

A new species in the *Nematus septentrionalis* group (Hymenoptera: Tenthredinidae) from China

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Abstract: One new species belonging to the *septentrionalis* group of *Nematus* is described. *Nematus zhongi* Liu, Li & Wei **sp. nov.** is illustrated from Guangxi Zhuang Autonomous Region, Guizhou, Hunan and Zhejiang provinces in China. A key to all Chinese species of the *Nematus septentrionalis* group is provided.

Key words: Tenthredinoidea; Nematinae; sawflies; taxonomy

中国大跗突瓣叶蜂种团一新种（膜翅目：叶蜂科）

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摘要：记述采自中国广西、贵州、湖南和浙江境内的突瓣叶蜂属大跗突瓣叶蜂种团 1 新种：钟氏突瓣叶蜂 *Nematus zhongi* Liu, Li & Wei **sp. nov.**，编制了大跗突瓣叶蜂种团中国已知种类检索表。

关键词：叶蜂总科；突瓣叶蜂亚科；叶蜂；分类

Introduction

Nematus Panzer, 1801 is a medium sized genus in the Nematinae, Tenthredinidae. Its morphological classification is very complicated. The *Nematus septentrionalis* group was first proposed by Prous *et al.* (2014) for the species formerly treated as *Craesus* Leach, 1817. To date there are 22 valid species worldwide belonging to the *N. septentrionalis* group (Blank *et al.* 2009; Taeger *et al.* 2010, 2018; Prous *et al.* 2014; Hara 2017).

So far, two species have been recorded in China: *N. eglabratus* (Wei, 1999) and *N. juglandis* (Beneš, 1990) (Wei & Nie 1999; Wei *et al.* 2006). In this study, a new species is described from Guangxi Zhuang Autonomous Region, Guizhou Province and Zhejiang Province in China. A key to the three species of the *Nematus septentrionalis* group in China is provided.

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Material and Methods

The specimens were examined with a Motic-SMZ-171 stereomicroscope. Images of adults were taken with a Nikon D700 digital camera and a Leica Z16APO. The genitalia were examined with a Motic BA410E microscope, and images of the genitalia were taken with a Motic Moticam Pro 285A. The series of images produced were montaged using Helicon Focus (HeliconSoft, Kharkiv, Ukraine) and further processed using Adobe Photoshop CS 11.0.

Morphological description of this new species is based on the holotype. The terminology of genitalia follows Ross (1945) and that of general morphology follows Viitasaari (2002). For a few terms, including middle fovea, lateral fovea, and lateral walls, we follow Takeuchi (1952).

Specimens examined in this study are deposited in the Asian Sawfly Museum, Nanchang, China (ASMN), including the holotype and all paratypes of this new species.

Abbreviations. OOCL — the distance between a lateral ocellus and the occipital carina, or the hind margin of the head where this carina would be if it was developed (Benson 1954); OOL — the shortest distance between an eye and a lateral ocellus; POL — the distance between the mesal margins of the two lateral ocelli.

Taxonomy

Nematus septentrionalis group

Diagnosis. Wings subhyaline or hyaline; stigma mostly black brown to black; frons often with hair warts and wrinkles; malar space usually not longer than diameter of median ocellus; postocellar area less than 2 times wide as long, and lateral furrows parallel; antenna not shorter than thorax and abdomen together; protarsomere 1 usually not shorter than following 3 tarsomeres together; apex of hind tibia and metatarsomere 1 compressed and inflated distinctly; metatarsomere 1 longer than following 4 tarsomeres together distinctly; inner apical spur of hind tibia 0.4–0.6 times as long as metatarsomere 1; tarsal claw with inner tooth usually as long as outer tooth; ovipositor sheath always shorter than metatarsomere 1; apex of cercus protruding beyond or as long as apical sheath in dorsal view; annular suture 1 of lancet curved; cypsella emarginate; serrulae knife-like; tangium long and wide; radix 0.7–0.8 times as long as lamnium; male tergum 8 with distinct procidentia; penis valve usually with long and sharp valvispina; paravalva lobe narrow, rounded or slightly sharp.

The diagnostic character of the *Nematus septentrionalis* group is the strongly compressed metatarsomere 1, which is clearly longer than the following 4 tarsomeres together.

