

Chinese Species of *Diglyphomorphomyia* Girault (Hymenoptera: Eulophidae)

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Chao-Dong Zhu and Da-Wei Huang (2003) Chinese species of *Diglyphomorphomyia* Girault (Hymenoptera: Eulophidae). *Zoological Studies* 42(3): 444-449. This paper treats Chinese species of *Diglyphomorphomyia* Girault. It represents the first record of the genus *Diglyphomorphomyia* from both the Oriental and Palearctic parts of China. Four new species are described from China: *D. aequus*, *D. metanotalia*, *D. nigra*, and *D. platys*. <http://www.sinica.edu.tw/zool/zoolstud/42.3/444.pdf>

Key words: Hymenoptera, Eulophidae, *Diglyphomorphomyia*, New species.

When surveying the Chinese fauna of the Chalcidoidea, we found several genera which have previously been rarely collected or reported (Zhu et al. 1999 2000a b, Zhu and Huang 2000 2001a b 2002a b c d, Xiao and Huang 2001a b c d e). Species of these genera occur more often in South China than in the north. *Diglyphomorphomyia* Girault (1913) (Eulophinae) was erected for *D. nigriscutellum* Girault. This genus included 3 species described by Girault and was recorded only from Australia before this paper (Noyes 1998 2002). In both Peck et al.'s (1964) and Schauff et al.'s (1997) keys to the eulophid genera, members of this genus were keyed to *Elachertus* Spinola. It is very close to *Elachertus* and *Deutereulophus* Schulz (Bouček 1988), but it differs from the latter genera by the diagnostic characters provided below. In this paper, we record this rare genus from China and describe 4 new species.

Morphological terminology follows that of Gibson et al. (1997). Absolute measurements, in millimeters (mm), are used for body and fore wing length. For all other dimensions, relative measurements are used. Unless indicated otherwise, all examined specimens are deposited at the Institute of Zoology, Chinese Academy of Sciences, Beijing (IZCAS). Other examined speci-

mens are deposited at the Insect Collection, Taiwan Agricultural Research Institute, Wufong, Taiwan (TARI).

Genus *Diglyphomorphomyia* Girault

Diglyphomorphomyia Girault, 1913: 281. Type species *Diglyphomorphomyia nigriscutellum* Girault.

Diagnosis: Mid lobe of mesoscutum (Fig. 2) or scutellum (Fig. 4) with deep punctures; sublateral grooves on scutellum distinct, their bottom punctuated (Fig. 3); mid lobe of mesoscutum with 2 or 3 pairs of setae (Fig. 2); occiput sharply margined posterior to ocelli (Figs. 7, 11, 15); propodeum with anterior margin raised into a perpendicular lamina (Fig. 3a); transverse carina lateral to plicae distinct behind propodeal spiracle (Fig. 4b).

In species from Australia, the vertex carina is posterior to the ocelli, and the scrobes are dorsally defined by a short cross carina (Bouček 1988). None of the Chinese species has an occipital carina, but instead the occiput is sharply margined posterior to the ocelli (Figs. 7, 11, 15). The short transverse carina above the scrobes is not distinct (Fig. 1). One species from Yunnan has 6 setae on

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the mid lobe of the mesoscutum.

