



## Five crab spiders of the Genus *Lysiteles* from Yunnan Province, China (Araneae: Thomisidae)

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### Abstract

This paper describes five species of spiders of the genus *Lysiteles* (Araneae: Thomisidae) from the Gaoligong Mountains, Yunnan Province, China. Included are three species new to science, *L. davidi* sp. nov., *L. conicus* sp. nov. and *L. dentatus* sp. nov., and two new records for China, *L. ambrosii* Ono, 2001 and *L. bhutanus* Ono, 2001, both originally described from Bhutan. Detailed morphological characters, photos and illustrations of body and copulatory organs of these five species are presented.

**Key words:** Taxonomy, new species, new records, Gaoligong Mountains

### Introduction

The genus *Lysiteles* was established by Simon for his new species, *L. catulus* Simon, 1895 which was based on a female specimen from India. Spiders of this genus were mainly found from South East Asia. In recent years, Ono studied the species of *Lysiteles* and described 23 species (Ono 1979, 1980, 1988, 2001; Ono *et al.* 1990). At present, 39 species are included in this genus (Platnick 2007). Of these, 19 have been reported from China (Song *et al.* 1997; Hu 2001; Zhu *et al.* 2004; Zhang *et al.*, 2006): *L. amoenus* Ono, 1980, *L. anchorus* Zhu *et al.*, 2004, *L. badongensis* Song & Chai, 1990, *L. coronatus* (Grube, 1861), *L. dianicus* Song & Zhao, 1994, *L. digitatus* Zhang *et al.*, 2006, *L. hongkong* Song *et al.*, 1997, *L. inflatus* Song & Chai, 1990, *L. kunmingensis* Song & Zhao, 1994, *L. linzhiensis* Hu, 2001, *L. maior* Ono, 1979, *L. mandali* (Tikader, 1966), *L. minimus* (Schenkel, 1953), *L. minusculus* Song & Chai, 1990, *L. quiae* Song & Wang, 1991, *L. saltus* Ono, 1979, *L. silvanus* Ono, 1980, *L. torsivus* Zhang *et al.*, 2006, *L. wenensis* Song, 1995.

The Gaoligong Mountains of Yunnan Province lie in the southwest of China. This region is a biodiversity hotspot of the world (Conservation International 2007) with a diverse biota, distinct from and ancestral to that of the eastern Himalayas (Li *et al.* 1999). While examining thomisid specimens from the Sino-American joint biodiversity survey of the Gaoligong Mountains, conducted by the California Academy of Sciences (CAS) and Hunan Normal University (HNU) from 1998 to 2006, 3 new species of *Lysiteles* and 2 previously described but new to China were identified and are described in this paper.

Spiders of this genus are small thomisids with a total length of 2.0–4.5 mm that inhabit grasses, shrubs, tree foliage and leaf litter. The genus *Lysiteles* is poorly defined, currently based only upon somatic characters: AER equals to PER, both of AER and PER recurved, ALE>PLE>AME>PME. prosoma longer than wide, swollen, with long setae, indistinct cervical grooves, radial grooves and fovea (Ono 1988), and female

epigyne usually with a sclerotized plate, spermathecae usually large and the copulatory ducts not much long; male palp usually with 2 tibial apophyses, tegulum usually flat, some with ATA, the shape of the embolus variable.

However, the wide variation in genitalic structures among the described *Lysiteles* species strongly suggests that the genus as currently maintained is not monophyletic. For example, judging from the simple illustrations provided by Barrion & Litsinger (1995), five “*Lysiteles*” species described from the Philippines differ from those known species of this genus in their less complex structures of the palp; two species described by Tikader (1962, 1966) from India are only known from crude figures. We have also examined the specimen of *L. digitatus* Zhang *et al.* (2006), which we collected from Guangdong Province, China. The PER is much longer than AER and the structure of palp is quite different from those known species, so we think *L. digitatus* does belong to a different genus. Future work, including the description of the type species male, will be needed to determine the actual limits of the genus.

## Methods

Specimens were studied using an Olympus SZ11 dissecting stereomicroscope. Most photos were taken by the Syncrosopy Auto Montage software under Leica M420 stereomicroscope, only 4 photos were taken by Olympus C7070 digital camera under Olympus SZ61 stereomicroscope; prior to examination with Leo 1450VP Scanning Electron Microscope, all structures were briefly cleaned in an ultrasonicator and critical point dried. Measurement data of leg length are given as: total length (femur, patella + tibia, metatarsus, tarsus). Spination of legs follows Ono (1988). Measurements are given in millimeters (mm). Holotypes are deposited in the HNU, some paratypes will be deposited in the CAS.

Abbreviations: AER = anterior eye row; ALE = anterior lateral eyes, AME = anterior median eyes, ATA = apical tegular apophysis, ITA = intermediate tibial apophysis, MOA = median ocular area, PER = posterior eye row, PLE = posterior lateral eyes, PME = posterior median eyes, RTA = retrolateral tibial apophysis, VTA = ventral tibial apophysis.

The institutions participating in the biodiversity survey of the Gaoligong Mountains are: California Academy of Sciences, USA (CAS); Hunan Normal University, China (HNU); Institute of Zoology, Chinese Academy of Sciences, China (IZCAS); Kunming Institute of Botany, Chinese Academy of Sciences, China (KIB).

