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**Report on Two New and Three Other Newly Recorded  
Species of *Drosophila* From India  
(Diptera : Drosophilidae)**

**B.K. Singh and J.P. Gupta**  
Genetics Laboratory, Department of Zoology, Banaras  
Hindu University, Varanasi, India

**ABSTRACT**

Description of five species belonging to the subgenus *Drosophila* are provided. Of these, *D. penidentata* and *D. neokuntzei* are new, while *D. trizonata*, *D. multispina* and *D. notostriata* are recorded for the first time from India. A close relationship of the new species in the subgenus is established.

**INTRODUCTION**

Despite the prominent position which members of the genus *Drosophila* have occupied in genetic research, studies concerning drosophilid species inhabiting the subcontinent of India have largely been neglected. Within the last decade, workers in this country have shown renewed interest resulting in the accumulation of considerable data on Indian species (see Gupta 1974 for review). Since then a few papers pertaining to Indian drosophilid species have also appeared (Vaidya and Godbole 1976; Singh and Gupta 1977; Prakash and Reddy 1977). Unfortunately these studies have been confined to a few regions and a wide area of great ecological interest still awaits exploration. This paper embodies the results of several surveys undertaken in different areas of northeastern India.

**MATERIALS AND METHODS**

Material for the present study was collected from areas near Shilong, Meghalaya. Flies were usually collected by exposing fermented fruits as baits in small containers, generally of 500 ml capacity. Besides this, net sweeping was also done over wild vegetation, fallen flowers, and decaying fruits. The flies thus trapped are sorted out and studied for different taxonomic characters following the details as described by Gupta (1969). The Holotypes

and Paratypes of the new species were deposited in the Museum, Department of Zoology, Banaras Hindu University, Varanasi, India. One specimen of the Paratype series was also sent to the Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

### TAXONOMIC DESCRIPTIONS

#### *Drosophila (Drosophila) penidentata* n. sp.

Holotype ♂, India: Motinagar forest, Khasi hill, Shillong district, Meghalaya, 30.4.1976, B.K. SINGH and J.P. GUPTA. r 18 23439

Paratypes: 2♀, same locality and collectors as holotype.

Holotype Male: Arista with 5 dorsal and 2 ventral branches in addition to terminal fork. Antenna with second segment yellow; third segment slightly darker. Frons tan. Carina tan and high. Face and cheek brownish, greatest width of cheek from base of oral to eye border about 1/7 greatest diameter of eye. Orbitals in the ratio of 9:3:9. Second oral seta thin, about half as long as vibrissa. Palpus yellowish, with about 3 marginal setae. Eyes bright red.

Acrostichal setae regular, in 8 rows between dorsocentrals. Anterior scutellars parallel; posterior scutellars crossing each other. Distance from anterior dorsocentral to posterior dorsocentral about half distance between first two dorsocentrals. Mesonotum and scutellum unicolorous, pale. Thoracic pleura yellowish. Sterno-index about 0.65, middle sternopleural bristles thin and as long as anterior one. Legs yellow, preapicals on all three tibiae; apicals on first and second tibiae. Metatarsal and second tarsal segments of male prothoracic legs with dense cluster of fine setae.

Wing (Fig. 1G): transparent, cross veins somewhat fuscous. Indices: C-index 3.45; 4V-index 1.63; 4C-index 0.73; 5X-index 1.18. Two equal setae at the apex of first costal section; heavy setae on basal half of third costal section. Halter yellow.

Abdominal tergites 1-3 yellow, with narrow, medially interrupted dark bands; remainder of abdomen completely dark brown dorsally, yellowish laterally.

Periphallalic organs (Fig. 1H): genital arch dark brown, narrow, with heel and toe at the same level, upper portion of genital arch bare, lower portion with 11 large stout setae arranged in two rows; upper one with 4 and lower one with 7 large setae. Clasper rectangular with 20 small black teeth arranged in a concave row, and 40 apically pointed secondary teeth covering greater portion of clasper. Anal plate large, nearly quadrate, with about 35 long setae and numerous short setae at lower tip.

