

Records of two known and one new species of *Drosophila* (Drosophilidae : Diptera) from India

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MS received 1 September 1979

Abstract. Taxonomic account for three *Drosophila* species is provided. Of these, *D. mediobandes* is new to science, while *D. obscuricornis* and *D. coel* are recorded for the first time from India.

Keywords. Drosophilidae ; Diptera ; taxonomic account ; *Drosophila mediobandes* ; *Drosophila obscuricornis* ; *Drosophila coel*.

1. Introduction

India possesses a rich, and at present little known fauna of *Drosophila*. During recent years a considerable amount of attention has been given by *Drosophila* geneticists to the field observations of *Drosophila* especially in connection with ecology and geographical distribution. However, a vast area of the Indian subcontinent still awaits exploration.

More recently several surveys were undertaken in various localities of north-east India which have yielded several new species (Dwivedi 1979; Dwivedi and Gupta 1979; Gupta and Singh 1977; Singh and Gupta 1980 *a, b*). The present paper deals with the results of further studies made in this region.

2. Materials and methods

Material for the present study was collected from areas near Shillong (Meghalaya) and Darjeeling (West Bengal). Methods for collecting flies were the same as described by Singh and Gupta (1980 *a*).

3. Taxonomic description

3.1. *Drosophila* (*Drosophila*) *mediobandes* sp. nov.

Male and female : Arista with 4 dorsal and 2 ventral branches in addition to terminal fork. Antennae with second segment dark brown and third segment yellowish brown. Frons including ocellar triangle yellowish brown. Orbitals

in ratio of 7 : 3 : 9. Second oral seta thin, about half as long as vibrissa. Palpi yellow, with one prominent apical and 3 marginal setae. Carina light brown, high and broadened below. Face and cheek brown, greatest width of cheek one-sixth greatest diameter of eye. Eyes dark red.

Acrostichal setae in six regular rows. Anterior scutellars parallel; posterior scutellars crossing each other. Distance between anterior and posterior dorso-central half of distance between first two dorsocentrals. Mesonotum, scutellum and thoracic pleura unicolorous, yellowish brown. Sterno-index 0.7.

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

Abdominal tergites yellow, with medially and sublaterally projected apical black bands.

Wings (figure 1D): clear, cross veins deeply fuscous: C-1 bristles two; C-3 bristles on basal two-fifth of third costal section. Indices: C-index 3.28; 4V-index 1.71; 4C-index 0.76; 5X-index 1.24. Halteres yellow.

Average length of wing: 3.47 mm (♂); 3.62 mm (♀).

Average length of body: 3.0 mm (♂); 3.33 mm (♀).

Periphallalic organs (figure 1C): Genital arch yellow, pubescent, toe narrow and pointed, upper portion with 2 bristles; lower portion with 11 bristles. Clasper distally broad, with 10 black teeth arranged in a slightly concave row along entire outer margin; dorsomedially with 4 stout black bristles, and with 4 fine setae ventrally. Anal plate large, oval, with 26 long bristles and 3-4 short setae at lower tip.

Phallic organs (figure 1A): Aedeagus yellowish brown, apically swollen and divided into two pointed processes bearing few serrations medially; basal apodeme of aedeagus as long as aedeagus. Anterior parameres large and slightly conical, basally attached to aedeagus, with two pairs of apical sensilla. Posterior parameres obscure. Caudal margin of novasternum with a pair of submedian spines. Ventral-fragma broadly rounded distally.

Egg-guides (figure 1B): Lobe yellowish brown, rounded at tip, with 16 brownish marginal and 4 yellowish discal teeth; ultimate tooth little apart from other marginal teeth. Basal isthmus narrow.

Holotype ♂, India: Ramam, Darjeeling district, West Bengal, May 1977, Colls. Dwivedi and Gupta.

Paratypes: 2 ♂♂, 7 ♀♀; collection data same as holotype.

All type specimens are at present deposited in the Museum, Department of Zoology, Banaras Hindu University, Varanasi. 1 ♂, 2 ♀♀, from the paratype series are also deposited in the "*Drosophila* Collection" of the Department of Biology, Tokyo Metropolitan University, Setagaya-Ku, Tokyo, Japan.

Distribution: India.

Okada (personal communication, 1978) has pointed out that *D. mediobandes* is a new species belonging to the *quinaria* group. On comparison with other species of this group it appears to be a unique species in the possession of aedeagus which is apically swollen and divided into two pointed processes bearing few serrations medially.

