

To Prof. Okada  
with  
authors best regards  
C. Gupta

## SOME FURTHER ADDITIONS TO THE LIST OF INDIAN FAUNA OF DROSOPHILIDAE

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### THREE TEXT-FIGURES

### ABSTRACT

Taxonomic account of seven species of Drosophilidae is provided. Three of them, *Amiota apodemata*, *Stegana crescentica* and *Stegana penihexata* are new to science, while *Leucophenga angusta*, *L. pectinata*, *Pararhinoleucophenga maura* and *Liodrosophila globosa* are recorded for the first time from India.

### INTRODUCTION

The Drosophilidae is a very large family of acalyprate flies of world wide distribution which now contains a little over 2500 species (Wheeler, 1981). However, this figure obviously does not furnish the final picture of Drosophilidae on a world basis, since several new species are continuously being added every year from different parts of the World. The present paper which is fourth in series (Gupta and Panigrahy, 1982; Panigrahy and Gupta, 1982; 1983) deals with the results of our recent studies carried out in some ecologically interesting areas of Orissa State.

### MATERIAL AND METHODS

Materials for the present study was collected from the vicinity of Narayanpur and Padmapur both located in Koraput district of Orissa. Flies were usually obtained from wild by exposing fermenting fruits as baits. Besides this, net sweeping was also done over decaying leaves, fallen flowers, fleshy fungi and wild vegetation. The collected flies were sorted out and studied for different taxonomic characters following the details as described by Gupta (1969).

### SYSTEMATIC ACCOUNT

Genus *Amiota* Loew

*Amiota* Loew, 1862, *Berl. Ent. Zeit.*, 6: 229.

Type species: *Amiota leucostoma* Loew; U.S.A.

