

CORRESPONDENCE

A new genus of Pteromalidae (Hymenoptera) with two new species, parasitoids of larvae of *Stenocephus fraxini* Wei (Hymenoptera: Cephidae) from China

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Abstract Parasitic wasps reared from larvae of *Stenocephus fraxini* on *Fraxinus chinensis* from Shandong Province, China were found to be two new species of Pteromalidae (Hymenoptera: Chalcidoidea). The characters of marginal vein, antenna, and propodeum show that the new species is close to the members of *Cyrtoptyx*, but hairs on thorax are white and conspicuous, the dorsellum is relatively large and reticulated, and marginal fringe on fore wing are absent. All characters are sufficient to justify the erection of a new genus, *Neocyrtoptyx* **gen. nov.**, to accommodate the new species *N. shanghensis* **sp. nov.** and *N. exilis* **sp. nov.**

Key words China mainland, *Neocyrtoptyx*, new genus, Pteromalidae, taxonomy.

1 Introduction

The ash tree, *Fraxinus chinensis* Roxb (Oleaceae), has a long history of cultivation and is widely distributed in China, often as an excellent plant for landscaping. In 2012, the tip of the branch was damaged by the larvae of a stem sawfly. Subsequently, the stem sawfly was reported and described as a new species, *Stenocephus fraxini* Wei (Hymenoptera, Cephidae) (Wei *et al.* 2015). During the biological study of *Stenocephus fraxini*, individual wasps were found parasitoids on the larvae of the sawfly. In this study, the wasps reared from the larvae of *Stenocephus fraxini* are described as a new genus of Pteromalinae (Hymenoptera: Pteromalidae), *Neocyrtoptyx* **gen. nov.**, with two new species *N. shanghensis* **sp. nov.** and *N. exilis* **sp. nov.**

2 Materials and Methods

All specimens for the present study were reared from the larvae of *Stenocephus fraxini* present on the tree *Fraxinus chinensis* from June 2015 to April 2018. They were preserved in 95% ethanol, subsequently air dried, mounted on rectangular cards, and examined with a LEICA MZ APO stereomicroscope. Photographs were taken under the Nikon Multizoom AZ100 system, and the plates were compiled using Adobe Photoshop® software. All type specimens of the new species are deposited in the Institute of Zoology, Chinese Academy of Sciences, China (IZCAS).

Morphological terminology mostly follows that of Bouček (1988) and Gibson *et al.* (1997). All specimens were examined and identified based on the studies of Delucchi (1956), Graham (1969), Bouček (1988), Bouček and Rasplus

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(1991), Xiao *et al.* (2003), Huang and Xiao (2005), and Sureshan (2012). The new species is described based on the holotype specimen. Body length excludes the ovipositor sheaths and is measured in millimeters (mm); other measurements are given as ratios.

Abbreviations of morphological terms used are:

Fu_n—funicular segment number;

POL—posterior ocellar distance;

OOL—ocellocular distance;

Gt_n—gastral tergum number.

3 Systematics

Neocyrtoptyx gen. nov.

Type species. *Neocyrtoptyx shanghensis* sp. nov.

Diagnosis. The new genus described here is similar to *Ischyroptyx* and *Cyrtoptyx* in the subfamily Pteromalinae by the antenna having three anelli, the pronotum being as broad as the mesoscutum, and the propodeum smooth with median carina reaching the raised adpetiolar lunate strip. However, it can be separated from *Ischyroptyx* by the marginal vein not thickened, and the flagellum plus pedicel are shorter than the width of the head in females. It differs from *Cyrtoptyx* in that the hairs on the thorax are white and conspicuous, and the fore wing without a marginal fringe.

