One newly recorded genus and two newly recorded species of Pireninae (Hymenoptera: Pteromalidae) from China

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Abstract: The genus *Watshamia* Bouček in the Pireninae (Hymenoptera: Pteromalidae), with two newly recorded species, *Watshamia versicolor* Bouček and *Gastrancistrus torymiformis* (Ratzeburg), are reported in China for the first time. Morphological descriptions, distribution and morphological figures are provided. The genera are differentiated in a key for this subfamily from China.

Key words: Chalcidoidea; *Watshamia*; *Gastrancistrus*; chalcid wasps; taxonomy

中国寡节金小蜂亚科一新纪录属及二新纪录种（膜翅目：金小蜂科）

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摘要：记录寡节金小蜂亚科 Pireninae (膜翅目：金小蜂科) 中国 1 新纪录属：沃式金小蜂属 *Watshamia* Bouček 及中国 2 新纪录种：异色沃式金小蜂 *Watshamia versicolor* Bouček, 刺状翘尾金小蜂 *Gastrancistrus torymiformis* (Ratzeburg)。提供了 2 纪录种的形态描述、分布及外部形态特征图，以及中国寡节金小蜂亚科分属检索表。

关键词：小蜂总科；沃式金小蜂属；翘尾金小蜂属；小蜂；分类

Introduction

Pireninae is a small subfamily of Pteromalidae. The name of this group can be traced back to the mid-nineteenth century when Haliday first proposed “tribus Pireniani” in 1844. Förster (1856) upgraded Pireniani to the family Pyrenoidae. Its generic composition underwent many changes. Graham (1969) classified it as a tribe Pirenini of the Miscogasterinae. More recently, the group was redefined and treated as an independent subfamily Pireninae by Bouček (1988).

The genera of Pireninae share the following characters: antennal insertion below centre of face, antenna at most 12 segments (one or two small anelli, at most 6 funicular segments except very rarely 7-segmented in males, but the males always with one anellus and clava 2-segmented inconspicuously); clypeus large, lower margin protrudent and curved. Pronotum

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dorsally mostly rounded, rarely blunt-edged anteriorly, anterior margin smooth without carina; notauli deep and complete; frenal line of scutellum distinct; propodeum rather weakly sculptured, plica always absent.

Until recently, a total of 19 valid genera of Pireninae, widely distributed in the world, have been reported worldwide (Noyes 2015). Cecidomyiidae (Diptera), Agromyzidae (Diptera), Cynipidae (Diptera) and Tenthredinidae (Hymenoptera) are reported as hosts of Pireninae (Noyes 2002). Only 3 genera, comprising a total of 4 species, from Pireninae have been recorded from China (Xiao & Huang 2000; Huang & Xiao 2005). Based on examination of the materials in the Zoological Museum, Institute of Zoology, *Watshamia* Bouček was found for the first time in China, and 2 newly recorded species, *Watshamia versicolor* Bouček and *Gastrancistrus torymiformis* (Ratzeburg), were also reported. So far, 4 genera of Pireninae have been recorded in China: *Macroglenes* Westwood, *Ecrizotomorpha* Mani, *Watshamia* Bouček, and *Gastrancistrus* Westwood.

Material and methods

Materials for the present study were swept using an insect net and preserved in 75% ethanol. They were subsequently air dried, point-mounted, and examined with a Leica MZ APO stereomicroscope. Photographs were taken using a Nikon Multizoom AZ100 system, and the plates of illustrations were compiled using Adobe Photoshop software. Morphological terminology follows that of Bouček (1988) and Gibson *et al*. (1997). Body length (i.e. length of body excluding the ovipositor sheaths) is measured in millimeters, but other measurements are relative. Abbreviations of morphological terms used are: fu_n — funicular segment; eye space — the minimal distance between the eyes in frontal view; POL — posterior ocellar distance; OOL — ocellocular distance; Gt_n — gastral tergum. All specimens are deposited in the Zoological Museum, Institute of Zoology, Chinese Academy of Sciences.

