A new species of inquiline cynipid of the genus *Ufo* Melika & Pujade-Villar (Hymenoptera: Cynipidae) with their host gall plants in China

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Abstract: A new inquiline cynipid species, *Ufo rufiventris* sp. nov. (Hymenoptera: Cynipidae), is fully described and illustrated with its diagnosis and host gall identified.

Key words: Cynipoidea; Synergini; Taxonomy; *Ufo rufiventris*

中国寄瘿类方胸瘿蜂属一新种及其致瘿寄主植物（膜翅目：瘿蜂科）

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摘要：记述寄瘿类方胸瘿蜂属 1 新种：锈腹方胸瘿蜂 *Ufo rufiventris* sp. nov. 并附特征图，同时报道了该种的鉴别特征及其致瘿寄主植物。

关键词：瘿蜂总科；客瘿蜂族；分类；锈腹方胸瘿蜂

Introduction

The genus *Ufo* Melika & Pujade-Villar, 2005 belongs to tribe Synergini in family Cynipidae (Hymenoptera). *Ufo* was established by Melika and Pujade-Villar with four known species: *U. cerroneuroteri* Melika *et al.* 2012 and *U. nipponicus* Melika *et al.* 2012 from Taiwan of China, *U. abei* Melika and Pujade-Villar, 2005 from Japan and *U. koreanus* Melika, Pujade-Villar & Choi, 2007 from South Korea, respectively (Melika *et al*. 2005, 2007, 2012). The genus can be easily separated from other genera in tribe Synergini by having the lateral pronotal carina strongly impressed, pronotum rectangular in dorsal view, the position of the metapleural sulcus high in lateral view and the mesoscutum coriaceous.

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In this study, we describe one additional new species from eastern China *Ufo rufiventris* sp. nov. with its host gall plant.

Material and methods

All specimens from China used and deposited in this study are from the Hymenoptera Collection, Zhejiang Agricultural, Lin'an, China (ZJUH). For the identification of the tribe and genera of the family Cynipidae, see Weld (1952) and Melika *et al*. (2005). The morphological terminology for the gall wasps used in this paper follows Ronquist & Nordlander (1989). Abbreviations for fore wing venation follow Melika (2006). Additional abbreviations used in this paper include: F1–F12 — 1st and subsequent antennal flagellomeres; POL (post-ocellar line) — the distance between the inner margins of the posterior ocelli; OOL (ocellar–ocular line), the distance from the outer edge of a posterior ocellus to the inner margin of the compound eye; LOL—the distance between frontal and lateral ocellus. The width of the radial cell is the longest distance between R1 and Rs veins, measured perpendicularly to Rs.

Descriptions and measurements were made under a Leica M205C stereomicroscope (Wetzlar, Germany) and photos were taken by a digital camera (Q-Imaging, Micropublisher 3.3 RTV) attached to a Leica DFC 450 stereomicroscope (Wetzlar, Germany) using Synoptics Auto-Montage version 5.0 software.

Taxonomy

1. ***Ufo cerroneuroteri* Melika, Tang & Yang, 2012** (Fig. 1)

Ufo cerroneuroteri Melika *et al*., 2012. *Zootaxa*, 3478: 143.

Specimens examined. 2♀, **China,** Zhejiang, Tianmushan, 119°27′E, 30°19′N, 22-IX-2010, Rui GUO.

Distribution. China (Zhejiang, Taiwan).

Biology. Host gall (Figs. 1H–I) is most commonly on the underside of *Quercus chenii* leaves. The mature gall reaches 5 mm in diameter, with a tough woody wall. The interior space contains a single larval chamber. Galls appear on the tree from early June, and develop through the summer and into early September. Under laboratory conditions, adults emerged in late September.

2. ***Ufo rufiventris* sp. nov.** (Fig. 2)

Diagnosis. According to the key of species of *Ufo* in Melika *et al*. (2012), this species is similar to *Ufo abei* Melika & Pujade-Villar, 2005 from Japan, but it can be easily separated from the latter by having the malar space 0.7 times as long as the height of the compound eye; notauli distinctly complete, with smooth and shinning bottom; anterior parallel lines and parapsidal lines uniformly absent; body with blackish brown to black.

Description. Female. Body length 1.1–1.2 mm, fore wing 1.2–1.3 mm and ovipositor sheath 0.1 mm.

Color. Body blackish brown to black, metasoma dark red, antennae and legs uniformly yellowish-brown.