Description. Body with white straight hairs, head and mesosoma with raised reticulation. Head oval in frontal view; antennal scrobes shallow, reaching anterior ocellus; malar sulci absent; antennal insertion on center of face; antennal formula 11353, flagellum plus pedicel combined shorter than width of head. Head occiput without carina. Pronotum short and almost as broad as mesosoma; notauli incomplete, frenal line on scutellum shallow; dorsellum long, ovoid and reticulate; propodeum short and smooth, median carina complete; fore wing without marginal fringe; marginal vein longer than postmarginal vein and stigmal vein. Gaster sessile, lanceolate, hind margin of Gt₁ and Gt₂ angularly produced, ovipositor sheath exerted.

Etymology. The new genus name refers to its close relationship with the genus *Cyrtoptyx* Delucchi, 1956.

Biology. Parasitic on larvae of *Stenocephus fraxini* (Cephidae) on the ash tree *Fraxinus chinensis* (Oleaceae).

Distribution. China (Shandong).

Key to species of *Neocyrtoptyx*.

1. Head in frontal view slightly transverse, 1.28× as wide as high; clypeus 1.76× as wide as high; head 2.39× as wide as long in dorsal view, POL 1.71× OOL; antenna with clava shorter than Fu₄ and Fu₅ combined; postmarginal vein 1.31× as long as stigmal vein.....
..... *N. shanghensis* sp. nov.
Head in frontal view almost circular, 1.09× as wide as high; clypeus 1.45× as wide as high; head 2.16× as wide as long, POL 2.12× OOL; antenna with clava as long as Fu₄ and Fu₅ combined; postmarginal vein 1.15× as long as stigmal vein.....*N. exilis* sp. nov.

Neocyrtoptyx shanghensis sp. nov. (Figs 1–8)

Diagnosis. Head in frontal view slightly transverse, 1.28× as wide as high; eyes height 0.58× head height; clypeus 1.76× as wide as high. Antenna with clava shorter than the length of Fu₄ and Fu₅ combined. Postmarginal vein 1.31× as long as stigmal vein; Gt₁ 0.21× length of gaster.

The new species is quite similar to *N. exilis* sp. nov., but it is stouter than the latter, and can be separated with the characters listed in the key.

Description. Female (holotype). Body (Figs 1–2) length 4.5 mm. Head and body dark green with bluish reflection. Mandibles brown, antennae mainly brown except joints of each section yellowish. Coxae concolorous with body, tibia and tarsi yellow, pretarsus yellowish brown.

Head in frontal view reticulated, 1.28× as wide as high (Fig. 3); eye height 0.58× head height; eyes separated by 1.52× their height. Antennal scrobes shallow, reaching anterior ocellus (Fig. 3). Clypeal suture obvious, clypeus 1.76× as wide as high, with radial striation; clypeal margin emarginate (Fig. 3). Antennae inserted in middle of face, distance from lower margin of torulus to lower margin of clypeus 1.26× distance from upper margin of torulus to lower margin of anterior ocellus. Gena smooth and convex; malar sulcus indistinct, malar space 0.45× eyes height. Antenna (Fig. 4) with three anelli and five funicular segments; scape reaching and exceeding anterior ocellus; length of pedicel and flagellum combined shorter than

head width ($0.88\times$); pedicel conical, $1.7\times$ as long as broad in lateral view, shorter than each funicular segment; anelli transverse; each funicular segment longer than its broad, with three irregular rows of sensilla, clava segment with single row of sensilla; ratio of length and width from Fu_1 to Fu_5 as 12:6, 12:6, 11:5.5, 8:5.5, 7:5.5; clava not wider than funicle, $2.43\times$ as long as broad, shorter than the length of Fu_4 - Fu_5 combined. Head in dorsal view, $2.39\times$ as wide as long; POL $1.71\times$ OOL, temple short.

