

## *Amiota (Phortica) omega* Species-complex, with Descriptions of Two New Species from Southern China (Diptera: Drosophilidae)

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**Abstract.** A new species-complex, the *Amiota (Phortica) omega* complex, is established, including three known and two new species, *A. (Ph.) biprotrusa* sp. nov. from Guangdong and *A. (Ph.) hainanensis* sp. nov. from Hainan Is.

**Key words:** Drosophilidae, *Amiota*, *Phortica*, *omega* species-complex, new species, China.

### Introduction

Up to the present, a total of 61 species of the subgenus *Phortica* Schiner, 1862 have been reported from the world. Although their phylogenetic relationships have not been revealed, three species-complexes have been recognized among them: the *Amiota variegata* complex (Máca, 1977), the *A. foliiseta* complex (Tsacas & Okada, 1983), and the *A. magna* complex (Chen & Toda, 1997).

Here, we establish another species-complex, the *A. omega* complex, in this subgenus. *Amiota (Phortica) omega* was first described from Thailand by Okada (1977) and then reported from Dinghushan in Guangdong, southern China, by Peng *et al.* (1990). Máca & Lin (1993) described its close relative, *Amiota (Phortica) perforcipata*, from Taiwan. We closely re-examined some of the specimens from Dinghushan, which had been identified as *omega*, comparing with the type specimens of *omega* and *perforcipata*, and found them to represent an undescribed species. In addition, we discovered that another new species from Hainan Is. and *Amiota (Phortica) paramagna* Okada, 1971 are certainly related to the above three species.

### *Amiota (Phortica) omega* Species-complex

**Diagnosis.** Paramere bifurcated from base; median rod of aedeagus slender, subapically with node or sinuated (Figs. 1C, 2C).

**Description.** Eye brownish red. Frons medially

with large, triangular, black patch; frontal vitta pollinose, anteriorly orange, medially with a few interfrontal setulae; fronto-orbital plate yellow, brown above, narrowly silvery white along eye margin. Face grayish yellow, whitish below; carina grayish brown, broad, low. Clypeus medially white, laterally black. Gena grayish yellow to brown; vibrissa prominent; other orals small; postgena dark brown, narrowly white along eye margin; occiput black. Antennal pedicel grayish brown; 1st flagellomere grayish orange yellow; arista without terminal fork. Palpus somewhat triangular, yellowish gray, darker basally, with 1 prominent subapical and 2–3 lateral setae.

Thorax orange brown, with brownish black patches and pollinose pattern. Postpronotal lobe pale yellow, darker below, with only 1 long seta. Acrostichal setulae in about 8 irregular rows. Prescutellar setae present. Scutellum dark brown, laterobasally and apically paler; basal scutellar setae divergent; apicals convergent, overlapping.

Wings hyaline, but slightly smoky. Veins grayish yellow; r-m and dm-cu crossveins clouded. Bm-cu crossvein present.  $R_{2+3}$  slightly curved to costa at tip;  $R_{4+5}$  and  $M_1$  distally slightly convergent.  $C_1$  seta less differentiated. Halter white.

Legs yellow; femora brown except for apical or distal portion; tibiae with 3 dark gray rings. Fore femur with especially long setae in 2–3 rows on posterior surface; mid and hind femora without such long setae. Preapical dorsal setae small, but present on all tibiae; apicals on fore and mid tibiae. Mid tarsus with 2 rows of cuneiform setulae on inner and outer sides; hind tarsus with 1 row of such setulae on underside. Fore and hind 1st tarsomeres each as long as 3 succeeding tarsomeres together; mid 1st tarsomere as

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long as other tarsomeres combined.

Abdominal tergites orange yellow; 2nd with brownish black patches sublaterally and on lateral margins; 3rd and 4th each with broad, caudal black band protruded medially and laterally and 1 pair of yellow patches near lateral margins; 5th with very broad, black band; 6th nearly entirely black except for median line. Sternites yellowish gray.

