

# Taxonomic study of the genus *Halolaguna* Gozmány (Lepidoptera, Lecithoceridae) from China, with descriptions of two new species

Kaijian Teng<sup>1</sup>, Shurong Liu<sup>1</sup>, Shuxia Wang<sup>1</sup>

<sup>1</sup> College of Life Sciences, Nankai University, Tianjin 300071, P. R. China

Corresponding author: Shuxia Wang ([shxwang@nankai.edu.cn](mailto:shxwang@nankai.edu.cn))

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## Abstract

The genus *Halolaguna* Gozmány, 1978 is studied in China. Two new species, *H. flabellata* sp. n. from Guangxi and *H. discoidea* sp. n. from Chongqing, Guangxi and Sichuan are described. The female of *H. guizhouensis* Wu, 2012 is reported for the first time. Photographs of adults and genitalia are provided. A checklist of all known *Halolaguna* species is included, along with a key to the Chinese species.

## Keywords

Lepidoptera, Lecithoceridae, *Halolaguna*, new species

## Introduction

The family Lecithoceridae occurs particularly in the Oriental and Australian Regions, with around 1,200 described species (van Nieuwerkerken et al. 2011). Wu (1997) recorded 206 species of Lecithoceridae from China and Park et al. (2013) listed 74 species of Lecithoceridae from Chinese Taiwan. To date, approximately 290 species of this family have been reported from China.

*Halolaguna* Gozmány, 1978 is a small genus of the subfamily Torodorinae in Lecithoceridae, which was established by Gozmány in 1978 based on the type species *H. sublaxata* Gozmány, 1978 from China. Subsequently, Wu (2000) transferred *Lecithocera biferrinella* Walker, 1864 to *Halolaguna*, and described *H. orthogonia* Wu,

2000 from Malaysia; Park (2000) transferred *Cynicostola oncopteryx* Wu, 1994 to *Halolaguna*, and described *H. palinensis* Park, 2000 from Taiwan; Park (2011) further described *H. sanmaru* Park, 2011 from Thailand; and Wu (2012) described *H. guizhouensis* Wu, 2012 from Guizhou. To date, *Halolaguna* includes seven species confined to the Oriental and Palaearctic regions, but little is known about the biology of this genus so far.

*Halolaguna* is characterized by having an elongate and relatively narrow forewing with  $M_2$  and  $M_3$  coincident, and the valva tapering to the apex in the male genitalia. *Halolaguna* is similar to *Antiochtha* Meyrick, 1905 in both appearance and male genitalia, but can be distinguished by the presence of  $M_2$  in the hindwing, which is absent in *Antiochtha*. It is also similar to *Athymoris* Meyrick, 1935 in the venation, but differs in the valva in the male genitalia that is tapering to a pointed apex, whereas the valva is foot-shaped and widened terminally in *Athymoris*.

We report five *Halolaguna* species from mainland China in this paper, based on the specimens collected mostly from mountainous regions and natural reserves. Two species are described as new, and the female of *Halolaguna guizhouensis* Wu, 2012 is described for the first time.

## Material and methods

The specimens examined in this study were collected from mountains, botanical gardens and nature reserves in China by light traps. All specimens studied, including the types, are deposited in the Insect Collection, College of Life Sciences, Nankai University, Tianjin, China.

Genitalia dissections were carried out following Li (2002). Photographs of the adults were taken with a Leica stereo microscope M205A plus Leica Application Suite 4.2 software, and genitalia were photographed using a Leica DM750 microscope plus the same software as for adults.

## Taxonomic accounts

### *Halolaguna* Gozmány, 1978

*Halolaguna* Gozmány, 1978: 238. Type species: *Halolaguna sublaxata* Gozmány, 1978. Type locality: China (Jiangsu).

### Checklist of *Halolaguna* species

*Halolaguna biferrinella* (Walker, 1864)

- Lecithocera biferrinella* Walker, 1864: 642.  
*Halolaguna biferrinella*: Wu, 2000: 428.  
 Distribution. Malaysia, Indonesia.  
*Halolaguna discoidea* sp. n.  
 Distribution. China (Chongqing, Guangxi, Sichuan).  
*Halolaguna flabellata* sp. n.  
 Distribution. China (Guangxi).  
*Halolaguna guizhouensis* Wu, 2012  
*Halolaguna guizhouensis* Wu, 2012: 394.  
 Distribution. China (Chongqing, Guangdong, Guangxi, Guizhou).  
*Halolaguna oncopteryx* (Wu, 1994)  
*Cynicostola oncopteryx* Wu, 1994: 125.  
*Halolaguna oncopteryx*: Park 2000: 240.  
 Distribution. China (Chongqing, Fujian, Guangxi, Sichuan, Taiwan, Yunnan, Zhejiang).  
*Halolaguna orthogonia* Wu, 2000  
*Halolaguna orthogonia* Wu, 2000: 427.  
 Distribution. Malaysia.  
*Halolaguna palinensis* Park, 2000  
*Halolaguna palinensis* Park, 2000: 241.  
 Distribution. China (Taiwan).  
*Halolaguna sanmaru* Park, 2011  
*Halolaguna sanmaru* Park, 2011: 201.  
 Distribution. Thailand.  
*Halolaguna sublaxata* Gozmány, 1978  
*Halolaguna sublaxata* Gozmány, 1978: 238.  
 Distribution. China (Hubei, Jiangsu, Liaoning, Shanxi, Taiwan, Zhejiang), Korea, Japan.

