

✓ **SOME SPECIES OF THE SUBFAMILY *STEGANINAE*
(*DIPTERA* : *DROSOPHILIDAE*)
FROM GUANGDONG PROVINCE, SOUTHERN CHINA**

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Key words : *Amiota*, *Apenthecia*, *Cacoxenus*, new species, new subgenus, new records, *Parapenthecia*, *Stegana*.

Résumé. – Quelques espèces de la sous-famille des *Steganinae* (*Diptera* : *Drosophilidae*) de la Province de Guangdong, de la Chine méridionale. – Huit espèces de *Steganinae* dont quatre nouvelles, appartenant aux genres *Amiota* Loew, *Cacoxenus* Loew, *Apenthecia* Tsacas et *Stegana* Meigen sont rapportées de la province du Guangdong. Un nouveau sous-genre, *Parapenthecia*, du genre *Apenthecia* est établi pour séparer deux espèces d'Asie et de Micronésie de leurs congénères africains.

Summary. – Four new and four known species of the steganine genera *Amiota* Loew, *Cacoxenus* Loew, *Apenthecia* Tsacas and *Stegana* Meigen are reported from Guangdong, China. A new subgenus, *Parapenthecia*, of the genus *Apenthecia* is established by distinguishing two Micronesian and Asian species from African congeners.

Up to the present, 27 species of the subfamily *Steganinae* (20 spp. of the genus *Amiota* Loew, six spp. of the genus *Leucophenga* Mik, and one sp. of the genus *Paraleucophenga* Hendel) have been reported from mainland China, mostly from Guangdong and Yunnan (Zhang & Gan, 1986; Okada, 1988; Peng *et al.*, 1990; Toda & Peng, 1990). This paper deals with one new and two known species of the genus *Amiota*, one known species of the genus *Cacoxenus* Loew, one new species of the genus *Apenthecia* Tsacas and two new and one known species of the genus *Stegana* Meigen, along with establishment of a new subgenus of *Apenthecia*. In consequence, the faunal list of the subfamily *Steganinae* in mainland China attains thirty five species of six genera.

All the holotypes and a part of paratypes designated here are deposited in the Guangdong Institute of Entomology, Guangzhou, China, and the remaining paratypes in the Entomological Institute, Hokkaido University, Sapporo, Japan.

Genus AMIOTA Loew

Amiota Loew, 1862, *Berl. ent. Zeit.*, 6 : 229. Type species : *Amiota leucostoma* Loew, 1862.

Diagnosis. – Mid tibia without stout bristles above; Ac-index more than 4.0; wing not maculated; carina undeveloped; arista usually plumose (Okada, 1989).

Subgenus *Amiota* s. str.

Diagnosis. – Anterior reclinate orbital as long as or slightly shorter than other orbitals; humerus and wing base milky white; mesoscutum practically unicolorous (Máca, 1980; Okada, 1988).

It has been a difficult problem to homologize the aedeagal structure of this subgenus with that of other drosophilid groups (*cf.* Máca, 1980). Recently, Grimaldi (1990) provided a sound answer to this problem: Aedeagus lost; apodeme usually very broad, dorsoventrally flattened, posteriorly with 1 pair of long arms articulating with anterior parameres.

Other characters commonly seen in the following 2 species of this subgenus are first described below.

Head. Eye dark reddish brown, bare. Antenna grayish brown. Arista plumose, without distinct terminal fork. Frons velvety brownish black, with a few minute frontal hairs; periorbit and ocellar triangle glossy, paler. Posterior reclinate orbital situated nearer to inner vertical than to proclinate. Face with broad milky white band on lower half; carina low, broad. Clypeus black. Cheek grayish yellow; postgena darker. Vibrissa prominent; other orals small.

Thorax glossy brownish black. Humerus with only 1 humeral. Acrostichal hairs in *ca.* 12 irregular rows. Prescutellars present. Anterior scutellars divergent; posteriors crossed.

Legs yellow. Preapicals and apicals on all tibiae. Mid tarsus with 2 rows of minute cuneiform bristles on inner and outer sides. Fore and hind metatarsi slightly shorter than rest of tarsal segments together.

Wing. Veins grayish yellow. Discal and 2nd basal cells separated by crossvein. Crossveins clear. R_{2+3} slightly curved towards costa at tip; R_{4+5} and M distally convergent. First costal section apically with 2 small C_1 -bristles. Halter white; stalk basally grayish.

Abdomen. First and 2nd abdominal tergites medially paler. Sternites yellowish gray.

Periphallitic organs. Epandrium with ridge-like structure running obliquely from anterodorsal corner to caudoventral part. Surstylus caudoventrally somewhat elongate, like a finger. Cercus separate from epandrium. Membrane between epandrium and cercus pubescent.

Phallic organs. Anterior paramere bilobed in lateral view; ventral lobe pale, elongate, apically pointed, with several sensilla; dorsal lobe sclerotized, triangular. Hypandrium narrow, arcuate, caudally with 1 pair of narrow flaps; caudal ends contiguous to caudolateral corners of posterior paramere and anterodorsal corners of epandrium.

Female 8th sternite somewhat oblong, apically somewhat trilobed; median lobe slightly constricted at middle. Spermatheca (fig. 6, 12) dark brown, elongate, apically slightly wrinkled; duct not introverted into spermatheca.

▼ *Amiota (Amiota) nagatai* Okada (fig. 1-6)

Amiota (Amiota) nagatai Okada, 1971b : 97.

Amiota (Amiota) alboguttata, forma *nagatai* Okada, 1960, *Mushi*, 34 : 96.

Amiota (Amiota) sp.2 like *nagatai* : Peng *et al.*, 1990 : 57.

Diagnosis. – Mid metatarsus slightly shorter than rest of tarsal segments together. Vertical lobe of posterior paramere with 1 pair of horn-like processes (fig. 4). Epandrium dorsomedially interrupted (fig. 1).

Male, female. – Body length, male *ca.* 3.1 mm (range: 2.90-3.31), female *ca.* 2.8 mm (2.74-2.84). Thorax length (including scutellum), male *ca.* 1.5 mm (1.45-1.56), female *ca.* 1.3 mm (1.24-1.34).

