

Two new species of *Dolerus* Panzer (Hymenoptera: Tenthredinidae) from China

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Abstract: Two new species of Dolerinae from Mt. Liupan, Ningxia of China are described: *Dolerus liupanicus* Wei **sp. nov.** and *D. xiai* Wei **sp. nov.** *Dolerus liupanicus* is similar to *D. purus* Jakovlev, 1891 but differs from it by the pronotum, tegula, mesoscutal middle lobe and the first abdominal tergum entirely black, the setae of apical sheath almost straight and extending outward at an angle of about 100 degrees, the alaspiculae of middle annuli very large, the middle serrulae each with about 14 to 15 small subbasal teeth. *Dolerus xiai* is similar to *D. japonicus* Kirby, 1882 but differs from the latter by the fore wing deeply infusate, the mesepisternum and legs entirely black, the setae on apical sheath blackish brown, the apical sheath in lateral view narrow and strongly tapering toward apex, the middle carina on mesoscutellar appendage not concave, the male abdomen with broad reddish brown rings, and the dorsal apical corner of penis valve convex. A key to species of Dolerinae from Mt. Liupan and nearby area is also provided.

Key words: Tenthredinoidea; Dolerinae; sawflies; taxonomy; key

中国六盘山麦叶蜂属二新种（膜翅目：叶蜂科）

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摘要：记述宁夏六盘山麦叶蜂属2新种：六盘山麦叶蜂 *Dolerus liupanicus* Wei **sp. nov.**和夏氏麦叶蜂 *D. xiai* Wei **sp. nov.**。六盘山麦叶蜂与大刻麦叶蜂 *Dolerus purus* Jakowlew, 1891 近似，但前胸背板、翅基片、中胸背板前叶和腹部第1背板全部黑色，锯鞘缨毛较直，伸向外侧，夹角约为100度，锯腹片中部锯节翼突距很大，中部锯刃具14~15枚细小亚基齿等，与之不同。夏氏麦叶蜂与日本麦叶蜂 *Dolerus japonicus* Kirby, 1882 近似，但前翅深烟褐色，中胸前侧片和足全部黑色，锯鞘缨毛黑褐色，锯鞘端窄长，端部尖，小盾片附片中纵脊较直，雄虫腹部具宽红环，阳茎瓣头叶背侧顶端突出等，与之不同。还编制了六盘山及邻近地区的麦叶蜂亚科分种检索表。

关键词：叶蜂总科；麦叶蜂亚科；叶蜂；分类；检索表

Introduction

Dolerinae is a small sawfly subfamily in the family Tenthredinidae with about 200 known species belonging to 5 genera. This subfamily is widespread throughout the subarctic

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and northern temperate parts of Eurasia and North America, and only one species has been found to occur in the mountains of Uganda in East Africa (Benson 1952). Among them four genera and more than 60 species have been recorded from China (Wei *et al.* 2006; Wei 2024). The known host plants of Dolerinae species include many species of Poaceae, Juncaceae, Cyperaceae and some species of Equisetaceae (Benson 1952). Several species of *Neodolerus* Goulet are well known pests of wheat and barley in China, such as *N. tritici* (Chu), *N. shanghaiensis* (Haris), *N. manticatus* (Konow) and *N. hordei* (Rohwer).

Mt. Liupan is an arc-shaped mountain located nearby the northeast corner of the Qinghai Tibet Plateau. The sawfly diversity on this mountain is quite prominent among the Central Asian Regions of China. Here we describe two new species of Dolerinae of Tenthredinidae.

Material and methods

The specimens were examined with a stereomicroscope model Motic-SMZ-168. Adult images were taken with a Nikon D700 digital camera and a series of images montaged using Helicon Focus (©HeliconSoft). All images were further processed with Adobe Photoshop CS 11.0®. The terminology of genitalia follows Ross (1945) and that of general morphology follows Niu & Wei (2010). The annuli, ctenidia and serrulae are counted from the base of the lancet to the tip.

The holotype and paratypes of the new species are deposited in the Asian Sawfly Museum, Nanchang, China (ASMN).

Taxonomy

1. *Dolerus liupanicus* Wei sp. nov. (Figs 1A, 2)

Description. Female holotype (Fig. 1A). Length 11 mm; body black, abdominal tergites 2–6 reddish brown, lateral margins of tergite 6 black, apex of fore femur dark reddish brown; body hairs silver, setae on sheath black brown; wings greyish hyaline, pterostigma and veins black.

