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SIX CRAB SPIDERS OF THE SUBFAMILY STEPHANOPINAE FROM SOUTHEAST ASIA (ARANEAE: THOMISIDAE)

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***ABSTRACT.* –** Six species of crab spiders belonging to three genera are reported from China, Myanmar and India, including two new species: *Sanmenia nigra* Tang, Griswold & Peng, new species (from Myanmar) and *Sanmenia tengchong* Tang, Griswold & Yin, new species (from Yunnan, China); three new combinations: *Epidius bazarus* (Tikader, 1970) new combination (from India and China, transferred from *Platythomisus*), *Epidius ganxiensis* (Yin, Peng & Kim, 1999) new combination (transferred from *Philodromus*, Philodromidae), and *Epidius gongi* (Song & Kim, 1992) new combination (transferred from *Cupa*); and one new record to China: *Cebrenninus rugosus* Simon, 1887 (from Yunnan, China). The genus *Cebrenninus* is recorded from China for the first time. Two species are synonymized: *Cupa kalawitana* Barrion & Litsinger, 1995 = *Cebrenninus rugosus* Simon, 1887; *Philodromus longitibiacus* Yin, Peng & Kim, 1999 = *Epidius gongi* (Song & Kim, 1992). Detailed morphological characters, the distribution map, photos and illustrations of genital organs are presented.

***KEY WORDS*. –** Taxonomy, Araneae, Thomisidae, Stephanopinae, new species, synonymy.

INTRODUCTION

The family Thomisidae is one of the largest families of spiders, including 2,070 species in 171 genera and 7 subfamilies in the world, of which about 500 species in 63 genera are known from Southeast Asia (Murphy & Murphy, 2000; Platnick, 2008). Simon (1880, 1903, 1909) described some thomisids from China, Vietnam and other areas; Thorell recorded 31 species of thomisids from Burma (Myanmar) (Thorell, 1895). However, the type specimens of most exotic genera described by Simon, Thorell, O. P. Pickard-Cambridge and some others were not studied by earlier authors (Lehtinen, 2004). Furthermore, the figures of genital organs are not exact enough in the references published by Tikader (1963, 1965, 1966, 1970, 1971, 1980) and his coworkers from India and Barrion & Litsinger (1995) from the Philippines. Lehtinen (2004) made a substantial revision of Misumenini and some species of other subfamilies from the Palaearctic and Oriental regions, and clarified many wrong generic placements: four new genera were erected, two genera and 28 species were synonymized and 28 new combinations were proposed. Since then, Tang and his colleagues have reported 32 species of crab spiders including 1 new genus and 20 new species from Yunnan, China (Tang, Yin, Griswold & Peng, 2006, Tang, Yin, Peng, Ubick & Griswold, 2007, 2008, Tang, Peng, Griswold, Ubick & Yin, 2008, Tang, Yin, Ubick & Peng, 2008).

Crab spiders of the subfamily Stephanopinae, which have teeth on the chelicerae, are typically striking in general appearance and structure of genital organs. They are also among the most poorly studied Asian Thomisidae. The genus *Cebrenninus* is poorly known and there have been no reports for about one century since Simon (1887) created this genus with the type species: *C. rugosus*, and only 5 species of this genus have been recorded from South Asia. The genus *Epidius* is also poorly studied and only 3 out of 9 described species have been illustrated. The genus *Sanmenia* was created by Song & Kim for the species: *Cupa zhengi* Ono & Song, 1986, and 3 species with detailed figures so far have been reported from China, Japan and Singapore (Song & Kim, 1992; Ono, 1995; Yang, Zhu & Song, 2006). This study is ready to report some poorly known crab spider species of the subfamily Stephanopinae from Asia, and to clarify some wrong generic placements.

In this paper, we describe two new species: *Sanmenia nigra* Tang, Griswold & Peng, new species (from Myanmar) and *Sanmenia tengchong* Tang, Griswold & Yin, new species (from Yunnan, China).

MATERIALS AND METHODS

Observed specimens were from the collection of the CaAS and HNU; the type specimens of *Epidius gongi* (Song & Kim, 1992) were loaned from IZCAS. Specimens were described and illustrated under an Olympus SZ11 dissecting stereomicroscope. Photos were taken using the Syncroscopy Auto Montage® software with a Leica M420 stereomicroscope or only by Nikon stereomicroscope. Measurements of leg lengths are given as: total length (femur, patella + tibia, metatarsus, tarsus). Spination of legs mainly follows Ono (1988), and in some species only the ventral spination of tibiae and metatarsi of legs I and II are given. Left structures (e. g., palp, legs and chelicera) are measured and described. The following abbreviations are used: anterior eye row (AER); anterior lateral eyes (ALE); anterior median eyes (AME); apical tegular apophysis (ATA); California Academy of Sciences (CaAS), San Francisco, USA; The George Washington University (GWU) Washington D.C., USA; Hunan Normal University (HNU), Changsha, China; Institute of Zoology of the Chinese Academy of Sciences (IZCAS), Beijing, China; Kunming Institute of Botany (KIB), Kunming, China; median ocular area (MOA); posterior eye row (PER); posterior lateral eyes (PLE); posterior median eyes (PME); retrolateral tibial apophysis (RTA); ventral tibial apophysis (VTA); Zoological Survey of India (ZSI), Calcutta, India.

TAXONOMY

Stephanopinae O. Pickard-Cambridge, 1871

Cebrenninus Simon, 1887 (New to China)

Cebrenninus Simon, 1887: 468
Libania Thorell, 1890: 148 (synonymized by Simon, 1897: 9)
Ocyllus Thorell, 1887 (synonymized by Lehtinen, 2002: 316)
Cupa Strand, in Bösenberg & Strand, 1906 (Barrion & Litsinger, 1995: 208, misidentified)

Type species. – *Cebrenninus rugosus* Simon, 1887, by original designation.

Diagnosis. – Medium sized thomisids. Cephalothorax: carapace convex, with many small apophyses and covered with many white hairs, lateral margins serrated. Chelicera with 2 promarginal and 2 retromarginal teeth, the larger retromarginal one bifid. Abdomen dorsum with small yellow spots and black markings. Male palp with a long RTA, bulb flat with slender embolus and median apophysis.

Remarks. – The genus includes 5 species recorded from Java, Sumatra and Borneo, but is poorly known because only the type species was simply illustrated by Simon (1897). This genus was misidentified by Barrion & Litsinger (1995) as *Cupa* (judging from his description and figures, the male palp of *Cupa kalawitana* has a long embolus and median apophysis, which is the typical diagnostic character of the genus *Cebrenninus*). This genus is similar to *Epidius* (both of them have a small tooth and a large bifid tooth on the retromargin of chelicera), but can be separated from the latter by: ratio of width of ocular area / head area = 1.0 (0.5 in *Epidius*); male palp has a spatulate VTA and a row of macrosetae (with VTA, RTA, sometimes with ITA in *Epidius*).

Cebrenninus rugosus Simon, 1887 (New to China) (Figs. 1A–F, 7)

Cebrenninus rugosus Simon, 1887: 468; Simon, 1897: 9, Figs. 1–2 (types not examined); Benjamin, 2008: 4 (no description)
Libania armillata Thorell, 1890: 149. (synonymized by Simon, 1897: 9)
Cupa kalawitana Barrion & Litsinger, 1995: 208, Figs. 119a–f (new synonymy, types not examined)

Material examined. – 1 male (HNU-Hu 060901), Qinglangdang (27º41'N 98º17'E), 1,309 m, Dulongjiang Township, Gongshan County, Yunnan Province, China, coll. P. Hu, 1 Sep.2006.

Diagnosis. – The species is the type species of the genus *Cebrenninus*, which can be separated from the allied species by: the tibia only with one large RTA, the bulb flat, and the embolus and median apophysis both long and spatulate, the apex of median apophysis curved.

