

TWO NEW SPECIES OF *DROSOPHILA* (DIPTERA : DROSOPHILIDAE) FROM SHILLONG, MEGHALAYA

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An account is given of seven species representing the subgenus *Drosophila*; out of them *Drosophila penispina* and *Drosophila novaspinofera* are described as new, while *Drosophila annulipes* and *Drosophila fuscicostata* are recorded for the first time from India.

(Key words: new *Drosophila*)

Recent collections of *Drosophila* from different areas in northeast India have made significant addition of several interesting species to the list of Indian fauna (Gupta and Singh, in press; Singh and Gupta, in press). In the present paper authors report the results of their further studies undertaken at and around Shillong, with particular concern to the species representing the subgenus *Drosophila* in this region.

Genus *Drosophila* Fallén

Drosophila Fallén, 1823, Diptera Sueciae Geomyz., 2:4. Type species: *Musca funebris* Fabricious; Sweden.

Subgenus *Drosophila* Fallén.

Drosophila Fallén, 1823, Diptera Sueciae Geomyz., 2:4; Sturtevant, 1939, Proc. Nat. Acad. Sci., 25:139; Sturtevant, 1942, Univ. Texas Publ., 4213:30.

Bands on abdominal tergites, when present, usually interrupted medially, at least on basal segments; cheek often broad; egg usually with 4 filaments; ventral receptacle generally long and finely coiled.

1. *Drosophila (Drosophila) penispina* sp. nov. (Figs. 1A-D)

Male and Female: Arista with about 4-5 dorsal and 2-3 ventral branches in addition to the small terminal fork. Antennae with second segment pale tan; third segment pale. Frons including ocellar triangle pale tan, subshining, carina broad, high. Face and cheek tan, greatest width of cheek from base of oral to eye border about one sixth the greatest diameter of eye. Orbitals in the ratio of 9:4:11. Second oral subequal to vibrissa. Palpi pale, with 3-4 marginal setae. Eyes bright red.

Acrostichal hairs regular, in 8 rows between dorsocentrals. Anterior scutellars convergent. Distance from anterior dorsocentral to posterior dorsocentral about two fifths the distance between 2 anterior dorsocentrals. Mesonotum and scutellum unicolorous, dull yellow, becoming little brownish with age. Thoracic pleura dull yellow. Sterno-index about 0.7. Legs yellowish, last tarsal segments dark brown, preapicals on all three tibiae; apicals on first and second tibiae.

Wings (Fig. 1D): Transparent, posterior cross vein clouded. Approximate indices:

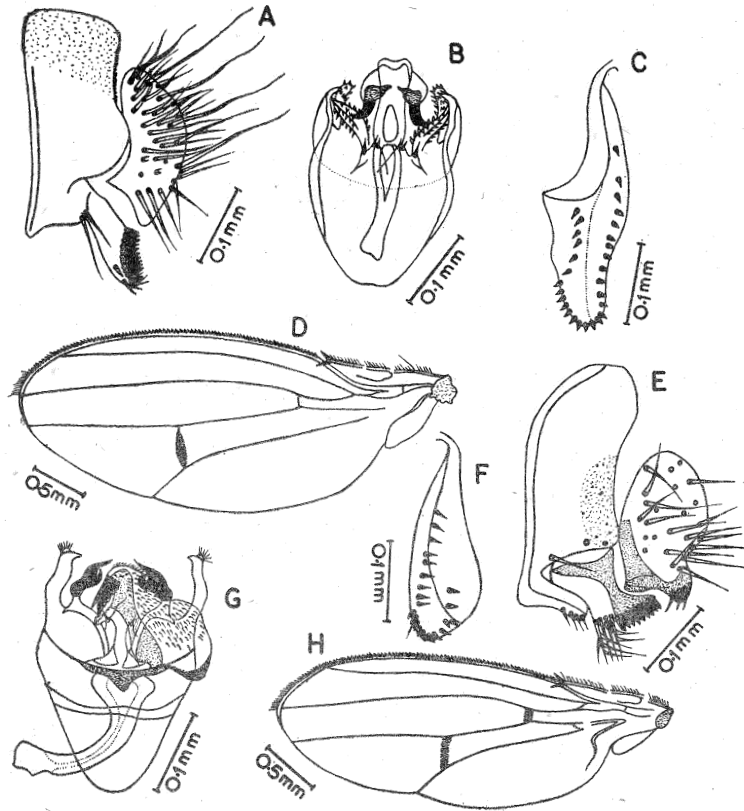


Fig. 1. (A-D): *Drosophila penispina* sp. nov. A, peripheral organs; B, phallic organs; C, egg guide; D, male wing. (E-H): *Drosophila novaspinofera* sp. nov. E, peripheral organs; F, egg guide; G, phallic organs; H, male wing.

C-index 5.9; 4 V-index 1.27; 4 C-index 0.39; 5 X-index 0.95. Two equal bristles at the apex of first costal section; heavy bristles on about basal one third of third costal section. Halteres dull yellow.