✓ 3.2. *Drosophila (Drosophila) obscuricornis* (de Meijere)

Stegana obscuricornis. de Meijere, 1915, *Tijd. v. Entomol.* 58 (Suppl.) 94 (Java).

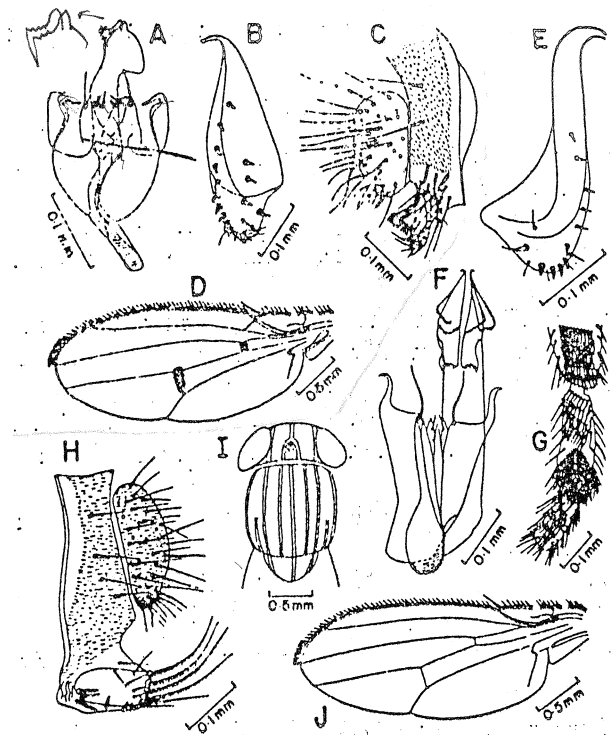


Figure 1. (A-D) *Drosophila mediobandes* sp. nov.: A, phallic organs; B, egg-guide; C, peripheral phallic organs; D, wing. (E-J) *Drosophila obscuricornis*: E, egg-guide; F, phallic organs; G, male fore leg; H, peripheral phallic organs; I, male head and thorax, dorsal aspect; J, wing.

Drosophila obscuricornis : Duda, 1924, *Arch. Naturgesch.* A 90 221 (Java).
Drosophila obscuricornis : Duda, 1926, *Suppl. Ent.* 14 107, 96 (Sumatra; redescription).
Drosophila obscuricornis : Wheeler, 1959; *Univ. Texas Publ.* 5914 185 (nomenclature, uncertain homonymy).
Zaprionus multistriata Sturtevant, 1927, *Philipp. J. Sci.* 32 365 (Philippine Islands).
Drosophila obscuricornis Grimshaw 1901 *Fauna Haw.* 3 72 (nec.).
Zaprionus obscuricornis : Okada, 1964, *Nature Life Southeast Asia* III : 442 (n. comb.).
Drosophila obscuricornis : Wilson *et al.*, 1969, *Univ. Texas Publ.* 6918 : 212 (*lineosa* subgroup, *immigrans* group); Okada, 1976, *Nature Life Southeast Asia* VII : 345.

Male and female : Arista with 3 dorsal and 2 ventral branches in addition to terminal fork. Antennae with second segment brown and third segment light brown. Frons brown, anteriorly tan, with two lateral and one median white

stripes; middle stripe encircling ocellar triangle (figure 2). Orbitals in ratio of 10 : 5 : 12.

Wings (figure 1J) : clear. Indices : C-index 5.75; 4V-index 1.66; 4C-index 0.52; 5X-index 1.22. Other details as described by Okada (1964).

Periphallic organs (figure 1H) : Genital arch brown, pubescent, elongate and curved ventrally, with upper 4 marginal large bristles and lower 3 short stout bristles apically. Clasper large, nearly quadrate, with 4-5 long bristles directed upward and ventrally with few short setae. Anal plate elongate, pubescent, with about 33 bristles.

Phallic organs (figure 1F) : Aedeagus long, stout and rod-shaped, apically with a pair of marginally serrated triangular flaps, subapically with another pair of small flaps, basal apodeme of aedeagus compressed, vertical rod developed. Anterior parameres small, fused with novasternum at base. Caudal margin of novasternum with a pair of submedian spines. Ventral fragma longer than broad.

Egg-guides (figure 1E) : Lobe yellowish brown, with about 11 marginal and 2 discal teeth. Basal isthmus narrow.

