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Research article

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Two new species of *Yaginumaella* (Araneae, Salticidae) from Wuling Mountain, China

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Abstract. The present paper deals with two new species, *Yaginumaella pulchella* sp. nov. and *Yaginumaella hubeiensis* sp. nov. Distributional data, as well as illustrations of body and copulatory organs, are provided. Descriptions of their morphology are given. The differences between the new species and their related taxa are discussed.

Keywords. Hubei, Hunan, jumping spider, Oriental region, taxonomy.

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Introduction

Yaginumaella Prószyński, 1979 was based on the type species *Y. striatipes* (Grube, 1861). So far, all the 46 species of *Yaginumaella* have been described from Asia (World Spider Catalog 2018). Eighteen species have been described from China (Prószyński 1979; Žabka 1980, 1981; Song & Chai 1992; Xie & Peng 1995; Yang *et al.* 1997; Peng *et al.* 2002, 2008; Zhu *et al.* 2005; Zhang & Zhu 2007; Liu *et al.* 2016).

While we examined the specimens collected from Wuling Mountain (Hunan, Hubei), two new species of *Yaginumaella* were identified and are described here.

Material and methods

All specimens were kept in 75% ethanol, examined, measured and drawn with an Olympus SZX16 stereomicroscope and an Olympus BX53 compound microscope. Photos were taken with a digital camera Canon PowerShot G12 mounted on an Olympus SZX16. Compound focus images were generated using Helicon Focus software v. 3.10.

Leg measurements are given as total length (femur, patella plus tibia, metatarsus, tarsus). Specimens are deposited at the College of Life Sciences, Hunan Normal University (HNU).

Abbreviations

AER	=	anterior eye row
ALE	=	anterior lateral eyes
AME	=	anterior median eyes
CD	=	copulatory ducts
CO	=	copulatory opening
E	=	embolus
EFL	=	eye diameter
EP	=	epigynal pocket
PB	=	palpal bulb
PER	=	posterior eye row
PLE	=	posterior lateral eyes
TA	=	tibial apophysis

Results

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Salticidae Blackwall, 1841
Genus *Yaginumaella* Prószyński, 1979

Yaginumaella pulchella sp. nov.

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Figs 1–2

Differential diagnosis

The new species resembles *Y. falcata* Zhu *et al.*, 2005, but can be distinguished by: (1) palpal bulb about two times longer than wide (Figs 1B, 2A) vs about 1.3 times longer than wide in *Y. falcata* in ventral view, (2) embolus originating from the position of 9:00 o'clock (Figs 1B, 2A) vs 8:00 o'clock in *Y. falcata* in ventral view, (3) tibial apophysis almost straight (Figs 1C, 2B) vs distinctly recurved in *Y. falcata* in retrolateral view, (4) epigynal pockets below the copulatory opening (Figs 1E, 2C) vs almost equal to the copulatory opening in *Y. falcata*, and (5) the course of copulatory ducts also different (Figs 1F, 2D).

Etymology

The specific name comes from the Latin adjective *pulchellus*, *-a*, *-um* (diminutive of *pulcher*), meaning “beautiful little”, and referring to the distinct marking on the dorsal side of the abdomen.

