

The Species of the Genus *Mycodrosophila* Oldenberg (Diptera: Drosophilidae) from India

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ABSTRACT—A total of six species of the genus *Mycodrosophila* were reported from India, with description of three new species and new distribution records of two known species. A key to Indian species of this genus is also provided.

INTRODUCTION

The genus *Mycodrosophila*, which has a world-wide distribution, now contains over 90 species [1-7]. However, fragmentary information on the species of this genus has been reported from India [8]. As a matter of fact, *Mycodrosophila gratiosa* (de Meijere) was the sole species representing this genus from India, and no other species of this genus has been added to the list of Indian fauna of Drosophilidae until now [9, 10].

The present paper deals with the description of three new species of the genus *Mycodrosophila* from India, with description of genitalia of two other known species, which were recently collected from two different geographic areas of Western Ghats, South India.

MATERIALS AND METHODS

Materials for the present study were mainly collected from two different geographic areas of Western Ghats, South India. Out of them, Virajpet is located in Coorg district of Karnataka, while Moozhiyar is in Pathanam thitta district of Kerala. Since bait trap method commonly used for collecting *Drosophila* species proved to be futile for these species, the flies were collected exclusively from various types of fungi with the help of an aspirator. The collected flies were preserved in

70% alcohol on the spot. Taxonomic description of these species is based on the procedure followed by Gupta [11].

KEY TO INDIAN SPECIES OF THE GENUS *MYCODROSOPHILA*

- 1 C-index less than 1 *Parallclinervis* Duda
- C-index more than 1 2
- 2 Thoracic pleura with a dark band-like structure below wing articulation 3
- Thoracic pleura without a dark band-like structure below wing articulation 4
- 3 Clasper small, with 4 black teeth. Aedeagus with minute hairs near the base
..... *penihispidus* sp. nov.
- Clasper large, with 9 black teeth. Aedeagus without minute hairs near the base
..... *gordoni* Mc Every & Bock
- 4 Abdominal tergites 2-4 with narrow black bands *gratiosa* (de Meijere)
- Abdominal tergites 2-4 completely black 5
- 5 Thoracic pleura brown
..... *melanopleura* sp. nov.
- Thoracic pleura pale *Xanthopleura* sp. nov.

Genus *Mycodrosophila* Oldenberg

Mycodrosophila Oldenberg, 1914. Arch. Naturg., 80A (2): 4. Type species: *Amiota poecilogastra* Loew; Europe.

Diagnosis. Arista plumose, usually with one ventral branch. Mesonotum dark shiny and strongly rounded. Anterior dorsocentrals minute

or absent. Acrostichal hairs in many rows. Distal costal incision rather deep, costa forming a dark lappet in typical species. Fungivorous species.

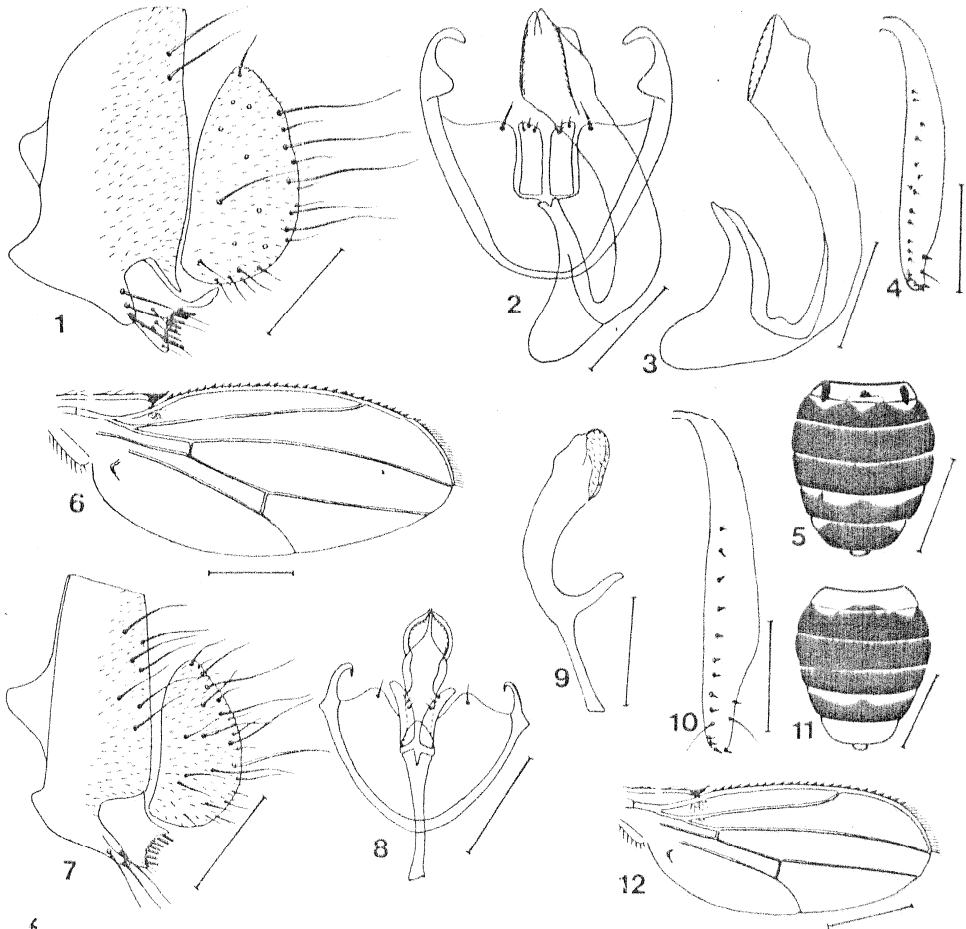
Mycodrosophila melanopleura sp. nov.
(Figs. 1-6)

