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Short Communication

A New Species of Spider Genus *Khorata* Huber, 2005 from China (Araneae: Pholcidae)

Huijuan Sheng[1], Xiang Xu[1], Haiqiang Yin[1]* and Muhammad Irfan[1,2]

[1]*College of Life Science, Hunan Normal University, Changsha 410081, Hunan, China*
[2]*College of Medicine, Shenzhen University, Shenzhen 518060, Guangdong, China*

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Authors' Contribution
HY supervised the study, presented the concept, arranged explorations and guided to collect specimens. HS wrote the manuscript and XX improved it. HS and MI too photos. XX and HS identified the specimens.

Key words
Taxonomy, Morphology, Long-legged spiders, Danxia Mountain, Guangdong

ABSTRACT

A new species of pholcid spider, *Khorata danxia* Sheng and Xu, sp. nov. (♂♀), is described from Danxiashan National Nature Reserve in Guangdong, China. The new species is diagnosed, described and illustrated with photographs.

The genus *Khorata* Huber, 2005 is endemic to Asia and distributed in southern China, Vietnam, Thailand and Laos (World Spider Catalog, 2020). A total of 48 species have been reported worldwide and most were collected at cave entrances from Karst regions (Huber, 2005; Zhang and Zhang, 2008; Chen *et al*., 2009; Zhang and Zhu, 2009; Yao and Li, 2010, 2013; Wei and Xu, 2014; Yao *et al*., 2014, 2015, 2019; Nie *et al*., 2018; Xu *et al*., 2020). A total of 33 *Khorata* species have been described from China. More specifically, they are distributed in Guangxi Zhuang Autonomous Region (called Guangxi for short in the text), Yunnan, Guizhou, Guangdong, Hunan, Fujian and Hainan Provinces, China. In Fujian, Hunan, and Hainan Provinces, only one *Khorata* species was found in each province. Comparatively higher *Khorata* species diversity is reported from Guangxi, Yunnan and Guizhou Provinces. The species diversity of *Khorata* is especially high in Guangxi, where 20 species have been reported (World Spider Catalog, 2020; Yao *et al*., 2019). It seems that most *Khorata* species have a preference for the limestone caves or other environment related with stone (including karst or non-karst). It is really a fact that Guangxi has very rich typical karst landform. Therefore, it also seems natural that there is a high species diversity of *Khorata* in Guangxi.

This genus can be distinguished from other genera of the family Pholcidae C.L. Koch, 1850 by the combination of: 1) the sclerotized ledges on the anterolateral surface of the male chelicerae; 2) the sclerotized proximal cheliceral apophyses; 3) the retrolateral apophysis on the male palpal femur; 4) the relatively small male palpal tibia; 5) the shallow thoracic furrow; 6) the absence of posterior pockets on the female opisthosoma; and 7) a membranous embolus (Huber, 2005; Wei and Xu, 2014).

Guangdong Province is just the east of Guangxi and two *Khorata* species were previously reported from there: *K. yangchun* Yao and Li, 2019 and *K. nani* Xu *et al*., 2020. In the present paper, the third *Khorata* species from Guangdong is described: *Khorata danxia* sp. nov. This new species was collected from Danxia Mountain (also named Danxiashan National Nature Reserve) which is famous for its Danxia landform. Danxia cliffs, sandstone walls, stone steles, aiguilles and hills are often seen in Danxia Landform. It is in the concavity of a sandstone wall where this new specie was found and collected. Though we have reason to believe that *Khorata* species diversity in Guangdong will not be as rich as in Guangxi, we also believe that more *Khorata* species will be found in Guangdong by future collection and further research.

Material and methods

Specimens were examined under an Olympus SZX16 stereomicroscope and an Olympus BX53 compound microscope. Photographs were taken with a Canon Power Shot G12 digital camera mounted on an Olympus BX53 compound microscope, and final multifocus images were produced using Helicon Focus 6.0. Both the male palps and female genitalia were examined and photographed after being dissected from the spider's body.

* Corresponding author: yinhaiqiang@hunnu.edu.cn
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All morphological measurements are calculated using a stereomicroscope (LEICA M205C) and given in millimeters (mm). Eye diameters are taken at the widest point. Leg measurements are gotten from the dorsal side and given as total length (femur + patella + tibia + metatarsus + tarsus). All specimens examined in this study are deposited in the College of Life Sciences, Hunan Normal University (HNU).

The terminology used in text and figure legends follows Huber (2005) and Yao *et al*. (2019).

Abbreviations used in the text and figure are as follows: AER, anterior eye row; ALE, anterior lateral eyes; b, bulb; da, distal apophysis; e, embolus; fa, frontal apophysis; PME, posterior median eyes; PLE, posterior lateral eyes; L/d, length/diameter; Pa, proximo-lateral apophysis; pp, pore plate; pr, procursus.

