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✓ TWO NEW AND TWO UNRECORDED SPECIES OF THE GENUS
DROSOPHILA FALLEN (DIPTERA: DROSOPHILIDAE) FROM
SHILLONG, MEGHALAYA, INDIA

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THREE TEXT FIGURES

ABSTRACT

Recent survey studies made in and around Shillong, Meghalaya have yielded two new species of *Drosophila* namely, *D. prolongata* and *D. tricombata* in addition to certain other known species, of which two species, namely, *D. rhopaloe* Bock and Wheeler and *D. prostipennis* Lin are recorded for the first time from India. Taxonomic description of these species, their relationships and a list of species so far recorded from this region are given.

INTRODUCTION

Recent work on the systematics of Drosophilidae has accumulated large data on Indian species. However, a vast range of areas still await exploration and particularly such information from the eastern zone which include Assam, Meghalaya, Tripura, Nagaland, Manipur, etc. are yet to be obtained. Singh (1972) for the first time reported six common species from Assam. Gupta (1973) recorded ten species of common occurrence from Manipur. The present paper deals with the results of our survey studies made in and around Shillong, which have yielded two new species of *Drosophila* in addition to certain other known species of which two are recorded for the first time from India.

✓ *Drosophila (Sophophora) prolongata*, new species

DESCRIPTION: Male and female: Arista with about 4–5 dorsal and 2 ventral branches in addition to the terminal fork. Antennae with second segment dark yellow; third segment whitish yellow. Frons including ocellar triangle orange yellow. Carina dark yellow, narrow and high. Face and cheek yellow, greatest width of cheek from base of oral to eye border about one sixth greatest diameter of eye. Orbitals in the ratio of 8 : 4 : 9. Second oral subequal to vibrissa. Palpi yellowish, with 2–3 marginal setae. Eyes bright red.

Acrostichal hairs regular, in 6 rows between dorsocentrals. Anterior scutellars convergent; posterior scutellars crossing each other. Distance from anterior dorsocentral

to posterior dorsocentral about half distance between two anterior dorsocentrals in female and about one-third distance in male. Mesonotum and scutellum unicolorous, orange yellow. Thoracic pleura brownish. Sterno-index about 0.66. Fore legs in male exceptionally large, coxae, femora, tibiae and tarsi dark brown except metatarsal segment. Second and third pairs of legs uniformly brownish yellow, preapicals on all three tibiae; apicals on first and second tibiae (Text-fig. 1D).

Wings with several conspicuous brown spots located on the apices of IInd, IIIrd, IVth longitudinal veins and on both cross-veins. In male, spot on IIIrd vein extending on either side, touching the spots of IInd and IVth veins. C-index about 1.8–2.0; 4V-index about 1.6; 4C-index about 1.1; 5X-index about 1.2. Two equal bristles at the apex of first costal section; stout bristles on about basal four-sevenths of third costal section (Text-fig. 1C, F). Halteres yellow.

Abdominal first three tergites pale, with black apical bands, remainder dark brown to black.

Periphallic organs (Text-fig. 1A): Genital arch broad; toe narrowly rounded; upper portion of genital arch with about 3 bristles, lower portion with about 35 bristles. Primary clasper large, crescentic tapering below, with two sets of teeth, upper set of about 7 pointed teeth facing downward; lower set of about 6 similar teeth facing upward; 2–3 bristles at the tip of clasper directed upward, 5 thick bristles present on medial margin of clasper. Secondary clasper fused to anal plate, with a large black tooth of uniform width. Anal plate large, with long bristles above and with about 10–11 short bristles below.

Phallic organs (Text-fig. 1B): Aedeagus very large, rod shaped, subapically swollen, apically hooked, with fine apical processes. Anterior parameres large, narrowing apically, with about 2 apical sensilla. Posterior parameres black, broad at base and narrowing apically. Novasternum concave, with well developed lateral processes resembling posterior parameres. Ventral fragma broader than long.

Egg-guides (Text-fig. 1G): Lobe pale, rounded apically, with about 16 marginal teeth; no discal teeth present; basal isthmus short.

