

Two new species of the genus *Timandra* Duponchel, 1829 (Lepidoptera: Geometridae) from China

Rui CHENG, Nan JIANG^①

Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences,
Beijing 100101, China

Abstract: Two new species of *Timandra* Duponchel, 1829 from China are described: *T. orhanti* sp. nov. and *T. majuscula* sp. nov. Diagnoses for these new species are provided, with illustrations of external features and genitalia.

Key words: Sterrhinae; Timandrini; taxonomy

中国紫线尺蛾属二新种记述（鳞翅目：尺蛾科）

程瑞，姜楠^①

中国科学院动物进化与系统学重点实验室，中国科学院动物研究所，北京 100101

摘要：记述中国紫线尺蛾属 2 新种：欧氏紫线尺蛾 *T. orhanti* sp. nov. 和广紫线尺蛾 *T. majuscula* sp. nov. 提供了新种的成虫及外生殖器鉴别特征图。

关键词：姬尺蛾亚科；紫线尺蛾族；分类

Introduction

The genus *Timandra* Duponchel, 1829 belongs to the tribe Timandrini of the subfamily Sterrhinae (Lepidoptera: Geometridae). 21 species from Asia, Europe, and North America (Scoble & Hausmann 2007) have been reported. Recently, Cui *et al.* (2019) reviewed the Chinese species of *Timandra*, and described seven new species from China. So far, 28 species have been recognized in *Timandra*, including 19 species recorded in China. In the course of an inventory of the Sterrhinae of China, it became apparent that two new species of *Timandra* still need to be described. The purpose of this paper is to describe them, and to provide diagnostic characters and illustrations of external features and genitalia of the new species.

Material and methods

Specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS). Terminology for wing venation follows the Comstock-Needham System (Comstock 1918), and that for the genitalia is based on Pierce (1914, reprinted 1976), Klots (1970) and Nichols (1989). Photographs of the adult moth and its genitalia were taken

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① Corresponding author, E-mail: jiangn@ioz.ac.cn

with digital cameras. Composite images were generated using Auto-Montage software version 5.03.0061 (Synoptics Ltd). The plate was compiled using Adobe Photoshop software.

Taxonomy

1. *Timandra orhanti* sp. nov. (Figs. 1–3)

Description (male). Forewing length 20 mm. Head. Frons blackish brown, with a blunt and moderate protrusion, without corners. Labial palpi greyish blown on lateral sides. Vertex white. Antennae bipectinate, dorsal surface of shaft white, covered with grey scales at terminal half, pectination dark greyish brown. Thorax. Patagia dark yellowish brown. Thorax and abdomen greyish white dorsally. Forewing with apex pointed and falcate, outer margin smooth; hindwing with outer margin forming an acute protrusion on vein M_3 . Forewing with one areole; R_1 arising before apex of areole; R_5 and R_{2-4} from apex of areole. Hindwing with Rs and M_1 shortly stalked. Wing colour greyish white, covered with grey speckles, almost without blackish brown scales. Forewing with costa black at base; without antemedial line and discal spot; postmedial line reddish brown, arising below apex, slightly curved before M_3 , straight and oblique inward below M_3 ; submarginal line overlapping with postmedial line near apex, sparsely diffused with black scales, covered with reddish brown scales on both sides, grey away from postmedial line below M_2 , slightly waved to inner margin. Hindwing with postmedial line slightly shallowly arched, blackish grey on anterior part, reddish brown below M_1 ; submarginal line away from postmedial line and near outer margin, arched at middle. Both wings without terminal lines; fringes yellowish-white. Underside yellowish white, densely covered with dark greyish brown speckles; postmedial and submarginal lines dark greyish brown, similar to those of upperside.

Male genitalia. Uncus trapeziform, forming a rounded depression at tip with bluntly rounded lateral processes. Tegumen long, constricted at middle; a pair of large processes present on lateral sides of terminal half of tegumen, broad plate-like on basal half, angled upwards at middle, horn-like on terminal half, with tiny spines on surface. Valva long and narrow, curved upwards on terminal half, almost flat at tip; a small process arising from base of costa; sacculus with a fold at basal one-fourth, a short and stout digitiform process at middle, and a small spine at terminal one-fourth. Juxta cup-like, broad on basal one-third. Saccus short with terminal margin concave and arched. Aedeagus small; cornutus narrow and short with spines; vesica with a tiny sclerotized particle near posterior part of aedeagus.

