

DROSOPHILA MYSORENSIS — A NEW SPECIES OF DROSOPHILA
(DIPTERA: DROSOPHILIDAE) FROM MYSORE, SOUTH INDIA

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✓ DROSOPHILA MYSORENSIS Sp. n.

Mysore area (India) has not been thoroughly investigated as to the numerous and diverse species of *Drosophila*. A new species *Drosophila rajasekari* was reported in 1968 (Reddy & Krishnamurthy, 1968). During the collection trips, traps from Srirangapatna (9 miles from Mysore City), Lucerne gardens and sewage farm in Mysore city and Mercara (70 miles South of Mysore) yielded several males and females which were different from those so far described (Patterson and Stone, 1952; Okada, 1953; Wheeler, 1959; Hardy, 1966). The most distinguishing characters are the prominent sex combs in the male and dark abdominal pigmentation in the female.

MORPHOLOGY

Males and females are bright yellow flies. Females are slightly darker and larger than males. The mean body length of the female is 2.24 mm ranging from 2.06 mm to 2.48 mm and that of males is 1.88 mm ranging from 1.80 mm to 2.12 mm.

Head — Arsta with 8 branches (6/2) including forked. Antenna light tan brown. Face yellow. Vibrissae with two long and one medium sized bristles in addition to a number of shorter ones. Anterior orbitals proclinate, $\frac{3}{4}$ the size of the posterior. Posterior reclinate and longest. Mid-orbital reclinate and about $\frac{1}{2}$ the size of the posterior. Palpi pale yellow with a single stiff bristle. Cheeks broad and light yellow. Carina narrow and tannish yellow. Eyes dark red. Inner verticals approximately as long as the outer. Post vertical $\frac{1}{3}$ the size of the anterior vertical.

Thorax — Brownish yellow. Acrostichals regular in eight rows. Anterior scutellars convergent. Posterior scutellars convergent and crossed. Prescutellars absent. Anterior dorsocentrals smaller than the posterior. Scutellum dark brown.

Posterior supraalars longer than the anterior. Anterior sternopleural about $1/2$ the size of the posterior, the middle one is absent. Halteres tan yellow.

Wings — Smoky and hyaline. Mean length of the wing in males is 1.80 mm. ranging from 1.70 to 1.90 mm. That of the female is 1.95 mm. ranging from 1.88 to 1.97 mm.

Wing indices:

	Costal index	Fourth vein index	Fifth vein index
Male	2.46 ranging from 2.15 to 2.81	2.57 ranging from 2.20 to 3.30	2.27 ranging from 1.75 to 3.00
Female	2.71 ranging from 2.36 to 3.16	2.47 ranging from 2.25 to 2.70	2.30 ranging from 2.00 to 3.00

Legs: Preapicals on all tibiae. The first and second tarsi of the two legs in male carry large prominent sex combs in two groups. The first group consists of 17 to

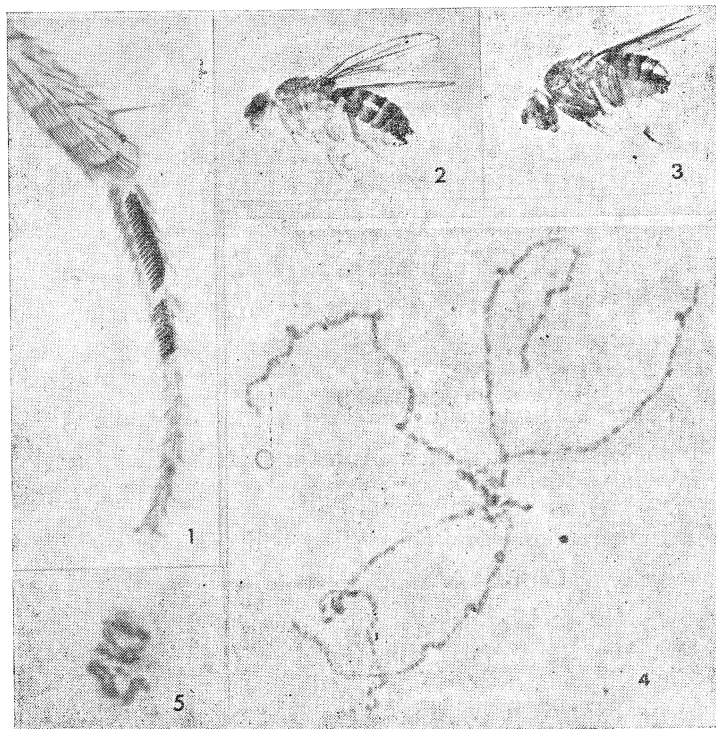


Plate I: 1. Fore leg of male showing sex combs. 2. Female fly. 3. Male fly. 4. Salivary gland chromosomes of female larva. 5. Somatic metaphase of male.

19 teeth while the second group has 10 to 12 teeth. In both the groups the proximal teeth are smaller than the distal ones. (Fig. 1, Plate I).

Abdomen: Bright yellow. Tergites darkly pigmented at posterior margins. Pigmentation is broader on the mid dorsal portion of the tergites and is narrowed laterally. The first abdominal tergite has its pigmentation interrupted in the middle. Further the intensity of the abdominal pigmentation is more in females than in males (Figs. 2 and 3, Plate I). Sternal plates are darker than the other parts.

Internal Characters: Malpighian tubules forked and free. Testis light yellowish brown with $2\frac{1}{2}$ coils. Paragonia highly transparent (Fig. 1, Plate II). Spermatheca round. Ventral receptacle long and coiled (Fig. 2, Plate II).

