, Zhengzhou (HNAU); 1♂, Longyuwan, 1,000 m, 11-VII-1996, B. Z. Hua, R. G. Tian & W. Z. Zhang. Jiangsu: 1♂. Hubei: 1♂2♀♀, Songbai, 25-VIII-1980, T. Chen; 1♀, Songbai, 950 m, 16-VII-1980; 1♀, Xingshan, 29-VII-1098, S.K. Liu. Chongqing: 1♂, 11-IV-1973, S.N. Jiang. Sichuan: 1♀, Liangshan; 1♀, Kangding, 22-VIII-1939, I. Chou, F.Y. Zheng & T.H. Hao; 1♂, Emei, 1,020 m, 16-IX-1978, F.S. Li (CAU). Guizhou: 2♂♂. Guangdong: 1♂, Nanling, 5-VI-2011 (SCAU). Guangxi: 1♂, Maoershan, 13-VIII-2009 (SCAU). Yunnan: 1♀, Kunming, 23-III-1982, S. M. Wang & J. R. Zhou; 1♂, Dianchangshan, 2,990 m, 20-VI-1974, I. Chou & F. Yuan; 1♀, Lijiang, 2,400 m, 11-VI-1974, I. Chou & F. Yuan; 1♂, Guandu, 2,300 m, 7-VIII-1980.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use



Figs. 19-24. Female genitalia of *Macdunnoughia*. (19) *Macdunnoughia (Macdunnoughia) confusa*; (20 and 21) *M. (M.) crassisigna* ; (22) *M. (M.) hybrida*; (23) *M. (Puriplusia) purissima*; (24) *M. (P.) tetragona*. Scale bars = 1 mm.

Distribution

This species is distributed from the northeastern part of China southwards to the central Chinese mountains (Ronkay et al. 2008). This study showed the distribution to extend southwards to Yunnan (Fig. 25).

Altitudinal range is from 400 m (Xixiang, Shaanxi) to 2,990 m (Dianchangshan, Yunnan).

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use



Fig. 25. Distribution of *Macdunnoughia*. *Macdunnoughia (Macdunnoughia) confusa* (■); *M. (M.) crassisigna* (●); *M. (M.) hybrida* (×); *M. (Puriplusia) purissima* (★); *M. (P.) tetragona* (▲). Oblique line indicates that *M. purissima* has been recorded but without a precise locality.

Macdunnoughia (Puriplusia) tetragona (Walker, [1858]) 方淡银纹夜蛾
(Figs. 11, 12, 18, 18a and 24)

Plusia tetragona Walker, [1858]: 932. Type-locality: India, Hindustan.

Plusia semivitta Moore, 1867: 63. Type-locality: India, Darjeeling.

Puriplusia zayuensis Chou & Lu 1982: 98. Type-locality: China, Xizang, Zayu.

Puriplusia tetragona: Chen et al. 1991: 313.

Macdunnoughia tetragona: Ronkay et al. 2008: 25.

Diagnosis

Macdunnoughia tetragona can be distinguished from *M. purissima* by the dark medial area on forewing (Figs. 9-12); the male genitalia have a row of large cornuti (Fig. 18a); ductus bursae and accessory bursae is short (Fig. 24).

Description

Male and Female. Wingspan 27-34 mm. Head blackish gray; antennae filiform; labial palpi short and upturned. Thorax densely covered with gray scales. Abdomen grayish. On forewing, ground color blackish gray, medial area black, a black streak over white claviform stigma; basal line grayish black; antemedial line black; medial line faint; postmedial line black with a little red color; subterminal line grayish black; terminal line black at front. On hindwing, ground color grayish brown; veins highlighted (Figs. 11 and 12).

Male Genitalia. Uncus narrow, sharp apically, 1.5 times as long as harpe; tegumen intermediate in size; valva slender; cucullus arched; harpe short and curved, sharp apically, almost as long as sacculus processus; sacculus processus sharp apically, broader than harpe; clavus finger-shaped; saccus relatively short (Fig. 18). Aedeagus shorter than vesica; vesica with a row of cornuti (Fig. 18a).

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Female Genitalia. Papillae anales intermediate in size; apophyses anteriores and posteriores narrow and long; ostium broad and slightly sclerotized; ductus bursae short and wrinkled; corpus bursae similarly rounded; accessory bursae relatively short and wrinkled (Fig. 24).

Specimens Examined

CHINA: Gansu: 1♀, Lianghe, 30-VIII-1980, J.K. Yang; 1♂, Wenxian, 7-VIII-1980, F.S. Li (CAU). Shaanxi: 2♂♂, Luotuoshu, 2,100 m, Taibaishan, 19-VI-1983; 1♀, Huoditang, 17-VIII-1984; 1♂, Qinling Station, 1-X-1980, I. Chou, S. M. Wang & J. R. Zhou; 1♂, Qinling Mt., 1,100 m, 9-12-X-1973, J. S. Lu & C. Tian. Hubei: 1♂, Shennongjia, 29-VIII-1980, T. Chen. Tibet: 1♀, Qamdo, 3,250 m, 6-VI-1984, B. Jiang; 1 specimen (abdomen missing), Zhangmu, V-1981, A. H. Li. Yunnan: 1 specimen (abdomen missing), Mengyang, 760 m, 8-V-1974, I. Chou & F. Yuan; 1♂1♀, Weishan, 2,300 m, 17-VIII-1980; 1♂, Xiaguan, 1,850 m, 19-VIII-1989; 1♂, Menghai, 1,160 m, 27-31-V-1974, I. Chou & F. Yuan.

