

Three new species in the genus *Metathrinca* Meyrick (Lepidoptera: Xyloryctidae) from China

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Abstract: Three new species in the genus *Metathrinca* Meyrick, 1908 from China are described: *Metathrinca bispina* Li **sp. nov.**, *Metathrinca mutatalvis* Li **sp. nov.** and *Metathrinca zhengi* Li **sp. nov.** Images of adults and genitalia are provided.

Key words: Microlepidoptera; Gelechioidea; taxonomy

中国叉木蛾属 *Metathrinca* Meyrick 三新种记述 (鳞翅目: 木蛾科)

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摘要: 记述中国叉木蛾属 *Metathrinca* Meyrick, 1908 三新种: 双刺叉木蛾 *Metathrinca bispina* Li **sp. nov.**, 异瓣叉木蛾 *Metathrinca mutatalvis* Li **sp. nov.** 和郑氏叉木蛾 *Metathrinca zhengi* Li **sp. nov.**, 提供了成虫和外生殖器特征图。

关键词: 小蛾类; 麦蛾总科; 分类

Introduction

Metathrinca was initially defined and placed in the family Xyloryctidae by Meyrick (1908). It is a group of oriental species with 22 known species worldwide (Clarke 1955; Diakonoff 1967; Wang *et al.* 2000; Lvovsky 2014). Five *Metathrinca* species were recorded in China prior to this study (Kearfott 1910; Meyrick *in* Caradja & Meyrick 1938; Wang *et al.* 2000). This paper describes three new species based on specimens mainly collected in South China.

Material and methods

Specimens were collected by light traps. Genitalia dissections followed the methods introduced by Li (2002). Images of adults and genitalia were captured using Leica M205A and Leica DM750 microscopes respectively, coupled with Leica Application Suite 4.2

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software, and finally processed using Adobe Photoshop CS5 software.

The type specimens are deposited in the Insect Collection of Nankai University (NKU).

Taxonomy

Genus *Metathrinca* Meyrick, 1908

Metathrinca Meyrick, 1908: 625. Type species: *Ptochoryctis ancistrias* Meyrick, 1906, by original designation.

Diagnosis. *Metathrinca* is diagnosed by the head with spreading lateral tufts, the bright white forewings usually with subterminal and terminal lines, and the antennae bipectinate in male and filiform in female; the sacculus with a developed saccular process bearing a few or a brush of spines in the male genitalia, and the presence of the signum in the female genitalia.

1. *Metathrinca bispina* Li sp. nov. (Fig. 1)

Description. Adult (Fig. 1A). Wingspan 13.0–17.0 mm. Head snowy white. Labial palpus curved upward, slightly beyond vertex; white in male, basal segment yellowish brown on outer side, second and third segments yellowish brown apically; in female basal and second segments white on inner side, yellowish brown on outer side, third segment pale yellowish brown. Antenna about 3/5 length of forewing, in male bipectinate, in female filiform; scape black on dorsal side, dark yellowish brown on ventral side; flagellum black.

Thorax and tegula white. Forewing white, tinged with silvery metallic luster between subterminal and terminal lines when observed under light; subterminal line yellowish brown, dark brown at starting point, first extending obliquely outward, then curved obliquely inward to dorsum; terminal line yellowish brown, dark brown at starting point; fringe silvery white, partially tipped with brown, with a distinct black subbasal line. Hindwing and fringe white. Foreleg with femur white, tibia and tarsus brown, without long hairs; midleg with femur white, tibia covered with yellowish-white hairs, tarsus brown; hindleg yellowish white, tibia covered with yellowish-white hairs, tarsus ringed with brown at apices of distal four tarsomeres.