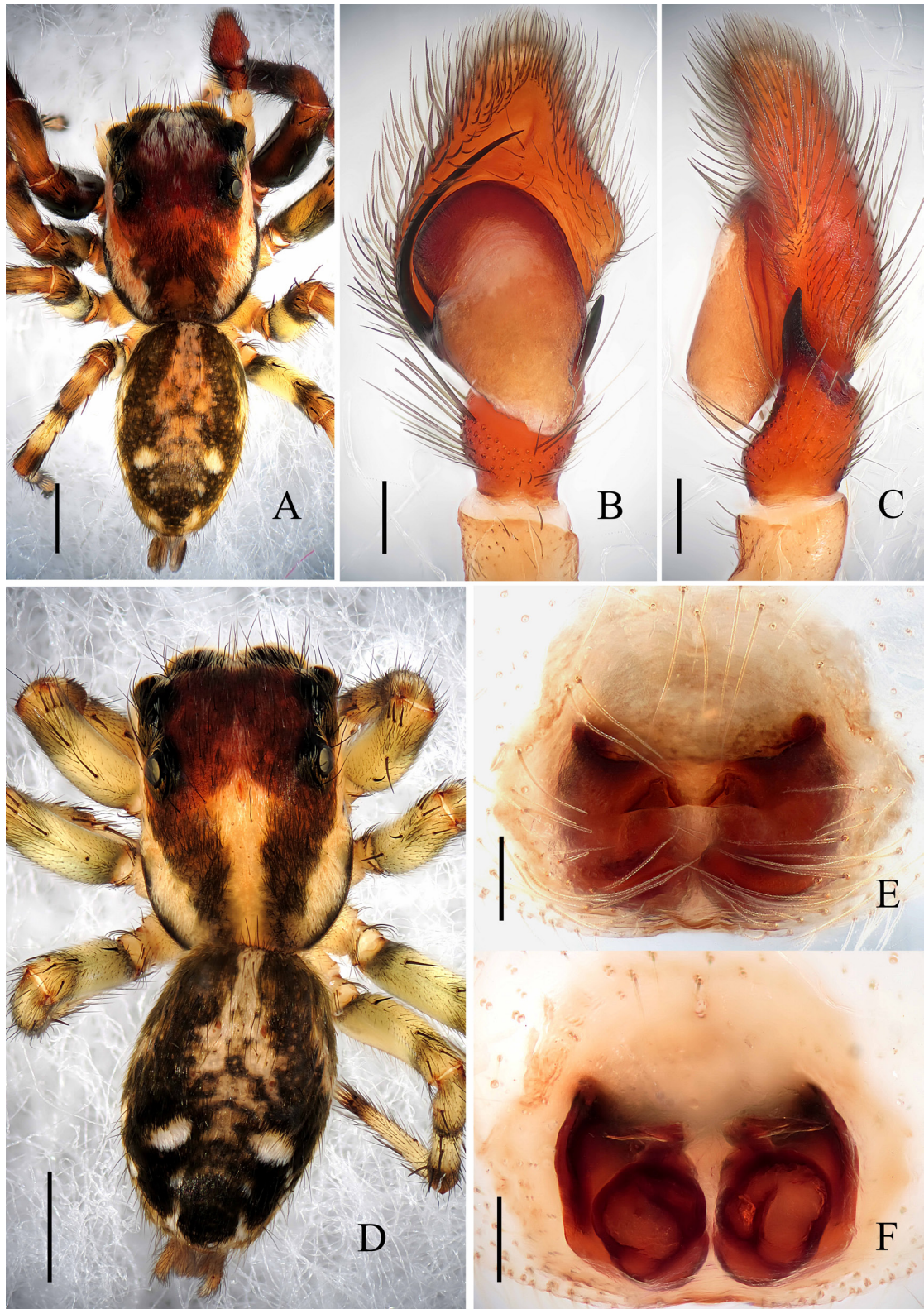


Fig. 1. *Yaginumaella pulchella* sp. nov. **A–C.** Holotype, ♂ (HNU-HN-IV-1417-02). **D–F.** Paratype, ♀ (HNU-HN-IV-1417-02). **A.** Male body, dorsal view. **B.** Male palp, ventral view. **C.** Male palp, retrolateral view. **D.** Female body, dorsal view. **E.** Epigyne, ventral view. **F.** Vulva, dorsal view. Scale bars: A, D = 1 mm; B–C, E–F = 0.2 mm.

Type material

Holotype

CHINA: 1 ♂, Hunan, Changde City, Shimen County, Hupingshan Township, Daling Village, 30°02'02" N, 110°37'30" E, 436 m a.s.l., 20 Oct. 2014, Cheng Wang, Bing Zhou, Jiahui Zhou, and Yuhui Gong leg. (HNU-HN-IV-1417-02).

Paratype

CHINA: 1 ♀, Hunan, Changde City, Shimen County, Hupingshan Township, Daling Village, 30°02'02" N, 110°37'30" E, 436 m a.s.l., 20 Oct. 2014, Cheng Wang, Bing Zhou, Jiahui Zhou, and Yuhui Gong leg. (HNU-HN-IV-1417-02).