Key to genera of Pireninae from China

1. Antenna with 6 segments or more than 6-segmented between pedicel and clava; postmarginal vein as long as or longer than stigmal vein····· 2
-. Antenna with 5 segments between pedicel and clava; postmarginal vein shorter than stigmal vein····· 3
2. Antenna with the 1st and 4th flagellums anelliform, the 4th shorter than the 3rd and 5th respectively; pronotum as broad as long, constricted posteriorly in dorsal view; postmarginal vein as long as stigmal vein····· *Ecrizotomorpha* Mani
-. Antenna with 1st flagellum anelliform, the 4th normal; pronotum short and not constricted posteriorly in dorsal view; postmarginal vein longer than stigmal vein····· *Gastrancistrus* Westwood
3. Mesoscutum slightly convex, head and thorax usually smooth, reticulation shallow; antenna with at least 3 segments anelliform; fore wing with marginal fringe····· *Macroglenes* Westwood
-. Mesoscutum strongly convex anteriorly, head and thorax with densely deep reticulation; antenna without distinct anelli; fore wing without marginal fringe····· *Watshamia* Bouček

Taxonomy

Watshamia Bouček, 1974, new record to China

Watshamia Bouček, 1974: 338. Type species: *Watshamia versicolor* Bouček, original designation.

Diagnosis. Head and thorax with deeply dense reticulation, hairs short and inconspicuous. Head large, broader than thorax, occiput delimited dorsally by arcuate carina; vertex normal size in female, but very narrow in male due to great enlargement of eyes; eyes large and bare (Figs. 2, 3), malar space very short, inner orbits more or less converging upward in female (but strongly converging upward in male, posterior ocelli touching eyes); clypeal margin protrudent; mandibles 4-toothed. Antennal insertion below centre of face (Figs. 2), at or slightly above lower ocular line; antennal formula 1153 (Fig. 3), without distinct anelli; all funicular segments combined shorter than scape, pedicel long. Pronotum short without collar; mesoscutum strongly convex, notauli fine and complete; scutellum strongly convex with fine frenal groove; propodeum generally smooth, median carina indicated, plicae distinct in postmedian; tegula triangular and large (Fig. 4). Fore wing extensively bare, with one or two infumations below marginal vein in female; marginal vein slender and long; postmarginal and stigmal vein short, stigma dark and widened. Metatarsi with two spurs. Gaster shorter than or as long as thorax, compressed laterally, petiole nearly invisible.

Biology. Only one species, *Watshamia malaica*, was recorded reared from galls of *Asphondylia* sp. (Diptera: Cecidomyiidae) (Bouček 1974).

Distribution. To date, three species of this genus are reported in the world. *W. turneri* Bouček and *W. versicolor* Bouček were recorded from South Africa; *W. malaica* Bouček was reported from Southeast Asia (Noyes 2002).

1. ***Watshamia versicolor* Bouček, 1974** (Figs. 1–5), new record to China

Watshamia versicolor Bouček, 1974: 339.

Male. Body length 2.0–2.6 mm (Fig. 1). Body metallic bluish green; antennae metallic brown; coxae and femora concolorous with body, tibiae brown, tarsi pale yellow.

Hind in frontal view (Fig. 2), 1.7 times as broad as high; face smooth with reticulation; clypeal margin protruding; eyes very large, inner orbits strongly converging upward; malar space very short, about 0.21 times as long as eye height. Antennal insertion over lower ocular line, nearing clypeus; scrobes deep and narrow, reaching lower margin of anterior ocellus; antenna with 5 segments between pedicel and clava; clava distinctly clavate; pedicel and flagellum combined shorter than head width. Head in lateral view (Fig. 3), eye height 1.35 times of eye width. Head in dorsal view without temple, occipital carina absent; posterior ocelli touching eyes.