Average length of male body (from 3 males): 2.34 mm.

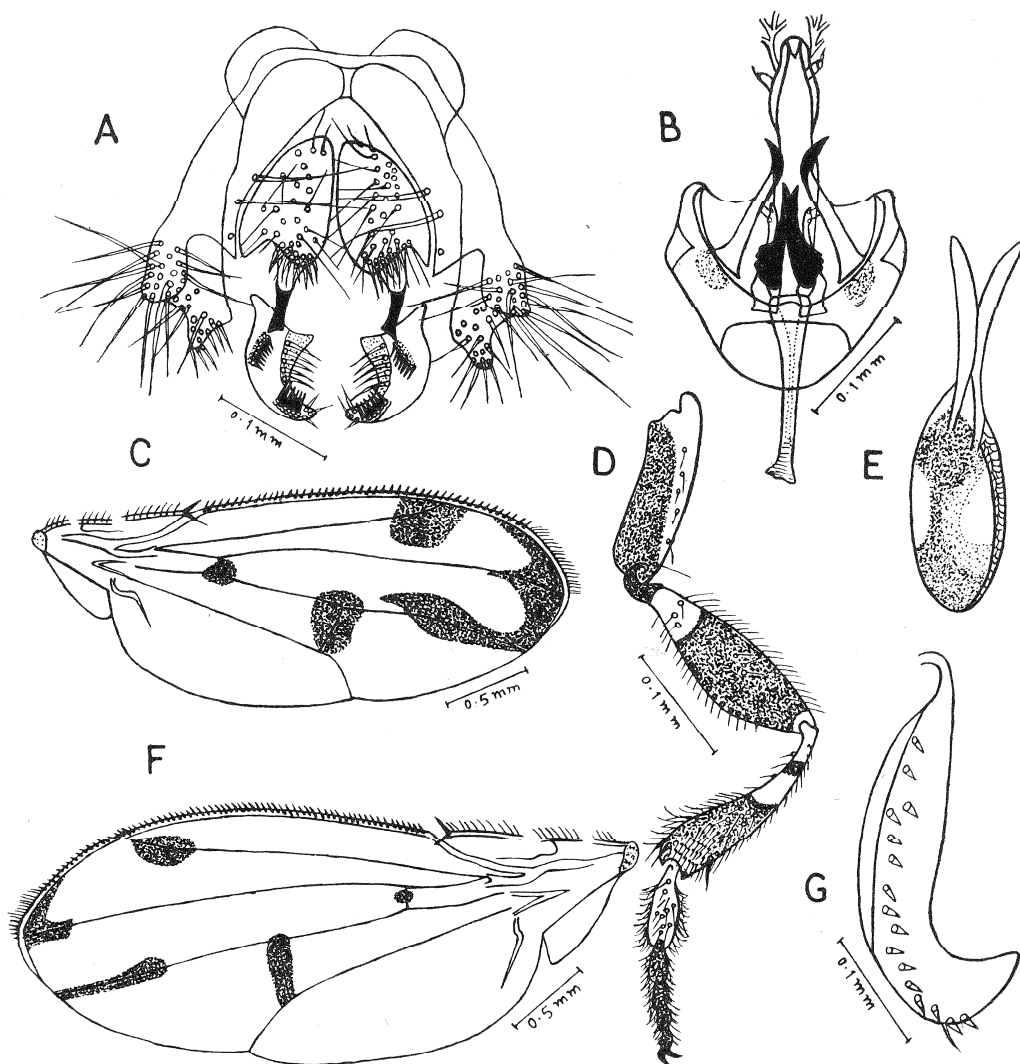
Average length of female body (from 10 females): 2.65 mm.

Egg (Text-fig. 1E): With two filaments.

HOLOTYPE ♂, INDIA: Motinagar forest, Khasi Hill, Shillong district, Meghalaya, April 1976, collected by Singh and Gupta. Deposited in the Department of Zoology, Banaras Hindu University, Varanasi, India.

