

Two new species of *Metallopeus* Malaise (Hymenoptera: Tenthredinidae) from Shennongjia, China

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Abstract: Two new beautiful species of Tenthredinidae are described from Shennongjia, China: *Metallopeus shennongjiana* Wei **sp. nov.** and *M. xiansui* Wei **sp. nov.** The morphological differences between these new species and their nearest relatives are briefly discussed. A key to species groups within *Metallopeus* and known species of the *M. sinensis* group and *M. splendidus* group is provided.

Key words: Tenthredinomorpha; Tenthredininae; taxonomy; key

中国神农架金蓝叶蜂属二新种（膜翅目：叶蜂科）

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摘要：本文记述中国神农架分布的叶蜂科 2 新种：神农金蓝叶蜂 *Metallopeus shennongjiana* Wei **sp. nov.** 和先驢金蓝叶蜂 *M. xiansui* Wei **sp. nov.**。讨论了 2 新种与其近缘种类之间的形态区别。提供了金蓝叶蜂属分种团检索表及 *M. sinensis* 种团和 *M. splendidus* 种团的已知种检索表。

关键词：叶蜂亚目；叶蜂亚科；分类；检索表

Introduction

Metallopeus Malaise, 1934 is a small genus of Tenthredinidae with 19 known species in the world (Malaise 1945; Shinohara 1986; Saini & Singh 1990; Bharti & Saini 2000; Wei *et al.* 2006; Saini 2007; Taeger *et al.* 2014). The species of the genus are very beautiful and brilliant occurring only within eastern Asia. This genus is a typical eastern Asian element of Asian fauna (Wei & Nie 1997). The generic position of *Metallopeus* is still controversial. Taeger *et al.* (2010) placed this genus as a subgenus under *Tenthredo* L., the largest genus of Tenthredinidae.

Metallopeus is endemic to south of eastern Asia and most species occur within the mountainous regions. About 30 species were collected from China and 10 of them have been reported. In this paper, two additional species of the genus are described and illustrated.

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Material and methods

Specimens were examined with a Motic-SMZ-171 stereomicroscope. Images of adults were taken with a Nikon D700 digital camera and a Leica Z16APO microscope. Images were focus-stacked using Helicon Focus (HeliconSoft, Kharkiv, Ukraine) and further processed with Adobe Photoshop CS 23. The terminology of genitalia follows Ross (1945) and terminology of wing venation follows Niu and Wei (2010) except for m-cu being replaced by 1m-cu, and stigma by pterostigma. The types of these new species are deposited in the Asian Sawfly Museum, Nanchang, China (ASMN).

Taxonomy

1. *Metallopeus shennongjiana* Wei *sp. nov.* (Figs 1A, 2)

Description. Female. Length 16 mm (Fig. 1A). Body including legs with strong metallic luster; head bright coppery without reddish or purplish tinge, mandibles largely black, labrum yellowish brown; antenna black, basal half with bluish green tinge; thorax, abdomen and legs coppery green, metathorax, dorsum of abdomen, tibiae and tarsi of legs bright blue; fore wing feebly infusate, pterostigma, veins and costal cell brownish black; hairs short and silver.