## Taxonomy

### Family Thomisidae Sundevall, 1833

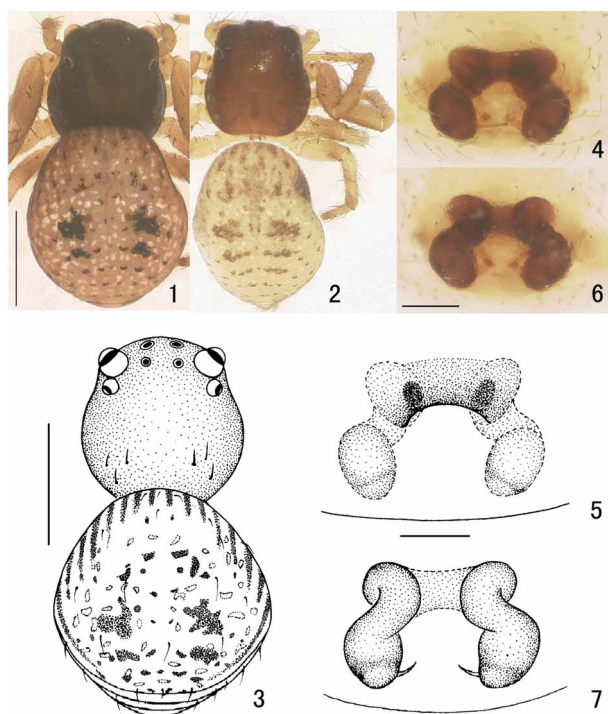
### Subfamily Thomisinae Sundevall, 1833

### Genus *Lysiteles* Simon, 1895

#### *Lysiteles davidi* sp. nov.

Figs 1–7

**Type material.** Holotype female, CHINA, Yunnan Province, Gongshan County, Dulongjian Township, Longyuan Village, Bailai Group, 1676 m [28.00330°N, 98.19198°E], 31 October 2004, Guo Tang (HNU-Tang040602). Paratype: 1 ♀, 3 km south of Longyuan Village, 1685 m [28.00532°N, 98.32145°E], 2 November 2004, David Kavanaugh (CAS-DHK04068), other data same as holotype.



**FIGURES 1–7.** *Lysiteles davidi* sp. nov. 1–3 Female, dorsal; 4–5 Epigyne; 6–7 Vulva. Scale bars: 1–3, 1 mm, 4–7, 0.1 mm.

**Etymology.** The specific name honors Dr. David Kavanaugh (CAS), who collected the type specimens, and is a name in genitive case.

**Diagnosis.** This species is similar to *Lysiteles himalayensis* Ono, 1979, but can be separated from the latter by its blackish brown carapace (yellowish brown in *L. himalayensis*), presence of stripes on opisthosoma dorsum (absent in *L. himalayensis*), copulatory ducts thick (thin in *L. himalayensis*) and spermathecae pear-shaped (globular in *L. himalayensis*).

**Description. Female** (holotype): Total length 3.20. Prosoma 1.50 long; 1.30 wide; opisthosoma 2.00 long, 1.80 wide. Carapace blackish brown, with several long bent setae. Both anterior and posterior eye rows recurved. Eye tubercles blackish brown with white rim. ALE tubercles largest. Eye sizes and interdistances: ALE 0.20, PLE 0.15, AME 0.08, PME 0.05, AME-AME 0.19, AME-ALE 0.20, PME-PME 0.25, PME-PLE 0.30; MOA long 0.30, front width 0.35, back width 0.38. Clypeus height 0.25. Sternum cordiform, light gray, darker along margins. Chelicerae, labium blackish brown, gnathocoxae yellowish brown. Legs light yellowish brown. Leg measurements: I 3.70 (1.20, 1.30, 0.70, 0.50), II 4.20 (1.40, 1.50, 0.70, 0.60), III 2.70 (1.00, 0.80, 0.40, 0.50), IV 3.00 (1.00, 1.00, 0.50, 0.50); formula 2, 1, 4, 3. Spination: Femora: I prolateral 1-1-1, I, IV dorsal 0-1-0, II dorsal 1-1-0, III dorsal 1-1-1; Patellae: I-IV 1(weak)-1; Tibiae: I-IV dorsal 1-0-1, retrolateral 0-1-1, I-II prolateral 1-1-1, ventral 2-2-0, III-IV prolateral 1-1, III ventral 2, IV 1; metatarsi I-IV pro-, and retrolateral 1-1, ventral 2-2, III-IV ventral 2. Opisthosoma subcircular, dorsum yellow, the anterior lightly yellowish brown with yellowish brown claviform stripes on the margin and black claviform stripes on the side. The median with scattered small black and white spots. Venter yellow with small white spots, mesally with a longitudinal black stripe.

*Epigyne-vulva* (Figs 4–7). light brown, sclerotized plate large, copulatory openings anterolateral. Spermathecae pear-shaped, copulatory ducts thick and short, curved, S-shaped ventrally.

**Male:** unknown.

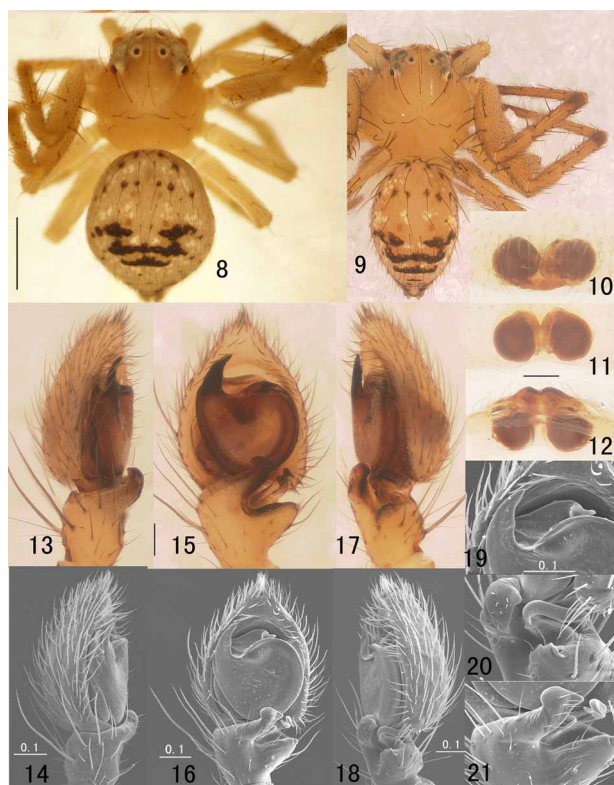
**Distribution.** China (Yunnan Province).