Head below ocelli coarsely punctured without smooth interspaces, temple sparsely punctured with broad and smooth interspaces (Fig. 2A); mesoscutal middle lobe and mesoscutellum densely punctured, lateral lobes minutely and sparsely punctured, mesoscutellar appendage impunctate, densely microsculptured; punctures on upper half of mesepisternum dense and quite large, about as large as ocellus (Fig. 2B), lower half of mesepisternum minutely and sparsely punctured; middle part of first abdominal tergum sparsely punctured mixed with some spines, surface smooth and shiny; tergites 2–6 smooth and glabrous; hairs on dorsum of head slightly longer than diameter of ocellus, hairs on mesopleuron 1.5–1.8 times as long as diameter of ocellus with apex weakly curved.

Clypeus broadly and deeply incised to a depth about 0.6 times clypeus length; malar space 1.3 times diameter of median ocellus; postocellar area 1.4 times as broad as long, lateral furrows shallow and short, subparallel to each other; head weakly narrowed behind eyes in dorsal view; antenna slightly longer than head and thorax together but shorter than abdomen;

mesoscutellar appendage 1.6 times as long as diameter of median ocellus, middle carina quite low and faint; distance between basal two pulvilli of hind tarsus 1.25 times length of second pulvillus, claw with a minute inner tooth at apical 0.4; sides of sheath parallel in dorsal view with apex obtuse, lateral setae almost straight and extending outward at an angle of 95 degrees, apical spines on cercus extending almost to end of setae on sheath (Fig. 2D); ventral margin of ovipositor sheath nearly straight, apical sheath small and narrowed toward apex, clearly shorter than basal sheath (Fig. 2E); lancet with 10 annuli, annuli 1–7 with distinct alaspiculae, first alaspicula very small, fifth alaspicula very large and acute, extending backward to basal 0.75 of annulus, fifth spiculella very large and extending to apical third of fourth serrula, each annulus with a long row of subalar spines and alaspinulae; serrulae almost flat, fourth serrula with 14 small subbasal teeth (Figs 2G, 2H).

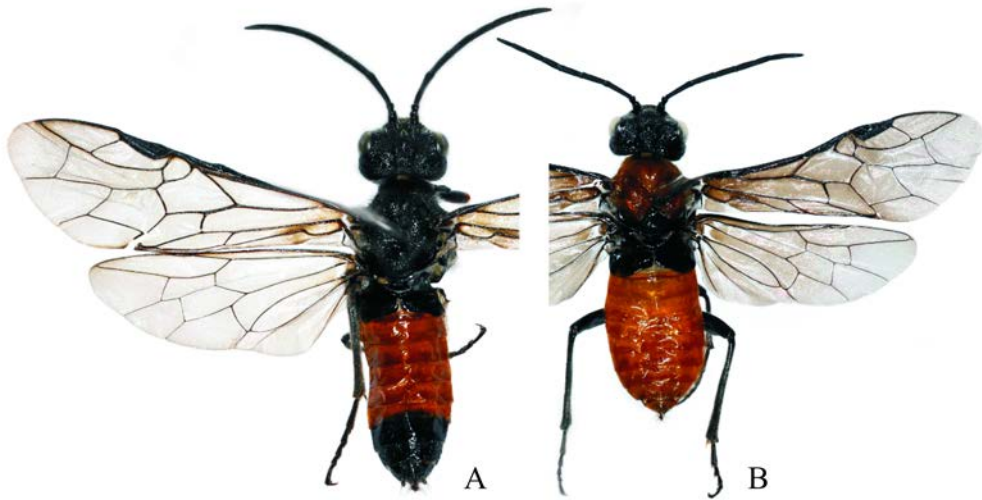


Figure 1. Adults of *Dolerus* spp. ♀, holotypes. A. *D. liupanicus* Wei **sp. nov.**; B. *D. xiai* Wei **sp. nov.**

Male. Body length 10.5 mm; color and structure similar to female except for the following: head narrowed behind eyes, antenna distinctly longer than head and thorax together, eighth tergite with a narrow triangular middle naked area; subgenital plate 1.3 times as long as broad with apical margin subtruncate; valviceps quite broad, apical margin obliquely truncate, ventral apical corner with a large and curved hook, dorsal margin weakly convex with minute teeth, valvar strut broad and oblique with apical end above membranous area (Fig. 2F).

