

A new genus and two new species of spider wasps (Hymenoptera: Pompilidae) from China

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Abstract: A new genus *Macropriocnemis* An & Li **gen. nov.** containing two new species, *Macropriocnemis fulvipedalis* An & Li **sp. nov.** and *Macropriocnemis zhejiangensis* An & Li **sp. nov.**, are described from China. This new genus belongs to the tribe Priocnemini of the subfamily Pepsinae and it is closely related to the genus *Eopriocnemis* Loktionov & Lelej, 2019. They can be distinguished from each other by punctures of the head, the length and shape of clypeus, the distance between mandible and eye, and the spot on the forewing. In addition, a key to the genera of the tribe Priocnemini is provided, and the two new species are described and illustrated.

Key words: Pepsinae; Priocnemini; taxonomy; key

中国蛛蜂一新属二新种记述 (膜翅目: 蛛蜂科)

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摘要: 记述中国蛛蜂科 Pompilidae 沟蛛蜂亚科 Pepsinae 锯胫沟蛛蜂族 Priocnemini 1 新属: 长沟蛛蜂属 *Macropriocnemis* An & Li **gen. nov.** 及 2 新种: 褐足长沟蛛蜂 *Macropriocnemis fulvipedalis* An & Li **sp. nov.** 和浙江长沟蛛蜂 *Macropriocnemis zhejiangensis* An & Li **sp. nov.**。该新属与其相似属 *Eopriocnemis* Loktionov & Lelej, 2019 在头部刻点、唇基形状和长度、颞眼距、前翅斑点等处相区别。文中还编制了锯胫沟蛛蜂族 Priocnemini 世界已知属的检索表。

关键词: 沟蛛蜂亚科; 锯胫沟蛛蜂族; 分类; 检索表

Introduction

The tribe Priocnemini with 10 known genera around the world belongs to the family Pompilidae which is a large family among aculeate wasps worldwide. The diagnosis for Priocnemini is as follows: hind tibia with scale-like bulges dorsally, every bulge with one short spine; ventral surface of tarsomere V with irregularly arranged spines or without any spine, never with two rows of spines; male tarsal claw never modified; mesopleuron without

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any tumor-like bulge (Banks 1934; Loktionov & Lelej 2012, 2014).

During our study of Pompilidae collections in China (Zhejiang, Hubei, Yunnan), we discovered 6 specimens belonging to an undescribed genus and species. All of these specimens are female. Their metatibia dorsally has one row of scale-like teeth and every tooth has one short spine. Every tarsomere 5 ventrally has median row of spines, indicating these specimens belong to the tribe Priocnemini, but some characteristics are different from other genera in the tribe Priocnemini, such as a very slender body and an elongated mesosoma (distinctly longer than in other species). These specimens were collected by sweep net in 2002 in South Central China (Hubei), by a yellow pan trap in 2011 in East China (Zhejiang), and by a Malaise trap in 2017 in Southwest China (Yunnan).

In this paper, a new genus *Macropriocnemis* An & Li **gen. nov.** and two new species, *M. zhejiangensis* An & Li **sp. nov.** and *M. fulvipedalis* An & Li **sp. nov.**, are described and illustrated based on females. A key to genera of the tribe Priocnemini is given below.

Material and methods

The terminology of the wing veins and cells follows Day (1988). A submarginal cell is defined as SMC. Wing veins are defined as: Rs — radial sector vein; M — medial vein; CuA — cubital vein; M+CuA — basal vein; cu-a — abscissae of CuA. The following morphological terms and abbreviations are used in the description: POD — postocellar distance; OOD — ocellocular distance; UID — upper interocular distance; MID — middle interocular distance; LID — lower interocular distance; HW — width of head; HL — length of head; F1, F2, F3, etc. — the first, second, third flagellomere, etc.; Rs1, Rs2, Rs3, etc. — the length of the first, second, third, etc.; submarginal on abscissa Rs; S — sternum; S1, S2, S3, etc. — the first, second, third metasomal sterna, etc.; T — tergum; T1, T2, T3, etc. — the first, second, third metasomal terga, etc. Images were taken with the Keyence VHX-5000 digital microscopic system at Yunnan Agricultural University. Measurements were taken using the SZX7 (Model: SZ2-ILST) ocular attachment and presented with the smallest and largest measurements, with the holotype measurement in parenthesis or by ratio.

