

A new species of the *Macrophya malaisei* group in *Macrophya* Dahlbom (Hymenoptera: Tenthredinidae) from China

Zejian LI¹, Mengmeng LIU^{2①}, Meicai WEI^{3①}

1. Provincial Postdoctoral Research Station, Scientific Research and Management Center of East China Medicinal Botanical Garden, Lishui Forestry Bureau, Lishui, Zhejiang 323000, China

2. College of Ecology, Lishui University, Lishui, Zhejiang 323000, China

3. College of Life Sciences, Jiangxi Normal University, Nanchang, Jiangxi 330022, China

Abstract: A new species of the *Macrophya malaisei* group in the genus *Macrophya* Dahlbom, 1835 from Zhejiang in China is described: *M. alboclypea* Li, Liu & Wei **sp. nov.** A revised key to the Chinese and Japanese species of the *M. malaisei* group is provided.

Key words: Tenthredinoidea; Tenthredininae; taxonomy; key

中国钩瓣叶蜂属玛氏钩瓣叶蜂种团 *Macrophya malaisei* group 一新种 (膜翅目: 叶蜂科)

李泽建¹, 刘萌萌^{2①}, 魏美才^{3①}

1. 丽水市林业局, 华东药用植物园科研管理中心, 省级博士后科研工作站, 浙江 丽水 323000; 2. 丽水学院生态学院, 浙江 丽水 323000; 3. 江西师范大学生命科学学院, 江西 南昌 330022

摘要: 记述中国钩瓣叶蜂属 *Macrophya* Dahlbom, 1835 玛氏钩瓣叶蜂种团 *Macrophya malaisei* group 1 新种: 白唇钩瓣叶蜂 *M. alboclypea* Li, Liu & Wei **sp. nov.**。修订了玛氏钩瓣叶蜂种团中国及日本种类分种检索表。

关键词: 叶蜂总科; 叶蜂亚科; 分类; 检索表

Introduction

Macrophya Dahlbom, 1835, the third largest genus in the Tenthredininae and the fourth largest of the family Tenthredinidae, contains 326 species worldwide (Zhang *et al.* 2023). In China, 186 *Macrophya* species have been recorded through June 2025 (Zhang *et al.* 2023).

The *M. malaisei* group is a small-sized group in the genus *Macrophya* with 9 previously known world species including one subspecies. Among them, *M. harai* Shinohara & Li, 2015, *M. katayamai* Shinohara, 2020, *M. malaisei* Takeuchi, 1937 and *M. malaisei malaisei* Takeuchi, 1937 occur in Japan (Takeuchi 1937; Shinohara & Li 2015; Shinohara 2020). In China, there are 6 species: *M. constricta* Wei & Chen, 2002, *M. diqingensis* Li, Liu & Wei, 2017, *M. glabrifrons* Li, Liu & Wei, 2018, *M. malaisei* Takeuchi, 1937, *M. pilotheca* Wei &

Accepted 12 June 2025. Published online 25 August 2025.

① Corresponding authors, E-mails: liummy2012@163.com; weimc@126.com

Ma, 1997 and *M. tenuitarsalina* Li, Liu & Wei, 2017 (Li *et al.* 2017, 2018; Liu *et al.* 2017). Herein, a new species belonging to the *M. malaisei* group from Zhejiang, China is described and illustrated: *Macrophya alboclypea* Li, Liu & Wei **sp. nov.** A key to all Chinese and Japanese species is revised.

Material and methods

Specimens were collected using entomological sweep nets in the forest of Zhejiang from China.

Specimens were examined with a Motic-SMZ-171 stereomicroscope. Adult images were taken with a Nikon D700 digital camera and the series of images montaged using Helicon Focus (HeliconSoft, Kharkiv, Ukraine). All images were further processed with Adobe Photoshop CS 11.0.

Morphological description of the 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 (e.g. middle fovea and lateral fovea), we follow Takeuchi (1952).

The holotype and all paratypes are deposited in the Asian Sawfly Collection, Nanchang, China (ASMN).

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 were developed (Benson 1954); OOL — the shortest distance between an eye and a lateral ocellus; POL — the shortest distance between the mesal margins of the two lateral ocelli.

Taxonomy

Macrophya malaisei species group

Diagnosis was first provided by Liu *et al.* (2017).