♂, ♀ Body length, ♂ ca. 2.9 mm (2.51-3.20), ♀ ca. 3.1 mm (2.87-3.52).

Head: Arista with 4 dorsal and 1 ventral branches in addition to the terminal fork. Antennae with second segment brown; third segment clon-

gate and brown. Orbitals in ratio of 4:1:3. Periorbits dark brown. Frons including ocellar triangle dark brown, pale yellow in the centre, pruinose when viewed from certain angles. Carina brown, narrow and high. Clypeus dark brown. Second oral absent. Face and cheek brown; greatest width of cheek ca. 1/6 (0.17, 0.13-0.20) the greatest diameter of eye. Palpi brown, with 1 apical and 2-3 marginal setae.

Thorax: Mesonotum glossy, brownish black, with a single dorsomedian light stripe; scutellum much darker. Acrostichal hairs in about 10 irregu-



Figs. 1-12. *Mycodrosophila melanopleura* sp. nov. 1: Peripheralia. 2: Phallic Organs. 3: Aedeagus (lateral view). 4: Egg-guide. 5: Abdomen. 6: Wing (Scale-line=0.5 mm in 5-6, 0.1 mm in 1-4). Figs. 7-12. *Mycodrosophila xanthopleura* sp. nov. 7: Peripheralia. 8: Phallic Organs. 9: Aedeagus (lateral view). 10: Egg-guide. 11: Abdomen. 12: Wing (Scale-line=0.5 mm in 11-12, 0.1 mm in 7-10).

lar rows. Humerals 2, equal. Thoracic pleura brown and with a yellowish patch below wing articulation. Sterno-index ca 0.67 (0.53-0.71). Legs yellow.

Wing (Fig. 6): Second costal incision rather deep; costa forming a black lappet, traces of darkening also below the second costal break. Wing indices: C ca. 1.67 (1.45-1.72); 4V ca. 1.95 (1.76-2.01); 4C ca. 1.40 (1.32-1.68); 5X ca. 1.80 (1.57-1.90). C_3 fringe ca. 0.55 (0.49-0.57). Halteres yellowish.

Abdomen (Fig. 5): 1T yellowish white, with narrow dark patch laterally and very faint spot medially; 2T with a black band having lateral and median depression; 3T and 4T Completely black; 5T with medially projected black band; 6T completely black.

Periphallial organs (Fig. 1): Epandrium broad, subapically with deep incision on caudal margin and a narrow process above insertion of surstylus, with 2 upper and 4 lower marginal bristles. Cercus broadened ventrally, with about 20-bristles. Surstylus triangular, upper portion having a narrow process and with 7 large black teeth arranged in a concave row on outer margin and a few fine setae.

Phallic organs (Figs. 2, 3): Aedeagus long, gently curved, distally dilated dorsoventrally and with fine serrations, proximally with the vertical rod and small basal apodeme. Anterior parameres large, with 3 minute apical sensilla. Novasternum deeply notched and with a pair of small submedian spines. Ventral fragma hemispherical.

Egg-guide (Fig. 4): Lobe oblong, with 18 marginal and 1 discal small teeth, and 1 subapical hair.