**Key to the Chinese *Halolaguna* species based on male genitalia**

- 1 Juxta with postero-lateral lobe about 1/2 length of juxta..... 2  
 – Juxta with postero-lateral lobe as long as juxta or slightly longer than juxta ... 4  
 2 Aedeagus without cornutus..... *H. guizhouensis*  
 – Aedeagus with cornutus..... 3  
 3 Juxta nearly rounded; aedeagus with a rounded apex .....*H. flabellata* sp. n.  
 – Juxta nearly square; aedeagus with a pointed apex..... *H. oncopteryx*  
 4 Gnathos slender, longer than uncus..... *H. sublaxata*  
 – Gnathos obviously shorter than uncus ..... 5  
 5 Aedeagus extending to a discal process distally ..... *H. discoidea* sp. n.  
 – Aedeagus not extending to a discal process distally.....*H. palinensis*

***Halolaguna discoidea* sp. n.**

<http://zoobank.org/E3FAFA75-8449-4793-AC0A-E7D624379185>

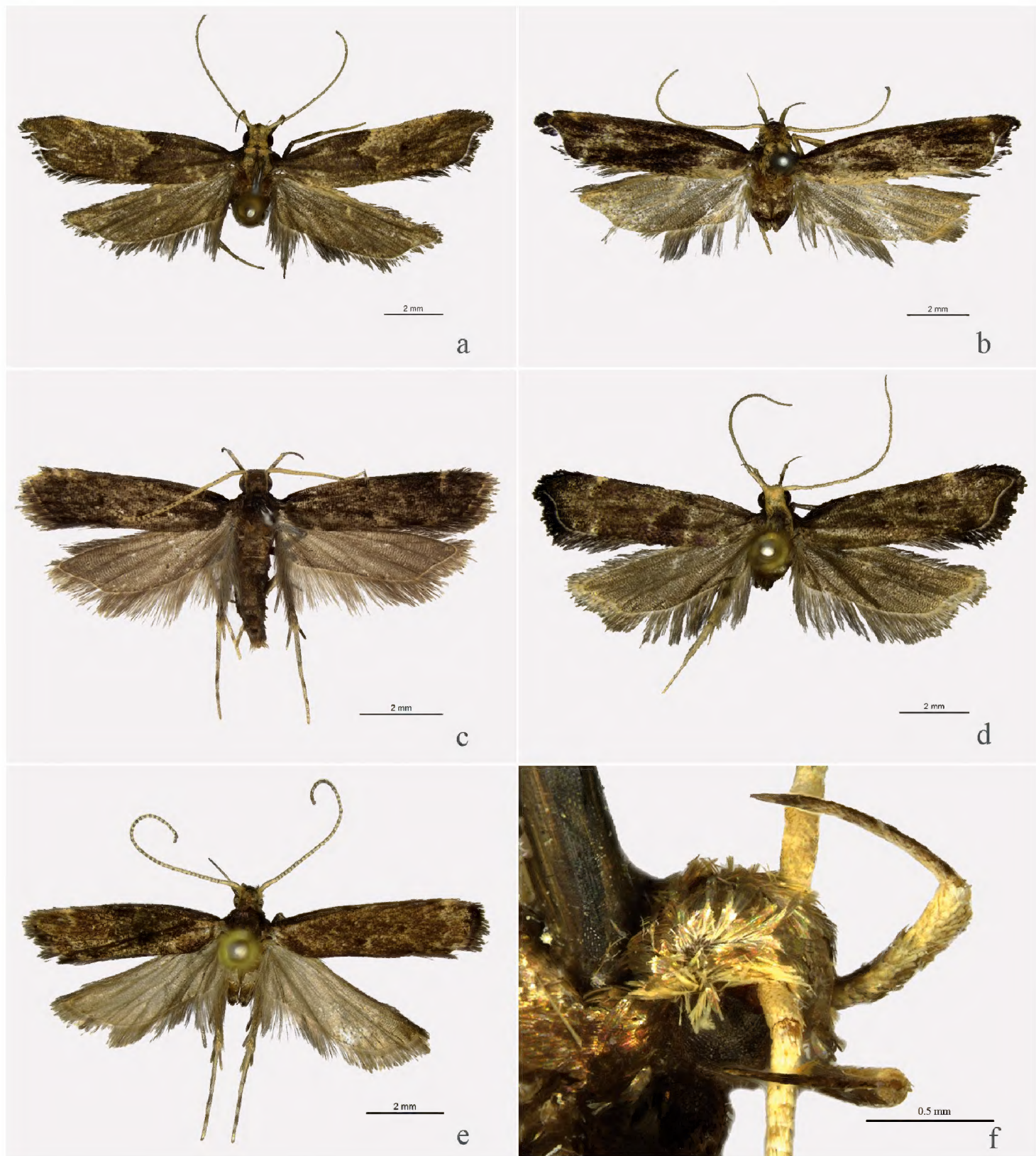
Figs 1a, 2a, 3a, 4a

**Type material.** Holotype ♂, **China:** Tudiyan, Mt. Simian (28°60'N, 106°40'E), Chongqing, 1200 m, 15.vii.2012, leg. Yinghui Sun and Aihui Yin, genitalia slide No. TKJ13023. Paratypes: 1 ♂, Mt. Simian, Chongqing, 1000 m, 21.vii.2010, leg. Xicui Du and Shengwen Shi; 1 ♂, same locality, 22.vii.2010, leg. Xicui Du and Lifang Song, genitalia slide No. WYQ13157, venation slide No. TKJ14008W; 1 ♂, 2 ♀, Labahe (30°17'N, 102°29'E), Tianquan County, Sichuan Province, 1300 m, 28.vii.2004, 29.vii.2004, leg. Yingdang Ren; 1 ♀, Mt. Daming (23°24'N, 108°30'E), Nanning, Guangxi Zhuang Autonomous Region, 1200 m, 5.viii.2011, leg. Shulian Hao and Yinghui Sun, genitalia slide No. TKJ14004.

**Diagnosis.** This species is similar to *H. oncopteryx* (Wu, 1994) and *H. flabellata* sp. n. in the forewing shape and the male genitalia, but can be separated from these by the juxta with thin claviform postero-lateral lobes slightly longer than the juxta, and the aedeagus with a discal process apically. In *H. oncopteryx* (Wu, 1994) and *H. flabellata* sp. n., the postero-lateral lobes of the juxta are short finger-shaped, about 1/2 length of the juxta, and the aedeagus is absent of discal process apically.

**Description.