A revised key to the Chinese and Japanese species of the *Macrophya malaisei* group

1. Below pterostigma with slightly clear smoky macula in fore wing; apical 2/3 of clypeus white, basal 1/3 black; posterior margin of pronotum with narrow white band; subapex of hind tibia with a small white macula weakly (sometimes hind tibia entirely black); ovipositor sheath clearly shorter than metabasitarsus. China (Sichuan)..... *M. tenuitarsalina* Li, Liu & Wei (♀)
- Wings hyaline, below pterostigma without smoky macula in fore wing; other characters not different from the former..... 2
2. Ventral sides of fore and middle trochanters with clear black maculae at least, hind trochanter entirely white..... 3
- All trochanters entirely white..... 5
3. Abdominal tergum 1 without white macula laterally, abdominal terga 2–4 with clear white maculae laterally; dorsal side with white macula at center and 1/3 time length of hind tibia; dorsal side of hind tarsomeres with white maculae clearly. (Male: posterior area and mesoscutellum entirely black; dorsal side with white macula at center and 2/5 time length of hind tibia; abdominal sternums 1–6 with clear white maculae). Japan (Hokkaido, Honshu)..... *M. harai* Shinohara & Li (♀♂)

- . Abdominal tergum 1 with clear white macula laterally, abdominal tergum 2 entirely black; subapex in dorsal side of hind tibia with a short white macula; other characters not different from the former..... 4
4. Frontal area in dorsum of head and surrounding areas densely and coarsely punctate, between punctures with narrow interspace, without clear microsculpture; labrum partly black, apex with a small white triangular macula; clypeus partly black, bases of lateral lobes with small roundish white maculae; subapical 2/7 of hind tibia with long white macula; hind tarsomeres entirely black, dorsal sides without white macula; serrulae clearly protruding, cypsella broader than serrula. Japan (Honshu, Shikoku, Kyushu); China (Anhui, Hubei, Zhejiang) *M. malaisei* Takeuchi (♀♂)
- . Frontal area in dorsum of head and surrounding areas sparsely and weakly punctate, between punctures with clear interspace, microsculptures weak; labrum and clypeus entirely black; serrulae slightly flat, cypsella slightly shorter than serrula. China (Henan, Shaanxi) *M. constricta* Wei & Chen (♀)
5. Frontal area in dorsum of head very smooth, without puncture or microsculpture; postocellar area approximately 1.8 times broader than long; lateral sides of pronotum with clear yellowish-white maculae; posterior margin of abdominal tergum 1 with broad yellowish-white macula, lateral sides entirely black; abdominal terga 2–7 with clear yellowish-white maculae laterally; basal 2/5 of hind femur yellowish-white, apical 3/5 black. China (Hubei, Zhejiang) *M. glabrifrons* Li, Liu & Wei (♀♂)
- . Frontal area in dorsum of head more or less with some punctures; other characters not different from the former 6
6. Frontal field in dorsum of head and surrounding areas sparsely and weakly punctate, between punctures with broad interspace; apex of mesoscutellar appendage white, metascutellum entirely black; abdominal terga 1–2 with small white maculae laterally, abdominal terga 3–5 with large white maculae laterally. China (Yunnan) *M. diqingensis* Li, Liu & Wei (♀)
- . Frontal field in dorsum of head and surrounding areas densely and coarsely punctate, between punctures with narrow interspace; mesoscutellar appendage entirely black, metascutellum largely white at least; abdominal terga 1–5 with clear white maculae laterally 7
7. Body broad; anterior margin of clypeus slightly deep, bottom arcuate, center with a gap; postocellar area with clear yellowish-white macula, “山” shaped; mesonotum largely black, inner sides of median mesoscutal lobes with a double long triangular yellowish-white maculae; subapical 1/2 of hind tibia with yellowish-white macula. (Male: abdominal terga 2–4 with small yellowish-white maculae laterally, abdominal terga 5–8 entirely black). China (Anhui, Fujian, Guangxi, Jiangxi, Hunan) *M. pilotheca* Wei & Ma (♀♂)
- . Body thin; anterior margin of clypeus deep, bottom flat and straight, center without gap; postocellar area with narrow macula; mesonotum entirely black; subapical 1/3 of hind tibia with white macula. (Male: abdominal terga 2–4 with long white maculae clearly, abdominal terga 6–8 with clearly white maculae laterally). China (Zhejiang) *M. alboclypea* Li, Liu & Wei **sp. nov.** (♀♂)