Head (Figs. 2A, B). Head transverse, coriaceous, 1.4 times as wide as media high in front

view and as wide as mesosoma, with sparse setae; gena behind eye with sparser setae than on lower face; vertex very narrow, without setae, smooth and shining. Gena delicately coriaceous, smooth and shining. Clypeus very small, quadrangular, delicately coriaceous, impressed, slightly broader than high, anterior tentorial pits small and hardly visible, epistomal sulcus and clypeo-pleurostomal indistinct. Lower face, malar space and clypeus with relatively dense white setae, same setae along inner margins of compound eye; malar space 0.7 times as long as height of compound eye. Distance between inner margin of compound eye 1.3 times as long as height of compound eye; distance between inner margin of compound eye and antennal socket equal to diameter of antennal socket and distance between antennal sockets slightly shorter than diameter of antennal socket. Head 2.2 times as wide as media length in dorsal view. POL : OOL : LOL = 2.5 : 0.7 : 1.1. Posterior edge of frontal ocellus barely lies on a line between anterior edges of lateral ocelli. Frons smooth and shining or delicately coriaceous, with a row of setae in front of frontal ocellus. Occiput smooth and shining, not descending vertically, concave backwards; occipital carina absent. Gena not broadened behind eye in front view. Postgena and postocciput smooth, shining, with some short white setae along hypostomal carina.

Antenna (Fig. 2H). Antenna 13-segmented, pedicel nearly 1.5 times as long as wide, F1 is the longest flagellomere except for F11; F1 1.4 times as long as pedicel and F2; F2 equal to F3–F10; ratio of scapus, pedicellum and F1–F11 as follows = 13 : 9 : 13 : 9 : 9 : 9 : 9 : 9 : 9 : 9 : 9 : 20 (measured on the holotype).

Mesosoma (Figs. 2C and E). Mesosoma 1.1 times as long as high in lateral view. Pronotum anteriorly nearly rectangular in dorsal view, anterior and lateral sides form a right angle; pronotum descending vertically to propleura; lateral part of pronotum going down from the dorsal part also nearly at a right angle; strong pronotal carina divides lateral part from frontal part, which are also oriented almost at a right angle to each other; pronotum dorsally punctuate, very finely coriaceous, laterally with strong longitudinal and parallel striations; dorsal and lateral parts with delicate short white setae. Propleuron coriaceous with some strong transversely orientated striate. Mesoscutum finely coriaceous, slightly longer than wide measuring along anterior edge of tegulae, with weak transverse striations and short sparse white setae; notauli distinctly complete, with smooth and shining bottom; anterior parallel lines and parapsidal lines absent. Scutellum 1.1 times as long as wide in dorsal view; weakly rugose around lateral and posterior edges, very finely coriaceous centrally and very few minute striations, area between ridges smooth and shining; scutellar foveae ovate with smooth bottom, separated by a distinct median carina. Mesopleuron smooth and shining, with some longitudinal striations, especially in central and postero-dorsal parts; metapleural sulcus reaching mesopleuron in upper 1/5 of its height; propodeum with uniformly sparse long white setae and finely coriaceous laterally; lateral propodeal carinae distinct, thin, straight, slightly diverging anteriorly; central propodeal area delicately alutaceous; metanotum smooth and shining; metanotal trough smooth and shining, with dense pubescence; propodeal spiracle with strong raised carina along anterior border. Tarsal claws with distinct basal lobes.

Fore wing (Fig. 2D). Forewing margin with long cilia; radial cell opened, 2.8 times as long as broad; veins Rs and R1 straight; areolet absent.

Metasoma (Fig. 2F). Metasoma tergites 2 and 3 fused, smooth and shining, covering entire metasoma. Metasoma tergites 2 and 3 with white setae antero-laterally. Prominent part

of ventral spine of hypopygium very short and slender; hypopygium micropunctate, with very few short white setae along ventral edge.