** Adult (Figs 1a, 2a) with wing expanse 16.5–18.0 mm. Head yellowish white, with scattered brown scales. Antenna yellowish white, scape brown on ventral surface, flagellum with pale brown annulations. Labial palpus yellowish white, with scattered brown scales; second segment with appressed scales; third segment slender, about same length as second. Thorax brown, tegula purple brown. Forewing with costal margin almost straight from basal 1/4 to 3/4; apex protruding triangularly; termen oblique, concave below apex; ground color deep grayish brown; subapical spot yellowish white, nearly triangular; discal and discocellular spots blackish brown, nearly rounded; a yellowish white line extending from costal 2/5 to above fold, edged with blackish brown scales along inner margin, curved triangularly inward to outer margin of discal spot; cilia blackish brown, yellowish white basally; venation:  $R_3$  stalked with  $R_{4+5}$  for basal half of its length,  $R_4$  and  $R_5$  stalked for 2/3 length,  $R_5$  to termen,  $M_1$  and  $R_{3+4+5}$  from upper angle of cell,  $M_2$  absent,  $M_3$  from above lower angle of cell,  $CuA_1$  and  $CuA_2$  shortly stalked at base, from lower angle of cell, cell closed. Hindwing and cilia grayish brown, yellowish white basally; venation:  $R_s$  and  $M_1$  stalked for 2/5 length,  $M_3$  and  $CuA_1$  stalked for about 1/3 length, remote from  $M_2$ , cell close partly. Fore leg with ventral surface brown, dorsal surface yellowish white, mottled brown scales, tarsus yellowish white on distal 1/3; mid leg yellowish white, mottled brown scales on ventral surface; hind leg blackish brown, yellowish white on dorsal surface of tibia and on distal half of tarsus.

Male genitalia (Fig. 3a): Uncus broad at base, narrowed to middle, distal half nearly parallel sided, bearing setae laterally, broadly rounded apically. Gnathos short, nearly triangular, curved distally, pointed apically. Valva broad at base, distinctly narrowed to middle, then slightly narrowed to narrowly rounded apex; costa gen-



**Figure 1.** Male adults of *Halolaguna* species. **a** *H. discoidea* sp. n., paratype, Chongqing **b** *H. flabellata* sp. n., holotype, Guangxi **c** *H. guizhouensis*, Chongqing **d** *H. oncopteryx*, Chongqing **e** *H. sublaxata*, Zhejiang **f** *H. sublaxata*, Hubei, head from dorsolateral view.

tly concave beyond middle; ventral margin nearly straight. Sacculus narrow, reaching 1/3 length of dorsum. Juxta nearly quadrate, slightly convex antero-medially, almost straight posteriorly; postero-lateral lobe thin claviform, bearing setae laterally, bluntly rounded apically, longer than juxta. Vinculum narrow. Aedeagus stout, slightly longer than valva, broad basally, narrowed to apex; basal half with dense spinules, distal 2/5 with dense granules, apically produced to a discal process.

