

THE SPIDERS OF THE GENUS *TELEMA* (ARANEAE: TELEMIDAE) FROM HAINAN ISLAND, CHINA

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ABSTRACT. – Four new species of the genus *Telema*, collected from Hainan Island, China, are diagnosed, described and illustrated: *Telema bella* (male, female), *T. breviseta* (male, female), *T. dengi* (male, female) and *T. spina* (male). *T. spina*, was collected from Mountain Wuzhishan, and the other three species were from caves. The type specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

KEY WORDS. – Taxonomy, Telemidae, new species, cave, endemic species.

INTRODUCTION

The spiders of family Telemidae are small (usually < 2 mm), three-clawed, ecribellate haplogyne spiders. They can be distinguished from other spiders by a transverse zigzag ridge anterodorsally on abdomen and, in females, a dorsal brush of distinctive short, stout and abruptly tapered macrosetae on the palpal tarsus. They are usually found in moist conditions, for example, in leaf litter, under rocks, and in caves (Song et al., 1999). Telemidae is a small family with 7 genera and 22 recognized species (Platnick, 2007), and widely distributed from tropical Africa, Europe, East and Southeast Asia to North and Central America (Brignoli, 1977).

The genus *Telema* was erected by Simon in 1882, with *T. tenella* as the type species. To date, only six species have been described under *Telema* (Gertsch, 1973; Song & Zhu, 1994; Wang & Ran, 1998; Yaginuma, 1972, 1973, 1974; Zhu & Chen, 2002) including *T. tenella* Simon, 1882, from Spain and France, *T. dongbei* Wang & Ran, 1998, and *T. liangxi* Zhu & Chen, 2002, from Guizhou, China, *T. mayana* Gertsch, 1973, from Guatemala, *T. nipponica* (Yaginuma, 1972) from Japan, and *T. wunderlichii* Song & Zhu, 1994, from Hunan, China. Whether the East Asian telemids actually belong to the genus *Telema* still await further testing (Wang & Ran, 1998). No *Telema* species has been reported from Hainan Province, a tropical island.

Hainan Island is situated at the southernmost part of China and has an area of 34,000 sq km, an average temperature between 22°C and 26°C and an annual rainfall of 1,600 to

2,000 mm. More than 4,000 species of plants are recorded from Hainan Island, which account for 15% of the country's total, and among them 600 are endemic to the island (Anonymous, 2006a). Meanwhile, 344 species of birds and 82 species mammals dwell on Hainan, including gibbons (*Hylobates concolor hainanus*) and Hainan Eld's Deer (*Cervus eldi hainanus*), of which 11 species (or subspecies) birds and 16 mammals are endemic to Hainan (Anonymous, 2006b). The high ratio of endemic species is thought to be a result of active speciation on the island.

During expeditions to Hainan, some telemids specimens were collected. Four new species are recognized and accommodated to genus *Telema* in this paper.

MATERIAL AND METHODS

Specimens were examined using an Olympus SZX12 stereomicroscope. Further details were studied under an Olympus® BX51 compound microscope. All illustrations were made using a drawing tube and inked on ink jet plotter paper. Photos were made with an Olympus® digital camera (C7070, 7.1 megapixels) mounted on an Olympus® SZX12 stereomicroscope. Male palps and female genitalia were examined and illustrated after they were dissected from the spiders' bodies. Vulvae of female were cleared in lactic acid.

All measurements were measured using an Olympus® BX51 compound microscope and given in millimeters (mm). Leg measurements are shown as: total length (femur, patella, tibia, metatarsus, tarsus).

The abbreviations used are: AM, anterior median eyes and AL, anterior lateral eyes. The specimens studied here are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

TAXONOMY

Telema Simon, 1882

Type species. – *Telema tenella* Simon, 1882: 205.

Telema bella, new species

(Figs. 1A, 2A–G, 6)

Holotype. – Male (IZCAS), Mihou Cave (18°56'N 109°04'E), Datian National Natural Reserve, Dongfang City, Hainan Island, China, coll. Y. Song, X. Han, Y. Tong and G. Deng, 28 Mar.2005.

Paratypes. – 22 females, 28 males (IZCAS), same data as holotype.

