TWO NEW SPECIES OF THE ANT SUBFAMILY LEPTANILLINAE FROM YUNNAN, CHINA*  
(HYMENOPTERA: FORMICIDAE)

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Abstract Two new species of the ant subfamily Leptanillinae are discovered in the Xishan Mountain Forest Park of Kunming City, Yunnan Province, i.e. Protanilla furcomandibula sp. nov. and Leptanilla kunmingensis sp. nov. Keys based on worker caste with illustrations are provided for the 3 known species of Protanilla of China and the 4 known Chinese species of Leptanilla.  
Key words Hymenoptera, Formicidae, Protanilla, Leptanilla, new species.

Worker caste of 3 genera of Leptanillinae are known in the world, i.e. Protanilla, Leptanilla and Anomalomyrmex (Bolton, 1990, 1994, 1995). Protanilla is a small genus with only 3 species described in the world. Leptanilla is a larger genus with more than 37 species recorded in the world (Baroni Urbani, 1977; Bolton, 1995). The Chinese species of Protanilla were reported by Xu (2001) and those of Leptanilla were reported by Tang et al. (1992), Ogata et al. (1995) and Xu (2001). In this study, 2 new species of Leptanillinae, Protanilla furcomandibula sp. nov. and Leptanilla kunmingensis sp. nov., are discovered in the Xishan Forest Park of Kunming City, Yunnan Province. Up to date, 3 species of Protanilla and 4 species of Leptanilla are known in China.

Standard measurements and indices are defined as follows:  
TL: Total length—the total outstretched length of the individual, from the mandibular apex to the gastric apex.  
HL: Head length—the length of the head proper, excluding the mandibles; measured in a straight line from the anterior clypeal margin to the mid-point of the occipital margin, in full-face view. In species with a strongly concave occipital margin the head length in measured to the mid-point of a line connecting the posterolateral projections.  
HW: Head width—the maximum width of the head, measured in full-face view.  
CI: Cephalic index = HW × 100/HL.  
SL: Scape length—the straight-line length of antennal scape excluding the basal constriction.  
SI: Scape index = SL × 100/HW.  
PW: Pronotal width—the maximum width of the pronotum in dorsal view.  
AL: Alitrunk length—the diagonal length of the alitrunk in lateral view from the point at which the pronotum meets the cervical shield to the posteroventral corner of alitrunk.  
ML: Mandibular length—the straight-line length of mandible from apex to the base.  
PNL: Petiolar node length—with petiolar node in lateral view, the maximum longitudinal length of the node without its anterior and posterior peduncles.

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PNH: Petiolar node height-with petiolar node in lateral view, the maximum vertical height of the node from summit to lowermost part of subpetiolar process.

PNW: Petiolar node width-the maximum width of the petiolar node in dorsal view.

PPNL: Postpetiolar node length-with postpetiolar node in lateral view, the maximum longitudinal length of the node without its anterior and posterior peduncles.

PPNH: Postpetiolar node height-with postpetiolar node in lateral view, the maximum vertical height of the node from summit to lowermost part of subpostpetiolar process.

PPNW: Postpetiolar node width-the maximum width of the postpetiolar node in dorsal view.

All measurements are expressed in mm.

The type specimens are deposited in the Insect Collection, Southwest Forestry College, Kunming, Yunnan Province, China.

**Key to Chinese species of Protanilla based on worker caste**

1. In lateral view mandible broad, lateroventral margin with 2 teeth. Ventral margin of postpetiole concave in profile view. In dorsal view anterior border of gaster deeply concave, with anterolateral corners protruding and surrounded the postpetiole (Figs. 1-3) (China; Middle Yunnan) ........................................... **P. furcomandibula** sp. nov.