Description. – **Male**. Total length 4.64. Carapace 2.25 long, 2.12 wide; abdomen 2.39 long, 1.88 wide. Carapace dark brown, slightly swollen, with some small apophyses and some short white hairs, lateral margins serrated with curved spines Cervical grooves, radial grooves and fovea distinct. Eye area wide, eye tubercles indistinct, eye sizes and interdistances: ALE (0.16) > PLE (0.14) > PME (0.06) > AME (0.04); AME-AME (0.14) < AME-ALE (0.15), PME-PME (0.25) < PME-PLE (0.32), MOA long (0.37), back (0.40) > front (0.29). Sternum brown. Chelicerae, gnathocoxae, labium blackish brown. Legs I, II dark brown; legs III, IV brown, all femora with annuli and 2 dorsal spines; femora I slightly swollen medially, ventrally and prolaterally with some denticles, prolaterally with 5 spines; tibiae I, II with 5 pairs of long ventral spines; metatarsi I, II with 2 pairs of spines; tibiae III, IV with 3 pairs of ventral spines; metatarsi III with 2 pairs of ventral spines; metatarsi IV without ventral spines. Leg measurements: I 7.90 (2.50, 3.20, 1.20, 1.00), II 8.20 (2.60, 3.30, 1.30, 1.00), III 5.70 (1.80, 2.10, 1.10, 0.70), IV 6.10 (1.90, 2.20, 1.20, 0.80); formula 2, 1, 4, 3. Abdomen nearly oval with short hairs, dorsum with black markings and small light brown spots. Its sides with black lines; venter yellow. Palpal tibia with large RTA, the apex of RTA sharp and slightly curved; bulb flat, sperm ducts visible within tegulum, both the embolus and the median apophysis long and spatulate, the apex of median apophysis curved in beak-shaped.

Female. No fresh female specimen was examined.

Distribution. – Java, Sumatra, Borneo, Thailand, Malaysia, the Philippines; China (Gongshan County, Yunnan Province).

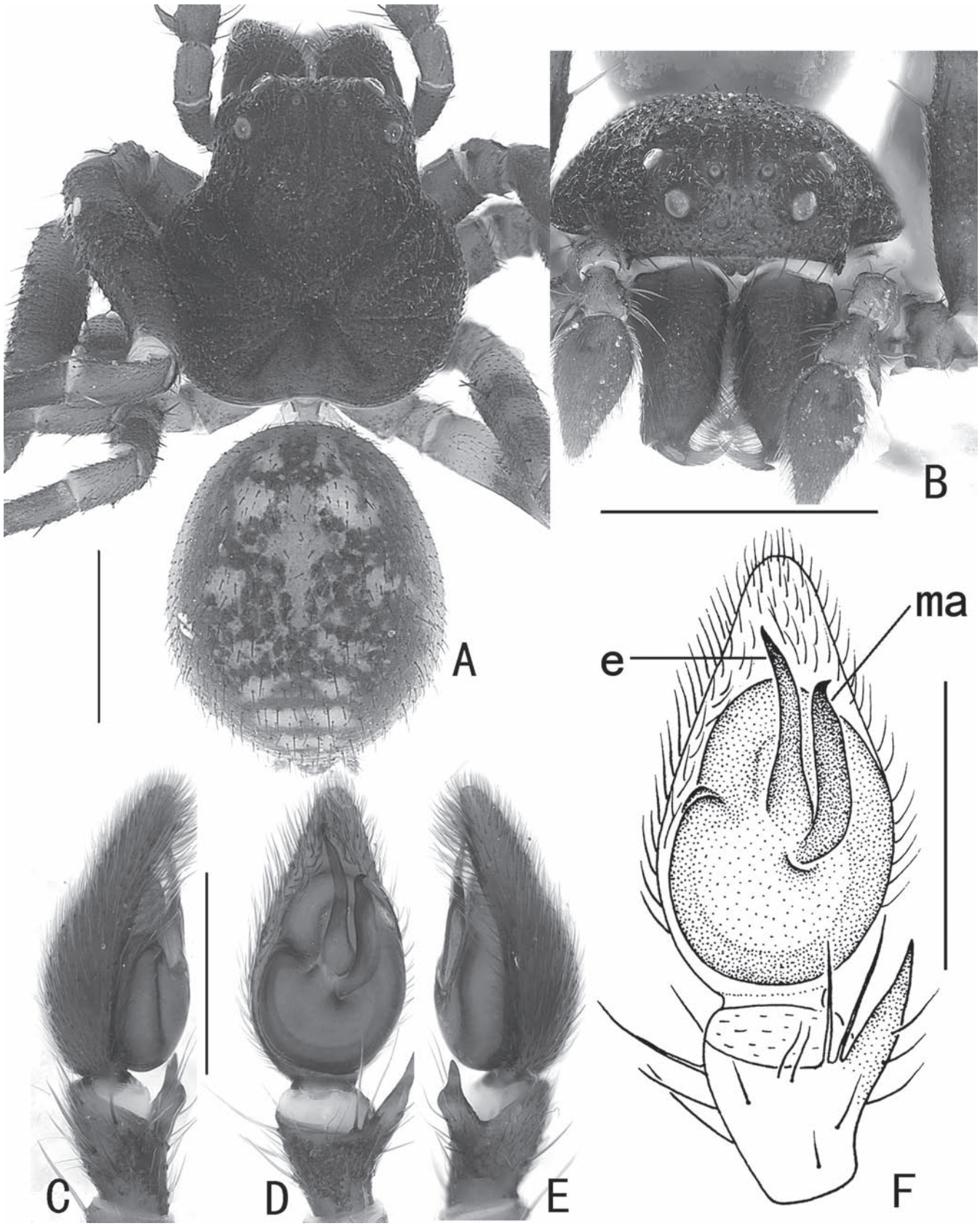

Fig. 1. *Cebrenninus rugosus* Simon, 1887: A, habitus of male, dorsal view; B, habitus of male, front view; C, palp, prolateral view; D, F, palp, ventral view; E, palp, retrolateral view; e, embolus; ma, median apophysis. Scale bars: A–B = 1.0 mm, C–F = 0.1 mm.

***Remarks*. –** This species is widely distributed from South Asia to China (including Thailand and Malaysia (Benjamin, 2008)). After compared the descriptions and figures of *Cebrenninus rugosus* Simon, 1887, and *Cupa kalawitana* Barrion & Litsinger, 1995 (types not examined), both male palps have a long embolus and median apophysis, which indicates that *Cupa kalawitana* Barrion & Litsinger, 1995, should be considered as a junior synonym of *Cebrenninus rugosus* Simon, 1887.

Epidius Thorell, 1877

Epidius Thorell, 1877: 492; Simon, 1897: 10; Millot, 1941: 65.
Cupa Strand, in Bösenberg & Strand, 1906 (Song & Zhu, 1997: 23, misidentified)

Type species. – *Epidius longipalpis* Thorell, 1877, by original designation.

***Diagnosis*. –** Small to medium size, Head area narrow, eye tubercles of each side continuous. Chelicera with 3 promarginal and 2 retromarginal teeth, the larger retromarginal one bifid. Legs slender with many spines. Epigyne usually with an atrium and a pair of posterior sclerotized plates. Male tibia with VTA and 4–6 macrosetae in a row.