Male terminalia: Epandrium pubescent laterally to dorsally, with several setae on caudomedial to dorsal part; anteroventral corner protruded. Surstylus setigerous, distally with wedge-shaped prenisetae arranged irregularly. Tenth sternite composed of 1 pair of lateral lobes connecting surstyli with each other and median piece with caudomedian process fused to pubescent plate. Cercus semicircular, separated from epandrium, densely setigerous and entirely pubescent. Membrane between epandrium and cercus entirely pubescent. Hypandrium narrow, arched, roundly curved in anterior portion, caudally with 1 pair of pubescent flaps; caudal ends contiguous to caudolateral corners of gonopod and anteroventral corners of epandrium. Gonopods fused, forming large posteromedian lobe caudally articulated with 10th sternite, medially narrow, anteriorly forming long, triangular, vertical lobe. Anterior branch of paramere subapically with 1 sensillum. Aedeagus composed of outer membranous tube and more or less sclerotized median rod; outer membrane posteriorly connected to vertical lobe of gonopod; median rod strongly sclerotized in basal 2/3, basally connected to basal corners of gonopod by 1 pair of small bridges and contiguous to elongated process from apodeme.

*Habitat.* All the members are dwelling in deep forests.

In the following descriptions of species, only features that differ among them are referred to.

*Amiota (Phortica) omega* Okada

*Amiota (Phortica) omega* Okada, 1977: 21.

*Diagnosis.* Male 6th tergite with no projection but dense, long setae at posteroventral corner (anteroventral corner damaged); posterior branch of paramere slender, with stout tooth apically; anterior branch of paramere subapically slightly expanded.

*Description* supplementary to the original description by Okada (1977). Epandrium anteroventrally without small patch of microtrichia. Surstylus basally narrow, lacking pubescence on outer surface.

*Specimens examined.* Holotype (♂) and 1♂ paratype, Thailand: Chiang Mai, 22. IX. 1975, coll. H.

Kurahashi (deposited in National Science Museum, Tokyo, Japan).

*Distribution.* Thailand.

*Amiota (Phortica) perforcipata* Máca et Lin

*Amiota (Phortica) perforcipata* Máca et Lin, 1993: 173.

*Diagnosis.* Male 6th tergite with prickly projection at anteroventral corner and densely setigerous on posteroventral portion; posterior branch of paramere broad, apically with sensillum arising from tooth; anterior branch of paramere subdistally with triangular expansion.

*Description* supplementary to the original description by Máca & Lin (1993). Aedeagal median rod with node subapically; apical portion beyond node less sclerotized, almost transparent (originally described as "Aedeagus apically truncated").

*Specimen examined.* Holotype (♂) (Institute of Zoology, Academia Sinica, Taipei, Taiwan).

*Distribution.* China (Taiwan).

*Amiota (Phortica) biprotrusa* sp. nov.

(Fig. 1)

*Diagnosis.* Male 6th tergite with 2 prickly projections on lateral margin (Fig. 1D).

*Description.* Male terminalia (Fig. 1): Epandrium anteroventrally lacking pubescence, distinctly constricted on caudoventral margin. Surstylus lacking pubescence, basally narrow. Tenth sternite narrow, with long lateral arms and caudomedian process. Anterior branch of paramere very long, slender, apically with 1 distinct, black tooth and 2 smaller ones; posterior branch slender, with distinct, acutely pointed, black tooth apically.

Measurements: BL (body length)=3.82 mm in the holotype (paratypes: 3.77 in 1♂, 3.44 in 1♀); ThL (thorax length)=1.88 mm (1.86–1.88 in 3♂, 1.82 in ♀); WL (wing length)=3.25 mm (3.00–3.15 in 3♂, 2.98 in ♀); WW (wing width)=1.38 mm (1.25–1.26 in 3♂, 1.25 in ♀).

