

A new species and a newly recorded species of *Metacosma* Kuznetzov (Lepidoptera: Tortricidae) from China

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Abstract: Two species of the genus *Metacosma* are discussed: *Metacosma bispinalis* sp. nov. is described as new, and *M. miratorana* Kuznetzov, 1988 is redescribed and newly reported from China. Photographs of adults and genitalia are provided, along with a key to all known species of *Metacosma*.

Key words: Olethreutinae; Eucosmini; taxonomy; morphology; *Metacosma miratorana*; *Metacosma bispinalis*

中国带小卷蛾属 *Metacosma* 一新种及一新纪录种记述 (鳞翅目: 卷蛾科)

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摘要: 记述带小卷蛾属 *Metacosma* 1 新种——双刺带小卷蛾 *Metacosma bispinalis* sp. nov. 和 1 中国新纪录种——奇带小卷蛾 *M. miratorana* Kuznetzov, 1988, 提供了 2 个种的成虫和雄性外生殖器特征图以及该属分种检索表。

关键词: 新小卷蛾亚科; 花小卷蛾族; 分类学; 形态学; 奇带小卷蛾; 双刺带小卷蛾

Introduction

Kuznetzov (1985) proposed the genus *Metacosma* with *M. impolitana* Kuznetzov, 1985 from Russia as the type. *Metacosma* is characterized by the cucullus having a long bristled band extending from the dorsal margin near its apex; with three or more stout ventral spines and one or two similar ones at or before the apex in the male genitalia; and by the sternite VII consisting of a raised median plate and various-shaped lateral plates in the female genitalia.

To date, *Metacosma* consists of six species worldwide, distributed in China, Korea, Japan, Vietnam and Russia. The biology of this genus was unknown until Komai, Byun & Yamazaki (2018) provided the host plant (Pinaceae: *Pinus* spp.) and a detailed introduction to the biology of *M. echinophora*.

Prior to this study, three species had been recorded in China (Zhang & Li 2009; Zhang 2012). We herein describe a new species *M. bispinalis* sp. nov. and redescribe *M. miratorana* Kuznetzov based on the specimens collected in China. A key to all known species of *Metacosma* is provided.

Material and methods

This study is based on examination of specimens collected by light traps from the forests and mountains in China. Genitalia dissection and mounting methods follow Li (2002). Descriptions of forewing pattern follow Brown and Powell (1991) as refined by Baixeras (2002).

Images of adults were taken with a Leica M205A Stereo microscope plus Leica Application Suite 4.2 software, and photographs of genitalia were prepared with a Leica DM750 Microscope provided with the same software.

The type specimens are deposited in the Insect collection of Nankai University, Tianjin, China (NKU).

Abbreviations. TL — Type locality; TD — Type depository; ZMAS — Zoological Museum of Russian Academy of Sciences, St. Petersburg, Russia.

Taxonomy

Metacosma Kuznetsov, 1985

Metacosma Kuznetsov, 1985: 3.

Type species: *Metacosma impolitana* Kuznetsov, 1985, by original designation.

Key to species of *Metacosma* Kuznetsov based on characters of male genitalia

1. Valva without stout spines; uncus absent (Fig. 4) *M. miratorana*
- . Valva with stout spines; uncus present 2
2. Sacculus right-angled distally (Komai, Byun & Yamazaki 2018: 136, Fig. 10) *M. echinophora*
- . Sacculus not right-angled distally 3
3. Cucullus asymmetrical (five stout spines on left side and six spines on right side) (Kuznetsov 1985: 4, Fig. 1) *M. impolitana*
- . Cucullus symmetrical 4
4. Uncus bifurcated, produced into two processes posterolaterally 5
- . Uncus triangular or trapeziform 6
5. Valva with a stout spine at apex (Zhang 2012: 2, Fig. 1b) *M. bifurcata*
- . Valva with two stout spines at apex (Fig. 3) *M. bispinalis* **sp. nov.**
6. Uncus trapeziform; valva with eight ventral spines (Zhang & Li 2009: 31, Fig. 4) *M. trapezia*
- . Uncus triangular; valva with less than eight ventral spines (Zhang & Li 2009: 31, Fig. 3) *M. triangulata*

1. *Metacosma bispinalis* Bai & Zhang **sp. nov.** (Figs. 1, 3)

Description. Adult (Fig. 1). Vertex gray, mixed with yellowish white tipped scales, frons yellowish white. Antenna with scape blackish brown mixed with yellowish white; flagellum brown, with basal notch in male. Labial palpus blackish brown mixed with white; second segment triangularly expanded; third segment short and thin, drooping. Tegulae with anterior 1/3 blackish brown, posterior 2/3 gray, mixed with yellowish white tipped scales; thorax blackish brown mixed with yellowish white.