Diagnosis. – The new species is similar to *T. dongbei* and *T. liangxi* but can be distinguished from *T. dongbei* by the presence of eyes, the distinctive cheliceral promarginal teeth and the shape of spermathecae of female, from *T. liangxi* by the presence of eyes, the presence of cheliceral teeth, the

distinctive shape of palpal bulb of males, and the shape of spermathecae of female.

Description. – **Males.** Total length 0.98–1.07. Carapace 0.48–0.51 long, 0.39–0.47 wide; abdomen 0.53–0.62 long, 0.41–0.53 wide. Carapace, legs, sternum, labium, endites and chelicerae yellow. Abdomen usually blue, a few specimens gray. Carapace with pair of setae at clypeus behind eyes, and at middle. Six eyes, anterior row of four eyes nearly straight, AM close together, nearly touching, separated from AL by 2/3 diameter of AL, lateral eyes contiguous. Promargin of fang furrow with one large tooth, one relatively small tooth and three barely visible granulous denticles, retromargin with four barely visible denticles. Legs with dorsal spine at distal end of patella as well as at middle of tibia. Leg measurements: I 2.92 (0.88, 0.16, 0.90, 0.54, 0.44); II 2.51 (0.77, 0.16, 0.75, 0.44, 0.39); III 1.85 (0.58, 0.15, 0.49, 0.33, 0.30); IV 2.23 (0.72, 0.16, 0.60, 0.39, 0.36). Leg formula: I-II-IV-III. Palp with prolateral cymbial apophysis; bulb oval with one simple apophysis.

Females. Total length 1.05–1.10. Carapace 0.47–0.52 long, 0.42–0.48 wide; abdomen 0.59–0.65 long, 0.48–0.55 wide. Eyes and chelicerae as in male. Leg measurements: I 2.79 (0.85, 0.17, 0.85, 0.47, 0.45); II 2.46 (0.75, 0.16, 0.72, 0.44, 0.39); III 1.84 (0.57, 0.14, 0.49, 0.32, 0.32); IV 2.28 (0.72,