Specimens examined : 4♂♂, 3♀♀, November 1976, Motinagar forest, Khas; Hill, Shillong district, Meghalaya. Colls. Dwivedi and Gupta.

Distribution : Borneo, Sumatra, Java, Philippine Islands, Celebes and India (new record).

3.3. *Drosophila (Sophophora) coei* Okada

Drosophila coei Okada, 1966, Bull. Brit. Mus. (Nat. Hist.) Ent. Suppl. 6 82 (Nepal).

Male and female : Arista with 5-6 dorsal and 3 ventral branches in addition to terminal fork. Orbitals in ratio of 6 : 3 : 9. Anterior dorsocentral two-third length of posterior dorsocentral. Other details as described by Okada (1966).

Periphallic organs (figure 2B) : Genital arch dark brown, broad, pubescent with a small triangular projection above the insertion of clasper, and with 12 large bristles. Anal plate brown, oval, pubescent, with several large bristles and a few fine setae ventrally. Clasper large, dark brown, with 10-11 black teeth arranged in a straight row covering dorsal portion of outer margin.

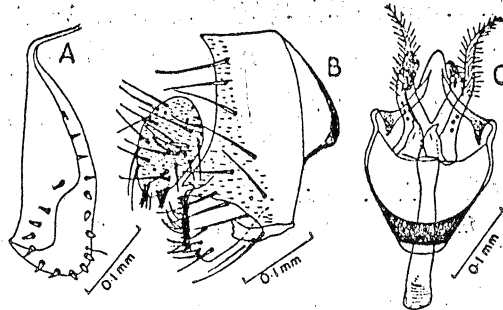


Figure 2. (A-C) *Drosophila coei* : A, egg-guide ; B, periphallic organs ; C, phallic organs.

Phallic organs (figure 2C) : Aedeagus large, fusiform, and with a pair of elongate processes attached to its base having several fine tubercles apically, basal apodeme quite long. Anterior parameres large, with dense hairs apically, a row of sensilla in middle and with ventrally curved large processes basally. Caudal margin of novasternum dorsolaterally extended into large processes somewhat resembling posterior parameres. Ventral fragma triangular.

Egg-guides (figure 2A) : Lobe yellowish brown, elongate, rounded distally, with 13 marginal and 3-4 yellowish discal teeth. Basal isthmus long.

Specimens examined : 2 ♂♂, 1 ♀, November 1976, Motinagar forest, Khasi Hill, Shillong district, Meghalaya. Colls. Dwivedi and Gupta.

Distribution : Nepal and India (new record).

Acknowledgements

The authors are grateful to Dr T Okada, Emeritus Professor, Department of Biology, Tokyo Metropolitan University, Tokyo, Japan for extending his help in confirming the identifications and to Prof. J P Thapliyal for providing laboratory facilities. Financial support to JPG and YND from the University Grants Commission, New Delhi and the Council of Scientific and Industrial Research, New Delhi, respectively is gratefully acknowledged.

References

- Dwivedi Y N 1979 Description of two new species of subgenus *Drosophila* (Drosophilidae : Diptera) from Darjeeling, India ; *Proc. Indian Acad. Sci. (Animal Sci.)* B88 299
- Dwivedi Y N and Gupta J P 1979 Three new drosophilids from northeast India (Diptera : Drosophilidae) ; *Entomon.* 4 183-187
- Gupta J P and Singh B K 1977 Two new and two unrecorded Indian species of *Drosophila* (Diptera) from Kurseong, Darjeeling ; *Entomol. Mon. Mag. (Oxford)* 113 71-78
- Okada T 1964 Drosophilidae (Diptera) of southeast Asia collected by the Thai-Japanese Biological Expedition, 1961-62 ; *Nature Life Southeast Asia* 3 439-466
- Okada, T 1966 Diptera from Nepal : Cryptochaetidae, Diastatidae and Drosophilidae ; *Bull. Brit. Mus. (Natur. Hist.) Entomol. Suppl.* 6 1-129
- Singh B K and Gupta J P 1980a Two new and two unrecorded species of the genus *Drosophila* Fallen (Diptera : Drosophilidae) from Shillong, Meghalaya, India ; *Proc. Zool. Soc. (Calcutta)* (in press)
- Singh B K and Gupta J P 1980b Report on two new and three other newly recorded species of *Drosophila* from India (Diptera : Drosophilidae) ; *Stud. Nat. Sci. (Portales, NM)* (in press)