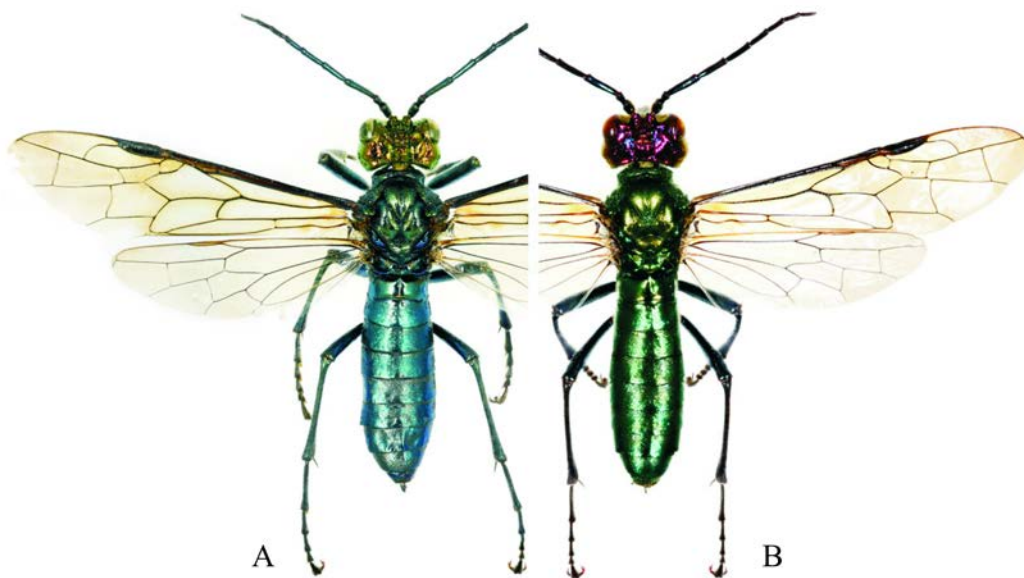


Figure 1. *Metallopeus* spp., adults. A. *M. shennongjiana* *sp. nov.* B. *M. xiansui* *sp. nov.*

Dorsum of head irregularly bulged, surface smooth, temple and postocellar area very sparsely punctured (Fig. 2A), clypeus and upper half of postorbit moderately and minutely punctured, lower half of hind orbit rugose and irregularly carinate, inner orbit with a distinct and oblique middle carina, frons with fine sculptures; mesonotum finely and sparsely punctured, anterior slope of mesoscutellum smooth and impunctate, posterior slope with some large and faint punctures, posttergite with several large punctures; ventral side of

mesepisternum densely microsculptured, matt; first abdominal tergum smooth and shiny, other tergites finely and densely microsculptured (Fig. 2E), sternites feebly microsculptured; base of basal sheath and apical sheath smooth, apical two thirds of basal sheath microsculptured.