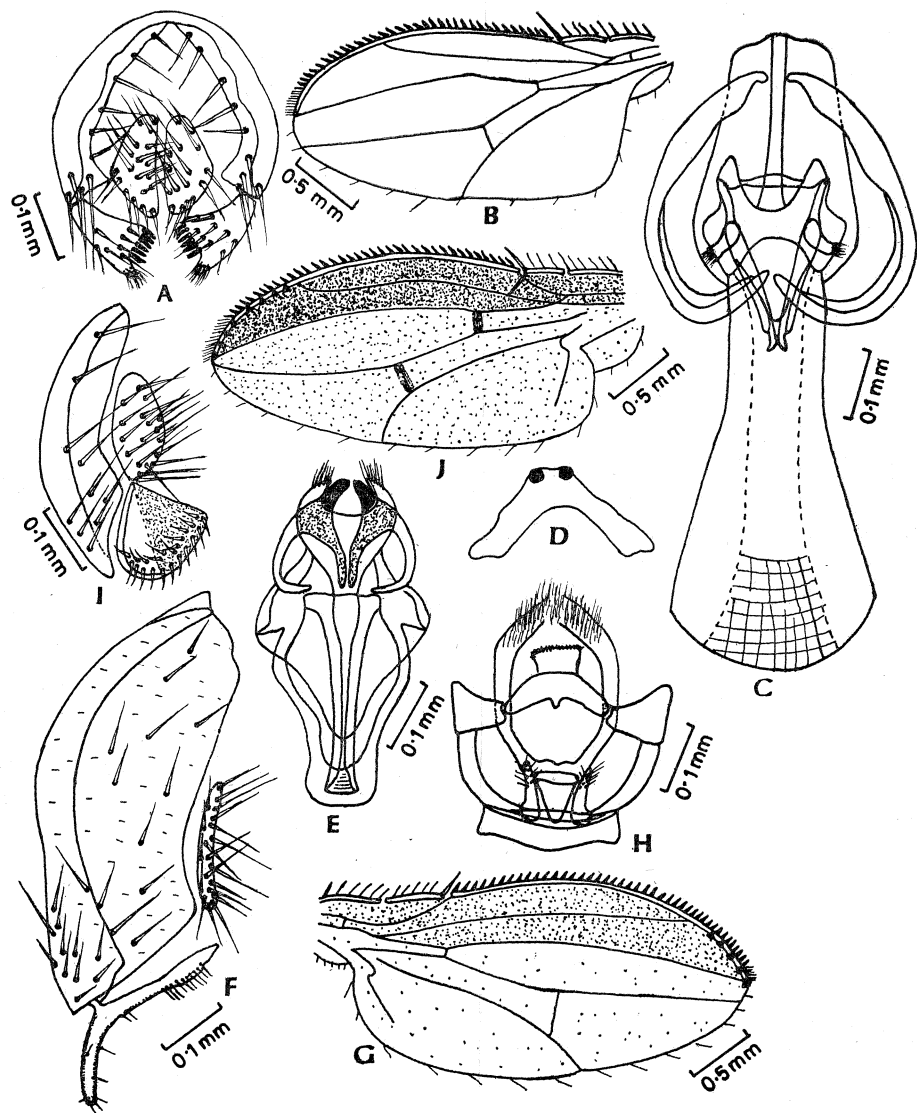
Subgenus *Amiota* Loew

*Amiota apodemata* new species

Mean body length: 1.98mm (♂).

*Head*, ♂: Arista with 5 branches and 3 below in addition to the terminal fork. Antennae with second segment brown; third segment yellowish brown. Frons

including ocellar triangle dark brown. Orbitals in ratio of 7:5:6. Vibrissa prominent, with white area at its base. Palpi brown, with one prominent apical seta. Carina flat. Face milky white, cheek pale brown, greatest width of cheek  $1/8$  the greatest diameter of eye. Clypeus brown. Eyes bright red.



TEXT-FIGURE 1. *Amiota apodemata* Gupta and Panigrahy (A-C). A, periphallic organs; B, male wing; C, phallic organs. *Stegana crescentica* Gupta and Panigrahy (D-G). D, decasternum; E, phallic organs; F, periphallic organs; G, male wing. *Stegana penihexata* Gupta and Panigrahy (H-J). H, phallic organs; I, periphallic organs; J, male wing.

*Thorax*, ♂: Acrostichal hairs somewhat irregular, in 8 rows. Anterior scutellars divergent; posterior scutellars crossing each other. Prescutellars well differentiated. Anterior dorsocentral three-seventh length of posterior dorsocentral; distance from anterior dorsocentral to posterior dorsocentral about two-fifth the distance between the anterior pair. Mesonotum and scutellum unicolorous, glossy brown. Humeral region milky white, with one prominent bristle. Thoracic pleura dark brown. Sterno-index 0.87.

*Legs*: Yellowish brown, preapicals on all three tibiae; apicals on first and second tibiae.

*Wings*, ♂ (Text-fig. 1B): Hyaline, with milky white area at its base. Mean length of wing 2.13 mm. Approximate indices: C-index 2.0; 4V-index 2.5; 4C-index 1.64; 5X-index 1.8. One seta present at the apex of first costal section; heavy setae on basal 1/4 of third costal section. Halteres white.

*Abdomen*, ♂: 1T yellowish, 2T with a medially interrupted broad band, the remainder tergites uniformly dark brown.

*Periphallidic organs* (Text-fig. 1A): Epandrium dark brown, narrow, truncate below, with 10-12 bristles. Surstylus long with broader tip, having 6 closely placed black teeth, a few fine setae on outer margin, and with 8 dorso-median setae. Cerci dark brown, triangular with 20 setae.

*Phallic organs* (Text-fig. 1C): Aedeagus yellowish brown, bifid, long and somewhat narrowly curved apically. Basal apodeme of aedeagus unusually long and broad basally. Anterior gonapophyses small with many sensilla. Posterior gonapophyses fused, broadened below.

