

Two new species of the *Praia* Wankowicz (Hymenoptera: Cimbicidae) from China

Yuchen YAN¹, Ling CHEN¹, Guihong LI¹, Zejian LI^{2①}, Meicai WEI^{3①}

1. Key Laboratory of Cultivation and Protection for Non-Wood Forest Trees, Key Laboratory of Insect Evolution and Pest Management for Higher Education in Hunan Province, Central South University of Forestry and Technology, Changsha, Hunan 410018, China

2. Postdoctoral Work Station, Lishui Academy of Forestry, Lishui, Zhejiang 323000, China

3. College of Life Science, Jiangxi Normal University, Nanchang, Jiangxi 330027, China

Abstract: Two new species of the *Praia* Wankowicz, 1880 on Mt. Tianmu of Zhejiang Province and Mt. Shunhuang of Hunan Province from China are described: *Praia tianmunica* Yan, Li & Wei **sp. nov.** and *P. megapulvilla* Yan, Li & Wei **sp. nov.** Description of the *Praia* Wankowicz, 1880 along with the characteristics and relationships of all species are reported here. A key to species of *Praia* from China is also provided.

Key words: Symphyta; Tenthredinoidea; taxonomy; key

中国舌锤角叶蜂属二新种（膜翅目：锤角叶蜂科）

晏毓晨¹, 陈玲¹, 黎桂鸿¹, 李泽建^{2①}, 魏美才^{3①}

1. 中南林业科技大学经济林培育与保护教育部重点实验室, 昆虫系统进化与综合管理湖南省普通高校重点实验室, 湖南 长沙 410018; 2. 丽水林业科学研究院, 博士后科研工作站, 浙江 丽水 323000; 3. 江西师范大学生命科学学院, 江西 南昌 330027

摘要: 记述采自中国浙江天目山与湖南舜皇山的舌锤角叶蜂属 2 新种: 天目舌锤角叶蜂 *Praia tianmunica* Yan, Li & Wei **sp. nov.** 和巨垫舌锤角叶蜂 *P. megapulvilla* Yan, Li & Wei **sp. nov.**。文中概括了舌锤角叶蜂属的属征及各已知种的特征与关系, 提供了中国舌锤角叶蜂属已知种的检索表。

关键词: 广腰亚目; 叶蜂总科; 分类; 检索表

Introduction

The genus *Praia* Wankowicz, 1880 is widely distributed in the Palaearctic region, including China, Europe (middle and north region), Russia (European area, Siberia, Usuli River, Sakhalin Island, Kamchatka Peninsula), Mongolia, Korea and Japan (Malaise 1939; Takeuchi 1939; Gusskovskij 1947). Two known species of *Praia* have been recorded (Taeger *et al.* 2010), and it was first described by Wankowicz (*P. taczanowskii*) (Wankowicz 1880, not seen in original paper, cited in Kirby (1882)). Malaise (1939) described *P. ussuriensis*. Takeuchi (1939) identified Japanese specimens as *P. ussuriensis*, instead of *P. taczanowskii*, based on the shape of the penis valve. Kim & Shinohara (1997) noted variation in this and

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① Corresponding authors, E-mails: lizejian2006@163.com; weimc@126.com

characters used to separate the two *Praia* species and although they didn't synonymize them, they stressed the need to examine a larger sample of specimens across the range of this genus to resolve the species definitions. However, the two species of *Praia* were not recovered by equal weights (EW) and implied weights (IW) analysis by Vihlelsen (2019) due to the absence of any unequivocal autapomorphies for this genus. The phylogeny based on Mitochondrial genomes show that *Praia* is a sister group of *Labriocimbex* (Cheng *et al.*, 2020).

In this work, two new species of *Praia* are described, namely, *P. tianmunica* Yan, Li & Wei **sp. nov.** on Mt. Tianmu of Zhejiang Province and *P. megapulvilla* Yan, Li & Wei **sp. nov.** on Mt. Shunhuang of Hunan Province, China.

Material and methods

Specimens were examined with a Leica S8APO dissection microscope. Adult images were taken with a Nikon D700 digital camera and the series of images edited using Helicon Focus (HeliconSoft), while detailed images were taken using a Leica Z16 APO/DFC550. The specimen must be sufficiently relaxed in a moist chamber before dissection. Dissected ovipositor valves, gonoforcep and penis valves were permanently mounted on slides in gum Arabic and images produced and composited automatically using a Nikon Ci-L/DS-Fi3. We used Adobe Photoshop CS 6.0 for further image processing. The terminology of sawfly 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).