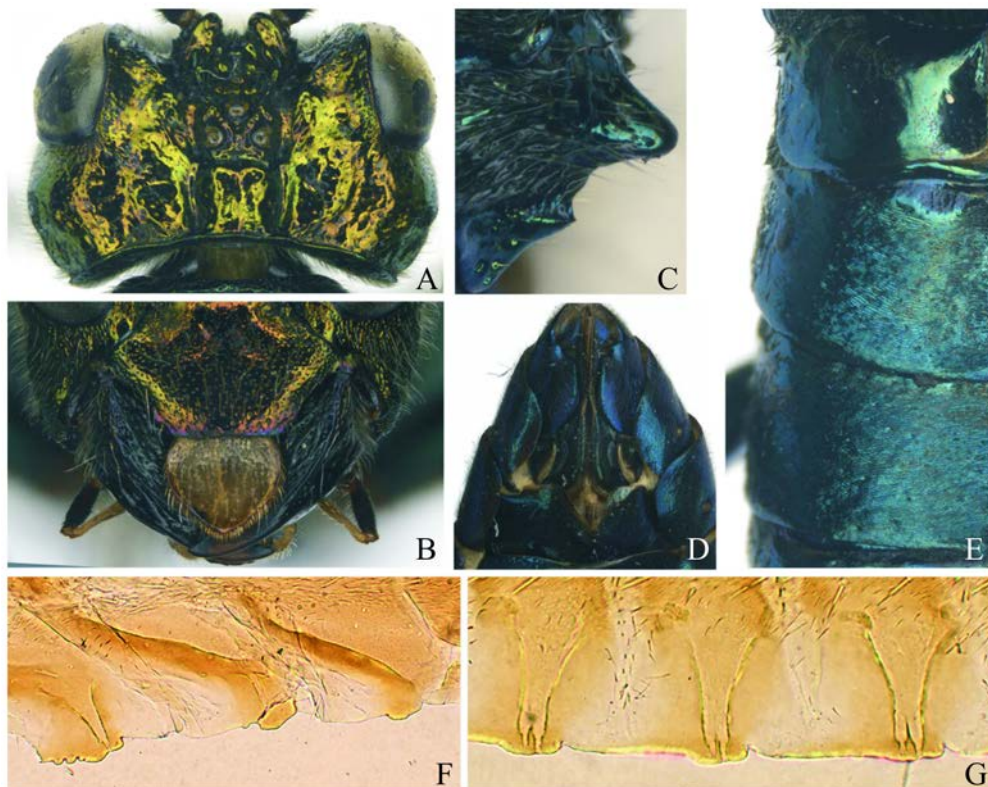


Figure 2. *Metallopeus shennongjiana* sp. nov. A. Female head, dorsal view; B. Clypeus and labrum; C. Mesoscutellum, lateral view; D. Apex of abdomen, ventral view; E. Abdominal tergites 1–3, left side; F. The 1st–3rd serrulae; G. The 9th–11th serrulae.

Clypeus with a distinct and broad middle depression, apical margin slightly convex, almost truncate (Fig. 2B), upper angle of supraclypeal area carinate; malar space 2 times diameter of median ocellus; bottom of middle fovea with an anteriorly oblique tubercle as high as ocelli; supraantennal tubercles quite high and long, slightly sloping and strongly divergent backwards, evenly merging with sharp and high frontal ridge, enclosing middle fovea and frons laterally; postocellar furrow broad and shallow; postocellar area as long as broad, not roof like, roundly elevated and sloping backwards with a fine middle carina; lateral furrows broad and deep, hardly bent and subparallel, marginal carina as high as lateral occipital carina; in dorsal view temple slightly longer than eye with middle part strongly convex (Fig. 2A); in lateral view hind orbit clearly broader than transverse axis of eye; lower part of occipital carina with a distinct folder and without oblique carina; antenna much longer

than head and thorax together, slightly shorter than abdomen, third antennomere 1.28 times as long as fourth one. Dorsal process of mesoscutellum distinct and flattened, posttergite with a low and obtuse middle carina (Fig. 2C); mesepisternum with a sharp ventral spur; legs slender, metabasitarsus shorter than following three tarsomeres together; claw with an obtuse basal lobe, inner tooth much longer than apical tooth. Seventh sternite deeply and acutely incised at middle (Fig. 2D); ovipositor sheath slightly longer than metabasitarsus, apical sheath as long as basal sheath; lancet narrow, basal three annuli strongly bent, first and second serrulae short, cypsella weakly convex (Fig. 2F), middle serrulae slightly oblique, almost flat (Fig. 2G).

Male. Unknown.

Holotype. ♀, **China**, Hubei, Shennongjia, Dalongtan, alt. 2,180 m, 19-VII-2011, Zejian LI & Yao LIU legs. **Paratype.** 1♀, **China**, Hubei, Shennongjia, 05-VII-2010, Maoling SHENG leg.

Etymology. This new species is named after the type locality, Shennongjia.

Remarks. This new species is a member of the *Metallopeus sinensis* group and is distinguished from other known species of this group by the head coppery without reddish or purplish tinge, the labrum yellowish brown; the anterior margin of the clypeus feebly convex and almost truncate; the supraantennal tubercles quite high and long, slightly sloping and strongly divergent backwards, evenly merging with the sharp and high frontal ridge, enclosing the middle fovea and frons laterally, the bottom of middle fovea with distinct tubercles as high as ocelli; the postocellar area quadrate and distinctly and roundly elevated; the mesoscutellum with a long and sharp dorsal process, the posttergite with large punctures; the middle serrulae almost flat.

2. *Metallopeus xiansui* Wei *sp. nov.* (Figs 1B, 3)

Description. Female. Length 17 mm (Fig. 1B). Body including legs with strong metallic luster; head bright red with purplish tinge (Fig. 3A), basal half of mandible coppery green, labrum yellowish brown, slightly darkened apically (Fig. 3B); scape and pedicel, thorax and abdomen entirely, all legs coppery green, third antennomere and basal half of fourth antennomere blue, other part of antenna black; fore wing feebly infusate, pterostigma, veins and costal cell brownish black; hairs short and silver.

