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✓ **DROSOPHILA RAJASEKARI—A NEW SPECIES
FROM MYSORE (INDIA)**

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DROSOPHILA RAJASEKARI—A NEW SPECIES FROM MYSORE (INDIA)

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PATTERSON and Stone (1952), list eight subgenera under the genus *Drosophila*. Wheeler (1959) recognizes 750 biologically valid species under this genus distributed in various parts of the world. Hardy (1966) has added some more new species. A new species *Drosophila rajasekari* collected from lucerne gardens of Mysore City and Hosa Agrahara 40 miles north of Mysore City is reported in this communication.

Drosophila rajasekari sp.n.

Males and females are light yellow flies. Mean body length of males is 2.07 mm. ranging from 1.9 to 2.4 mm., and that of females is 2.63 mm. ranging from 2.4 to 2.8 mm.

Head.—Arista with 8 to 9 branches in addition to terminal fork. Antenna brownish-yellow. Face light yellow, carina narrow, cheeks round and broad. Vibrissae, of two stiff long dark bristles in addition to a few short bristles. Palpi yellowish-brown with one stiff dark bristle in addition to a few short hairs. Anterior orbital proclinate, three-fourths the size of posterior orbital which is reclinate. Middle orbital reclinate and one-fourth the size of anterior orbital. Ocellar triangle shining and slightly broad.

Thorax.—Bright yellow. Achrostical hairs in eight rows two of which are irregular. Posterior scutellars convergent. Anterior scutellars parallel. Prescutellars absent. Anterior supra-alars small. Anterior dorso-centrals smaller than the posterior. Posterior sternopleural long and twice the length of anterior. Middle sternopleural three-fourths the length of the anterior.

Wings.—Smoky and hyaline. Wing of male (Fig. 1) with a black patch starting from distal part of the marginal vein and extending partly into the submarginal cell but not touching the 3rd longitudinal vein. Mean

length of the wings of males is 1.71 mm. ranging from 1.2 to 1.9 mm. Mean length of the wings of females is 2.0 mm. ranging from 1.8 to 2.1 mm. Mean costal index of males is 2.9 ranging from 2.5 to 3.3. Mean 5x index is 1.6 ranging from 1.3 to 2.0. Mean costal index of females is 2.9 ranging from 2.5 to 3.5. Mean fourth vein index is 2.1 ranging from 1.8 to 2.7. Mean 5x index is 1.7 ranging from 1.3 to 2.3. Halteres pale yellow.

Legs.—Light brown. Femur with 5 to 6 stiff bristles in female and 6 to 7 in male in addition to small ones. The metatarsus of the forelegs in male carries sex combs in two rows—the proximal row with 6 to 7 teeth and distal row with 3 teeth (Fig. 2). Tarsal claws dark and small. Preapicals present on all the three tibiae of females.

Abdomen.—Bright yellow. Fourth and fifth tergites darkly pigmented in males while in females dark brown pigmentation confined to posterior part of each segment with a median peak with the exception of the first segment where it is medially interrupted.

Male genital plate (Fig. 3).—Broad in the middle. Anterior margin slightly convex. Heel round. Toe slightly pointed. Genital arch carries 25 to 30 bristles. Primary clasper independent of the genital arch, roughly triangular bent anteriorly inwards and accommodates a primary row of 6 to 7 teeth. The under-margin carries 5 to 7 bristles. The secondary row with 3 to 4 teeth is present at the posterior outer angle of the primary clasper. The anal plate is roughly triangular with evenly scattered bristles ranging from 30 to 35.

Internal characters.—Testis yellow with three coils and paragonia as in *Drosophila melanogaster*. Spermathecae round and slightly chitinized. Ventral receptacle highly transparent convoluted tube. Two pairs of malpighian tubules present which are free at their terminal ends.

Eggs.—With two long filaments tapering terminally.

Pupa.—Brownish-yellow with about six anterior spiracular filaments.