***Distribution*. –** Africa, India, Sri Lanka, Java, Sumatra, the Philippines, Indonesia, Vietnam, China.

***Remarks*. –** This genus is composed of 9 species from Africa and Southeast Asia. *Epidius* is a group of poorly known special crab spiders and differs from other genera greatly by their general appearance and genital organs. This genus is similar to *Sanmenia* in the shape of embolus and conductor of male palp, but can be separated from the latter by: body usually light yellow to gray without markings (gray to grayish-brown with some black-brown stripes or markings in *Sanmenia*), epigyne usually with a pair of sclerotized plates posteriorly (without those in *Sanmenia*) and male palp with only VTA (with both VTA and RTA in *Sanmenia*). After checking the type specimens of *Cupa gongi* Song & Kim, 1992, (the only representative of the genus *Cupa* recorded from China), it is found that *Cupa gongi* Song & Kim, 1992, was misidentified as a representative of the genus *Cupa*. The male palp of *Cupa gongi* has a spatulate VTA and a row of macrosetae, which are the typical diagnostic characters of the genus *Epidius*. *Cupa gongi* Song & Kim, 1992, should be transferred to the genus *Epidius* as *E. gongi* (Song & Kim, 1992). Therefore, there is no real representative of *Cupa* found in China now.

Epidius bazarus (Tikader, 1970), new combination
(Figs. 2A–F, 7)

Platythomisus bazarus Tikader, 1970: 48, Fig. 27a-c; Tikader, 1971: 65, Fig. 17M–P; 1980: 171, Figs. 237–239. (type specimens collected from West Sikkim, India and deposited in IZA, India, inaccessible; not examined)

***Material examined*.** 1 female (HNU-Tang 2003102801), Daxinzai Village (24°32'N 98°24'E), 1,219 m, Wuhe Township, Tengchong County, Yunnan Province, China, coll. G. Tang, 28 Oct.2003. 1 female (CaAS-19611021), Lataguri, 110 m, West Bengal, India, coll. E. Ross, 21 May 1961.

***Diagnosis*. –** The species can be easily separated from *E. gongi* (Song & Kim, 1992) by: female with larger body size: 7.36–7.62 (6.00–6.60 in *E. gongi*); copulatory ducts curved and tube-shaped (short and straight in *E. gongi*); spermathecae small and spherical (spermathecae with 2 chambers in *E. gongi*).

***Description*. – Female.** Total length: 7.36–7.62. The specimen of total length 7.62 measured: carapace 3.47 long, 3.14 wide; abdomen 4.58 long, 2.76 wide. Cephalothorax: Carapace slightly raised on the median, light yellow, without markings. Cervical grooves, radial grooves and fovea indistinct. Eye area gray, compact, eye tubercles grayish-black, small, eye sizes and interdistances: ALE 0.17, PLE 0.16, AME 0.06, PME 0.14; AME-AME 0.17, AME-ALE 0.12, PME-PME 0.28, PME-PLE 0.20, MOA length 0.43 with front width 0.30 and back width 0.52. Sternum pale yellow. Chelicerae, gnathocoxae, labium yellow. Leg femora yellow, metatarsi and tarsi yellowish-brown. Leg measurements: I 19.20 (6.00, 7.20, 4.00, 2.00), II 18.60 (5.80, 7.20, 3.80, 1.80), III 9.50 (2.90, 3.80, 1.80, 1.00), IV 10.00 (3.00, 4.00, 2.00, 1.00); formula 1, 2, 4, 3. Legs light yellow. Spination: femur: I dorsal, weak spine: 0-0-1-0-0, II–IV 0-1-0-0-1, prolateral (weak) 0-1-2-1-1 (right), 1-1-2-1-1 (left); tibiae: prolateral I–IV 0-0-1-1, ventral I-II 2-2-2-2-2, III–IV 2-2-2, metatarsus I–II prolateral 1-0-0-1ap, ventral 2-2-2-2; III–IV prolateral 1-1-1ap, III ventral 0-2-2. Abdomen elongate oval, dorsum with broken silvery white spots; cardiac pattern gray, 2 pairs of muscular depressions visible; laterally silvery white; venter light yellow. Epigyne simple, atrium depressed; with a pair of sclerotized plates posteriorly; copulatory ducts curved in n-shaped; spermathecae spherical.

***Distribution*. –** China (Tengchong County of Yunnan), India.

***Remarks*. –** The type specimen of *Platythomisus bazarus* was kept in ZSI and is unavailable for study by foreign arachnologists (Lehtinen, 2004: 178). However, the locality of one of our specimens (Lataguri, West Bengal, India) is adjacent to that of *Platythomisus bazarus* (Nayabazar, West Sikkim, India). After comparing the descriptions and figures of *Platythomisus bazarus* Tikader, 1970, and those of our specimens (from India, China), it was found that they should be the same species. Both of our specimens bear the following diagnostic characters of the genus *Epidius*: tibiae and metatarsi of legs I & II slender with thick ventral spines, epigyne with an atrium and a pairs of posterior sclerotized plates, eye arrangement also as same as that of *Epidius*. Because of those, *Platythomisus bazarus* should be transferred to the genus *Epidius* as *Epidius bazarus* (Tikader, 1970), new combination.

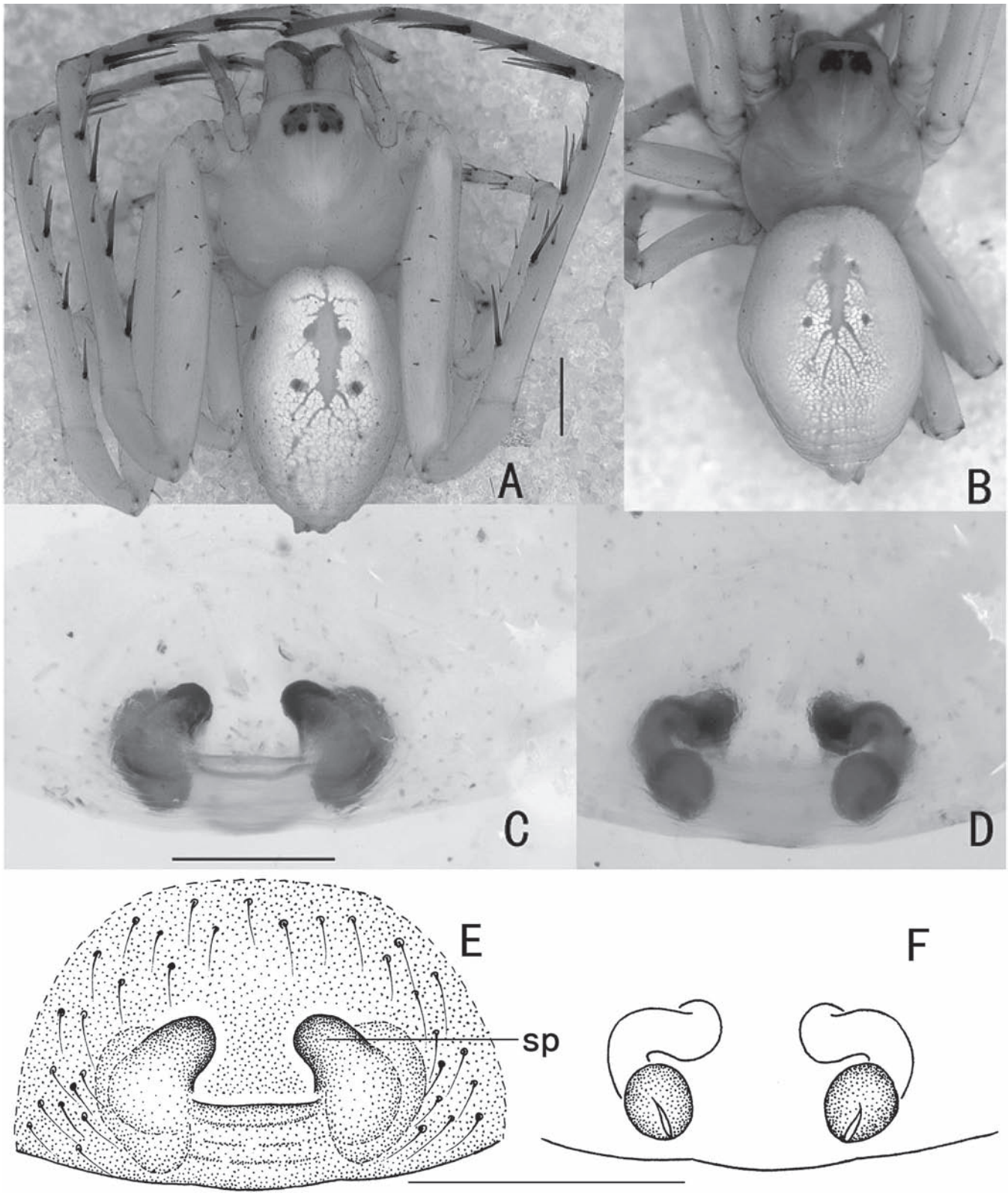

Fig. 2. *Epidius bazarus* (Tikader, 1970): A, habitus of female (from Yunnan, China); B, habitus of female (from West Bengal, India); C, E, epigyne; D, F, vulva; sp, sclerotized plate. Scale bars: A–B = 1.0 mm; C–F = 0.1 mm.