PARATYPES: 2 ♂♂, 14 ♀♀, same data as holotype. Deposited in the Department of Zoology, B.H.U., Varanasi, India and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

REMARKS: This species belongs to the *suzukii* subgroup of the *melanogaster* species group. It seems to be unique in the subgroup with respect to the wing spots and in having unusually large forelegs in males probably meant for some special function.



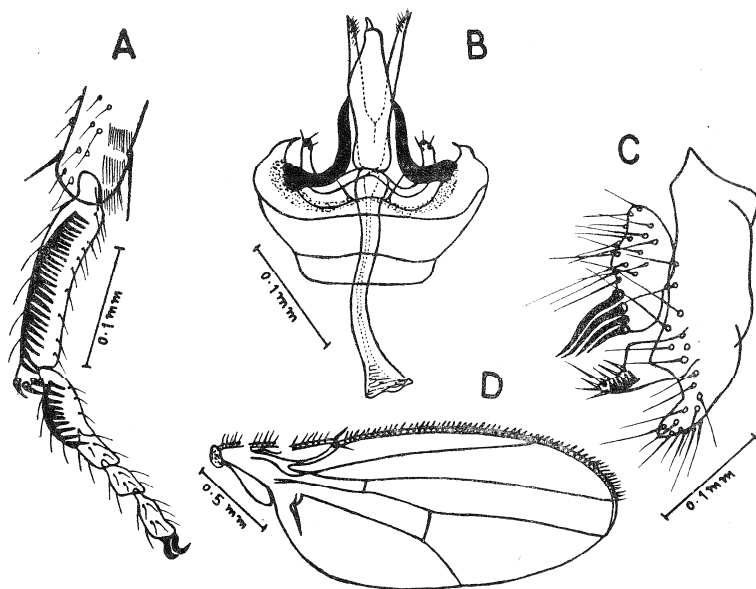
TEXT-FIGURE 1.—*Drosophila prolongata* Singh and Gupta. **A**, periphallic organs; **B**, phallic organs; **C**, male wing; **D**, Sex-comb; **E**, egg; **F**, female wing; **G**, egg-guide.

✓ *Drosophila* (*Sophophora*) *tricombata*, new species

DESCRIPTION: MALE: Arista with about 4 dorsal and 3 ventral branches in addition to the terminal fork. Antennae with second segment pale brownish; third segment yellowish. Frons including ocellar triangle tan to brownish. Carina narrow and high.

Face pale brownish, cheek yellow, greatest width of cheek from base of oral to eye border about one-tenth greatest diameter of eye. Orbitals in the ratio of 11:4:13. Palpi yellow, each with one large apical seta. Eyes dark red.

Acrostichal hairs regular, in 6 rows between dorsocentrals and in 8 rows in front of dorsocentrals. Anterior scutellars convergent; posterior scutellars crossing each other. Distance from anterior dorsocentral to posterior dorsocentral about two-fifths distance between two anterior dorsocentrals. Mesonotum and scutellum pale shiny, becoming darker with age. Thoracic pleura pale brown. Sterno-index about 0.62. Legs dull yellow, preapicals on all three tibiae; apicals on first and second tibiae. Male prothoracic legs with two large sex combs along metatarsal and second tarsal segments; metatarsal comb consisting of about 28 teeth, lowermost 3 so displaced from axis of remaining teeth giving an appearance of another sex-comb on metatarsal segment; comb on second tarsal segment consisting of about 10 teeth (Text-fig. 2A).



TEXT-FIGURE 2.—*Drosophila tricombata* Singh and Gupta. A, Sex-comb; B, phallic organs; C, periphallic organs; D, male wing.

Wings transparent. C-index about 2.41; 4V-index about 2.67; 4C-index about 1.35; 5X-index about 2.31. Two equal bristles at the apex of first costal section; stout bristles on about basal half of third costal section. Halteres yellow (Text-fig. 2D).

Abdominal tergites shiny yellow, with black apical broad bands, last two tergites completely black.

