

A new species of *Spinarge* (Hymenoptera: Argidae) with a revised key to Chinese species

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Abstract: The diagnosis of *Spinarge* Wei of Argidae is briefly discussed. A new species of *Spinarge* Wei is described and illustrated from Hebei, China: *Spinarge heterocarina* Wei **sp. nov.** A key to known species of *Spinarge* from China is revised.

Key words: Tenthredinomorpha; Arginae; sawflies; taxonomy

刺背三节叶蜂属一新种暨中国已知种检索表修订 (膜翅目: 三节叶蜂科)

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摘要: 简要讨论了三节叶蜂科刺背三节叶蜂属的属征, 记述了中国河北的刺背三节叶蜂属 1 新种: 异脊刺背三节叶蜂 *Spinarge heterocarina* Wei **sp. nov.**, 并修订了中国刺背三节叶蜂属的分种检索表。

关键词: 叶蜂亚目; 三节叶蜂亚科; 叶蜂; 分类

Introduction

Spinarge Wei, 1998 is a small genus in the family Argidae. *Spinarge* occurs in Asia and Europe but mainly in the eastern Asian region, and a total of 12 species have been recorded worldwide (Hara & Shinohara 2006; Liu *et al.* 2021). In China, there are 7 recorded species (Wei 1998; Wei & Nie 1998; Hara & Shinohara 2006; Liu *et al.* 2021). This paper reports one additional species in this genus from north China.

The males of *Spinarge* are very easy to be recognized by their fifth abdominal tergum having a long and sharp middle spur (Fig. 1I). But the females of this genus are difficult to distinguish from the species of *Arge*, though the longitudinal fine middle carina in abdominal terga may be helpful to recognize them (Fig. 1E). The validity of this genus needs further study relative to the generic phylogeny of Arginae. Here we follow the definition of *Spinarge* Wei by Hara & Shinohara (2006).

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Material and methods

The specimens were examined with a Leica S8APO dissection microscope. Adult images were taken with a Nikon D700 digital camera and the series of images were montaged using Helicon Focus (©HeliconSoft). Detailed images were taken with a Leica Z16 APO/DFC550. All images were further processed using Adobe Photoshop CS 6.0.

The terminology of sawfly genitalia follows Ross (1945) and that of general morphology follows Niu & Wei (2010).

All types of this new species are deposited in the Asian Sawfly Museum, Nanchang, China (ASMN).

Taxonomy

Spinarge Wei, 1998

Diagnosis. Body medium sized, mainly black, usually with metallic tinge; body largely smooth and shiny; clypeus flat with anterior incision; eyes large, inner margins feebly convergent downwards, distance between them much broader than longest axis of eye; malar space not shorter than diameter of median ocellus; middle of face strongly convex; occipital carina absent; female flagellum simple, enlarged toward apex; male flagellum straight with erect hairs; middle tibia with a preapical spur, hind tibia with or without preapical spur; claw simple, without basal lobe or inner tooth; vein Sc present, R+M very short, cells R1 in fore wing and hind wing close, hind anal cell close with a long petiole, cell M slightly smaller than Rs in hind wing; female abdominal terga with indistinct middle carina, male tergum 5 with a long and sharp middle spur; ovipositor sheath simple and stout; lancet simple, without stout annular spines, serrulae oblique.

Host plant. *Sorbus* spp. and *Prunus* spp. of Rosaceae; *Betula* spp. of Betulaceae (Hara & Shinohara 2006); and *Tilia* spp. of Tiliaceae (Shinohara & Hara 2012).

Hara & Shinohara (2006) and Liu *et al.* (2021) provided keys to species groups of this genus.

Spinarge heterocarina Wei sp. nov. (Fig. 1)

Female. Body length 9.5–10 mm; body including antenna and legs black with faint bluish tinge; fore wing strongly infusate in basal two thirds and hyaline in apical third, pterostigma and veins black, hind wing almost hyaline (Fig. 1A); body hairs mainly black, only hairs on face and mouthparts partly silver.

Dorsum of head and of thorax with sparse and small punctures, punctures on frons and clypeus slightly denser than those on dorsum, surface still smooth; parapsis, metanotum, pleura and abdomen smooth, strongly shiny. Hairs on dorsum of head as long as diameter of lateral ocellus, hairs on mesopleuron slightly longer than diameter of lateral ocellus.