*Lysiteles conicus* sp. nov.

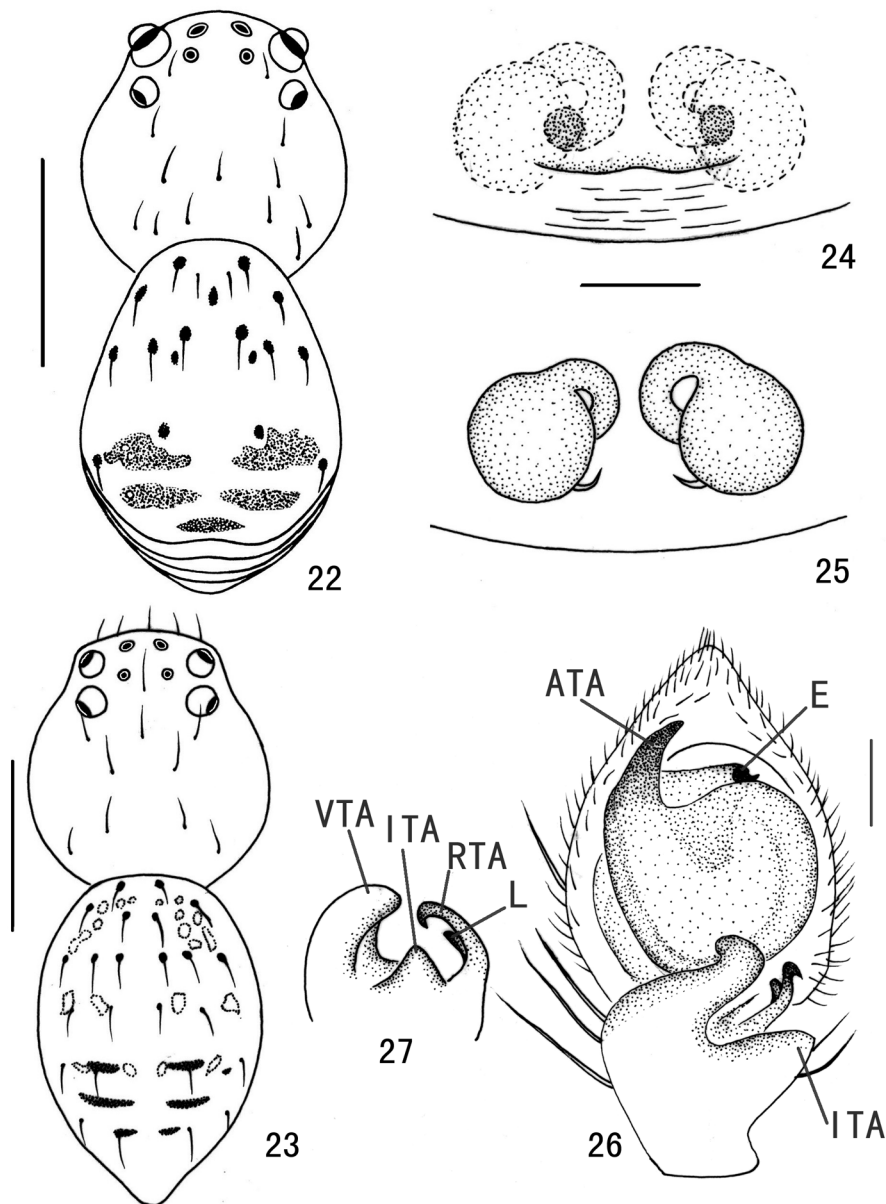
Figs 8–27

**Type material:** Holotype male, CHINA, Yunnan Province, Tengchong County, Tengyue Township, Laifengshan, 1780 m [25.01053°N, 98.28367°E], 31 May 2006, Chang-Min Yin, Jia-Fang Hu, Xiao-Hua Yang (HNU-YHY1602). Paratypes: 13 ♂, 3 ♀, same data as holotype (HNU: 7 ♂, 2 ♀; CAS: 7 ♂, 1 ♀). **CHINA, Yunnan Province, Tengchong County:** 1 ♂, Qushi Township, Daba village, 2170m [25.171409°N, 98.421013°E], 14 May 2006 (HNU-YHY0101); 1 ♀, Jietou Township, Shabadi Village, 1923 m [25.24086°N, 98.42355°E], 15 May 2006 (CAS-YHY0205); 3 ♂, Jietou Township, Xinzhuang Village, 1950 m [25.26508°N, 98.42347°E], 23 May 2006, (HNU-YHY1101); 2 ♀, Xinhua Township, Longjing Village, Shanqing, 1880 m [25.48243°N, 98.31454°E], 27 May 2006 (HNU-YHY1305); 4 ♂, 1 ♀, Tengyue Township, Baofeng Temple, 1790 m [25.03101°N, 98.25073°E], 31 May 2006 (CAS-YHY1502); 1 ♀, Shangying Township, Dahaoping Village, 2040 m [25.58297°N, 98.43461°E], 4 June 2006 (CAS-YHY2602); 1 ♀, Xinhua Township, Longjing Village, 1940 m [24.48203°N, 98.23390°E], 5 June 2006 (CAS-YHY2901); 2 ♂, 1 ♀, Puchuan Township, Miguo Village, 1920 m [24.48288°N, 98.32031°E], 5 June 2006, (HNU-YHY3002); 1 ♂, 3 ♀, Manbang Township, Hongdoushu Village, 1790 m [24.55051°N, 98.35455°E], 6 June 2006, (CAS-YHY3304). All of the above-mentioned specimens were collected by Chang-Min Yin, Jia-Fang Hu and Xiao-Hua Yang. **Gongshan County:** Dulongjiang Township, Longyuan Village, Bailai Group, 1676 m [28.00330°N, 98.19198°E], Oct. 31, 2004, Guo Tang (HNU-Tang040604). **Baoshan City:** 1 ♂, Mangkuan Township, Baihualing, 1515 m [25.30890°N, 98.79536°E], 2 June 2005, Heng-Mei Yan and Ke-Ji Guo (CAS-GKJ3703).

