

First record of the genus *Apostegania* Prout, 1932 (Lepidoptera: Geometridae: Sterrhinae) based on a newly recorded species from China

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Abstract: A newly recorded rare genus *Apostegania* Prout, 1932 of Sterrhinae based on the newly recorded species *A. crina* (Swinhoe, 1892) from China is reported. Morphological descriptions and illustrations are provided.

Key words: Rhodostrophiini; taxonomy; distribution

中国尺蛾科新纪录属——离顶尺蛾属及其一新纪录种记述（鳞翅目：尺蛾科：姬尺蛾亚科）

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摘要: 首次报道姬尺蛾亚科离顶尺蛾属 *Apostegania* Prout, 1932 和离顶尺蛾 *A. crina* (Swinhoe, 1892) 在中国分布, 给出了形态描述和特征图。

关键词: 红旋尺蛾族; 分类; 分布

Introduction

The rare genus *Apostegania*, a small genus of the tribe Rhodostrophiini in the subfamily Sterrhinae, was originally established by Prout (1932) on the basis of *Stegania crina* Swinhoe, 1892, a species described from the Khasi Hills, India based on a single male specimen. At the same time, Prout (1932) transferred *Ptochophyle rectilineata* Swinhoe, 1906, a species from Sumatra, into *Apostegania*. Prout (1938) described a subspecies *prosthesis* of *A. rectilineata* from west Bali. At present, a total of two species and one subspecies in this genus are recorded worldwide (Scoble 1999; Scoble & Hausmann 2007), none having been found in China before this work. This genus is now represented in China by the newly recorded species *Apostegania crina* (Swinhoe, 1892) from Hainan Province.

Material and methods

Specimens of *Apostegania* examined are from the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS). Dissection and preparation of genitalia slides were performed applying standard protocols (Robinson 1976). The genitalia were embedded in Canada Balsam and mounted on slides. Terminology for wing venation follows the Comstock-Needham System (Comstock 1918) as adopted for Geometridae by Scoble (1992) and Hausmann (2001). Terminology of the genitalia is based on Pierce (1914, reprinted 1976), Klots (1970) and Nichols (1989). Photographs of the moths were taken with digital cameras. Composite images were generated using Auto-Montage software version 5.03.0061 (Synoptics Ltd). The plates were compiled using Adobe Photoshop software.

Taxonomy

Apostegania Prout, 1932, new record to China

Apostegania Prout, 1932, *Novitates Zoologicae*, 37: 230. Type species: *Stegania crina* Swinhoe, 1892.

Generic characters. Antennae ciliate in both sexes, fasciculate in male. Frons not protruding. Labial palpus rather short. Hind tibia of male with hair-pencil, with a single and strong terminal spur in the type species, a single proximal spur in *A. rectilineata*, female with a pair of terminal spurs. Both fore- and hindwings pale fawn, with darker brown straight fasciae, lacking discal spots; outer margin smooth. Forewing with cell short, Sc from cell, areole double; hindwing with Sc+R₁ and Rs connate, or very shortly stalked. Abdomen with dorsal and ventral sides pale fawn. The second sternite of male abdomen rugose, or forming a shallow pocket. Eighth sternite modified at least in *A. crina*. Male genitalia. Uncus simple, setose dorsally, or with lateral flanges in *A. rectilineata*. Gnathos weak. Valva simple, small, triangular. Vesica of aedeagus without cornutus. Female genitalia. Sterigma unmodified. Ductus bursae long, narrow, more strongly sclerotized towards its junction with the spherical bursa. Corpus bursae with signum (modified from Prout 1938 and Holloway 1997).

Distribution. China; India; Vietnam; Indonesia.

Apostegania crina (Swinhoe, 1892) (Figs. 1–5), new record to China

Stegania crina Swinhoe, 1892, *Transactions of the Entomological Society of London*, 1892(1): 14, pl. 1, fig. 14. Holotype ♂ (BMNH), [India]: Khasi Hills.