The type specimens are deposited in the YNAU-insect specimen room of Yunnan Agricultural University, Kunming, China.

Taxonomy

Tribe Priocnemini Banks, 1934

Priocnemini Banks 1934: 31 (based on *Priocnemis* Schiødte, 1837, stem Priocnem-): Engel & Grimaldi 2006: 360; Loktionov & Lelej 2012: 12, 2014: 85, 2015: 17.

Type genus. *Priocnemis* Schiødte, 1837.

Diagnosis. Metatibia dorsally with one row of scale-like teeth and every tooth with one short spine; every tarsomere 5 ventrally with median row of spines, or median and lateral surfaces with one random arrangement of spines, or without any spines, never with two rows of spines laterally; male's tarsal claw never modified; some species' clypeus with one

semicircular notch and a slender body (Banks 1934; Engel & Grimaldi 2006; Loktionov & Lelej 2012, 2014, 2015).

Genera Included: *Caliadurgus* Pate, 1946; *Claveliocnemis* Wolf, 1968; *Clistoderes* Banks, 1934; *Ctenopriocnemis* Ishikawa, 1962; *Eopompilus* Gussakovskij, 1932; *Eopriocnemis* Loktionov & Lelej, 2019; *Macropriocnemis* An & Li **gen. nov.**; *Malloscelis* Haupt, 1935; *Platydialepis* Haupt, 1941; *Priocnemis* Schiødte, 1837; *Priocnessus* Banks, 1925 (Banks 1934; Haupt 1935, 1941; Pate 1946; Dreisbach 1960; Ishikawa 1962; Wolf 1968, 1981, Day 1988; Lelej 1988; Shimizu & Ishikawa 2002; Shimizu and Wahis 2013; Wahis *et al.* 2018; Loktionov *et al.* 2017, 2019).

Distribution. Worldwide.

Key to genera of the tribe Priocnemini (♀)

1. Anterior margin of propodeum arched and steeply elevated over deeper metapostnotum. Mesosoma (dorsal view) distinctly narrowed near posterior margin of mesoscutum. Wings reduced, narrowed and diminished to vestigial with reduced venation *Claveliocnemis* Wolf
- Anterior margin of propodeum straight or weakly arched and hardly elevated over shallow metapostnotum. Mesosoma not narrowed near posterior margin of mesoscutum. Wings always normal-sized 2
2. Clypeus enlarged, much wider than LID. Crossvein cu-a of hind wing originating at or distally to fork of vein M+Cu 3
- Clypeus normal-sized, narrower than LID. Crossvein cu-a of hind wing originating basally to fork of vein M+Cu 5
3. Apical margin of clypeus weakly produced medially *Malloscelis* Haupt
- Apical margin of clypeus distinctly produced medially and laterally 4
4. Clypeus very huge. Metatarsal claw with 2 or 3 additional teeth *Platydialepis* Haupt
- Clypeus normal size. Metatarsal claw with 1 additional tooth *Priocnessus* Banks
5. Pronotum distinctly short, anterior surface of pronotum well differentiated flat, with sharp bend to dorsal face. Protibia dorsally with a huge curved spine *Caliadurgus* Pate
- Pronotum normal-sized, anterior face of pronotum not differentiated, more or less convex, with smooth arcuate bent to dorsal surface. Protibia dorsally without huge curved spine 6
6. Inner side of metatibia with longitudinal sharp groove along upper margin of brush *Eopompilus* Gussakovskij
- Inner side of metatibia without longitudinal sharp groove along upper margin of brush 7
7. Axilla broad and sometimes not separated in middle area 8
- Axilla narrow, wedge-like and broadly separated in middle area 10
8. Abscissa Rs3 and Rs4 not forming obtuse angle. T1 without petiole *Priocnemis* Schiødte
- Abscissa Rs3 and Rs4 forming obtuse angle. T1 with long petiole 9
9. Clypeus very long, slightly less than 0.5× width, central part of apical rim with approximately emicircular depression, both side of depression angulate *Macropriocnemis* An & Li **gen. nov.**
- Clypeus normal-sized and central apical rim without semicircular depression *Eopriocnemis* Loktionov & Lelej
10. F1 6.0–7.0× as long as thick, 0.9× UID. Orbicular pecten with 8–10 strong long, distinctly de-curved setae; arolium abnormally large, apically extending beyond apex of tarsal claw. Propodeum without sublateral longitudinal impression from spiracle towards apex *Ctenopriocnemis* Ishikawa
- F1 4.2–5.0× as long as thick, 0.8× UID. Orbicular pecten with six weak shorter, scarcely de-curved setae; arolium normal, apically never extending beyond apex of tarsal claw. Propodeum with distinct or weak