Male genitalia (Fig. 1B). Uncus widened at base, narrowed to before bilobed apex, with short setae laterally; apical lobes subtrapezoidal, strongly sclerotized apically, extending outward. Gnathos shorter than uncus, strongly sclerotized, with dense protuberances; ventral plate concave at apex medially, forming two peak-shaped lobes. Tegumen trapezoidal; pedunculi parallel to before rounded apex. Valva broad, parallel sided in basal 3/4, slightly narrowed from distal 1/4 to rounded apex; costa with long setae, basal 1/3 slightly concave, distal 2/3 straight; ventral margin concave medially; sacculus elongate subelliptical, saccular process sclerotized, elliptical, with two apical spines directed straightly dorsad. Saccus small, inverted triangular. Juxta broad fusiformis, widened medially, narrowed anteriorly and posteriorly from middle length. Aedeagus slender, straight, slightly tapered to apex.

Female genitalia (Fig. 1C). Papillae anales broad, with long setae. Apophyses posteriores about 1.2 times length of apophyses anteriores. Eighth sternum sclerotized, with small excavation medially on posterior margin, lined with setae. Ductus bursae long, about three times length of apophyses posteriores, membranous. Corpus bursae subovate, about 1/3 length of ductus bursae; signum cross-shaped, with a longitudinal median ridge.

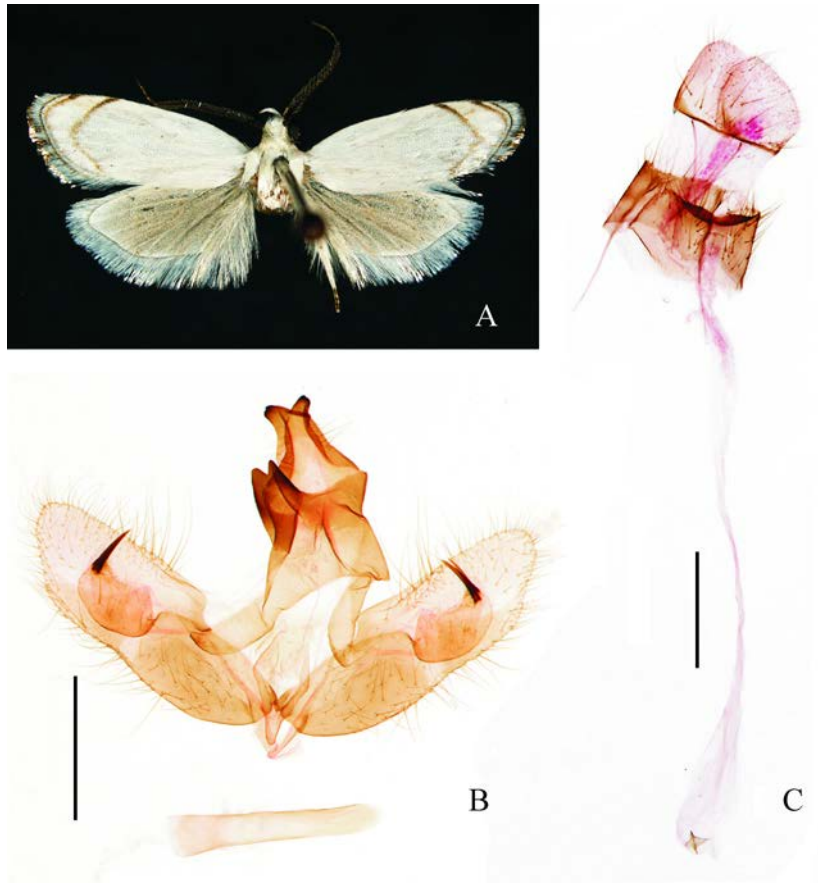


Figure 1. *Metathrinca bispina* Li **sp. nov.** A. Adult, ♂, holotype; B. Male genitalia, holotype, slide No. TSY24641; C. Female genitalia, paratype, slide No. TSY24539. Scale bars = 0.5 mm.

