

Three New Species of the Genus *Philodromus* from China (Araneae: Philodromidae)

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Three novel species, *Philodromus daoxianen* n. sp., *P. ganxiensis* n. sp., and *P. longitibiacus* n. sp., are described based on the specimens collected from Hunan Province, China. *P. daoxianen* is similar to *P. rufus*, but its spermathecae is calabash-shaped, that of the latter spherical. It is also similar to *P. kendradatai*, but differs in the form of atrium, distance between two spermathecae and dorsal markings of the abdomen. *P. ganxiensis* differs from other species of the genus *Philodromus* in epigynum by a pair of sword-shaped apophyses, palpal organ with slightly wider distal end of a tibial apophysis, and knife-shaped membranous median apophysis. *P. longitibiacus* differs from other related species in long and thin palps and legs especially tibia of palps, which is about 4.5 times as long as the cybium, and basal portion of embolus strongly sclerotized.

In China, *Philodromus* spiders are somewhat rare and less than 20 species have been reported thus far (Chen and Gao, 1990; Feng, 1990; Tikader, 1996). Hitherto, 83 species of the genus *Philodromus* are known in the world (Platnick, 1997) and 28 species in northeastern Asia (Paik, 1979). These spiders, despite their relatively long legs, are somewhat crab-like in general appearance and can run very rapidly both forwards and sideways. All the species habituate low vegetation and are usually obtained by beating and sweeping. Identifying the specimens of our collections, we found three new species of the Philodromidae. Holotype and males, females of the paratypes are deposited in the Department of Biology, Hunan Normal University, Changsha, Hunan, China.

Materials and methods

The specimens were fixed in 80% ethanol immediately after they were collected. The leg segments were measured in ratio of millimeter to total length (femur, tibia, metatarsus, tarsus).

Abbreviations used in this paper are: AER=anterior eye row, AL=abdomen length, ALE=anterior lateral eye, ALE-PLE=interval between ALE and PLE, AME=anterior median eye, AME-AME=interval between AMEs, AW=abdomen width, CL=carapace length, CW=carapace width measured at the widest position, L=length, MOQ=

median ocular quadrate, PER=posterior eye row, PME=posterior median eye, PME-PME=interval between PMEs, PME-PLE=interval between PME and PLE, TL=total length, W=width.

Results

Family Philodromidae Cambridge, 1871
Genus *Philodromus* Walckenaer, 1826

Philodromus daoxianen sp. nov.
(Fig. 1A-C)

Material examined: Holotype ♀ (Type No. 99-14), paratypes 2♀♀, Daoxian County (25°30', 111°36'E), Hunan Province, June 1986, by Gong Lian-Su; 1♀, Daoxian, Hunan, May 19, 1986, by Gong Lian-Su.

Measurements: TL 4.50, CL 1.75, CW 1.95, AL 2.95, AW 1.80, Legs: I 6.40 (1.90, 2.30, 1.40, 0.75); II 8.60 (2.60, 3.20, 1.90, 0.90); III 6.10 (2.00, 2.20, 1.20, 0.70); IV 5.35 (1.90, 1.75, 1.10, 0.60); formula II, I, III, IV. Eye size and interval: AME 0.07, ALE 0.06, PME 0.05, PLE 0.075, AME-ALE 0.20, AME-ALE 0.06, PME-PME 0.32, PME-PLE 0.24; MOQ: L 0.28; W 0.26 (front), 0.42 (back).

Description: Female: Carapace cordiform, yellowish brown, lightly colored medially; cephalic area narrower and bulged; cervical grooves clear; radial grooves indistinct; both AER and PER recurved. Sternum light yellow brown, cordiform. Chelicerae light yellow, one small promarginal tooth, no retromarginal one. Distal

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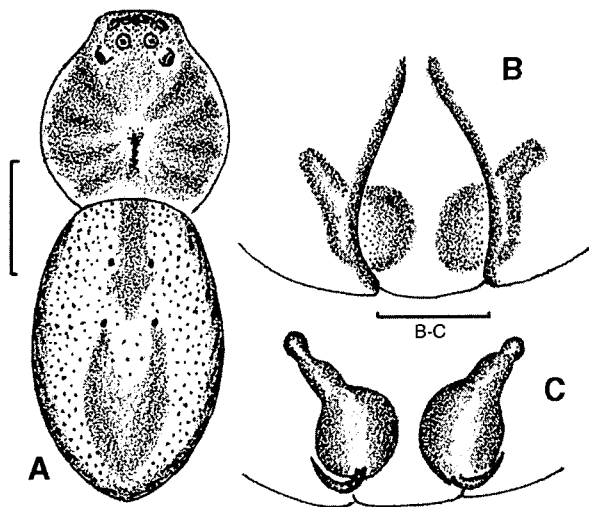