***Macrophya alboclypea* Li, Liu & Wei sp. nov.** (Figs 1, 2)

Female. Holotype. Body length 8.5 mm. Body largely black; palp largely blackish brown; following parts white: basal half of mandibles, center of labrum, clypeus, posterior margin of postocellar area with narrow maculae, posterior margin of pronotum, outer margin of tegula, center of mesoscutellum, metascutellum, posterior margin and large maculae in lateral corners of abdominal tergum 1, broad maculae in apical 1/4–1/3 of abdominal terga 2–7, long triangular maculae in apex at center of abdominal terga 6–8 and abdominal tergum 10. Legs largely black; fore and middle tarsomeres blackish brown; apical parts of fore and middle coxae, an oval macula on outer side and apical part of hind coxa, all trochanters, some stripes

on anterior side and basal margin of fore femur, basal margin of middle femur, basal 1/3 of hind femur, anterior side of fore tibia, a small macula on anterior side of middle tibia and a short macula on subapex of hind tibia. Body hairs short and dense, silver; setae on sheath long and curved, pale blackish brown. Wings hyaline, without smoky macula, pterostigma and largely veins blackish brown (Figs 1A, 1B).



Figure 1. *Macrophya alboclypea* Li, Liu & Wei **sp. nov.** ♀, holotype; ♂, paratype. A, B. Female adult, dorsal and lateral views; C, D. Male adult, dorsal and lateral views. Scale bars = 2 mm (A, C).

Dorsum of head less shiny, frontal area and surrounding areas densely and coarsely punctate, between punctures with narrow interspace (Fig. 2A); labrum less shiny, without clear puncture, but microsculptures fine; clypeus less shiny, with some large and shallow punctures, without clear microsculpture (Fig. 2B); postocellar area and lateral sides shiny, with small smooth areas, without clear punctures or microsculptures (Fig. 2A). Mesonotum less shiny, with dense and minute punctures, punctures on mesonotum smaller than punctures on head, interspaces between punctures as broad as diameter of a puncture, microsculptures weak (Fig. 2C); mesoscutellum less shiny, with some large and shallow punctures, interspaces between punctures without clear microsculpture; mesoscutellar appendage dull, with dense and course punctures and microsculptures; metascutellum less shiny, without clear punctures,

microsculptures weak. Mesepisternum less shiny, densely punctured, upper 1/2 with large punctures, interspaces narrower than diameter of a puncture, lower 1/2 with small punctures, interspaces broader than diameter of a puncture; anepimeron dull, densely wrinkled; anterior 1/4 of katepimeron smooth, without puncture or microsculpture, strongly shiny; posterior 3/4 of katepimeron shiny, sparsely and largely punctate, microsculptures distinct; metepisternum dull, densely and minutely punctate, microsculptures fine; metepimeron less shiny, with slightly denser and larger punctures, microsculptures fine (Fig. 2D). Dorsal sides of abdominal terga less shiny, center part of abdominal tergum 1 smooth, lateral sides with some punctures and weak microsculptures; dorsal side of other abdominal terga with minute and sparse punctures, microsculptures fine. Lateral side of ovipositor sheath with minute and fine punctures, microsculptures fine.