Description

Male (holotype)

Total length 6.08 mm. Cephalothorax 3.01 × 2.04 mm. Abdomen 2.08 l × 1.91 mm. Eye sizes and interdistances: AME 0.67 mm, ALE 0.37 mm, PLE 0.39 mm, AER 2.07 mm, PER 1.95 mm, EFL 1.41 mm. Carapace brown to orange in color followed by a pair of longitudinal white hairs band on lateral sides; median ocular area provided with a round patch of white hairs. Basal area of each eye, anterior, and lateral margins of ocular area black with black hairs. Thoracic region flat. Fovea short and longitudinal. Chelicerae yellowish-brown, two pro-marginal and one retro-marginal tooth. Endites longer than wide, yellowish-brown. Labium ligulate with thick hairs, terminal area lightly colored. Sternum almost oval, covered with yellow hairs. Legs yellowish-brown, terminal areas darker in I and II. Measurements of legs: I 6.70 mm (2.10 mm, 2.75 mm, 1.15 mm, 0.70 mm), II 5.61 mm (1.71 mm, 2.18 mm, 1.02 mm, 0.70 mm), III 6.37 mm (2.04 mm, 2.20 mm, 1.31 mm, 0.82 mm), IV 6.54 mm (2.12 mm, 2.30 mm, 1.39 mm, 0.83 mm). Leg formula: 1432. Abdomen oval, yellowish-green with lighter yellowish central area, followed by the longitudinal greenish band on lateral areas and transversally in the posterior,

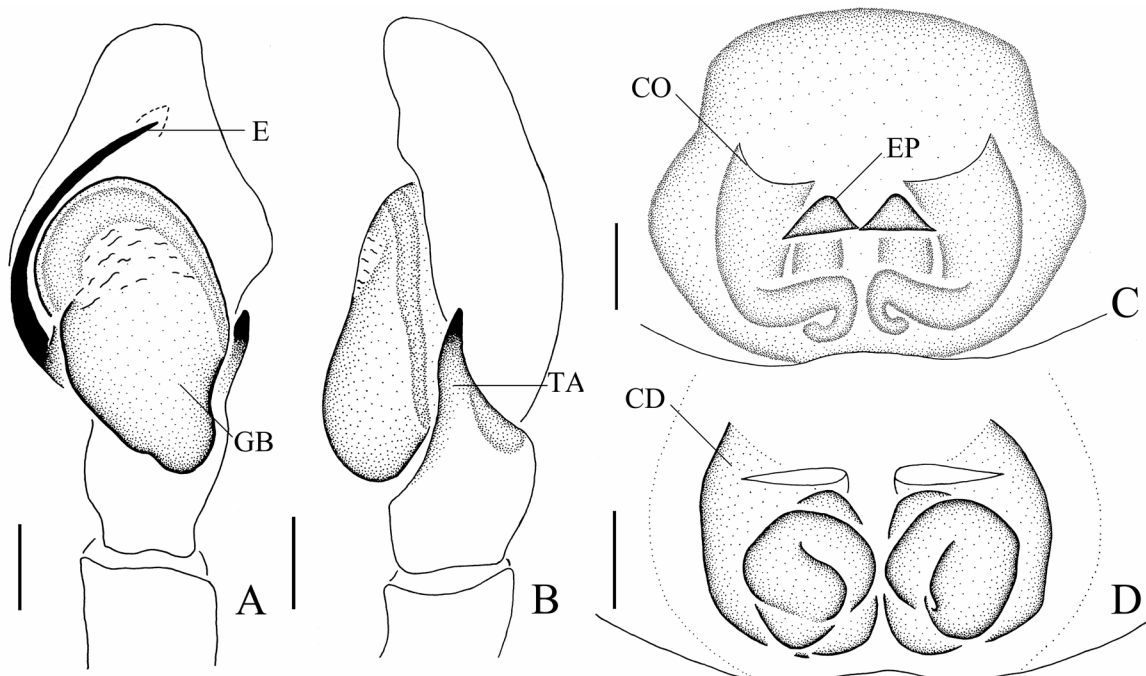


Fig. 2. *Yaginumaella pulchella* sp. nov. **A–B.** ♂, HNU-HN-IV-1417-02. **C–D.** ♀, HNU-HN-IV-1417-02. **A.** Male palp, ventral view. **B.** Male palp, retrolateral view. **C.** Epigyne, ventral view. **D.** Vulva, dorsal view. Scale bars: 0.2 mm.