Holotype. ♀, **China**, Ningxia, Mt. Liupan, Erlonghe Forest Plant, alt. 2,036 m, 18-V-2023, legs. Gucheng XIA, Taiyu SHI & Guixia CAO. **Paratypes.** 2♂, data same as the holotype.

Etymology. This species is named after the type locality.

Remarks. This new species is quite similar to *D. purus* Jakowlew as shown by the head and thorax with long silver hairs, the upper half of mesepisternum with very large and dense punctures, the alaspiculae of lancet distinct and penis valve very broad with a large ventral apical hook. *D. liupanicus* distinguishes from *D. purus* by the pronotum, tegula, the

mesoscutal middle lobe and the first abdominal tergum entirely black, the lateral setae of sheath almost straight and extending outward at an angle more than 90 degrees, the middle alaspiculae very large and the middle serrulae each with about 14 small subbasal teeth. In *D. purus* the pronotum, tegula, the mesoscutal middle lobe and the first abdominal tergum reddish brown (Jakowlew 1891), the lateral setae of sheath distinctly curved and extending more backward with an angle less than 60 degree (Haris 2000), the middle alaspiculae small and the middle serrulae each with about 8–9 small subbasal teeth.

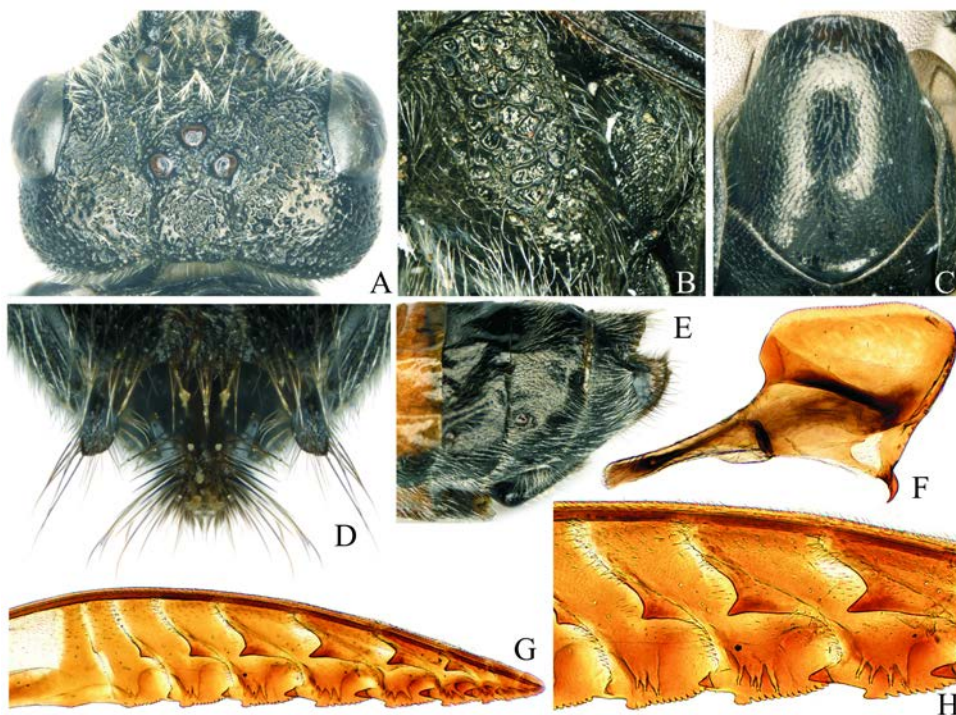


Figure 2. *Dolerus liupanicus* Wei **sp. nov.** A. Female head, dorsal view; B. Male mesepisternum; C. Male subgenital plate, ventral view; D. Cerci and sheath, dorsal view; E. Apex of female abdomen, lateral view; F. Penis valve; G. Lancet; H. The second to fourth annuli of lancet.

2. *Dolerus xiai* Wei **sp. nov.** (Figs 1B, 3)

Description. Female holotype (Fig. 1B). Length 8.5–9 mm; body black, pronotum, propleuron, tegula, mesoscutal middle lobe and lateral lobes reddish brown; abdomen reddish brown, tergites 1 and sheath black; body hairs silver, setae on sheath dark brown; wings deeply infuscate, pterostigma and veins black.