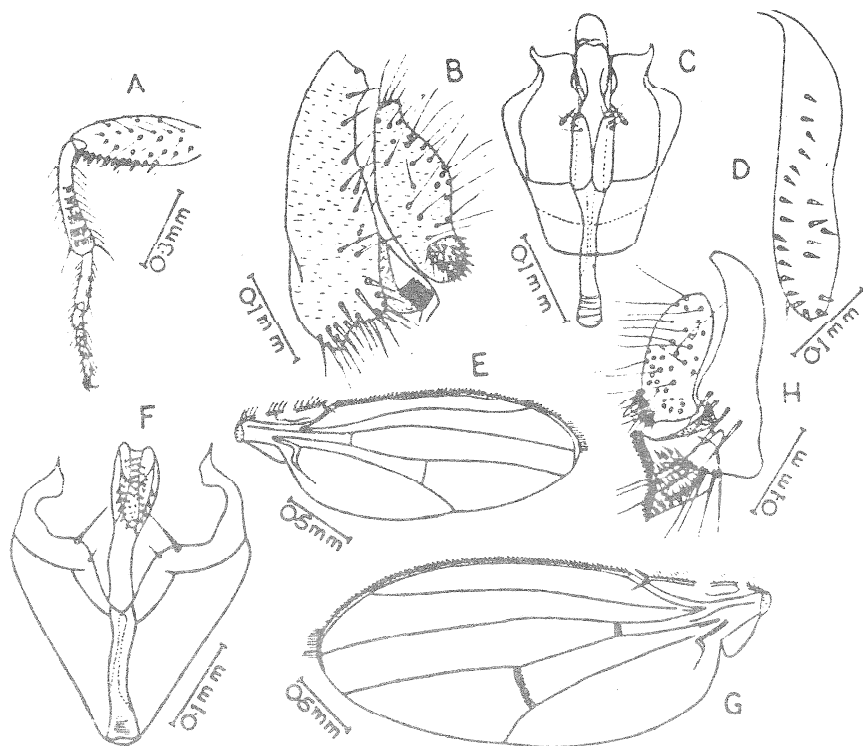


Fig. 1 (A-E) *Drosophila notostrata* <sup>Okada</sup>: A, male fore leg; B, periphallallic organs; C, phallic organs; D, egg-guide; E, male wing  
(F-H) *Drosophila penidentata* n. sp.: F, phallic organs; G, male wing; H, periphallallic organs.

Phallic organs (Fig. 1F): aedeagus brown, apically with a large ventrally directed spur, with numerous small conical processes; basal apodeme as long as aedeagus. Anterior parameres small, fused with novasternum, each with one apical sensillum. Posterior parameres obscure. Novasternum with lateral processes and with a pair of submedian spines. Ventral fragma triangular.

Average length of male (2 males): 2.9 mm.

Diagnosis: *D. penidentata* seems to be a member of *quinaria* group, where it somewhat resembles *D. unispina* Okada in having crossveins fuscous and closer wing vein indices, but distinctly differs from it in having different male genitalia.

Distribution: India.

✓ *Drosophila (Drosophila) neokuntzei* n. sp.

Holotype ♂ India: Motinagar forest, Khasi hill, Shillong district, Meghalaya, 30.4.1976, B.K. SINGH and J.P. GUPTA. [ 2 ♂ 21435

Paratypes: 18 ♂, 2 ♀, same locality and collectors as holotype.

Holotype Male: Arista with 4-5 dorsal and 2-3 ventral branches in addition to terminal fork. Antenna with second segment pale; third segment little darker. Frons including ocellar triangle orange yellow. Orbitals in ratio of 6.3:9. Carina yellowish, high, little broader below. Palpus yellowish, with 3-4 marginal setae. Face and cheek pale, greatest width of cheek from base of oral to eye border about 1/5 greatest diameter of eye. Second oral seta about half length of vibrissa. Eyes bright red.

Acrostichal setae regular, in 6 rows in front of dorsocentrals. Anterior scutellars convergent. Distance from anterior dorsocentral to posterior dorsocentral about half distance between first two dorsocentrals. Mesonotum and scutellum unicolorous, orange yellow. Thoracic pleura pale brownish. Sterno-index about 0.53. Legs pale, preapicals on all tibiae; apicals on first and second tibiae.

Wing (Fig. 3C): transparent, cross veins deeply clouded. Indices: C-index 3.77; 4V-index 1.51; 4C-index 0.74; 5X-index 1.1. Heavy setae on basal half of third costal section.

Abdominal tergites in male with dark brown, medially interrupted, apical bands becoming narrower laterally, posterior tergites completely smoky.

Periphallalic organs (Fig. 3B): genital arch broad dorsally, tapering ventrally, upper portion bare, lower portion with about 7 setae. Clasper broader apically, with 10 black teeth arranged in a concave row, 2 similar secondary teeth and 3 bristle like teeth arranged medioventrally and a cluster of few short setae ventrally. Anal plate large, oval, with numerous large setae.