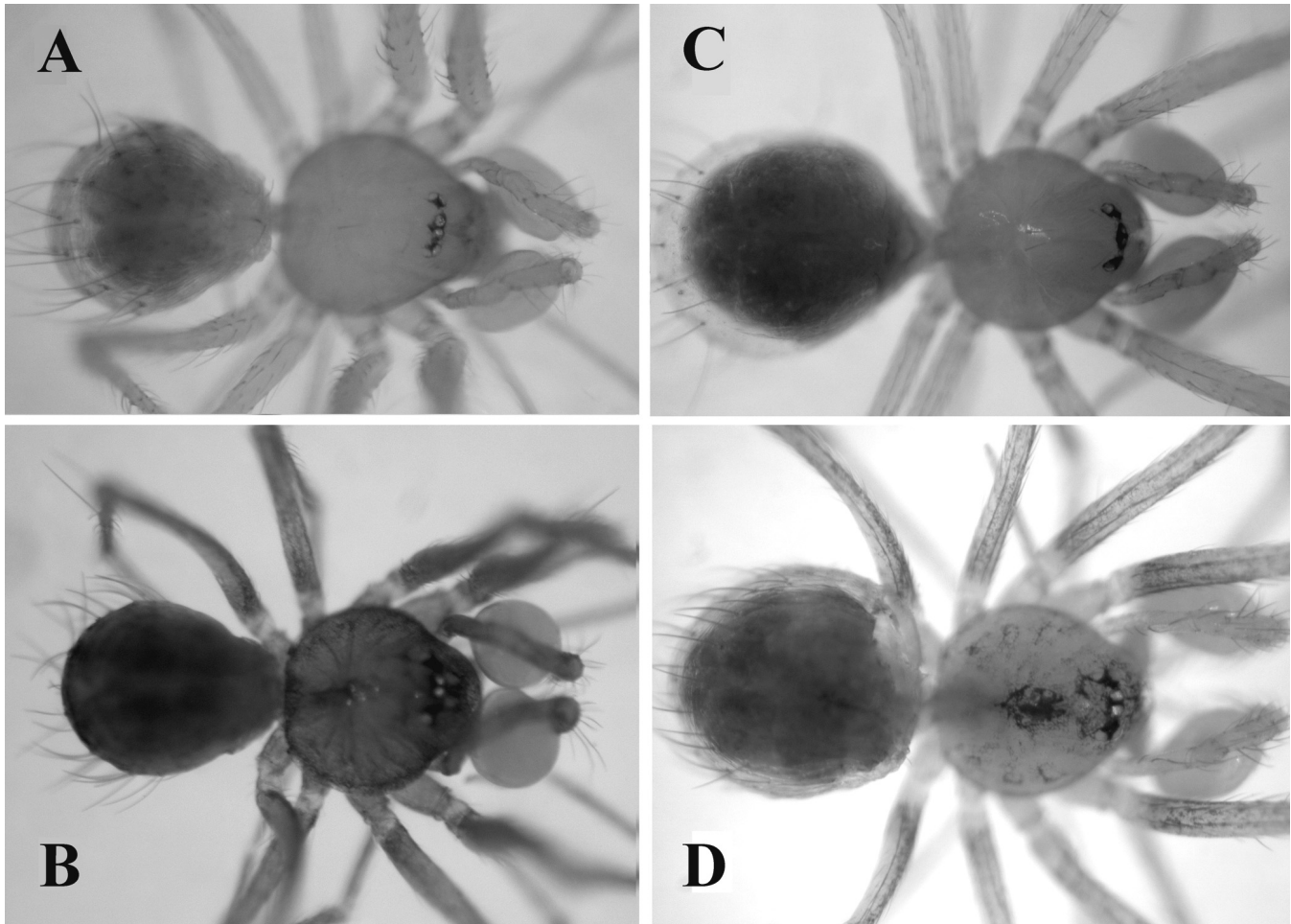


Fig. 1. Dorsal views of *Telema* spiders: A, *T. bella*, new species, dorsal view; B, *T. breviseta*, new species, dorsal view; C, *T. dengi*, new species, dorsal view; D, *T. spina*, new species, dorsal view.

0.15, 0.62, 0.44, 0.35). Leg formula: I-II-IV-III. Epigynum with one row of hairs on epigynal plate. Spermatheca narrow, long, with distal end curved posteriorly.

Etymology. – The specific name is from Latin “*bella* = beautiful”, indicates the beautiful color of abdomen of the species.

***Telema breviseta*, new species**

(Figs. 1B, 3A–I, 6)

Holotype. – Male (IZCAS), Yalong Cave (18°59'N 108°53'E), Yalong Village, Donghe Town, Dongfang City, Hainan Island, China, coll. Y. Song, X. Han, G. Deng and Y. Tong, 1 Apr.2005.

Paratypes. – 8 females, 6 males (IZCAS), same data as holotype; 2 females, 1 male (IZCAS), a cave (not named) (19°01'N 109°04'E), Nanlang village, Donghe town, Dongfang city, Hainan Island, China, same collectors as holotype, 30 Mar.2005.

Diagnosis. – The new species is similar to *T. nipponica* (Yaginuma, 1972) and can be distinguished by the presence of a small prolateral cymbial apophysis, the distinctive shape of palpal bulb of males, the presence of a row of short setae on anteroventral surface of femur I, the shape of sternum, and the presence of two large promarginal teeth on fang furrow.

Description. – Males. Total length 0.98–1.09. Carapace 0.51–0.53 long, 0.47–0.50 wide; abdomen 0.58–0.61 long, 0.44–0.46 wide. Carapace yellowish brown with brownish margin; at center a dark suffused area from which ill-defined striae diverge; area before AM with two light yellow rings, indistinct in some specimens. Legs, labium, endites and chelicerae yellowish brown. Sternum dark brown. Abdomen gray, blackened on posterior area; spinnerets light yellow, colulus blackened. Carapace with pair of setae at clypeus, behind eyes, and at middle. Six eyes, anterior row of four eyes nearly straight, AM close together, nearly touching, separated from AL by 1/2 diameter of AL, lateral eyes contiguous. Promargin of fang furrow with two large tooth, and three small denticles, retromargin with four barely visible denticles. Legs with dorsal spine at distal end of patella as well as at middle of tibia. Leg measurements: I 2.90 (0.86, 0.18, 0.87, 0.56, 0.43); II 2.55 (0.77, 0.17, 0.74, 0.46, 0.41); III 1.93 (0.62, 0.17, 0.48, 0.34, 0.32); IV 2.44 (0.77, 0.17, 0.66, 0.47, 0.37). Leg formula: I-II-IV-III. Femur I with characteristic row of short setae on anteroventral surface (also present in femur II on specimens of Nanlang). Palp with prolateral slender cymbial apophysis; bulb oval with one simple apophysis.