sublateral longitudinal impression from spiracle towards apex..... *Clistoderes* Banks

Key to genera of the tribe Priocnemini (♂)

(unknown for *Claveliocnemis* Wolf and *Macropriocnemis* An & Li gen. nov.)

1. Clypeus enlarged, much wider than LID 2
- Clypeus normal-sized, narrower than LID 4
2. Protarsal claws symmetrical *Malloscelis* Haupt
- Protarsal claws asymmetrical 3
3. Protarsal claws with outer ray more elongate and more strongly curved than that of inner one. Mandible with two additional teeth *Platydialepis* Haupt
- Protarsal claws with inner ray more elongate and more strongly curved than that of outer. Mandible with one additional tooth *Priocnessus* Banks
4. Pronotum distinctly short, with distinguished front face and dorsal face, two faces perpendicular, vertical one smooth *Caliadurgus* Pate
- Pronotum normal-sized, without distinguished front face and dorsal face 5
5. Posterior margin of T6 with one row of dense, short, equal length bristles *Eopompilus* Gussakovskij
- Posterior margin of T6 without rows of dense, short, equal length bristles 6
6. Axilla broad and sometimes not separated in middle area 7
- Axilla narrow, wedge-like and broadly separated in middle area 8
7. Abscissa Rs3 and Rs4 not forming obtuse angle, pterostigma distinctly shorter than SMC2. T1 without distinct petiole *Priocnemis* Schiødte
- Abscissa Rs3 and Rs4 forming obtuse angle, pterostigma distinctly longer than SMC2. T1 with distinct petiole *Eopriocnemis* Loktionov & Lelej
8. Propodeum with sublateral longitudinal impression from spiracle towards apex *Clistoderes* Banks
- Propodeum without sublateral longitudinal impression from spiracle towards apex *Ctenopriocnemis* Ishikawa

Genus *Macropriocnemis* An & Li gen. nov.

Type species. *Macropriocnemis fulvipeda* An & Li sp. nov.

Diagnosis. Female. Very slender body, whole body with dense grey-brown micropubescence. Mandible with blunt teeth subapically. Clypeus very long, central part of apical margin with approximately semicircular notch (Figs 1A, 2A), in lateral view, central position convex, apex distinctly narrow. Antenna very slender (Figs 1H, 2G), antennal socket with distinct hump (Figs 1B, 1C, 2B, 2C). Ocellus area small, ocelli arranged at acute angle (Figs 1C, 2C). Vertex very broad, dorsal view from hind ocellus posterior to occipital carina appearing uniformly convex (Figs 1C, 2C). Occiput broad. Lateral margin of occipital dorsum, in dorsal view, narrowing backward. Pronotum short, almost unable to distinguish anterior surface and dorsal surface, lateral margin of pronotal dorsum, in dorsal view, narrowing anteriorly (Figs 1D, 2D). Middle of mesonotum with distinct longitudinal tuberculate processes. Axilla broad and deep, not separated in middle area. Propodeum elongated, dorsally slightly uniform convex, without distinct dorsal face and lateral oblique face (Figs 1E, 2J). Mesopleuron, metapostnotum and propodeum with regular transverse ridge, ridge on lateral area more distinct (Figs 1D, 1F, 2D, 2F). Basal T1 with very long and narrow gastral petiole (Figs 1G, 2I). S2 with distinct transverse groove, distinctly curved.