Abbreviations. OCL — the distance between a lateral ocellus and the occipital carina, or the hind margin of the head where this carina would be if it had 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.

Specimens examined in this study are deposited in the Central South University of Forestry and Technology, Changsha (CSCS), China, including the holotype and some paratypes of the new species. Other paratypes of the new species are deposited in Lishui Academy of Forestry, Lishui, Zhejiang, China (LSAF).

Taxonomy

Praia Wankowicz, 1880

Type species: *Praia taczanowskii* Wankowicz (by monotype).

Description. Body middle-sized; clypeus about as broad as distance between lower margin of eyes; labrum small, flat, narrower than 1/4 breadth of clypeus; malar space small, as long as the diameter of lateral ocellus; supraclypeal furrow with depression; clypeus separated from supraclypeal area; inner margins of eyes sub-parallel, slightly convergent downwards; antennal toruli not elevated; front flat, with depression shallow at middle; frontal ridge obtuse; postocellar furrow distinct; postocellar area broader than long. Antenna longer than head breadth, club of antenna strongly enlarged with obscure annular suture, with 5 antennomeres before club. Anal cell in fore wing with a short petiole at basal third; jugum region of hind wing without crossveins. Legs black except for tarsus, hind coxae not narrowed at base,

ventral side of hind femur without denticle; hind tibia clearly compressed, apex of tibial spur stout, about as long as 1/2 apical breadth of tibia, apex blunt and membranous; tarsal pulvilli large, longer than 1/2 length of basitarsus; claw simple, not divided. Posterior margins of abdominal tergum 1 without large cenchrus; terga with transverse band.

Key to adult species of *Praia* in China

1. Abdominal tergum 1 almost entirely (except for basal 1/5 black), posterior half of terga 3–7 with narrow band (1/3 of terga) yellowish white 2
- Posterior half of abdominal tergum 1 and terga 3–8 with bands widely (half of terga) orange yellow; middle and hind femora and tibiotarsus reddish brown. China (Jilin); Russia (Ussuri land, Sakhalin); Japan; Korea *P. ussuriensis* Malaise
2. Middle and hind femora and tibia brownish red, tarsi yellowish brown; head with dense long and white hairs; short hairs on occiput dense and blackish brown; mesothorax with dense long and yellowish white hairs; head and mesothorax densely punctured, matte. China (specific address unknown); Europe (middle and north region); Russia (European area, Siberia, Kamchatka Peninsula); Mongolia; Japan *P. taczanowskii* Wankowicz
- Middle and hind femora and tibia black, tarsi brownish yellow; dense hairs on head and thorax black at base, yellow at apex; abdominal tergum 1 with dense and yellow hairs; head and mesothorax with large punctures distinctly, with luster 3
3. Tarsal pulvilli slightly larger, first pulvillus about 0.5 time length of basitarsus, 1st and 2nd tarsal pulvilli separated each other; malar space slightly longer than the diameter of lateral ocellus. China (Zhejiang) *P. tianmunica* Yan, Li & Wei **sp. nov.**
- Tarsal pulvilli very large, first pulvillus about 0.9 time length of basitarsus, 1st and 2nd tarsal pulvilli long, nearly contiguous; malar space slightly shorter than the diameter of lateral ocellus. China (Hunan) *P. megapulvilla* Yan, Li & Wei **sp. nov.**

1. *Praia tianmunica* Yan, Li & Wei **sp. nov.** (Figs. 1, 2)

Female. Body length 15 mm (Fig. 1A). Black largely; club of antenna, apex 1–2 of maxillary palp and labial palp brownish (Figs. 2C, J); apex of mandibles (Figs. 2F, G), ocellus reddish brown; tegula reddish brown; abdominal tergum 1 almost entirely (except for basal 1/5 black), lateral margins of tergum 2, band on terga 3–5 at posterior 1/3 and both sides yellowish brown (Figs. 2B, D); posterior margins of abdominal tergum 6 with narrow and yellowish brown band; cenchri pale yellowish white; abdominal sternites yellowish brown; sheath black. Wings pale yellow and hyaline (Fig. 1A), with black and short hairs, veins yellow at base, yellowish brown at apex, stigma blackish brown, veins brownish black at both sides. Legs black, with longitudinal and yellowish brown band on middle and hind coxae and posterior side of femora; fore tarsi reddish brown; middle and hind tarsi brown. Hairs on head and pronotum black at base and yellowish white at apex (Figs. 2A, D); hairs on mesonotum and mesopleuron black at base and reddish yellow at apex (Fig. 2E); hairs on mandible black and straight (Figs. 2F, G); hairs on scutellum, abdominal tergum 1 (Fig. 2B), sternites 1–3, coxae and femora yellow hairs; hairs on abdominal terga 2–7 white and short; hairs on abdominal terga 8–10 and sheath black (Fig. 2H).