Holotype. ♂, **China**, Sichuan, Bifeng Gorge, Ya'an, 30°4'N, 102°58'E, 1,115 m, 28-VI-2016, leg. KJ TENG & XF YANG, gen. slide No. TSY24641. **Paratypes.** **China**, Sichuan, 47♂17♀, Mt. E'mei, 29.57°N, 103.40°E, Leshan, 790 m, 20-VII-2021, leg. S YU, XJ ZHU & D ZHANG, gen. slide Nos. ZAP24053♂, ZAP24057♂, ZAP24058♂, ZAP24059♂, ZAP24061♂, TSY24183♂, TSY24243♂, TSY24406♂, TSY24407♂, TSY24539♀; 22♂2♀, Wannian Temple, 29.59°N, 103.38°E, Mt. E'mei, 830 m, 14-VII-2014, leg. KJ TENG *et al.*, gen. slide Nos. WQY15046♂, WQY15081♂, WQY15082♀; 14♂1♀, Beishan Park, 32.41°N, 104.52°E, Mt. Pingwu, 864 m, 26-VII-2017, leg. MJ QI & XF YANG, gen. slide Nos. ZAP24052♂, ZAP24060♂; 1♂2♀, Baoxing Town, 1,100 m, 05-VIII-2004, leg. YD REN; 1♂1♀, Bifeng Gorge, Ya'an, 30°4'N, 102°58'E, 1,115 m, 28-VI-2016, leg. KJ TENG & XF YANG, gen. slide No. ZAP24057♂; 1♀, Longcang Gully, Yingjing, 29.63°N, 102.87°E, 1,388 m, 17-VII-2021, leg. S YU, XJ ZHU & D ZHANG. Anhui, 1♂, Mozitan, Huoshan County, 12-VIII-2004, leg. JS XU & JL ZHANG. Fujian, 5♂, Ecological Station of Junzifeng Nature Reserve, 26.36°N, 117.46°E, Mingxi County, 568 m, 05-VIII-2020, leg. MJ QI, XY JIN; 1♂, Taoyuan Valley, 27.73°N, 117.72°E, Mt. Wuyi, 620 m, 07-VIII-2020, leg.