Abscissa Rs2 and Rs3 of fore wing forming distinct obtuse angle. Pterostigma longer than SMC 2, distinctly. Fore wing with dark subapical spot, vein M and vein Cu of fore wing

reaching margin (Figs 1J, 2E). Metatibia dorsally with row of scale-like teeth, every tooth with short spine, outside of teeth with row of short spines (Figs 1I, 2H). Tarsomere 5 smooth and without any spines. Orbicula pectin with 8 or 9 sub-erect fine bristles, radially.

Male. Unknown.

The similarities between the new genus and the genus *Eopriocnemis* Loktionov & Lelej, 2019 are: axilla broad and deep, not separated in middle area; fore wing abscissa Rs3 and Rs4 vein forming distinct obtuse angle; pterostigma longer than SMC2, fore wing with dark subapical spot; orbicula pectin with 8 or 9 suberect fine bristles, radially, longest bristle 0.7× length of tarsal claw; base of T1 with very long and narrow gastral petiole. But easily differentiated by the following characters: head matte with dense punctures (versus head strongly polished in *Eopriocnemis*); clypeus very long, slightly less than 0.5× width, central part of apical rim with approximately semicircular notch, both sides of notch angulate (versus normal-sized and central apical rim without semicircular depression in *Eopriocnemis*); malar space more developed and much longer than 0.5× antennal pedicel width (versus 0.4× antennal pedicel width in *Eopriocnemis*); fore wing with dark subapical spot (versus without any dark spot in *Eopriocnemis*); S2 with strong transverse groove in female (versus with very fine transverse groove in *Eopriocnemis*).

Distribution. China (Hubei, Yunnan, Zhejiang).

Etymology. The generic name *Macropriocnemis*, is derived from the generic character where the female body and antenna are very slender and long; the generic addition *Macro*-meaning long in Greek (*makros*).

Key to the species of *Macropriocnemis* (♀)

1. Abscissa Rs4 of fore wing much shorter than abscissa Rs3; 1m-cu touching SMC2 after middle of vein M; legs mostly reddish brown but coxae dark *M. fulvipedalis* An & Li **sp. nov.**
- . Abscissa Rs4 of fore wing much longer than abscissa Rs3; 1m-cu touching SMC2 at nearly middle of vein M; legs black *M. zhejiangensis* An & Li **sp. nov.**

1. *Macropriocnemis fulvipedalis* An & Li **sp. nov.** (Figs 1, 3A, 3D)

Description. Female. Body very slender, black. Length 18 mm, fore wing length 14 mm. Clypeus mostly black but apical rim dark amber; mandible dark brown in apical half; pronotum lateral margin dark amber; leg light brown except coxa black; fore wing light brown, with dark subapical spot, discal cell with small dark spot at lower basal corner. Body with light brown grey pubescence; apical half of mandible, fore coxa anteriorly with sparse, erect light brown pubescence; lower frons and clypeus largely covered with dense light brown pubescence; propodeum with silvery pubescence; metasomal 6th segment with dense, long, light brown setae.