Diagnosis. Both this new species and *T. majuscula* are larger than the recognized species of *Timandra*. Among the recognized species, the largest is *T. extremaria* Walker, 1861, *T. robusta* Cui, Xue & Jiang, 2019 and *T. stueningi* Cui, Xue & Jiang, 2019. The forewing length of the largest adult of the above three species is 19 mm. However, the forewing length of this new species and *T. majuscula* sp. nov. is 20 to 21 mm. The apex of the forewing is more strongly protruding in the two new species than in *T. extremaria*, *T. robusta* and *T. stueningi*. The submarginal lines of both wings form black spots on veins in *T. extremaria*, *T. robusta* and *T. stueningi*, while the two new species do not have this character. In the male genitalia, the shape of the two lateral processes of the tegument of the two new species is unique in *Timandra*. The diagnostic characters between this new species and *T. majuscula* are shown in Table 1.

Table 1. The diagnostic characters between *T. orhanti* and *T. majuscula*

Characters	<i>T. orhanti</i>	<i>T. majuscula</i>
Femora and tibia of legs	Almost without blackish brown scales	Diffused with blackish brown scales
Wing colour	Without blackish brown scales	Diffused with blackish brown scales
Postmedial line of forewing	Slightly curved above M_3	Slightly curved at R_5
Fringes of wings	Yellowish white	Yellowish white on basal half, reddish purple sparsely diffused with black on terminal half
Submarginal line of forewing	Black anterior part extending to M_2	Black anterior part extending to M_3
Submarginal line of hindwing	Keeping away from postmedial line and near outer margin, arched at middle, not distinctly protruding inwards among M veins	Close to postmedial line, weakly protruding outwards at middle, slightly protruding inwards among M veins
Underside of wings	With dark greyish brown speckles, including veins	Discocellulars of forewing and veins on outer half of both wings blackish brown
Uncus	Concave at tip	Flat at tip
Lateral processes of tegumen	Situated at upper half of tegumen, angled at middle	Situated at middle of tegumen, not angled

Holotype. ♂, China, Shaanxi (IZCAS), Zhashui, Yingpan, Niubeiliang, 1373 m, 24–26-VII-2018, coll. Xinyi ZHANG.

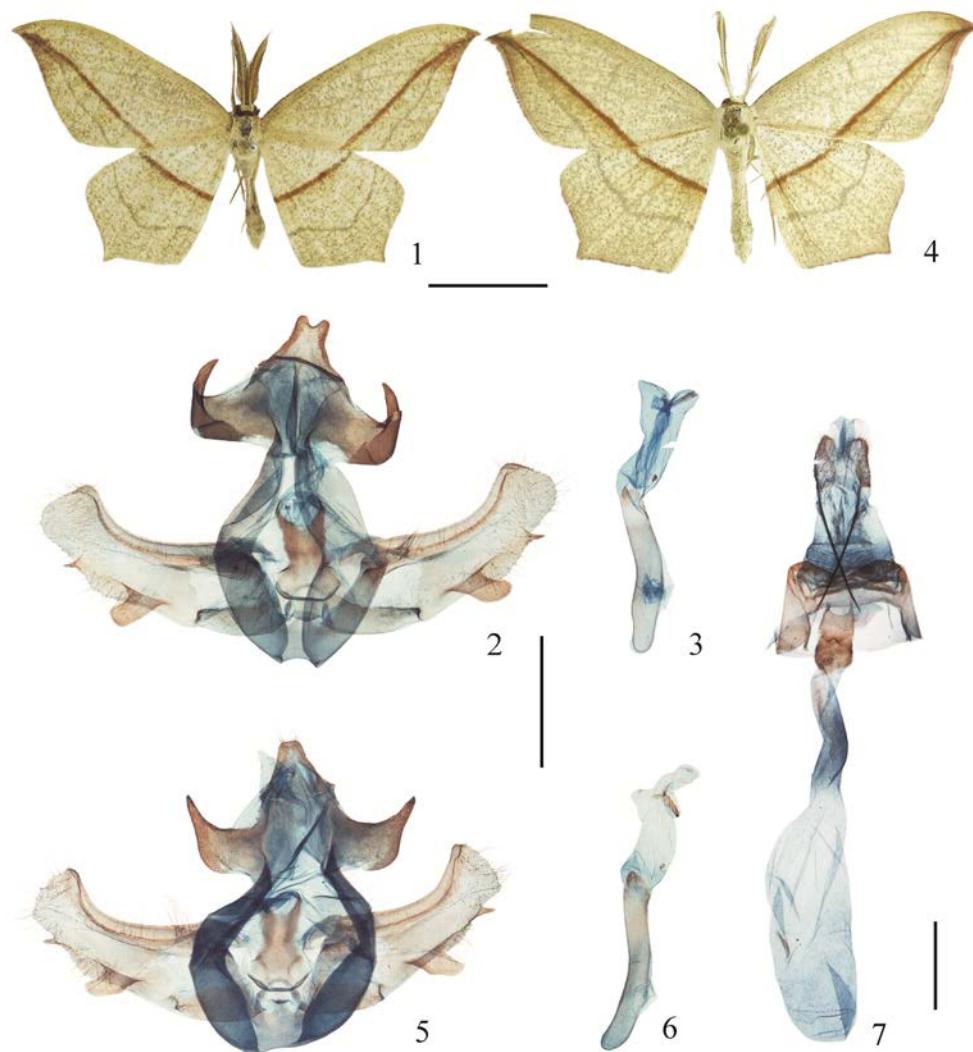
Distribution. China (Shaanxi).