*Holotype*: ♂, INDIA, ORISSA, Koraput district, Padmapur, October 1981 (Coll. Gupta and Panigrahy). *Paratypes*: 11 ♂♂, same locality and collectors as holotype. Deposited in the "Drosophila Collection" of the Department of Zoology, Banaras Hindu University, Varanasi, India, and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

*Relationships*: This species superficially resembles *A. lanceolata* Okada, but distinctly differs from it in having C-index 2.0 and heavy setae on basal one-fourth of third costal section (C-index 1.2 and heavy setae three-fourth in *lanceolata*), proximal half of fore femur not fuscous (fuscous in *lanceolata*), basal apodeme of aedeagus unusually long and broad distally (shorter in *lanceolata*), and anterior gonapophyses small with many sensilla (fusiform with few sensilla in *lanceolata*).

*Distribution*: INDIA

#### Genus *Stegana* Meigen

*Stegana* Meigen, 1830, *Syst. Besch. Europ. Zweifl. Insekt.*, 6:79.

Type species: *Stegana nigra* Meigen = *Drosophila curvipennis* Fallen; Europe.

*Protostegana* Hendel, 1929, *Wien. Ent. Zeit.*, 38: 52.

Type species: *Drosophila curvipennis* Fallen; Europe.

Subgenus *Stegana* Meigen.

*Stegana crescentica* new species

Mean body length: 2.47 mm (♂).

*Head*, ♂: Arista with 6 branches above and 4-5 below in addition to the terminal fork. Antennae with second segment yellow; third segment pale. Frons including ocellar triangle pale brown. Orbitals in ratio of 12:7:10. Vibrissa prominent, second oral not differentiated. Palpi pale yellow, with 3-4 marginal setae. Carina pale and flat. Face and cheek yellow, greatest width of cheek  $1/6$  the greatest diameter of eye. Clypeus pale brown. Eyes bright red.

*Thorax*, ♂: Acrostichal hairs somewhat irregular, in 8 rows. Anterior scutellars divergent; posterior scutellars crossing each other. Prescutellars well differentiated. Anterior dorsocentral one-third length of posterior dorsocentral; distance from anterior dorsocentral to posterior dorsocentral about one-fourth the distance between the anterior pair. Mesonotum and scutellum straw colour. Humeral two, outer longer. Thoracic pleura with a brown longitudinal stripe. Sterno-index 0.72.

*Legs*: Yellowish. Midtibia with two stout bristles proximally along outside. Preapicals on all three tibiae; apicals on first and second tibiae.

*Wings*, ♂ (Text-fig. 1G): With upper portion brown extending up to 3rd longitudinal vein. Mean length of wing 2.09 mm. Approximate indices: C-index 2.88; 4V-index 1.68; 4C-index 0.77; 5X-index 1.8. One seta at the apex of first costal section; heavy setae on basal  $1/7$  of third costal section; five small thorn-like warts at the margin of third costal section. Halteres pale yellow.

*Abdomen*, ♂: Somewhat elongated, tergites with brown apical bands interrupted medially giving V-shaped appearance; terminal tergites with uninterrupted bands.

*Periphallic organs* (Text-fig. 1F): Epandrium pale yellow, broad, pubescent, with 22 scattered setae. Surstylus narrow, crescentic, with 20 fine setae arranged in several irregular sets on outer margin. Cerci narrow, with 24 setae.

*Decasternum* (Text-fig. 1D): Pale brown with lateral broad pieces.

*Phallic organs* (Text-fig. 1E): Aedeagus brown, subapically swollen; apically notched and hairy. Basal apodeme of aedeagus twice as long as aedeagus. Posterior gonapophyses tripartite, apically pointed and black. Hypandrium without submedian spines. Ventral fragma triangular.

*Holotype*: ♂, INDIA, ORISSA, Koraput district, Padmapur, October 1981 (Coll. Gupta and Panigrahy). *Paratypes*: 5 ♂♂, same locality and collectors as holotype. Deposited in the "Drosophila Collection" of the Department of Zoology, Banaras Hindu University, Varanasi, India, and Department of Biology, TOKYO Metropolitan University, TOKYO, Japan.