Dorsum of head flat, not bulging, surface smooth, moderately and minutely punctured, as dense as punctures on mesonotum (Fig. 3A); hind orbit with a long and broad bulge, distinctly elevated; inner orbit with a distinct and oblique middle carina; mesonotum finely and moderately punctured, lateral sides of mesoscutellum distinctly punctured, posttergite with some punctures and feebly microsculptured (Fig. 3C); venter of mesepisternum densely microsculptured, matt, depressed part of metepimeron densely sculptured; first abdominal tergum smooth, other tergites densely microsculptured (Fig. 3E), sternites feebly microsculptured; sheath densely microsculptured.

Anterior margin of clypeus truncate and without middle depression; malar space 2 times diameter of median ocellus (Fig. 3B); bottom of middle fovea with a low and long middle carina, much lower than ocelli; supraantennal tubercles quite high and long, strongly sloping and divergent backwards, almost cut-off with low frontal ridge, not enclosing middle fovea and frons laterally; postocellar furrow fine and shallow; postocellar area clearly broader than

long, anterior part weakly elevated with faint middle furrow; lateral furrows deep, distinctly bent and convergent backwards, marginal carina as high as lateral occipital carina; in dorsal view temple slightly longer than eye with middle part strongly convex (Fig. 3A); in lateral view hind orbit clearly broader than transverse axis of eye; lower part of occipital carina with a short folder and without oblique carina; antenna as long as abdomen, third antennomere slightly longer than fourth one. Dorsal process of mesoscutellum distinct and flattened, posttergite with a low and obtuse middle carina (Fig. 3C); mesepisternum with a sharp ventral spur; legs slender, metabasitarsus shorter than following three tarsomeres together; claw with a distinct basal lobe, inner tooth much longer than apical tooth. Seventh sternite roundly and shallowly incised at middle with short and triangular lateral process (Fig. 3D); ovipositor sheath as long as metabasitarsus, apical sheath much longer than basal sheath; lancet narrow, basal three annuli strongly bent, first and second serrulae short with flat cypsella (Fig. 3F), middle serrulae distinctly oblique with 5–6 distal teeth (Fig. 3G).

Male. Unknown.

Holotype. ♀, **China**, Hubei, Shennongjia, alt. 2,800 m, 22-VII-2003, Hu ZHOU leg.

Paratypes. 1♀, **China**, Hubei, Shennongjia, alt. 2,600 m, 22-VI-2002, Yihai ZHONG leg.; 1♀, **China**, Hubei, Shennongjia, Dalongtan, 110°17.772'E, 31°29.691'N, alt. 2,180 m, 19-VII-2011, Meicai WEI & Gengyun NIU legs; 1♀, **China**, Hubei, Shennongjia, Honghuaduo, 109°56'E, 31°15'N, alt. 1,200 m, 03-VII-2007, Meicai WEI leg.