Thoracic dorsum convex and reticulate (Fig. 4); pronotum sloping right from hind margin (invisible in dorsal view), distinctly narrower than mesoscutum; mesoscutum about 1.71 times as broad as long; notauli complete and deeply emarginated; scutellum about 0.82 times as broad as long, frenal line conspicuous, frenal area with reticulate punctures larger than those on anterior part of scutellum; dorsellum semicircle and quite elongate, about half length of scutellum; propodeum smooth, median carina of propodeum distinct and complete, central area convex, lateral area reticulate; neck distinct. Fore wing hyaline (Fig. 5), length at least 2 times width, with marginal fringe; basal cell bare; speculum large, extending below the stigmal vein, stigmal vein forming an angle of 90° with postmarginal vein; marginal vein about 2.6 times as long as postmarginal vein, postmarginal vein slightly longer than stigmal vein, marginal vein about 3.25 times as long as stigmal vein.

Gastral petiole subquadrate and smooth, broader than long; gaster rather stout,

compressed laterally (Fig. 1), shorter than thorax (prothorax, mesothorax and metathorax combined), about 0.87 times as long as thorax; Gt_1 about three fifth gaster length.

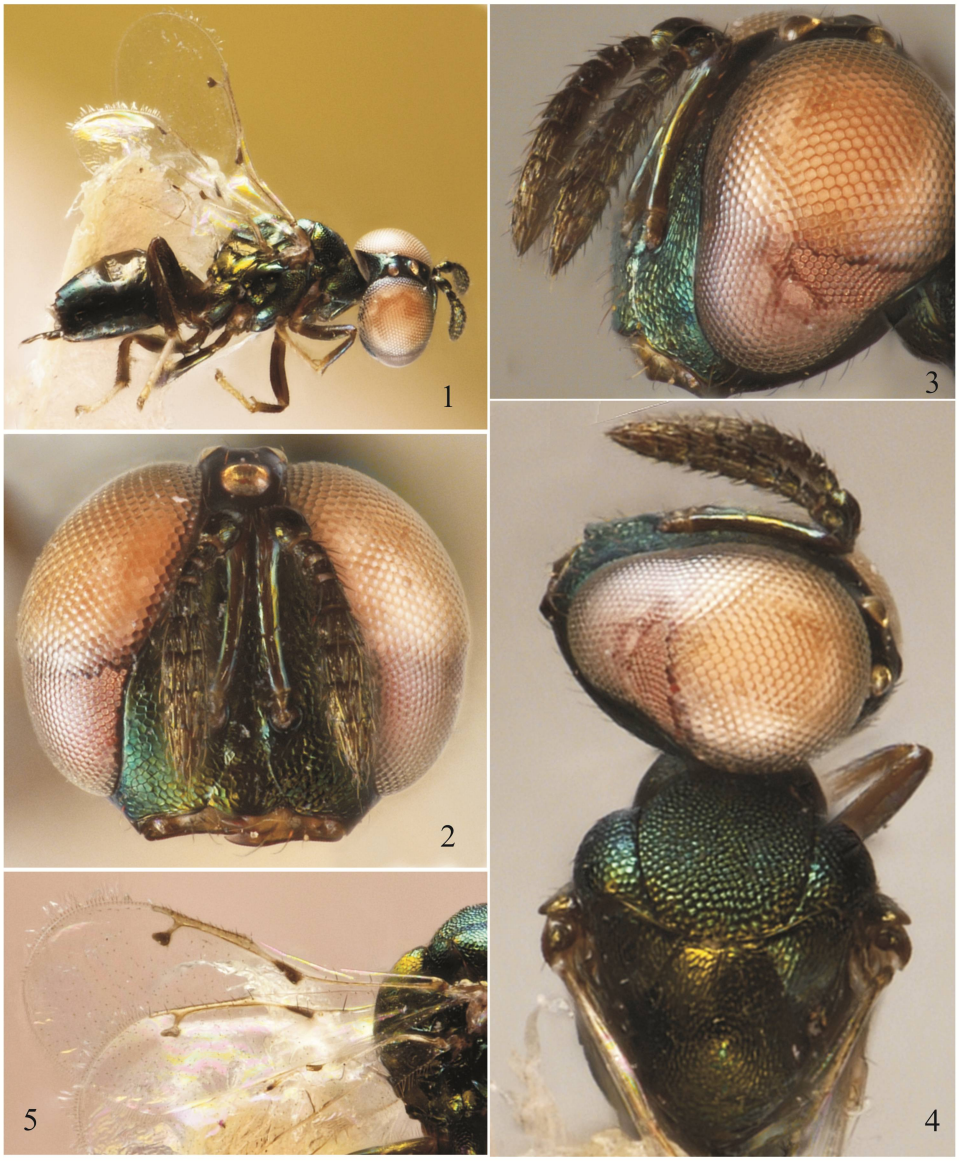

Figure 1–5. *Watshamia versicolor* Bouček, ♀. 1. Body, lateral view; 2. Head, frontal view; 3. Head, lateral view; 4. Thorax, dorsal view; 5. Fore wing, dorsal view.

Female. Unexamined.

Based on Bouček's description (1974), body length 2.5–3.1mm, metallic bluish green to blue; scape brownish red, flagellum black with greenish gloss; wing hyaline, fore wing with two brownish crossbands. Head in front view 1.75 times as broad as high, eye about 1.67

times as long as broad, malar space 0.29 times as long as eye height. Antennae with flagellum and pedicel combined shorter than head width (0.77 times); each funicular segment bearing one row of longitudinal sensilla, first segment about as long as broad, following ones transverse. Head in dorsal view about 2.1–2.2 times as broad as long; temple less than 1/4 length of eye; posterior ocelli not touching eyes, POL 1.3–1.5 times of OOL. Mesoscutum strongly convex anteriorly, with deep reticulation; scutellum with straight frenal line; propodeum sublaterally at hind margin with coarse areolation; hind coxa reticulate, dorsally bare; fore wing without marginal fringe.