*Relationships*: This species resembles *S. taba* Okada, in having similar number of arista branches, a few stout bristles on midtibia proximally and thoracic pleura with a longitudinal stripe; but distinctly differs from it in having yellow mesonotum

(glossy brownish black in *taba*), abdomen with medially interrupted brown apical bands giving V-shaped appearance (abdominal tergites black in *taba*), third costal section with five thorn-like warts (no warts in *taba*), surstylus crescentic, with 20 fine setae arranged in several irregular sets on outer margin (semicircular, with a large proximal black tooth and a smaller one distally in addition to 18 setae along outer margin in *taba*), and the hypandrium without submedian spines (2 pairs in *taba*).

Distribution : INDIA

Subgenus *Steganina* Wheeler

*Stegana penihexata* new species

Mean body length : 2.36 mm (♂).

*Head*, ♂ : Arista with 5-7 branches above and 3-4 below in addition to the terminal fork. Antennae with second segment brown; third segment darker. Frons including ocellar triangle dark brown. Orbitals in ratio of 8: 3: 5; anterior reclinate orbital much closer to posterior reclinate. Vibrissa prominent, second oral not differentiated. Palpi dark brown, with 3-4 marginal setae. Carina dark brown, narrow and flat below. Face and cheek pale brown, greatest width of cheek  $\frac{1}{6}$  the greatest diameter of eye. Clypeus dark brown. Eyes dark red.

*Thorax*, ♂ : Acrostichal hairs in numerous rows. Anterior scutellars divergent; posterior scutellars crossing each other. Prescutellars well differentiated. Anterior dorsocentral half the length of posterior dorsocentral; distance from anterior dorsocentral to posterior dorsocentral about one-sixth the distance between the anterior pair. Mesonotum brown, with many obscure longitudinal striations; scutellum much darker. Thoracic pleura with a dark brown stripe. Sterno-index 0.8.

*Legs* : Pale brown, distal and proximal portion of femora and tibia, femora-tibial joints of fore legs and the joints of other legs dark brown. Midtibia with a row of stout bristles along outer side. Preapicals on all three tibiae, apicals on second and third tibiae.

*Wings*, ♂ (Text-fig. 1J) : Dark, upper portion extending upto 3rd longitudinal vein much darker, both cross veins fuscous; 3rd and 4th longitudinal veins strongly converging apically. Mean length of wing 2.34 mm. Approximate indices : C-index 1.9; 4V-index 2.11; 4C-index 1.29; 5X-index 1.83. Two equal setae at the apex of first costal section; heavy setae on basal  $\frac{1}{5}$  of third costal section; several thorn-like warts at the margin of third costal section. Halteres pale yellow.

*Abdomen*, ♂ : Abdominal tergites black.

*Periphalllic organs* (Text-fig. 1I) : Epandrium brown, narrowing at lower tip, with 10 scattered setae along posterior margin. Surstylus brown, distally broad and rounded, with 22 small setae arranged in two rows on outer margin. Cerci brown, oval, with 20 setae.

*Phallic organs* (Text-fig. 1H) : Aedeagus brown, apparently hexagonal in shape, bifid apically and with hairy crown. Basal apodeme of aedeagus one-fourth the length of aedeagus. Anterior gonapophyses brown, small, with 8 sensilla anteriorly. Posterior gonapophyses swollen distally and connected with each other by a membranous structure. Ventral fragma narrow.

*Holotype*: ♂, INDIA, ORISSA, Koraput district, Padmapur, October 1981 (Coll. Gupta and Panigrahy). *Paratypes* : 6♂♂, same locality and collectors as holotype. Deposited in the "Drosophila Collection" of the Department of Zoology, Banaras Hindu University, Varanasi, India, and Department of Biology, Tokyo Metropolitan University, TOKYO, Japan.

*Relationships* : This species closely resembles *S. coleoptrata* (Scopoli), in having striped thoracic pleura and in the wing pattern, but distinctly differs from it in having mesonotum with many obscure longitudinal striations (no striations in *coleoptrata*), genital arch with narrow lower tip (broadened in *coleoptrata*), ventral side of aedeagus without thorn-like projections (many in *coleoptrata*), and anterior gonapophyses with 8 sensilla (absent in *coleoptrata*).