Head below ocelli coarsely punctured with fine interspaces, temple sparsely punctured with distinct smooth interspaces; mesoscutal middle lobe and mesoscutellum densely punctured, lateral lobes minutely and sparsely punctured, anterior part of mesoscutellum with distinct smooth patch, mesoscutellar appendage impunctate, densely microsculptured; punctures on upper half of mesepisternum dense, clearly smaller than ocellus, lower half of mesepisternum minutely and sparsely punctured; abdominal tergites including first tergum

smooth and shiny, impunctate and without microsculptures; hairs on dorsum of head straight and slightly longer than diameter of ocellus, hairs on mesopleuron 1.3–1.5 times as long as diameter of ocellus with apex curved.

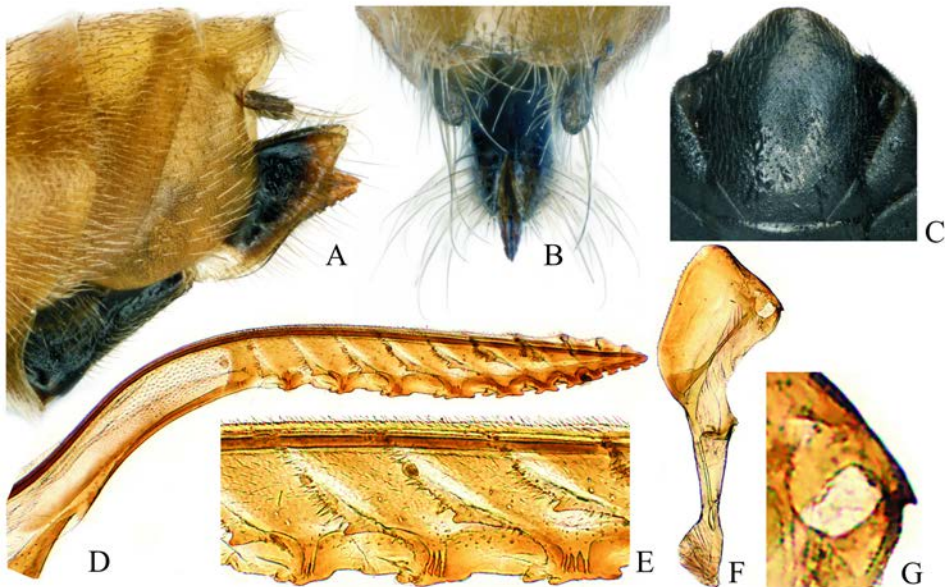


Figure 3. *Dolerus xiai* Wei **sp. nov.** A. Apex of female abdomen, lateral view; B. Cerci and sheath, dorsal view; C. Male subgenital plate, ventral view; D. Lancet; E. The second to fourth annuli of lancet; F. Penis valve; G. Ventral apical corner of valviceps.

Clypeus narrowly and deeply incised to a depth about 0.55 times clypeus length; malar space 1.3 times diameter of median ocellus; postocellar area 1.5 times as broad as long, lateral furrows deep and straight, slightly convergent backwards; head weakly narrowed behind eyes in dorsal view; antenna slightly longer than head and thorax together but shorter than abdomen; mesoscutellar appendage 2 times as long as diameter of median ocellus, middle carina quite sharp; distance between basal two pulvilli of hind tarsus 1.25 times length of second pulvillus, claw with a minute inner tooth just at middle; sheath distinctly narrowed toward apex in dorsal view, apex acute, lateral setae long and distinctly curved, extending outward at an angle of about 120 degrees, apical spines on cercus extending almost to end of setae on sheath (Fig. 3B); ventral margin of ovipositor sheath not straight, apical sheath as long as basal sheath, ventrally convex at base and strongly narrowed toward apex (Fig. 3A); lancet with 12 annuli, annuli 1–7 with distinct but small alaspiculae, alaspiculae almost equal in size, fifth alaspicula extending backward to basal 0.4 of annulus, fifth spiculella distinct but remote from fourth serrula, each annulus with a long row of subalar spines and alaspinulae; serrulae almost flat and without distinct small subbasal tooth (Figs 3D, 3E).