Labrum short, anterior margin bent down; clypeus with deep middle incision (Fig. 1C); malar space 2 times diameter of median ocellus and 1.5 times diameter of lateral ocellus; face strongly and roundly convex without middle carina; lateral carina between toruli very short and low, obtuse; middle fovea deep, broadly open toward shallow frontal basin; shortest distance between eyes 1.4 times longest axis of eye; interocellar furrow absent, postocellar

furrow shallow but distinct; postocellar area short and distinctly oblique backwards; in dorsal view head weakly dilated behind eyes, temple slightly shorter than eye (Fig. 1G); antenna as long as thorax, flagellum slightly longer than head breadth, distinctly enlarged toward apex (Fig. 1F). Mesoscutellum flat, posterior slope steep, distance between cenchri 0.3 times longest axis of a cenchrus. Legs slender, hind tibia without preapical spur; metabasitarsus as long as following 3 tarsomeres combined. Fore wing with vein Sc basad apex of vein 1M, vein R+M and R clearly shorter than Sc, cu-a meeting cell 1M slightly beyond middle, cell 2Rs longer than 3Rs, fourth abscissa of vein Rs 0.8–1 times as long as third abscissa of Rs, basal anal cell close or nearly so; hind wing with anal cell close, length ratio of anal cell and anal petiole as 50 : 29, cell M shorter than Rs. Middle of abdominal terga each with an indistinct carina, tergum 5 sometimes with a recognizable middle carina (Fig. 1E); posterior margin of sternum 7 truncate; ovipositor sheath in dorsal view as Fig. 1D, lateral view as Fig. 1H; lancet gradually tapering toward apex, annular spines short and thin (Fig. 1M), distance between basal two serrulae clearly longer than distance between second and third serrulae (Fig. 1K); middle serrulae oblique with fine and indistinct teeth (Fig. 1L).

Male. Body length 8.5 mm; color and structure similar to female except for: antenna longer, flagellum not enlarged toward apex and with long setae; middle spur of abdominal tergum long and convex, almost reaching to apical margin of tergum; hind wing also distinctly infusate in basal two thirds; apical half of subgenital plate distinctly narrowed; harpe broader than long, apex round, gonostipe broad (Fig. 1N); penis valve with a narrow ventral apical process, not extending upwards, dorsal apical corner roundly protruding, caudal lobe broad (Fig. 1J).

Holotype. ♂, **China**, Hebei, Mt. Xiaowutai, Chiyapu, 115°01.263'E, 39°59.412'N, alt. 1485 m, 24-VII-2008, Zejian LI leg. **Paratypes.** 13♀1♂, data same as the holotype; 1♀, **China**, Hebei, Mt. Xiaowutai, Chiyapu, 115°01.263'E, 39°59.412'N, alt. 1485 m, 14-VII-2007, Zejian LI leg; 1♀, **China**, Hebei, Mt. Xiaowutai, Xigoumen, 115°01.415'E, 39°59.172'N, alt. 1607 m, 15-VII-2007, Zejian LI leg; 4♀, **China**, Hebei, Mt. Xiaowutai, Xigoumen, 115°01.415'E, 39°59.172'N, alt. 1607 m, 22–26-VII-2008, Zejian LI leg; 1♀, **China**, Hebei, Mt. Xiaowutai, Donggoumen, 115°02.039'E, 39°59.266'N, alt. 1325 m, 17-VII-2007, Zejian LI leg; 2♀, **China**, Hebei, Mt. Xiaowutai, Donggoumen, 115°02.039'E, 39°59.266'N, alt. 1325 m, 27–28-VII-2008, Zejian LI leg.

Etymology. The specific epithet of this new species is composed of *heteros* and *carina*, referring to the different patterns of the middle carina on the female and male fifth abdominal terga.

Remarks. This new species is quite similar to *S. sichuanensis* Wei, 1998 from Sichuan, but differs from it by the following characters: the mesepisternum with black hairs; the fourth abscissa of vein Rs 0.8–1 times as long as the third abscissa of Rs; the middle fovea broadly opened upwards; the female serrulae more oblique with each serrula distinctly separated from others; the ventral apical process of valviceps horizontal, not extending upwards, and the caudal lobe broad. In *S. sichuanensis*, the mesepisternum with pale hairs; the fourth abscissa of vein Rs very short, about 0.25–0.3 times as long as the third abscissa of Rs; the middle fovea narrowly opened upwards; the middle and apical serrulae almost flat with serrulae contiguous together; the ventral apical process of valviceps distinctly extending upwards, and the caudal lobe narrow.