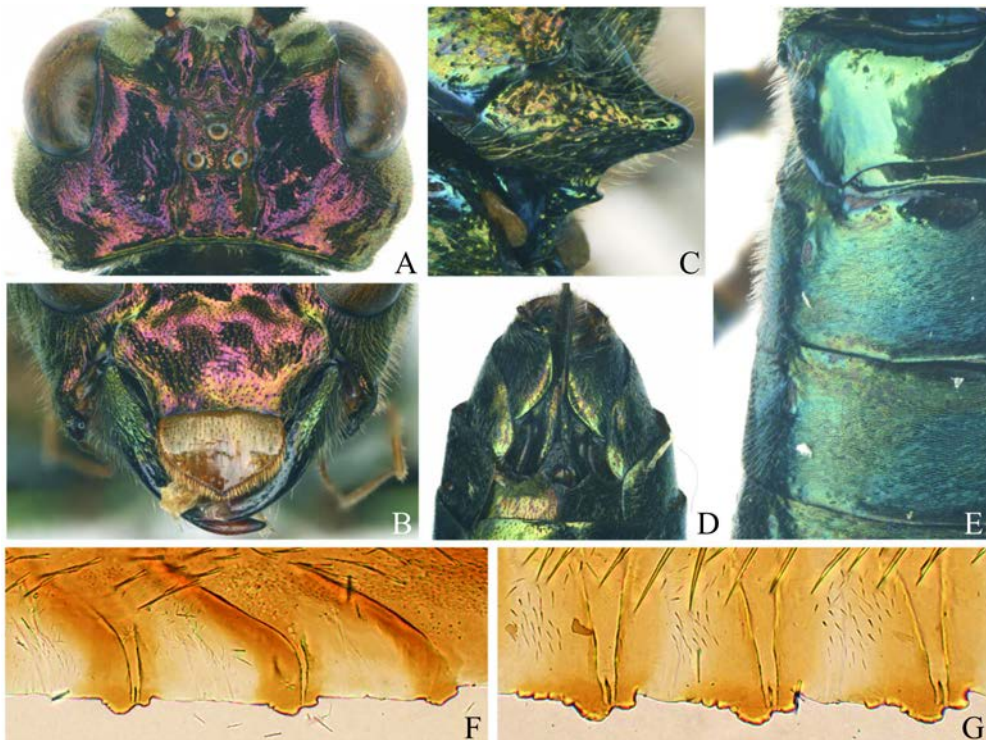


Figure 3. *Metallopeus xiansui* sp. nov. A. Female head, dorsal view; B. Clypeus and labrum; C. Mesoscutellum, lateral view; D. Apex of abdomen, ventral view; E. Abdominal tergites 1–3, left side; F. 1st–3rd serrulae; G. 8th–10th serrulae.

Etymology. This new species is named after Prof. Xiansu HU (Hsen-Hsu Hu, editor's note), a founder of plant taxonomy in China.

Remarks. This new species is similar to *Metallopeus splendidus* (Konow, 1907) from the southeastern region of Xizang, China and North India. This new species differs from the latter one by the clypeus truncate at apex; the supraantennal tubercles high and long, the anterior part of frons not flat; the posttergite with distinct punctures and microsculptures; the lower part of metepimeron densely microsculptured; the forewing subhyaline, the base without infusate macula; the lower half of middle annuli with narrow annular spine bands and remote to each other. In *M. splendidus* the clypeus with a distinct incision; the supraantennal tubercles short and low, the anterior part of frons flat; the posttergite smooth and impunctate; the lower third of metepimeron smooth and shiny; the base of forewing with a distinct infusate macula; the lower half of middle annuli with broad annular spine bands and merged together.

Key to species groups of *Metallopeus*, species of *M. sinensis* group and *M. splendidus* group

1. Antenna clearly shorter than head and thorax together, total length of flagellum less than 1.3 times head breadth (dorsum of head with irregular bulges and without many distinct punctures; postocellar area weakly elevated and without longitudinal middle carina; anterior margin of clypeus truncate, seldom with a small and shallow middle incision; head coppery red, labrum blackish or dark brown) *M. cupreiceps* group
- Antenna not shorter than head and thorax together, total length of flagellum not less than 1.5 times head breadth 2
2. Dorsum of head with distinct minute punctures similar to punctures on dorsum of mesonotum; postocellar area flat, broader than long and without middle carina, sometimes with shallow middle furrow; tubercle on bottom of middle fovea absent or small and quite low, much lower than ocelli; frontal carinae quite low. *M. splendidus* group 11
- Dorsum of head smooth and with irregular bulges, minute punctures absent or very sparse, much different from punctures on mesonotum 3
3. Anterior margin of clypeus usually truncate or roundly protruding; bottom of middle fovea always with a distinct tubercle; postocellar area flat or weakly elevated without middle carina, marginal carina as high as posterior carina on temple. *M. sinensis* group 4
- Anterior margin of clypeus roundly or triangularly incised; bottom of middle fovea flat and without elevated tubercle; postocellar area strongly elevated, marginal carina usually higher than posterior carina on temple 9
4. Supraantennal carina high and feebly sloping backward and merging with sharply elevated frontal ridge, enclosing middle fovea laterally; postocellar area roundly elevated, lateral furrow broad and deep, distinctly bent; dorsum of head coppery green without red. China (Hubei)··· *M. shennongjiana* Wei **sp. nov.**
- Supraantennal carina very high and strongly sloping backwards and sharply cut off before anterior end of frontal ridge, not enclosing middle fovea laterally; postocellar area flat or nearly so, lateral fovea narrow and shallow; dorsum of head not coppery green 5
5. Fore wing subhyaline, apical half feebly infusate; anterior margin of clypeus roundly and strongly protruding; postocellar area flat with distinct middle furrow; upper part of hind orbit densely punctured; frons and nearby blue, temple and upper part of hind orbit purplish red; posttergite smooth. China (Yunnan, Sichuan) *M. sinensis* Malaise