Fig. 1. *Philodromus daoxianen* sp. nov. A, Body. B, Epigynum. C, Vulva. Scale bars=0.1 mm (B, C) and 1 mm (A).

ends of endites and labium light yellow. Labium hexagonal, as long as wide. Legs light yellowish brown, dorsum lighter; spines sparse, tibiae I, II and metatarsi I, II with two pairs of ventral spines. Abdomen yellowish white, anterior margin about straight, posterior end taper; dorsum (Fig. 1A) with two pairs of dark muscular depressions in median area; behind them is a rhombus mark extending to posterior margin; each side of it is a darker longitudinal band; the ventral yellow to grayish yellow medially; its lateral area with bands connecting with dorsal bands. Spinnerets yellowish brown. Epigynum with a flask-shaped atrium, wider posteriorly, slightly incised medially (Fig. 1B); spermathecae calabash-shaped, each with a small distal bulb (Fig. 1C).

Male: Unknown.

Distribution: China (Hunan).

Etymology: The specific name refers to the type locality.

Remarks: This new species is similar to *P. rufus* Walckenaer, 1826, but its spermathecae (Fig. 1C) is calabash-shaped, where that of the latter is spherical. The new species is also similar to *P. kendrabatai* Tikader, 1966, but differs from the former by the form of the atrium, two spermathecae closer than those of the latter and markings on abdominal dorsum.

Philodromus ganxiensis sp. nov.
(Fig. 2A-G)

Material examined: Holotype ♀ (Type No. 99-15), paratypes 2 ♀♀, 2 ♂♂, Ganxi, Tongdao County (26° 12', 109°48'E), Hunan Province, June 1, 1996, by Yin Chang-Min, Peng Xian-Jin & Zhang Yong-Jin.

Measurements: Female: TL 3.50-4.00. Holotype measured: TL 4.00, CL 1.75, CW 1.50, AL 2.05, AW 1.72. Legs: I 10.70 (3.85, 3.80, 2.00, 1.05); II 10.90 (3.90, 4.00, 2.00, 1.00); III 5.15 (1.75, 2.00, 0.80, 0.60); IV 6.00 (2.00, 2.20, 1.25, 0.60); formula II, I, IV, III. Eye size and interval: AME 0.081, ALE 0.127, PME 0.086, PLE 0.127, AME-AME 0.035, AME-ALE 0.046, PME-PME 0.150, PME-PLE 0.155; MOQ: L 0.167; W 0.230 (front). 0.334 (back).

Male: TL 3.26-3.75. The specimen of TL 3.26 measured: CL 1.75, CW 1.60, AL 1.50, AW 1.20. Legs: I 11.70 (3.10, 4.15, 2.95, 1.50); II 11.40 (3.05, 4.10, 2.90, 1.35); III 5.10 (1.50, 2.10, 1.00, 0.50); IV 6.45 (2.15, 2.20, 1.40, 0.70); formula II, I, IV, III. Eye size and interval: AME 0.10, ALE 0.20, PME 0.13, PLE 0.16 AME-AME 0.007, AME-ALE 0.09, PME-PME 0.13, PME-PLE 0.13; MOQ: L 0.30; W 0.20 (front), 0.37 (back).

Description: Female (holotype): Carapace (Fig. 2A) light yellowish brown with darker markings; AER recurved, PER slightly procurved, each eye with a black eye tubercle. Sternum, chelicerae, palp and legs grayish yellow brown. Distal ends of endites and labium gray. Labium longer than wide. Legs I and II almost as long as each other, two times as long as leg III. Abdomen darker than cephalothorax; dorsum with 3 pairs of white markings, lateral area and posterior side with grayish-black striae; the ventral with silver spots on lateral area. Spinnerets gray. Epigynum (Fig. 2C) about oval; each posterior side with a strongly sclerotized sword-shaped apophysis. Spermathecae (Fig. 2D) large, like an elongated egg-plant.