Abdomen yellowish, with medianly interrupted faint brownish apical bands which fade away entirely laterally, in male last tergite all black.

Peripheral organs (Fig. 1A): Genital arch broad dorsally and narrowing ventrally, upper portion bare and little pubescent, lower portion with about two large bristles. Primary clasper with about 10-11 stout black teeth arranged on outer concave row,

one tooth placed a little apart from the remaining teeth, and about 5-6 short stout setae at lower tip. Anal plate black, semi-lunar, with about 5 large thick and several thin small bristles.

Phallic organs (Fig. 1B): Aedeagus short and straight, subapically on either side with thick black curved spines; basal apodeme of aedeagus thick and short. Anterior parameres fused with novasternum, and with about 2 apical sensilla. Posterior parameres large, curved apically, with several conical processes. Novasternum with a pair of small submedian spines. Ventral fragma somewhat triangular.

Egg guides (Fig. 1C) : Lobes broadly rounded at tip, with about 23 marginal and 6 discal teeth. Basal isthmus narrow and short.

Average length of male body (from 10 males) : 3.38 mm.

Average length of female body (from 10 females) : 3.61 mm.

Holotype ♂, INDIA: MEGHALAYA: Motinagar forest, Khasiya hill, Shillong district, 30. iv. 1976, J. P. Gupta and B. K. Singh. Deposited in the Museum of Department of Zoology, Banaras Hindu University, Varanasi, India. **Paratypes** : 15 ♂♂, 20 ♀♀ same locality and collectors as holotype. Deposited in Museum of Department of Zoology, B. H. U., Varanasi and Department of Biology, Tokyo Metropolitan University, Tokyo, Japan. (2♂, 1♀)

Distribution : India.

12. *Drosophila* (*Drosophila*) *novaspinifera*
sp. nov. (Figs. 1E-H)

Male and female : Arista with about 5 dorsal and 2 ventral branches in addition to the terminal fork. Antennae with second segment tan; third segment darker. Frons pale, with ocellar triangle brown. Carina tan, high and broad below. Face and cheek pale, greatest width of cheek from base of oral to eye border about one fifth the greatest diameter of eye. Orbitals in the ratio of 8:4:10. Palpi yellow, with about 3 prominent marginal setae. Second oral subequal to vibrissa. Eyes bright red.

Acrostichal hairs regular, in 8 rows between dorsocentrals. Anterior scutellars slightly convergent. Distance from anterior dorsocentral to posterior dorsocentral about one third the distance between 2 anterior dorsocentrals. Mesonotum and scutellum unicolorous yellow. Thoracic pleura dark yellow. Sterno-index about 0.76. Legs

yellow, preapicals on all three tibiae; apicals on first and second tibiae.

Wings (Fig. 1H) : transparent, crossveins slightly fuscous. Approximate indices : C-index 4.00; 4V-index 1.7; 4C-index 0.67; 5X-index 1.3. Two small equal bristles at the apex of first costal section; heavy on about basal half of third costal section. Halteres yellow.

Abdomen yellow, anterior 2-3 tergites with dark and narrow apical bands, posterior tergites with very faint bands.

Periphalllic organs (Fig. 1E) : Genital arch broad; heel high and rectangular; toe narrow and forming an obtuse angle; upper portion almost bare, lower portion with about 7-8 bristles. Primary clasper large, nearly quadrate, with about 10 black stout teeth arranged in a straight row and with about 4 large bristles as well as a tuft of 8-9 short bristles at lower tip of clasper. Anal plate oval, with about 25 long bristles above, lower tip slightly narrowed and with about 3 black, short curved bristle like teeth.

Phallic organs (Fig. 1G) : Aedeagus short and compact, basally swollen, covered with fine setae, apical portion directed ventrad, with serrated inner lobe and with two outer black teeth; basal apodeme longer than aedeagus. Anterior parameres small, each with an apical sensillum. Posterior parameres obscure. Novasternum with developed lateral processes and with 2 pairs of black hooked scaly submedian spines. Ventral fragma broader than long.

Egg guides (Fig. 1F) : Lobe rounded at tip, with about 17 marginal and 3-4 discal teeth. Basal isthmus narrow and short.

Length of male body (from 1 male) : 3.08 mm.

Length of female body (from 1 female) : 3.51 mm.