Epidius ganxiensis (Yin, Peng & Kim, 1999), new combination

(Figs. 3A–J, 7)

Philodromus ganxiensis Yin, Peng & Kim, 1999: 356, Fig. 2A–G (types in HNU, examined)

Material examined. – 2 males, 3 females (HNU), Ganxi Township, Tongdao County (26°03'N 109°17'E), Hunan Province, China, coll. C. Yin, X. Peng and Y. Zhang, 1 Jun.1996.

Description. – Male palp with a spatulate VTA and 6 macrosetae in a row at tibial apex, conductor transparent, twisted and concave at apex; embolus slender, apically hidden under the conductor. Epigyne with a pair of spatulate sclerotized plates posteriorly; copulatory openings slit like, copulatory ducts complexly twisted; spermathecae curved in n-shape.

Diagnosis. – This species can be separated from *E. gongi* (Song & Kim, 1992) by: the atrium slit-shaped laterally (pit like medially); the ratio of length of palpal tibia to palp = 1.2 (5.0 in *E. gongi*).

Distribution. – China (Hunan).

Remarks. – The species was firstly placed under the spider family Philodromidae. However, the male palp has a spatulate VTA and a row of macrosetae, which are the typical diagnostic characters of the genus *Epidius* of family Thomisidae. *Philodromus ganxiensis* Yin, Peng & Kim, 1999, should be transferred to the genus *Epidius* as *E. ganxiensis* (Yin, Peng & Kim, 1999), new combination.

Epidius gongi (Song & Kim, 1992), new combination

(Figs. 4A–I, 7)

Cupa gongi Song *et* Kim, 1992: 141–142, Figs. 1–7; Song & Zhu, 1997: 23, Fig. A–G (type in IZCAS, examined)
Philodromus longitibiacus Yin, Peng & Kim, 1999: 356, Fig. 3A–D (new synonym, types in HNU, examined)

Material examined. – 2 males, 1 female (HNU), Nanyue (27°05'N 112°19'E), Hunan Province, China, coll. G. Tang, P. Hu and Q. Wang, 3 May 2007; 1 female (HNU), Xiaxiang, Tongdao County (26°03'N 109°17'E), Hunan Province, China, coll. C. Yin, 2 Jun.1996; 2 females (HNU), Mujiao Township, Tongdao County, coll. X. Peng & Y. Zhang, 4 Jun.1996; 1 female (HNU), Linkou Township, Tongdao County, coll. X. Peng & Y. Zhang, 6 Jun.1996; 1 male, 1 female (IZCAS-Ar9378, Ar9379), Daoxian County (25°11'N 111°12'E), Hunan Province, China, coll. L. Gong, May.1984; 1 male, 1 female (IZCAS-Ar9380, Ar9381), Tiantong Park (121°15'N 29°17'E), Ningbo City, Zhejiang Province, China, Jun.1990; 1 male (IZCAS-Ar9382), Yujiaping, Mountain Longxi, Jiangle County (117°05'N 26°11'E), Fujian Province, coll. Y. Han, 11 Apr.1991.

Description. – Male palp with a spatulate VTA and 5 macrosetae at tibial apex; conductor axe shaped, apically curved; sperm ducts visible, embolus needle like, combined with a median apophysis basally, which can be observed after expanding for half an hour in lactic acid (Fig. 4C, F). Epigyne with a pair of sclerotized plates posteriorly; copulatory ducts short; spermathecae with 2 oval chambers.

Diagnosis. – This species is similar to *E. ganxiensis* (Yin, Peng & Kim, 1999), the differences are discussed in the "diagnosis" of *E. ganxiensis*. The male is similar to *E. longipalpis* Thorell, 1877, in the long palpal tibia, but can be separated from the latter by: the tibia with 2 apophyses (only with one in *E. longipalpis*).

Distribution. – China (Hunan, Zhejiang, Fujian Provinces).

Remarks. – The male palp of *Cupa gongi* has a spatulate VTA and a row of macrosetae, the epigyne with a pair of posterior sclerotized plates, which are the typical diagnostic characters of the genus *Epidius*. *Cupa gongi* Song & Kim, 1992, should be transferred to the genus *Epidius* as *E. gongi* (Song & Kim, 1992), new combination. *Philodromus longitibiacus* Yin, Peng & Kim, 1999, was firstly placed under the spider family Philodromidae. After examined both type specimens of *Philodromus longitibiacus* and *Cupa gongi*, it is found that *Philodromus longitibiacus* actually is a junior synonym of *Epidius gongi* (Song & Kim, 1992).

Sanmenia Song & Kim, 1992

Sanmenia Song & Kim, 1992: 142; Song & Zhu, 1997: 28; Yang *et al*., 2006: 42

Type species. – *Cupa zhengi* Ono & Song, 1986.

Diagnosis. – Small sized thomisids, body covered with short white hairs. Chelicerae usually with 3–4 promarginal teeth and 3 retromarginal teeth. Legs long with many thick spines. Male palp with VTA and RTA, tegulum simple without apophysis. Embolus slender filiform, conductor wide and extend from the tegulum, and shades embolus. Epigyne usually with a large medial atrium.

Remarks. – The type species of this genus was firstly placed in the genus *Cupa* (Ono & Song, 1986). Song & Kim (1992) erected the genus *Sanmenia* to accommodate *Cupa zhengi*. This genus only includes 3 species recorded from Asia before this study. This genus is similar to *Epidius* in the structures of the parts of male palpal organ. The differences are discussed in the **Remarks** of *Epidius*.

Sanmenia nigra, Tang, Griswold & Peng, new species

(Figs. 5A–E, 7)

Material examined. – Holotype – female (CaAS9019310), 4.36 km 142° east-south-east of Popamyo (20°33'N 95°08'E), 2,050 m, deciduous forest, Mt. Popa Wildlife Reservation, Mandalay Division, Myanmar, coll. C. Griswold, 26 Sep.2003.