**Etymology.** The specific name is from the Latin “conicus”, and refers to the large conical ATA on the bulb of male palp.



**FIGURES 8–21.** *Lysiteles conicus* sp. nov. 8 Female, habitus; 9 Male, habitus; 10–12 Epigyne (10 ventral, 11 dorsal, 12 basal); 13–19 Left palp (13–14 prolatera, 15–16 ventral, 17–18 retrolateral, 19 embolus enlarged, ventral); 20–21 Tibial apophyses (20 retrolateral, 21 ventral). Scale bars: 8–9 1 mm, 10–21 0.1 mm.



**FIGURES 22–27.** *Lysiteles conicus* sp. nov. 22 Female, body; 23 Male, body; 24 Epigyne, 25 Vulva; 26 Left palp, ventral; 27 Tibial apophyses, retrolateral. Scale bars: 22–23 1 mm, 24–26 0.1 mm. ATA = apical tegular apophysis; E = embolus; ITA = intermediate tibial apophysis; L = lobe of RTA; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis.

**Diagnosis.** The new species is very similar to another new species: *Lysiteles dentatus* sp. nov. in the body shape and spots on dorsum, but differs in: prosoma lacking stripe (with a pair of grayish brown stripes in *L. dentatus*); copulatory ducts short, forming single coil (long and twisted, forming two coils in *L. dentatus*); bulb flat with a large conical ATA (with a small, denticle-shaped ATA in *L. dentatus*); embolus stout (long and helical in *L. dentatus*); RTA shorter than in *L. dentatus*.

**Description. Male** (holotype): Total length 3.10, Prosoma 1.50 long, 1.30 wide; opisthosoma 1.70 long, 1.20 wide. Carapace yellow with several long bent setae. Both anterior and posterior eye rows strongly recurved. Lateral eyes with large tubercles. Eye sizes and interdistances: ALE 0.15, PLE 0.10, AME 0.06, PME 0.05; AME-AME 0.15, AME-ALE 0.14, PME-PME 0.20, PME-PLA 0.20, MOA long 0.30 with front width 0.30 and back width 0.32, Clypeus height 0.18. Sternum cordiform, light yellow, with short hairs. Chelicerae, gnathocoxae yellow. Labium yellowish brown. Legs yellow, I, II robust and long. Legs yellow, with

many spines. Leg measurements: I 6.10 (2.00, 2.10, 1.30, 0.70), II 6.40 (2.00, 2.30, 1.40, 0.70), III 3.70 (1.10, 1.40, 0.70, 0.50), IV 4.00 (1.20, 1.50, 0.80, 0.50); formula 2, 1, 4, 3. Spination: Femora: I prolateral 0-1-1-1, I-IV dorsal 1-1-1-1; Patellae: I-IV 1(weak)-1, prolateral 0-1-0, retrolateral 0-1-0; Tibiae: I-II pro- and retrolateral 1-1-1, dorsal 1-0-1, ventral 2-0-2, III-IV pro-, dor- and retrolateral 1-1, ventral 2-2; metatarsi I-II pro-, dor- and retrolateral 1-1-1, ventral 2-0-2, III-IV pro- and retrolateral 1-1, ventral 2-2; Dorsum lightly yellow with 2 pairs of muscular depressions; anteriorly scattered with small black spots, each with a long black hair; posteriorly with 3 pairs of black bands, with a pair of small black stripes on the rear bilaterally and black lines on the side, the venter with a grayish black U-shaped mark anterior of spinnerets.

*Palp* (Figs. 13–21, 26–27): VTA digitiform, curving ectally and dorsally; ITA large, RTA slim falciform with a small lobe on the basae. Bulb flat with a large conical ATA; sperm duct distinct, embolus stout and bent, beak-shaped.

**Female** (one of the paratypes, HNU-YHY1602): Total length 3.00. Prosoma 1.50 long, 1.30 wide; opisthosoma 1.70 long, 1.40 wide. Body color same with male. Eye sizes and interdistances: ALE 0.15, PLE 0.10, AME 0.08, PME 0.05, AME-AME 0.18, AME-ALE 0.15, PME-PME 0.25, PME-PLE 0.26; MOA length 0.30, front width 0.31, hind width 0.35. Clypeus height 0.15. Leg measurements: I 4.50 (1.50, 1.50, 1.00, 0.50), II 4.60 (1.40, 1.60, 1.00, 0.60), III 3.10 (1.00, 1.00, 0.60, 0.50), IV 3.20 (1.00, 1.10, 0.70, 0.40); formula 2, 1, 4, 3. Spination: Femora: I prolateral 0-1-1-1, I, IV dorsal 0-1-0-1, II-III dorsal 1-1-0-1; II Patellae: I-IV 1(weak)-1, prolateral 0-1-0, retrolateral 0-1-0; Tibiae: I-II pro- and retrolateral 1-1-1, dorsal 1-0-1, ventral 2-2-0, III-IV pro-, dor- and retrolateral 1-1, ventral 1-0; metatarsi I-II pro-, dor- and retrolateral 1-1-1, ventral 2-2-0, III-IV pro- and retrolateral 1-1, ventral 1-1. Opisthosoma narrower than in male, anteriorly with scattered small black spots, each with a long black hair; posteriorly with 3 pairs of black bands, with a pair of small black stripes on the rear bilaterally and black lines on the side. Venter light yellow, with a rectangular large gray stripe with 2 pairs of small white spots anterior of spinnerets.

*Epigyne-vulva* (Figs. 10–12, 24–25). Epigyne brown, sclerotized plate slightly concave medially. Copulatory openings lateral; copulatory ducts curved, arc-shaped; spermathecae large, globular.