Labrum, clypeus and occiput with distinctly broad and deep punctures, interspaces between punctures smooth, with strong luster; apical portion of mandible clearly shiny (Figs. 2A, D). Mesoscutellum and metascutellum densely punctured, interspaces between punctures

with weak microsculptures; lateral carina of scutum on thorax with strong luster; mesosternum with large and sparse punctures, strong luster (Figs. 2B, E). Abdominal tergum 1 largely smooth at apex, with sparse, fine and shallow punctures, shiny; other terga matte, minutely and densely microsculptured, without distinct punctures. Femora and tibia of legs sparsely and distinctly punctured, slightly with luster (Fig. 2H).

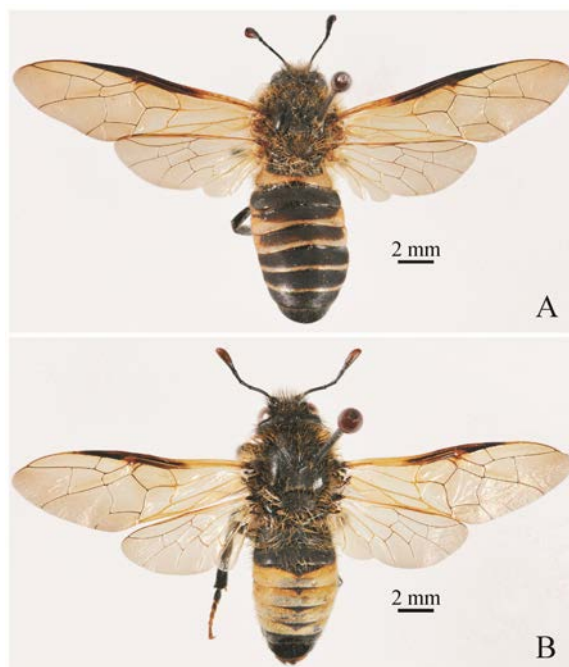


Figure 1. *Praia tianmunica* Yan, Li & Wei **sp. nov.**, holotype (A) and paratype (B). A. Female adult, dorsal view; B. Male adult, dorsal view.

Clypeus slightly narrower than distance between lower margins of eyes (Fig. 2A), anterior half slightly concave at middle, with supra clypeal furrow; labrum oval-triangular, small and flat (Fig. 2J); mandible thickened at outer margins of basal 1/2, clearly higher than apical half of mandible and labrum, with 3 denticles symmetrical (Figs. 2F, G); malar space slightly longer than diameter of lateral ocellus, inner margins of eyes sub-parallel, slightly convergent downwards; distance between eyes about 1.4 times longest axis of eyes, front flat, roundish, middle fovea deep, frontal ridge distinct but blunt; supra antennal toruli absent; postocellar furrow distinct; postocellar area short and broad, rectangular, lateral furrow shallow and arcuate, distinctly convergent backwards (Fig. 2D); POL : OOL : OCL = 2.8 : 4 : 5, head slightly dilated behind eyes, long hairs on gena about 3.5 times diameter of lateral ocellus. Antenna with 7 antennomeres, broader than head breadth; club of antenna strongly enlarged, widest breadth 4.5 times the breadth of antennomere 3 at middle, and slightly longer than length of antennomeres 4 and 5 combined, with obscure annular suture (Fig. 2C). Lateral lobe of mesonotum distinctly dilated, middle furrow distinct, lateral furrow nearly merging, distinct; mesopleuron without carina (Fig. 2E); anterior margin of scutellum sub-arcuate, posterior margins and lateral margins almost in contact, arc-shaped. Cenchrus 3.1 times