Female genitalia (Fig. 4a): Eighth sternite with caudal margin deeply concave in U shape at middle, bearing dense setae laterally. Posterior apophyses about twice length

of anterior apophyses. Antrum inconspicuous. Ductus bursae long and heliciform, about four times length of corpus bursae, slightly narrow basally, with numerous thumbtack-shaped spinules ranging from basal  $1/4$  to  $1/2$ ; ductus seminalis slender and long, arising from basal  $1/4$  of ductus bursae. Corpus bursae oval; signum nearly oval, placed at middle of corpus bursae, margined with teeth anteriorly and posteriorly, medially concave, forming a broad and flat central groove.

**Distribution.** China (Chongqing, Guangxi, Sichuan).

**Etymology.** The name of this species is derived from the Latin adjective *discoideus* (discal), in reference to the discal process of the aedeagus at apex.

***Halolaguna flabellata* sp. n.**

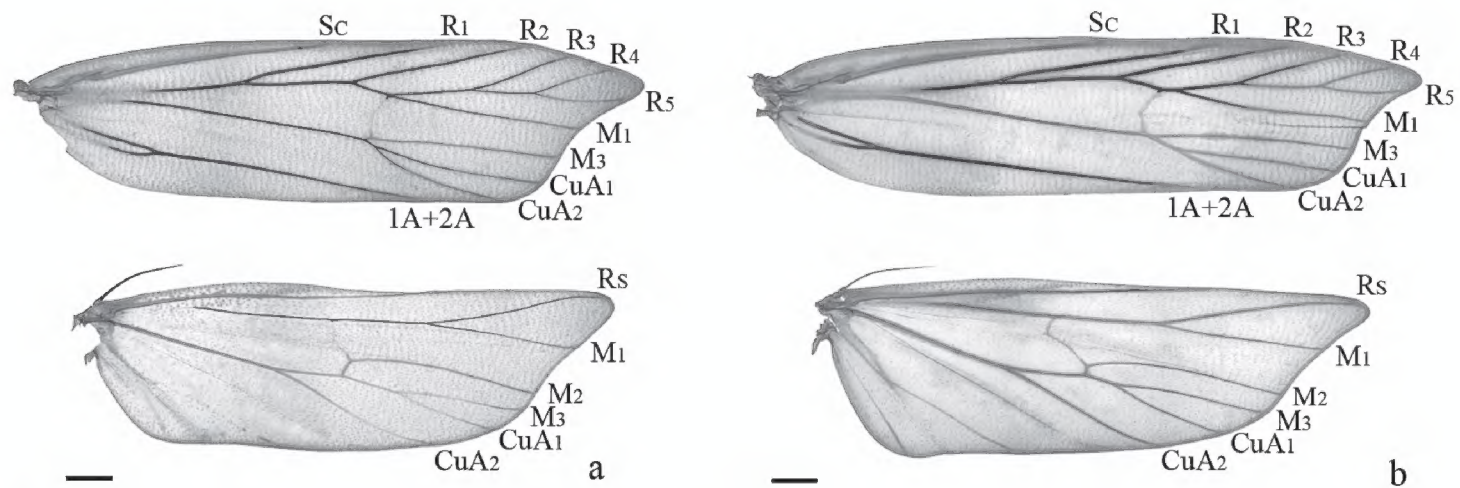
<http://zoobank.org/D3B12A57-853E-4B81-B865-F1A19028BAD1>

Figs 1b, 2b, 3b

**Type material.** Holotype ♂, **China:** Jinxiu County ( $24^{\circ}07'N$ ,  $110^{\circ}11'E$ ), Guangxi Zhuang Autonomous Region, 650 m, 28.iv.2008, leg. Hui Zhen and Li Zhang, genitalia slide No. TKJ13034. Paratype: 1 ♂, Hongqilinchang ( $21^{\circ}54'N$ ,  $107^{\circ}54'E$ ), Shanshi County, Guangxi Zhuang Autonomous Region, 260 m, 2.iv.2002, leg. Shulian Hao and Huaijun Xue, venation slide No. ZYM06260W.

**Diagnosis.** This species is similar to *H. oncopteryx* (Wu, 1994) superficially and in the male genitalia, but can be separated from the latter by the valva with a blunt apex lacking an apical spine, the juxta nearly rounded, and the apex-rounded aedeagus with two sclerotized plates. In *H. oncopteryx*, the apex of the valva has a strong apical spine, the juxta is nearly square, and the apex-pointed aedeagus has one sclerotized plate.