Females. Total length 1.05–1.12. Carapace 0.51–0.58 long, 0.48–0.54 wide; abdomen 0.62–0.67 long, 0.47–0.51 wide. Eyes and chelicerae as in male. Leg measurements: I 2.84 (0.85, 0.18, 0.82, 0.52, 0.47); II 2.46 (0.76, 0.17, 0.69, 0.45, 0.39); III 1.88 (0.57, 0.17, 0.48, 0.34, 0.32); IV 2.41 (0.76, 0.17, 0.66, 0.45, 0.37). Leg formula: I-II-IV-III. Femur I without special setae. Epigynum with sparse hairs on epigynal

plate, and another row behind epigastric furrow. Spermatheca strong, with distal end swollen and curved downwards.

Etymology. – The specific name is from Latin “*brevi* = short, and *seta* = bristle”, and refers to the row of short setae on anteroventral surface of femur I.

***Telema dengi*, new species**

(Figs. 1C, 4A–H, 6)

Holotype. – Male (IZCAS), Luobi Cave (18°20'N 109°33'E), Lizhigou Town, Sanya City, Hainan Island, China, coll. X. Han, Y. Song, G. Deng and Y. Tong, 10–11 Apr.2005.

Paratypes. – 26 females, 23 males (IZCAS), same data as holotype; 4 females, 14 males (IZCAS), a cave (not named), Lizhigou Town, Sanya City, Hainan Island, China, same collectors as holotype, 11 Apr.2005.

Diagnosis. – This new species is similar to *T. dongbei* and can be distinguished from *T. dongbei* and all the congeneric species by the presence of eyes, the distinctive shape of palpal bulb of males, and the shape of spermathecae of females.

Description. – Males. Total length 1.20–1.49. Carapace 0.60–0.70 long, 0.56–0.62 wide; abdomen 0.66–0.82 long, 0.60–0.73 wide. Carapace, legs, labium, endites and chelicerae yellow; sternum yellow, with margins dark colour. Abdomen grayish; spinnerets and colulus white. Carapace without patterns, with pair of setae at clypeus, behind eyes, and at middle. Six eyes, anterior row of four eyes nearly straight, AM close together, nearly touching, separated from AL by one diameter of AL, lateral eyes contiguous. Promargin of fang furrow with one large tooth, one relatively small tooth and three barely visible granulous denticles, retromargin with four barely visible denticles, in which the one near base of fang larger. Legs with dorsal spine at distal end of patella as well as at middle of tibia. Leg measurements: I 4.58 (1.41, 0.21, 1.44, 0.90, 0.62); II 3.97 (1.26, 0.21, 1.22, 0.75, 0.53); III 2.81 (0.93, 0.19, 0.72, 0.54, 0.43); IV 3.50 (1.15, 0.19, 0.97, 0.70, 0.49). Leg formula: I-II-IV-III. Palp with prolateral cymbial apophysis; bulb oval with one relatively complex apophysis.

Females. Total length 1.26–1.52. Carapace 0.70–0.73 long, 0.61–0.63 wide; abdomen 0.65–0.83 long, 0.63–0.76 wide. Eyes and chelicerae as in male. Leg measurements: I 4.95 (1.57, 0.23, 1.59, 0.93, 0.63); II 4.27 (1.41, 0.22, 1.32, 0.79, 0.53); III 3.12 (1.03, 0.21, 0.87, 0.56, 0.45); IV 3.84 (1.29, 0.21, 1.11, 0.71, 0.52). Leg formula: I-II-IV-III. Epigynum with one row of hairs on epigynal plate, and another row behind epigastric furrow. Spermatheca narrow basally and strongly swollen at distal end.