broader than long, oval; metascutellum protruding backwards (Fig. 2B). Anal cell in fore wing with a short petiole, apical anal cell about 1.5 times as long as basal anal cell in fore wing; jugum region of hind wing without crossveins. Posterior of abdominal terga 4–7 with arc-shaped depression at middle. Ventral margins of middle and hind femora without denticle (Fig. 2H); apex of tibial spur stout, about as long as 1/2 apical breadth of tibia, apex blunt and membranous; tarsal pulvilli slightly large, 1 first pulvillus about 0.5 time length of basitarsus, 1st and 2nd tarsal pulvilli separate from each other; claw simple, not divided. Apical sheath roundish in lateral view; lancet with 39 annular sutures and serrulae (Fig. 2M), middle serrulae shown in Fig. 2N, annular spine bands narrow, membranous area between serrulae protruding, serrulae oblique truncate, serrulae with 4–5 proximal and 6–7 distal subbasal denticles.



Figure 2. *Praia tianmunica* Yan, Li & Wei **sp. nov.** A. Head of female, anterior view; B. Metanotum and base of abdomen; C. Antenna of female, lateral view; D. Head of female, dorsal view; E. Mesopleuron of female, lateral view; F. Left mandible; G. Right mandible; H. Abdomen, lateral view; I. Hind tarsal pulvilli; J. Labrum and palpus; K. Penis valve; L. Gonoforcep; M. Lancet; N. Middle serrulae.

Male. Body length 13.5 mm (Fig. 1B); body color and structure similar to female except for following parts: abdominal terga 1 and 2 entirely black, terga 3–6 with narrow band black at base, with black macula in middle, largely yellow. Legs black, tarsi blackish brown. Penis valve shown in Fig. 2K, gonoforcep as shown in Fig. 2L.

Holotype. ♀ (CSCS140112), **China**, Zhejiang Province, Lin'an City, Mt. Tianmu, Kaishan Palace, 119°26.05' E., 30°20.33' N., alt. 1142 m, 10-IV-2014, Haiyan NIE & Ping HU leg. **Paratypes.** 1♀ (LSAF14007), locality and collecting time as holotype, Zejian LI leg. 1♀ (CSCS15027), locality as holotype, 05-IV-2015, Wei XIAO leg. 1♀ (CSCS15028), locality as holotype, 05-IV-2015, Mengmeng LIU & Lin LIU leg. 3♀ (CSCS15022), locality as holotype, 04-IV-2015, Zejian LI leg. 2♀ (LSAF16143), locality as holotype, 14-IV-2016, Zejian LI & Mengmeng LIU leg. 1♀ (LSAF17034), 3♀ (LSAF17040), (LSAF17036), 1♀4♂ (LSAF18009), 3♀2♂ (LSAF18010) all specimens collection locality as former, collector, Mengmeng LIU, Kaiwen GAO & Tingting JI, 14-IV-2017, 31-III-2018, 01-IV-2018; 8♀23♂ (LSAF19009), **China**, Zhejiang Province, Lin'an City, Mt. Tianmu, Kaishan Palace, 119.433°E, 30.343°N, alt. 1106 m, 06–07-IV-2019, Zejian LI & Xiufang LI leg.

Variation. Body length 13–16 mm in female, 13–17 mm in male; club of antenna color reddish brown or yellowish brown; hairs color on mesonotum yellow or reddish brown; fore tibia yellowish brown or blackish brown. Sternites reddish brown or yellowish brown

Distribution. China (Zhejiang).

Etymology. The specific epithet of this new species refers to the distribution area which is in Mt. Tianmu, Zhejiang Province, China.

Remarks. This new species is similar to *P. megapulvilla* Yan, Li & Wei **sp. nov.** See the above key for differences between the two species.

2. *Praia megapulvilla* Yan, Li & Wei **sp. nov.** (Fig. 3)