MJ Qi & XY JIN. Gansu, 5♂, Fanba, Wenxian County, 718 m, 14, 18–19-VII-2005, leg. HL YU, gen. slide No. TSY25093. Guangxi, 3♂, Dingjiawan, 25.49°N, 109.97°E, Guihuaping Nature Reserve, 789 m, 03-VIII-2022, leg. H ZHANG, D ZHANG & ZX XU; 2♂, Hongtan Management Station, 25.61°N, 109.97°E, Guihuaping Nature Reserve, 842 m, 01–04-VIII-2022, leg. H ZHANG, D ZHANG & ZX XU; 1♂, Guluojie, 25.60°N, 109.96°E, Guihuaping Nature Reserve, 801 m, 02-VIII-2022, leg. H ZHANG & D ZHANG; 1♂, Hekou, 24.14°N, 110.08°E, Dayaoshan Nature Reserve, Jinxiu County, 578 m, 20–25-VII-2022, leg. H ZHANG, D ZHANG & ZX XU; 1♂, Qianjiadong Nature Reserve, 25.50°N, 111.18°E, Guanyang County, Guilin, 110 m, 31-VII-2021, leg. LL ZHANG. Guizhou, 25♂1♀, Taiping Town, 27.84°N, 108.77°E, Jiangkou County, 528 m, 12–16-VII-2019, leg. MR XING, BX ZHAO & H SUN, gen. slide Nos. TSY24288♂, TSY24439♂; 13♂1♀, Mt. Foding, 27.35°N, 108.16°E, Shiqian County, 618 m, 17–19-VII-2019, leg. MR XING, BX ZHAO & H SUN, gen. slide Nos. TSY24153♂, TSY24189♂, TSY24228♂, TSY24248♀, TSY24249♂, TSY24250♂, TSY24251♂, TSY24252♂; 7♂, Maoya Town, 28.14°N, 107.16°E, Suiyang County, 530 m, 03–06-VII-2019, leg. MR XING, BX ZHAO & H SUN, gen. slide Nos. TSY24355, TSY24437, TSY24438; 2♂, Sanchahe Town, 28.48°N, 106.42°E, Xishui County, 767 m, 01–02-VII-2019, leg. MR XING, BX ZHAO & H SUN, gen. slide No. TSY24354; 1♂, Banzhai Village, 25.23°N, 108.03°E, Libo County, 513 m, 22-VII-2019, leg. MR XING, BX ZHAO & H SUN, gen. slide No. TSY24436. Hainan, 1♂, Mt. Wuzhi, 700 m, 18-V-2007, leg. ZW ZHANG & WC LI; 8♂1♀, Wuzhishan Nature Reserve, 18.54°N, 109.40°E, 742 m, 04–07-VII-2014, 21-VI-2015, leg. PX CONG, W GUAN & S HU, gen. slide Nos. TSY24588♂, BX15020♀; 18♂, Core Area of Qiongzong Limushan Nature Reserve, 19.172°N, 109.735°E, 640 m, 05-V-2014, leg. PX CONG, W GUAN & S HU, gen. slide Nos. TSY24570, TSY24574; 10♂, Limushan Forest Park, 19°10'N, 109°44'E, 607 m, 16–17-V-2015, 20-VII-2016, leg. PX CONG, W GUAN & S HU, X BAI, SN QIAN & WD QI, gen. slide Nos. TSY24453, TSY24454; 1♂, Limushan Nature Reserve, 19°10'N, 109°44'E, 632 m, 03-VII-2015, leg. QY WANG, SR LI & MT CHEN; 3♂1♀, Yinggezui, 19.05°N, 109.56°E Yinggeling, 599 m, 29–31-VII-2017, leg. X BAI, P LIU & S YU, gen. slide Nos. TSY24509♂, TSY24418♀; 1♂, Yinggeling, 620 m, 21-VI-2010, leg. BB HU & J ZHANG; 1♂, Jianfengling National Nature Reserve, 18.74°N, 108.87°E, Ledong County, 770 m, 16-VII-2014, leg. PX CONG, LJ LIU & S HU; 1♂, Nancha River, Bawangling, 600 m, 09–10-VI-2007, leg. ZW ZHANG & WC LI, gen. slide Nos. TSY24526, WQY15132. Hubei, 35♂ 3♀, Maoba District, Lichuan City, 700 m, 28–30-VII-1999, leg. HH LI *et al.*; 8♂, Mahe Township, Xianfeng County, 400 m, 28–30-VII-1999, leg. HH LI *et al.* Hunan, 13♂, Yong'an Village, 24.98°N, 112.86°E, Yizhang County, 480 m, 21-VII-2020, leg. H SUN, XH ZUO & ZL TAO; 6♂, Xiangshanjiang, 26.42°N, 111.01°E, Shunhuangshan Nature Reserve, Xinning County, 921 m, 03–06-VIII-2020, leg. H SUN, XH ZUO & ZL TAO; 8♂, Hetanyuan, 25.49°N, 111.39°E, Dupangling Nature Reserve, Daoxian County, 540 m, 29-VII-2020, leg. H SUN, XH ZUO & ZL TAO; 2♂, Zihuaping, 26.41°N, 111.01°E, Dupangling Nature Reserve, Daoxian County, 540 m, 29-VII-2020, leg. H SUN, XH ZUO & ZL TAO; 2♂, Zongshuba, 24.98°N, 112.91°E, Dupangling Nature Reserve, Daoxian County, 540 m, 27-VII-2020, leg. H SUN, XH ZUO & ZL TAO; 3♂, Shunting, 26.43°N, 111.01°E, Dupangling Nature Reserve, Daoxian County, 540 m, 06-VIII-2020, leg. H SUN, XH ZUO & ZL TAO; 1♂, Houwangzhai,

