

TWO NEW SPECIES OF *DROSOPHILA*
(*SCAPTODROSOPHILA*)
(DIPTERA : DROSOPHILIDAE)

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ABSTRACT. Two new species, *Drosophila* (*Scaptodrosophila*) *krishnamurthyi* and *mundagensis*, are described from Karnataka and Maharashtra, India.

Drosophila is a large genus consisting of 1254 named species from the world (Wheeler and Hamilton, 1972). However only about 60 species have been recorded from India (Gupta, 1973) indicating the paucity of information on Indian *Drosophila*. Recent collection trips to Soundathi and Mangalore (Karnataka) have yielded two new species of the subgenus *Scaptodrosophila* which are described below. The wing indices are calculated as per the formulae of Okada (1956).

1. *Drosophila* (*Scaptodrosophila*) *krishnamurthyi*, sp. nov. (Figs. 1-4)

Male and Female : Comparatively large, for Indian species; brownish-yellow flies. Both males and females approximately of the same size; mean body length of female 3.03 mm, ranging from 2.94 to 3.21 mm and of male 2.99 mm, ranging from 2.86 to 3.09 mm. *Head* : Arista with (4/3) branches including apical fork; second segment of antenna carrying long stiff bristle in addition to two small stiff bristles; vibrissa with a long bristle followed by a few small bristles; eyes pilose; anterior orbitals proclinate, mid and posterior orbitals reclinate; anterior orbitals as long as posterior ones; mid orbitals 0.33 the size of anterior orbitals; post verticals convergent but not crossed; ocellar bristles proclinate; palpi light yellow with two stiff bristles. *Thorax* : Brownish-yellow. Acrostichal hairs in 8 rows; prescutellars well differentiated; anterior scutellars slightly divergent; posterior scutellars crossed and convergent; halteres light yellow; wings smoky and hyaline; mean length of the wing in males 2.51 mm ranging from 2.48 to 2.60 mm, and of females 2.49 mm ranging from 2.48 to 2.61 mm. Wing indices :

| Costal index | | 4V index | 4 C index | 5X index |
|--------------|-----------|-------------|-------------|-------------|
| 2nd Costal | | 4th Section | 3rd Costal | 4th Section |
| Section/ | | of IV Vein/ | Section/ | of IV Vein/ |
| 3rd Costal | | 3rd Section | 3rd Section | Posterior |
| Section | | of IV Vein. | of IV Vein. | Cross Vein |
| Female | 2.14 | 2.30 | 1.28 | 2.12 |
| | 1.73-2.53 | 2.06-2.58 | 1.25-1.31 | 1.66-2.40 |
| Male | 2.11 | 2.21 | 1.20 | 1.91 |
| | 2.05-2.17 | 2.11-2.30 | 1.17-1.23 | 1.83-2.00 |

Legs : Preapicals present on the first and second tibiae. *Abdomen* : No sexual dimorphism with regard to abdominal pigmentation; dark bands of terga laterally expanded forward reaching anterior margin and medially not interrupted. *Periphallic organs* (Fig. 1) : Epandrium somewhat oval in shape, narrow above and broader below; carrying 12 to 13 bristles; surstylus triangular and carrying 12 to 14 stout sclerotized teeth arranged in the form of 'S'; in addition to carrying 6 to 7 bristles of which two are long and pointed inwards; cerci free from epandrium and carrying 30 to 31 bristles including a tuft of small bristles at the lower end. *Egg guide* (Fig. 2) : Yellowish-brown with slightly blunt end carrying 18 to 19 marginal teeth of equal size and a few upper discal teeth. *Internal characters* : Malpighian tubules opposed, forked and free, testis orange-coloured and sac-like with fused vas deferens (Fig. 3); paragonia coiled and highly transparent; spermathecae sclerotized; paraovaria transparent; ventral receptacle coiled (Fig. 4); egg with 6 filaments.

The cytology of this species could not be analysed as it could not breed in laboratory.

Holotype ♂, INDIA : KARNATAKA : Dharwar : Soundatti, grape gardens, 5. ix. 1971, S. Nirmala Sajjan and N.B. Krishnamurthy. Deposited in the Museum of Department of Zoology, University of Mysore, Mysore. *Allotype* ♀, data as above. *Paratypes* : 2♂♂, 3♀♀, KARNATAKA : Dharwar : Soundatti, S. Nirmala Sajjan and N.B. Krishnamurthy. MAHARASHTRA : Poona, 2♀♀, 2♂♂, 18.x.1973, G. Sreerama Reddy and H.B. Devaraj Sarkar. 2♀♀, and 2♂♂, deposited in Department of Biology, Tokyo Metropolitan University, Setagaya-Ku, Tokyo, Japan and some will be deposited in Z.S.I., Calcutta, I.A.R.I., New Delhi and in the University of Texas reference collections.