Male. Body length 8.5 mm; body and legs black, abdominal segments 2–7 reddish brown, extreme base of tergite 2 and narrow apical margin of segment 6 black; subgenital plate 1.1 times as long as broad with apical margin roundish; valviceps subtriangular, apical margin

almost truncate, ventral apical corner with a small tooth, dorsal margin weakly convex with minute teeth, dorsal apical corner convex, caudal corner round, apical 0.65 of valvar strut very narrow with apical end extending to small membranous area (Figs 3F, 3G).

Holotype. ♀, **China**, Ningxia, Mt. Liupan, Erlonghe Forest Plant, alt. 2,056 m, 18-V-2023, legs. Gucheng XIA. **Paratypes.** 1♀2♂, data same as the holotype.

Etymology. This species is named after the collector of the type material.

Remarks. This new species is quite similar to *D. japonicus* Kirby but differs from it by the forewing distinctly infusate, the mesepisternum and legs entirely black, the lateral setae of sheath black brown, the apical sheath in lateral view narrow and strongly tapering toward apex, the mesoscutellar appendage with sharp middle carina, the apical sheath in female narrow and long, the male abdominal segments 2–7 reddish brown, and the dorsal apical corner of valviceps convex. In *D. japonicus* the forewing hyaline, the upper third of mesepisternum reddish brown, each knee and base of tibia reddish brown, the lateral setae of sheath pale brown, the apical sheath in lateral view broad in basal part, the mesoscutellar appendage with low and concave middle carina, the apical sheath in female broad, the male abdomen entirely black, and the dorsal apical corner of valviceps round (Haris 2000).

Key to species of *Dolerinae* occurring on Mt. Liupan and nearby area

1. Apical sheath clearly longer than basal sheath; lancet simple without alaspicula and spiculella; abdomen black with strong microsculptures; thorax partly red in female..... 2
- . Apical sheath as long as or shorter than basal sheath; lancet with distinct alaspiculae and spiculellae; abdomen partly red in female; abdominal tergites smooth, without microsculpture; thorax partly red or entirely black in female..... 4
2. Upper part of mesepisternum red; mesoscutellar appendage smooth; penis valve with dorsal apical corner evenly rounded..... 3
- . Mesepisternum entirely black; mesoscutellar appendage microsculptured; mesoscutal middle lobe entirely red; upper half of mesepisternum coarsely punctured without smooth interspaces; penis valve with dorsal apical corner distinctly convex..... *Neodolerus tritici* (Chu)
3. Mesoscutal middle lobe partly black; punctures on mesepisternum large and sparse, with broad and smooth interspaces..... *Neodolerus shanghaiensis* (Haris)
- . Mesoscutal middle lobe entirely red; punctures on mesepisternum small and very dense without smooth interspace..... *Neodolerus manticus* (Konow)
4. Upper third of mesepisternum red, mesoscutal lateral lobes entirely red, metathorax largely red with metascutellum black..... *Dolerus zaplatus* Wei
- . Mesepisternum and metathorax entirely black..... 5
5. Head and thorax with erect and blackish hairs about as long as diameter of ocellus; abdomen tergites 2–10 red; pronotum, mesoscutal middle lobe and anterior corner of lateral lobes red; punctures on mesepisternum much smaller than ocellus..... *Dolerus cameroni* Kirby
- . Head and thorax with silver hairs much longer than diameter of ocellus, apex distinctly curved..... 6
6. Punctures on mesepisternum as large as ocellus; mesoscutal lateral lobes and four apical segments of abdomen black; subgenital plate in male 1.3 times as long as broad with apical margin subtruncate; valviceps of penis valve subquadrate with a large apical-ventral hook..... 7
- . Punctures on mesepisternum smaller than ocellus; pronotum, mesoscutal middle and lateral lobes reddish yellow, abdominal tergites 2–10 yellow; subgenital plate in male 1.1 times as long as broad with apical

- margin round; valviceps of penis valve subtriangular with a minute apical-ventral tooth.....
*Dolerus xiai* Wei **sp. nov.**
7. Pronotum, mesoscutal middle lobe and first abdominal tergite entirely black; alaspicula of fifth annulus very large and extending more than 0.7 middle length of annulus, fourth serrula with 14 small teeth
*Dolerus liupanicus* Wei **sp. nov.**
- Pronotum and mesoscutal middle lobe entirely and first abdominal tergite largely reddish yellow; alaspicula of fifth annulus small and extending less than 0.4 middle length of annulus, fourth serrula with 8–9 small teeth *Dolerus purus* Jakowlew

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