Indices: arb (dorsal branches of arista/ventral branches of arista)=5/3 (4–5/2–3), FW/HW (frontal width/head width)=0.46 (0.44–0.45), ch/o (maximum width of gena/maximum diameter of eye)=0.09 (0.09–0.11), prorob (proclinate orbital/posterior reclinate orbital)=1.05 (1.05, the setae broken in the other paratype specimens), rcorb (anterior reclinate orbital/posterior reclinate orbital)=0.50 (0.43–0.50), vb (subvibrissal/vibrissa)=damaged (0.40–0.45), dcl (anterior dorsocentral/posterior dorsocentral)=0.60

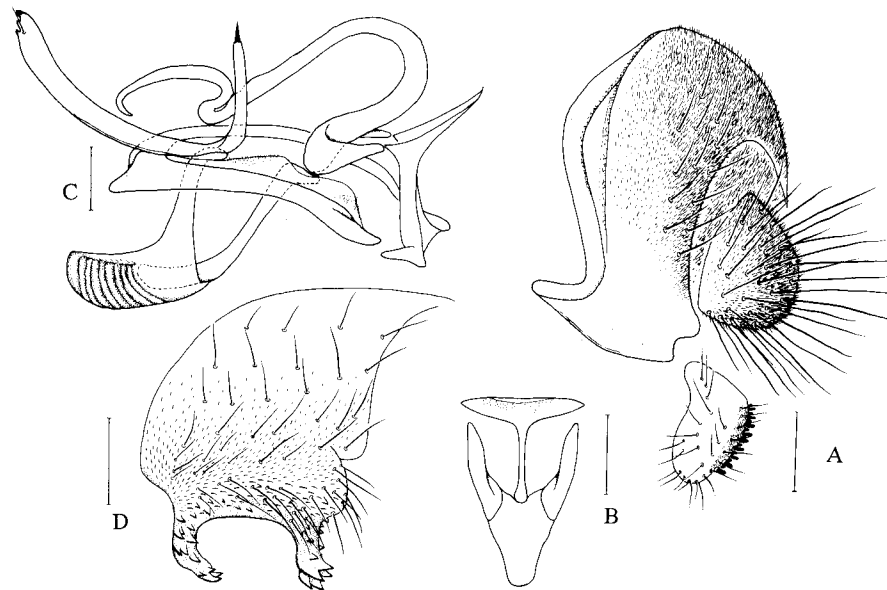


Fig. 1. *Amiota (Phortica) biprotrusa* sp. nov. ♂ (paratype from Dinghushan, Guangdong) — A, Epandrium, surstylus, and cercus; B, 10th sternite and sclerite between 10th sternite proper and cerci; C, hypandrium, paramere, gonopod, and aedeagus; D, 6th tergite. (Scale-line=0.1 mm).

(0.65), presctl (prescutellar/posterior dorsocentral) = 0.50 (0.65), sctl (basal scutellar/apical scutellar) = 1.00 (1.10), sterno (anterior katepisternal/posterior katepisternal) = 0.85 (0.95), orbito (distance between proclinate and posterior reclinate orbitals/distance between inner vertical and posterior reclinate orbital) = 1.25 (1.20–1.25), dcp (distance between ipsilateral dorsocentrals/distance between anterior dorsocentrals) = 0.27 (0.25–0.27), sctlp (distance between ipsilateral scutellars/distance between apical scutellars) = 1.20 (1.10–1.20), C=2.21 (2.08–2.54), 4c=1.75 (1.38–1.71), 4v=3.00 (2.88–3.14), 5x=0.83 (0.83–1.00), ac=3.50 (3.00–3.25), M=0.63 (0.63–0.71), C3F=0.71 (0.69–0.72).

Holotype: ♂, China: Dinghushan, Guangdong, 22–31. I. 1987, ex banana trap, coll. T. X. Peng (DBSC: Department of Biology, Shenyang Teachers' College, Shenyang, China).

Paratypes: China: 2♂, same data as the holotype (GIE: Guangdong Institute of Entomology, Guangdong, China, and EHU: Entomological Institute, Hokkaido University, Sapporo, Japan); Myanmar: 1♂, 1♀, Pyinoolwin, 30. XII. 1981–6. I. 1982, ex banana trap, coll. M. J. Toda (EHU).

*Distribution.* China (Guangdong), Myanmar.