Periphallalic organs (Text-fig. 2C): Genital arch black, elongate, narrowing ventrally and slightly projecting at the insertion of clasper, and with about 20 bristles running from top of posterior margin along margin downward. Primary and secondary claspers present. Primary clasper with a lateral row of 5 teeth and a ventromedial cluster of 8–10 stout bristles, 1 elongated. Secondary clasper fused to anal plate, with 4 large ventrally directed teeth, lowermost little smaller. Anal plate black, with several long bristles.

Phallic organs (Text-fig. 2B): Aedeagus slender, broader medially and narrowing at both ends, apically with a small pointed process; basal apodeme very long. Anterior parameres large and curved, with about 3 apical sensilla. Posterior parameres large, narrow and dilated basally. Novasternum with little median convexity and with a pair of submedian spines. Ventral fragma broader than long. Average length of male body (from 10 males): 2.12 mm.

HOLOTYPE ♂, INDIA: Motinagar forest, Khasi hill, Shillong district, Meghalaya, April 1976, collected by Singh and Gupta. Deposited in the Department of Zoology, Banaras Hindu University, Varanasi, India.

PARATYPES: 26 ♂♂, same data as holotype. Deposited in the Department of Zoology, B.H.U., Varanasi, India and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

REMARKS: *Drosophila tricombata* seems to be a member of *montium* subgroup of the *melanogaster* species group where it somewhat resembles *D. vulcana* Graber especially in having displaced sex comb teeth, but distinctly differs from it in having aedeagus not hirsute, curved and narrow anterior parameres, second clasper with four large teeth and in many other important taxonomic characters.

Drosophila (Sophophora) rhopaloa Bock and Wheeler

Drosophila rhopaloa Bock and Wheeler, 1972, Univ. Texas Publ. (7213): 69. Type locality: Khao Yai, Thailand.

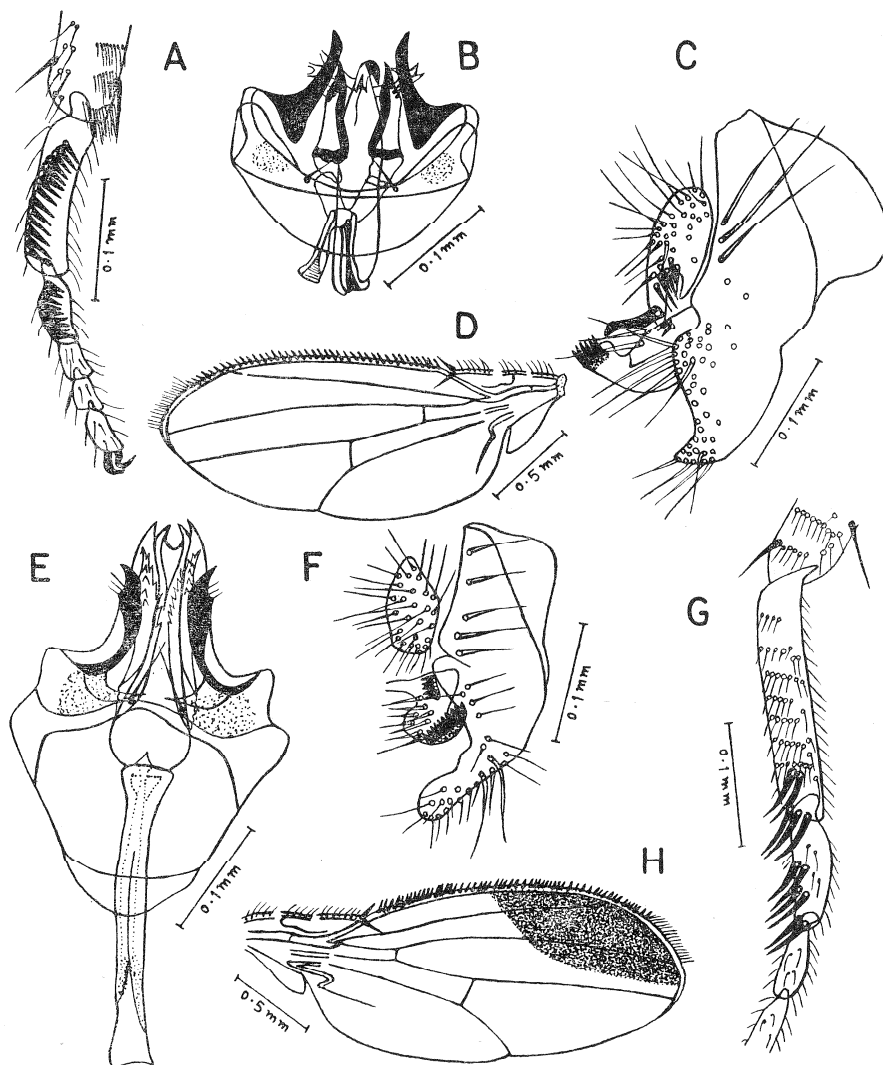
DESCRIPTION: Male: Arista with about 4 dorsal and 2 ventral branches in addition to the terminal fork. Antennae with second segment brown; third segment yellowish. Frons including ocellar triangle yellowish brown.