Key to species of the *Nematus septentrionalis* group in China

1. Body with blue-black metallic luster; fore wing with infusate transverse band; ventral side of protibia dark yellowish brown, and dorsal side black; mesotibia entirely black; antennomere 3 as long as antennomere 4. China (Guangxi, Guizhou, Hunan, Zhejiang) *N. zhongi* Liu, Li & Wei **sp. nov.**
- . Body without metallic luster; fore wing without infusate transverse band; basal 1/3 to 1/2 of protibia and mesotibia white; antennomere 3 shorter than antennomere 4 2
2. Basal 1/2 of protibia and mesotibia, basal 2/5 of metatibia, protarsomere 1 and mesotarsomere 1 white; antennomere 3 slightly shorter than antennomere 4; base of sheath in dorsal view not constricted; annular suture 1 of lancet from base distinctly curved, dorsal side of annulus 1 slightly narrower than ventral side;

- valvispina slender. China (Henan, Zhejiang) *N. eglabratus* (Wei)
- . Basal 1/3 of all tibiae white; protarsomere 1 and mesotarsomere 1 yellowish brown; antennomere 3 distinctly shorter than antennomere 4; base of sheath in dorsal view constricted; annular suture 1 of lancet from base slightly curved, and dorsal side of annulus 1 distinctly broader than ventral side; valvispina short and relatively flat. China (Henan, Hubei, Hunan, Jiangsu, Shandong); Korea *N. juglandis* (Beneš)

***Nematus zhongi* Liu, Li & Wei sp. nov.** (Figs 1–9)

Female. Body length 11.5 mm.

Coloration. Body black and with blue-black metallic luster. Apical 1/3 of hind coxa, hind trochanter, basal 1/5 of hind tibia, cenchrus yellowish white; apical margin of fore femur, ventral side of fore tibia and tarsus dark yellowish brown. Fore wings with dark infusate maculae; apical 2/5 of fore wings light infusate, and the rest of wings pale brownish; stigma and most of veins black brown (Fig. 1).

Head. Inner margins of eyes parallel in frontal view, and distance between them 2.0 times as long as height of eyes. Base of labrum slightly elevated, and apex slightly rounded; base of clypeus elevated feebly, anterior margin of clypeus incised to 1/3 length of clypeus, lateral corners slightly rounded; labrum and clypeus shiny, with faint and sparse setigerous punctures, microsculpture indistinct. Malar space about as long as diameter of median ocellus (Fig. 3). Middle fovea long groove-like and slightly shallow, with a longitudinal groove at bottom. Frons hardly elevated, slightly shiny, with a few wrinkles, punctures minute and sparse; anterior wall elevated and curved, lateral wall slightly low and blunt. Interocellar furrow fine and shallow, postocellar furrow broad and shallow; POL : OOL : OCL = 1.0 : 1.1 : 1.0. Vertex and postocellar area shiny, punctures faint, with a few weak wrinkles; postocellar area feebly elevated, anterior half of mesosulcus clear, posterior half faint, 1.7 times as wide as long, lateral furrows slightly narrow and deep, parallel; in dorsal view, vertex approximately 0.5 times as long as eyes, convergent feebly between lateral margins (Fig. 2). Antenna filamentous, not compressed, about as long as thorax and abdomen together, tapered towards apex; antennomere 2 1.3 times wide as long, antennomere 3 as long as antennomere 4 and slightly longer than antennomere 5 (1.0 : 0.9) (Fig. 4).

Thorax. Mesonotum shiny, with fine and slightly dense punctures, without microsculpture; median mesoscutal groove slightly deep and fine; mesoscutellum almost flat, without middle ridge, almost as wide as long (1.0 : 0.9), lower than top of mesonotum in lateral view; mesoscutellum appendage shiny, with shallow and sparse punctures, microsculpture indistinct; about 1/4 length of scutellum, middle ridge indistinct. Cenchri distance as long as breadth of a cenchrus. Mesepisternum shiny, setigerous punctures small and dense, without microsculpture; anepimeron of mesepimeron slightly shiny, with small and sparse punctures, microsculptures rough; katepimeron smooth and shiny, lower side with wrinkles, punctures sparse; metepisternum slightly shiny, backside with hair warts, punctures minute and sparse; metepimeron smooth and shiny, with a few faint punctures, microsculptures indistinct (Fig. 5). Subbase of vein M in fore wings slightly curved; vein Sc almost interstitial with origin of vein M from R, vein M slightly longer than vein R + M; fore wings with crossvein cu-a joining cell 1M at basal 2/5, cell 2Rs 1.8 times as long as wide, 2.8 times as long as cell 1R1, 1st section of vein Rs exists, petiole of hind anal cell as long as cu-a, and cu-a curved.