24.98°N, 112.86°E, Mangshan Nature Reserve, Yizhang County, 541 m, 27-VII-2020, leg. H SUN, XH ZUO & ZL TAO. Jiangxi, 1♂, Mt. Jiulian, 21-VII-2006, leg. JS XU & WC LI. Yunnan, 4♂1♀, Wild Elephant Valley, 22.17°N, 100.87°E, Xishuangbanna, 762 m, 11-VII-2015, 21-VII-2019, leg. KJ TENG, X BAI, KJ TENG, C LIU & AL WANG, gen. slide No. TSY24318♂; 1♂, Green Stone Forest Station, Xishuangbanna Nature Reserve, 20-V-2015, leg. ZG ZHANG, gen. slide No. TSY24338. Zhejiang, 12♂, Wuyanling, Taishun County, 790 m, 02-VIII-2007, leg. Q JING; 1♂, Mt. Fengyang, Longquan, Lishui City, 1,470 m, 26-VII-2007, leg. Q JING; 1♂, Laofoyan, 28°21'N, 118°41'E, Shuangxikou Township, Jiangshan, 424 m, 07-VIII-2016, leg. QY WANG, MQ YANG & P LIU; 1♂, Baishanzu Nature Reserve, 27°44'N, 119°10'E, 1,149 m, 16-VII-2016, leg. QY WANG, MQ YANG & P LIU; 1♂, Changgangshan National Forest Park, Zhoushan, 30°1'N, 122°6'E, 64 m, 06-VIII-2016, leg. QY WANG, MQ YANG & P LIU; 1♂, Laofoyancun, 28°21'N, 118°31'E, Xianxialing, Jiangshan City, 465 m, 12-VIII-2018, leg. S YU, MR XING & C LIU, gen. slide No. TSY25099; 3♂, Mt. Changgang, 30.03°N, 122.12°E, Zhoushan, 70 m, 21-VIII-2017, leg. ZG ZHANG, YY JIA & J LI; 1♂, Mt. Gutian, 29.24°N, 118.11°E, Quzhou, 412 m, 24-VIII-2017, leg. ZG ZHANG, YY JIA & J LI; 1♂, Xiayangping, 28.37°N, 118.69°E, Jiangshan, 373 m, 04-VII-2017, leg. ZG ZHANG, YY JIA & J LI.

Etymology. The specific epithet of this new species is derived from the Latin “bi-” and “spina”, referring to the two spines of the sacculus process in the male genitalia.

Remarks. This new species can be separated from its congeners by the elongate subelliptical sacculus half as long as the valva and the horizontally ovate sacculus process with two apical spines directed dorsad.

2. *Metathrinca mutativalvis* Li sp. nov. (Fig. 2)

Description. Adult (Fig. 2A). Wingspan 20.0–23.0 mm. Head shining white. Labial palpus pale yellowish brown, curved upward beyond vertex, apex pointed. Antenna dark brown, about 3/5 length of forewing.

Thorax and tegula white. Forewing white, tinged with pale yellowish luster; subterminal and terminal lines light brown; fringe white, partially tipped with brown, with a black subbasal line. Hindwing and fringe white. Foreleg brown; midleg white, tibia with long hairs; hindleg white, tibia with long hairs, tarsus brown, white at apex of each tarsomere.

Male genitalia (Fig. 2B). Uncus wide at base, narrowed to before apex; apex heavily sclerotized, concave medially, forming two semicircular lobes extending obliquely outward. Gnathos with basal arms wide, ventral plate more or less short lingulate, obtusely rounded apically, with dense protuberances. Tegumen wide medially; pedunculi slightly narrowed to rounded apex. Valva wide and parallel sided basally, varied distally: gradually narrowed and almost straight ventrodistally (Figs B, Ba, Bc), or only slightly narrowed from beyond sacculus process to apex and arched ventrodistally (Bb), or distinctly narrowed from distal 1/4 to apex and concave on ventrodistally (Fig. Bd), with a long horizontal pleat extending from about distal 1/3 to before apex along 2/5–1/2 anterior to costal margin of valva (Figs Ba–c), or with a very short pleat in some individuals (Fig. Bd); sacculus trapezoidal, 3/4 width and 1/3 length of valva, sacculus process curved horizontally in C shape, open toward costa, densely setose, with a large subapical spine directed dorsad, not reaching costal margin of valva.