Male: Color darker than that of female; anterior margin of abdominal dorsum with a row of setae; white markings more distinct. Palpal organ (Fig. 2E-G): tibiae long, ventral apophysis stout and long, distal end slightly wider; reterior ventral side of tibiae with a row of sclerotized long spines, four of them larger (Fig. 2E-F); cymbium narrower and longer; embolus originates from retrolateral side of posterior portion of bulb; conductor larger, hook-shaped (Fig. 2E-G); median apophysis knife-shaped, membranous (Fig. 2E-G).

Distribution: China (Hunan).

Etymology: The specific name refers to type locality.

Remarks: This new species differs from any other ones of the genus *Philodromus* from the former by the epigynum with a pair of sword-shaped apophyses, palpal organ with one tibial apophysis, its distal end slightly wider and median apophysis knife-shaped, membranous.

Philodromus longitibiacus sp. nov.
(Fig. 3A-D)

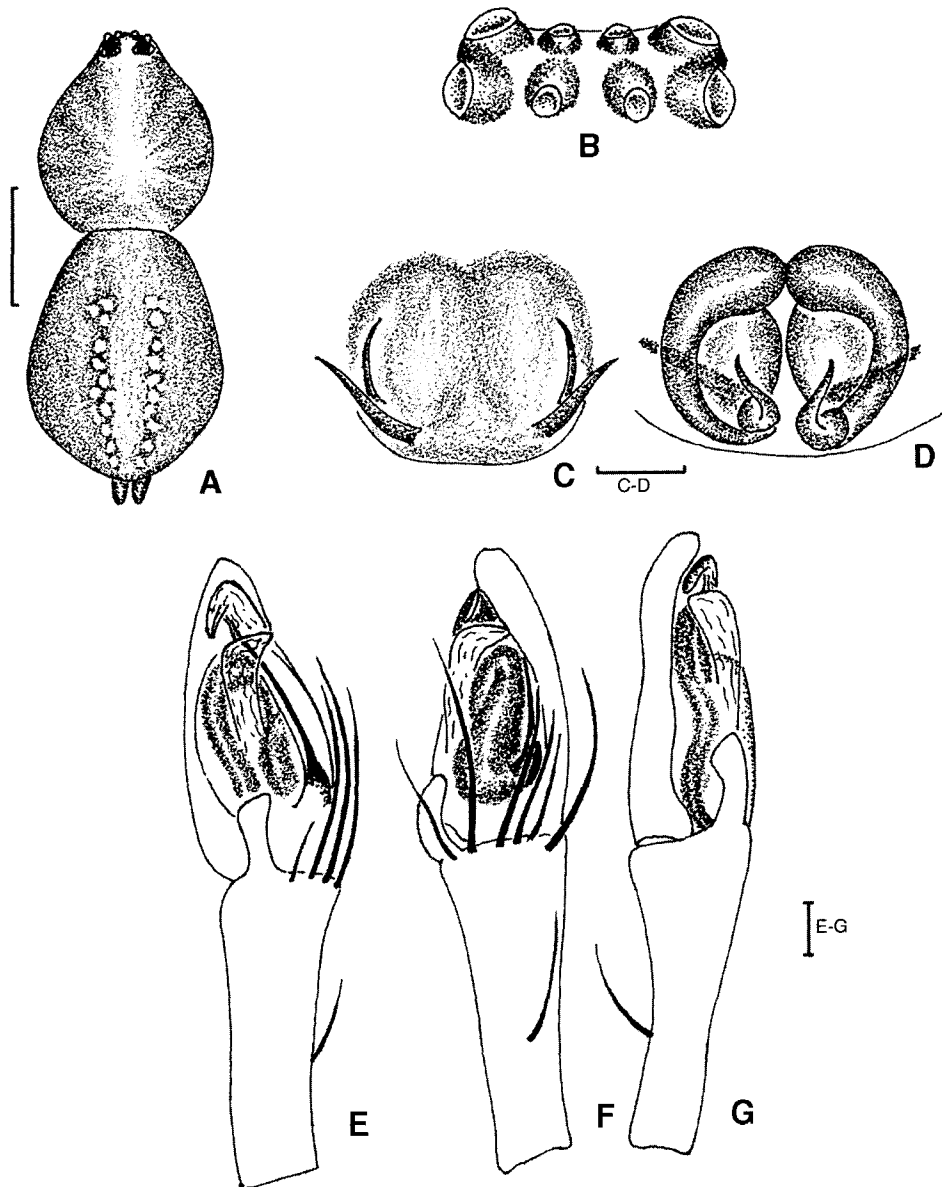


Fig. 2. *Philodromus ganxi* sp. nov. A, Body (♀). B, Eyes (frontal view). C, Epigynum. D, Vulva. E, Palpal organ, ventral. F, Ditto, retrolateral. G, Ditto, prolateral. Scale bars=0.1 mm (C-G) and 1 mm (A).