Head. Third antennal segment blackish. Arista with *ca.* 5 (4 5) upper and *ca.* 3 (2 3) lower branches. Frons *ca.* 1/3 (mean = 0.35, 0.33-0.37, measured at level of anterior ocellus) as broad as head. Anterior reclinate orbital *ca.* 4/5 (0.79, 0.76-0.85) length of posterior reclinate; proclinate *ca.* 9/10 (0.91, 0.83-0.99) length of posterior reclinate. Face glossy brownish black, paler above. Cheek narrower than 1/10 of maximum eye diameter (0.09, 0.08-0.10). Palpus dark yellowish

gray, subapically to laterally with several prominent setae.

Thorax. Anterior dorsocentral *ca.* 5/9 (0.54, 0.50-0.58) length of posterior; distance between ipsilateral dorsocentrals *ca.* 1/4 (0.26, 0.22-0.30) of cross distance between anterior dorsocentrals. Prescutellar *ca.* 1/2 (0.52, 0.45-0.56) length of posterior dorsocentral. Posterior scutellars equidistant to each other and to anterior; anterior/posterior *ca.* 1.2 (1.11-1.21). Sterno-index *ca.* 0.9 (0.75-0.94).

Wing indices : C *ca.* 1.7 (1.50-1.79), 4V *ca.* 2.5 (2.27-2.69), 4C *ca.* 1.6 (1.41-1.69), 5x *ca.* 1.6 (1.44-1.94), Ac *ca.* 4.8 (4.07-5.31), Cx *ca.* 0.7 (0.62-0.81), C3-fringe *ca.* 0.9 (0.80-0.91).

Abdominal tergites glossy brownish black.

Periphallic organs (fig. 1). Epandrium pubescent on caudal half, with *ca.* 18 (16-20) bristles on ventral and near caudal margin. Surstylus with *ca.* 9 primary teeth, setigerous on distal parts of outer and inner surfaces and ventral margin. Cercus oval, somewhat narrowly expanded at caudoventral corner, nearly entirely setigerous and pubescent except for tip of caudoventral corner.

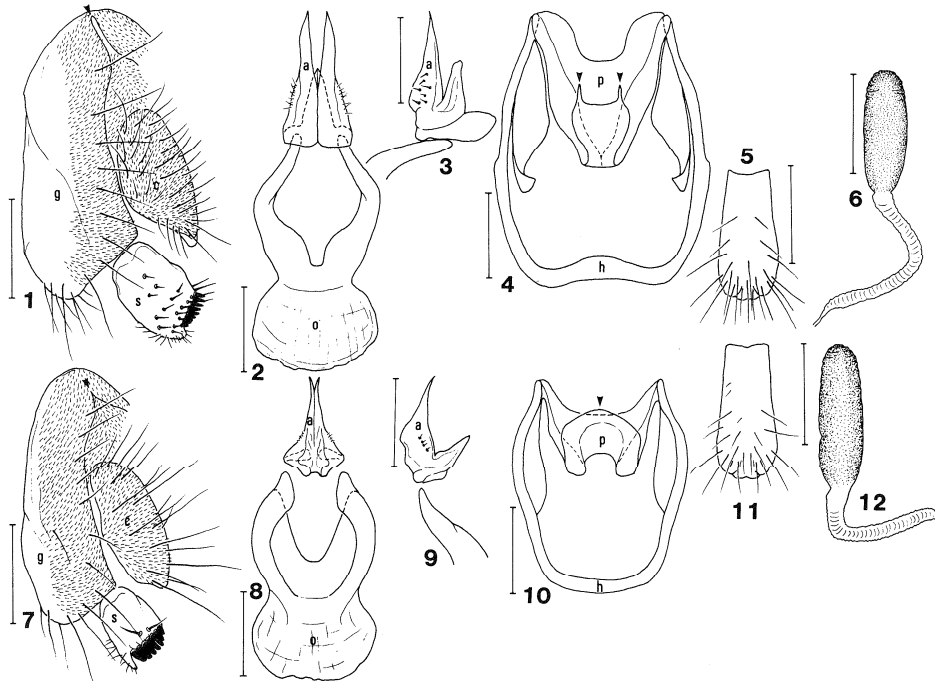


Fig. 1 to 12, 1 to 6, *Amiota (Amiota) nagatai* Okada, 1971. - 7 to 12, *Amiota (Amiota) okinawana* Okada, 1971. - 1, 7, Periphallic organs. - 2, 8, aedeagus and anterior parameres (ventral view). - 3, 9, aedeagus and anterior paramere (lateral view). - 4, 10, posterior paramere and hypandrium. - 5, 11, female 8th sternite. - 6, 12, spermatheca. c, Cercus; g, epandrium; s, surstylus; a, anterior paramere; h, hypandrium; o, aedeagal apodeme; p, posterior paramere. (Scale-line = 0.1 mm).

Phallic organs (fig. 2-4). Anterior paramere submedially with *ca.* 7 sensilla, basally with 1 pair of club-shaped lateral processes.

Female 8th sternite (fig. 5) with *ca.* 21 bristles.

Specimens examined : China : Dinghushan, Guangdong Province, 1 male, 1 female, 8/18-VI-1986; 1 female, 21/27-VII-1986; 1 male, 31-I/11-II-1987; 15 males, 14/23-V-1987; ex traps (*T. X. Peng*).

Distribution - Japan, Ryukyu Is., China (n. loc. rec.) : Guangdong.

✓ *Amiota (Amiota) okinawana* Okada (fig. 7-12)

Amiota (Amiota) okinawana Okada, 1971b : 86.

Amiota (Amiota) sp. like *nagatai* : Peng *et al.*, 1990 : 57.

Diagnosis. – Mid metatarsus as long as rest of tarsal segments together. Vertical lobe of posterior paramere apically round, without horn-like processes (fig. 10). Epanthrium dorsomedially constricted but not interrupted (fig. 7).

Male, female. – Body length, male *ca.* 2.6 mm (2.39-2.80), female *ca.* 2.8 mm (2.74-2.90). Thorax length, male *ca.* 1.2 mm (1.13-1.32), female *ca.* 1.3 mm (1.26-1.34).

Head. Arista with *ca.* 4 (3-5) upper and *ca.* 3 (2-3) lower branches. Frons *ca.* 1/3 (0.34, 0.33-0.36) as broad as head, Anterior reclinate orbital *ca.* 4/5 (0.81, 0.75-0.87) length of posterior reclinate; proclinate as long as posterior reclinate (1.03, 0.95-1.13). Face glossy dark grayish brown. Cheek narrower than 1/10 of maximum eye diameter (0.08, 0.06-0.11). Palpus grayish yellow, with 1 prominent seta subapically and several moderate setae laterally.