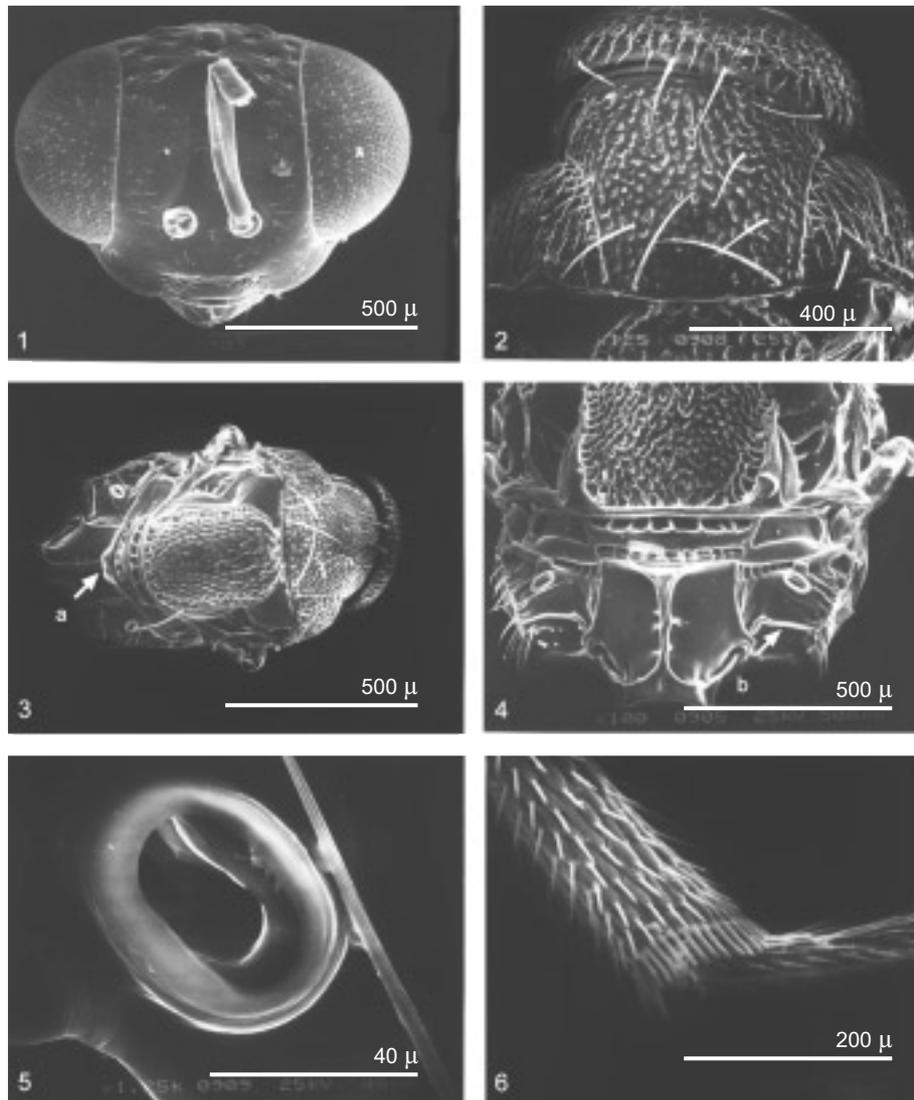
The propodeal spiracle of the genus is almost the same as those of *Elachertus* (ref. Zhu and Huang 2001b: figs. 7, 20, 64, 72, 97). However, the spiracle of *Diglyphomorphomyia* (Fig. 5) is completely empty inside and smooth on the inner margin, while those of *Elachertus* always have carinae or other material inside (refer to figures in Zhu and Huang 2001b). This genus differs from other Chinese eulophines by the hind tibiae being distinctly punctuated (Fig. 6).

Distribution: China, Australia (Girault 1913 1915). Bouček (1988) also indicated its occurrences in Korea, Malaysia, Papua New Guinea, Sri Lanka, and Uganda.

We have collected 1 male of an unidentified species in mountains east of Nanjing, Jiangsu (China). It could not be accurately identified. Except for 1 species, *D. platys*, which occurs only in Beijing (North China), most of the Chinese species of this genus have been collected from South China.

Key to species

1. Notauli strongly divergent posteriorly meeting inner angle of axillae (Fig. 11); dorsellum smooth; hind femora and tibiae dark.....*D. metanotalia* sp. nov.
- Notauli straight, converging posteriorly and laterad to inner angle of axillae (Figs. 2, 3, 7, 15); dorsellum reticulate; all legs yellow.....2
2. Body dark brown to black.....*D. nigra* sp. nov.



Figs. 1-6. *Diglyphomorphomyia aequus* sp. nov.: 1. Frontal view of head; 2. dorsal view of mid lobe of mesoscutum; 3. dorsal view of mesosoma; 4. dorsal view of propodeum and posterior half of scutellum; 5. propodeal spiracle; 6. hind tibia.

- Body mostly to completely yellow.....3
- 3. Funicle with all segments of same breadth, F4 as long as broad, F2-F4 brown (Fig. 8).....*D. aequus* sp. nov.
- Funicle becoming broader and shorter apically, F4 1.1 times as long as broad; F3-F4 brown (Fig. 19).....*D. platys* sp. nov.

***Diglyphomorphomyia aequus* sp. nov.**
(Figs. 1-10)

Diagnosis: Notauli not carinate, straight and converging posteriorly to meet laterad to inner angles of axillae (Figs. 2, 3, 7, 15); dorsellum with isodiametric, engraved reticulations; antenna with yellow scape, pedicel, and F1, remaining segments brown; body and all legs yellow.

Female: Body length 2 mm, fore wing length 1.6 mm. Body yellow. Head brown. Eyes yellowish white. Ocellus yellow. Antennae (Fig. 8) with yellow scape, pedicel, anelli, and F1; following segments brown. Setae brown except for yellow ones on mesoscutum. Legs yellow. Metasoma yellow with a brown patch.