Phallic organs (Fig. 3A): aedeagus large, straight, apically somewhat concaved and dilated, ventromedially with several curved processes. Anterior parameres long, narrow with 2 sensilla apically. Caudal margin of novasternum S-shaped, with a pair of submedian strong spines. Ventral fragma triangular.

Allotype ♀: Resembles male except in the absence of sex comb and posterior tergites not smoky.

Egg-guides (Fig. 3D): lobe large, apically broadly rounded, with about 14 marginal and 4 discal teeth. Basal isthmus short.

Average length of male (9 males): 2.21 mm.

Average length of female (2 females): 2.5 mm.

Diagnosis: This species superficially resembles *D. kuntzei* Duda, but differs from it in having the genital arch tapering ventrally, clasper with

Species of *Drosophila* from India

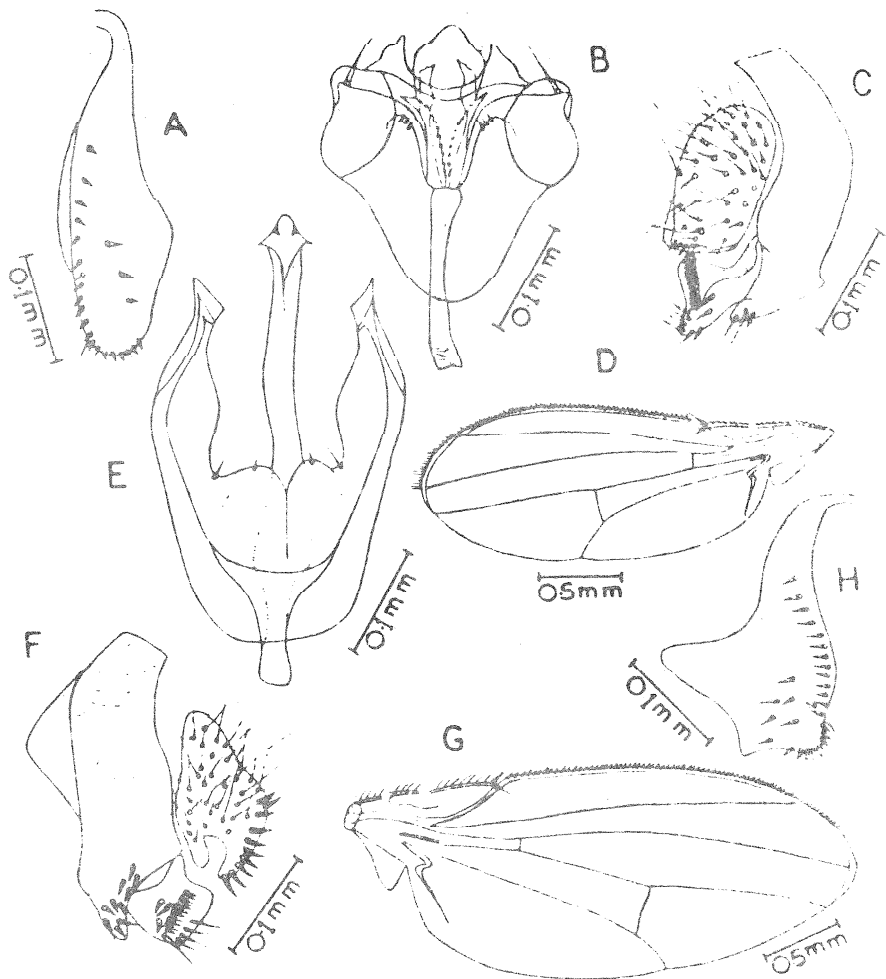


Fig. 2 (A-D) *Drosophila trizonata*: A, egg-guide; B, phallic organs; C,Periphallic organs; D, male wing.  
(E-H) *Drosophila multispina*: E, phallic organs; F, periphallic organs; G, male wing; H, egg-guide

12 stout black teeth and ventral fragma triangular.

Distribution: India

*Drosophila (Drosophila) trizonata* Okada

*Drosophila trizonata* Okada, 1966, Bull. Br. Mus. (Nat. Hist.) Ent. Suppl. 6:97

Male and female: General features as described by Okada (1966)

Wing (Fig. 2D): transparent. Indices: C-index 3.5; 4V-index 1.7.

4C-index 0.7; 5X-index 1.5.

Periphallallic organs (Fig. 2C): genital arch narrowing ventrally and not directed posteroventrally like a finger. Other details as described by Okada (1966).

Phallic organs (Fig. 2B): aedeagus with some large processes with serrated margins surrounding its base. Other details as described by Okada (1966).