**Variation.** Total length: female 2.70–3.40 (n = 15), male 2.60–3.20 (n = 23). Carapace pale yellow to yellow. The spots on dorsum vary in size and color, from gray to black; dorsal bands fused in some females.

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

### *Lysiteles dentatus* sp. nov.

Figs 28–40

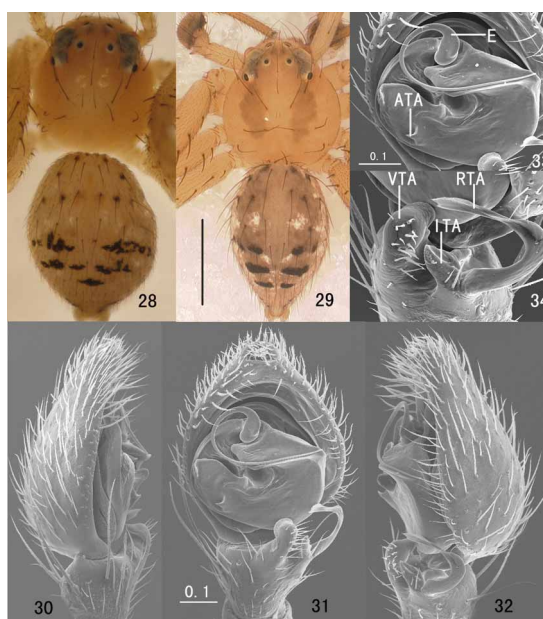
**Type material.** Holotype male, CHINA, Yunnan Province, Tengchong County, Tengyue Township, Laifengshan, 1780 m [25.01053°N, 98.28367°E], 31 May 2006, Chang-Min Yin, Jia-Fang Hu and Xiao-Hua Yang (HNU-YHY1601). Paratypes: 14 ♂, 5 ♀, same data as holotype, (HNU: 7 ♂, 3 ♀; CAS: 7 ♂, 2 ♀). **CHINA, Yunnan Province, Tengchong County:** 1 ♂, Xinhua Township, Longjing Village, Shanqing, 1880 m [24.48243°N, 98.31454°E], 27 May 2006 (HNU-YHY1306); 1 ♂, Xinhua Township, Longjing Village, 1940 m [24.48203°N, 98.23390°E], 5 June 2006 (CAS-YHY2902); 2 ♂, 2 ♀, Puchuan Township, Miguo Village, 1920 m [24.48288°N, 98.32031°E], 5 June 2006 (HNU-YHY3001: 1 ♂, 1 ♀; CAS-YHY3001: 1 ♂, 1 ♀). All of the above-mentioned specimens were collected by Chang-Min Yin, Jia-Fang Hu and Xiao-Hua Yang. **Gongshan County:** 1 ♀, New Road, Heiwadi, 1850 m [27.47101°N, 98.35533°E], 13–16 Nov. 2004, Guo Tang (HNU-Tang0412).

**Etymology.** The specific name is from the Latin “dentatus”, and refers to the small denticle-shaped ATA on the bulb of male palp.

**Diagnosis.** The new species is very similar to *Lysiteles conicus* sp. nov. in general appearance. The differences between the two species are discussed in the description of *L. conicus*.



**Description. Male** (holotype): Total length 3.20. Prosoma 1.50 long, 1.30 wide; opisthosoma 1.80 long, 1.20 wide. Carapace yellow, darken on the margin, with long bent setae and a pair of grayish brown paramedian stripes. Eye area light brown. Both anterior and posterior eye rows strongly recurved. Lateral eyes with large tubercles. Eye sizes and interdistances: ALE 0.15, PLE 0.10, AME 0.09, PME 0.05; AME-AME 0.12, AME-ALE 0.11, PME-PME 0.20, PME-PLA 0.25, MOA long 0.35 with front width 0.30 and back width 0.32, Clypeus height 0.18. Legs yellow with many spines. Leg measurements: I 6.00 (1.80, 2.00, 1.30, 0.90), II 6.40 (2.00, 2.00, 1.50, 0.90), III 3.70 (1.10, 1.20, 0.80, 0.60), IV 4.10 (1.30, 1.30, 0.90, 0.60); formula 2, 1, 4, 3. Spination: Femora: I prolateral 0-1-1-1, I-IV dorsal 1-1-1-1; Patellae: I-IV 1(weak)-1, prolateral 0-1-0, retrolateral 0-1-0; Tibiae: I-II pro- and retrolateral 1-1-1, dorsal 1-0-1, ventral 2-0-2, III-IV pro-, dor- and retrolateral 1-1, ventral 2-2; metatarsi I-II pro-, dor- and retrolateral 1-1-1, ventral 2-2-2, III-IV pro- and retrolateral 1-1, ventral 2-2. Opisthosoma slim, dorsum yellow with small white dots and black markings, with 2 light brown muscular depressions; anteriorly with scattered black dots, each with a long black hair; dorsally with three sets of posterior bands; ventrally with grayish black rectangular mark anterior of spinnerets.



**FIGURES 28–34.** *Lysiteles dentatus* sp. nov. 28 Female, habitus; 29 Male, habitus, 30–32 left palp (30 prolateral, 31 ventral, 32 retrolateral); 33 Embolus enlarged, ventral; 34 Tibial apophyses enlarged, retrolateral. Scale bars: 28–29 1 mm, 30–34 0.1 mm. ATA = apical tegular apophysis; E = embolus; ITA = intermediate tibial apophysis; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis.

*Palp* (Figs. 30–34, 39–40): VTA digitiform, setose, curved mesally; ITA and RTA fused basally, ITA strongly sclerotized, with sharp point, RTA translucent, long falciform. Bulb with a small tooth-shaped ATA mesally, embolus filiform and twisted helically.