Thorax. Anterior dorsocentral *ca.* 1/2 (0.48, 0.43-0.53) length of posterior; distance between ipsilateral dorsocentrals *ca.* 1/4 (0.25, 0.23-0.27) of cross distance between anterior dorsocentrals. Prescutellar *ca.* 1/2 (0.52, 0.46-0.62) length of posterior dorsocentral. Posterior scutellars equidistant or nearer to each other than to anterior; anterior/posterior *ca.* 1.2 (1.08-1.30). Sterno-index *ca.* 0.8 (0.76-0.94).

Wing indices : C *ca.* 1.6 (1.40-1.76), 4V *ca.* 2.5 (2.20-2.66), 4C *ca.* 1.6 (1.41-1.72), 5x *ca.* 1.5 (1.29-1.64), Ac *ca.* 5.1 (4.59-5.93), Cx *ca.* 0.7 (0.57-0.86), C3-fringe *ca.* 0.8 (0.78-0.91).

Abdominal tergites glossy dark brown.

Periphallitic organs (fig. 7). Epanthrium long, slightly broad below, pubescent except for anterior margin, with *ca.* 15 (14-16) bristles. Surstylus somewhat oblong, longer than broad, with *ca.* 6 or 7 primary teeth on distal margin and *ca.* 2 spines on outer surface, setigerous on distal parts of inner surface and ventral margin. Cercus elliptical, somewhat pointed at caudoventral corner, nearly entirely setigerous and pubescent.

Phallic organs (fig. 8-10). Anterior paramere submedially with *ca.* 4 sensilla; lateral process undeveloped.

Female 8th sternite (fig. 11) with *ca.* 22 bristles.

Specimens examined : China : Dinghushan, Guangdong Province, 1 male, 9/16-IV-1987; 3 males, 1 female, 8/18-VI-1986; 1 female, 4/12-VIII-1986; 6 males, 31-VIII/6-IX-1988; ex traps (*T. X. Peng*).

Distribution. – Ryukyu Is., China (n. loc. rec.): Guangdong.

Relationship. – This species is very close to the foregoing species, *A. nagatai*, but clearly distinguishable from the latter by the diagnostic characters. The specimens from Guangdong Province are different from the original description by Okada (1971b) in having surstylus elongated caudoventrally like a finger.

Subgenus **Phortica** Schiner

Phortica Schiner, 1862, *Wien. ent. Monatschr.*, 6 : 433. – Okada, 1971 b : 96; Máca, 1977, *Acta ent. bohemoslov.*, 74 : 116. Type species : *Drosophila variegata* Fallén, 1823.

The diagnosis was given by Toda & Peng (1990).

✓ *Amiota (Phortica) bipartita*, sp. nov. (fig. 13-16)

Diagnosis. – Anterior paramere distally strongly sclerotized and with 2 long curved processes; thick process apically with 2 sharp projections, subapically with *ca.* 3 sensilla; thin process bare (fig. 16).

Male. – Thorax length *ca.* 2.1 mm.

Head. Eye brownish red, bare. Antenna grayish brown; 3rd segment paler. Arista with *ca.* 5 upper and *ca.* 3 lower branches; terminal fork absent. Frons pollinose, grayish brown but narrowly white along eye margins, with several minute frontal hairs, slightly narrower than 1/2 of head width (0.48); periorbit posteriorly broad and dark brown, anteriorly narrow and pale brown, shorter than 1/2 length of frons; ocellar triangle dark brown. Posterior reclinate orbital situated nearer to inner vertical than to proclinate; anterior reclinate slightly longer than half length of posterior reclinate (0.53); proclinate as long as posterior reclinate (1.00). Face pollinose, grayish brown; carina low, broad below. Clypeus medially white, laterally black. Cheek grayish yellow, *ca.* 1/8 (0.13) as broad as maximum eye diameter. Palpus grayish yellow, basally blackish, with 1 prominent apical and several moderate lateral setae.

Thorax. Mesoscutum and thoracic pleura grayish orange brown, with dark brown patches and pollinose pattern. Scutellum grayish yellow, medioposteriorly with large triangular dark brown patch posteriorly bifurcated, laterally pale. Humerus yellowish white, with only 1 humeral and several small bristles. Acrostichal hairs anteriorly in *ca.* 8 but posteriorly in *ca.* 6 irregular rows. Anterior dorsocentral *ca.* 5/9 (0.55) length of posterior; distance between ipsilateral dorsocentrals *ca.* 1/4 (0.27) of cross distance between anterior dorsocentrals. Prescutellars present, *ca.* 7/10 (0.70) length of posterior dorsocentral. Anterior scutellars divergent; posteriors crossed, nearer to each other than to anterior; anterior/posterior *ca.* 1.0. Sterno-index *ca.* 0.8.

Legs yellow; femora basally and submedially more or less darker; tibiae with 3 dark brown rings; tarsi distally darker. Preapicals small, but present on all tibiae; apicals on fore and mid tibiae. Mid tarsus with 2 rows of minute cuneiform bristles on inner and outer sides. Hind tarsus with 1 row of minute cuneiform bristles on outer side and 1 sparse row of recurved minute hairs on underside. Fore and hind metatarsi slightly longer than 3 succeeding tarsal segments together; mid metatarsus slightly longer than rest together.

Wing hyaline. Veins grayish yellow. Crossveins clouded; posterior slightly oblique and sinuate. Discal and 2nd basal cells separated by crossvein. R₂₊₃ nearly straight. C₁-bristles 2, but small. Wing indices: C *ca.* 2.2, 4V *ca.* 2.8, 4C *ca.* 1.5, 5x *ca.* 0.8, Ac *ca.* 3.0, C3-fringe *ca.* 0.9. Halter white.

Abdomen. Tergites pale yellow; 2nd dark brown sublaterally and on lateral margins; 3rd and 4th each with broad dark brown caudal band medially not protruded and 1 pair of yellow patches near lateral margins; broad dark brown caudal bands on 5th and 6th medially, narrowly interrupted. Sternites small, pale yellow.