Diagnosis. – This new species can be separated from *S. tengchong*, Tang, Griswold & Yin, new species by: carapace

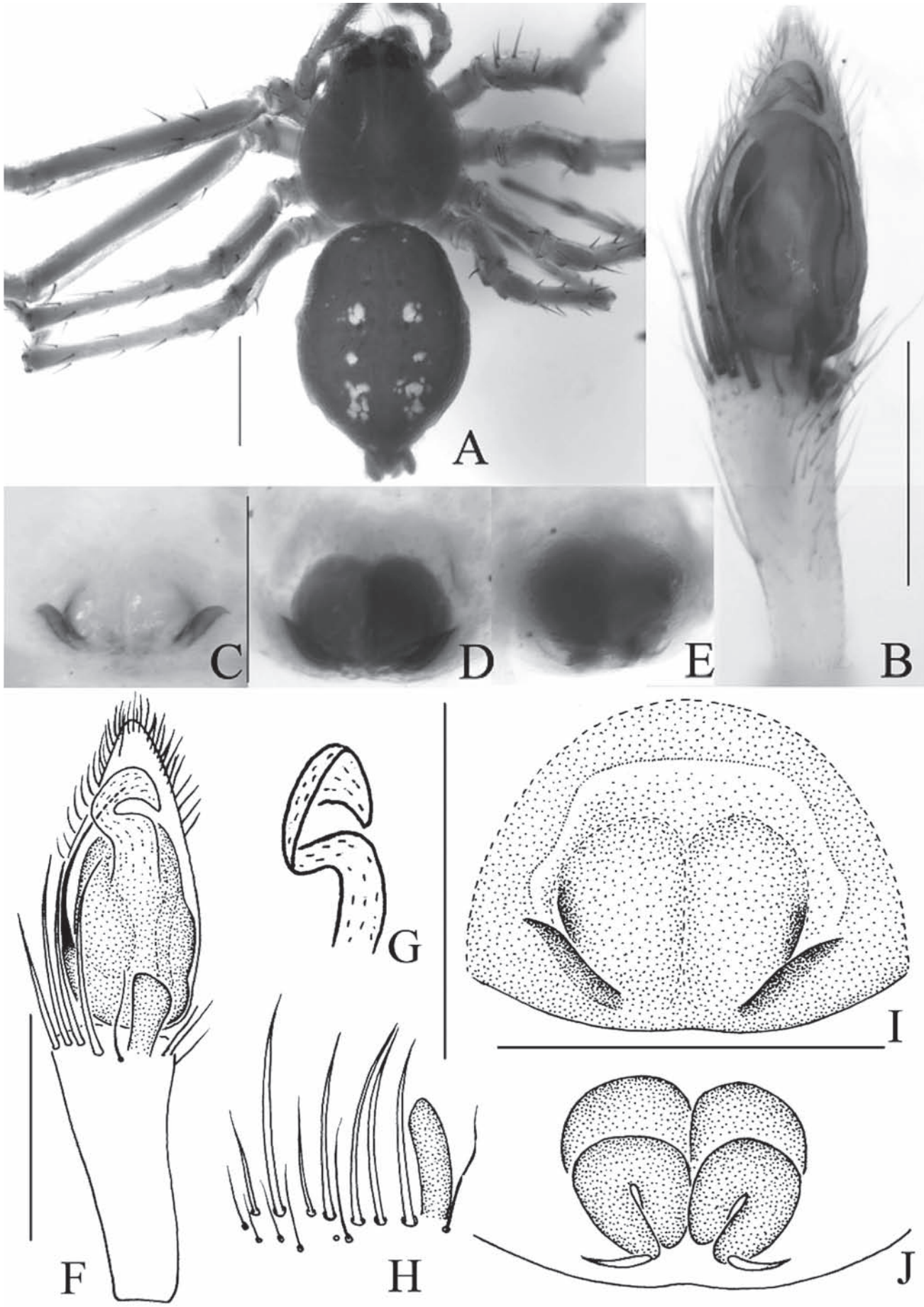

Fig. 3. *Epidius ganxiensis* (Yin, Peng & Kim, 1999): A, habitus of female; B, F, left palp, C, D, I, epigynum; E, J, vulva; G, embolus; H, VTA and tibial spines. Scale bars: A = 1.0 mm, B–J = 0.1 mm.

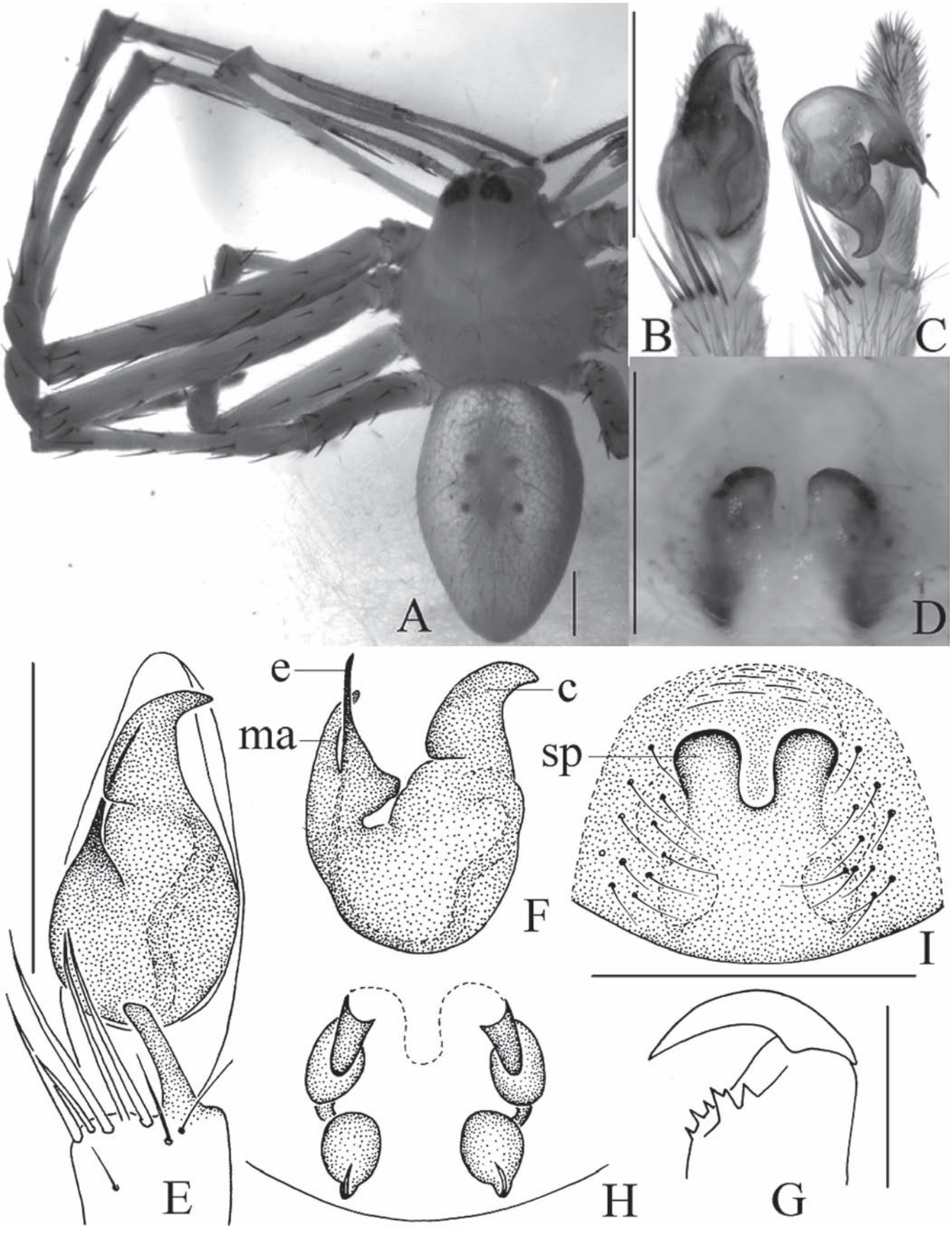

Fig. 4. *Epidius gongi* (Song & Kim, 1992): A, habitus of male; B, C, E, left palp; D, I, epigyne; F, palpal bulb (expanded after storage in lactic acid for half an hour); G, chelicera; H, vulva; c, conductor; e, embolus; ma, median apophysis. sp, sclerotized plate. Scale bars: A = 1.0 mm, B–I = 0.1 mm.

with pars cephalica all black (with small sparse brown stripes in *S. tengchong*); the epigyne without lateral hoods (with a pair of lateral hoods in *S. tengchong*); the spermathecae elongate oval (curved in n-shaped in *S. tengchong*).