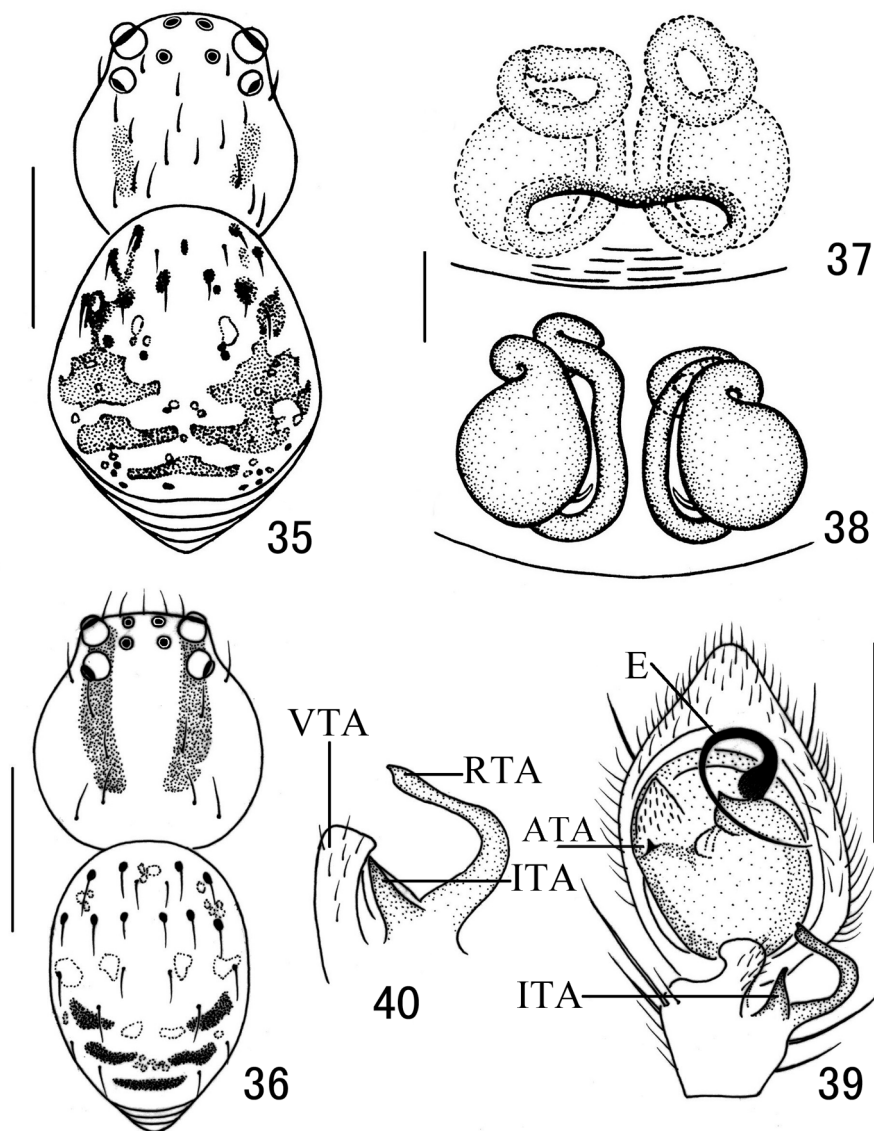
**Female** (one of the paratypes, HNU-YHY1601): Total length 3.40. Prosoma 1.30 long, 1.30 wide; opisthosoma 2.20 long, 1.40 wide. Body color same with male. ALE 0.12, PLE 0.10, AME 0.08, PME 0.05, AME-AME 0.16, AME-ALE 0.15, PME-PME 0.25, PME-PLA 0.26; MOA long 0.35, front width 0.32, back width 0.35. Clypeus height 0.20. Sternum cordiform, lightly yellow, with short hairs. Chelicerae, gnathocoxae, labium and leg yellow. Distal parts of both tibia I and II brown. Legs with many spines. Leg measurements: I 4.40 (1.50, 1.50, 0.90, 0.50), II 4.70 (1.50, 1.60, 1.00, 0.60) III 3.40 (1.00, 1.30, 0.60, 0.50), IV 3.50 (1.20, 1.20, 0.60, 0.50); formula 2, 1, 4, 3. Spination: Femora: I prolateral 0-1-1-1, I, IV dorsal 0-1-0-1, II dorsal 1-1-0-1, III dorsal 1-1-1-1; II Patellae: I-IV 1(weak)-1, prolateral 0-1-0, retrolateral 0-1-0; Tibiae: I-II pro- and retrolateral 1-1-1, dorsal 1-0-1, ventral 2-0-2, III-IV pro-, dor- and retrolateral 1-1, ventral 2-2; metatarsi I-II pro-, dor- and retrolateral 1-1-1, ventral 2-2-2, III-IV pro- and retrolateral 1-1, ventral 2-2. Opisthosoma

wider than in male, others similar with male. The venter light yellow, with a rectangular gray marking, with 2 pairs of white spots anterior of spinnerets.

*Epigyne-vulva* (Figs. 37–38): Epigyne brown, sclerotized plate convex medially. Copulatory openings posteriolateral; copulatory ducts twisted and visible in ventral view before maceration, slender and curled into two loops. Spermathecae ovoid.

**Variation.** Total length: female 3.00–3.60 (n = 8), male 2.80–3.30 (n = 19). Some specimens lacking paramedian stripes on carapace. The spots on posterior dorsum vary in size.

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



**FIGURES 35–40.** *Lysiteles dentatus* sp. nov. 35 Female, habitus; 36 Male, habitus; 37 Epigyne, 38 Vulva; 39 Left palp, ventral; 40 Tibial apophyses enlarged, retrolateral. Scale bars: 35–36 1 mm, 37–39 0.1 mm. E = embolus; ITA = intermediate tibial apophysis; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis.