**Description.** Adult (Figs 1b, 2b): Wingspans 16.0–16.5 mm. Head brown, pale yellow on frons and around eye. Antenna yellowish white, with scattered pale brown scales. Labial palpus yellowish white, with scattered pale brown scales; second segment dark brown on outer surface, with appressed scales; third segment slender, slightly longer than second, pointed terminally. Thorax yellowish white, with brown scales medially; tegula purple brown. Forewing with costal margin almost straight from basal  $1/5$  to  $4/5$ ; apex protruding triangularly; termen oblique, slightly concave below apex; ground color dark brown; subapical spot pale yellow, nearly triangular; discal and discocellular spots blackish brown, small, nearly rounded (somewhat worn); cilia blackish brown, yellowish white basally; venation:  $R_3$  and  $R_{4+5}$  stalked for basal  $1/3$  length,  $R_4$  and  $R_5$  stalked for  $3/5$  length,  $R_5$  reaching termen,  $M_1$  and  $R_{3+4+5}$  shortly stalked at base,  $M_2$  absent,  $M_3$  and  $CuA_{1+2}$  from lower angle of cell,  $CuA_1$  and  $CuA_2$  shortly stalked, cell closed. Hindwing and cilia gray, yellowish white basally; venation:  $R_s$  and  $M_1$  stalked for basal  $2/5$  length,  $M_3$  and  $CuA_1$  shortly stalked, remote from  $M_2$  basally, cell close. Legs yellowish white; fore leg with femur having grayish brown scales on ventral surface, tibia purple brown, tarsus mottled dark brown scales; mid leg with scattered dark brown scales; hind leg dark brown on distal half of femur, at base of tibia and on basal half of tarsus.



**Figure 2.** Wing venation of *Halolaguna* species. **a** *H. discoidea* sp. n., slide No. TKJ14008W **b** *H. flabellata* sp. n., slide No. ZYM06260W (Scales = 0.5 mm).

Male genitalia (Fig. 3b): Uncus broadened in fan shape basally, clubbed distally, bearing short setae laterally, rounded apically. Gnathos narrow, basal 1/3 nearly aequilate, median portion gradually narrowed, distal 1/3 sharply narrowed to pointed apex. Valva broad at base, slightly narrowed to middle, distal half obviously narrowed, slightly curved dorsad distally, narrowly rounded apically; costa concave medially. Sacculus broad at base, narrowed distally, reaching 1/4 length of dorsum. Juxta nearly rounded, convex antero-medially, slightly arched posteriorly; postero-lateral lobe short thumb-shaped, bearing setae apically. Vinculum narrow. Aedeagus straight, shorter than valva, broad at base, slightly narrowed to rounded apex, with numerous unequally sized toothlike thorns at base, with dense spinules and granular teeth ranging from about middle to distal 1/4, distal half with two sclerotized irregular plates, one of them with teeth.

Female: Unknown.

**Distribution.** China (Guangxi).

**Etymology.** The specific name of this species is derived from the Latin adjective *flabellatus* (flabellate), in reference to the basally fan-shaped uncus.

### *Halolaguna guizhouensis* Wu, 2012

Figs 1c, 3c, 4b

*Halolaguna guizhouensis* Wu, 2012: 394. Type locality: China (Guizhou).

**Material examined. China:** Guizhou Province: 1 ♂, Linjiang (28°05'N, 105°32'E), Xishui County, 550 m, 26.ix.2000, leg. Haili Yu; Chongqing: 5 ♂, 1 ♀, Beipo (29°02'N, 107°11'E), Mt. Jinfo, 1100 m, 5.v.2013, 12.v.2013, leg. Xiaofei Yang; 1 ♂, same locality, 4.viii.2012, leg. Xiaofei Yang and Tengteng Liu; Guangxi Zhuang Autonomous Region: 2 ♂, 1 ♀, Shaopinglinchang (22°03'N, 106°55'E), Pingxiang, 280 m, 28.iii.2013, 2.iv.2013, 10.iv.2013, leg. Xiaofei Yang, genitalia slide No. TKJ14087♀;

1 ♂, Qinmu Village (24°59'N, 109°59'E), Yongfu County, 160 m, 1.v.2008, leg. Hui Zhen and Li Zhang; 1 ♂, Hekoubaohuzhan, Jinxiu County (24°07'N, 110°11'E), 650 m, 28.iv.2008, leg. Hui Zhen and Li Zhang, genitalia slide No. TKJ13055; 1 ♂, Xijiao (24°15'N, 108°01'E), Nandan County, Hechi, 868 m, 10.viii.2011, leg. Shulian Hao and Yinghui Sun; Guangdong Province: 1 ♂, Heshan (22°25'N, 112°32'E), 26.viii.2002, leg. Guilin Liu; 1 ♂, Hebao Island (21°52'N, 113°10'E), Zhuhai, 30 m, 18.v.2010, leg. Bingbing Hu and Jing Zhang.

**Diagnosis.** Adult (Fig. 1c) with wing expanse 14.0–15.0 mm. This species is similar to *H. sublaxata* Gozmány, 1978 superficially by sharing small and rounded discal spot and relatively large fold and discocellular spots. It can be separated from the latter by the valva broadly rounded apically, the relatively short gnathos slightly shorter than the uncus, and the juxta with postero-lateral lobes shorter than the juxta in the male genitalia (Fig. 3c). In *H. sublaxata*, the valva is narrow and thin apically, the slender gnathos is distinctly longer than the uncus, and the postero-lateral lobes of the juxta are longer than the juxta.