***Description*. – Female.** Holotype total length 3.88. Carapace 1.80 long, 1.66 wide; abdomen 2.02 long, 2.00 wide. Carapace light brown with black margin, pars cephalica all black. Cervical grooves, radial grooves and fovea indistinct. Eye area with some long stick-like hairs. Tubercles of ALE and PLE continuous. Eye sizes and interdistances: ALE 0.13, PLE 0.12, PME 0.11, AME 0.03; AME-AME 0.07, AME-ALE 0.08, PME-PME 0.11, PME-PLE 0.12, MOA 0.21 long, front width 0.24, back width 0.29. Sternum light yellow. Chelicerae, gnathocoxae, labium yellow; chelicerae with scopulae on both margins of fang furrows; 3 promarginal and 3 retromarginal teeth (Fig. 5c). Legs yellow with many spines, legs I, II darker. Femora I with 5 prolateral spines and 1 dorsal short one. Tibiae I, II with 2 dorsal spines, 3 prolateral ones and 5 pairs of long ventral ones; metatarsi I, II with 2 prolateral spines and 4 pairs of long ventral ones. Left legs I, II lost, right leg measurements: I 5.20 (1.50, 2.20, 1.00, 0.50), II 6.20 (2.00, 2.60, 1.10, 0.50), III 3.40 (1.20, 1.20, 0.60, 0.40), IV 4.20 (1.50, 1.50, 0.70, 0.50); formula 2, 1, 4, 3. Abdomen near oval, dorsum light yellow with large black markings. Its sides with black markings; venter light yellow. Epigyne with a median depressed atrium; copulatory ducts short; spermathecae elongate oval.

Male. Unknown.

***Etymology*. –** The specific name refers to the large black markings on carapace and abdominal dorsum.

***Distribution*. –** Myanmar.

***Remarks*. –** Thorell published a descriptive catalogue of 31 species of thomisids in 20 genera including 12 new species from Burma (Myanmar) without figures (Thorell, 1895). Up to now, 4 genera recorded by Thorell from Myanmar were synonymized, but no species recorded by Thorell was transferred to the genus *Sanmenia*.

Sanmenia tengchong, Tang, Griswold & Yin, new species

(Figs. 6A–F, 7)

***Material examined*. –** Holotype – female (HNU-YHY2202), Dengma Village (24°56'N 98°23'E), 1,113 m, Hehua Township,

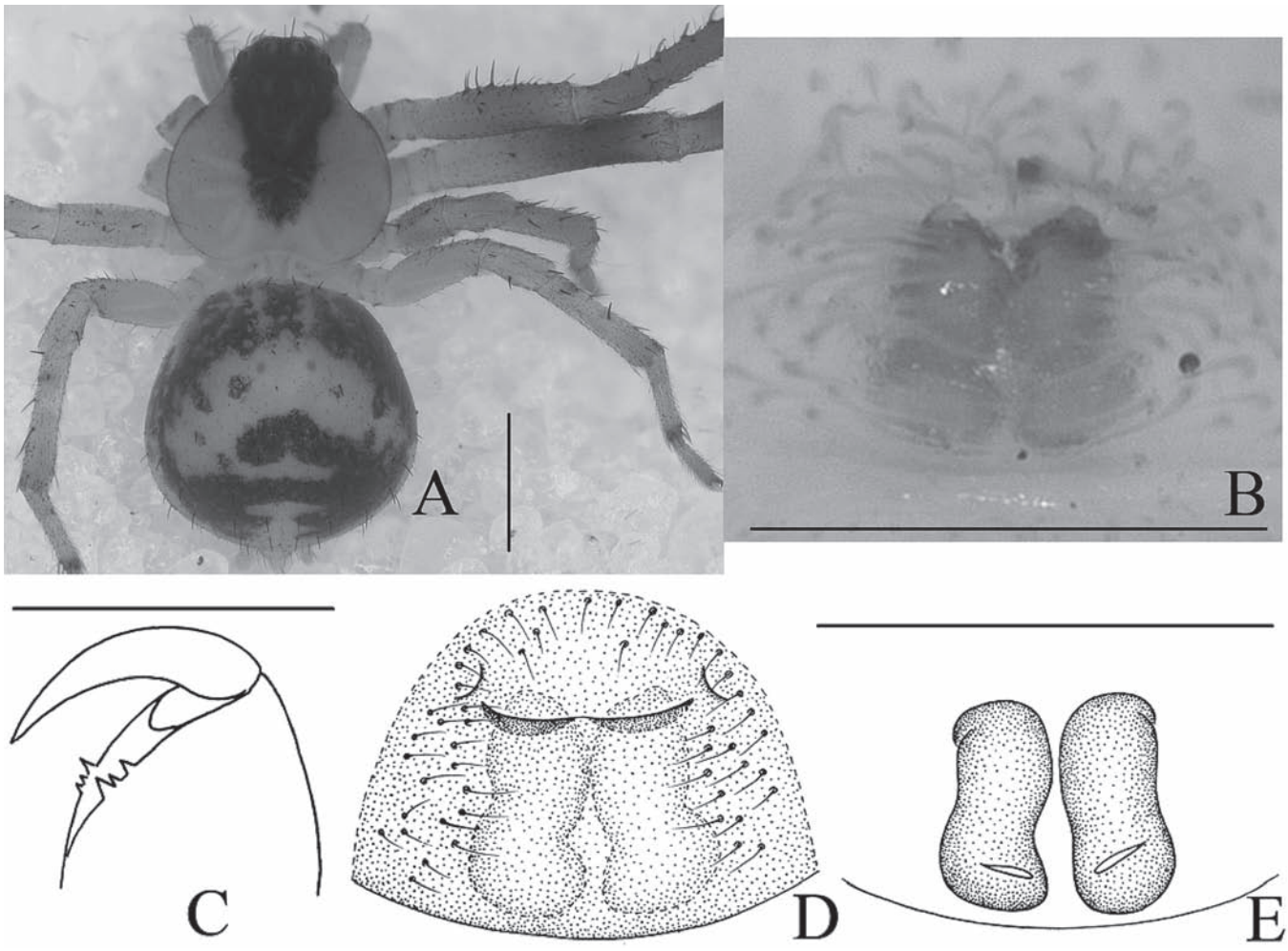

Fig. 5. *Sanmenia nigra*, Tang, Griswold & Peng, new species: A. habitus of female; B, D, epigyne; C, chelicera; E, vulva. Scale bars: A = 1.0 mm, B–E = 0.1 mm.