Egg-guides (Fig. 2A): lobe broadly rounded at tip, with about 20 marginal and 3 discal teeth. Basal isthmus narrow.

Distribution: Nepal and Shillong (India) (new record).

✓ *Drosophila (Drosophila) multispina* Okada

*Drosophila multispina* Okada, 1956, Syst. Study Dros. Japan, 143.

Male and female: General features as described by Okada (1956).

Wing (Fig. 2G): transparent. Indices: C-index 3.45; 4V-index 1.33; 4C-index 0.64; 5X-index 1.1.

Periphallallic organs (Fig. 2F): lower portion of genital arch with 10 stout toothlike setae. Anal plate ventrally narrowing and with 10 stout black teeth. Other details as described by Okada (1956).

Phallic organs (Fig. 2E): As described by Okada (1956).

Egg-guides (Fig. 2H): lobe somewhat quadrate, anterior margin with submedian process, and about 22 marginal and 6 discal teeth.

Distribution: Japan and Shillong (India) (new record).

✓ *Drosophila (Drosophila) notostriata* Okada

*Drosophila notostriata* Okada, 1966, Bull. Br. Mus. (Nat. Hist.) Ent. Suppl. 6: 107.

Male and female: General features as described by Okada (1966). Forefemur with two types of spinules (Fig. 1A).

Wing (Fig. 1E): transparent. Indices: C-index 3.3; 4V-index 1.9; 4C-index 0.9; 5X-index 1.6.

Periphallallic organs (Fig. 1B): anal plate ventroapically with about 25 toothlike setae. Other details as described by Okada (1966).

Phallic organs (Fig. 1C): aedeagus straight, apically somewhat swollen, mediolaterally with fine serrations. Anterior parameres elongated. Other details as described by Okada (1966).

Egg-guides (Fig. 1D): lobe pale yellow, somewhat rounded apically, with about 17 marginal and 5 discal teeth.

Distribution: Nepal and Shillong (India) (new record).

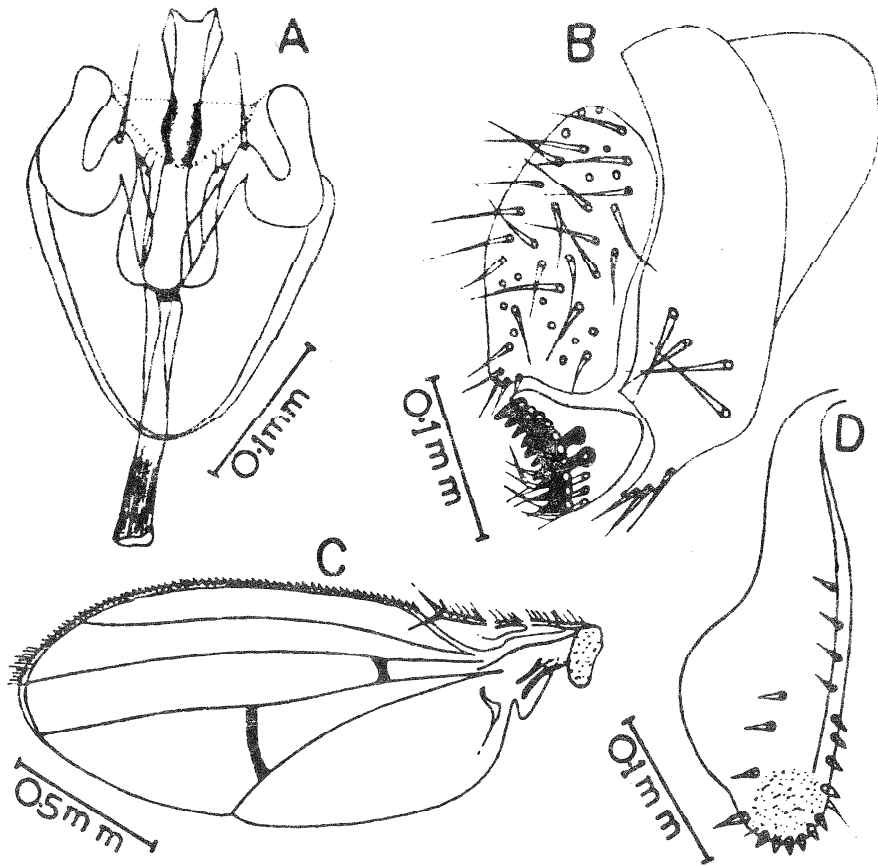


Fig. 3 (A-D) *Drosophila neokuntzei* n. sp.: A, phallic organs; B, periphallic organs; C, male wing; D, egg-guide.

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