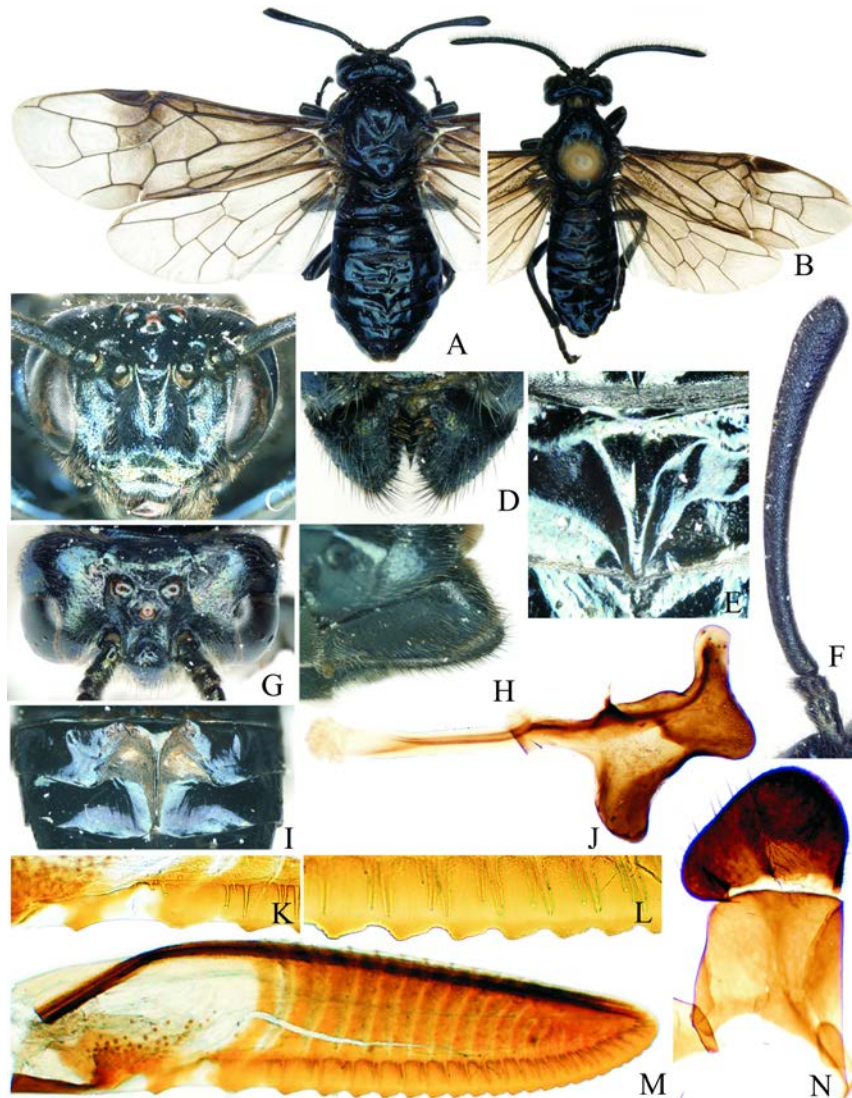


Figure 1. *Spinarge heterocarina* Wei sp. nov. A. Female adult, dorsal view, paratype; B. Male adult, dorsal view, holotype; C. Head, frontal view; D. Ovipositor sheath, dorsal view; E. Middle process of tergum 5; F. Antenna; G. Head, dorsal view; H. Ovipositor sheath, lateral view; I. Middle process of tergum 5; J. Penis valve; K. Basal three serrulae; L. The 5th–10th serrulae; M. Lancet; N. Harpe and gonostipe. C–I, K–M. Female; J, N. Male.

Key to species of *Spinarge* from China

1. Wings including pterostigma and veins yellow; body including antenna and legs black. China (Ningxia, Shaanxi, Hubei, Sichuan) *S. chrysoptera* (Gussakovskij)
- . Wings hyaline or partly infusate, not yellow, pterostigma blackish brown to black 2
2. Hind tibia without preapical spur; hairs on mesepisternum blackish or silver; harpe broader than long; valviceps narrow, with long ventral apical process; wings strongly infusate with paler apex 3
- . Hind tibia with preapical spur; mesepisternum with silver hairs; harpe longer than broad; valviceps broad, without narrow apical process 6
3. Body with weak metallic bluish tinge; middle process of fifth tergum in male long and convex, apex almost

- reaching to posterior margin of sixth tergum; valviceps of penis valve without narrow dorsal apical process, ventral apical process narrow, about 2 times as long as broad..... 4
- . Body with strong bluish or purplish reflection; middle process of fifth tergum in male short and almost flat, apex reaching to about middle of sixth tergum 5
4. Mesepisternum with black hairs; ventral apical process of valviceps horizontal, not extending upwards, caudal lobe broad. China (Hebei)..... *S. heterocarina* Wei **sp. nov.**
- . Mesepisternum with silver hairs; ventral apical process of valviceps extending obliquely upwards, caudal lobe narrow. China (Sichuan) *S. sichuanensis* Wei
5. Body with purplish reflection; upper of mesepisternum with pale brown hairs; valviceps with a narrow dorsal apical process, ventral apical process narrow, about 2 times as long as broad. China (Hunan) *S. liui* Wei
- . Body with blue reflection; mesepisternum with black hairs; valviceps without a dorsal apical process, ventral apical process short and broad, about as long as broad. China (Zhejiang)..... *S. lishuii* Liu, Li & Wei
6. Tibiae and tarsi yellowish brown; spines on vein C yellowish brown; middle fovea and frontal basin broadly connected; male subgenital plate strongly narrowed from middle toward apex. China (Hebei); Palaearctic..... *S. metallica* (Kulg)
- . Apex of tibia and tarsus entirely black; spines on vein C black; middle fovea and frontal basin broadly or narrowly connected; male subgenital plate broadly roundish at apex 7
7. Antenna and legs entirely black. China (Zhejiang)..... *S. hyalina* Wei & Nie
- . Antennal flagellum reddish brown; hind tibia largely white. China (Jilin); northeastern Asia *S. fulvicornis* (Mocsáry)

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