Vertex with isodiametric, engraved reticulations (Fig. 1). Lower face reticulate. Occiput reticulate. Toruli placed at lower eye margin (Fig. 1). Relative measurements: head width 72, head length 28, head height 58, POL 17, OOL 6, eye length 38, eye width 18, distance between eyes 36, malar space 18, mouth opening 16, toruli to median ocellus 30, toruli to mouth margin 15. Scape slightly flattened. Flagellum about same width. Clava as long as F1, and longer than remaining ones. Relative measurements: scape 30, pedicel 10, F1 13, F2 10, F3 11, F4 7, clava 15.

Pronotum without transverse carina, reticulate (Fig. 2). Notauli straight, converging, ending laterad to inner angle of axilla. Mid lobe of mesoscutum with 2-3 pairs of stout setae, without scattered setae, with isodiametric, engraved reticulations. Axilla with anterior margin in line with scutoscutellar sulcus, reticulate. Scutellum (Fig. 3) longer than mesoscutum, with straight sublateral grooves, punctate. Dorsellum with isodiametric, engraved reticulations, with rectangular posterior margin. Callus with 7 setae. Propodeal median carina present, inverted T-shaped posteriorly. Relative measurements: mesosoma length 25, mesosoma width 20, pronotum 6, mesoscutum 8, scutellum 11, dorsellum 2.5, propodeum 7.5.

Fore wing setae on lower surface of costal cell scattered over surface, those on upper surface distal to mid point. Submarginal vein with 6 setae

on dorsal surface. Cubital vein straight at base. Hind wing (Fig. 10) rounded apically. Relative measurements: fore wing length 52, fore wing width 19, submarginal vein 38, costal cell 54, parastigma 15, marginal vein 45, postmarginal vein 25, stigmal vein 18.

Metasoma ovate, as long as mesosoma, as broad as mesosoma. Apex of metasoma acute. Tip of ovipositor sheath visible. Relative measurements: metasoma length 25, metasoma width 18.

Male: unknown.

Materials examined: Holotype: ♀, Sichuan, Youyang, 17 July 1989, 1250 m (LL Yang). Paratypes: 9 ♀♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin and WS Tang); 1 ♀, C. Taiwan, Nantou, Meifeng, 2-4 July 1980, 2150 m (LY Chou and CC Chen); 1 ♀, C. Taiwan, Nantou, Meifeng, 24-26 July 1981, 2150 m (KS Lin and WS Tang).

Distribution: China: Sichuan; Taiwan.

***Diglyphomorphomyia metanotalia* sp. nov.**
(Figs. 11-14)

Diagnosis: Notauli carinate, strongly curved outward meeting at inner angles of axillae (Fig. 11); cubital vein curved inward near base (Fig. 13); dorsellum smooth; hind femora and hind tibiae dark; body black.

Female: Body length 1.6 mm, fore wing length 1.51 mm. Body black. Eye reddish. Ocellus black. Antenna brown except for yellow scape. Setae yellowish brown except for yellow ones on eyes and callus. Legs yellow, except for yellowish-brown coxa, fore and mid femora, hind femora and hind tibiae brown.

Lower face striate. Toruli placed above lower eye margin. Relative measurements: head width 54, head length 18, head height 44, POL 13, OOL 6, eye length 22, eye width 8, distance between eyes 34, malar space 12, toruli to median ocellus 21, toruli to mouth margin 13. Scape slightly flattened. Flagellum usually about same width (Fig. 12). Clava longer than each funicular segment. Relative measurements: scape 25, pedicel 10, F1 13, F2 10, F3 10, F4 10, clava 20.

Pronotum without transverse carina anteriorly, granulate. Notauli curved outwards posteriorly, ending at inner angles of axillae (Fig. 11). Mid lobe of mesoscutum with 3 pairs of setae only, punctate. Axilla with anterior margin in line with scutoscutellar sulcus, reticulate. Scutellum as long as mesoscutum, with curved sublateral grooves (Fig. 11), with 2 pairs of setae, with isodiametric

and engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Callus with 6 setae. Propodeal median carina present, enlarged posteriorly to form a triangular plate. Relative measurements: mesosoma length 20, mesosoma width 16, pronotum 3, mesoscutum 9, scutellum 9, dorsellum 1.5, propodeum 6.5.

Fore wing setae on lower surface of costal cell in a line, distal to mid point; those on upper surface distal to mid point (Fig. 13). Submarginal vein with 5 setae on dorsal surface. Cubital vein straight at base. Basal cell with several setae below submarginal vein. Hind wing (Fig. 14) subacute apically. Relative measurements: fore wing length 48, fore wing width 20, submarginal vein 33,

costal cell 44, parastigma 10, marginal vein 47, postmarginal vein 28, stigmal vein 17.