Wingspan 6.8–8.5 mm. Forewing ground color grayish white, mixed with brown; costa blackish brown, with nine pairs of white strigulae; striae below distal five pairs leaden gray; strigulae 1–2 indistinct; strigulae 3–4 before median fascia; strigulae 5–9 clear, often

composed of only one stria; basal patch blackish brown mixed with yellowish white, gradually broadened from basal 1/3 of costa to basal 1/3 of dorsum, angulated and more distinct at outer margin; median fascia short, extending to distal 1/4 of discal cell on anterior margin, forming a sub-trapezoidal blackish brown spot; ocellus leaden gray, sub-ovate, surrounded by yellowish scales; a nearly inversed triangular blackish brown patch located at outer side of ocellus; dorsum with a small triangular spot before ocellus; cilia blackish brown, with yellowish white tipped scales, subbasal line blackish brown. Hindwing with basal 2/3 translucent, with spine-like blackish gray scales between veins, brown along veins; distal 1/3 dark gray, darker along veins; cilia gray, subbasal line gray.

Male genitalia (Fig. 3). Tegumen with lateral arms long, narrow. Uncus small, bifurcated, forming two processes posterolaterally. Socius elongate, approximately 2/5 length of tegumen height, with sparse short hairs. Valva sub-rectangular, bristled band represented by a setose dorsodistally area; costa nearly straight; ventral margin slightly concave beyond middle, with sparse short setae and three or four stout spines distally; apex with two stout spines of different sizes on a papillary process. Phallus broad at base, sharply narrowed to basal 1/3, distal 2/3 slender; cornuti consisting of numerous deciduous needlelike spines (cornuti lost in Fig. 3).

Female unknown.

Holotype. ♂, **China**, Wuzhishan, 18.88°N, 109.65°E, Hainan Province, 742 m, 21-V-2015, leg. Peixin CONG, Wei GUAN & Sha HU, slide No. BX15116. **Paratypes.** Hainan Province, 1♂, Shuiman, Wuzhishan, 640 m, 28-X-2016, leg. Xia BAI, Shuonan QIAN & Wanding QI; 1♂, Wuzhishan, 738 m, 02-XI-2016, leg. Xia BAI, Shuonan QIAN & Wanding QI, slide No. BX15556; 1♂, Tianchi, Jianfengling, 787 m, 12-VII-2015, leg. Qingyun WANG, Suran LI & Mengting CHEN, slide No. BX15324; 1♂, Tianchi, Jianfengling, 787 m, 16-I-2016, leg. Kaijian TENG, Xia BAI & Mengting CHEN, slide No. BX15422; Chongqing, 1♂, Mt. Jinfo, 1100 m, 01-VI-2013, leg. Xiaofei YANG, slide No. BX15705; Guangxi Zhuang Autonomous Region, 1♂, Longbang, Jingxi, Baise, 770 m, 15-VII-2013, leg. Xiaofei YANG, slide No. BX15690; Tibet, 1♂, Beibeng, Motuo County, 987 m, 12-VIII-2017, leg. Mujie QI & Xiaofei YANG, slide No. BX15849.

Distribution. China (Chongqing, Guangxi, Hainan, Tibet).

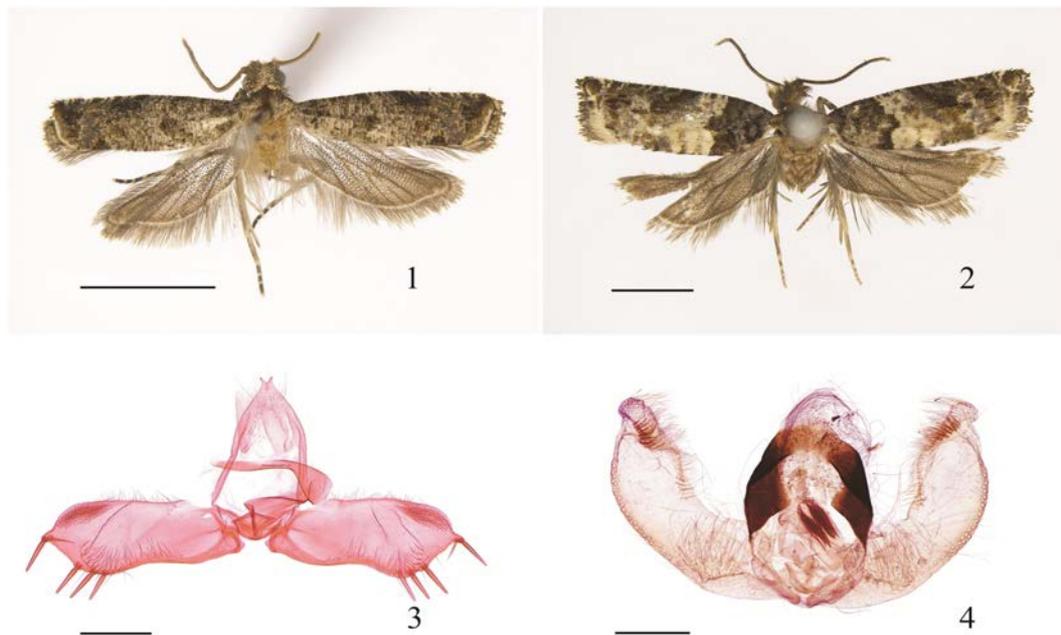
Etymology. The specific name is derived from the Latin prefixes *bi-* and Latin *spinalis*, referring to the two apical spines of the cucullus in the male genitalia.