Etymology. – The species is named after the collector Mr. Gaoyun Deng, a colleague at Hainan Normal University, China.

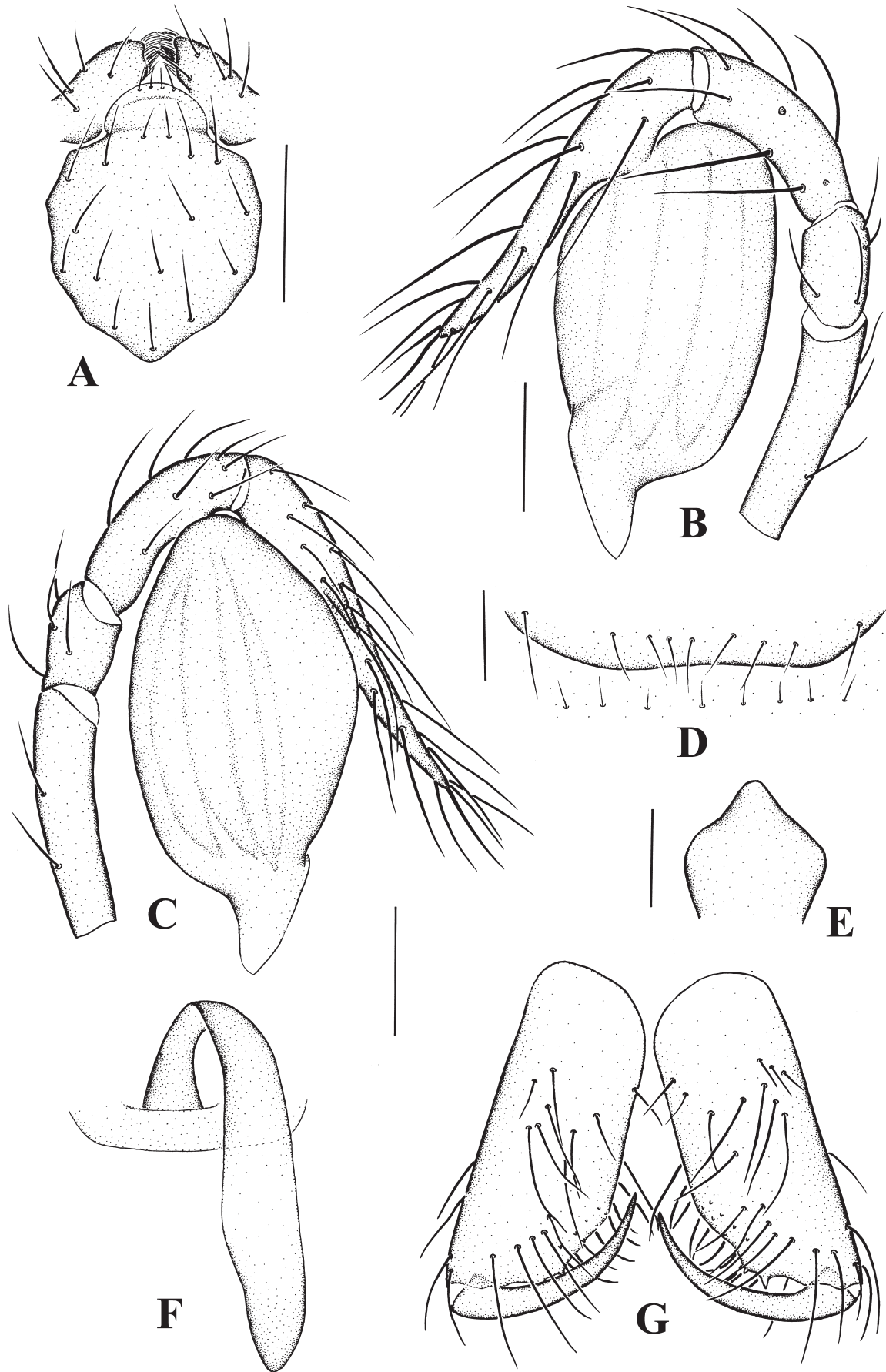


Fig. 2. *Telema bella*, new species: A, female endites, labium and sternum in ventral view; B, male left palp in retrolateral view; C, male left palp in prolateral view; D, female genitalia in ventral view; E, colulus; F, female genitalia in dorsal view; G, chelicerae in ventral view. Scale bars: A = 0.2 mm; B, C, F, G = 0.1 mm; D, E = 0.05 mm.