***Lysiteles ambrosii* Ono, 2001**

Figs 41–48

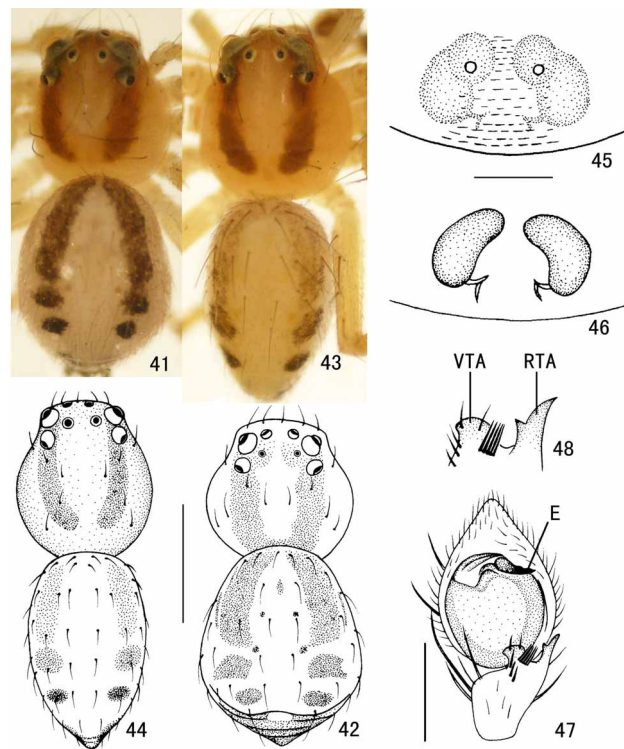
*Lysiteles ambrosii* Ono, 2001: 217, f. 28–33, types not examined.

**Material examined.** CHINA, Yunnan Province, Gongshan County: 1 ♀, Dulongjiang Township, Longyuan Village, Bailai Group, 1676 m [28.00330°N, 98.19198°E], 31 Oct.–3 Nov. 2004 Guo Tang (HNU-



Tang0406); 1 ♀, Heiwadi, New Road, 1850 m [27.47101°N, 98.35533°E], 13-16 Nov. 2004, Guo Tang (CAS-Tang0412). **Tengchong Country:** 1 ♂, 2 ♀ Wuhe Township, Tongjiazhuang Village, Longchuanjiang River, 1210 m [24.89284°N, 98.67439°E], 24 May 2005, Heng-Mei Yan and Ke-Ji Guo (HNU-GKJ02006); 1 ♀, Mangkuan Township, Baihualing, 1515 m [25.30890°N, 98.79536°E], 2 June 2005, Heng-Mei Yan and Ke-Ji Guo (CAS-GKJ03702).

**Description. Male** (HNU-GKJ02006): Total length 3.10. Prosoma 1.50 long, 1.25 wide; opisthosoma 1.60 long, 1.05 wide. Carapace yellow with long setae and a pair of paramedian blackish brown stripes. Eye area yellowish brown, both anterior and posterior eye rows strongly recurved. Eye sizes and interdistances: ALE 0.12, PLE 0.10, AME 0.08, PME 0.06, AME-AME 0.12, AME-ALE 0.12, PME-PME 0.20, PME-PLE 0.25; MOA length 0.25, front width 0.30, hind width 0.32. Sternum light yellow. Chelicerae, gnathocoxae, labium and legs yellow. Femora with long spines. Tibiae and metatarsi I and II with 2 pairs of weak ventral spines. Legs light yellowish brown, distal parts of tibiae and metatarsus darker. Leg measurements: I 6.80 (1.80, 2.50, 1.50, 1.00), II 7.00 (2.00, 2.40, 1.60, 1.00), III 3.95 (1.25, 1.30, 0.80, 0.60), IV 4.00 (1.30, 1.40, 0.70, 0.60); formula 2, 1, 4, 3. Opisthosoma dorsum with narrow paramedian stripes, posteriorly broken into spots; ventrally light yellow; spinnerets brown.



**FIGURES 41–48.** *Lysiteles ambrosii* Ono, 2001. 41–42 Female, habitus; 43–44 Male, habitus; 45 Epigyne; 46 Vulva; 47 Left palp, ventral; 48 Tibial apophyses enlarged, retrolateral. Scale bars: 41–44 1 mm, 45–47 0.1 mm. E = embolus; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis.

*Palp* (Figs 47-48): VTA rounded, with row of 5 short thick bristles; RTA sclerotized and bifurcate; ITA absent. Bulb flat; embolus basally thick, apically twisted; ATA absent.

**Female** (HNU-GKJ02006): Total length 2.70. Prosoma 1.20 long, 1.20 wide; opisthosoma 1.70 long, 1.40 wide. Spots same with those of male. Eye sizes and interdistances: ALE 0.08, PLE 0.05, AME 0.05, PME 0.04, AME-AME 0.15, AME-ALE 0.14, PME-PME 0.20, PME-PLE 0.20; MOA long 0.30, front width 0.30, hind width 0.32. Leg measurements: I 4.15 (1.30, 1.45, 0.80, 0.60), II 4.60 (1.40, 1.60, 1.00, 0.60), III 2.70 (0.90, 0.90, 0.50, 0.40), IV 2.80 (1.00, 0.90, 0.50, 0.40); formula 2, 1, 4, 3. Spots of dorsum dark than in male, 2 pairs of muscular depressions visible; laterally with black lines.

*Epigyne-vulva* (Figs. 45–46): Epigyne light brown, sclerotized plate absent, copulatory openings small, anterolateral, copulatory ducts short, spermathecae reniform.

**Variation.** Total length: female: 2.20–3.20 (n = 5). The spots on dorsum vary from grayish black to black.

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

### *Lysiteles bhutanus* Ono, 2001

Figs 49–58

*Lysiteles bhutanus* Ono, 2001: 222, f. 44–51, types not examined.