*Relationship.* This species resembles *A. (Ph.) omega* and *A. (Ph.) perforcipata* in having the epandrium anteroventrally lacking pubescence and the surstylus basally narrow and lacking pubescence on outer surface, but can be clearly distinguished from them by the diagnostic characters.

*Etymology.* In reference to the ♂ 6th tergite with 2 projections on the lateral margin.

*Amiota (Phortica) paramagna* Okada

*Amiota (Phortica) paramagna* Okada, 1971: 92.

*Diagnosis.* Anterior branch of paramere with 3 black teeth apically; aedeagal median rod gently sinuated, without subapical node.

*Description* supplementary to the original description by Okada (1971). Male 6th tergite without any ornamentations on lateral margins. Epandrium anteroventrally pubescent. Surstylus basally broad, pubescent on nearly entire, outer surface. Anterior and posterior branches of paramere subbasally expanded.

Measurements (♂): BL=3.24–4.30 mm; ThL=1.52–1.87 mm; WL=3.13–3.64 mm; WW=1.28–1.60 mm.

Indices: arb=4–5/2–3, FW/HW=0.41–0.46, ch/o=0.09–0.11, prorlb=1.11–1.14, rcorb=0.38–0.40, vb=0.30–0.38, dcl=0.55–0.60, presctl=0.65–0.70, sctl=1.03–1.08, sterno=0.95–0.97, orbito=1.25–1.32, dcp=0.32–0.35, sctlp=0.98–1.02, C=2.26–2.43, 4c=1.34–1.50, 4v=2.60–2.78, 5x=0.88–0.99, ac=2.80–3.11, M=0.60–0.70, C3F=0.57–0.75.

*Specimens examined.* China: 16♂, Shanlinxi, Taiwan, 16. X. 1992, around human eyes, coll. M. J. Toda.

*Distribution.* China (Taiwan).

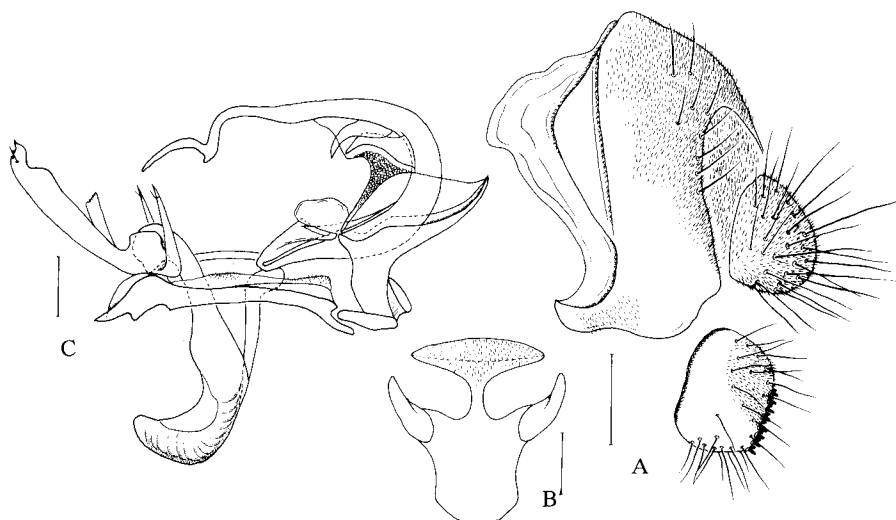


Fig. 2. *Amiota (Phortica) hainanensis* sp. nov. ♂ (paratype from Jianfengling, Hainan Is.) — A, Epandrium, surstylus, and cercus; B, 10th sternite and sclerite between 10th sternite proper and cerci; C, hypandrium, paramere, gonopod, and aedeagus. (Scale-line=0.1 mm).

***Amiota (Phortica) hainanensis* sp. nov.**

(Fig. 2)

**Diagnosis.** Aedeagus submedially with 1 pair of asymmetrically attached, beak-shaped processes on median rod and 1 pair of anteriorly browned vela connected to side margins of vertical lobe of gonopod (Fig. 2C).