Female genitalia (Fig. 4b): Eighth sternite bearing dense setae, with caudal margin slightly emarginated at middle. Anterior apophyses about 3/4 length of posterior apophyses. Ductus bursae about four times length of corpus bursae, long and heliciform; ductus seminalis slender, arising from basal 1/8 of ductus bursae. Corpus bursae nearly rounded; two small papillate signa placed posteriorly, with dense granules; one big rhombic signum placed at middle of corpus bursae, with a nearly triangular horizontal plate arising medially.

**Distribution.** China (Chongqing, Guangdong, Guangxi, Guizhou).

**Remarks.** *Halolaguna guizhouensis* was described by Wu (2012) based on two male specimens from Guizhou. The valva of this species is not distinctly narrowed distally, whereas the valva of its congeners is obviously narrowed to pointed apex. However, the venation of this species is consistent with that of the type species. The female is described here for the first time.

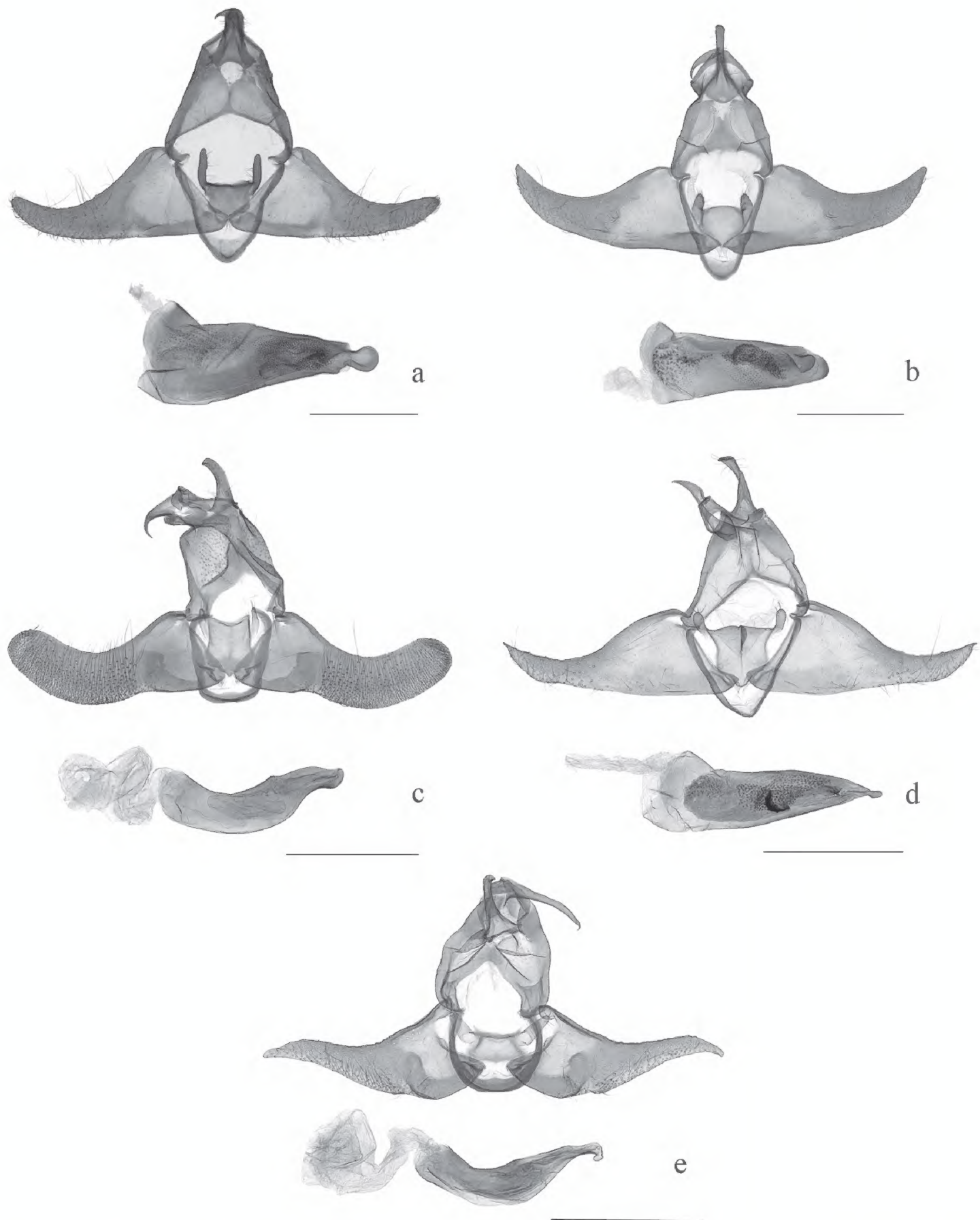
### *Halolaguna oncopteryx* (Wu, 1994)

Figs 1d, 3d, 4c

*Cynicostola oncopteryx* Wu, 1994: 125. Type locality: China (Sichuan).

*Halolaguna oncopteryx* (Wu): Park 2000: 240.