Head. Densely punctate. Clypeus long, width 2.46× length, width much smaller than LID, apical margin with broad, deep, semicircular notch medially (Fig. 1A). Malar space as long as pedicel width (Fig. 1B) approximately. Antennal socket with distinct hump (Figs 1B, 1C). Frontal line distinct. Ocellus area very small, ocelli arranged at acute angle. Inner margin of eyes straight and inclined inward at top (Fig. 1A). UID : LID = 55 : 35; HW : HL = 4 : 3; POD : OOD = 7 : 24. Antenna very long (Fig. 1H), length ratio of antennal scape, pedicel, F1 and F2 = 57 : 16 : 76 : 55; width ratio of antennal scape, pedicel, F1 and F2 = 15 : 10 : 8 : 10.

Mesosoma. Mesosoma with fine dense punctures. Pronotum nearly flat in lateral view,

lateral area in dorsal view curved into triangle. Mesoscutum with shield-like convex from anterior margin to near posterior margin, ad-median line almost invisible. Axilla broad and deep, not separated in middle area. Scutellum and metanotum slightly convex. Metapostnotum board, with strong transverse ridges medially, posterior margin strongly emarginated medially, relative length of metanotum and metapostnotum medially = 20 : 16 (Figs 1D, 1F). Propodeum matte, anteriorly with dense hair; posterior area of propodeum with distinctly transverse ridges, lateral view forming gentle slope (Fig. 1E).

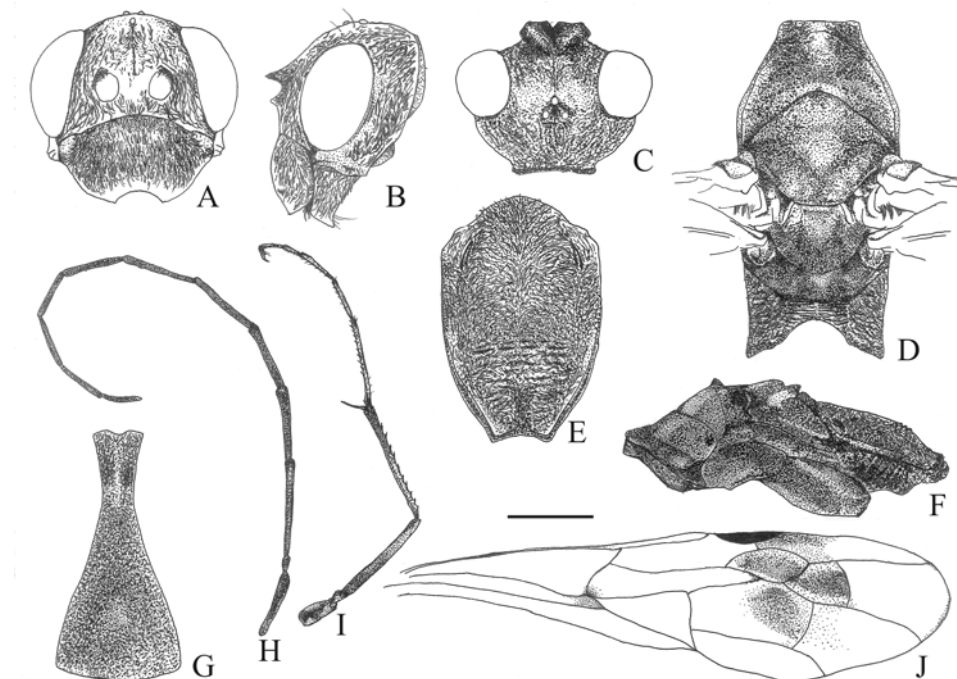


Figure 1. *Macropriocnemis fulvipedalis* An & Li sp. nov. A. Head, frontal view; B. Head, lateral view; C. Head, dorsal view; D. Mesosoma, dorsal view; E. Propodeum, dorsal view; F. Mesosoma, lateral view; G. Petiole and T1, dorsal view; H. Antenna, lateral view; I. Meta-leg, lateral view; J. Forewing. Scale bar = 1 mm (A–E, G); 1.67 mm (F); 2 mm (H, J); 4 mm (I).