muscular impressions distinct, posterior area with a pair of white circular patches, lateral areas scattered with three pairs of small white patches. Venter light yellow, scattered with black patches, median area with one longitudinal dark brown stripe. Palp (Figs 1B–C, 2A–B): tibia longer than wide, terminal part of the tibial apophysis recurved in retrolateral view. Palpal bulb with a membranous structure at the center. Embolus almost as long as palpal bulb, originated from the position of 9:00 o'clock. Palpal bulb about two times longer than wide in ventral view. Sperm duct robust.

Female (paratype)

Total length 5.38 mm. Cephalothorax 2.57×1.48 mm. Abdomen 2.71×1.86 mm. Clypeus height 0.13 mm. Eye sizes and interdistances: AME 0.57 mm, ALE 0.34 mm, PLE 0.33 mm, AER 1.81 mm, PER 1.67 mm, EFL 1.29 mm. Carapace similar to male but slightly more reddish, with two longitudinal white stripes at the lateral sides and, a central white band extending from the posterior margin of ocular area to the posterior margin of carapace. Legs pale yellow, terminal areas darker with annuli in III and IV. Measurements of legs: I 4.31 mm (1.51 mm, 1.54 mm, 0.66 mm, 0.60 mm), II 4.38 mm (1.52 mm, 1.61 mm, 0.65 mm, 0.60 mm), III 5.31 mm (1.70 mm, 1.75 mm, 1.05 mm, 0.81 mm), IV 5.53 mm (1.65 mm, 1.82 mm, 1.25 mm, 0.81 mm). Leg formula: 4321. The morphological characters of abdomen as same as in male except darker in color. Epigyne (Figs 1E–F, 2C–D): epigynal pockets present ventromesially. Copulatory opening almost slit-shaped. Copulatory ducts short and stout.

Distribution

Hunan (China) (Fig. 3).