Periphallidic organs (fig. 13-15). Epandrium broad, pubescent caudomedially to dorsally, anteroventrally and also between epandrium and cercus, with *ca.* 11 bristles on caudomedial to dorsal part; anteroventral corner prominently protruded; ventral lobe indistinct; caudoventral margin constricted. Surstylus somewhat triangular, roundly expanded anteriorly, setigerous on ventral and caudolateral margins, distally partly pubescent, with comb of *ca.* 15 teeth on slightly convex caudoventral margin, *ca.* 4 long stout bristles dorsally and numerous spines on inner surface. Cercus separate from epandrium, elliptical, entirely setigerous and pubescent; setae on dorsal half especially long. Decasternum composed of median piece anteriorly bilobed and 1 pair of triangular lateral arms; plate between decasternum proper and cerci nearly entirely pubescent, except for anterior elongation.

Phallic organs (fig. 16). Aedeagus (outer membranous tube) broad, apically tripartite, reaching up to dorsal mantle; median rod weakly sclerotized, strongly curved, basally contiguous to apodeme by means of rod; apodeme with well developed, distally bifurcated vertical rod; basal process strongly sclerotized, with 2 dendric arms apically bifid, caudally connected to basal part of dorsal mantle by 2 bridges. Anterior paramere attached to tip of vertical rod. Posterior paramere caudally bifurcated; dorsal mantle spoon-shaped. Hypandrium narrow, arcuate, subcaudally with 1 pair of small flaps; caudal ends contiguous to caudolateral corners of posterior paramere and anteroventral corners of epandrium.

Holotype male, China : Heishiding, Guangdong Province, 3-XI-1988, around human eyes (*M. J. Toda*).

Distribution. – China : Guangdong.

Relationship. – This species somewhat resembles *A. (Ph.) eparmata* Okada, 1977 in the morphology of surstylus and aedeagal basal process, but differs clearly from the latter in the shape of anterior paramere.

Etymology. – Referring to the anterior paramere with 2 long processes.

Genus **CACOXENUS** Loew

Cacoxenus Loew, 1858, *Wien. entom. Monatschr.*, 2 : 217. – Tsacas & Desmier de Chenon, 1976 : 498. Type species : *Cacoxenus indagator* Loew, 1858.

Paragitona Kröber, 1912, *Zeitschr. wiss. Ins. Biol.*, 8 : 235. Type species : *Paragitona obscura* Kröber, 1912. (= *Ca. indagator*).

Diagnosis. – Arista pubescent; legs not annulated; carina present only between and just below antennae (Tsacas & Desmier de Chenon, 1976).

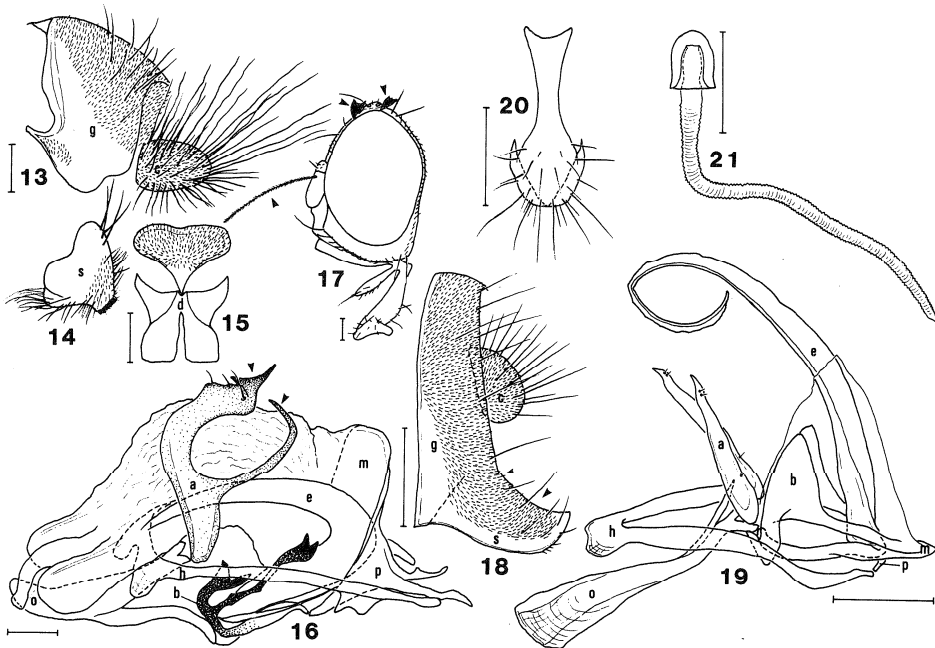


Fig. 13 to 21, 13 to 16, *Amiota (Phortica) bipartita*, sp. nov. – 17 to 21, *Apenthetia (Parapenthetia) foliolata*, sp. nov. – 13, Epandrium and cercus. – 14, surstylus. – 15, decasternum. – 16, 19, phallic organs (lateroventral view). – 17, head. – 18, peripheral phallic organs. – 20, female 8th sternite. – 21, spermatheca. *d*, Decasternum; *e*, aedeagus; *b*, basal process; *m*, dorsal mantle. (Scale-line = 0.1 mm).

Subgenus **Gitonides** Knab

Gitonides Knab, 1914, *Insec. Inscit. Menstr.*, 2 : 165 (as genus). – Tsacas & Desmier de Chenon, 1976 : 500 (as subgenus of *Cacoxenus*). Type species : *Gitonides perspicax* Knab, 1914.

Eudrosophila Malloch, 1924, *Mem. Dept. Agric. India, Ent. Ser.*, 8 : 63. Type species : *Gitonides perspicax* Knab, 1914.

Diagnosis. – Mesoscutum pale with small brown spots at bases of hairs; legs pale; aedeagus long; anterior paramere elongate; posterior paramere very small (Tsacas & Desmier de Chenon, 1976).

✓ *Cacoxenus (Gitonides) perspicax* (Knab)

Gitonides perspicax Knab, 1914, *Insec. Inscit. Menstr.*, 2 : 166. – Hardy, 1965, *Insects Hawaii*, 12 : 35; McAlpine, 1968 : 517.

Cacoxenus (Gitonides) perspicax : Tsacas & Desmier de Chenon, 1976 : 500.

Cacoxenus punctatus Duda, 1924, *Arch. Naturg.*, 90A (3) : 225 (*nomen nudum*).