Cytology.—Somatic metaphase configuration from neuroblast cells of female larva reveal two pairs of 'V'-shaped chromosomes one pair of which is longer, a pair of rods and a pair of dots. Two rods of equal size represent the X-chromosomes in female, while in male one of the rods is replaced by a small 'V'-shaped chromosome which represents the Y-chromosome (Fig. 4). Salivary gland nuclei reveal five long strands and a short strand radiating from the chromocenter. The hetero-

zygous inversions of low frequency are found in the Hosa Agrahara population (Fig. 5).

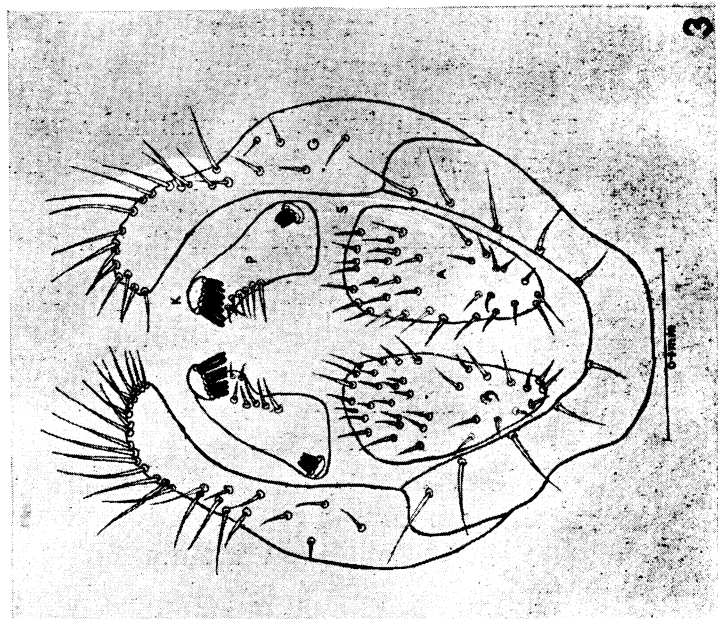
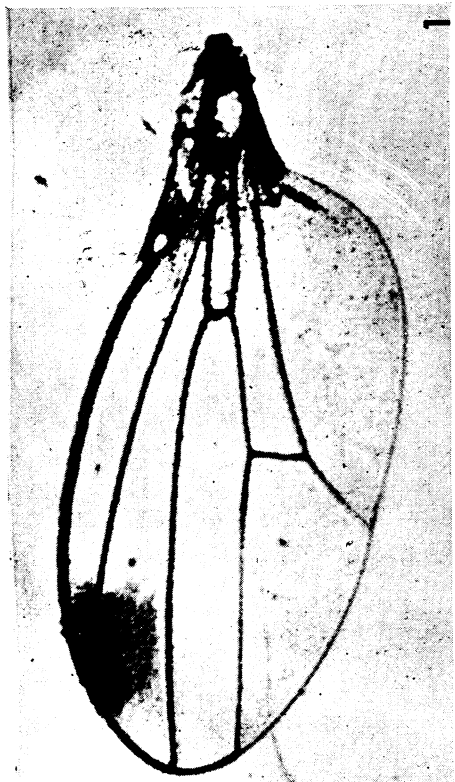
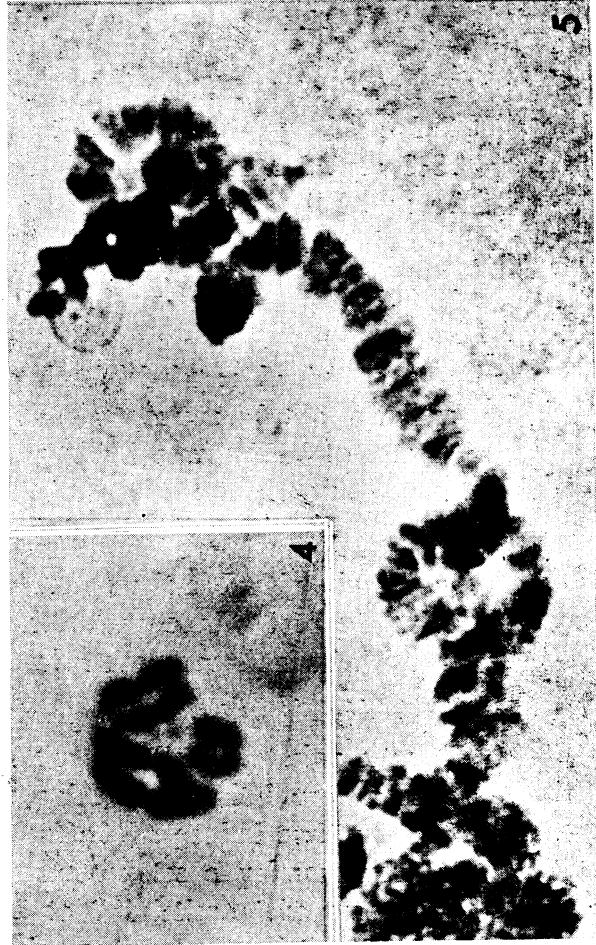
The new species, because of the two egg filaments, appearance of the puparia, number of vibrissae, palpal bristle, two pairs of malpighian tubules similar in orientation to *D. melanogaster*, permits its inclusion under the subgenus *Sophophora*. The abdominal pigmentation and the presence of sex combs in male brings it closer to *D. melanogaster*. However, the two rows of sex combs in males and the presence of dark black patch on the wing of male and the morphology of male genital plate are unlike that of *D. melanogaster*. On reference to literature (Tan, Hsu and Sheng, 1949; Hsu, 1949), we find the new species shows certain morphological characters similar to *D. suzukii* (Matsumura) and *D. pulchrella* (Tan, Hsu and Sheng). However, examination of the wing and the sex combs on the metatarsus of the new species in comparison with *D. suzukii* and *D. pulchrella* shows neither basal wing patch nor similarity in the number of teeth in sex combs of male. Further, the toe of the genital arch is slightly pointed and devoid of the tube-like process found in *suzukii*. There are certain glaring similarities between this new species and *Drosophila biarmipes* Malloch. However, the new species described in this article differs with regard to the arista in having 9 branches in addition to forked and sex combs with six and three teeth on first and second tarsi of male and further our description is more conclusive than given by Malloch (1924). Hence it has called our attention to elevate it to the level of a new species *Drosophila rajasekari* belonging to *suzukii* subgroup of the *melanogaster* species group of the subgenus *Sophophora*.