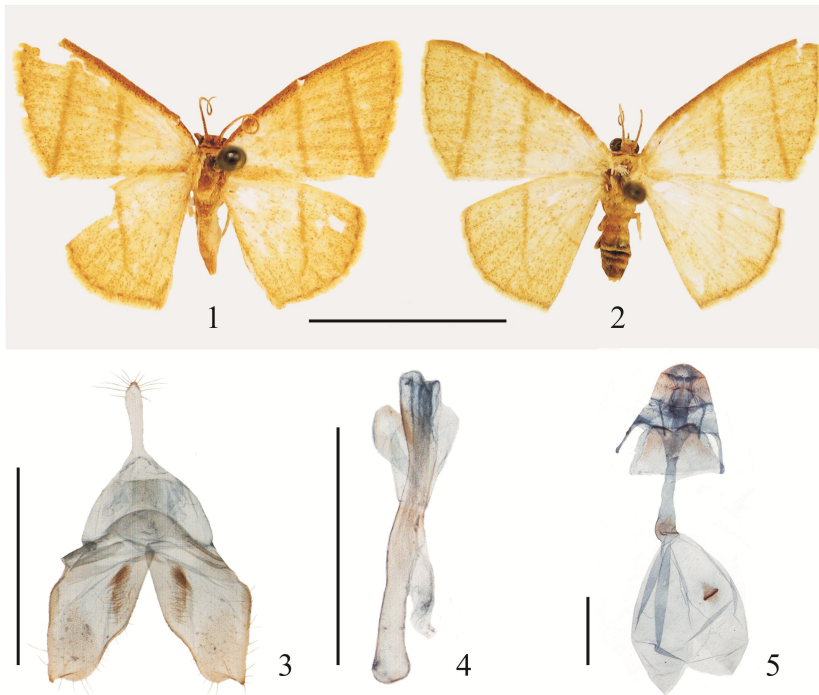
Apostegania crina: Prout, 1932, *Novitates Zoologicae*, 37: 230.

Redescription. Head. Antennae ciliate in both sexes, fasciculate in male. Frons reddish, not protruding. Labial palpus brown, rather short. Vertex, tegula and patagia yellowish brown. Thorax. Thorax with dorsal and ventral sides yellowish brown. Hind tibia of male with a single terminal spur, that of female with a pair of terminal spurs, with hair-pencil in male. Wing pattern. Forewing length: ♂♀ 12–13 mm. Outer margin of forewing slightly arc-shaped, that of hindwing rounded. Wings pale yellowish brown, decorated with brown lines. Forewing costa a narrow reddish brown band. Antemedial line indistinct; medial line straight, nearly upright; postmedial line straight, from distal one-fourth of costa to anal angle; terminal line a row of small nearly circular brown spots. Fringes pale yellowish brown. Hindwing with medial line as a very faint oblique line; postmedial line mostly straight, curving inwards below

vein CuA₁ to anal margin; terminal line and fringes identical with forewing. Underside identical to upperside.

Abdomen. Abdomen with dorsal and ventral sides pale yellowish brown. Eighth sternite protruding, with posterior margin slightly concave at middle.

Male genitalia. Uncus stick-like, with terminal part slightly swollen, sparse setae dorsally. Gnathos weak. Valva small, triangular, bearing a setose patch at basal half near costa; costa with basal half straight, slightly concave at distal half, tip convex and blunt; terminal half of ventral margin almost straight, forming a small blunt process at tip. Juxta undeveloped. Saccus broad and curved (reversed in Fig. 3). Aedeagus columniform and narrow, with posterior part sclerotized, vesica without cornutus.



Figures 1–5. *Apostegania crina*. 1, 2. Adults. 1. Male (Hainan); 2. Female (Hainan); 3. Male genitalia; 4. Aedeagus; 5. Female genitalia. Scale bars = 1 cm (Figs. 1, 2); 1 mm (Figs. 3–5).