Saccus short, triangular. Juxta narrowed anteriorly, posterolateral lobes narrowed to apex. Aedeagus tubular, slightly narrowed and curved medially; cornutus short, situated near apex.

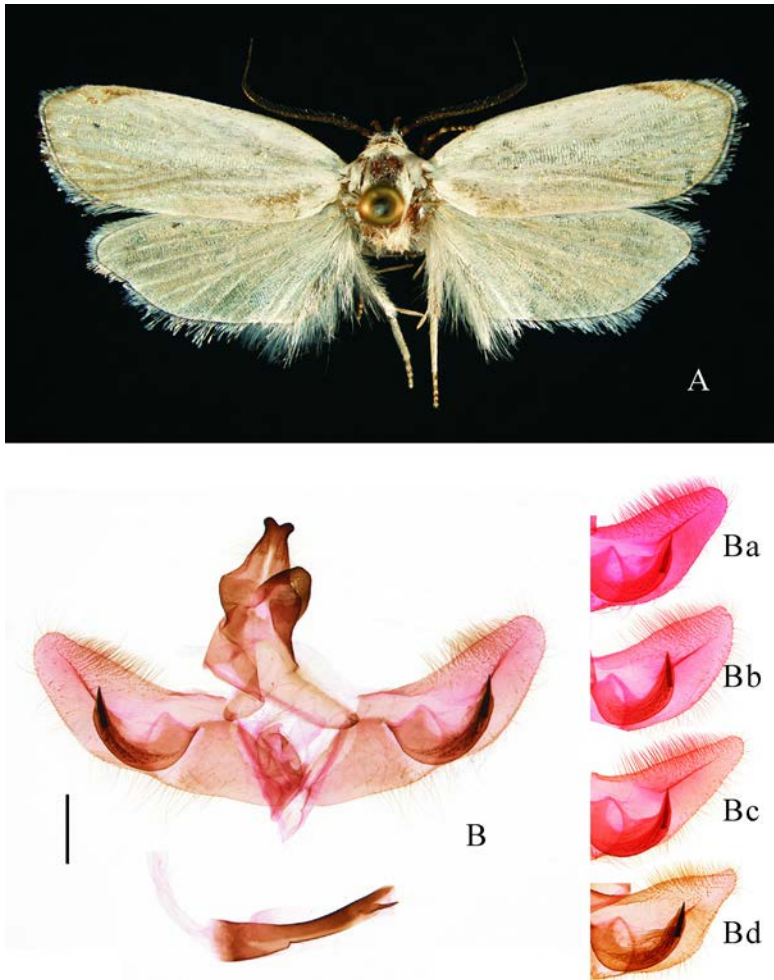


Figure 2. *Metathrinca mutativervis* Li **sp. nov.** A. Adult, ♂, holotype; B. Male genitalia, holotype, slide No. TSY24535; Ba–d. Variations of male valva, paratypes: a. Slide No. WQY13041; b. Slide No. BX15092; c. Slide No. BX15041; d. Slide No. TSY24534. Scale bar = 0.5 mm.

Female unknown.

Holotype. ♂, **China**, Sichuan, Mt. E'mei, 29.57°N, 103.40°E, Leshan, 790 m, 19-VII-2021, leg. S YU, XJ ZHU & D ZHANG, gen. slide No. TSY24535. **Paratypes.** 1♂, same data as holotype, gen. slide No. TSY24534; 1♂, Hainan, Limushan Nature Reserve, 19.17°N, 109.74°E, 640–700 m, 04-V-2014, leg. TT LIU, W GUAN & XM HU, gen. slide No. BX15041; 1♂, Hainan, Donger Workstation, Bawangling, 1,000 m, 23-IV-2009, leg. BB HU & Q JIN, gen. slide No. WQY15092; 1♂, Hubei, Houhe, Wufeng, 1,000 m, 10-VII-1999, leg. HH LI *et al.*, gen. slide No. WQY13041.