Mesonotum and scutellum brownish. Distance from anterior dorsocentral to posterior dorsocentral about half distance between two anterior dorsocentrals. Two longitudinal sex-combs on metatarsal and second tarsal segments of male fore legs; metatarsal comb with about 14 teeth; second tarsal comb with about 9 teeth (Text-fig. 3A). Other details as described by Bock and Wheeler (1972).

Wings clear (Text-fig. 3D): C-index about 2.53; 4V-index about 2.59; 4C-index about 1.27; 5X-index about 1.27. Stout bristles on about basal one-fourth of third costal section.

Periphallalic organs (Text-fig. 3C) and phallic organs (Text-fig. 3B) as described by Bock and Wheeler (1972).

DISTRIBUTION: Thailand, India (New record).



TEXT-FIGURE 3.—*Drosophila rhopaloa* Bock and Wheeler (A-D) and *Drosophila prostipennis* Lin (E-H). A, sex-comb; B, phallic organs; C, periphallalic organs; D, male wing; E, phallic organs; F, periphallalic organs; G, sex-comb; H, male wing.

✓ *Drosophila (Sophophora) prostipennis* Lin

D. prostipennis Lin, 1972, Univ. Texas Publ. (7213): 19. Type locality: Wulai, Taiwan.

DESCRIPTION: Male: Arista with about 4–5 dorsal and 3 ventral branches in addition

to the terminal fork. Antennae with second segment pale, third segment whitish yellow. Second oral subequal to vibrissa.

Distance from anterior dorsocentral to posterior dorsocentral about half distance between two anterior dorsocentrals. Mesonotum and scutellum unicolorous, pale. Sex-comb of male in transverse rows of stout bristles, 2 rows on metatarsal and 3 rows on second tarsal (Text-fig. 3G).

Male wings with a large dusky apical area. Stout bristles on about basal one-third of third costal section (Text-fig. 3H).

Periphallic organs (Text-fig. 3F) and phallic organs (Text-fig. 3E) as described by Bock and Wheeler (1972).

DISTRIBUTION: Taiwan, India (New record).

A LIST OF *DROSOPHILA* SPECIES SO FAR KNOWN FROM EASTERN
ZONE OF INDIA

Subgenus *Dorsilopha* Sturtevant
busckii Coquillett 1901

Subgenus *Drosophila* Fallén
immigrans Sturtevant 1921
nasuta Lamb 1914
albomicans Duda 1924

Subgenus *Sophophora* Sturtevant
ananassae Doleschall 1858
biplectinata Duda 1923
eugracilis Bock & Wheeler 1972
kikkawai Burla 1954
malerkotliana Parshad and Paika 1964
melanogaster Meigen 1830
nepalensis Okada 1955
prostipennis Lin 1972 (New record)
prolongata Singh and Gupta 1977
punjabiensis Parshad and Paika 1964
rhopaloa Bock and Wheeler 1972 (New record)
takahashii Sturtevant 1927
tricornata Singh and Gupta 1977

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