Legs. Leg very slender. Metatarsus conspicuously long, ratio of metatarsus: metatibia = 59 : 80. Procoxa coxa long, ratio of procoxa: profemur = 49 : 83. Meso- and metatarsal tarsal claws dentate in middle. Protarsal claw smooth. Metatibia with one row of scale-like bulges, every bulge with a short spine, beside each bulge with row of spines. All tarsus V smooth, without any spines (Fig. 1I).

Wings. Pterostigma longer than abscissa Rs3. Marginal cell very long horizontally, apical area forming sharp acute angle. Both Vein M and vein Cu reaching margin. Hindwing vein M+Cu forking after cross-point of crossvein cu-a and vein M+CuA (Fig. 1J).

Metasoma. Basal T1 with very long and narrow gastral petiole (Fig. 1G); S2 with distinct transverse groove, distinctly curved.

Male. Unknown.

Holotype. ♀, **China**, Yunnan, Maguan, Gulinqing, VI-2017, No. 2018000256 (YNAU), 22°48'21"N, 103°58'02"E, Malaise trap. **Paratype.** 1♀, **China**, Hubei, Wufeng, Houhe,

X-2002, No. X012002 (YNAU), 30°11'52"N, 110°35'53"E, sweep net.

Etymology. The specific epithet *fulvipedalis* is derived from the Latin *fulv-* (fulvus = light brown) and the Latin word *pedalis*, referring to the leg being light brown except for the coxa that is black in this species.

2. *Macropriocnemis zhejiangensis* An & Li sp. nov. (Figs 2, 3B, 3C)

Description. Female. Body slender, black. Length 16–18 mm, fore wing length 10 mm. Clypeus apically half amber; lateral margin of pronotum dark black; antenna brown; leg brown except coxa, trochanter and femur black; fore wing colorless and transparent, with dark subapical spot, discal cell with small dark spot at lower basal corner. Body with light brown grey pubescence; apical half of mandible with sparse, erect light brown pubescence; lower frons and clypeus largely covered with dense, white pubescence; propodeum with sparse silvery pubescence; metasomal 6th segment with long, light brown setae.