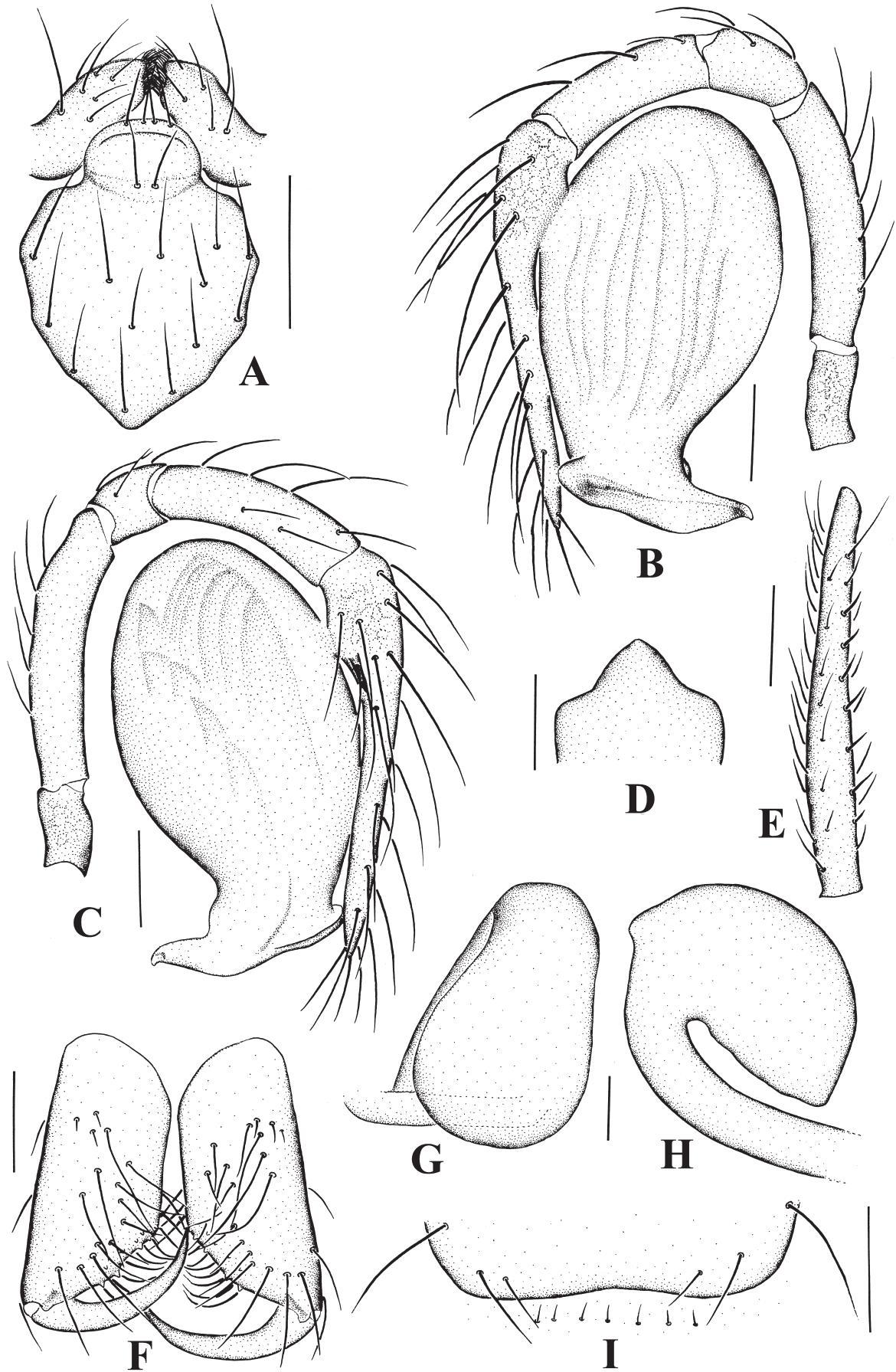


Fig. 3. *Telega breviseta*, new species: A, female endites, labium and sternum in ventral view; B, male left palp in retrolateral view; C, male left palp in prolateral view; D, colulus; E, male femur I in prolateral view; F, chelicerae in ventral view; G, female genitalia in dorsal view; H, spermatheca in lateral view; I, female genitalia in ventral view. Scale bars: A, E = 0.2 mm; B, C, F-I = 0.1 mm, D = 0.05 mm.