Material examined: Holotype 1 ♂ (Type No. 99-16), Suining County (26°3'6", 110°1'2"E), Hunan Province, May 29, 1996, by Zhang Yong-Jin.

Measurements: Male (holotype): TL 6.00, CL 2.40, CW 2.50, AL 3.20, AW 1.60. Legs: I 18.80 (5.10, 7.30, 4.50, 1.90); II 18.40 (5.00, 7.00, 4.60, 1.80); III 9.75 (3.10, 3.60, 2.25, 0.90); IV 10.80 (3.50, 3.80, 2.50, 1.00); formula I, II, IV, III; palp 8.40 (3.60, 4.00, 0.80). Eye size and interval: AME 0.08, ALE=PLE 0.14, PME 0.09, AME-AME 0.03, AME-ALE 0.08, PME-PME 0.18, PME-PLE 0.16; MOQ: L 0.44; W 0.28 (front), 0.40 (back).

Description: Male: Carapace (Fig. 3A) yellowish brown; clypeus and areas between radial grooves light yellowish white; fovea reddish brown, long and longitudinal; cephalic area slightly bulged; eight eyes in two rows, each eye situated at a black tubercle; AER recurved; PER slightly longer than AER, almost straight. Sternum light yellow, cordiform, no marking but with dense short hairs. Chelicerae with grayish black hairs but no tooth. Endites rectangle, slightly sloped inward. Labium dark brown, almost as long as wide. Legs yellowish brown, lighter than carapace; tibiae I and II with 3 pairs of ventral spines; metatarsi I and II with two pairs. Abdomen (Fig. 3B) oval; dorsum silver with square-shaped

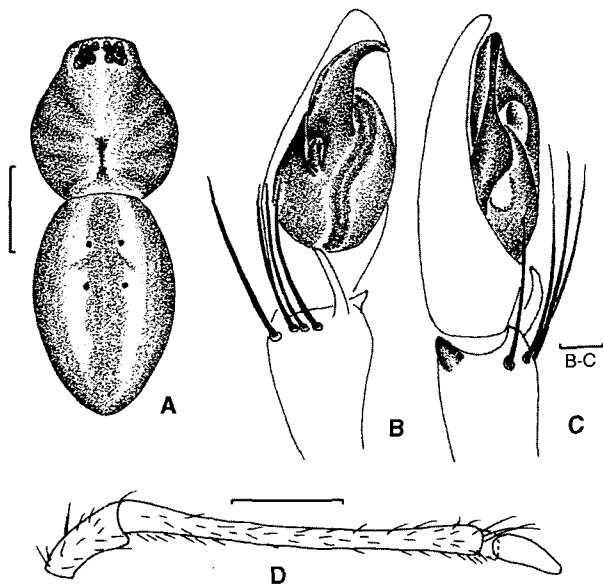


Fig. 3. *Philodromus longitibiatus* sp. nov. A, Body. B, Palpal organ, ventral. C, Ditto, lateral. D, Palpal organ. Scale bars=0.1 mm (B, C) and 1 mm (A, D).

light brown markings on median area; two pairs of muscular depressions on median portion; hairs black and sparse; the ventral silver gray with indistinct marking. Palpal organ (Fig. 3C): Tibiae with two apophyses

(Fig. 3B); ventral one long and thick; retrolateral one small, triangular and thinner; ventral anterior margin of tibiae with four stout setae (Fig. 3B-C); embolus (Fig. 3B-C) long, its base black, long and strongly sclerotized; conductor (Fig. 3B-C) large, with tapering arc-shaped end.

Distribution: China (Hunan).

Etymology: The specific name refers to long tibiae of palp.

Remarks: This new species differs from any other species of the genus *Philodromus* in the palps and legs long and thin, especially for tibiae of palps, which is about 4.5 times as long as cymbium, and basal portion of embolus strongly sclerotized.

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