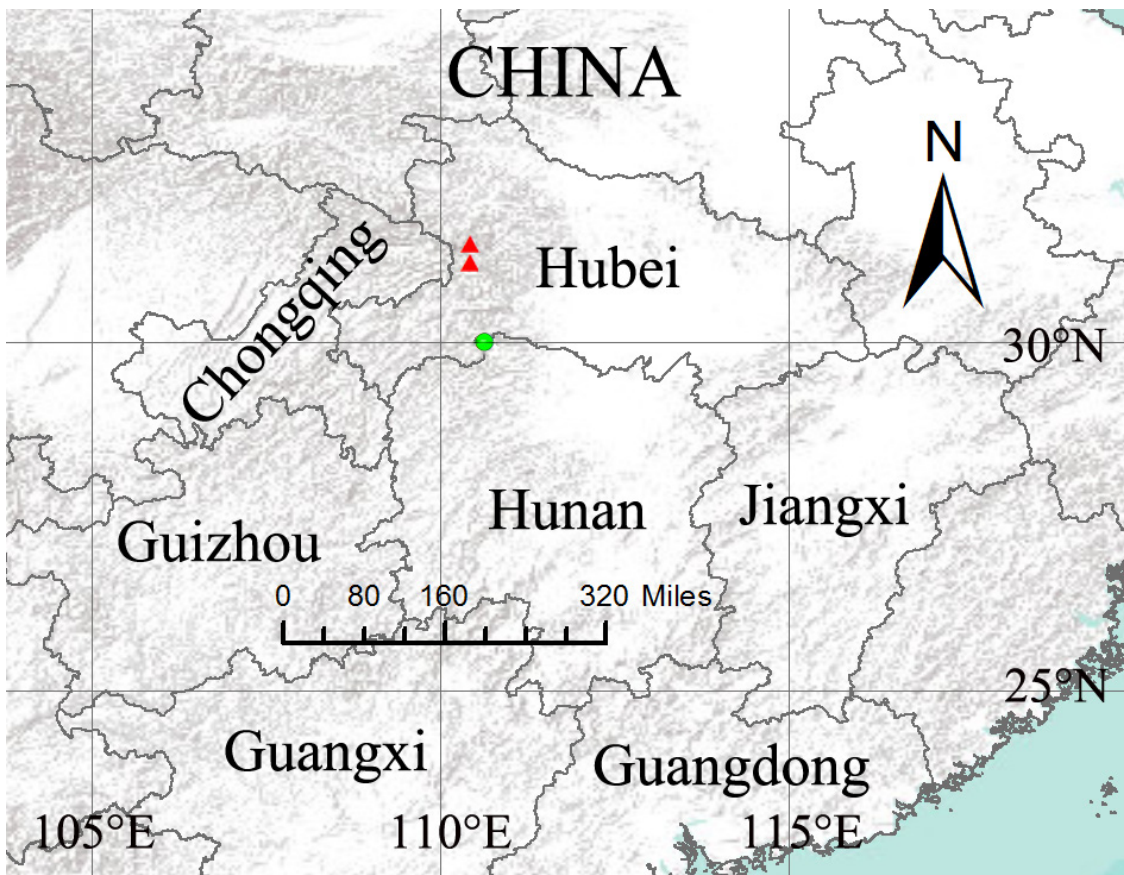


Fig. 3. Distribution records of *Yaginumaella hubeiensis* sp. nov. (red triangles) and *Y. pulchella* sp. nov. (green dot).

Yaginumaella hubeiensis sp. nov.

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Figs 4–5

Differential diagnosis

The new species resembles *Y. pulchella* sp. nov., but can be distinguished by: (1) embolus much longer than the palpal bulbus, originating from the position of 7:00 o'clock (Figs 4B, 5A) vs as long as palpal bulbus, and originating from the position of 9:00 o'clock in *Y. pulchella* sp. nov. (Figs 1B, 2A) in ventral view, (2) palpal bulbus slightly wider anteriorly, depressed posteriorly (Figs 4B, 5A) vs much wider anteriorly and bulging posteriorly in *Y. pulchella* sp. nov. (Figs 1B, 2A) in ventral view, (3) the visible portion of the sperm duct originates from the posterior portion of the palpal bulbus (Figs 4B, 5A) vs from the anterior portion of the palpal bulbus in *Y. pulchella* sp. nov. (Figs 1B, 2A) in ventral view, (4) epigynal pockets bell-shaped, longer than wide, and separated from each other for more than four times of epigynal pocket width (Figs 4E, 5C) vs as long as wide, and almost touching each other in *Y. pulchella* sp. nov. (Figs 1E, 2C), (5) copulatory opening “()”-shaped and longitudinal (Figs 4E, 5C) vs slit-shaped and diagonal in *Y. pulchella* sp. nov. (Figs 1E, 2C), and (6) the course of the copulatory ducts is also different (Figs 4F, 5D).

Etymology

The specific name comes from the type locality.

Type material

Holotype

CHINA: 1 ♂, Hunan, Changde City, Shimen County, Hupingshan Township, Daling Village, 30°20'26" N, 110°24'47" E, 1320 m a.s.l., 26 Apr. 2016, Wang Liu, Chen Zen, and Tian Tian leg. (HNU-HB-IV-1626).

Paratypes

CHINA: 9 ♂, Hunan, Changde City, Shimen County, Hupingshan Township, Daling Village, 30°20'26" N, 110°24'47" E, 1320 m a.s.l., 26 Apr. 2016, Wang Liu, Chen Zen, and Tian Tian leg. (HNU-HB-IV-1626); 3 ♀, Hubei, Enshi City, Badong County, Yanduhe Township, Songziyuan Village, 31°24'1" N, 110°23'57" E, 1836 m a.s.l., 24 Apr. 2016, Wang Liu, Chen Zen, and Tian Tian leg. (HNU-HB-IV-1624).