Abdomen. All abdominal terga shiny, with small and sparse punctures, microsculpture

fine and very dense. Ovipositor sheath shiny, punctures on lateral of apical sheath distinct and slightly sparse, microsculpture indistinct; sheath 0.8 times as long as metatarsomere 1 and about as long as front tibia, apical sheath about as long as basal sheath; in lateral view, sheath tapering toward apex (Fig. 6); in dorsal view, apex of cercus protruding beyond apical sheath slightly. Lancet with 14 serrulae (Fig. 7); each middle serrula with 3–5 distal teeth; annular suture 1 curved, sutures 2–10 with bands of setae, longest setal band about 5/6 length of annulus; cypsella long, with less deeply emarginate; tangium 3.7 times as long as annulus 1, radix 0.8 times as long as lamnium; basal angle rounded, dorsal prominent; middle serrulae from base as in Fig. 8.

Legs. Protarsomere 1 about as long as following three tarsomeres together; inner apical spur of hind tibia 0.4 times as long as metatarsomere 1, and 1.5 times as long as breadth of apical hind tibia, hind tibia 1.1 times as long as hind tarsus, metatarsomere 1 compressed and inflated distinctly, 0.3 times as wide as long, and 1.6 times as long as following four tarsomeres together, the widest about as wide as apical hind tibia (Fig. 9); tarsal claw with inner tooth as long as outer tooth.

Male. Unknown.

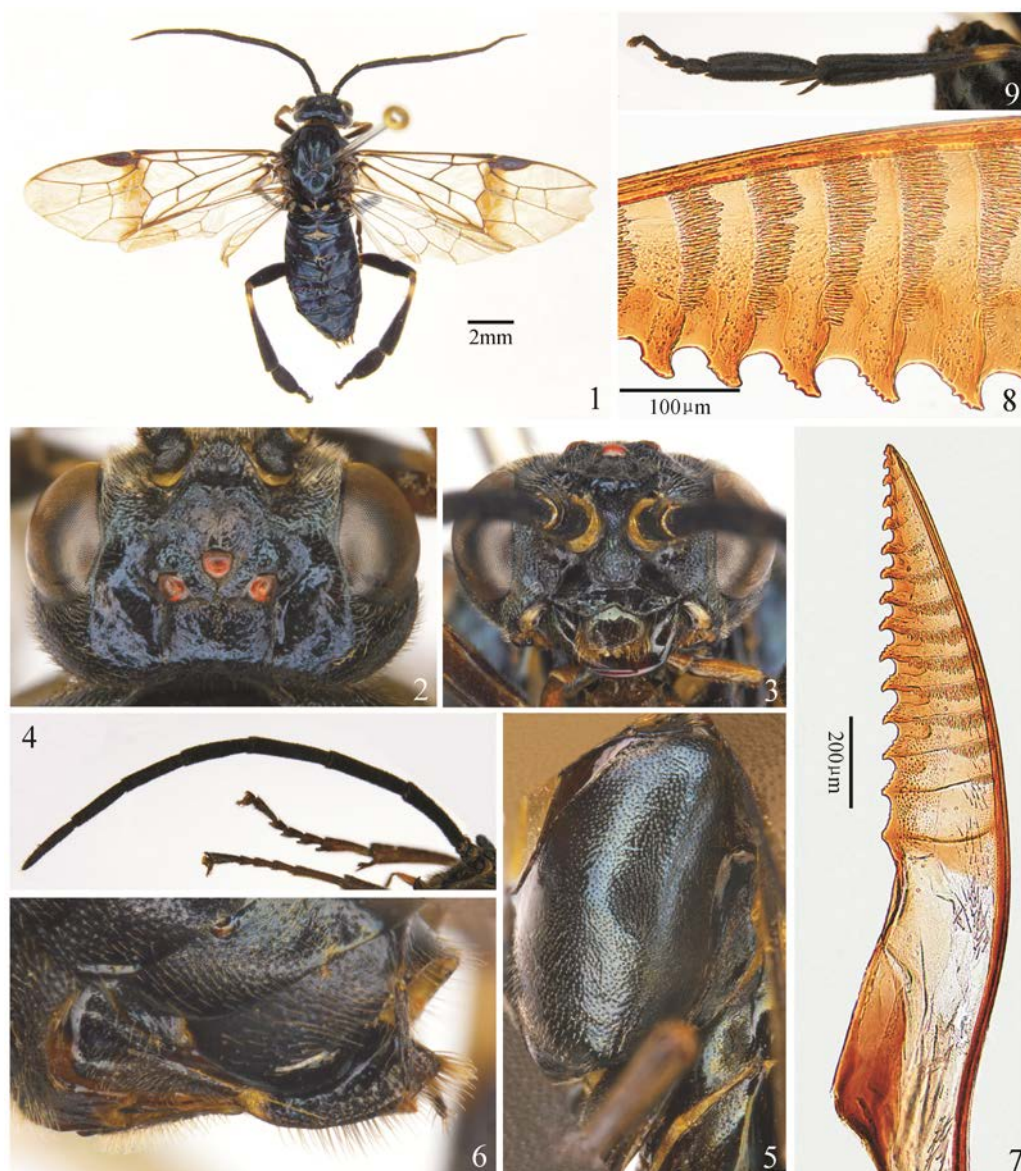
Holotype. ♀, **China**, Guangxi Zhuang Autonomous Region, Tianlin County, Mt. Cenwanglao, Tingcheping, 106°23'29"E, 24°29'15"N, alt. 1849 m, 29-IV-2012, Yihai ZHONG leg. **Paratypes.** 1♀, **China**, Guangxi Zhuang Autonomous Region, Tianlin County, Mt. Cenwanglao, Magunpo, 106°23'25"E, 24°24'54"N, alt. 1150 m, 28-IV-2012, Yihai ZHONG leg.; 1♀, **China**, Guangxi Zhuang Autonomous Region, Tianlin County, Mt. Cenwanglao, Tingcheping, 106°23'29"E, 24°29'15"N, alt. 1849 m, 08-V-2013, Yafei SHANG, Mengmeng LIU & Liwei QI leg.; 1♀, **China**, Guangxi Zhuang Autonomous Region, Tianlin County, Mt. Cenwanglao, Qixiangzhan, 106°22'49"E, 24°24'50"N, alt. 1232 m, 04-V-2013, Meicai WEI & Gengyun NIU leg.; 1♀, **China**, Zhejiang Province, Mt. Fengyang, Datianping, 119°10'21"E, 27°54'23"N, alt. 1296 m, 04-VIII-2008, Xiaoyu JIANG leg.; 1♀, **China**, Guizhou Province, Mt. Leigong, 14-VIII-1988, Xingcai LIANG leg.; 1♀, **China**, Hunan Province, Mt. Mang, 112°58'55"E, 24°57'04"N, alt. 1319 m, 21-IV-2021, Meicai WEI leg.