Gaster shiny, almost bare; hind margin of Gt_1 with angular excision.

Specimens examined. 5♂, **China,** Hainan, Wenchang, Touyuan Village, 24-V-2009, coll. Tingyu HU.

Biology. Unknown.

Distribution. China (Hainan); Afrotropical Region (South Africa, Zimbabwe) (Bouček 1974).

Gastrancistrus Westwood, 1833

Gastrancistrus Westwood, 1833: 444. Type-species: *Gastrancistrus vagans* Westwood, by monotypy; Dalla Torre, 1898: 202; Ashmead, 1904: 273; Bouček, 1993: 1308; Jamal Ahmad, 1995: 95; Dzhanokmen, 1995: 685. Bouček, 1988: 476.

Glyphe Walker, 1834: 168, 170. Type-species: *Glyphe autumnalis* Walker, by monotypy. Synonymized by Bouček, 1988: 476.

Meromalus Walker, 1834: 168, 178. Type-species: *Meromalus flavicornis* Walker, by monotypy. Synonymized by Bouček, 1988: 476.

Stomoctea Dufour, 1846: 23. Type-species: *Stomoctea pallipes* Dufour, by monotypy. Synonymized by Graham, 1991: 55.

Tridymus Ratzeburg, 1848: 183. Type-species: *Tridymus aphidum* Ratzeburg, designated by Gahan & Fagan, 1923: 148. Synonymized by Graham, 1969: 271.

Tripedias Förster, 1856: 60. Type-species: *Gastrancistrus* (*Tripedias*) *Tripedias* Bouček, designated and synonymized by Bouček, 1964: 259.

Stigmatocrepis Ashmead, 1904: 273. Type-species: *Stigmatocrepis Americana* Ashmead, by original designation and monotypy. Synonymized by Heydon & Bouček, 1992: 474.

Amuscidea Girault, 1913: 107. Type-species: *Amuscidea nigripes* Girault, by original designation. Synonymized by Narendran *et al*., 2001: 149.

Roptroceropseus Girault, 1913: 309. Type-species: *Roptroceropseus albicornis* Girault, by original designation and monotypy. Synonymized by Bouček, 1988: 476.

Isoplata Girault, 1913: 312. Type-species: *Isoplata geniculata* Girault, by original designation. Preoccupied by *Isoplata* Förster, 1856. Synonymized by Bouček, 1988: 476.