- . Fore wing evenly infusate or paler toward apex; anterior margin of clypeus truncate, feebly convex or incised; postocellar area without middle furrow; upper part of hind orbit sparsely punctured; dorsum of head bright coppery or blue 6
6. Fore wing deep smoky, sometimes paler toward apex; posttergite without middle carina but with several small punctures; labrum yellowish white 7
- . Fore wing weakly and evenly infusate, not paler toward apex; posttergite distinctly carinate at middle with dense punctures; labrum brown; head coppery without purple or red tinge. China (Shanxi, Hebei, Qinghai, Gansu, Ningxia) *M. sunae* Wei & Zhang
7. Anterior margin of clypeus shallowly incised; dorsum of head coppery; fore wing smoky, not paler toward apex. North India *M. tuberculatus* Saini & Singh
- . Anterior margin of clypeus truncate or weakly protruding; dorsum of head blue or purplish blue; fore wing smoky and clearly paler toward apex 8
8. Postocellar area broader than long; head with distinct purplish tinge; posttergite without large puncture. China (Xizang); Kashmir *M. kashmiricus* Malaise
- . Postocellar area as long as broad; head blue without purplish ting; posttergite with several large punctures at middle. North India *M. balbiri* Saini & Bharti
9. Fore wing subhyaline, apical third sometimes feebly infusate; head and thorax always metallic green; postocellar area strongly elevated and roof like with sharp middle carina; bottom of middle incision on seventh sternite in female acute *M. chlorometallicus* group
- . Fore deeply smoky, sometimes paler toward apex; head and thorax usually blue, seldom green; bottom of middle incision on seventh sternite in female obtuse, not acute 10
10. Head, thorax and ventral side of abdomen metallic green, dorsum of abdomen shining blue; anterior margin of clypeus in male truncate; postocellar area strongly elevated with sharp middle carina *M. coccinocerus* group
- . Body dark blue, dorsum of head sometimes dark coppery, seldom with feebly greenish tinge, ventral side of abdomen sometimes greenish; anterior margin of clypeus in male incised; postocellar area roundly elevated, middle carina present or absent *M. clypeatus* group
11. Hind orbit with an oblique carina between eye and occipital carina; dorsum of abdomen polish and smooth; body dark bluish green; fore wing strongly infusate toward base and slightly paler toward apex. North India *M. trigon* Malaise
- . Hind orbit without an oblique carina between eye and occipital carina; dorsum of abdomen distinctly microsculptured; body shiny green, sometimes head coppery; fore wing largely subhyaline or faintly infusate 12
12. Clypeus truncate at apex; base of fore wing not infusate; supraantennal tubercles high and long, anterior part of frons distinctly elevated; posttergite with distinct punctures and microsculptures; lower part of metepimeron densely microsculptured. China (Hubei) *M. xiansui* Wei **sp. nov.**
- . Clypeus with a distinct incision; supraantennal tubercles short and low, anterior part of frons flat; posttergite smooth and impunctate; lower third of metepimeron smooth and shiny; base of forewing with a distinct infusate macula. China (Xizang) *M. splendidus* (Konow)

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