Holotype ♂, India: Karnataka, Virajpet, 4.X. 1988. (Coll. Sundaran and Gupta).

Paratypes, 6 ♂♂, 2 ♀♀, same data as holotype. Deposited in the "Drosophila Collection" of Department of Zoology, Banaras Hindu University, Varanasi, India and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

Distribution. India: Virajpet.

Relationship. This species closely resembles *M. atrithorax* Okada, 1968, in having aedeagus dilated distally and with developed vertical rod, but distinctly differs from it in having large anterior parameres (small in *atrithorax*), legs completely yellow (black; yellow at knee joints, tip of tibiae

and tarsi in *atrithorax*) and epandrium apically without a finger-like projection (finger-like projection in *atrithorax*).

Remarks. This species is named because its thoracic pleura has brown pigmentation.

Mycodrosophila xanthopleura sp. nov.

(Figs. 7-12)

♂, ♀. Body length, ♂ ca. 2.03 mm (1.95-2.25), ♀ ca. 2.16 mm (2.05-2.32).

Head: Arista with 4 dorsal and 1 ventral branches in addition to the terminal fork. Antennae with second segment pale yellow; third segment brownish. Anterior reclinate orbital minute, proclinate slightly larger than posterior reclinate. Periorbits dark brown. Frons including ocellar triangle dark brown, pale yellow in the centre, pruinose when viewed from certain angles. Carina yellow, moderately high. Clypeus dark brown. Second oral absent. Face and cheek brown; greatest width of cheek ca. 1/5 (0.21, 0.16-0.25) the greatest diameter of eye. Palpi dark brown, with one prominent apical seta.

Thorax: Mesonotum glossy, brownish black; scutellum dark brownish black. Acrostichal hairs in 10 irregular rows. Humerals 2, subequal. Thoracic pleura whitish yellow. Sterno-index ca. 0.60 (0.48-0.63). Legs whitish yellow.

Wing (Fig. 12): Second costal incision rather deep; costa forming a black lappet, traces of darkening also below the second costal break. Wing indices: C ca. 1.25 (1.21-1.28); 4V ca. 1.80 (1.76-1.92); 4C ca. 1.50 (1.47-1.55); 5X ca. 1.80 (1.69-1.82). C_3 fringe ca. 0.50 (0.41-0.52). Halteres yellowish white.

Abdomen (Fig. 11): Black. 1T whitish yellow, with a narrow median dark patch; 2T-4T completely black; 5T with a broad medially projected black band; 6T completely yellow.

Periphallial organs (Fig. 7): Epandrium broad, narrowing below, with 7 upper and 4 lower marginal bristles. Cercus large, with about 25 long and short bristles. Surstylus with 7 black teeth on outer margin arranged in a concave row and with a few fine setae.

Phallic organs (Figs. 8, 9): Aedeagus long, dilated apically. Anterior parameres large, with 3

minute sensilla subapically. Novasternum medially concaved and with a pair of submedian spines. Ventral fragma somewhat triangular.

Egg-guide (Fig. 10): Lobe oblong, with 13 marginal and 1 discal teeth, and 2 subapical hairs.

Holotype ♂, India: Kerala, Moozhiyar, 16. X. 1988, (Coll. Sundaran and Gupta).

Paratypes, 14 ♂♂, 5 ♀♀, same data as holotype. Deposited in the "*Drosophila* Collection" of Department of Zoology, Banaras Hindu University, Varanasi, India and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

Distribution. India: Moozhiyar.

Relationship. This species closely resembles the foregoing species, *M. melanopleura* in general morphology, but clearly differs from it in having whitish yellow thoracic pleura, 6th abdominal tergite yellowish and in the shape of aedeagus as well as anterior parameres.

Remarks. This species is named because its thoracic pleura being whitish yellow.

Mycodrosophila penihispidus sp. nov.

(Figs. 13–18)

♂, ♀. Body length, ♂ ca. 2.00 mm (1.83–2.15), ♀ ca. 2.21 mm (2.15–2.43).

Head: Arista with 4 dorsal and 1 ventral branches in addition to the terminal fork. Antennae with second segment yellow; third segment pale yellow. Anterior reclinate orbital minute, proclinate slightly larger than posterior reclinate. Periorbits dark brown. Frons including ocellar triangle dark brown, pale yellow in the centre, pruinose when viewed from certain angles. Carina yellowish brown, high and broad-below. Clypeus dark brown. Second oral absent. Face and cheek dark brown; greatest width of cheek ca. 1/5 (0.20, 0.14–0.21) the greatest diameter of eye. Palpi dark brown, with 2 apical setae.