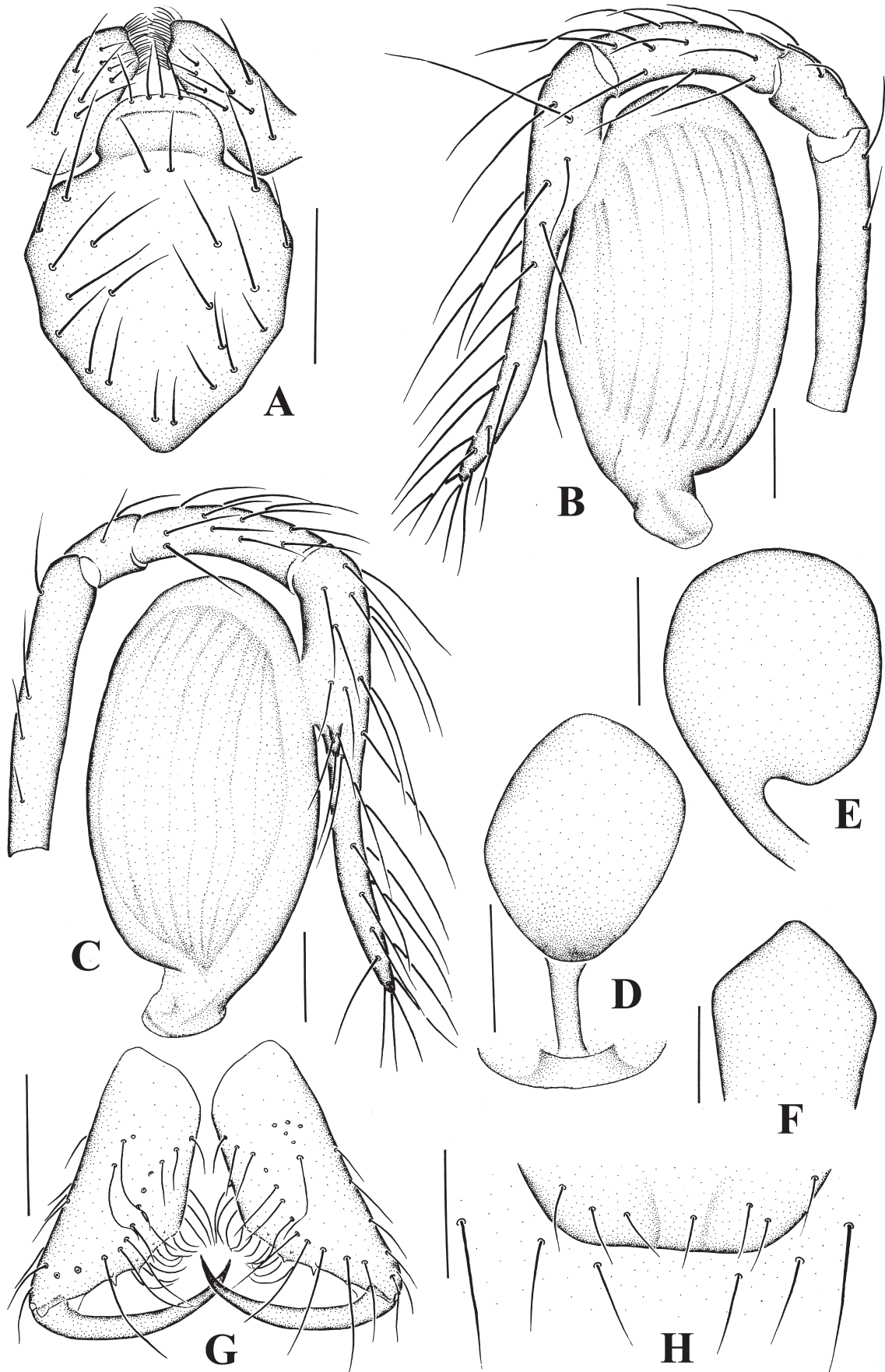


Fig. 4. *Telema dengi*, new species: A, female endites, labium and sternum in ventral view; B, male left palp in retrolateral view; C, male left palp in prolateral view; D, female genitalia in dorsal view; E, Spermatheca in lateral view; F, colulus; G, chelicerae in ventral view; H, female genitalia in ventral view. Scale bars: A, D, E, G, H = 0.2 mm; B, C = 0.1 mm; F = 0.05 mm.

***Telema spina*, new species**

(Figs. 1D, 5A–C, 6)

Holotype. – Male (IZCAS), Mountain Wuzhishan (18°49'N 109°39'E), Wuzhishan City, Hainan Island, China, coll. Y. Song, 16 Apr.2005.

Diagnosis. – The new species is similar to the male of *T. dongbei* Wang & Ran, 1998, and can be distinguished by the distinctive straight bulb apophysis (the angle of bulbal apophysis to the bulb is smaller than 90° in *T. dongbei*), the strong spine present on distal end of palpal tarsus, the presence of eyes, the presence of dark area on carapace, the distinctive cheliceral promarginal teeth, the distinctive shorter legs (the longest legs of *T. dongbei* are more than twice those of the counterpart of the new species, the shortest legs of *T. dongbei* are distinctly longer than the longest legs of the new species), and the smaller body size.



Fig.5. *Telema spina*, new species: A, male left palp in retrolateral view; B, male left palp in prolateral view; C, chelicerae in ventral view. Scale bars: 0.2 mm.