Description

Male (holotype)

Total length 6.98 mm. Cephalothorax 3.28 × 2.44 mm. Abdomen 3.49 × 2.03 mm. Eye sizes and interdistances: AME 0.63 mm, ALE 0.34 mm, PLE 0.18 mm. AER 2.06 mm, PER 1.82 mm, EFL 1.38 mm. Carapace reddish brown, with three longitudinal yellowish-brown stripes on the median and two on the lateral areas (extending from the posterior margin of the ocular area to posterior margin of carapace). Lateral areas densely covered with longitudinal white hairs strips. Central area lightly colored. The base of each eye, anterior and lateral margins of ocular area black with black hairs. Thoracic region flat, fovea longitudinal, shallow, and indistinct. Cervical and radial grooves distinct. Sternum oval, covered with short brown hairs, central area bulged. Chelicerae yellowish-brown, two pro-marginal and one retro-marginal tooth. Legs yellowish-brown with annuli, terminal area darker. Measurements of legs: I 7.35 mm (2.52 mm, 2.82 mm, 1.28 mm, 0.73 mm), II 5.87 mm (2.04 mm, 2.43 mm, 0.89 mm, 0.51 mm), III 6.03 mm (2.26 mm, 2.32 mm, 0.85 mm, 0.60 mm), IV 6.96 mm (2.30 mm, 2.42 mm, 1.54 mm, 0.70 mm). Leg formula: 1432. Abdomen oval, dark brown with lighter yellowish central area with inclined white stripes, followed by the longitudinal dark band on lateral areas and transversally



Fig. 4. *Yaginumaella hubeiensis* sp. nov. A–C. Holotype, ♂ (HNU-HB-IV-1626). D–F. Paratype, ♀ (HNU-HB-IV-1624). A. Male body, dorsal view. B. Male palp, ventral view. C. Male palp, retrolateral view. D. Female body, dorsal view. E. Epigyne, ventral view. F. Vulva, dorsal view. Scale bars: A, D = 1 mm; B–C, E–F = 0.2 mm.

in the posterior, dorsum scattered with lots of white and grayish-black patches, lateral area two pairs of muscular impressions distinct. Venter white, scattered with black patches, median area with one longitudinal dark brown stripe. Palp (Figs 4B–C, 5A–B): tibia thick, terminal part of the tibial apophysis straight in retrolateral view. Palpal bulbus slightly wider anteriorly, with a membranous structure at the center, posterior end with a deep depression. Embolus bow-shaped, much longer than the palpal bulbus, originated from the position of 7:00 o'clock. Sperm ducts robust. Variation: total length 5.97–6.98 mm (n = 10).

Female

Total length 6.34 mm. Cephalothorax 2.59×1.91 mm. Abdomen 3.55×2.33 mm. Clypeus height 0.09 mm. Eye sizes and interdistances: AME 0.48 mm, ALE 0.24 mm, PLE 0.22 mm. AER 1.82 mm, PER 1.67 mm, EFL 1.19 mm. Carapace the same as male except dark colored. Carapace yellowish-brown. Legs light yellow, terminal areas darker with annuli in III and IV. I and II darker than III and IV. Measurements of legs: I 4.52 mm (1.42 mm, 1.87 mm, 0.69 mm, 0.54 mm), II 4.05 mm (1.51 mm, 1.59 mm, 0.58 mm, 0.37 mm), III 4.27 mm (1.61 mm, 1.25 mm, 0.97 mm, 0.44 mm), IV 4.85 mm (1.66 mm, 1.81 mm, 0.98 mm, 0.40 mm). Leg formula: 4321. The other morphological characters of abdomen as same as male except darker in color. Epigyne (Figs 4E–F, 5C–D): epigynal pockets bell-shaped, longer than wide, present ventrolaterally. Copulatory opening slit-shaped and diagonal. Variation: Total length 4.81–6.76 mm (n = 3).

Distribution

Hubei (China) (Fig. 3).