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Pholcidae C.L. Koch, 1850
Genus *Khorata* Huber, 2005
Type species: *Khorata khammouan* Huber, 2005.

Khorata danxia **Sheng and Xu, sp. nov.**
(Figs. 1–2)

Diagnosis

The male of this new species is similar to that of *Khorata shao* Yao and Li, 2010 in having similar male chelicerae (Fig. 2C, D; Yao and Li, 2010) but can be distinguished by the different distal elements of procursus and the degrees of their sclerotization (distal part of procursus with three strongly sclerotized branches in this new species, while only slightly sclerotized in *K. shao*) (Fig. 1C, D; Yao and Li, 2010). The female of this new species can be distinguished from all known *Khorata* species by the shape, relative size and position of pore plates of epigynum (oval; the widest diameter about 1/5–1/6 of the width of vulva; each pore plate at an angle of 30–45 degrees to the horizontal line and two lines extended from the inner-lateral margins of pore plates forming a right angle (Fig. 2B).

Etymology

The specific name refers to the type locality, Danxia Mountain (also named Danxiashan National Nature Reserve), China.

Material examined

Holotype: ♂ (HNU, Phol-*Khor*-0001-001), CHINA–Guangdong Province; Renhua County, Danxiashan National Nature Reserve (namely Danxia Mountain), 25°08′836″N, 113°44′23.99″E, 201 m a.s.l., sandstone wall, 6 August 2019, leg. Ailan He, Qu Cai, Shixiong Zhu, Jiabin Liu.

Paratype: 1♀ (HNU, Phol-*Khor*-0001-002), CHINA–Guangdong Province, same data as holotype.

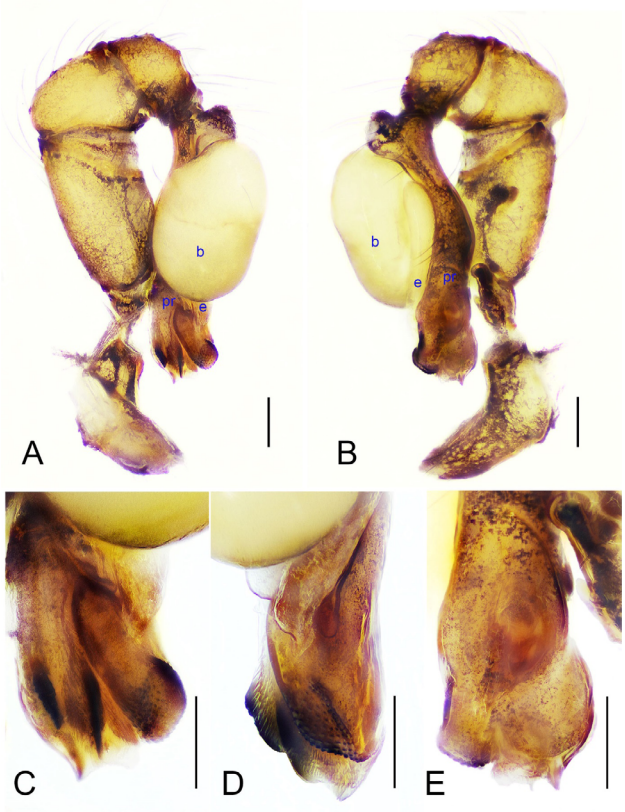

Fig. 1. *Khorata danxia* sp. nov., holotype male. A, Pedipalp, prolateral view; B, Ditto, retrolateral view; C, Distal part of procursus, prrolateral view; D, Ditto retrolateral view; E, Ditto, ventral view. b, bulb; e, embolus; pr, procursus. Scale bars: 0.1 mm.

Description

Male (Holotype): COLOR AND BODY. Habitus as in Fig. 2E, F. Total length 2.35, prosoma 0.82 long, 0.92 wide, opisthosoma 1.46 long, 1.05 wide. Carapace yellowish, with margins and head region black. Ocular area slightly elevated and separated from prosoma; PME-PME 0.10, diameter PME 0.08, PME-ALE 0.04, AME absent. Thoracic furrow shallow but distinct; radial stripes also distinct. Clypeus unmodified. Sternum black, slightly longer than wide (0.53/0.50). Legs yellowish, without spines and curved hairs, with distal femora and tibiae slightly pale, and distal parts of tarsi gradually becoming whitish. Leg I: 18.97 (4.50 + 0.33 + 4.49 + 7.38 + 2.27), leg II: 12.86 (3.69 + 0.19 + 3.27 + 4.37 + 1.34), leg III: 9.75 (2.96 + 0.15 + 2.43 + 3.34 + 0.87), leg IV: 12.35 (3.70

+ 0.20 + 3.15 + 4.44 + 0.86). Tibia I L/d: 39. Leg formula: I, II, IV, III. Chelicerae (Fig. 2C, D) pale yellow, with pair of small, mildly sclerotized frontal apophyses (red arrows in Fig. 2C, D), pair of strong, hooked frontal apophyses (tips sclerotized, close together), pair of small proximo-lateral apophyses and pair of small, flat distal apophyses (lateral margins slightly sclerotized). Opisthosoma (Fig. 2E, F) oval. From dorsal view, cardiac pattern large, occupies about 2/3 length of abdomen; several chevrons patterns situated at the back and on both sides of cardiac pattern. From ventral view, a black rectangle pattern present in front of spinnerets, and with four large, black dots around it (posterior two dots may be as the extension of some patterns on the dorsum of abdomen); regions around epigastric furrow also black.