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.

The species is named in honour of Prof. M. R. Rajasekarasetty of the University of Mysore, Mysore, India.

ACKNOWLEDGEMENTS

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Figs. 1-5

REFERENCES

1. Patterson, J. T. and Stone, W. S. *Evolution in the Genus Drosophila*. The MacMillan Company, New York, 1952.
2. Wheeler, M. R. .. "A nomenclatural study of the genus *Drosophila*," *Univ. Texas Publ.* 5914, 1959, 181-205.
3. Elmo Hardy, D. .. "Descriptions and notes on the Hawaiian Drosophilidae, (Diptera)," *Ibid.*, 6615, 1966, 195-244.
4. Tan, C. C., Hsu, T. C. and Sheng, T. C. "Known *Drosophila* species in China with descriptions of twelve new species," *Ibid.*, 4920, 1949, 196-206.
5. Hsu, T. C. .. "The external genital apparatus of male Drosophilidae in relation to systematics," *Ibid.*, 4920, 1949, 80-142.
6. Malloch, J. R. .. "Two Drosophilidae from Coimbatore," *Mem. Dept. Agri. India Ent. Ser.*, 1924, 8 (3), 63-65.

EXPLANATION OF PLATE V

FIGS. 1-5

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- FIG. 1. Wing of male showing black patch at one end.
- FIG. 2. Part of the fore-leg of male showing two rows of sex comb.
- FIG. 3. Male genital plate (from Camera lucida drawing):
 - G = Genital arch.
 - P = Primary clasper.
 - K = Primary row of teeth.
 - S = Secondary row of teeth.
 - A = Anal plate.
- FIG. 4. Somatic metaphase of male *Drosophila rajasekari*.
- FIG. 5. Chromosome X showing simple proximal inversion and a subterminal inversion.