Diagnosis. This new species is characterized by the valva having a setose area dorsodistally instead of having a bristled band as in the male genitalia of other congeneric species. It is similar to *M. bifurcata* Zhang, 2012 in the male genitalia by the uncus being bifurcated distally, but it can be distinguished by the valva having three or four ventral spines and two apical spines of different sizes. In *M. bifurcata*, the valva bears eight ventral spines and one apical spine in the male genitalia.

2. *Metacosma miratorana* Kuznetsov, 1988 (Figs. 2, 4), new record to China

Metacosma miratorana Kuznetsov, 1988: 630; Brown 2005: 419; Zhang & Li 2009: 32. TL: North Vietnam (Vinhphu Province, Tamdao); TD: ZMAS.

Redescription. Adult (Fig. 2). Vertex dark brown, frons white. Antenna with scape grayish white, flagellum dark brown. Labial palpus with second segment brown except grayish white at apex; third segment grayish white. Thorax and tegulae brown.



Figures 1–4. 1, 2. Adults of *Metacosma* spp. 3, 4. Male genitalia of *Metacosma* spp. 1. *M. bispinalis* sp. nov., paratype, ♂; 2. *M. miratorana* Kuznetsov, ♂; 3. *M. bispinalis* sp. nov., holotype, slide No. BX15116; 4. *M. miratorana* Kuznetsov, slide No. ZAH14040. Scale bars = 2.0 mm (Figs. 1, 2); 0.25 mm (Figs. 3, 4).

Wingspan 10.0 mm. Forewing ground color white mixed with brown, with a dark brown spot at apex; costa blackish brown, with nine pairs of white strigulae: strigulae 1–2 indistinct; strigulae 3–4 between basal patch and point where Sc meeting costa; strigulae 5–6 between Sc and R_1 points, and extending to anterior angle of inner side of ocellus; distal three pairs of strigulae converging and extending to termen below apex; basal patch dark brown mixed with gray, extending from basal 1/4 of costa to basal 1/3 of dorsum, protrudent on outer margin; median fascia extending from middle of costa to posterior angle of discal cell, blackish brown, leaden gray along inner margin, mixed with yellow tipped scales; ocellus silvery, sub-ovate, with four parallel black striae of different lengths at outer side and one at inner side; cilia dark gray except white near tornus, mixed with blackish brown near apex, tinged with white tipped scales. Hindwing and cilia brown.

Male genitalia (Fig. 4). Tegumen sclerotized. Uncus absent. Socius broad oval, with dense long hairs. Valva elongately ovate, neck indistinct, ventral surface with numerous long hairs on basal 1/3, ventral margin with some long setae (lost and only inserted holes available), a slender bristled band extending from before apex along costa to before middle. Phallus short, approximately 1/3 length of valva, broad at base, gradually narrowing to apex; cornuti consisting of two bundles of needlelike spines.

Specimen examined. 1♂, Xiaoheishan, Longling County, Yunnan Province, 1974 m, 17-VII-2013, leg. Shurong LIU, Yuqi WANG & Kaijian TENG, slide No. ZAH14040.

Distribution. China (Yunnan); Vietnam.

Discussion. Kuznetsov (1988) described this species based on one male specimen from

North Vietnam. Komai, Byun & Yamazaki (2018) questioned its generic assignment and considered that this species was related to some species of *Gypsonoma* Meyrick. The long ventral setae and the bristled band of the cucullus are characteristic of the genus *Metacosma* Kuznetsov, which are not found in the genus *Gypsonoma*. Therefore we still treat *M. miratorana* as a member of *Metacosma* in this study, and its taxonomic status should be reconsidered when females are available.

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