Thorax: Mesonotum glossy, brownish black; scutellum much darker. Acrostichal hairs in about 10 irregular rows. Humeral 2, subequal. Thoracic pleura yellowish and with a dark band below the wing articulation extending up to the pteropleuron. Sterno-index ca. 0.67 (0.58–0.70). Legs yellowish white.

Wing (Fig. 18): Second costal incision rather

deep; costa forming a large black lappet, traces of darkening also below the second costal break. Wing indices: C ca. 1.20 (1.14–1.21); 4V ca. 2.60 (2.56–2.66); 4C ca. 2.00 (1.89–2.02); 5X ca. 2.80 (2.75–2.84). C₃ fringe 0.50 (0.47–0.54). Halteres knob black, enclosing a small light area, dorsal surface of the stalk brown.

Abdomen (Fig. 17): 1T light yellow, with dark patch laterally; 2T with a broad black band enclosing partially a median and sublateral yellow areas; 3T and 4T completely black; 5T with medially projected broad black band; 6T yellowish white.

Periphallial organs (Fig. 13): Epandrium broad, subapically with a rectangular process on caudal margin and with 3 upper and 3 lower marginal bristles. Cereus large, with 23–27 bristles. Surstylus with upper portion having a narrow process, with 4 large black teeth arranged in a straight row on outer margin.

Phallic organs (Figs. 14, 15): Aedeagus straight, broadened apically and bilobed at tip, basally with minute hairs. Anterior parameres minute, with single apical sensillum. Novasternum concaved near median protrusion, and with a pair of submedian spines. Ventral fragma broader than long.

Egg-guide (Fig. 16): Lobe elongate, broadened subapically, with a row of 6 small black teeth distally and 9 bristle-like marginal teeth proximally and 3 large subapical hairs.

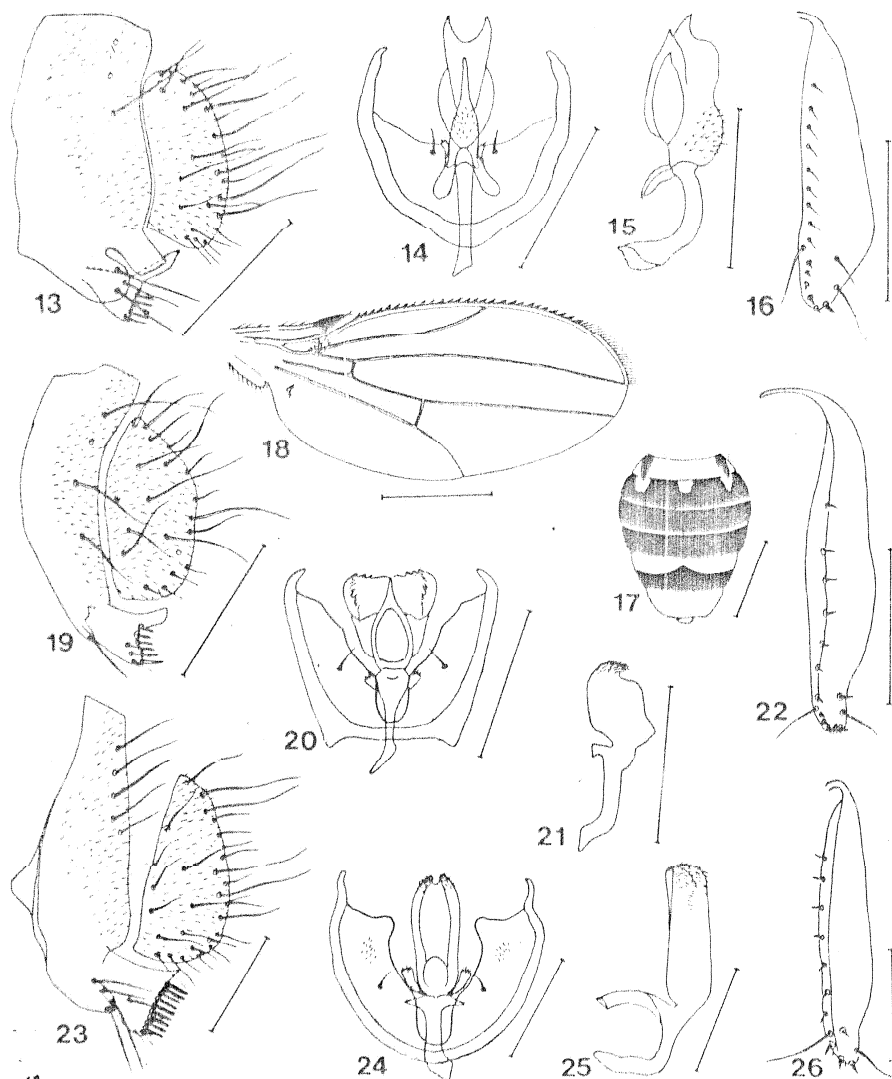
Holotype ♂, India: Karnataka, Virajpet, 4. X. 1988, (Coll. Sundaran and Gupta).