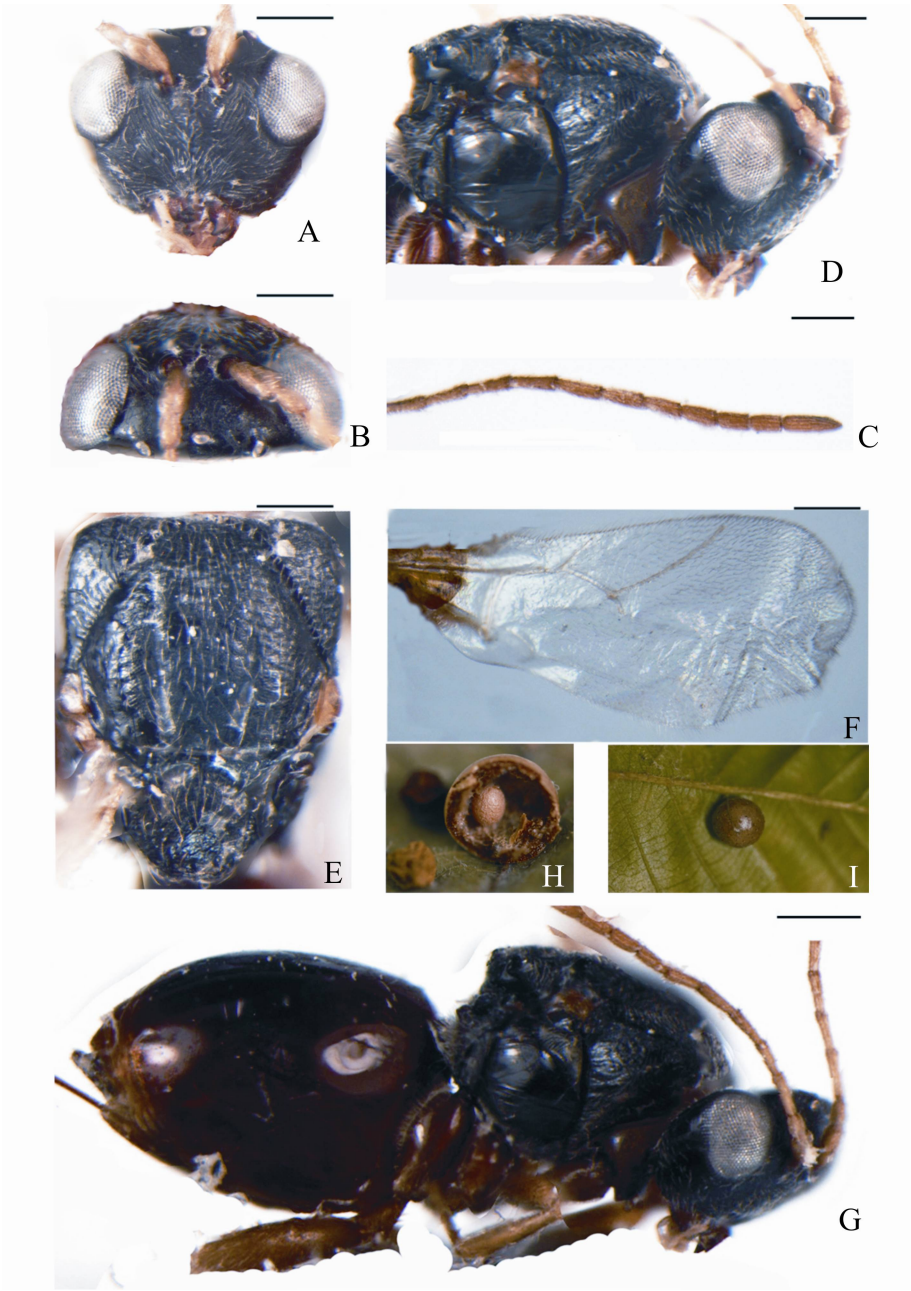

Figure 1. *Ufo cerroneuroteri* Melika *et al*., 2012, female. A. Head, anterior view; B. Head, dorsal view; C. Antenna; D. Mesosoma, lateral view; E. Mesosoma, dorsal view; F. Forewing; G. General habits, lateral view; H, I. Galls. Scales = 0.2 mm (Figs. A–E, G); 0.4 mm (Fig. F).

Male. Unknown.

Holotype. ♀, **China,** Zhejiang, Tianmushan, 119° 27′E, 30°19′N, 08-IX-2010, Rui GUO.

Paratype. 1♀, same label as the holotype.

Distribution. China (Zhejiang).

Biology. Galls (Fig. 2G) develop on the underside of *Q. acutissima* leaves. The galls are small, rounded and flattened with a central dimple, yellowish, smooth, with few setae around the gall, thin walled, monolocular, 2.0 mm in diameter. Galls appear on the tree from early June, develop through the summer and into early September. Under laboratory conditions, adults emerged in late September.

Etymology. This new species epithet is named after the color of the abdomen of type specimens.