Head slightly wider than thorax ($1.06\times$ as broad as mesosoma) (Fig. 5). Pronotum, mesoscutum and scutellum with raised reticulation. Pronotum $0.94\times$ as broad as mesoscutum. Mesoscutum $1.59\times$ as broad as long; notauli incomplete. Scutellum $1.13\times$ as broad as long, frenal line shallow but traced, frenum $0.37\times$ length of scutellum. Dorsellum reticulated, $2.6\times$ as broad as long, shorter than frenum and propodeum. Propodeum almost smooth (Fig. 5), $0.2\times$ as long as scutellum, median carina distinct. Thorax in lateral view (Fig. 6), prepectus small and smooth; upper mesepisternum finely reticulate with small area smooth. Fore wing (Fig. 7) $2.88\times$ as long as broad, speculum large; marginal fringe absent; costal cell with sparse setae; ratio of marginal vein: postmarginal vein: stigmal vein as 27:19:14.5; stigmal vein oblique, stigma slightly expanded, approximately $1/3$ length of stigmal vein.

Gaster lanceolate, $2.57\times$ as long as broad, longer than head and mesosoma combined ($1.32\times$); hind margin of Gt_1 and Gt_2 angularly produced and emarginate in the middle; Gt_1 $0.21\times$ length of gaster, Gt_2 shorter than Gt_1 . Ovipositor sheaths distinctly produced in dorsal view.

Male (Fig. 8). Gaster shorter than head and thorax combined, other characters similar to the female.

Type material. Holotype, female, China, Shandong, Shanghe Xian (37.18°N , 117.09°E), 1.VIII.2015–6.VI.2015, leg. Jiahe Yan (Hyp-2018-74). Paratypes. 2♀ (Hyp-2018-74), 1♂ (Hyp-2018-78), same data as holotype.

Etymology. The specific named after the location of the type material.

Biology. Parasitic on the larvae of *Stenocephus fraxini* (Hymenoptera, Cephidae).

Distribution. China (Shandong).

Neocyrtoptyx exilis sp. nov. (Figs 9–10)

Diagnosis. Head in frontal view almost circular, $1.09\times$ as wide as high; eye height $0.47\times$ head height; clypeus $1.45\times$ as wide as high. Antenna with clava as long as the length of Fu_4 and Fu_5 combined. Postmarginal vein $1.15\times$ as long as stigmal vein; Gt_1 $0.14\times$ length of gaster.

The new species is slimmer than *N. shanghensis* sp. nov. at first sight, it can be recognized by the characters listed in the key.

Description. Female (holotype). Body (Figs 9–10) length 4.0 mm. Head and thorax dark green with bluish reflection, gaster dark brown. Mandibles brown, antennae yellowish. Coxae concolorous with body, femur brown, tibia and tarsi yellow, pretarsus yellowish brown.

Head in frontal view reticulated, $1.09\times$ as wide as high; eye height $0.47\times$ head height; eyes separated by $1.53\times$ their height. Antennal scrobes shallow, reaching anterior ocellus. Clypeal suture obvious, clypeus $1.45\times$ as wide as high, with radial striation; clypeal margin emarginate. Antennae inserted in middle of face, distance from lower margin of torulus to lower margin of clypeus $1.53\times$ distance from upper margin of torulus to lower margin of anterior ocellus. Gena smooth and convex; malar sulcus indistinct, malar space $0.5\times$ eyes height. Length of pedicel and flagellum combined shorter than head width ($0.91\times$); pedicel conical, $1.5\times$ as long as broad in lateral view, shorter than each funicular segment; anellus transverse; each funicular segment longer than its broad, with three irregular rows of sensilla, clava segment with single row of sensilla; ratio of length and width from Fu_1 to Fu_5 as 16:8, 15:8, 14:8, 12:8, 11:8; clava not clavate, $2.87\times$ as long as broad, as long as Fu_4 and Fu_5 combined. Head in dorsal view, $2.16\times$ as wide as long; POL $2.12\times$ OOL, temple short.