Paratypes, 5 ♂♂, 6 ♀♀, same data as holotype. Deposited in the "*Drosophila* Collection" of Department of Zoology, Banaras Hindu University, Varanasi, India and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

Distribution. India: Virajpet.

Relationship. This species closely resembles *M. joalahae* Boek, 1982, in having large black costal lappet and in the abdominal pattern, but distinctly differs from it in having 1T with dark lateral patch (no lateral patch in *joalahae*), broad epandrium (narrow in *joalahae*) and the aedeagus with minute hairs on basal portion (no hairs on basal portion in *joalahae*).

Remarks. This species is named because its aedeagus possesses numerous minute hairs on basal portion.



Figs. 13-26. *Mycodrosophila penitispidus* sp. nov. 13: Periphallie Organs. 14: Phallic Organs. 15: Aedeagus (lateral view). 16: Egg-guide. 17: Abdomen. 18: Wing (Scale line = 0.5 mm in 17-18, 0.1 mm in 13-16). Figs. 19-22. *Mycodrosophila parallelinervis* Duda, 1926. 19: Periphallie Organs. 20: Phallic Organs. 21: Aedeagus (lateral view). 22: Egg-guide. (Scale-line = 0.1 mm) Figs. 23-26. *Mycodrosophila gordoni* Mc Evrey and Bock, 1982. 23: Periphallie Organs. 24: Phallic Organs. 25: Aedeagus (lateral view). 26: Egg-guide. (Scale-line = 0.1 mm).

Mycodrosophila parallelinervis Duda
(Figs. 19-22)

Mycodrosophila parallelinervis Duda, 1926, Suppl. Ent., 14: 57.

♂, ♀. The general features as described by Duda [13].

Periphallie organs (Fig. 19): Epandrium narrowing below, with about 4 upper and 1 lower marginal bristles. Cercus broad, with about 16 bristles. Surstylus triangular, with 5 large black teeth on outer margin, arranged in a concave row and with few fine setae.

Phallic organs (Figs. 20, 21): Aedeagus broad,

fan-shaped in dorsal view, finely serrated apically and laterally. Anterior parameres small, with 3-4 minute apical sensilla. Novasternum deeply concaved, with a pair of small submedian spines. Ventral fragma quadrate.

Egg-guide (Fig. 22): Lobe elongate, with about 12 marginal and 1 discal teeth, and 2 large subapical hairs.

Specimen examined. India: 21 ♂♂, 3 ♀♀, Karnataka, Virajpet, 10. X. 1988, (Coll. Sundaran and Gupta).

Distribution. Indonesia, Thailand, Malaya, Singapore, Sri Lanka, New Guinea, India (New record).

Mycodrosophila gordonii Mc Every & Bock
(Figs. 23-26)

Mycodrosophila gordonii Mc Every & Bock, 1982. *Aust. J. Zool.*, 30: 699.

♂, ♀. The general features as described by Mc Every & Bock [14].

Periphallial organs (Fig. 23): Epandrium elongate, narrowing below, with 5 upper and 4 lower marginal bristles. Cercus broadened below, with about 24 bristles. Surstylus triangular, with 9 large black teeth arranged in a straight row on outer margin and with 2 secondary bristles and few fine setae.

Phallic organs (Figs. 24, 25): Aedeagus broad and straight, mildly notched and hirsute at tip. Anterior parameres small, with 3-4 apical sensilla. Novasternum deeply concaved, with a pair small submedian spines. Ventral fragma broader than long.

Egg-guide (Fig. 21): Lobe oblong, with 10 marginal and 1 discal teeth and 2 subapical hairs.

Specimen examined: India: 10 ♂♂, 3 ♀♀, Karnataka, Virajpet, 10. X. 1988, (Coll. Sundaran and Gupta).

Distribution. Australia, India (new record).

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