

Two new species and one new record of the genus *Macaduma* Walker, 1866 from China (Lepidoptera: Erebidae, Arctiinae)

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Abstract

In this paper, two new species of the genus *Macaduma* Walker, 1866: *Macaduma huanglianshana* Zhao, Bucsek & Han, sp. n. and *Macaduma chenglaiae* Zhao, Bucsek & Han, sp. n., are described from Yunnan Province, China. Meanwhile, another species: *M. micra* Dubatolov & Bucsek, 2016 is reported for the first time from China. Adults of these species are illustrated, and images of the male genitalia are provided.

KEY WORDS: Lepidoptera, Erebidae, Arctiinae, *Macaduma*, new species, taxonomy, distribution, China.

Dos nuevas especies y un nuevo registro del género *Macaduma* Walker, 1866 de China (Lepidoptera: Erebidae, Arctiinae)

Resumen

En este trabajo se describen dos nuevas especies de la provincia Yunnan, China del género *Macaduma* Walker, 1866, *Macaduma huanglianshana* Zhao, Bucsek & Han, sp. n. y *M. chenglaiae* Zhao, Bucsek & Han, sp. n. y se registra por primera vez para China a *M. micra* Dubatolov & Bucsek, 2016. Se ilustran los adultos de estas especies y se proporcionan las imágenes de la genitalia del macho.

PALABRAS CLAVES: Lepidoptera, Erebidae, Arctiinae, *Macaduma*, nuevas especies, taxonomía, distribución, China.

Introduction

The genus *Macaduma* Walker, 1866 was established based on the type species *Macaduma tortricella* Walker, 1866 from Java, Indonesia (WALKER, 1866). In recent years, eight species from Southeast Asia and southern China have been described and recorded (FANG, 2000; HOLLOWAY, 2001; ČERNÝ & PINRATANA, 2009; BUCSEK, 2012, 2014; DUBATOLOV & BUCSEK, 2016; BAYARSAIKHAN *et al.*, 2020). Up to now, only one species: *M. tortricella* has been reported in China (FANG, 2000). In this study, two new species of the genus *M. huanglianshana* Zhao, Bucsek & Han, sp. n. and *M. chenglaiae* Zhao, Bucsek & Han, sp. n. are described in Yunnan Province, China, and *M. micra* Dubatolov & Bucsek, 2016 is described as new to the Chinese fauna.

Materials and methods

The specimens were trapped by a mercury lamp at night during July and August 2018. Photographs of the adult specimens were taken with the Nikon D700 camera. Dissection and preparation of the genitalia slides were followed standard methods (KONONENKO & HAN, 2007). Photographs of the genitalia slides were taken with an Olympus microscope and Helicon Focus software, and the pictures

were further processed in Adobe Photoshop CS6. All specimens of these new species are deposited in the collections of Northeast Forestry University, Harbin, China (NEFU).

Taxonomic account

Genus *Macaduma* Walker, 1866

Macaduma Walker, 1866, *List Spec. Lepid. Insects Colln Br. Mus.*, **35**: 1704

Type species: *Macaduma tortricella* Walker, 1866

Type locality: Java, INDONESIA

= *Psapharacis* Turner, 1899. *Trans. R. Soc. S. Aust.*, **23**: 14

Type species: *Psapharacis toxophora* Turner, 1899

Type locality: Brisbane, AUSTRALIA

Descriptions of new species and new record species

Macaduma huanglianshana Zhao, Bucsek & Han, sp. n. (Figs 1, 8, 15, 16)

Material: Holotype ♂, CHINA, Yunnan Province, Luchun, Mt. Huanglian, 27-31-VII-2018, H. L. Han, J. Wu leg., genitalia No. ztt-277-1, coll. NEFU. Paratype: 1 ♂, same data as for holotype, genitalia No. ztt-281-1; coll. NEFU.