Eggs: Eggs with two filaments with club-shaped terminal ends (Fig. 3, Plate II).

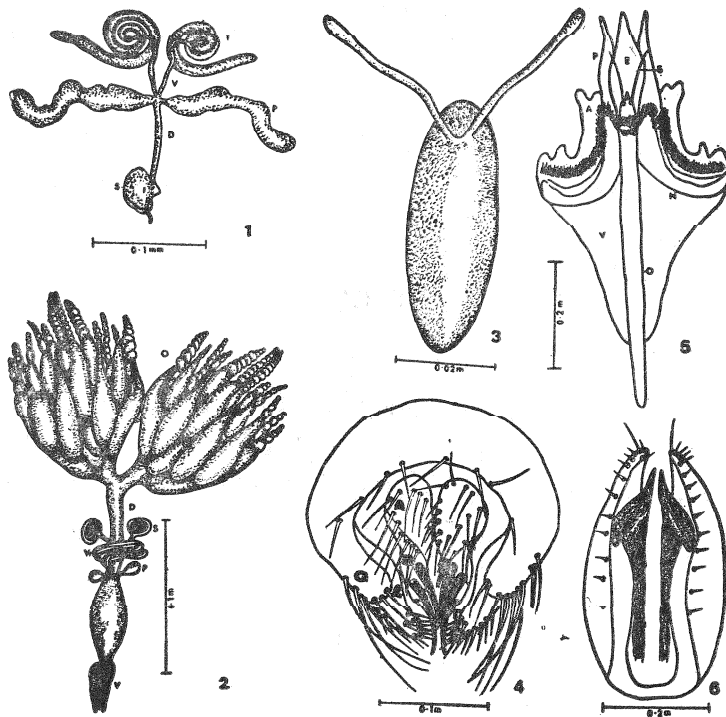


Plate II. Fig. 1. D—Anterior ejaculatory duct, P—Paragonia, S—Sperm pump, T—Testis, V—Vas deferens.
 Fig. 2. D—Oviduct, O—Ovary, P—Paraovaria, S—Spermatheca, V—Vagina, Vr—Ventral receptacle.
 Fig. 4. A—Anal plate, G—Genital arch, P—Primary clasper, S—Secondary clasper.
 Fig. 5. A—Anterior paramere, E—Aedeagus, N—Novasternum, O—Basal apodeme of the aedeagus, P—Posterior paramere, S—Submedian spine of the novasternum, V—Ventral fragma.
 Fig. 6. Egg guides.

Pupa: Pupa with 12 anterior spiracular filaments.

Periphallitic Organs: The genital arch is broad and carries 8 to 12 long slender bristles. The primary and secondary claspers are present. Primary clasper is devoid of teeth but has 12 to 13 bristles arranged on the outer and inner margins. Secondary clasper originates from the posterior ventral side of the anal plate and carries two long chitinized teeth, a feature of diagnostic importance of this species (Fig. 4, Plate II).

Phallic Organs: Aedeagus spindle-shaped and apically pointed. Anterior paramere broad and short with a number of median sensilla and is independent of the aedeagus. Posterior parameres simple lying one on either side of the aedeagus. Ventral fragma triangular slightly longer than broad. Novasternum with blunt lateral process and a conical median projection without a median notch. A pair of very long submedian spines originate from the apex of the conical median projection (Fig. 5, plate II).

Egg Guides: Brown in colour and pointed with 13 to 14 teeth. A brownish folded structure brushy in appearance extends along the lumen of the egg guide (Fig. 6, Plate II).

CYTOLOGY

Somatic metaphase of the female larval neuroblast cells reveal three pairs of 'V'-shaped chromosomes, a pair of which is smaller and a pair of dots. In males one of the small 'V'-shaped chromosomes is replaced by a submetacentric chromosome representing the 'Y' chromosome (Fig. 5, Plate I). The salivary gland nuclei reveal five long arms and a short arm radiating from the chromocenter (Fig. 4, Plate I).

DISCUSSION

The presence of two egg filaments, the nature of puparia, the number of vibrissae, palpal bristles, number and appearance of Malpighian tubules and coiled nature of the testes permit the inclusion of this new species in the *melanogaster* species group of the subgenus *Sophophora*. The presence of two groups of prominent sex combs, peculiar origin of the secondary clasper with two long chitinized teeth and the greater intensity of the abdominal pigmentation in females are the

distinguishing features of these flies which qualify them to the status of a new species as these characters are not found together in any known species studied thus far. The only species that has a morphological nearness is *Drosophila montimum* (Okada, 1954) but then the flies under study differ from it in possessing triangular ventral fragma and number of median sensilla on the anterior paramere. Hence the form described in the article deserves the status of a new species and named as *Drosophila mysorensis* after the City Mysore, South India where the flies were trapped for the first time.

= kikihawai

Holotype males and females are deposited in the Department of Zoology, Manasa Gangotri, University of Mysore, Mysore, India. Ten paratype males and females are being placed in the University of Texas, reference collections.

SUMMARY

A new species of the sub-genus *Sophophora* of the Genus *Drosophila* collected from Mysore and its surroundings is described. Studies of morphological characters, internal features of pupae and imagines of both sexes on the one hand and comparative study of somatic metaphase chromosomes and salivary gland chromosomes on the other have been made. Systematic position of this new species is discussed.

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