Gitona paolii Seguy, 1933, *Boll. Soc. Ent. Ital.*, 65 : 187.

Sinophthalmus creberii Singh, 1976, *Rec. Zool. Surv. India*, 69 : 188. **Syn. nov.**

Amiota creberii : Wheeler, 1981, *Genet. Biol. Drosophila*, 3a : 23.

Amiota sp.G1 like *creberii* : Peng *et al.*, 1990 : 57.

Specimens examined : China : 1 male, Dinghushan, Guangdong Province, 12/22-I-1987; 1 female, Guangzhou, 21/27-II-1987; ex traps (T. X. Peng).

Distribution. – Africa, Australia, Hawaii, India, Philippines, China : Taiwan, Guangdong (n. loc. rec.).

Genus **APENTHECIA** Tsacas

Apenthecia Tsacas, 1983 : 333. Type species : *Erima crassiseta* Hackman, 1960.

Diagnosis. – Posterior reclinate orbital either flattened forming very distinctive scale, or thickened forming short swollen bristle approximately equal to or shorter than anterior reclinate orbital; arista bare or pubescent; all tibiae annulate; surstylus long; aedeagus partly membranous or sclerotized; anterior paramere developed (Tsacas, 1983; McEvey *et al.*, 1988).

✓ Subgenus **Parapenthecia**. nov.

Diagnosis. – Anterior and posterior reclinate orbitals modified into thin black scales (fig. 17); arista pubescent; surstylus fused to epandrium.

Type species : *Cacoxenus lepidothrix* Wheeler & Takada, 1964.

Etymology. – Another *Apenthecia*.

This newly established subgenus includes *Apenthecia lepidothrix* (Wheeler & Takada, 1964) from Micronesia (Caroline Is.) and the following new species from southern China. The former was originally described as a species of the genus *Cacoxenus*, and later transferred to the genus *Erima* Kertész by McAlpine (1968). Tsacas (1983) confirmed the taxonomic status of *Erima* as a subgenus of the genus *Amiota* re-examining the type specimen of *E. fasciata* (Kertész, 1899), and simultaneously established a new genus, *Apenthecia*, comprising eight African species, of which three had been previously included in *Erima*. He tentatively included *lepidothrix* also in *Apenthecia*. However, Bock (1984), finding a species of *Drosophila* (*Scaptodrosophila*) with flattened reclinate orbitals, considered that such bizarre orbitals had been independently developed within several lineages in the Drosophilidae and *lepidothrix* would be more appropriately returned to the genus *Cacoxenus*. Tsacas and Chassagnard (1990), following Bock's opinion, retransferred it to *Cacoxenus*. However, *lepidothrix* and the following new species share enough diagnostic characters other than flattened reclinate orbitals with African *Apenthecias* such that these two species should be included in the genus *Apenthecia*. On the other hand, these two species are distinct from African congeners in having some characters mentioned in the subgeneric diagnosis and should be treated as another subgenus separate from *Apenthecia* s. str.

✓ *Apenthecia (Parapenthecia) foliolata*, sp. nov. (fig. 17-21)

Apenthecia lepidothrix ? : Peng *et al.*, 1990 : 57.

Diagnosis. – Anterior scutellar slightly longer than posterior (anterior/posterior = 1.06, 1.00-1.30). C-index *ca.* 1.8 (1.64-2.07). Surstylus without teeth (fig. 18).

Male, female. – Body length, male *ca.* 2.5 mm (2.17-2.87), female *ca.* 2.6 mm (2.43-2.96). Thorax length, male *ca.* 1.1 mm (0.96-1.13), female *ca.* 1.1 mm (1.00-1.24).

Head (fig. 17). Eye brownish red, bare. Antenna grayish yellow. Frons pollinose, grayish yellow, posteriorly darker, with minute frontal hairs, *ca.* 2/5 as broad as head. Periorbit gray posteriorly and at base of proclinate orbital, narrow anteriorly; posterior reclinate orbital situated nearer to inner vertical than to proclinate; extra small bristle present between proclinate and anterior reclinate, and several minute hairs along eye margin before proclinate. Ocellar triangle gray, black on inner margins of ocelli; ocellars situated inside ocellar triangle. Postverticals absent. Face pollinose, grayish yellow; carina low, broad below. Clypeus dark brown. Cheek grayish yellow, *ca.* 1/7 (0.15, 0.13-0.19) as broad as maximum eye diameter. Palpus grayish yellow, basally darker, with 1 prominent apical and several moderate lateral setae.

Thorax grayish brown, with dark brown patches and pollinose pattern. Humerus paler, with only 1 long humeral and several small bristles. Acrostichal hairs in *ca.* 10 irregular rows. Anterior

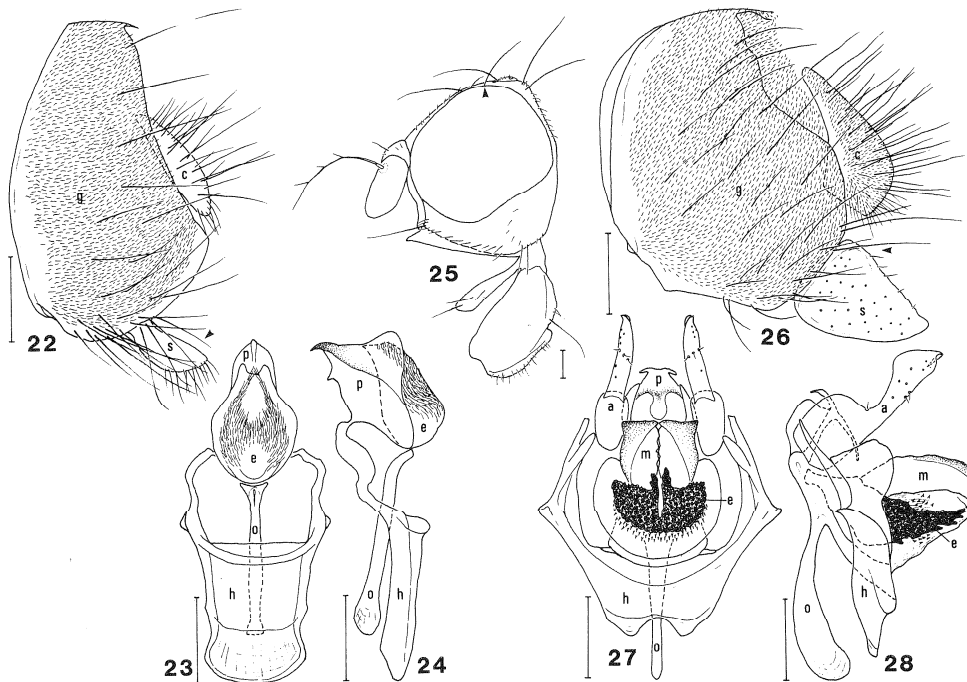


Fig. 22 to 28, 22 to 24, *Stegana (Oxyphortica) adentata*, sp. nov. – 25 to 28, *Stegana (Parastegana) drosophiloides*, sp. nov. – 22, 26, Peripheral organs. – 23, 27, phallic organs (ventral view). – 24, 28, ditto (lateral view). – 25, head. (Scale-line = 0.1 mm).