Description: Wingspan 18-19 mm in male. Head, patagium, and tegula dark brown. Antennae filiform. Thorax brown. Forewing ground color brown scattered little black; basal area, veins, and inner margin dark. Hindwing brown diffuse, small, dark brown flecks, fringe brown. Abdomen brown with pale yellow anal tuft.

Male genitalia: Tegumen triangular, thin. Uncus slender, slightly swollen subapically, with a hooked apex. Vinculum narrow, weakly sclerotized. Juxta weakly sclerotized, with a strongly sclerotized tapering process. Valva rather flat, broad, and asymmetrical, in the left one, sacculus broad at the base, narrowing distally, cucullus weakly sclerotized, ending in irregular sawtooth shape; in the right one, the top of cucullus relatively flat, with two apical elongations on both sides, and the ventral elongation is about twice as long as the dorsal one. Aedeagus slender, vesica with a long cornutus, and plate of minute spiculi.

Female unknown.

Diagnosis: This new species is similar to *M. cinnamum* Bucsek, 2012 (Figs 2, 9), but can be separated from it by the following characters (*M. cinnamum* details are in parentheses): head and thorax dark brown, abdomen brown with pale yellow anal tuft (head and thorax cinnamon-brown, abdomen black with ochreous pubescence); the ground color of forewing brown scattered little black, the hindwing pale brown (forewing cinnamon-brown, hindwing dark brown). In the male genitalia, the juxta has a long and tapering process (without process); valva wider than *M. cinnamum*, apical elongations of valva nearly triangular or tapering (all apical elongations of valva rounded); aedeagus straight (aedeagus significantly bent).

Distribution: China (Yunnan: Mt. Huanglian) (Fig. 15).

Etymology: The species is named after the type locality, Mt. Huanglian, Yunnan province, China.

Bionomics: The collection site is located in Huanglian Mountain National Nature Reserve. The reserve is one of the three slides of the "Green Delta" that borders China, Vietnam, and Laos. It is also the intact tropical rain forest that connects southwest China and Southeast Asia and is rich in biodiversity. The reserve is the only one with the most complete vertical distribution of subtropical monsoon evergreen broad-leaved forest, mountain mossy evergreen broad-leaved forest, mountain mossy dwarf forest, and secondary forest in the south of Yunnan. The specimens were collected in July (Fig. 16).

Macaduma chenglaiae Zhao, Bucsek & Han, sp. n. (Figs 3, 10, 17, 18)

Material: Holotype ♂, CHINA, Yunnan Province, Menglun, Mannanxing village, 8-VIII-2018, H. L. Han, J. Wu leg., genitalia No. ztt-275-1; coll. NEFU.

Description: Wingspan 18-19 mm. Head, patagium, and tegula dark brown. Antennae filiform. Thorax brown. Forewing ground color dark brown, costa strongly convex, external edge with triangular process; outer margin with a gentle concave arc at M_2 . Hindwing dark brown, costal band light brown, fringe pale to smoky brown. Abdomen brown with black fringe and light brown anal tuft.

Male genitalia: Tegumen triangular and thin, slightly shorter than uncus. Uncus thick, covered with setae, slightly curved, swollen subapically with hooked apex. Juxta weakly sclerotized is slender and ribbonlike. Vinculum narrow, weakly sclerotized. Valva asymmetrical, with apical processes, which is membranous at ventral side, and weakly sclerotized at dorsal side; in the left valva, cucullus with a hook-shaped elongation on the dorsal side, in the right one, cucullus bifurcated, the middle part concave, and acute at both sides. Aedeagus curved, bent at middle, with three different sized cornuti on vesica proximally, a long cornutus and a plate of minute spiculi on the vesica.

Female unknown.