Erotolepsiopus Girault, 1915: 193. Type-species: *Erotolepsiopus subsolanus* Girault, by original designation and monotypy. Synonymized by Bouček, 1988: 479.

Muscideomyia Girault, 1915: 325. Type-species: *Muscideomyia nigricyanea* Girault, by monotypy. Synonymized by Bouček, 1988: 476.

Parerotolepsia Girault, 1915: 194. Type-species: *Parerotolepsia auripes* Girault, by monotypy. Synonymized by Bouček , 1988: 476.

Proplesiotolepsia Girault, 1915: 280. Type-species: *Proplesiotolepsia unfasciatuma* Girault, by original designation. Synonymized by Bouček, 1988: 476.

Parecrizotes Girault, 1916: 305. Type-species: *Parecrizotes marylandensis* Girault, by monotypy. Synonymized by Heydon & Bouček, 1992: 474.

Parasyntomocera Girault, 1917: 2. Type-species; *Parasyntomocera hillmeadia* Girault, by monotypy. Synonymized by Heydon & Bouček, 1992: 474.

Isoplatella Gahan & Fagan, 1923: 76. Replacement name for *Isoplata* Girault. Synonymized by Bouček, 1988: 476.

Mesecrizotes De Santis, 1968: 155. Type-species: *Mesecrizotes terebrator* De Santis, by monotypy. Synonymized by Heydon & Bouček, 1992: 474.

Diagnosis. The species of the genus *Gastrancistrus* share the following characters: antenna with 5 funicular segments (Fig. 8), (6 funicular segments in males). Clypeus arcuate, seldom truncate or emarginate. Mandibles rather long and narrow, with lower edge little curved and slightly diverging teeth at apex (species in European quadridentate while in India species vary from bidenate to quadridentate). Thorax very compact, notaular grooves shallow, sometimes distinct. Propodeum short and smooth, median carinae distinct or absent. Scutellum simple and convex, with a transverse furrow before tip. Abdomen pointed conic-ovate (Fig. 6), little longer than thorax, gaster sessile or subsessile. Ovipositor produced. Second abdominal segment longest, occupying about a third of the gaster.

Biology. The genus *Gastrancistrus* contains 136 species (Noyes 2015). Host information for most species are unknown. Some species were recorded as parasitoids of Cecidomyiidae (Diptera), Agromyzidae (Diptera), Tenthredinidae (Hymenoptera) (Matsuo 2012) and Cynipidae (Diptera). The species of *Gastrancistrus* reared from galls, larvae and pupae (Noyes 2002). Georgiev *et al*. (2003) reported that *Gastrancistrus fulvicoxis* Graham, *Gastrancistrus salicis* (Nees) and *Gastrancistrus speculifer* (Förster) were reared from galls of *Dasineura saliciperda* (Dufour) (Diptera: Cecidomyiidae). Yukawa (2006) found that *Gastrancistrus* sp. is univoltine and possibly a monophagous endoparasitoid of *Pseudasphondylia neolitseae* (Diptera: Cecidomyiidae).

Distribution. All regions of the world, apparently numerous especially in some parts of the Americas, of Eurasia, also in Australia, New Zealand and India; probably fewer in Africa (Bouček 1988).

2. ***Gastrancistrus torymiformis* (Ratzeburg, 1852)** (Figs. 6–10), new record to China

Tridymus torymiformis Ratzeburg, 1852: 226.

Gastrancistrus torymiformis (Ratzeburg) Reinhard, 1858: 320; Graham, 1969: 311.

Female. Body (Fig. 6) length 1.5 mm, black with metallic dark green gloss; mandible yellowish brown; eyes bronzing, ocelli hyaline; antennae brown except scape and pedicel yellowish brown; coxae and femora concolorous with body, trochanters brown, tibiae and tarsi yellowish brown, claws brown; wings hyaline with veins yellowish brown; ovipositor yellowish brown, and ovipositor sheaths black.