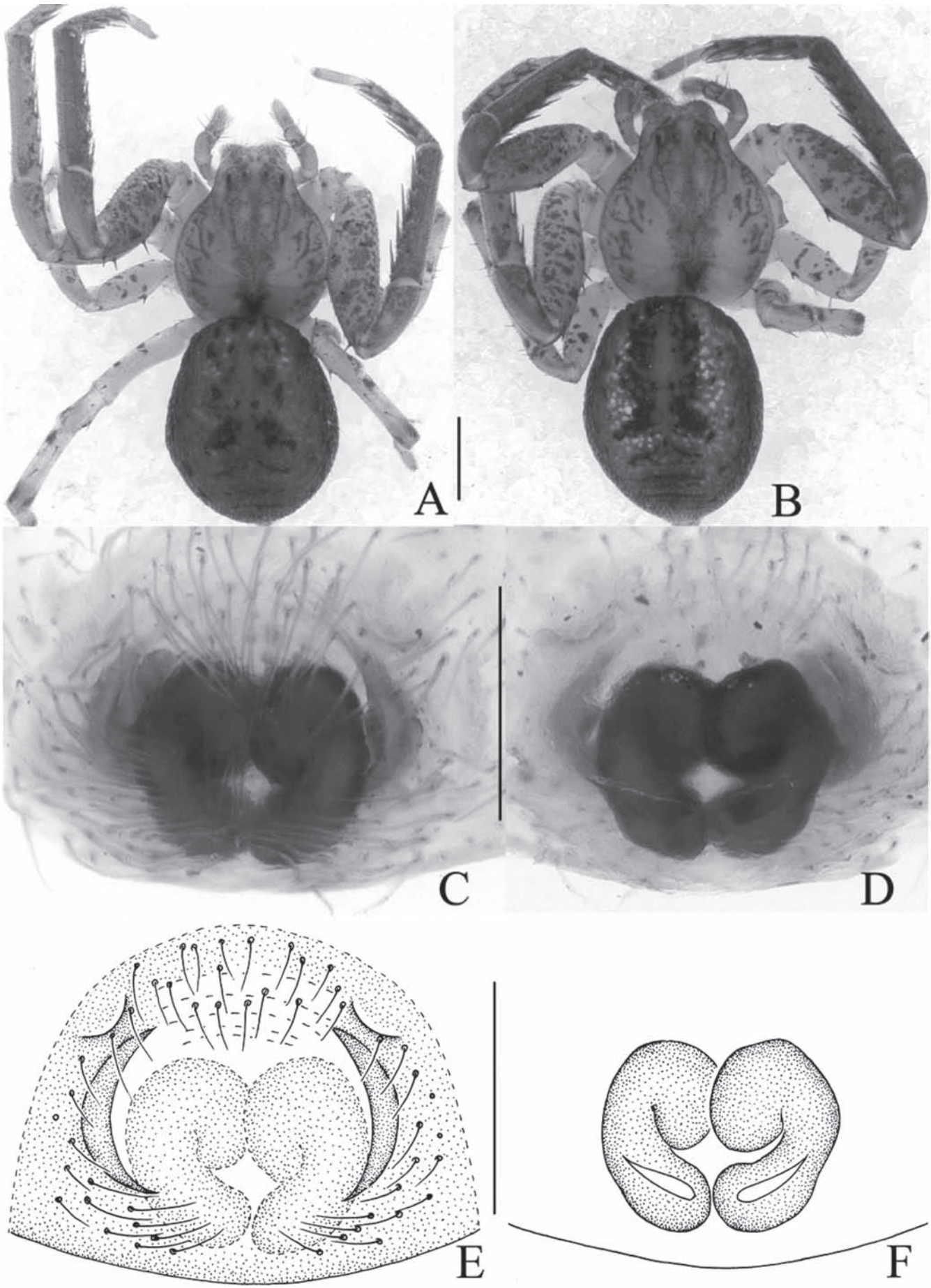

Fig. 6. *Sanmenia tengchong*, Tang, Griswold & Yin, new species: A, habitus of female, holotype; B, habitus of female, paratype; C, E, epigyne; D, F, vulva. Scale bars: A–B = 1.0 mm, C–F = 0.1 mm.

Tengchong County, Yunnan Province, China, coll. P. Hu, 2 Jun.2006.

Paratypes – 1 female (CaAS-YHY2202), same data as holotype.

***Diagnosis*. –** This new species is similar to *S. nigra*, Tang, Griswold & Peng, new species, the differences are discussed in the "Diagnosis" of *S. nigra*. The new species can also be separated from *S. gongshan* Yang et al., 2006, by: the abdomen with more dark markings and fewer white spots; the abdomen only with short white hairs (short white hairs and some long black hairs in *S. gongshan*); the epigynal hoods laterally located (posteriorly located in *S. gongshan*); the spermathecae curved, tube-shaped (pyriform in *S. gongshan*).

***Description*. – Female.** Total length 4.80–5.00. Holotype total length 4.80. Carapace 2.17 long, 1.93 wide; abdomen 2.54 long, 2.19 wide. Cephalothorax elevated moderately, carapace brown with short white hairs, with grayish black markings bilaterally and medially. Carapace flat on the head area. Carapace with 3 small black stripes behind the PER and extending backwards, the fovea black. Cervical grooves, radial grooves and fovea indistinct. Eye area with some long hairs. Tubercles of ALE and PLE grayish-white and continuous. Eye sizes and interdistances: ALE 0.13, PLE 0.12, PME 0.11, AME 0.05; AME-AME 0.08, AME-ALE 0.08, PME-PME 0.13, PME-PLE 0.14. Sternum yellow. Chelicerae, gnathocoxae, labium yellowish brown; chelicerae with scopulae on both margins of fang furrows; 3 promarginal and 3 retromarginal teeth. Legs grayish-yellow with grayish-black spots. Femora I swollen with 5 prolateral and 1 dorsal short spines. Tibiae I, II with 3 prolateral and 5 pairs of ventral spines; metatarsi I, II with 4 pairs of ventral spines. Leg measurements: I 6.98 (2.32, 2.96, 1.20, 0.50), II 6.66 (2.20, 2.86, 1.15, 0.45), III 4.80 (1.80, 1.90, 0.80, 0.30), IV 5.03 (1.80, 1.93, 0.90, 0.40); formula 1, 2, 4, 3. Abdomen nearly oval, dorsum covered with short white hairs, dorsum grayish-brown with paramedian grayish-black stripes and some small white spots; laterally grayish-black; venter grayish-brown with some small black spots. Epigyne with a pair of hoods laterally; copulatory ducts invisible; spermathecae curved, tube-shaped.

Male. Unknown.