dorsocentral *ca.* 4/9 (0.47, 0.41-0.53) length of posterior; distance between ipsilateral dorsocentrals *ca.* 1/6 (0.18, 0.14-0.22) of cross distance between anterior dorsocentrals. Prescutellars present, *ca.* 3/5 (0.60, 0.47-0.79) length of posterior dorsocentral. Anterior scutellars divergent; posteriors crossed, nearer to each other than to anterior. Sterno-index *ca.* 1.1 (1.00-1.23).

Legs yellow; femora submedially somewhat darker; tibiae with 2 dark brown rings. Preapical indistinct; apicals present on all tibiae. Mid tarsus with 1 row of minute cunelform bristles. Fore and hind metatarsi as long as 3 succeeding tarsal segments together; mid metatarsus as long as rest together.

Wing hyaline. Veins grayish yellow. Discal and 2nd basal cells separated by crossvein.

Crossveins clear. R_{2+3} apically slightly curved towards costa; R_{4+5} and M distally convergent. C_1 -bristles not differentiated. Wing indices: 4V *ca.* 2.4 (2.07-2.67), 4C *ca.* 1.4 (1.24-1.59), 5x *ca.* 1.2 (1.00-1.38), Ac *ca.* 4.0 (3.42-4.82), C3-fringe *ca.* 0.7 (0.61-0.76). Halter white, basally slightly grayish.

Abdomen. Tergites mostly dark grayish brown; 1st nearly entirely yellow except for lateral margins; 2nd medially yellow, with 1 pair of yellow patches near lateral margins; 3rd to 5th narrowly yellow on anterior and posterior margins, with 1 pair of yellow patches near lateral margins. Sternites pale yellow.

Periphallic organs (fig. 18). Epandrium narrow, long, caudoventrally broadly confluent to surstylus, pubescent except for anteroventral area, with *ca.* 7 hairs near caudal margin; anteroventral corner prominent. Surstylus large, apically pointed, pubescent except for ventral margin, with *ca.* 6 or 7 hairs on outer surface and several short bristles on caudoventral part of inner surface. Cercus separate from epandrium, small, somewhat semicircular, nearly entirely pubescent, with *ca.* 18 (16-19) bristles.

Phallic organs (fig. 19). Aedeagus weakly sclerotized, very long, slender, distally somewhat curled, proximally covered with membrane confluent to dorsal mantle, basally contiguous to apodeme by means of black thick rod; apodeme very long, apically bifurcated, subapically with thin vertical rod; basal process triangular, caudally connected to dorsal mantle by bridge. Anterior parameres attached to bifurcated tips of aedeagal apodeme, elongate, apically pointed, with 2 sensilla subapically and 1 sensillum subbasally. Posterior paramere forming short transverse bar connecting caudolateral ends of hypandrium; dorsal mantle small, triangular. Hypandrium narrow, somewhat V-shaped in ventral view.

Female 8th sternite (fig. 20) proximally narrow, distally broad and with *ca.* 26 bristles and 1 pair of spur-like projections laterally. Spermatheca (fig. 21) small, bell-shaped; introvert deep; duct very long, constricted slightly basally and apically in introvert.

Holotype male, China : Dinghushan, Guangdong Province, 5/13-VII-1986, ex trap (*T. X. Peng*). – **Paratypes** : China : Dinghushan, Guangdong Province, 5 males, 3 females, 14/23-IX-1986; 8 females, 11/19-VIII-1987; 1 male, 24-IV/4-V-1988; 11 females, 23/31-VII-1988; 3 males, 2 females, 23-VIII/6-IX-1988; ex traps (*T. X. Peng*).

Distribution. – China : Guangdong.

Relationship. – This species can be distinguished from *A. lepidothrix* by the diagnostic characters.

Etymology. – Meaning «with foliole», in reference to the modified anterior and posterior reclinate orbitals.

Genus STEGANA Meigen

Stegana Meigen, 1830, *Syst. Besch. europ. zweifl. Insekt.*, 6 : 79. – Wheeler, 1960, *Proc. Ent. Soc. Wash.*, 62 : 109; Okada, 1989 : 396. Type species : *Stegana nigra* Meigen, 1830 (designated by Zetterstedt, 1847, *Diptera Scandinaviae*, 6 : 2577).

Protostegana Hendel, 1920, *Wien. Ent. Zeit.*, 38 : 53. Type species : *Drosophila curvipennis* Fallén, 1823.

Diagnosis. – Mid tibia usually (except for the subgenera *Parastegana* Okada and *Pseudostegana* Okada) with stout bristles above; Ac-index more than 4.0; carina undeveloped; arista plumose (Okada, 1989).

Subgenus Steganina Wheeler

Steganina Wheeler, 1960, *Proc. Ent. Soc. Wash.*, 62 : 110 (as subgenus of *Stegana*). – Okada, 1978 : 398. Type species : *Musca coleoprata* Scopoli, 1763.

Diagnosis. – Face with black and white bands; frons and face right-angled in pro-

file; maximum diameter of eye oblique to body axis; postgena broad; wing curved down in resting posture; scutellum nearly flat, marginally ridged; wing nearly entirely dark fuscous (Okada, 1971a, 1978).

✓ *Stegana (Steganina) nigrolimbata* Duda

Stegana nigrolimbata Duda, 1924, *Arch. Naturg.*, 90A (3) : 181; 1923, *Ann. Hist.-nat. Mus. Nat. Hung.*, 20 : 37 (nomen nudum).