Diagnosis: The new species is externally similar to *M. borneana* Holloway, 2001 (Figs 4, 11) and *M. malayana* Bucsek, 2014 (Figs 5, 12), but it can be separated from the latter by the following characters (*M. borneana* details are in parentheses; *M. malayana* details are in parentheses): the ground color of forewing is dark brown (lighter; brownish black, apex and termen cinnamon brown); the forewing is of typical shape for the genus, costal margin strongly bent forming a triangle (typical shape; costal margin rounded). In the male genitalia, base of the left valva is wider and the middle part is clearly segmented (narrow at both ends and wide in the middle; narrow, no segmented); the elongation of left cucullus is short hook-shaped, on the dorsal side (slender and noticeably longer than *M. chenglaiae*; on the ventral side, slightly thicker than *M. chenglaiae*); the elongation of right cucullus is bifurcated, ending in two triangles (bifurcated, sclerotized and slender; slightly curved and sharp); the aedeagus bent at middle, with three differently sized cornuti on basal vesica (bent near the caecum, vesica with cornuti more than three; two small and a larger cornutus on vesica).

Distribution: China (Yunnan: Menglun) (Fig. 17).

Etymology: The species name is dedicated to Mrs. Cheng-Lai Fang, a famous researcher of Chinese lepidoptera.

Bionomics: Menglun town is located in the northwest of Mengla County, Xishuangbanna, on the east bank of Lancang River basin, with a landscape of low hills and intermountain basins. The zonal vegetation in Menglun is mainly tropical seasonal rain forest. The specimens were collected close to a broad-leaved forest with ferns and shrubs in August (Fig. 18).

Macaduma micra Dubatolov & Bucsek, 2016 (Figs 6, 13)

Macaduma micra Dubatolov & Bucsek, 2016. *Euroasian Ent. J.*, 15(3): 234, figs 12, 31

Type locality: Kon Tum Prov. Sa Thay Distr., Bargok Comm, Chu Mon Ray, VIETNAM

Material: CHINA: Prov. Yunnan, Mengyang, Yexianggu, 2 ♂♂, 4-5-VIII-2018, H. L. Han, J. Wu leg., genitalia No. ztt-279-1, ztt-282-1; coll. NEFU. **New for China.**

Diagnosis: Wingspan 18-19 mm in male. The forewings are dark and of typical wing shape for the genus. In male genitalia, tegumen triangular, slightly shorter than uncus; uncus slightly swollen medially, sharp distally; juxta with strongly sclerotized process; valva are not completely asymmetrical, the left cucullus is larger than the right. Aedeagus curved, bent at middle, with a long cornutus and a plate of minute spiculi on the vesica.

Distribution: China (Yunnan), Cambodia (Cardamom Mountains), Vietnam (Kon Tum).

Key to the species of the genus *Macaduma* Walker, 1866 in China based on the male genitalia

- 1 Apex of left valva not trifurcate.....2
- Apex of left valva trifurcate.....*M. huanglianshana* sp. n.
- 2 The apical elongation of left cucullus not long hook-shaped.....3
- The apical elongation of left cucullus long hook-shaped.....*M. chenglaiae* sp. n.
- 3 Juxta with a strongly sclerotized and strip-shaped process.....*M. micra*
- Juxta with a weakly sclerotized and angular process.....*M. tortricella*