***Etymology*. –** The specific name refers to the type locality.

***Distribution*. –** China (Yunnan Province, China).

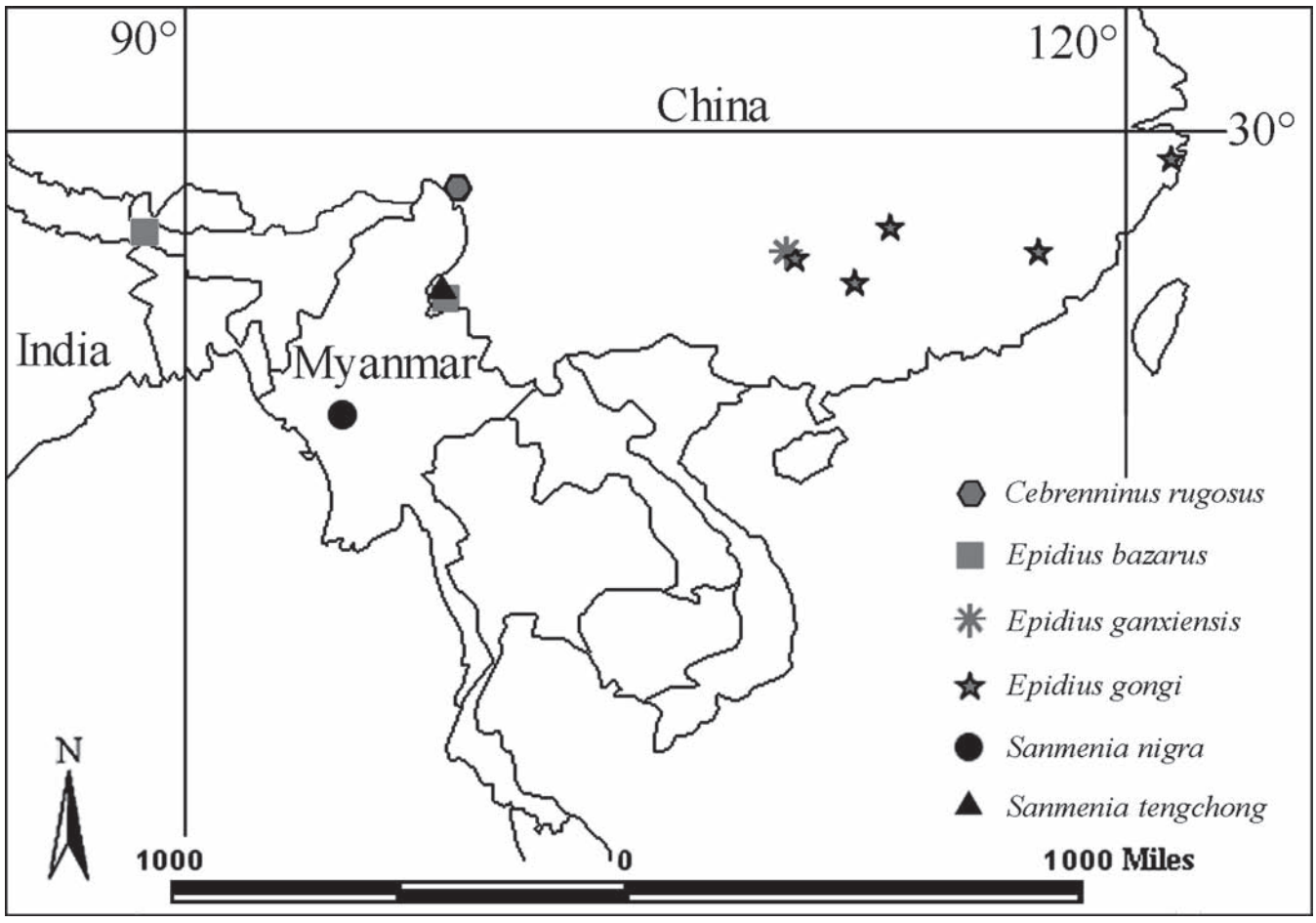

Fig. 7. distribution map of the six crab spiders from South East Asia: *Cebrenninus rugosus* Simon, 1887, *Epidius bazarus* (Tikader, 1970), *Epidius ganxiensis* (Yin, Peng & Kim, 1999), *Epidius gongi* (Song & Kim, 1992), *Sanmenia nigra*, Tang, Griswold & Peng, new species, and *Sanmenia tengchong*, Tang, Griswold & Yin, new species.

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LITERATURE CITED

Barrion, A. T. & J. A. Litsinger, 1995. *Riceland Spiders of South and Southeast Asia.* CAB International, Wallingford, UK, xix + 700 pp.

Benjamin, S. P., 2000. *Epidius parvati* sp. n., a new species of the genus *Epidius* from Sri Lanka (Araneae: Thomisidae). *Bulletin of the British Arachnological Society*, **11**: 284–288.

Benjamin, S. P., D. Dimitrov, R. G. Gillespie & G. Hormiga, 2008. Family ties: molecular phylogeny of crab spiders (Araneae: Thomisidae). *Cladistics*, **24**: 1–15.

Lehtinen, P. T., 2002. Generic revision of some thomisids related to *Xysticus* C. L. Koch, 1835 and *Ozyptila* Simon, 1864. *European Arachnology*, 315–327.

Lehtinen, P. T., 2004. Taxonomic notes on the Misumenini (Araneae: Thomisidae: Thomisinae), primarily from the Palaearctic and Oriental regions. In Logunov, D. V. & D. Penney (eds.), European Arachnology 2003 (Proceedings of the 21st European Colloquium of Arachnology, St.-Petersburg, 4–9 August 2003). *Arthropoda Selecta, Special Issue*, **1:** 147–184.

Millot, J., 1941. Les araignées de l'Afrique Occidentale Française - sicariides et pholcides. *Mémoires de l'Académie des Sciences de l'Institut de France*, **65:** 1–82.

Murphy, F. & J. Murphy, 2000. *An Introduction to the Spiders of South East Asia, With Notes on All the Genera*. Malaysian Nature Society, Kuala Lumpur, Malaysia, 625 pp.

Ono, H. & D. X. Song, 1986. A new Sino-Japanese species of the genus *Cupa* (Araneae, Thomisidae) from the coastal areas of the East China Sea. *Bulletin of the National Science Museum*, Tokyo, (A) **12:** 25–29.

Ono, H., 1988. *A revisional study of the spider family Thomisidae (Arachnida, Araneae) of Japan*. National Science Museum, Tokyo, 252 pp.

Ono, H., 1995. Four East Asian spiders of the families Eresidae, Araneidae, Thomisidae and Salticidae (Arachnida, Araneae). *Bulletin of the National Science Museum*, **21**(3)**:** 157–169.

Platnick, N. I., 2008. The world spider catalog, version 9.0. American Museum of Natural History. Available from: http://research.amnh.org/entomology/spiders/catalog/index.html (accessed 1 Sep.2008).

Simon, E., 1880. Etudes arachnologiques. 11e Mémoire. XVII. Arachnides recueilles aux environs de Pékin par M. V. Collin de Plancy. *Annales de la Société Entomologique de France*, (5) **10:** 97–128.

Simon, E., 1903. Etudes arachnologiques. 33e Mémoire. LIII. Arachnides recueillis à Phuc-Son (Annam) par M. H. Fruhstorfer (nov–dec. 1899). *Annales de la Société Entomologique de France*, **71:** 725–736.

Simon, E., 1897. *Histoire naturelle des araignées*, Paris, **2**: 1–192.

Song, D. X. & J. P. Kim, 1992. A new species of crab spider from China, with description of a new genus (Araneae: Thomisidae). *Korean Arachnology*, **7:** 141–144.

Song, D. X. & M. S. Zhu, 1997. *Fauna Sinica: Arachnida: Araneae: Thomisidae, Philodromidae*. Science Press, Beijing, 259 pp. (in Chinese)

Tang, G., C. M. Yin, C. Griswold & X. J. Peng, 2006. Description of *Sinothomisus* gen. nov. with a new species from Yunnan Province, China (Araneae, Thomisidae). *Zootaxa*, **1366**: 61–68.

Tang, G., C. M. Yin, X. J. Peng, D. Ubick & C. Griswold, 2007. Five crab spiders of the genus *Lysiteles* from Yunnan Province, China (Araneae: Thomisidae). *Zootaxa*, **1480**: 57–68.

Tang, G., C. M. Yin, X. J. Peng, D. Ubick & C. Griswold, 2008. The crab spiders of the Genus *Lysiteles* from Yunnan Province, China (Araneae: Thomisidae). *Zootaxa*, **1742**: 1–41.

Tang, G., Peng, X. J., Ubick, D., Griswold C. & Yin, C. M., 2008. Four crab spiders of the family Thomisidae (Arachnida: Araneae) from Yunnan, China. *Acta Zootaxonomica Sinica*, **33**(2): 241–247.

Tang, G., Yin, C. M., Ubick, D., & Peng, X. J., 2008. Two new species of the crab spider genus *Talaus* (Araneae: Thomisidae) from Yunnan Province, China. *Zootaxa*, **1815**: 62–68

Thorell, T., 1890. Diagnoses aranearum aliquot novarum in Indo-Malesia inventarum. *Annali del Museo Civico di Storia Naturale di Genova*, **30:** 132–172.

Thorell, T., 1895. *Descriptive catalogue of the spiders of Burma*. London, Pp. 1–406.

Tikader, B. K., 1963. Studies on interesting south Indian crab-spiders (Family: Thomisidae). *Proceedings of the Indian Academy of Sciences*, **58**(B): 249–262.

Tikader, B. K., 1965. On some new species of spiders of the family Thomisidae from India. *Proceedings of the Indian Academy of Sciences*, **61**(B): 277–289.

Tikader, B. K., 1966. Studies on some crab-spider (family: Thomisidae) from Khasi and Jaintia hills, Assam, India. *Proceedings of the Indian Academy of Sciences*, **64**(B): 53–61.

Tikader, B. K., 1970. Spider fauna of Sikkim. *Records of the Zoological Survey of India*, **64:** 1–83.

Tikader, B. K., 1971. Revision of Indian crab spiders (Araneae: Thomisidae). *Memoirs of the Zoological Survey of India*, **15**(8): 1–90.

Tikader, B. K., 1980. Thomisidae (Crab-spiders). *Fauna India* (Araneae), **1:** 1–247.