*Distribution* : INDIA

#### *Leucophenga angusta* Okada

*Leucophenga angusta* Okada, 1956, *Syst. Study Droso. Japan*, : 28 (Tokyo, Japan). *nigriventris* (Macquart) of various authors, nec. *Drosophila nigriventris* Macquart. *nigripalpis*, Okada, not Duda, misidentification.

*Male* : Arista with 7-8 branches above and 3-4 below in addition to the terminal fork. Vibrissa prominent. Palpi with 3-4 marginal setae. Clypeus dark brown. Other characters including the male wing (Text-fig. 2C) as described by Okada (1956).

*Periphalllic organs* (Text-fig. 2A) : Epandrium dark brown, broad, pubescent, with elongate basal fragma, upper portion with 3 and lower with 4 setae. Other features as described by Okada (1956).

*Phallic organs* (Text-fig. 2B) : Aedeagus large, cylindrical and pointed apically. Anterior gonapophyses broad, with 4 marginal sensilla. Posterior gonapophyses large. Ventral fragma elongate.

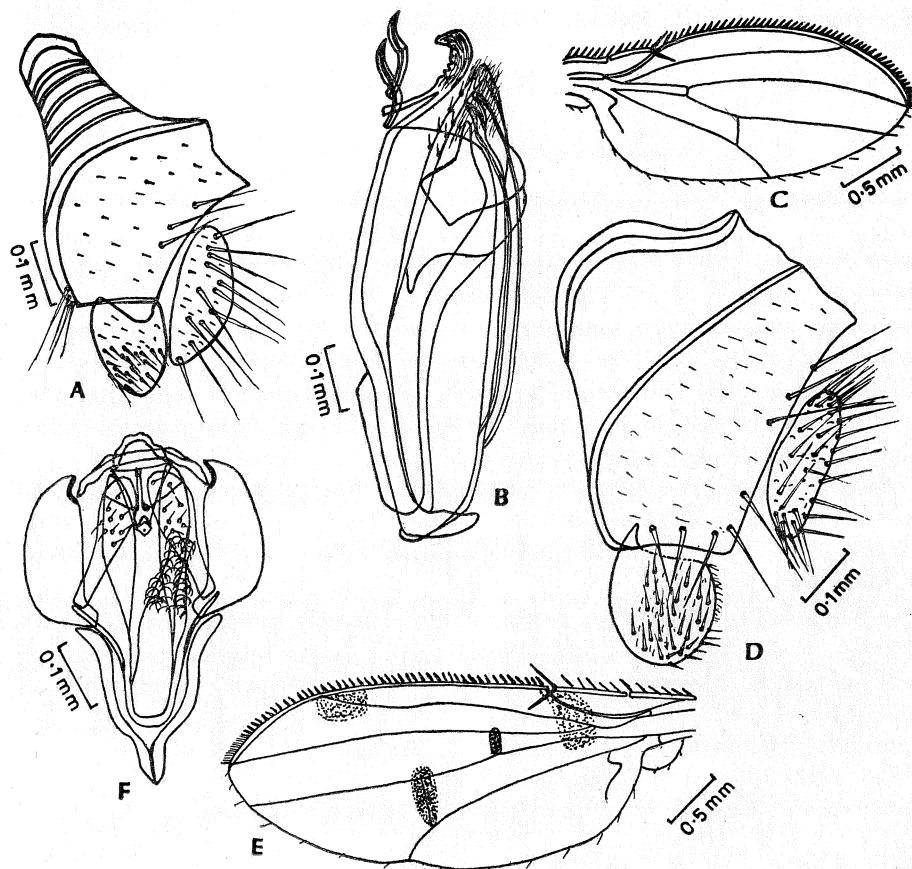
*Specimens examined* : INDIA, ORISSA, Koraput district, Padmapur, 6♂♂, October 1981.

*Distribution* : Hong Kong, Java, Nepal, Singapore, Sumatra, Vietnam, Japan, Micronesia and India (New record).

#### *Leucophenga pectinata* Okada

*Leucophenga pectinata* Okada, 1968, *Kontyu*, 36(4) : 310 (Kenting, Formosa).