Female. Body length 20 mm (Fig. 3A). Black largely; club of antenna brown, apex of mandible ocellus and eyes reddish brown, head dark brown; apex 1–2 of maxillary palp and labial palp, tegula brown (Fig. 3C), cenchri pale yellowish white; posterior half of mesepimeron, metapleuron largely, both lateral margins of metanotum, abdominal tergum 1 almost entirely (except for basal 1/5 black), posterior half of terga 2–6 with narrow band, abdominal sternites 1–3 yellowish white, abdominal sternites 4–8 gradually deep, from yellowish brown to blackish brown. Wings pale yellow and hyaline (Fig. 3A), with black and short hairs, veins yellow at base, dark brown at apex, stigma black, veins brownish black at both sides. Legs black, middle and hind coxae, basal of outer side of hind femora yellowish white; all tarsi brownish. Hairs on face and gena black at base and yellowish white at apex (Fig. 3C); hairs on vertex of head and mesonotum black (Fig. 3F); hairs on pronotum, scutellum and mesopleuron reddish yellow (Figs. 3B, D); hairs on mesonotum, abdominal tergum 1, abdominal sternites 1–3, coxae and femora with yellow hairs (Fig. 3D); hairs on abdominal terga 2–7 white and short; hairs on abdominal terga 8–10 and sheath black (Fig. 3H).

Head and thorax densely microsculptured, with distinctly broad and deep punctures; temple, post gena, lower margin of orbit, apical half of mandibles (Figs. 3C, F), lateral sides of mesoscutal lateral lobe, ventral part of trochanters and of femora distinctly shiny, ventral half of mesepisternum feebly microsculptured mixed with some minute punctures, shiny;

abdominal tergum 1 largely smooth, shiny; venter of abdomen feebly shiny; other terga matte. Femora and tibia of legs sparsely and distinctly punctured, with slight luster.



Figure 3. *Praia megapulvilla* Yan, Li & Wei **sp. nov.** A. Female adult (holotype), dorsal view; B. Mesopleuron and metapleuron of female; C. Head of female, anterior view; D. Metanotum and base of abdomen; E. Antennae of female, lateral view; F. Head of female, dorsal view; G. Hind tarsal pulvilli; H. Middle serrulae; I. Ovipositor sheath, lateral view; J. Lancet.

Clypeus slightly narrower than distance between lower margins of eyes (Fig. 3C), anterior half slightly concave at middle, with supra clypeal furrow; labrum triangular, about 1/3 breadth of clypeus (Fig. 3C); malar space slightly shorter than diameter of lateral ocellus,

inner margins of eyes sub-parallel, slightly convergent downwards; distance between eyes as long as axis of eyes (Fig. 3C); front flat, roundish, middle fovea deep, frontal ridge blunt; supra antennal toruli absent; postocellar furrow distinct; postocellar area short and broad, trapezoidal, lateral furrow shallow and sub-arcuate, distinctly convergent backwards (Fig. 3D); POL : OOL : OCL = 3.8 : 4.1 : 6.5, head slightly dilated behind eyes, long hairs on gena about 2.5 times diameter of lateral ocellus. Antenna with 7 antennomeres, broader than head breadth; club of antenna strongly enlarged, widest breadth 4.5 times the breadth of antennomere 3 at middle, and slightly longer than length of antennomeres 4 and 5 combined, with obscure annular suture (Fig. 3E). Lateral lobe of mesonotum distinctly dilated, middle furrow distinct, lateral furrow nearly merging, distinct; mesopleuron without carina (Fig. 3B). Cenchrus about 2.9 times broader than long, oval; metascutellum protruding backwards (Fig. 3B). Anal cell in fore wing with a short petiole, apical anal cell about 1.7 times as long as basal anal cell in fore wing; jugum region of hind wing without crossveins. Posterior of abdominal terga 4–7 with arcuate depression at middle, sternites with arc-shaped depression at both sides. Ventral margins of middle and hind femora without denticle (Fig. 3H); apex of tibial spur stout, about 0.4 times apical breadth of tibia, apex blunt and membranous; tarsal pulvilli very large, first pulvillus about 0.9 times length of basitarsus, 1st and 2nd tarsal pulvilli long, nearly contiguous; claw simple, not divided. Apical sheath roundish in lateral view; lancet with 38 annular sutures and serrulae (Fig. 3M), middle serrulae shown in Fig. 3N, membranous area between serrulae protruding, serrulae oblique truncate, serrulae with 6–7 proximal and 8–9 distal subbasal denticles.

Male. Unknown.

Holotype. ♀, **China**, Hunan Province, Yongzhou City, Mt. Shunhuang, alt. 900–1200 m, 28-IV-2004, Shaobing ZHANG leg.

Distribution. China (Hunan).

Etymology. The specific epithet of this new species refers to the tarsal pulvilli being very large.

Remarks. This new species is similar to *P. tianmunica* Yan, Li & Wei **sp. nov.** See the above key for differences between the two species.

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