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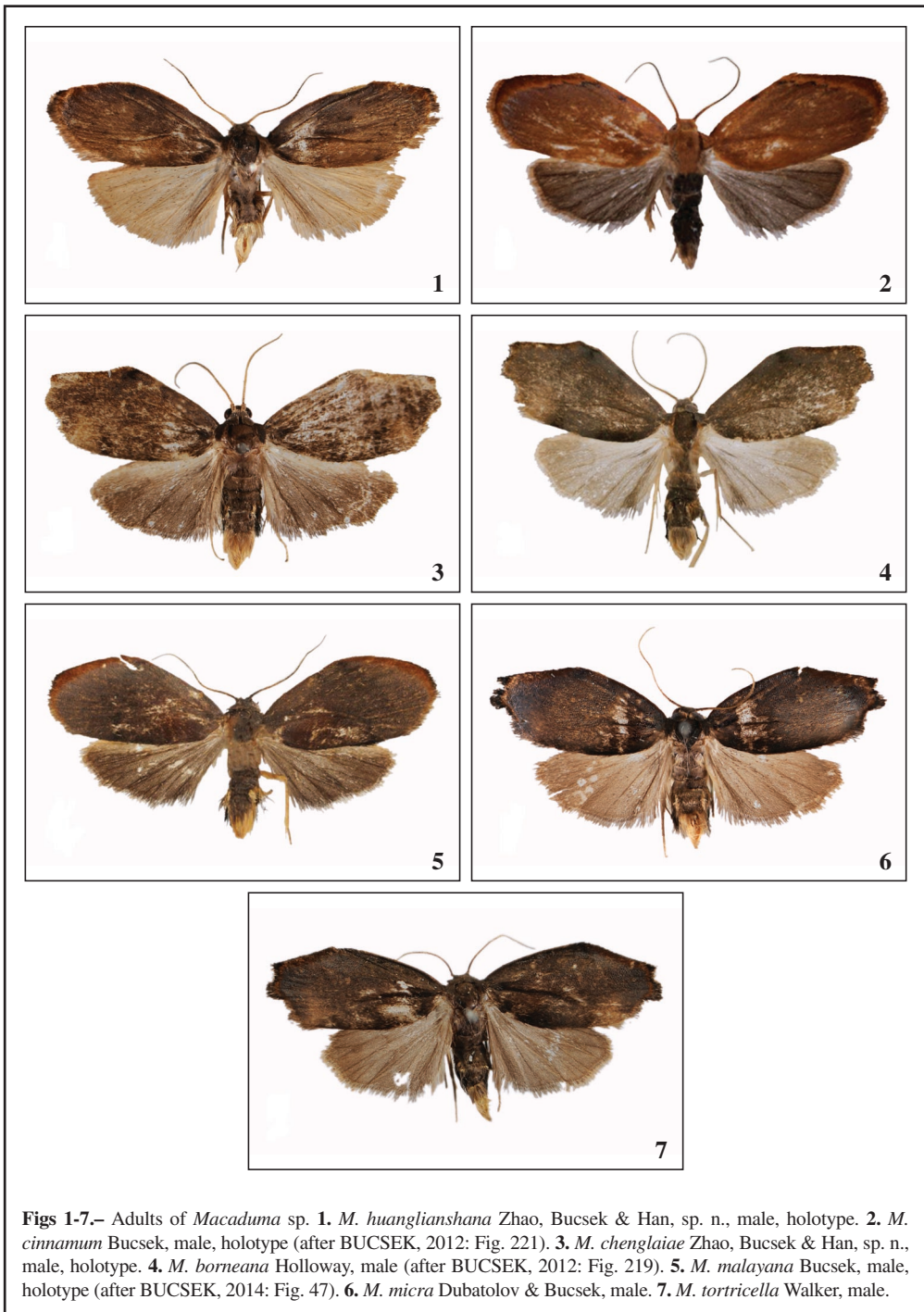
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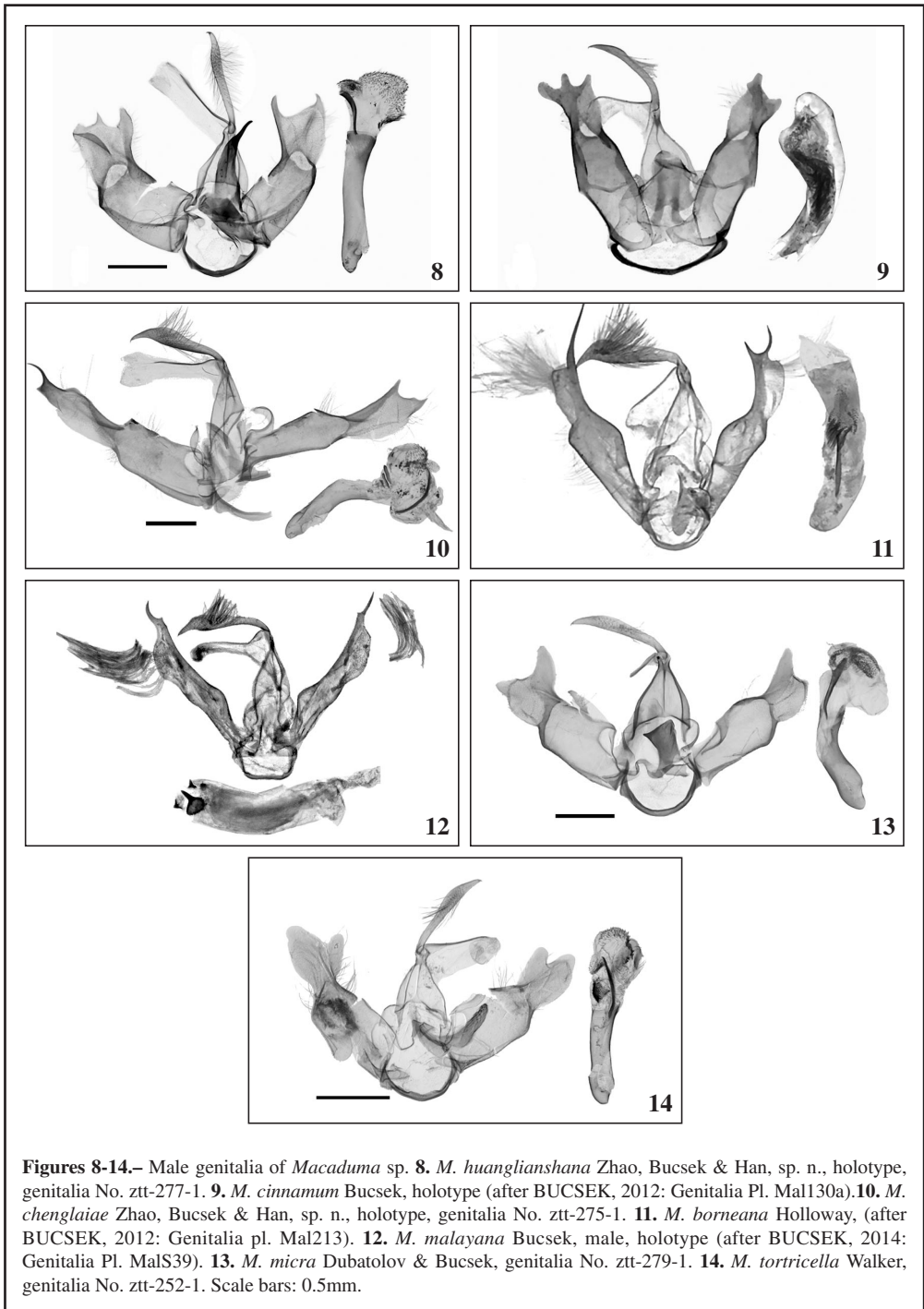
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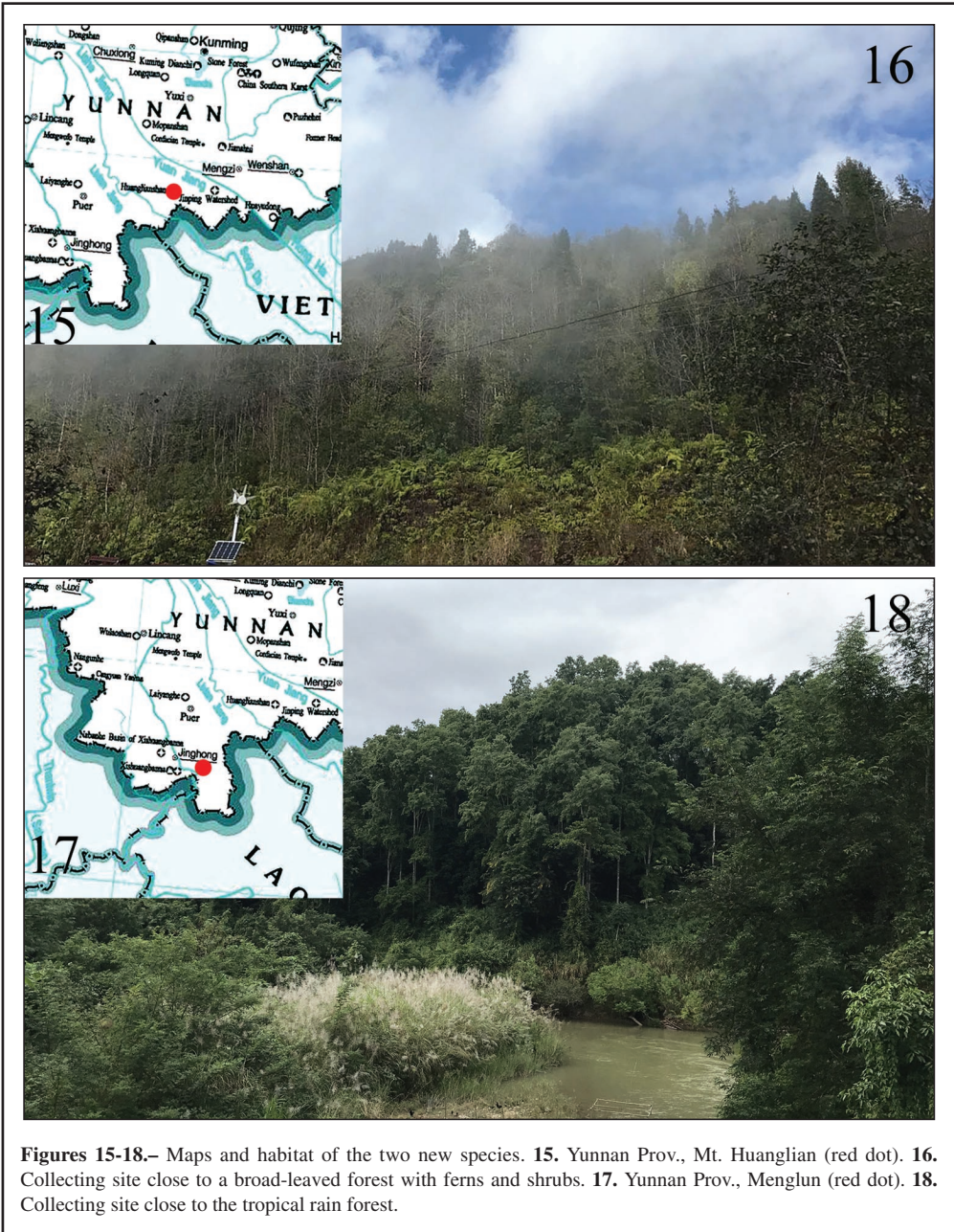
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Figs 1-7.— Adults of *Macaduma* sp. **1.** *M. huanglianshana* Zhao, Bucsek & Han, sp. n., male, holotype. **2.** *M. cinnamum* Bucsek, male, holotype (after BUCSEK, 2012: Fig. 221). **3.** *M. chenglailae* Zhao, Bucsek & Han, sp. n., male, holotype. **4.** *M. borneana* Holloway, male (after BUCSEK, 2012: Fig. 219). **5.** *M. malayana* Bucsek, male, holotype (after BUCSEK, 2014: Fig. 47). **6.** *M. micra* Dubatolov & Bucsek, male. **7.** *M. tortricella* Walker, male.





Figures 15-18.— Maps and habitat of the two new species. 15. Yunnan Prov., Mt. Huanglian (red dot). 16. Collecting site close to a broad-leaved forest with ferns and shrubs. 17. Yunnan Prov., Menglung (red dot). 18. Collecting site close to the tropical rain forest.