Stegana (Steganina) nigrolimbata : Wheeler, 1960, *Proc. Ent. Soc. Wash.*, 62 : 110; Okada, 1971a : 83.

Specimens examined : China : 3 males, 6 females, Heishiding, Guangdong Province, 2/5-XI-1988, by sweeping on forest floor (*M. J. Toda*).

Distribution. – China : Taiwan, Guangdong (n. loc. rec.).

Subgenus *Oxyphortica* Duda

Oxyphortica Duda, 1923, *Ann. Hist.-nat. Mus. Nat. Hung.*, 20 : 34 (as subgenus of *Phortica*). – Okada, 1971a : 94. Type species : *Drosophila convergens* de Meijere, 1911.

Chaetocnema Duda, 1926, *Ann. Hist.-nat. Mus. Nat. Hung.*, 23 : 242 (preoccupied by *Chaetocnema* Stephens, 1831, in Coleoptera). Type species : *Chaetocnema (Oxyphortica) poeciloptera* Duda, 1926.

Diagnosis. – M distally weakly curved forward; maximum diameter of eye perpendicular to body axis; postgena narrow, linear; wing not curved down in resting posture; scutellum flat, marginally ridged; wing nearly entirely dark fuscous; frons and face making obtuse angle in profile (Okada, 1971a, 1978).

✓ *Stegana (Oxyphortica) adentata*, sp. nov. (fig. 22-24)

Diagnosis. – Surstylus somewhat elongate, distally setigerous, with ca. 4 long bristles basally but no teeth (fig. 22). Anterior parameres absent.

Male. – Body length ca. 2.9 mm (2.90-2.96). Thorax length ca. 1.4 mm (1.37-1.58).

Head. Eye brownish red, bare. Second antennal segment yellowish brown; 3rd grayish yellow, apically narrowing. Arista with ca. 6 or 7 upper and ca. 5 lower branches in addition to small terminal fork. Frons dark grayish brown, with several minute frontal hairs, ca. 1/3 (0.36) as broad as head; periorbit paler; ocellar triangle black. Postverticals absent. Posterior reclinate orbital situated nearer to inner vertical than to proclinate; anterior reclinate ca. 5/7 (0.72) length of posterior reclinate; proclinate slightly longer (1.05) than posterior reclinate. Face grayish brown. Clypeus grayish brown. Cheek grayish yellow, anteriorly darker, ca. 1/10 (0.10, 0.09-0.12) as broad as maximum eye diameter. Palpus yellow, with 1 prominent subapical and several moderate lateral setae.

Thorax. Mesoscutum brown, with median obscure stripe broadened posteriorly. Scutellum dark brown, marginally slightly paler. Thoracic pleura grayish brown, with broad dark brown longitudinal stripe above. Humerus paler, with 1 long humeral. Acrostichal hairs in ca. 10 irregular rows. Anterior dorsocentral ca. 1/2 (0.49) length of posterior; distance between ipsilateral dorsocentrals ca. 1/4 (0.26, 0.25-0.27) of cross distance between anterior dorsocentrals. Prescutellars present, ca. 4/9 (0.44) length of posterior dorsocentral. Anterior scutellars divergent; posteriors crossed, nearer to anterior than to each other; anterior/posterior ca. 1.2 (1.18-1.31). Sterno-index ca. 0.8 (0.84).

Legs yellow, slightly darker at knee joints. Mid tibia proximally with 2 stout long bristles. Preapicals on all tibiae; apicals on fore and mid tibiae. Mid and hind tarsi with 2 and 1 row of minute cuneiform bristles on underside, respectively. Fore and mid metatarsi as long as 3 and 4 succeeding tarsal segments together, respectively; hind metatarsus slightly shorter than 3 succeeding together.

Wing dark fuscous, paler basally and caudally. Veins dark brown. Discal and 2nd basal cells separated by crossvein. Posterior crossvein oblique to CuA₁ (5th longitudinal vein). CuA₁ apically slightly sinuate. R₂₊₃ nearly straight; R₄₊₅ and M distally convergent. C₁-bristles 2. Third costal section with ca. 4 small warts on distal half of under surface. Wing indices: C ca. 2.7 (2.65-2.68), 4V ca. 1.6 (1.59-1.63), 4C ca. 0.8 (0.77-0.79), 5x ca. 1.4 (1.22-1.49), Ac ca. 5.5 (4.77-6.18), C3-fringe ca. 1.0 (0.99-1.00). Halter white, basally slightly grayish.

Abdomen. Tergites mostly dark grayish brown; 1st to 3rd anteromedially widely yellow. Sternites pale yellow.

Periphallic organs (fig. 22). Epandrium broad below, slightly constricted dorsally, setigerous on caudal half, pubescent except for anterior and ventral margins; anteroventral corner somewhat prominent. Cercus separate from epandrium, narrow, setigerous but not pubescent.

Phallic organs (fig. 23, 24). Aedeagus densely haired; apodeme ca. 1.5 times longer than aedeagus. Posterior paramere large, dorso-apically with small sclerotized claw, ventrally bilobed and partly covering aedeagus. Hypandrium somewhat oblong.

Holotype male, China : Conghua, Guangdong Province, 27-I-1987, by sweeping on forest floor (*M. J. Toda*). – **Paratypes** : China : 2 males, Heishiding, Guangdong Province, 2-XI-1988, by sweeping on forest floor (*M. J. Toda*).

Distribution. – China : Guangdong.

Relationship. – This species somewhat resembles *St. (Oxy.) convergens* (de Meijere, 1911) and *St. (Oxy.) subconvergens* Okada, 1988, but can be clearly distinguished from these two species by the diagnostic characters.

Etymology. – Referring to the surstylus without teeth.

Subgenus *Parastegana* Okada

Parastegana Okada, 1971a : 91 (as subgenus of *Stegana*). Type species : *Protostegana femorata* Duda, 1923.

Diagnosis : Frontal triangle obscure; scutellum dorsally convex, marginally not ridged; mid tibia without stout bristles above; prescutellars absent; wing hyaline, with or without black patches; posterior reclinate orbital situated nearer to proclinate than to inner vertical (Okada, 1978).

J *Stegana (Parastegana) drosophiloides*, sp. nov. (fig. 25-28)

Diagnosis. – Surstylus proximally without finger-like projection (fig. 26). C3-fringe ca. 0.9. Maximum diameter of eye very oblique to body axis; postgena broad (fig. 25). Postverticals absent.