Etymology. The specific epithet of this new species is derived from the Latin “mutatus” and “-valvis”, referring to the varied distal part of the valva in the male genitalia.

Remarks. The new species can be distinguished from its congeners by the uncus narrowed from base to before the semicircular lobes, the gnathos with ventral plate sub-lingulate, and the saccular process with a large distal process directed dorsad in the male genitalia. It is similar to *M. zhengi* Li **sp. nov.**, and the differences between them are stated under the latter species.

3. *Metathrinca zhengi* Li **sp. nov.** (Fig. 3)

Description. Adult (Fig. 3A). Wingspan 18.0–23.0 mm. Head white. Labial palpus dark yellowish brown, curved upward beyond vertex. Antenna about 2/3 length of forewing; scape brown on dorsal side, white on ventral side; flagellum dark yellowish brown.

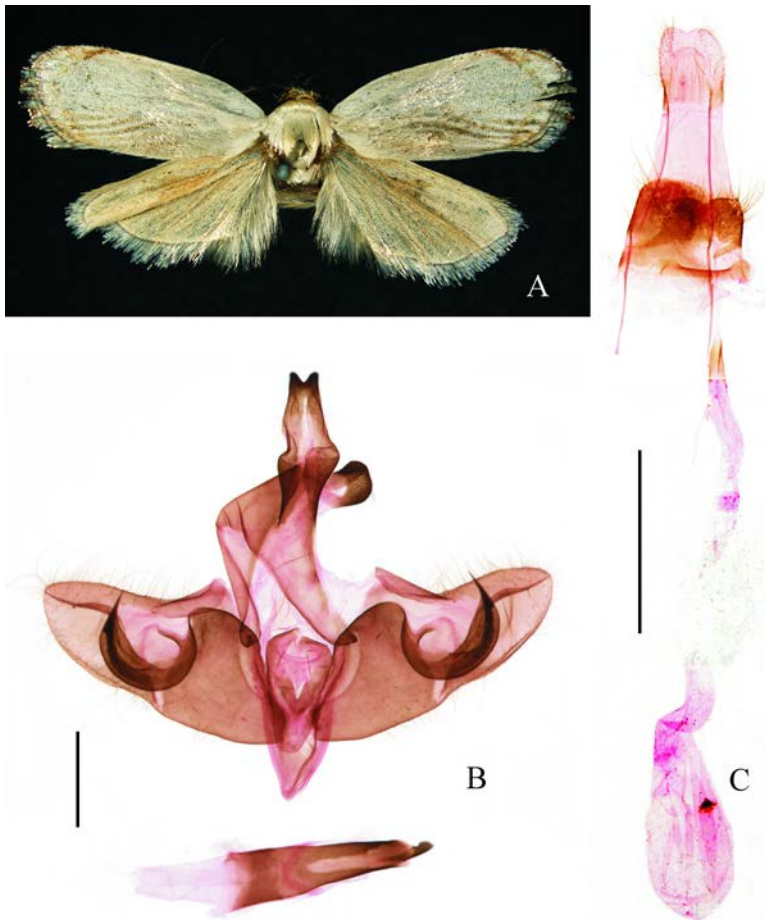


Figure 3. *Metathrinca zhengi* Li **sp. nov.** A. Adult, ♂, holotype; B. Male genitalia, holotype, slide No. TSY24538; C. Female genitalia, paratype, slide No. TSY24616. Scale bars = 0.5 mm.

Thorax and tegula white. Forewing white above, dark yellowish brown beneath; subterminal and terminal lines light brown, between them tinged with iridescent silvery luster

when observed under light; fringe white, partially tipped with brown, with a black subbasal line. Hindwing and fringe white, tinged with pale yellow. Foreleg brown; midleg yellowish white, tibia covered with white hairs; hindleg white, tibia with long hairs, tarsus alternately white and brown.