**Material examined. China:** Fujian Province: 1 ♂, 1 ♀, Mt. Meihua (25°20'N, 116°50'E), 19.vii.1988, 22.vii.1988, leg. Chinese Academy of Science; Chongqing: 1 ♂, 1 ♀, Mt. Simian (28°60'N, 106°40'E), 1000 m, 20.vii.2010, leg. Xicui Du and Lifang Song; Guangxi Zhuang Autonomous Region: 1 ♂, 1 ♀, Hongqilinchang (21°54'N, 107°54'E), Shangsi County, 260 m, 2.iv.2002, leg. Shulian Hao and Huaijun Xue; 2 ♂, 1 ♀, Shaoping linchang (22°03'N, 106°55'E), Pingxiang, 280 m, 19.iv.2012, 28.iii.2013, 13.iv.2013, leg. Xiaofei Yang; 2 ♀, Mt. Daming (23°24'N,



**Figure 3.** Male genitalia of *Halolaguna* species. **a** *H. discoidea* sp. n., slide No. WYQ13157 **b** *H. flabellata* sp. n., slide No. TKJ13034 **c** *H. guizhouensis*, slide No. TKJ13055 **d** *H. oncopteryx*, slide No. TKJ13039 **e** *H. sublaxata*, slide No. TKJ13051 (Scales = 0.5 mm).

108°30'E), Nanning, 1200 m, 7.viii.2011, 8.viii.2011, leg. Shulian Hao and Yinghui Sun; Yunnan Province: 1 ♂, Tropical Botanical Garden (21°55'N, 101°17'E), Menglun County, 570 m, 13.viii.2005, leg. Yingdang Ren; Zhejiang Province: 1 ♀, Zhangkengkou (28°32'N, 118°99'E), Mt. Jiulong, 623 m, 5.vii.2013, leg. Aihui Yin

and Xiuchun Wang; 2 ♂, 1 ♀, Neijiujian (28°40'N, 118°84'E), Mt. Jiulong, 430 m, 7.vii.2013, leg. Aihui Yin and Xiuchun Wang, genitalia slide No. TKJ13035♀; 1 ♂, 2 ♀, Yanping (28°38'N, 118°89'E), Mt. Jiulong, 530 m, 4.vii.2013, leg. Aihui Yin and Xiuchun Wang, genitalia slide No. TKJ13039♂; 2 ♂, 2 ♀, Huangtanyu (28°39'N, 118°84'E), Mt. Jiulong, 467 m, 8.vii.2013, leg. Aihui Yin and Xiuchun Wang; 1 ♂, Wuyanling (27°42'N, 119°39'E), Taishun County, 680 m, 28.vii.2005, leg. Yunli Xiao.

**Diagnosis.** Adult (Fig. 1d) with wing expanse 15.0–16.0 mm. This species is similar to *H. sanmaru* Park, 2011 in the male genitalia, but can be separated from it by the valva with a strong apical spine, the juxta with postero-lateral lobes about 1/2 length of the juxta, and the aedeagus with a pointed apex (Fig. 3d). In *H. sanmaru*, the valva does not bear an apical spine, the postero-lateral lobes of the juxta are slightly longer than the juxta, and the aedeagus is rounded apically. This species is also similar to *H. discoidea* sp. n. in the female genitalia, but can be separated from it by the eighth sternite with caudal margin slightly concave at middle, and the ductus seminalis as broad as the ductus bursae (Fig. 4c). In *H. discoidea* sp. n., the caudal margin of the eighth sternite is deeply concave in U shape medially, and the ductus seminalis is slenderer than the ductus bursae.