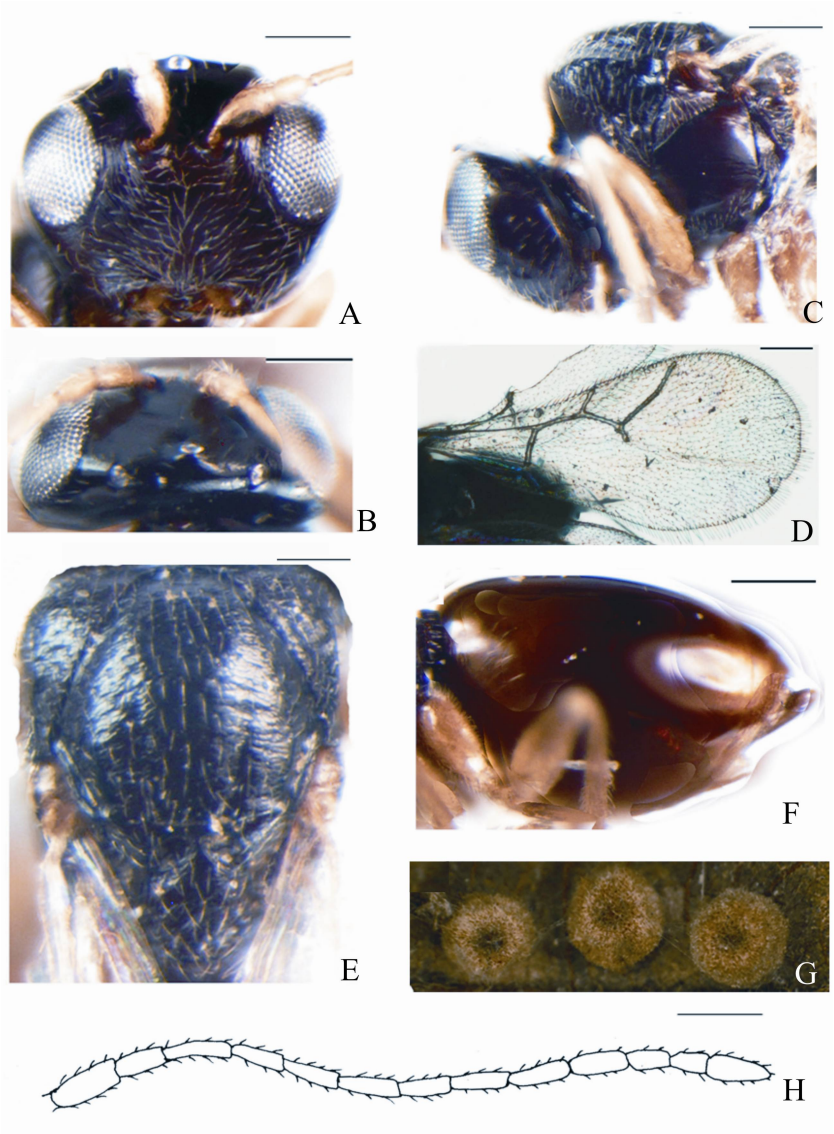

Figure 2. *Ufo rufiventris* sp. nov., female. A. Head, anterior view; B. Head, dorsal view; C. Mesosoma, lateral view; D. Forewing; E. Mesosoma, dorsal view; F. Metasoma, lateral view; G. Galls; H. Antenna. Scales = 0.12

mm.

Discussion. The genus *Ufo* is easily distinguished from other genera by pronotum anteriorly nearly rectangular in dorsal view, anterior and lateral sides forming a right angle. Five species of *Ufo* are know: *U. abei*, *U. koreanus*, *U. cerroneuroteri, U. nipponicus* and *U. rufiventris* sp. nov.. All the known species are distributed in the Eastern Palaearctic Regions (China, Japan and Korea). They have different host gall plants, and their galls have different shapes. This may suggest that eastern Asia is the center of origin for this genus. In *Ufo* only the known species *Ufo koreanus* was reared as leaf spangle-galls on *Neuroterus nawai* Ashmead, 1904. But now we also know that *U. cerroneuroteri* is reared as leaf galls on *Q. chenii* and *U. rufiventris* as leaf galls on *Q. acutissima*. Melika (2005) believes that the genus *Ufo* is most closely related to some species in the genus *Saphonecrus*, which are characterized by a distinct lateral pronotal carina; however, the other species of *Saphonecrus* and *Synergus* cannot be compared based on the lateral carinae.

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