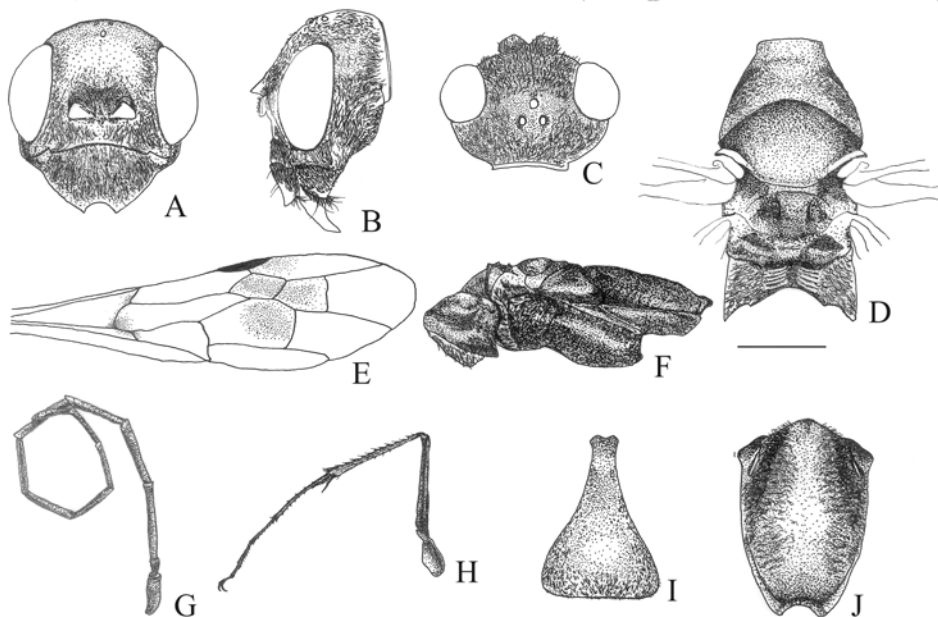


Figure 2. *Macropriocnemis zhejiangensis* An & Li sp. nov. A. Head, frontal view; B. Head, lateral view; C. Head, dorsal view; D. Mesosoma, dorsal view; E. Forewing; F. Mesosoma, lateral view; G. Antenna, lateral view; H. Meta-leg, lateral view; I. Petiole and T1, dorsal view; J. Propodeum, dorsal view. Scale bar = 1 mm (A, C, D, I, J); 1.09 mm (B); 1.67 mm (F); 2 mm (E, G); 4 mm (H).

Head. Densely punctate. Clypeus long, width $1.81 \times$ length, conspicuously shorter than LID, apical margin with broad, deep, semicircular notch medially; ratio of length: width = 50 : 25, apical margin with narrow, slightly deep, semicircular notch medially (Fig. 2A). Malar space slightly shorter than pedicel width. Antennal socket with distinct hump (Figs 2B, 2C). Frontal line distinct. Ocellus area very small, ocelli arranged at acute angle. Inner margin of eyes straight and inclined inward at top (Fig. 2A); UID : LID = 31 : 45; HW : HL = 7 : 10; POD : OOD = 8 : 26. Antenna long (Fig. 2G), length ratio of antennal scape, pedicel, F1 and F2 = 43 : 11 : 61 : 51. Width ratio of antennal scape, pedicel, F1 and F2 = 11 : 7 : 8 : 7.

Mesosoma. Mesosoma with fine dense punctures. Pronotum anterior part strongly narrow. Pronotum short, nearly flat in lateral view, dorsal view lateral area curved into triangular. Mesonotum with shield-like convex from anterior margin to near posterior margin. Axilla broad and deep, not separated in middle are. Scutellum and metanotum slightly convex (Figs 2D, 2F); metanotum distinctly board, with strong transverse ridges medially, posterior margin moderately emarginated medially, relative length of metanotum and metapostnotum medially = 12 : 11. Metapostnotum broad and short, with transverse ridges (Fig. 2D). Propodeum very long, anteriorly with sparse hair, with fine transverse rugae; round of propodeum with ridge (Fig. 2J).