Head slightly wider than thorax ($1.11\times$ as broad as mesosoma) (Fig. 10). Pronotum, mesoscutum and scutellum with raised reticulation. Pronotum $0.91\times$ as broad as mesoscutum. Mesoscutum $1.76\times$ as broad as long; notauli shallow and incomplete. Scutellum $1.15\times$ as broad as long, frenal line absent. Dorsellum reticulation, $2.6\times$ as broad as long. Propodeum smooth, $0.2\times$ as long as scutellum, median carina distinct. Prepectus small and smooth. Fore wing with marginal fringe absent; ratio of marginal vein: postmarginal vein: stigmal vein as 33:23:20; stigmal vein oblique, stigma expand backwards, stigmal more than $1/3$ length of stigmal vein.

Gaster lanceolate, $2.54\times$ as long as broad, longer than head and mesosoma combined ($1.32\times$); hind margin of Gt_1 and Gt_2 angularly produced and emarginate in the middle; Gt_1 $0.14\times$ length of gaster, Gt_2 shorter than Gt_1 . Ovipositor sheaths not produced in dorsal view.

Male. Unknown.

Type material. Holotype, female, China, Shandong, Shanghe Xian (37.18°N , 117.09°E), 1.VIII.2015–6.VI.2015, leg. Jiahe Yan (Hyp-2018-75). Paratypes. 2♀ (Hyp-2018-75), same data as holotype.



Figures 1–10. *Neocyrtoptyx* spp. 1–8. *N. shanghaiensis*, **sp. nov.**, female, holotype. 1. Body in dorsal view. 2. Body in lateral view. 3. Head in frontal view. 4. Antenna. 5. Mesosoma in dorsal view. 6. Body in lateral view. 7. Fore wing in dorsal view. 8. Male, body in lateral view. 9–10. *N. exilis* **sp. nov.**, female, holotype. 9. Body in dorsal view. 10. Body in lateral view.

Etymology. The specific name from the Latin word *exilis*, meaning slim, in reference to the slim body.

Biology. Parasitic on the larvae of *Stenocephus fraxini* (Hymenoptera, Cephidae).

Distribution. China (Shandong).

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References

- Bouček, Z. 1988. *Australasian Chalcidoidea (Hymenoptera). A biosystematic revision of genera of fourteen families, with a reclassification of species*. CAB International, Wallingford, Oxon and Cambrian News Ltd, Aberystwyth, Wales. 832 pp.
- Bouček, Z., Rasplus, J.Y. 1991. *Illustrated key to West-Palaeartic genera of Pteromalidae (Hymenoptera: Chalcidoidea)*. Institut National de la Recherche Agronomique, Paris. 140pp.
- Delucchi, V. 1956. Beitrag zur Kenntnis der Pteromalidae (Hym., Chalcidoidea) II (Fortsetzung). *Zeitschrift für Angewandte Entomologie*, 39: 242, 252.
- Gibson, G.A.P., Huber, J.T., Woolley, J.B. 1997. Morphology and Terminology. In: Gibson, G.A.P., Huber, J.T., Woolley, J.B. (eds.), *Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera)*. National Research Council Research Press, Ottawa. 794 pp.
- Graham, M.W.R. de V. 1969. The Pteromalidae of North-Western Europe (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology)*, 16: 1–908.
- Huang, D.W., Xiao, H. 2005. *Hymenoptera Pteromalidae. Fauna Sinica. Insecta, 42*. Science Press, Beijing. 388 pp.
- Sureshan, P.M. 2012. The genus *Cyrtoptyx* Delucchi (Hymenoptera: Chalcidoidea: Pteromalidae) from India, with a description of a new species from the southern Western Ghats of Kerala. *Journal of Threatened Taxa*, 4(5): 2578–2581.
- Wei, M.C., Niu, G.Y., Yan, J.H. 2015. Review of *Stenocephus* Shinohara (Hymenoptera: Cephidae), with description of a new species from China. *BioOne*, 117(4): 508–518.
- Xiao, H., Chen, Y., Huang, D.W. 2003. Taxonomy of the genus *Cyrtoptyx* Delucchi (Hymenoptera, Pteromalidae). *Acta Zootaxonomica Sinica*, 28(3): 535–536.