Etymology. The species is dedicated to Dr. Georges ORHANT, France, who has contributed greatly to the taxonomy of Lepidoptera.

2. *Timandra majuscula* sp. nov. (Figs. 4–7)

Description. Forewing length 21 mm in male; 20 in female. Head. Frons blackish brown, slightly protruding. Labial palpi greyish yellow, mixed with blackish brown scales on lateral sides. Vertex and dorsal surface of antennae white; antennae bipectinate in male, filiform in female; pectination dark greyish brown in male. Thorax. Patagia dark yellowish-brown. Thorax and abdomen greyish yellow dorsally, dorsal surface of abdomen diffused with dark grey to blackish brown scales. Femora and tibia of legs diffused with blackish brown scales. Forewing with apex pointed and falcate, outer margin smooth; hindwing with outer margin forming an acute protrusion on vein M_3 . Forewing with one areole; R_1 arising before apex of areole; R_5 stalked with R_{2-4} in holotype, and stalked length different between left wing and right wing. Hindwing with Rs and M_1 not stalked. Wing colour foggy yellow, covered with grey speckles and blackish brown scales. Forewing without antemedial line and discal spot; postmedial line arising from apex, reddish purple at apex, the remaining reddish brown, slightly curved at R_5 , then straight, oblique inwards; submarginal line overlapping with postmedial line at anterior part, black mixed with reddish brown, diffused with reddish brown after separating from postmedial line, reddish brown scales absent below M_3 , slightly

separating from grey inner part among M veins, grey below M_3 , straight or slightly waved; reddish purple scales present below and inside apex. Hindwing with postmedial line straight, reddish brown mixed with blackish grey, anterior part with more blackish grey scales; submarginal line grey, close to postmedial line, weakly protruding outwards at middle, slightly protruding inwards among M veins. Both wings with yellow shadows outside postmedial lines, without terminal lines; fringes yellowish white on basal half, reddish purple sparsely diffused with black on terminal half. Underside yellowish white, densely covered with blackish brown speckles; postmedial, submarginal and terminal lines blackish brown; discocellulars of forewing and veins on outer half of both wings blackish brown.



Figures 1–7. 1–3: *Timandra orhanti* sp. nov.; 4–7: *Timandra majuscula* sp. nov. 1–6. holotype, 7. paratype. 1, 4. Adults. 2, 3, 5, 6. Male genitalia.. 7. Female genitalia. Scale bars = 1 cm (Figs. 1, 4); 1 mm (Figs. 2, 3, 5, 6, 7).

Male genitalia. Similar to *T. orhanti*, but uncus flat at tip; tegumen shorter, less constricted at middle, lateral large processes situated at lower part, not angled at middle with more coarse surface; vesica with a pair of tiny sclerotized granules near posterior part of aedeagus.

Female genitalia. Apophyses anteriores short, apophyses posterior narrow and long. Seventh sternite sclerotized, forming an arched depression on posterior margin. Colliculum present. Ductus bursae long and narrow, weakly sclerotized at lateral side. Corpus bursae usually long and bag-like; signum shaped as a weakly sclerotized longitudinal fold.

Holotype. ♂, China, Sichuan (IZCAS), Pingwu, Motianling Natural Reserve, Jianchazhan, 1264 m, 19-VII-2019, coll. Xin ZHOU *et al.* **Paratype.** 1♀, China, Gansu (IZCAS), Wenxian, Liziba, 1971 m, 22–24-VIII-2014, coll. Xiaodan PAN.

Diagnosis. See *T. orhanti* and Table 1.

Distribution. China (Gansu, Sichuan).

Etymology. The species epithet indicates that it is the largest in size in the genus.

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