**Distribution.** China (Chongqing, Fujian, Guangxi, Sichuan, Taiwan, Yunnan, Zhejiang).

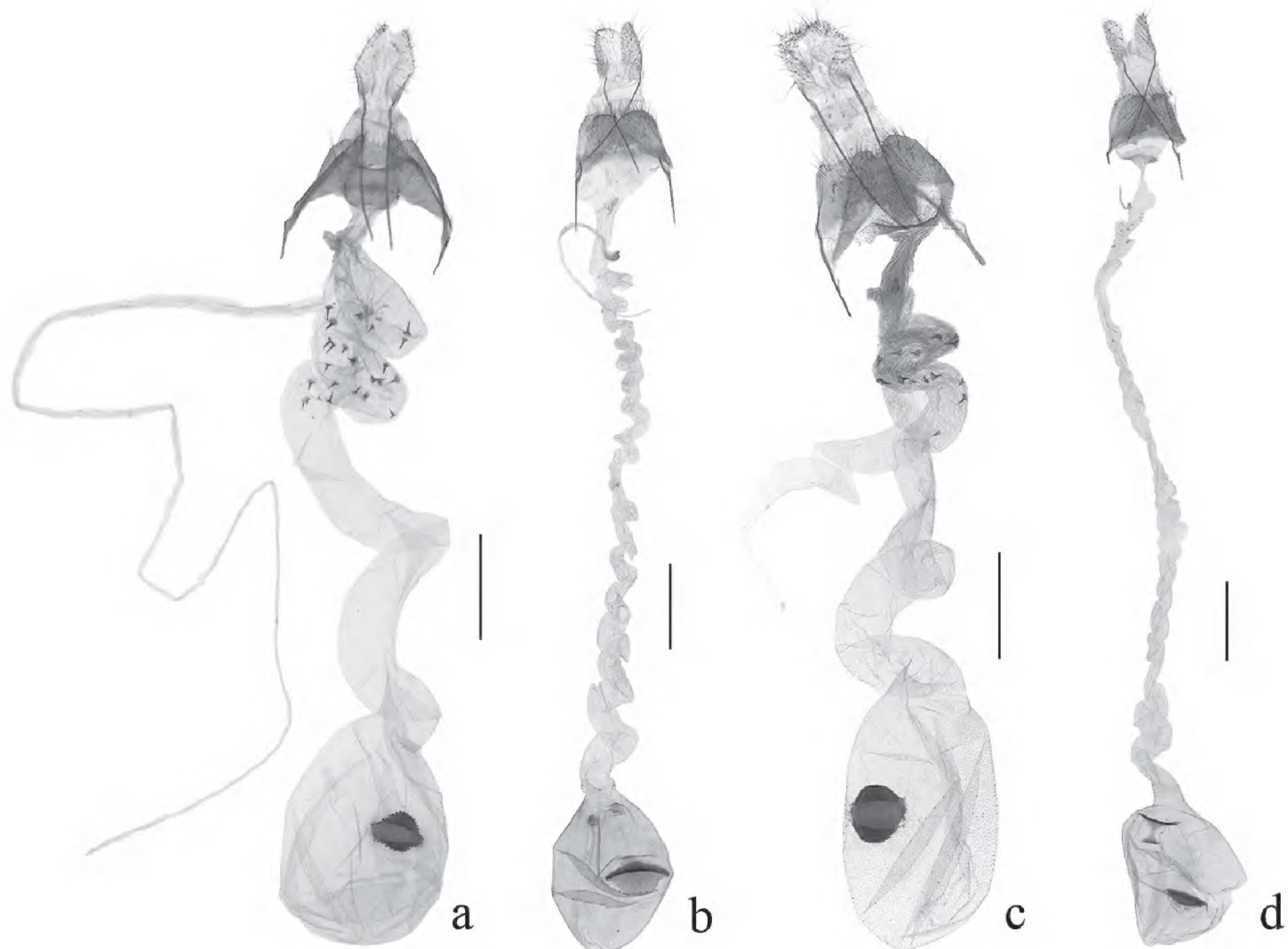
### *Halolaguna sublaxata* Gozmány, 1978

Figs 1e, 1f, 3e, 4d

*Halolaguna sublaxata* Gozmány, 1978: 238. Type locality: China (Jiangsu).

**Material examined. China:** Zhejiang Province: 1 ♂, Mt. Jiulong (28°29'N, 119°54'E), 400 m, 5.viii.2011, leg. Linlin Yang and Na Chen; 1 ♂, Houshanmen, Mt. Tianmu (30°15'N, 119°20'E), 500 m, 16.viii.1999, leg. Houhun Li et al.; Shanxi Province: 1 ♂, Mt. Li (35°26'N, 111°58'E), Jincheng, 1520 m, 16.viii.2006, leg. Xu Zhang and Haiyan Bai; Liaoning Province: 1 ♂, Shilizi (40°42'N, 124°42'E), Kuandian County, 10.viii.2009, leg. Weichun Li and Jiayu Liu; Hubei Province: 2 ♂, Mt. Wujia (31°05'N, 115°48'E), Yingshan County, 8.vii.2008, leg. Yunli Xiao, genitalia slide No. TKJ13051; 1 ♂, 2 ♀, Mt. Dahong (31°27'N, 113°00'E), Suizhou, 30.ix.2008, 1.x.2008, leg. Yunli Xiao, genitalia slide No. TKJ14088♀.

**Diagnosis.** Adult (Fig. 1e, f) with wing expanse 14.0–15.0 mm. *Halolaguna sublaxata* Gozmány, 1978 can be separated from its congeners by the slender gnathos longer than uncus, and the valva slightly curved ventrad before apex in the male genitalia (Fig. 3e). *Halolaguna sublaxata* is similar to *H. guizhouensis* in the female genitalia by the corpus bursae sharing three signa, but can be separated from it by the position of the signa: in *H. sublaxata*, one large sub-triangular signum placed posteriorly, one small triangular signum below it, and the shuttle-shaped signum placed anteriorly



**Figure 4.** Female genitalia of *Halolaguna* species. **a** *H. discoidea* sp. n., slide No. TKJ14004 **b** *H. guizhouensis*, slide No. TKJ14087 **c** *H. oncopteryx*, slide No. TKJ13035 **d** *H. sublaxata*, slide No. TKJ14088 (Scales = 0.5 mm).

(Fig. 4d); in *H. guizhouensis*, two small papillate signa placed posteriorly, and the third large rhombic signum is placed at middle of the corpus bursae.

**Distribution.** China (Hubei, Jiangsu, Liaoning, Shanxi, Taiwan, Zhejiang).

### Acknowledgements

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