Head in frontal view (Fig. 7) about 1.35 times as broad as high; head height 1.66 times of eye height; eye space 1.38 times of eye height; inner margin of compound eyes not parallel; lower face prominent with sparse punctation and hairs，reticulated; scrobe slightly shallow, not reaching lower anterior ocellus; gena plump; supraclypeal area and interantennal area smooth and strongly prominent; clypeal small with four bristles, anterior margin curved, medially truncate; malar space about 0.52 times of eye height, intermalar distance 2 times malar space; antennal insertion at lower face, lower margin of torulus over lower ocular line; interantennal

area with prominent vertical carina. Antennal formula 11253 (Fig. 8); scape about 0.9 times as long as eye height, not reaching lower margin of median ocellus, about 1.45 times as long as broad; pedicel and flagellum combined almost 0.81 times as long as head width, pedicel length about 1.5 times its width; anelli transverse; fu_1 slightly longer than other funicular segments, fu_1 about 1.29 times as long as broad, fu_2–fu_4 with same width, fu_2 as broad as fu_3, fu_3 about 0.73 times as long as broad; fu_5 slightly broader than fu_4; clava shorter than fu_3–fu_5 combined, clava clavate with segments inconspicuous, venter margin without micropilosity area. Head in lateral view (Fig. 6), eye height 1.34 times of eye width; malar sulcus absent. Head in dorsal view about 3.2 times as broad as long; vertex with reticulation and sparse hairs; occipital carina absent; anterior ocellus and posterior ocelli on obtuse angle; POL 1.43 times OOL.

Figure 6–10. *Gastrancistrus torymiformis* (Ratzeburg). 6–9. ♀; 10. ♂. 6. Body, lateral view; 7. Head, frontal view; 8. Antenna, dorsal view; 9. Fore wing, dorsal view; 10. Antenna, dorsal view.

Thoracic dorsum with dense reticulation and sparse hairs (Fig. 6); mesosoma in dorsal view 1.14 times as long as broad, about 1.36 times as broad as head; pronotum short, about 0.79 times as broad as mesoscutum; mesoscutum about 1.27 times as broad as long; notauli deep and complete; scutello-axillar sutures meet the mesoscutum at about two-fifths mesad of the hind ends of the notauli; scutellum with reticulation, about 1.18 times as long as broad, frenal line absent; propodeum about half as long as dorsellum, propodeum about 0.25 times as long as scutellum, median area smooth, median carina absent but strongly protuberant, plicae

absent; spiracles suboval.

Mesopleuron finely reticulate, mesepisternum marked off from the mesepisternum; metapleuron rather more finely reticulate than the mesopleuron. Fore wing hairy with basal cell bare (Fig. 9), costal cell bare on upper surface and with two row of hairs on lower surface, radial cell hairy; speculum on upper surface of wing, extending below the marginal vein; marginal vein 2.27 times as long as stigmal vein, postmarginal vein strongly shorter than marginal vein, about 0.56 times as long as marginal vein, stigmal vein about 0.79 times as long as postmarginal vein, stigmal vein slightly curved, stigma not clavate.

Gaster with petiole transverse; gaster long-oval (Fig. 6), about 2.78 times as long as broad, 1.25 times as long as combined length of head and thorax; gaster narrower than thorax, about 0.68 times as broad as mesoscutum; ovipositor and ovipositor sheaths produced.

Male. Antennae yellowish brown except scape and pedicel brown; antennal formula 11262 (Fig. 10); funicular segments same length, fu_1 long-oval, fu_2–fu_4 subquadrate, fu_5 longer than broad, clava normal; gaster short, about 0.78 times as long as combined length of head and thorax; other characters same as female.

Specimens examined. 3♀2♂, **China,** Tibet, Nyalam, Zham, 3000–3050 m, 01-IX-2001, coll. Chaodong ZHU.

Biology. Ratzeburg recorded that the species was reared from *Salix cinerea* L (Cecidomyiidae) (Ratzeburg 1852).

Distribution. China (Tibet); Palearctic Region (Germany, Hungary, Sweden, United Kingdom) (Noyes 2002).

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