Male genitalia (Fig. 3B). Uncus subrectangular, slightly narrower distally, with longitudinal fine ridge near lateral margin; apex broadly concave at middle, forming two subtriangular, apically rounded lobes. Gnathos with basal arms almost uniformly banded, weakly sclerotized; ventral plate subrectangular, wider than long, with dense protrusions throughout. Tegumen wide medially; pedunculi narrowed to rounded apex. Valva subtriangular, broad at base, narrowed to rounded apex, with a strong longitudinal pleat running straightly from distal 1/4 to apex along 1/3 anterior to costal margin; costa concave beyond basal 1/3, with setae; ventral margin concave at middle length; sacculus subtrapezoidal, anterior margin reaching below costa, saccular process horizontally C-shaped, with a slender process near base directed outward and parallel with ventral margin of valva, with a row of clustered fine spines in distal 3/5 along midline, bearing a large subapical spine reaching costal margin of valva. Saccus triangular. Juxta rounded on anterior margin, broadened toward posterior margin. Aedeagus straight, tapered to obtuse apex, with a sclerotized process extending from near apex to beyond apex; cornutus indistinct.

Female genitalia (Fig. C). Papillae anales subquadrate, with short setae. Apophyses posteriores about 1.2 times length of apophyses anteriores. Eighth sternum sclerotized, with long setae on posterior margin. Ductus bursae long, about 3 times length of apophyses posteriores, membranous. Corpus bursae elongate ovate; signum irregular in shape, with several protrusions.

Holotype. ♂, China, Sichuan, Mt. E'mei, 29.56°N, 103.40°E, Leshan, 847 m, 23-VII-2021, leg. S YU, XJ ZHU & D ZHANG, gen. slide No. TSY24538. **Paratypes.** China, 1♂, Chongqing, Mt. Simian, 1,200 m, 15-VII-2012, leg. YH SUN & AH YIN, gen. slide No. TSY24341; 2♂, Guangdong, Nanling, Shaoguan, 27-V-2009, 07-14-VII-2007, leg. M WANG *et al.*, gen. slide Nos. TSY24179, TSY24262; 5♂1♀, Hainan, Jianfengling, 18.75°N 108.87°E, Ledong County, 810 m, 13-15-VI-2018, leg. P LIU, X BAI & S YU, gen. slide Nos. TSY24144♂, TSY24245♂, TSY24247♂, TSY24281♂, TSY24310♂, TSY24616♀; 2♂, Diaoluoshan Nature Reserve, 18.43°N, 109.52°E, 922 m, 26-27-V-2015, leg. PX CONG, W GUAN & S HU, gen. slide Nos. TSY24262, TSY24398; 1♂, Hainan, Hongkan Forest Ranger Station, Yinggeling, 19.08°N 109.50°E, leg. PX CONG, W GUAN & S HU, gen. slide No. TSY24371; 1♂, Yunnan, Taiyanghe Nature Reserve, 1,450 m, 03-VI-2014, leg. ZG ZHANG, gen. slide No. TSY24496.

Etymology. The specific epithet of the new species is named in honor of the late Professor Zhemin ZHENG (Shaanxi Normal University, Xi'an, China) for his outstanding contribution to the taxonomic study of insects.

Remarks. The new species can be separated from its congeners by the subtriangular valva with a distinct longitudinal pleat running from distal 1/4 to the apex. It is similar to *M. mutativervis* **sp. nov.**, but can be distinguished by the subrectangular uncus, the subtriangular valva, and the subapical spine of the saccular process reaching the costal margin of the valva. In *M. mutativervis* **sp. nov.**, the uncus is narrowed from the wide base to before the apex, the

valva is parallel basally and narrowed distally, and the subapical spine of the saccular process does not extend to the costal margin of the valva.

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