Female genitalia. Ovipositor lobes forming a short conical tube. Apophyses posteriores short, about 3/4 length of apophyses anteriores. Ostium wide-open, lateral margin well sclerotized; antrum funnel-like; ductus bursae narrow and long, gradually broadening towards the sclerotized junction with corpus bursae; corpus bursae very large, nearly oval, signum nearly triangular.

Diagnosis. *A. crina* can be easily differentiated from another congeneric species, *A. rectilineata*. On the wing pattern, *A. crina* is smaller; the postmedial line reaches the anal angle on the forewing and is closer to that angle on hindwing; however, in *A. rectilineata*, the postmedial line is not reaching the forewing anal angle, and terminates about at the middle of the outer margin of the hindwing. In the male genitalia, the uncus is simple in *A. crina* but

with lateral flanges in *A. rectilineata* (Holloway 1997: Fig. 164); the distal part of the costa is convex in *A. crina* but slightly concave in *A. rectilineata*.

Specimens examined. 1♂, **China**, Hainan (IZCAS), Jianfeng, 14-IV-1978, coll. Baolin ZHANG, slide no. Geom-4122; 1♂, Yinggeling, Baisha, Nankai, 248 m, 20-XI-2008, coll. Jing LI; 2♀, Wuzhishan, Shuiman, 730–900 m, 07–11-V-2007, coll. Hongxiang HAN *et al.*, slide no. Geom-4123.

Distribution. China (Hainan); India; Vietnam.

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References

- Comstock JH. 1918. *The Wings of Insects*. Comstock Publishing Company, Ithaca, New York, 430 pp.
- Hausmann A. 2001. Introduction. Archiearinae, Orthostixinae, Desmobathrinae, Alsophilinae, Geometrinae. In: Hausmann A (Ed.), *The Geometrid Moths of Europe*. Vol. 1. Apollo Books, Stenstrup, 282 pp.
- Holloway JD. 1997. The moths of Borneo: family Geometridae, subfamilies Sterrhinae and Larentiinae. *Malayan Nature Journal*, 51(1-4): 1–242.
- Klots AB. 1970. Lepidoptera. In: Tuxen SL (Ed.), *Taxonomist's Glossary of Genitalia in Insects*. Munksgaard, Copenhagen, pp. 115–130.
- Nichols SW. 1989. *The Torre-Bueno Glossary of Entomology*. New York Entomological Society in cooperation with the American Museum of Natural History, New York, 840 pp.
- Pierce FN. 1914 [reprinted 1967]. *The Genitalia of the Group Geometridae of the British Islands*. E.W. Classey Ltd., Middlesex, xxix + 88 pp., 48 pls.
- Prout LB. 1932. New genera and species of Sterrhinae (Fam. Geometridae). *Novitates Zoologicae*, 37: 229–251.
- Prout LB. 1938 (1920–1941). The Indoaustralian Geometridae. In: Seitz A (Ed.), *The Macrolepidoptera of the World*. Vol. 12. Verlag A. Kernen, Stuttgart, pp. 1–356, 41 pls.
- Robinson GS. 1976. The preparation of slides of Lepidoptera genitalia with special reference to the Microlepidoptera. *Entomologist's Gazette*, 27: 127–132.
- Scoble MJ. 1992. *The Lepidoptera, Form, Function and Diversity*. Oxford University Press, Oxford & New York, 404 pp.
- Scoble MJ. 1999. *Geometrid Moths of the World: A Catalogue (Lepidoptera, Geometridae)*. Vols. 1, 2. CSIRO Publishing, Collingwood, 1016 pp.
- Scoble MJ & Hausmann A. [updated 2007] Online list of valid and available names of the Geometridae of the world. Available from: http://www.lepbarcoding.org/geometridae/species_checklists.php (Accessed December 2017).
- Swinhoe C. 1892. New species of Heterocera from the Khasia Hills. Part II. *Transactions of the Entomological Society of London*, 1892: 1–20.
- Swinhoe C. 1906. Eastern and African Heterocera. *Annals and Magazine of Natural History*, 7: 540–556.