**Material examined.** CHINA, Yunnan Province, Gongshan County: 2 ♂, 1 ♀, No. 12 Bridge Camp area, 2775 m [27.71503°N, 98.50224°E], 15–19 July 2000 (HNU-00QD59: 1 ♂, 1 ♀; CAS-00QD59: 1 ♂); 1 ♂, 1 ♀, Qiqi, Gongshan County, 2000 m [N27.71542°, E98.56529°], 9–14 July 2000 (CAS-00QF76, CAS-00QF79). All of the above-mentioned specimens were collected by Heng-Mei Yan, David Kananaugh, Charles Griswold, Darrell Ubick, Hong-Bin Liang and Da-Zhi Dong; 3 ♀, Dulongjiang Township, Dizhengdang Village, 1841 m [28.0443°N, 98.19322°E], 27–30 October 2004, Guo Tang (CAS-Tang0405); 3 ♂, 4 ♀, Heiwadi, 1850 m [27.47101°N, 98.35533°E], 13–16 November 2004, Guo Tang (CAS-Tang0412). **Tengchong County:** 1 ♀, Longwen Bridge of Longchuan River, 1306 m [25.01408°N, 98.40583°E], 20 October 2003, Guo Tang (HNU-Tang03102002); 1 ♀, **Baoshan City**, Nankang (National 320 Road), Yakou, 2186 m [24.43717°N, 98.46054°E], 31 October 2003, Guo Tang (HNU-Tang03103102).

**Description. Male** (HNU-00QD59): Total length 2.70. Prosoma 1.25 long, 1.00 wide; opisthosoma 1.50 long, 1.00 wide. Carapace light yellow, with long sparse setae. Both anterior and posterior eye rows recurved. Lateral eyes with tubercles large, contiguous. Eye sizes and interdistances: ALE 0.16, PLE 0.10, AME 0.08, PME 0.05, AME-AME 0.15, AME-ALE 0.13, PME-PME 0.20, PME-PLE 0.24; MOA long 0.20, front width 0.28, back width 0.30. Chelicerae light brown. Gnathocoxae, labium, sternum. Legs light yellow, femora with 4 thick spines. Tibiae of I, II, III, IV and metatarsi of I, II with 2 pairs of weak ventral spines. Metatarsi I, IV with 1 weak ventral spine. Leg measurements: I 4.80 (1.50, 1.60, 1.00, 0.70), II 5.20 (1.70, 1.65, 1.10, 0.75), III 3.20 (1.00, 1.20, 0.50, 0.50), IV 3.50 (1.10, 1.30, 0.60, 0.50); formula 2, 1, 4, 3. Opisthosoma dorsally light brown, with paramedian dark stripes broken into 4 pairs of spots, anterior largest; laterally with many small white spots scattered; ventrally light yellow with a U-shaped gray mark posteriorly; spinnerets grayish brown.

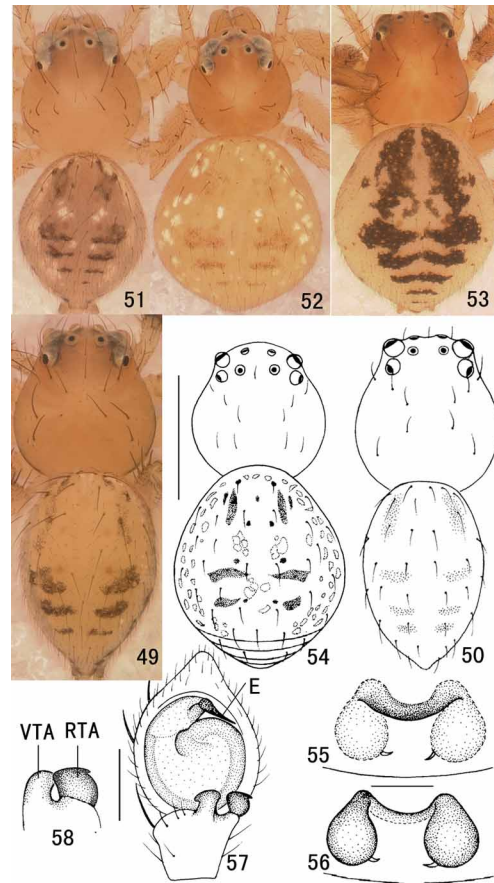
*Palp* (Figs. 57–58): VTA and RTA short, VTA digitiform, RTA blunt beak-shaped. Bulb flat, embolus short, spiniform.

**Female** (HNU-00QD59): Total length 2.60. Prosoma 1.10 long, 1.10 wide; opisthosoma 1.60 long, 1.10 wide. Carapace yellow. Eye sizes and interdistances: ALE 0.12, PLE 0.08, AME 0.06, PME 0.05, AME-AME 0.15, AME-ALE 0.13, PME-PME 0.20, PME-PLE 0.13; MOA length 0.30, front width 0.30, hind width 0.32. Clypeus height 0.25. Spination same as in male. Leg measurements: I 3.70 (1.20, 1.20, 0.70, 0.60), II 4.25 (1.25, 1.50, 0.80, 0.70), III 2.80 (0.90, 0.90, 0.60, 0.40), IV 2.90 (0.90, 0.90, 0.60, 0.50); formula 2, 1, 4, 3. Spots on dorsum similar with those of male.

*Epigyne-vulva* (Figs. 55–56): Epigyne brown, with a tongue-shaped sclerotized plate, enclosing 2 copulatory ducts medially; spermathecae globular.

**Variation.** Total length: female, 2.60–2.90 (n = 11); male: 2.70–3.20 (n = 6). Dorsal markings on opisthosoma vary from light to dark gray. Only few specimens have the U-shaped brown markings on carapace, the shape of the RTA also various.

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



**FIGURES 49–58.** *Lysiteles bhutanus* Ono, 2001. 49–50 Male, habitus; 51–54 Female; 55 Epigyne; 56 Vulva; 57 Left palp, ventral; 58 Tibial apophyses enlarged, retrolateral. Scale bars: 49–54 1 mm, 55–57 0.1 mm. E = embolus; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis.

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