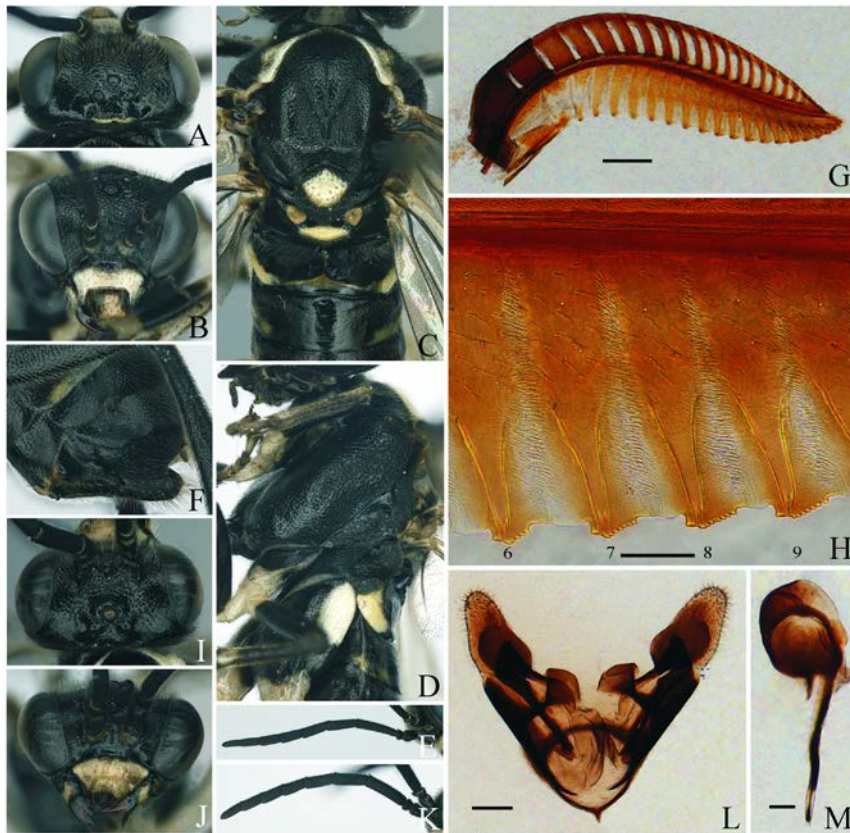


Figure 2. *Macrophyta alboclypea* Li, Liu & Wei **sp. nov.** ♀, holotype; ♂, paratype. A, B. Female head, dorsal and frontal views; C, D. Female mesopleuron and metapleuron, dorsal and lateral views; E. Female antenna, lateral view; F. Ovipositor sheath, lateral view; G. Lancet; H. The 6th–9th serrulae; I, J. Male head, dorsal and frontal views; K. Male antenna, lateral view; L. Gonoforceps; M. Penis valve. Scale bars = 200 μm (G, L, M); 50 μm (H).

Middle part of labrum clearly elevated, apical margin of labrum truncate, anterior margin with shallow gap; clypeus weakly elevated, base broader than distance between lower corner

of eyes, lateral sides convergent forwards, anterior margin deeply incised to approximately 1/3 length of clypeus, lateral corners narrow and long, anterior margins slightly acute (Fig. 2B); malar space linear, 0.5 times as long as diameter of median ocellus; middle fovea shallow and long dot-shaped; lateral foveae slightly deep, furrow-like; frontal area weakly elevated, slightly higher than top of eyes in lateral view; frontal ridge slightly flat, center of frontal area slightly depressed; interocellar furrow weak, postocellar furrow indistinct; POL : OOL : OOCL = 38 : 72 : 40; postocellar area slightly elevated, approximately 2.1 times broader than long, anterior 2/3 of lateral furrows shallow, posterior 1/3 broad and deep, clearly divergent backwards; head narrowed behind eyes in dorsal view, occipital carina complete (Fig. 2A). Antenna not slender, slightly longer than combined head and thorax (72 : 62), shorter than abdomen (72 : 86); antennomere 2 broader than long; antennomere 3 approximately 1.4 times longer than antennomere 4 (98 : 70), approximately 0.73 times longer than antennomeres 4 and 5 together (98 : 135), subapical antennomeres not dilated, apical antennomeres 6–9 not reduced, the ratio being 60 : 50 : 45 : 42 (Fig. 2E). Mesoscutellum roundly elevated, without peak or middle carina, mesoscutellum as high as top of mesonotum in lateral view; mesoscutellar appendage with a low and short median carina; metascutellar appendage without middle carina; dorsal-posterior platform of mesepimeron as broad as diameter of median ocellus; posterior corner of metepimeral appendage round and obtuse; mesopleuron and metapleuron as in Fig. 2D; distance between cenchri approximately 1.75 times as long as breadth of a cenchrus (Fig. 2C). Inner tibial spur of hind leg 0.58 times length of metabasitarsus (35 : 60), metabasitarsus as long as following 4 tarsomeres together; claw with inner tooth slightly longer and broader than outer tooth. Ovipositor sheath slightly shorter than metabasitarsus (55 : 60), apical sheath slightly longer than basal sheath, apical margin roundish in lateral view (Fig. 2F). Fore wing with vein cu-a joining cell 1M at basal 1/3, vein 2r joining cell 2Rs at apical 1/3, cell 2Rs as long as cell 1Rs, anal cell with a middle petiole, slightly shorter than vein 1r-m, clearly shorter than vein cu-a; petiole of anal cell in hind wing slightly shorter than 0.5 times length of vein cu-a. Lancet with 19 serrulae (Fig. 2G), serrulae slightly oblique and protruding, middle serrulae with 1 proximal denticle and 7–8 distal denticles, denticle small and clear, annular spine bands not broad, spine slightly sparse, the 6th–9th serrulae at base as in Fig. 2H.