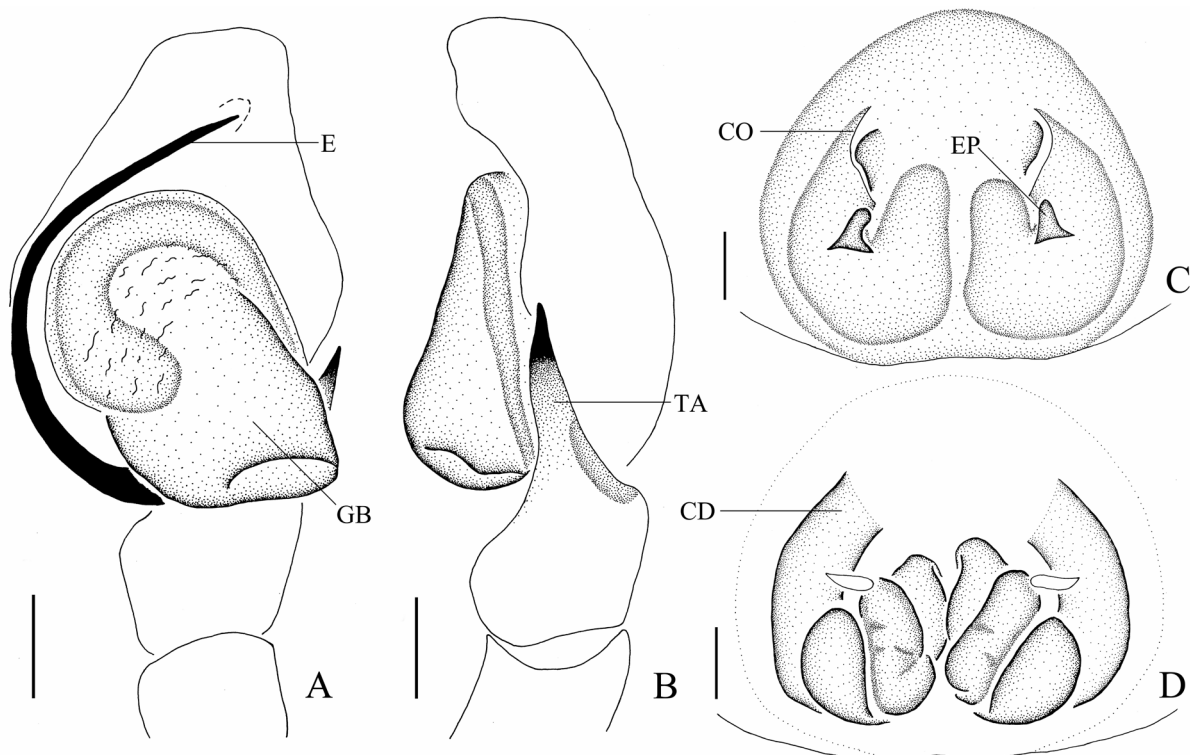


Fig. 5. *Yaginumaella hubeiensis* sp. nov. **A–B.** ♂, HNU-HB-IV-1626. **C–D.** ♀, HNU-HB-IV-1624. **A.** Male palp, ventral view. **B.** Male palp, retrolateral view. **C.** Epigyne, ventral view. **D.** Vulva, dorsal view. Scale bars: 0.2 mm.

Discussion

The genus *Yaginumaella* is placed under the subtribe Plexippina (Maddison, 2015) of subfamily Salticinae (Maddison, 2015) (Maddison 2015). Currently, a total of 46 species have been described mainly from subtropical Bhutan, China, India, Japan, Korea, Myanmar, Nepal, and Russia (World Spider Catalog 2018), and *Ptocasius* (Simon, 1885) only contains 13 species described from China, India, Kazakhstan, Myanmar, Singapore, Sri Lanka, and Vietnam (World Spider Catalog 2018). Most of the taxonomists have reported that *Yaginumaella* is closely similar to, and may well be synonymous with, *Ptocasius* (Žabka 1985; Song 1991; Hu 2001; Sunil 2013; Logunov & Jäger 2015), in particular, the characteristics of the female are so close that it is difficult to distinguish. Even many scholars think it should be merged. So far, as there is no particular consensus, they are considered two separate genera. In future, many species will need to be transferred depending on taxonomic revisions. But, based on the characteristics of specimens checked by the authors, together with those illustrated in literature, we think the two genera can be diagnosed as: (1) thoracic region steep in *Ptocasius* vs flat in *Yaginumaella*; (2) carapace with a transverse stripe in *Ptocasius* vs a pair of longitudinal dark bands extending from back of ALE to retromargin in *Yaginumaella*; (3) abdomen with transverse stripes in *Ptocasius* vs usually with longitudinal stripes in *Yaginumaella*; (4) embolus two times longer than palpal bulb, originating from the right margin of the palpal bulb, and palpal bulb without posterior lobe in *Ptocasius* vs as long as palpal bulb, originating from the left margin of the palpal bulb, and palpal bulb with posterior lobe in *Yaginumaella*. Because of this, the two new species we describe fit the characteristics of *Yaginumaella*.

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