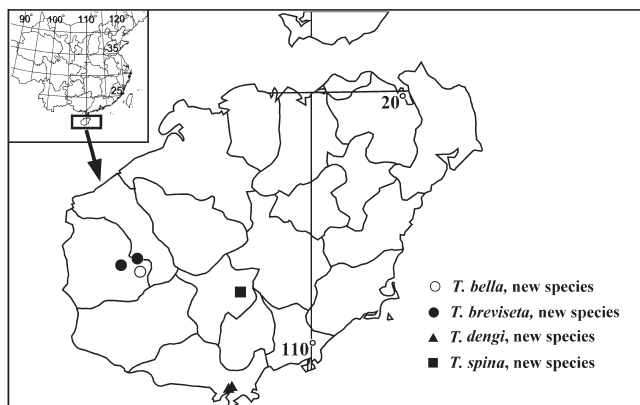


Fig. 6. Collection localities of *Telema* spiders in Hainan, China.

Description. – **Males.** Total length 1.22. Carapace 0.56 long, 0.49 wide; abdomen 0.66 long, 0.55 wide. Carapace yellow, with dark patterns. Middle area of clypeus, area behind eyes and center of carapace blackened. Legs, labium, endites and chelicerae yellowish brown. Sternum blackish brown. Abdomen gray; spinnerets yellow, colulus brown. Carapace with pair of setae at clypeus, and behind eyes. Six eyes, anterior row of four eyes nearly straight, AM close together, nearly touching, separated from AL by 1/3 diameter of AL, lateral eyes contiguous. Promargin of fang furrow with one large tooth, one relatively small tooth and three barely visible granulous denticles, retromargin with four barely visible denticles. Legs with dorsal spine at distal end of patella as well as at middle of tibia. Leg measurements: I 3.13 (0.92, 0.18, 0.93, 0.59, 0.51); II 2.70 (0.81, 0.18, 0.77, 0.49, 0.45); III 1.93 (0.56, 0.17, 0.51, 0.36, 0.33); IV 2.50 (0.80, 0.17, 0.67, 0.47, 0.39). Leg formula: I-II-IV-III. Palp with prolateral cymbial apophysis; palpal tarsus with 3-4 strong spines on distal end; bulb oval with one simple apophysis.

Female. Unknown.

Etymology. – The specific name is from Latin “*spina*”, refers to the strong spine present on distal end of palpal tarsus.

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