*Male wing* (Text-fig. 2E) : Two types of male individuals are detected with respect to the wing pattern, some with 3 distinct black patches but with C<sub>3</sub> fringe



TEXT-FIGURE 2. *Leucophenga angusta* Okada (A-C). A, peripheral organs; B, phallic organs; C, male wing. *Leucophenga pectinata* Okada (D-F). D, peripheral organs; E, male wing; F, phallic organs.

complete, while in others an additional black patch is found at the apex of 2nd vein but not having  $C_3$  fringe complete. Other features as described by Okada (1968).

*Peripheral organs* (Text-fig. 2D) : Epandrium light brown, broadened below, with a large basal fragma; upper portion with 3 and lower with 5. Cerci elongate, with many bristles. Surstylus oval, pubescent, with about 20-22 setae.

*Phallic organs* (Text-fig. 2F) : Aedeagus rod shaped and densely pubescent apically. Anterior gonapophyses large somewhat swollen distally and with 9 sensilla on upper half. Posterior gonapophyses broad and connected with each other by a membranous structure. Ventral fragma narrow.

Specimens examined : INDIA, ORISSA, Koraput district, Narayanpur, 18♂♂, April 1981.

Distribution : Ceylon, Formosa, Hong Kong and India (New record).

*Pararhinoleucophenga maura* (de Meijere)

*Pararhinoleucophenga maura* (de Meijere) 1911, *Tijdschar. Ent.*, 54 : 406 (Wonosobo, Java).

*Male* : Arista with 4-5 above and 3 below in addition to the terminal fork. Orbitals in ratio of 5 : 4 : 7. Vibrissa prominent. Prescutellars well differentiated. Mesonotum and scutellum unicolorous, brownish. Abdominal tergites brown.

*Wings*, ♂ (Text-fig. 3B) : Dark upper portion uniformly black extending upto 3rd longitudinal vein, and with a few setae on basal section of vein  $R_{4+5}$ . One seta at the apex of first costal section; heavy setae on basal of third costal section complete. Halteres pale yellow.

*Periphallitic organs* (Text-fig. 3A) : Epandrium brown, pubescent, broadened at middle, with 16 setae along posterior margin. Surstylus long, with 9 black stout teeth in a straight row; ultimate tooth being slightly longer. Cerci brown, narrow, with many long fine setae.

*Phallic organs* (Text-fig. 3C) : Aedeagus bifid, densely pubescent and pointed anteriorly; basal apodeme of aedeagus unusually long. Posterior gonapophyses curved and with marginally ciliated inner lamellar structure. Ventral fragma small and V-shaped.

Specimens examined : INDIA, ORISSA, Koraput district, Padmapur, 4♂♂, October 1981.

Distribution : Ceylon, Java, Sumatra, and India (New record).