In lateral view mandible narrow, lateroventral margin without tooth. Ventral margin of postpetiole convex in profile view. In dorsal view anterior border of gaster not concave ........................................................................ 2

2. In full-face view head not constricted at the antennal socket position in contrary with a prominence at each side. Mandible with 11 peg-like teeth. Anterior margin of elypeus emarginate. Antennal segments 4-10 broader than long. In profile view anterodorsal corner of petiolar node as high as posterodorsal corner. In dorsal view both petiolar node and postpetiolar node are longer than broad. Body in color brownish yellow, metathorax, propodeum, petiole, postpetiole and first gastral segment black (Figs. 4-6) (China; Southern Yunnan) ........................................................................................................ P. bicolor Xu

3. In full-face view head constricted at the antennal socket position. Mandible with 13 peg-like teeth. Anterior margin of elypeus straight. Antennal segments 4-10 as broad as long. In profile view anterodorsal corner of petiolar node higher than posterodorsal corner. In dorsal view both petiolar node and postpetiolar node are broader than long. Body in color reddish brown (Figs. 7-9) (China; Southern Yunnan). ........................................................................................................ P. concolor Xu

**Protanilla furcomandibula** sp. nov. (Figs. 1-3)

Holotype worker: TL 4.1, HL 0.77, HW 0.60, CI 78, SL 0.67, SI 111, PW 0.47, AL 1.17, ML 0.50, PNL 0.33, PNH 0.43, PNW 0.32, PPNL 0.40, PPNH 0.43, PPNW 0.30. Head distinctly longer than broad, narrowed forward. In full face view, occipital margin straight, occipital corners rounded. Lateral sides of head evenly convex and with a tooth-like prominence at the antennal socket position, below the prominence with a deep notch. In dorsal view mandible long triangular, masticatory margin with 15 spine-like teeth. In lateral view mandible thick, lateroventral margin with 2 teeth, the basal one short and oblique, the apical one long and erect. Clypeus roughly triangular, anterior margin obviously concave in the center. Antenna with 12 segments, scape surpassed occipital corner by 1/5 of its length, segments 5-11 longer than broad, antennal club indistinct. In profile view, thorax distinctly constricted at mesothorax, pronotum roundly convex, mesonotum straight. Promesonotol suture distinct, metanotal groove depressed. Dorsum of propodeum evenly convex, longer than declivity, posterodorsal corner rounded. In profile view petiolar node nearly rectangular, anterodorsal corner bluntly prominent, higher than posterodorsal corner, the latter rounded, anterior face vertical, posterior face sloped, dorsal face weakly convex. Subpetiolar process long and anteroventrally pointed, with a circular subtransparent fovea. Postpetiolar node weakly inclined forward, anterior or face convex, dorsal face straight, anterodorsal corner rounded. Sternite of postpetiole deeply concave on the ventral face. In dorsal view petiolar node roughly square, width:length = 9:8, anterior and posterior borders weakly convex, lateral borders evenly convex. Postpetiolar node
trapezoid, narrowed forward and longer than broad, anterior and posterior faces roundly convex, lateral sides straight. In profile view, anterior margin of gaster with a narrow deep notch between tergite and sternite of the first segment. In dorsal view, anterior margin of gaster deeply concave, with anterolateral corners protruding and surrounded the postpetiole. Mandibles, head and the whole body smooth and shining. Head and body with sparse suberect hairs and dense decumbent pubescence. Scapes and tibiae with sparse subdecumbent hairs and dense decumbent pubescence. Body in color yellowish brown, legs brownish yellow.

Paratype worker: TL 4.0, HL 0.73, HW 0.57, CI 77, SL 0.67, SI 118, PW 0.43, AL 1.13, ML 0.47, PNL 0.33, PNH 0.43, PNW 0.30, PPNL 0.43, PPNH 0.43, PPNW 0.28 (1 individual measured). As holotype.

Holotype. worker, No. A00250, 2 250 m, Huatingsi Temple, Xishan Forest Park, Kun-
ming, Yunnan Province, 31 Mar. 2001, collected by XU Zheng-Hui in a soil sample in coniferous and broad-leaf mixed forest. Paratype: 1 worker, with same data as holotype.

This new species is close to P. bicolor Xu (Figs. 4-6), but differs in occipital margin straight, mandible thick and with 2 teeth on lateroventral margin, metanotal groove depressed, ventral margin of postpetiolar concave, anterior margin of gaster deeply concave with anterolateral corners protruding and surrounded the postpetiole.