Male. Body length 6–6.5 mm, colour and structure similar to female; but labrum entirely white (Fig. 2J); dorsal view of head in male as shown in Fig. 2I; lateral view of antennae in male as shown in Fig. 2K; center of mesoscutellum with a small white macula; fore and middle coxae largely and except for dorsal sides with black stripes; basal 1/3–1/2 of hind femur white; center of genital plate largely white; harp narrowed from base to apex, apical margin rounded, gonoforceps as shown in Fig. 2L; penis valve as shown in Fig. 2M.

Variation. Male specimen (postocellar area entirely black; mesoscutellum entirely black).

Holotype. ♀, **China**, Zhejiang, Taishun County, Mt. Wuyanling, Banshangang, 119.767° E, 27.668° N, alt. 339 m, 21-III-2024, Hailong ZHANG leg. (LSAF24008). **Paratypes.** 3♂, the same data as the holotype; 1♂, **China**, Zhejiang, Taishun County, Mt. Wuyanling, Banshangang, 119.767° E, 27.668° N, alt. 339 m, 23-III-2024, Hailong ZHANG leg. (LSAF24012).

Etymology. The species epithet “alboclypea” refers to the white clypeus of this new

species.

Host plant. Unknown.

Remarks. This new species is similar to *M. malaisei* in general appearance, but can be distinguished from the latter by the following combination of characters: the clypeus entirely white; frontal area and surrounding areas in dorsum of head densely and coarsely punctated, between punctures with narrow interspace; all trochanters entirely white; basal 1/3 of hind femur white, apical 2/3 black; broad maculae in apical 1/4–1/3 of abdominal terga 2–7 white; middle serrulae with 1 proximal denticle and 7–8 distal denticles. In addition, this new species is similar to *M. pilotheca* Wei & Ma, 1997 in general appearance. Please refer to the above key.

Acknowledgements

The authors are deeply grateful to the anonymous referees for their valuable comments and suggestions. This research was supported by the Scientific Research Project of Baishanzu National Park (2023JBGS07), the National Natural Science Foundation of China (31970447; 32370500) and the Special Funds for Scientific Research of Postdoctoral Work Station Assessment in Zhejiang Province, China (2023).

References

- Benson RB. 1954. Some sawflies of the European Alps and the Mediterranean region (Hymenoptera: Symphyta). *Bulletin of the British Museum (Natural History), Entomology*, 3(7): 267–295.
- Li ZJ, Gao KW, Ji TT, Liu MM & Wei MC. 2017. Two new species of the genus *Macrophya* Dahlbom (Hymenoptera: Tenthredinidae) from China. *Entomotaxonomia*, 39(4): 300–308.
- Li ZJ, Wei MC, Liu MM & Chen ML. 2018. *Macrophya Dahlbom in China*. China Agricultural Science and Technology Press, Beijing, 456 pp.
- Liu MM, Li ZJ, Xu ZW & Wei MC. 2017. Taxonomic study of the *Macrophya malaisei* group with two new species (Hymenoptera: Tenthredinidae) in China. *Entomotaxonomia*, 39(2): 123–132.
- Ross HH. 1945. Sawfly genitalia: terminology and study techniques. *Entomological News*, 61(10): 261–268.
- Shinohara A. 2020. Japanese sawflies of the genus *Macrophya* (Hymenoptera, Tenthredinidae), two new species and a revised key to species. *Bulletin of the National Museum of Nature and Science, Series A (Zoology)*, 46(2): 67–78.
- Shinohara A & Li ZJ. 2015. Two new species of the sawfly genus *Macrophya* (Hymenoptera, Tenthredinidae) from Japan. *Bulletin of the National Museum of Nature and Science, Series A (Zoology)*, 41(1): 43–53.
- Takeuchi K. 1937. A study on the Japanese species of the genus *Macrophya* Dahlbom (Hymenoptera Tenthredinidae). *Tenthredo. Acta Entomologica*, 1(4): 376–454.
- Takeuchi K. 1952. *A Generic Classification of the Japanese Tenthredinidae (Hymenoptera: Symphyta)*. Kyoto, 90 pp.
- Viitasaari M. 2002. The suborder Symphyta of the Hymenoptera. In: Viitasaari M (Ed.), *Sawflies (Hymenoptera, Symphyta) I. A Review of the Suborder, the Western Palaearctic Taxa of Xyeloidea and Pamphilioidea*. Tremex, Helsinki, pp. 11–174.
- Zhang HL, Nie HY, Zhu ZC, Li ZJ & Wei MC. 2023. Two new species of the *Macrophya ligustri* group in *Macrophya* Dahlbom (Hymenoptera, Tenthredinidae), China. *Entomotaxonomia*, 45(4): 311–320.