Male. – Body length ca. 3.1 mm. Thorax length ca. 1.3 mm.

Head (fig. 25). Eye brownish red, bare. Second antennal segment yellowish brown; 3rd grayish yellow. Arista with ca. 2 or 3 small upper branches. Frons orange yellow, pale anteriorly, almost bare, ca. 4/9 (0.45) as broad as head; periorbit grayish brown; ocellar triangle black. Anterior reclinate orbital minute, ca. 2/9 (0.21) length of posterior reclinate; proclinate slightly longer (1.02) than posterior reclinate. Face angled obtusely to frons in lateral view, grayish brown, darker on buccal margin; carina undeveloped. Clypeus dark brown. Cheek grayish brown, darker on ventral margin, ca. 1/4 (0.25) as broad as maximum eye diameter. Vibrissa stout, long; other orals fine. Palpus yellowish gray, slender, with 1 prominent subapical and ca. 2 or 3 lateral setae.

Thorax. Mesoscutum brownish yellow, laterally darker, with 3 dark brown longitudinal stripes; median stripe posteriorly broadened; lateral stripe running from suture to posterior end just outside of dorsocentral line. Scutellum dark brown, apically white. Thoracic pleura dark grayish brown. Humerus dark grayish brown, with 1 long humeral. Acrostichal hairs in ca. 8 irregular rows. Anterior dorsocentral slightly longer than 1/2 length of posterior (0.53); distance between

ipsilateral dorsocentrals ca. 1/4 (0.26) of cross distance between anterior dorsocentrals. Anterior scutellars convergent; posteriors crossed, nearer to each other than to anterior; anterior/posterior ca. 1.0. Sterno-index ca. 0.5.

Legs grayish yellow; fore coxa, femur and tibia, and mid tibia darker; mid and hind femora, and hind tibia distally darker. Preapicals on mid and hind tibiae; apicals on fore and mid tibiae. Mid and hind tarsi with 2 and 1 row of minute cuneiform bristles on underside, respectively. Fore metatarsus as long as rest of tarsal segments together; mid and hind metatarsi longer than rest together.

Wing hyaline, with 4 large black patches below 2nd break of costa, at tips of R_{2+3} and R_{4+5} and on posterior crossvein. Veins yellowish gray. Discal and 2nd basal cells confluent. R_{2+3} distally strongly curved towards costa; R_{4+5} and M distally strongly convergent. Costa reaching tip of M . C_1 -bristles 2, but small. Third costal section distally with ca. 4 or 5 small warts on under surface. Wing indices: C ca. 1.4, 4V ca. 2.1, 4C ca. 1.4, 5x ca. 1.1, Ac ca. 13.5. Halter white; stalk slightly grayish.

Abdomen. Tergites nearly entirely dark gray. Sternites pale gray, broader than long; 5th especially large.

Periphallic organs (fig. 26). Epandrium broad, slightly constricted dorsally, setigerous, nearly entirely pubescent except for anterior margin; anteroventral corner somewhat prominent. Surstylus large, triangular, with small warts scattered sparsely on outer surface and small bristles on caudal margin and caudal half of inner surface. Cercus separate from epandrium, narrow above, broad below, setigerous, especially dense on ventral margin, pubescent except for anterior margin.

Phallic organs (fig. 27, 28). Aedeagus composed of robust median rod and outer membrane; median rod black, strongly sclerotized, irregularly rough on surface, distally bilobed, apically narrowing; outer membrane posteriorly reaching dorsal mantle, submedially with numerous spinules; apodeme long, with well developed vertical plate. Anterior paramere situated behind aedeagus, proximally broad, distally elongate, with ca. 3 sensilla subapically, ca. 1 sensillum submedially and several small warts on distal outer surface. Posterior paramere composed of median lobe and 1 pair of lateral plates; dorsal mantle bilobed. Hypandrium arcuate, subcaudally with 1 pair of subtriangular large plates.

Holotype male, China : Babaoshan, Guangdong Province, 11-XI-1989, by sweeping on tree trunks (*M. J. Toda*).

Distribution. – China : Guangdong.

Relationship. – This species is similar to *Stegana* (*Parastegana*) *maculipennis* Okada, 1971 in wing color pattern and the anterior paramere being situated behind the aedeagus, but clearly distinguishable from the latter by the diagnostic characters. The taxonomic position of this species is quite interesting. Okada (1978) pointed out the close relationship between the subgenus *Parastegana* and *Pseudostegana*, because of sharing the following characters: anterior reclinate orbital minute; posterior reclinate orbital situated nearer to proclinate than to inner vertical; mid tibia without stout bristles above; scutellum more or less convex, with scutellars inserted below dorsal surface; metatarsus as long as or longer than rest of tarsal segments together; costa extending beyond tip of R_{4+5} . He recognized only 2 diagnostic characters, i.e., sharply defined, elongate frontal triangle and the absence of postverticals, by which *Pseudostegana* can be distinguished from *Parastegana*. The present new species sharing the latter character may represent a link between the two subgenera. On the other hand, this species having oblique eye and broad cheek and postgena may be somewhat related also to the subgenus *Steganina*. In addition, it is very interesting that this species has some characteristics common to the subfamily Drosophilinae, e.g., posterior reclinate orbital nearer to proclinate orbital than to inner vertical, minute anterior reclinate orbital, prescutellars absent, convergent anterior scutellars, and discal cell confluent to 2nd basal cell. Most of these characters are shared also by the subgenus *Pseudostegana*. As pointed out by Okada (1978), this suggests an intermediate position of the subgenus *Pseudostegana* and *Parastegana* between the subfamily Steganinae and Drosophilinae.

Etymology. – Meaning «like *Drosophila*», for sharing some characteristics common to the Drosophilinae.

Acknowledgments

We wish to thank Dr. L. Tsacas for giving us some comments on the taxonomic position of *A. lepidothrix*, and Dr. L. Y. Li, the director of the Guangdong Entomological Institute, who understood and encouraged us in the course of this study. We are highly indebted to Mr. L. Xie and Mr. Y. C. Zhang for their help in collecting the samples. This work was supported by a Grant-in-Aid for Overseas Scientific Survey from the Ministry of Education, Science and Culture, Japan (Nos. 60041061, 61043056, 62041085, 63043060, 01041078).

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