Variation. Body length 11.0–12.0 mm. Labrum black brown to black; basal 1/5 of hind tibia yellowish white to yellowish brown; vein Sc a little basad or interstitial with origin of vein M from R; fore wings with cu-a joining cell 1M at basal 1/3 to 2/5; petiole of hind anal cell 0.8 times to 1.0 times as long as cu-a; except for infusate maculae, the wings of the paratype collected from Zhejiang Province, are yellowish brown.

Etymology. This species is dedicated to the collector of the holotype, Dr. Yihai ZHONG.

Diagnosis. The new species is similar to *N. eglabratus* Wei, 1999, but can be distinguished from the latter by the following combination of characters: body with blue-black metallic luster; ventral side of fore tibia and protarsomere 1 dark yellowish brown, and dorsal side black; midtarsomere 1 black; basal 1/5 of hind tibia yellowish brown; fore wings with dark infusate maculae; antennomere 3 as long as antennomere 4, and slightly longer than antennomere 5 (1.0 : 0.9); tarsal claw with inner tooth as long as outer tooth; vein Sc almost interstitial with origin of vein M from R; cu-a curved; sheath 0.8 times as long as metatarsomere 1. *Nematus eglabratus*: body without metallic luster; basal 1/2 of fore and middle tibiae, tarsomeres 1 of fore and middle tibiae, basal 2/5 of hind tibia white; fore wings

without maculae; antennomere 3 slightly shorter than antennomere 4, and as long as antennomere 5; tarsal claw with inner tooth shorter than outer tooth; vein Sc far away from origin of vein M from R; cu-a straight, not curved; sheath as long as metatarsomere 1.



Figures 1–9. *Nematus zhongi* Liu, Li & Wei **sp. nov.** ♀, holotype. 1. Female adult, dorsal view; 2. Head, dorsal view; 3. Head, anterior view; 4. Antenna, lateral view; 5. Mesopleuron and metapleuron; 6. Ovipositor sheath, lateral view; 7. Lancet; 8. Middle serrulae; 9. Hind tibia and tarsus.

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