Metasoma ovate, as broad as mesosoma. Apex of metasoma acute. Relative measurements: metasoma length 22, metasoma width 14.

Materials examined: Holotype: ♀, Yunnan, Liude, Yongsheng, 8 July 1984, 2300 m (CF Li). Paratypes: 1 ♀, C. Taiwan, Nantou, Tungpu, 1200 m, 18-23 Nov. 1981 (T Lin and WS Tang); 4 ♀♀, C. Taiwan, Nantou, Meifeng, 5-9 Oct. 1980, 2150 m (CC Chen and CC Chien); 1 ♀, C. Taiwan, Nantou, Meifeng, 5-9 Oct. 1980, 2150 m (KS Lin and SC Lin); 3 ♂♂, Fujian, Dazulan, July 1980 (NQ Lin).

Distribution: China: Fujian, Yunnan; Taiwan.

Diglyphomorphomyia nigra sp. nov.

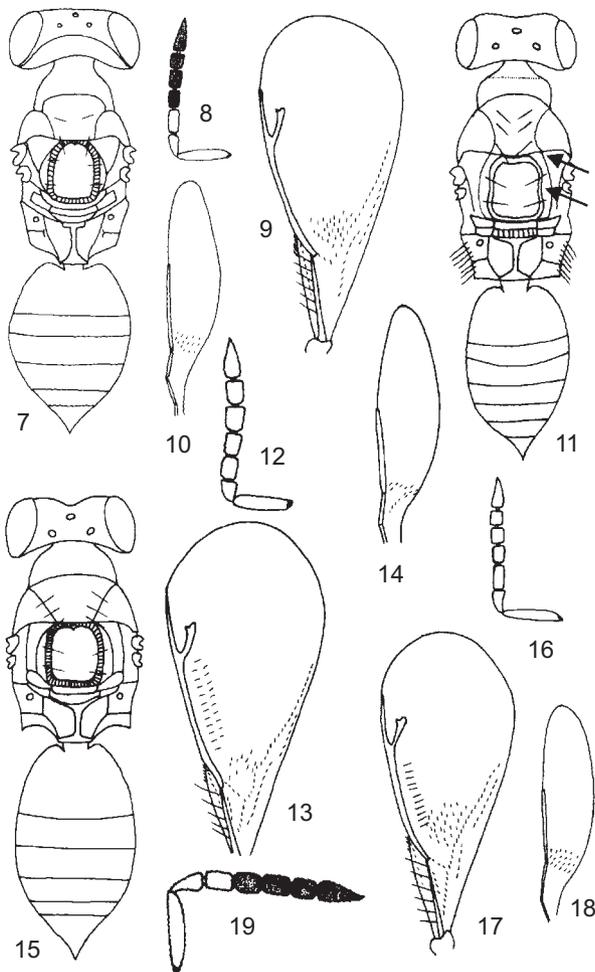
(Figs. 15-18)

Diagnosis: Notauli not carinate, straight, converging posteriorly to meet at inner angles of axilla; dorsellum with isodiametric, engraved reticulations; antenna yellow; legs yellow; body black.

Female: Body length 1.88 mm, fore wing length 1.45 mm. Body brownish. Head brown with the following parts yellow: eye, ocellus, antenna, and mandible. Setae brown except for yellow ones on eye, lower face, callus, fore wing, and marginal fringe. Venation yellow. Legs yellow. Metasoma yellowish brown with a yellow patch.

Vertex with isodiametric, engraved reticulations. Occiput reticulate. Toruli placed above lower eye margin. Relative measurements: head width 59, head length 27, head height 49, POL 13, OOL 6, eye length 28, eye width 9, distance between eyes 32, malar space 20, mouth opening 23, toruli to median ocellus 26, toruli to mouth margin 14. Scape cylindrical. Clava longer than each funicular segment. Relative measurements: scape 25, pedicel 10, F1 11, F2 8, F3 9, F4 8, clava 13.

Pronotum (Fig. 15) without transverse carina, reticulate. Notaulus straight, converging, ending at inner tip of axilla. Mid lobe of mesoscutum with 3 pairs of setae, without scattered setae, punctated. Axilla with anterior margin in line with scutoscuteular sulcus, reticulate. Scutellum longer than mesoscutum, with straight sublateral grooves, with 2 pairs of setae, punctate. Dorsellum with isodiametric, engraved reticulations, with rectangular posterior margin. Callus with 7 setae. Propodeal median carina present, linear posteriorly. Relative measurements: mesosoma length 21, mesosoma width 17, pronotum 3, mesoscutum 6, scutellum 10, dorsellum 1.5, propodeum 7.5.