*Liodrosophila globosa* Okada

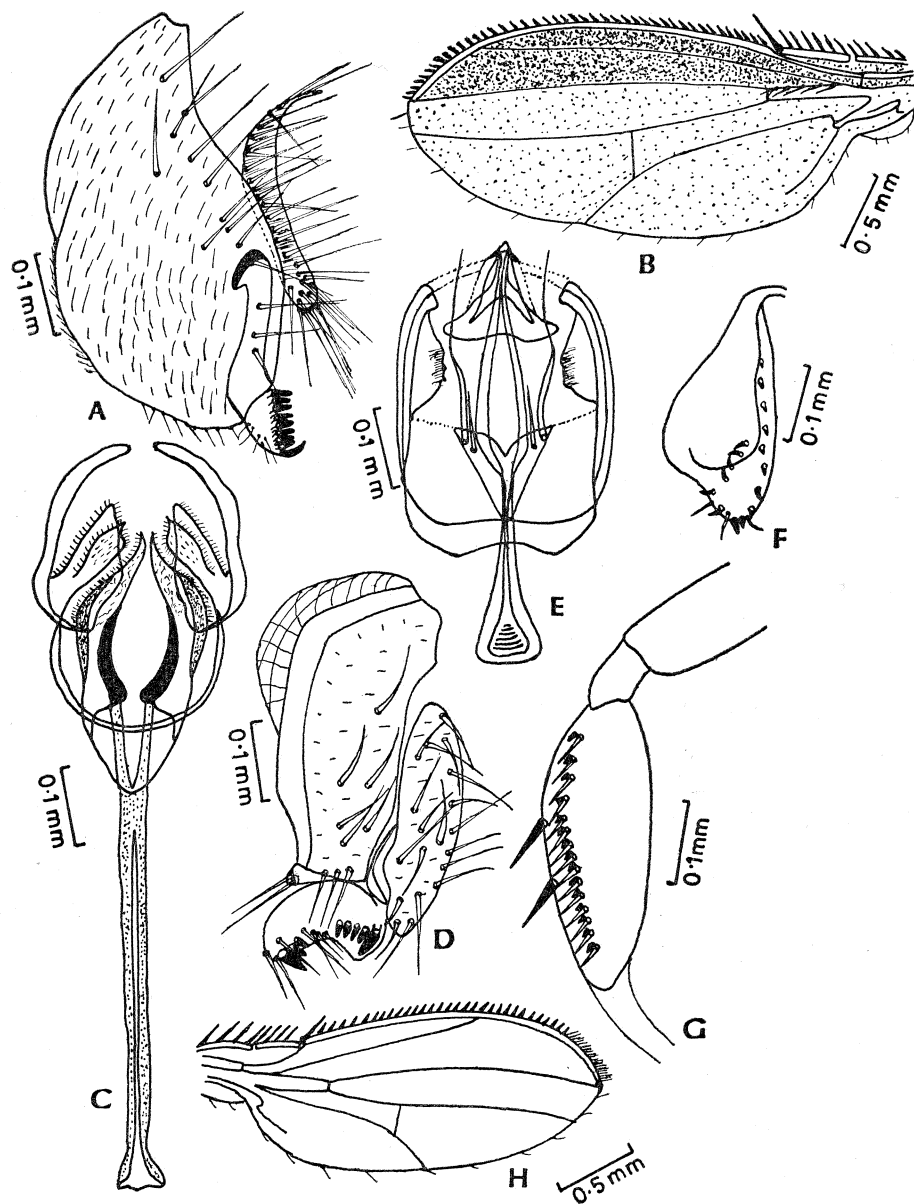
*Liodrosophila globosa* Okada, 1965, *Kontyu*, 33 (3) : 334 (Haterumamori, Ryuku Island).

*Male and female* : Arista with 6 branches above and 2 below in addition to the terminal fork. Fore femora (Text-fig. 3G) with a row of 13-20 spinules and 1-3 tough marginal setae on outer margin. Other characters including the wing (Text-fig. 3H) as described by Okada (1965).

*Periphallitic organs* (Text-fig. 3D) : Epandrium black, slender, truncate below, with 11 scattered setae and with narrow basal fragma. Surstylus globular, with two sets of stout black teeth, upper with 5 teeth and lower with 3 dissimilar teeth and a few recurved setae. Cerci fusiform, with about 20 bristles.

*Phallic organs* (Text-fig. 3E) : Aedeagus bifid, narrowing apically, basal apodeme of aedeagus as long as aedeagus. Hypandrium with 2 pairs of submedian spines, outer pair much longer than the inner one. Other details as described by Okada (1965).





TEXT-FIGURE 3. *Pararhinoleucophenga maura* (de Meijera) (A-C). A, peripheralia; B, male wing; C, phallic organs. *Liodrosophila globosa* Okada (D-H). D, peripheralia; E, phallic organs; F, egg-guide; G, fore femur; H, male wing.

*Egg-guides* (Text-fig. 3F) : Lobe short and thick, with 12 dissimilar marginal teeth and 4 discal teeth. Basal isthmus short and narrow.

Specimens examined : INDIA, ORISSA, Koraput district, Padmapur, 53♂♂, 60♀♀, October 1981.

Distribution : Borneo, Ceylon, Formosa, Java, Ryuku Island, Sumatra and India (New record).

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