**Description.** Male 6th tergite without any projections on lateral margins.

Male terminalia (Fig. 2): Epandrium anteroventrally pubescent; apodeme robust. Surstylus basally broad, partly pubescent. Tenth sternite as long as broad; caudomedian process short. Anterior branch of paramere apically narrowed and with 3 small teeth; posterior branch slender, apically with 1 small, acutely pointed tooth and 1 sensillum. Aedeagal median rod with subapical node.

Measurements: BL=4.10 mm (range in 7♂ paratypes: 3.35–3.95); ThL=2.05 mm (1.88–1.98); WL=2.94 mm (2.63–2.94); WW=1.23 mm (1.18–1.23).

Indices: arb = 5/2 (4–5/2), FW/HW = 0.44 (0.41–0.47), ch/o=0.10 (0.10–0.13), prorb=1.20 (1.02–1.18), rcorb=0.40 (0.40–0.42), vb=0.33 (0.35–0.38), dcl=0.57 (0.55–0.60), presctl=0.72 (0.67–0.70), sctl=1.10 (1.02–1.10), sterno=0.97 (0.95–0.98), orbito=1.25 (1.18–1.38), dcp=0.24 (0.25–0.32), sctlp=1.25 (0.96–1.24), C=2.18 (2.09–2.38), 4c=1.70 (1.48–1.73), 4v=3.26 (3.04–3.39), 5x=1.22 (1.09–1.22), ac=3.29 (2.67–3.21), M=0.72 (0.64–0.75), C3F=0.80 (0.68–0.76).

Holotype: ♂, China: Wuzhishan, 580m, Hainan,

19–21. V. 1993, around human eyes, coll. Y. S. Cui (DBSC).

Paratypes: China: 1♂, same data as the holotype (DBSC); 6♂, Jianfengling, 800m, Hainan, 23, 24. IX. 1993, around human eyes, coll. M. J. Toda (GIE, EHU).

**Distribution.** China (Hainan Is.).

**Relationship.** This species resembles *A. (Ph.) paramagna* in having the epandrium anteroventrally pubescent and the surstylus basally broad and partly pubescent on the outer surface, but is very unique among the species of this species-complex in having lateral processes and vela on the aedeagus.

**Etymology.** In reference to the type locality.

**Key to Species of the *Amiota (Phortica)* omega Species-complex**

The generic and subgeneric diagnoses were given by Toda & Peng (1992, 1990), respectively, and keys to the genera and the subgenera were provided by Okada (1971, 1988, 1989) and Toda *et al.* (1996).

Male.

- i. Paramere bifurcated from base; median rod of aedeagus slender, subapically with node or sinuated. .... *A. (Ph.) omega* species-complex
1. Sixth tergite with prickly projections and/or dense, long setae on lateral margins; epandrium anteroventrally lacking pubescence; surstylus basally narrow, lacking pubescence on outer surface. .... 2
- Sixth tergite without any ornamentations on lateral margins; epandrium anteroventrally pu-

- bescent; surstylus basally broad, pubescent on outer surface. .... 4
2. Sixth tergite with 2 prickly projections at antero- and postero-ventral corners.  
..... *A. (Ph.) biprotrusa* sp. nov.
- Sixth tergite lacking prickly projection but dense, long setae at posteroventral corner. .... 3
3. Posterior branch of paramere slender, much narrower than anterior branch; anterior branch of paramere subapically slightly expanded.  
..... *A. (Ph.) omega* Okada
- Posterior branch of paramere as broad as anterior branch; anterior branch of paramere subapically with distinct, triangular expansion.  
..... *A. (Ph.) perforcipata* Măca et Lin
4. Aedeagal median rod with node subapically, 1 pair of asymmetrically attached, beak-shaped processes submedially, and 1 pair of anteriorly browned vela connected to side margins of vertical lobe of gonopod; anterior branch of paramere with 3 small teeth apically.  
..... *A. (Ph.) hainanensis* sp. nov.
- Aedeagal median rod without node subapically, any processes submedially, and vela; anterior branch of paramere with 3 large teeth apically.  
..... *A. (Ph.) paramagna* Okada

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