Figs. 7-10. *Diglyphomorphomyia aequus* sp. nov.: 7. dorsal view of body; 8. antenna; 9. fore wing; 10. hind wing. **Figs. 11-14.** *D. metanotalia* sp. nov.: 11. dorsal view of body; 12. antenna; 13. fore wing; 14. hind wing. **Figs. 15-18.** *D. nigra* sp. nov.: 15. dorsal view of body; 16. antenna; 17. fore wing; 18. hind wing. **Fig. 19.** *D. platys* sp. nov.: antenna.

Fore wing setae on lower surface of costal cell in a line, only distal to mid point; those on upper surface distal to mid point. Submarginal vein with 6 setae on dorsal surface. Cubital vein straight at base. Basal cell bare below submarginal vein. Hind wing (Fig. 18) subacute apically. Relative measurements: fore wing length 44, fore wing width 18, submarginal vein 34, costal cell 45, parastigma 12, marginal vein 37, postmarginal vein 22, stigmal vein 14.

Metasoma ovate, as broad as mesosoma. Apex of metasoma acute. Tip of ovipositor sheath visible. Relative measurements: metasoma length 28, metasoma width 18.

Male: Same as holotype female, except for funicular segments shorter.

Materials examined: Holotype: ♀, Fujian, Shouning, Sanfeng, 10 Oct. 1988 (ZY Zhu). Other specimens examined: 1 ♂, Hainan, Jianfeng Mts., 31 Mar. 1981 (CF Li).

Distribution: China: Fujian, Hainan.

***Diglyphomorphomyia platys* sp. nov.**

(Fig. 19)

Diagnosis: Notauli not carinate, straight and converging posteriorly to meet at inner angles of axillae; dorsellum with very vague isodiametric and engraved reticulations; antenna (Fig. 19) yellow except for brown F3, F4, and clava; body yellow.

Female: Body 1.38 mm long, fore wing length 1.17 mm. Body brown. Eye white. Ocellus brown. Antenna yellow except for brown F3, F4, and clava. Setae brown except for yellow ones on lower face, eyes, scutellum, and callus. Propodeum and legs yellow.

Vertex with isodiametric, engraved reticulations. Occiput reticulate. Toruli placed below lower eye margin. Relative measurements: head width 50, head length 13, head height 42, POL 10, OOL 6, eye length 28, eye width 13, distance between eyes 31, malar space 13, mouth opening 13, toruli to median ocellus 26, toruli to mouth margin 10. Scape cylindrical. Flagellum usually about same width. Clava longer than each funicular segment. Relative measurements: scape 17, pedicel 10, F1 9, F2 6, F3 7, F4 6, clava 11.

Pronotum without transverse carina anteriorly, reticulate. Notauli straight, converging, ending at inner angles of axillae. Mid lobe of mesoscutum with 3 pairs of setae only, punctuate. Axillae with anterior margin in line with scutoscuteellar sulcus, reticulate. Scutellum longer than mesoscutum, with straight sublateral grooves, with 4 pairs of

setae, with elongate and engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Callus with 5 setae. Propodeal median carina present, linear posteriorly; plicae present. Relative measurements: mesosoma length 24, thorax width 14, pronotum 4, mesoscutum 6.5, scutellum 8, dorsellum 1.5, propodeum 3.5.

Fore wing setae on lower surface of costal cell in a line, distal to mid point; those on upper surface of costal cell distal to mid point. Cubital vein sinuate at base, curving inward under or near speculum. Basal cell with 1 setal line parallel to submarginal vein. Hind wing rounded apically. Relative measurements: fore wing length 34, fore wing width 15, submarginal vein 18, costal cell 30, parastigma 12, marginal vein 30, postmarginal vein 21, stigmal vein 13.

Metasoma ovate, longer than and as broad as mesosoma. Apex of metasoma not acute. Tip of ovipositor sheath visible. Relative measurements: metasoma length 22 and width 13.

Materials examined: Holotype: ♀, Beijing, Jietan Temple, 19 May 1984 (DW Huang). Other specimens examined: 2 ♀♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin and WS Tang); 1 ♀, Guizhou, Qingcheng, 31 Dec. 1963 (DX Liao); 1 ♀, Fujian, Xianfeng Mts., 26 June 1980 (XF Zhao); 1 ♀, Yunnan, Jingdong, 30 March 1957 (DX Liao).

Distribution: China: Beijing, Fujian, Yunnan, Guizhou; Taiwan.

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