Distribution

This species is distributed in the Himalayan-Pacific Region, including the eastern edge of the Tibetan plateau, the eastern Chinese mountains and Taiwan (Ronkay et al. 2008). In this survey, we found that it also occurs in central China. Its distribution overlaps with that of *M. purissima* at the Qinling Mt. (Shaanxi) and Shennongjia (Hubei) (Fig. 25).

Altitudinal range is from 760 m (Mengyang, Yunnan) to 3,250 m (Qamdo, Tibet).

References Cited

Butler, A. G. 1878. Descriptions of new species of Heterocera from Japan. Part II. Noctuites. Ann. Mag. Nat. Hist. 5(1): 192-204.

Chen, Y. X., Wang, B. H., and Lin, D. W. 1991. The Noctuids fauna of Xizang. Henan Scientific and Technical Publishing House, Henan. 409 pp.

Chou, I., and Lu, T. 1974. Studies on the Chinese Plusiinae (Lepidoptera, Noctuidae). Acta Entomol. Sinica 17(1): 66-78.

Chou, I., and Lu, T. 1979. Two new genera and four new species of Plusiinae and revision of some known species (Lepidoptera, Noctuidae). Entomotaxonomia 1(1): 15-20.

Chou, I., and Lu, T. 1982. Check list of Noctuidae in Xizang (Plusiinae). Insects of Xizang 2: 97-102.

Chu, H. F., and Chen, Y. X. 1963. Economic insect fauna of China, Lepidoptera, Noctuidae (1). Science Press, Beijing. 172 pp.

Chu, H. F., Yang, J. K., Lu, J. R. and Chen, Y. X. 1964. Economic insect fauna of China, Lepidoptera, Noctuidae (2). Science Press, Beijing. 183 pp.

Eichlin, T. D. 1975. Guide to the adult and larval Plusiinae of California (Lepidoptera, Noctuidae). Dept. Food and Agric., Div. Plant Industry, Laboratory Services, California. 73 pp.

Guenée, A. 1852. Noctuélites. Tome 2, 443 pp. *In* J. B. A. D. Boisduval and A. Guenée [eds.], Histoire Naturelle des Insectes. Species Général des Lépidoptères. Tome Sixième. Librairie Encyclopédique de Roret, Paris.

Hampson, G. F. 1913. Catalogue of the Noctuidae in the collection of the British Museum. (Nat. Hist.). XII. Noctuidae. 626 pp.

Han, H. L., Jin, D. Y., and Park, K. T. 2005. Plusiinae in Mt. Changbai (Lepidoptera, Noctuidae), with six new records from China. Korean J. Appl. Entomol. 44(1): 13-20.

Kostrowicki, A. S. 1961. Studies on the Palaearctic species of the subfamily Plusiinae (Lepidoptera, Phalaenidae). Acta Zool. Cracoviensia 6: 367-472.

Kumar, R., and Kumar, V. 2013. A new species of genus *Macdunnoughia* Kostrowicki (Lepidoptera: Noctuidae) from India. Mun. Entomol. Zool. 8(2): 876-882.

Lu, H., Xu, W., Chen, R. Z., and Kang, Z. X. 1999. Studied on biology of *Macdunnoughia crassisigna* Warren. J. Jilin Agric. Univ. 21(3): 26-28.

Ma, W. B., Pati, G. L., Chen, D. L. and Ma, Z. X. 2011. Distribution and biological characteristics of *Macdunnoughia agnata* in the region of Lanzhou. J. Gansu Sci. 23(2): 38-41.

Moore, F. 1867. On the lepidopterous insects of Bengal. Proc. Zool. Soc. London 44-98.

Ronkay, L. 1986. On the taxonomy and zoogeography of some Palaearctic and Indo-Australian Plusiinae (Lepidoptera, Noctuidae). Ann. Hist.-Nat. Mus. Natl. Hungarica 78: 205-218.

Ronkay, L., Ronkay, G., and Behounek, G. 2008. The Witt Catalogue. A taxonomic atlas of the Eurasian and North African Noctuoidea Vol. I, Plusiinae I. Heterocera Press, Budapest. 348 pp.

Stephens, J. F. 1850. List of the specimens of British animals in the collection of the British Museum. Lepidoptera. 5th Edition. Order of the Trustees, London. 353 pp.

Walker, F. 1858. List of the specimens of lepidopterous insects in the collection of the British Museum 12. Order of the Trustees, London. pp. 765-982.

Warren, W. 1913. Familie: Noctuidae. Die Gross-Schmetterlinge des palaearktischen Faunengebietes, Band 3: Die Eulenartigen Nachtfalter, pp. 9-444 *In* A. Seitz [eds.], Die Gross-Schmetterlinge der Erde. Verlag des Seitz'schen Werkes (Alfred Kernen), Stuttgart.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use