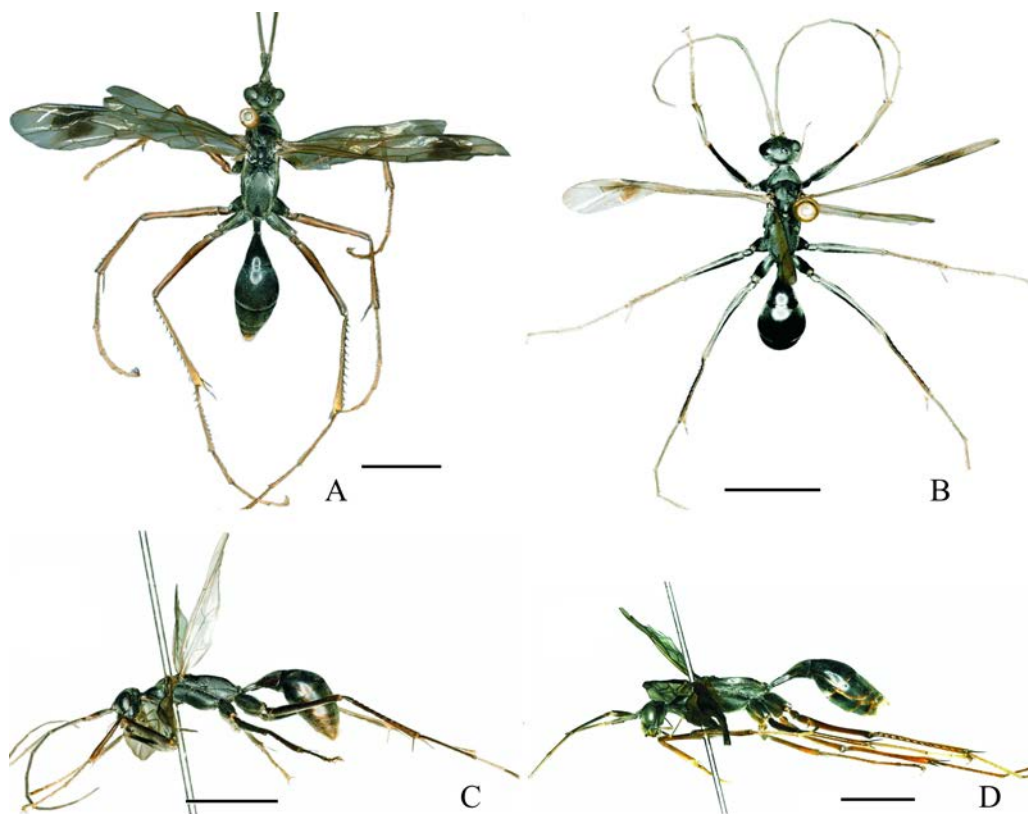


Figure 3. A, D. *Macropriocnemis fulvipedalis* An & Li **sp. nov.**, ♀; B, C. *Macropriocnemis zhejiangensis* An & Li **sp. nov.**, ♀. Holotypes. A, B. Dorsal views; C, D. Lateral views. Scale bars = 5 mm.

Legs. Legs slender. Metatarsus long, ratio of metatarsus: metatibia = 50 : 87. Procoxa long, ratio of procoxa: profemur = 42 : 60. Meso- and metatarsal claws dentate in middle; protarsal claw dentate at midpoint near apex of claw. Metatibia with one row of scale-like bulges, every bulge with short spine, beside of bulge with row of spine. All tarsus V smooth, without any spine (Fig. 2H).

Wings. Pterostigma longer than abscissa Rs3. Marginal cell very long horizontally, apical area forming sharp acute angle. Vein M and vein Cu both reaching margin. Hindwing vein M+Cu forking after cross-point of crossvein cu-a and vein M+CuA (Fig. 2E).

Metasoma. Basal T1 with long and narrow gastral petiole (Fig. 2D); S2 with distinct transverse groove, distinctly curved.

Male. Unknown.

Holotype. ♀, **China.** Zhejiang. Mt. Oingliangfeng, X-2011, No. 2011X23 (YNAU), 30°06'02"N, 118°51'41"E, Zhejiang A&F University. **Paratypes.** 1♀, **China,** Zhejiang. Mt. Tianmu, Laodian, 30°20'25N, 119°26'20"E, X-2011, No. 2011106 (YNAU), Zhejiang A&F University; 2♀, **China,** Zhejiang, Mt. Oingliangfeng. X-2011, No. 2011X23, 2011X23J (YNAU), 30°06'02"N, 118°51'41"E, Zhejiang A&F University.

Etymology. Latin origin, specific epithet *zhejiangensis* indicates the type specimen's location.

Remarks. The similarities between *Macropriocnemis fulvipeda* An & Li **sp. nov.** and *Macropriocnemis zhejiangensis* An & Li **sp. nov.** are: apical center semicircularly notch; UID > LID, eye inner margin straight and inclined inward; wing with spot. But they are easily differentiated by the following characters: legs light brown except coxa black, legs very slender, metatarsus conspicuously long, ratio of metatarsus: metatibia tibia = 59 : 80 (versus leg brown, except coxa, trochanter and femur black; meta-leg long, ratio of metatarsus: metatibia = 59 : 41 in *L. zhejiangensis* An & Li **sp. nov.**); meso- and metatarsal claws dentate in middle; protarsal claw smooth, not dentate (versus meso- and metatarsal claws with a tooth in middle; protarsal claw dentate at midpoint near apex of claw in *L. zhejiangensis* An & Li **sp. nov.**).

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