Key to Chinese species of Leptanilla based on worker caste

1. Metanotal groove present ................................................................. 2
   Metanotal groove absent ............................................................. 3

2. In full face view head roughly rectangular. Clypeus not protruding with anterior margin rounded convex. In profile view dorsum of petiole almost straight. In dorsal view postpetiolar node much broader than petiolar node (Figs. 10-12) (China: Hunan Province) ................................................................. L. hunanensis Tang, Li et Chen
   In full face view head distinctly narrowed forward. Clypeus protruding with anterior margin concave. In profile view dorsum of petiole rounded convex. In dorsal view postpetiolar node as broad as petiolar node (Figs. 13-15) (China: Middle Yunnan Province) ........................................... L. hunningensis sp. nov.

3. Anterior margin of clypeus straight and incised in the middle. In profile view petiolar node rounded convex, in dorsal view the node as broad as long (Figs. 16-18) (China: Taiwan Province) .................. L. taiwanensis Ogata, Terayama et Masuko
   Anterior margin of clypeus weakly convex and complete. In profile view petiolar node rectangular, in dorsal view the node broader than long (Figs. 19-21) (China: Southern Yunnan Province) ............................................ L. yunnanensis Xu

Leptanilla kunmingensis sp. nov. (Figs. 19-21)

Holotype worker: TL 2.2, HL 0.47, HW 0.37, CI 79, SL 0.27, SI 73, PW 0.25, AL 0.63, ML 0.22, PNL 0.17, PNH 0.15, PNN 0.13, PPNL 0.13, PPNH 0.20, PPNW 0.13. Head longer than broad, distinctly narrowed forward. In full face view, occipital margin weakly concave, occipital corners bluntly prominent, lateral sides rounded convex. Mandible narrow and slender, masticatory margin with 3 teeth. Clypeus protruding forward and bicarinated, anterior margin evenly concave. Antenna short, with 12 segments, apex of scape reached to 2/3 of the distance from antennal socket to occipital corner, segments 4-10 about as broad as long, antennal club indistinct. In profile view, pronotum evenly convex, promesonal suture distinct. Mesothorax constricted at its anterior portion, mesonotum convex. Metanotal groove depressed. Propodeum weakly convex, about 2 times as long as declivity, posterodorsal corner rounded. In profile view, dorsum of petiolar node rounded convex, anterior face short and sloped, dorsal and posterior faces formed a single arch. Subpetiolar process very narrow, weakly convex, anteroventral corner acutely angled. In profile view, postpetiolar node shorter than petiolar node, with dorsum rounded convex, the sternite formed a large broad subpostpetiolar process with blunt anteroventrally pointed corner. In dorsal view, petiolar node longer than broad, lateral sides weakly convex. Postpetiolar node nearly square, lateral sides evenly convex, as broad as petiolar node. Mandibles, head and the whole body smooth and shining. Head and body with dense decumbent pubescence. Petiole, postpetiole and gaster with sparse subdecumbent hairs. Scapes and tibiae with dense decumbent pubescence. Body in color brownish yellow.

Paratype workers: TL 2.1-2.2, HL 0.47-0.50, HW 0.37-0.40, CI 76-80, SL 0.23-0.30, SI 64-77, PW 0.25-0.27, AL 0.57-0.63, ML 0.20-0.23, PNL 0.15-0.17, PNH 0.13-0.15, PNN 0.12-0.1, PPNL 0.13, PPNH 0.18-0.22, PPNW 0.12-0.13 (8 individuals measured).

As holotype.

Holotype worker, No. A00506, 2 150 m, Longmen, Xishan Forest Park, Kunming, Yunnan Province, 4 May 2001, collected by ZHAO Yu-Xiang in a soil sample in evergreen broad-leaf forest. Paratypes: 29 workers, with same data as holotype.
This new species is close to *L. hunanensis* Tang, Li et Chen (Figs. 10-12), but clypeus protruding forward with anterior margin evenly concave, in profile view dorsum of petiole roundly convex, in dorsal view postpetiolar node as broad as petiolar node.

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**REFERENCES**


中国云南细蚁亚科二新种
（膜翅目：蚁科）

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摘要

在云南省昆明市西山森林公园发现细蚁亚科2新种，即叉颚原细蚁 Prostanilla furcomandibula sp. nov. 和昆明细蚁 Leptanilla kunmingensis sp. nov. 分别编制了中国原细蚁属 Prostanilla 3个已知种和细蚁属 Leptanilla 4个已知种工蚁分种检索表，并附所有物种的插图。

关键词 膜翅目，蚁科，原细蚁属，细蚁属，新种。

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