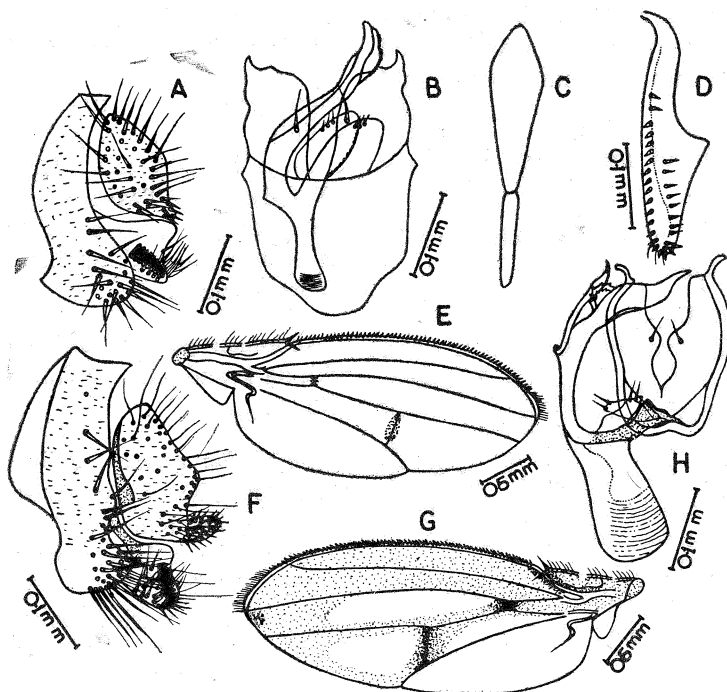


Fig. 2. (A-E): *Drosophila annulipes* A, periphalllic organs; B, phallic organs; C, aedeagus (dorso-ventral view); D, egg-guide; E, male wing. (F-H): *Drosophila fuscicostata* F, periphalllic organs; G, male wing; H, phallic organs.

Holotype ♂, genitalia on slides; INDIA: MEGHALAYA: Motinagar forest, Khasiya hill, Shillong district, 30. iv. 1976, J. P. Gupta and B. K. Singh. Deposited in the Museum of Department of Zoology, Banaras Hindu University, Varanasi, India. **Paratype**: 1 ♀, same locality and collectors as holotype. Slides deposited in the Museum of Department of Zoology, B.H.U., Varanasi, India.

Remarks: *Drosophila novaspinofera* probably belongs to *quinaria* section

Distribution: India.

✓ **3. *Drosophila (Drosophila) annulipes* Duda** (Figs. 2A-E)

Drosophila annulipes Duda, 1924, Archiv Naturgesch. A, 90 (3): 209, 221, 250; Duda,

1923, Mus. Nat. Hungarici, ann. 20: 58 (nomen nudum)

Male and female: General features as described by Tan; Hsu and Sheng (1949), Okada (1956), and Wheeler and Takada (1964).

Wings (Fig. 2E): Transparent, cross veins clouded. Approximate indices: C-index 4.5; 4V-index 1.37; 4C-index 0.52; 5X-index 1.0.

Periphallic organs (Fig. 2A): As described by Okada (1956).

Phallic organs (Fig. 2B): As described by Okada (1955).

Egg guides (Fig. 2D): Lobe somewhat elongated, and with about 22 marginal and 8 discal teeth.

locally?

Distribution ; Formosa, China, Korea, Japan, Bonin Island, Nepal and India (New record).

✓ 4. *Drosophila (Drosophila) fuscicostata* Okada (Figs. 2F-H)

Drosophila fuscicosta Okada, 1966, Bull. Br. Mus. (Nat. Hist.) Ent. Suppl. 6: 111.

Male : General features as described by Okada (1966).

Wings (Fig. 2G) : Largely fuscous extending from costal margin to R_{2+3} below, apically of R_{4+5} cells as well as in the vicinity of cross veins. Approximate indices: C-index 4.0; 4V-index 1.8; 4C-index 0.7; 5X-index 1.1.

Periphallie organs (Fig. 2F) and phallic organs (Fig. 2H) as described by Okada (1966).

Distribution : Nepal and India (New record).

✓ 5. *Drosophila (Drosophila) albomicans* Duda

Duda 1923: 43, 47, 48; 1924a: 209; 1924b: 245, Fig. 70; 1926: 83, 88-89; 1940: 23. *D. komaii* is a probable synonym.

Male and female : General features as described by Duda (1924).

Specimen examined : 50 ♂♂, 35 ♀♀, April 1976, Shillong, Meghalaya.

Distribution : Okinawa, Taiwan (Formosa), Pescadores Islands, Thailand and India.

6. *Drosophila (Drosophila) nasuta* Lamb

Drosophila nasuta Lamb, 1914, Trans. Linn. Soc. 16: 346.

Male and female : General features as described by Lamb (1914) Harrison (1954) and Wheeler and Takada (1964).

Specimen examined : 32 ♂♂, 21 ♀♀, INDIA; MEGHALAYA: Shillong, iv. 1976

Distribution : Borneo, Sumatra, Formosa, Moluccas, New Guinea, Samoa, Fiji, Hawaii, Micronesia, Seychelles, India.

7. *Drosophila (Drosophila) immigrans* Sturtevant

Drosophila immigrans Sturtevant, 1921, Carnegie Inst. Washington Publ. 301: 83.

Male and female : General features as described by Sturtevant (1921), Patterson (1943) and Kikkawa and Peng (1938).

Specimen examined : 202 ♂♂, 110 ♀♀, INDIA, MEGHALAYA, Shillong, iv. 1976

Distribution ; Cosmopolitan.

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