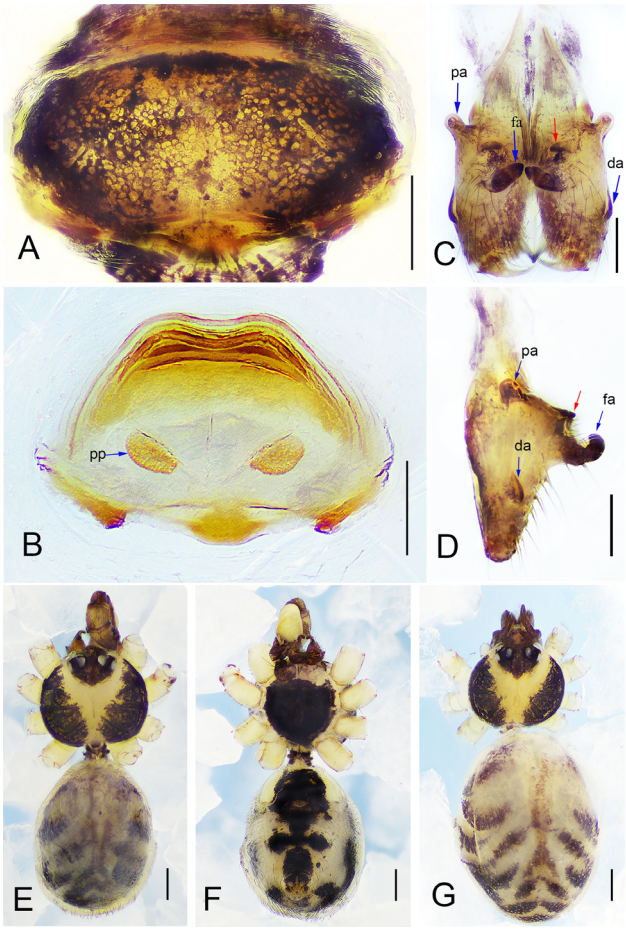

Fig. 2. Khorata danxia sp. nov., holotype male (C–F) and paratype female (A, B, G). A, Epigynum, ventral view; B, Vulva, dorsal view; C, Chelicerae, frontal view; D, Ditto, lateral view; red arrows point at mildly sclerotized frontal apophysis; E–G, Habitus Dorsal view; F, Ventral view. da, distal apophysis; fa, frontal apophysis; pa, proximo-lateral apophysis, pp, pore plate. Scale bars: 0.1 mm.

PALP (Fig. 1A, F). Trochanter with small retrolateral apophysis; femur widened, with small, slightly sclerotized retrolateral apophysis; patella swollen, with some bristles; procursus simple proximally but complex with three sclerotized regions distally (Fig. 1C, D); bulb slightly yellow, simple, without any other projections except for embolus; embolus membranous, transparent, extending along the margin of bulb proximally and dissociative distally from the bulb (Fig. 1B–D).

Female (Paratype): Similar to male in general characteristics. Habitus as in Fig. 2G. Total length 2.53, prosoma 0.69 long, 0.82 wide-opisthosoma 1.42 long, 1.33 wide. Eyes: PME-PME 0.10, diameter PME 0.07, PME-ALE 0.05. Leg I:11.55 (3.23 + 0.19 + 2.79 +4.05 + 1.29), leg II miss, leg III: 7.97 (2.37 + 0.27 + 1.79 + 2.63 + 0.91), leg IV: 10.48 (3.12 + 0.25 + 2.52 + 3.76 + 0.83). Tibia I L/d: 44. Chelicerae unmodified.

EPIGYNUM. brown, decorated with many black and yellow dots, with lip-shaped protruding posterior margin (Fig. 2A). Vulva anterior margin slightly wavy and forming two arches. Pair of pore plates yellow, oval, the widest diameter about 1/5–1/6 of the width of vulva; each pore plate at an angle of 30–45 degrees to the horizontal line and two lines extended from the inner-lateral margins of pore plates forming a right angle.

Distribution: Known only the type locality, China (Guangdong).

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Statement of conflict of interest

The authors have declared no conflict of interest.

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