Distribution : India : Karnataka and Maharashtra.

Drosophila (*Scaptodrosophila*) *krishnamurthyi* is close to *D. interrupta* Duda from New South Wales, in having dark bands on the abdominal terga being laterally expanded forward to reach anterior margins. It, however, differs from *D. interrupta* in having uninterrupted bands. Further, *D. krishnamurthyi* differs from *D. chandrabhiana* Gupta and Ray-Chaudhuri (1970) in not having scattered silvery white spots on mesonotum and scutellum, and from *D. silvalineata* Gupta and Ray-Chaudhuri (1970) in not having silvery striations. Though it resembles *D. paratriangulata* Gupta and Ray-Chaudhuri (1970) and *D. latifshahi* Gupta and Ray-Chaudhuri (1970) in having unicoloured mesonotum and scutellum, it differs from these in the nature of testis, the number of teeth and the shape of the surstylus, of the egg guide and other characters. *D. krishnamurthyi* by virtue of having peculiar sac like testis with fused vas deferens and highly coiled transparent paragonia, surstylus with teeth arranged in 'S' shape coupled with monomorphism in size and abdominal pigmentation in males and females deserves a specific status.

The species is named in honour of Dr. N.B. Krishnamurthy, of the University of Mysore, Mysore, India.

✓ 2. *Drosophila* (*Scaptodrosophila*) *mundagensis*, sp. nov. (Fig. 5-7).

Male and female : Small, light yellow flies. Mean body length of male 1.66 mm, ranging from 1.64 to 1.68 mm, and of female 1.69 mm ranging from 1.67 to 1.70 mm. *Head* : Arista 9 branched, including fork (6/3); second antennal segment silvery-white, terminal segment brownish-tan; palpi yellow with two stiff bristles followed by smaller ones; eyes dark red and pilose; anterior orbital bristles proclinate; mid orbitals reclinate and about $0.5\times$ the size of the anterior; posterior orbitals reclinate and $2.0\times$ the length of the anteriors; anterior verticals slightly convergent and longer than posterior verticals; ocellar bristles proclinate; postverticals small, $0.33\times$ the size of ocellar bristle; Carina narrow, with a light silvery streak running along the lower part of the orbit. *Thorax* : Mesonotum and scutellum yellowish; acrostichals in 8 rows; anterior scutellars convergent; posterior scutellars convergent and crossed; a pair of prescutellars present; halteres pale yellow; wings smoky and hyaline; wing length 1.52 mm in male. *Wing indices* : In male, costal index (2nd costal section/3rd costal section) 1.23; 4 V index (4th section of IV Vein/3rd section of IV Vein) 3.00; 4 C index (3rd costal section/3rd section of IV Vein) 2.30; and $5\times$ index (4th section of IV Vein/Posterior Cross Vein) 3.40. *Legs* : Preapicals on all the tibiae; about 5 to 6 bristles on precoxal region of the second leg. *Abdomen* : Broadened and highly rounded posteriorly in males; no distinct sexual dimorphism with regard to pigmentation. *Periphallic organs* (Fig. 5) : Epandrium hairy, broader below with a triangular shelf-like projection above the surstylus, bearing a few small bristles; surstylus hairy and carrying 9 small stout teeth and two bristles; cerci free from epandrium, hairy, oblong and carrying about 13 bristles. *Egg guide* (Fig. 6) : Small, slender, yellowish-brown with about 15 teeth including a few upper discal teeth. *Internal characters* : Testis (Fig. 7) sac-like, greenish, paragonia transparent and the sperm pump whitish in colour; malpighian tubules forked and free at their ends and are thus similar to *D. chandrabhiana* Gupta and Ray-Chaudhuri; egg with 8 filaments.

As these flies could not be bred under laboratory conditions, their cytology could not be analysed.

Holotype ♂, INDIA : KARNATAKA : Mangalore : Mundage, 21.xi.1971, Kathyayini Bhide. Deposited in the Museum of Department of Zoology, University of Mysore, Mysore. *Allotype* ♀, data as above. *Paratypes* : KARNATAKA : Mangalore : Mundage, 4♂♂ 4♀♀, Kathyayini Bhide; KARNATAKA : Western Ghats : Kottigehar, 5♂♂ 3♀♀, Siddaveere Gowda and Ranganath. 2♂♂ 2♀♀ deposited in Department of Biology, Tokyo Metropolitan University, Setagaya-Ku, Tokyo, Japan and some will be deposited in Z.S.I., Calcutta and I.A.R.I., New Delhi.

Distribution : India : Karnataka.

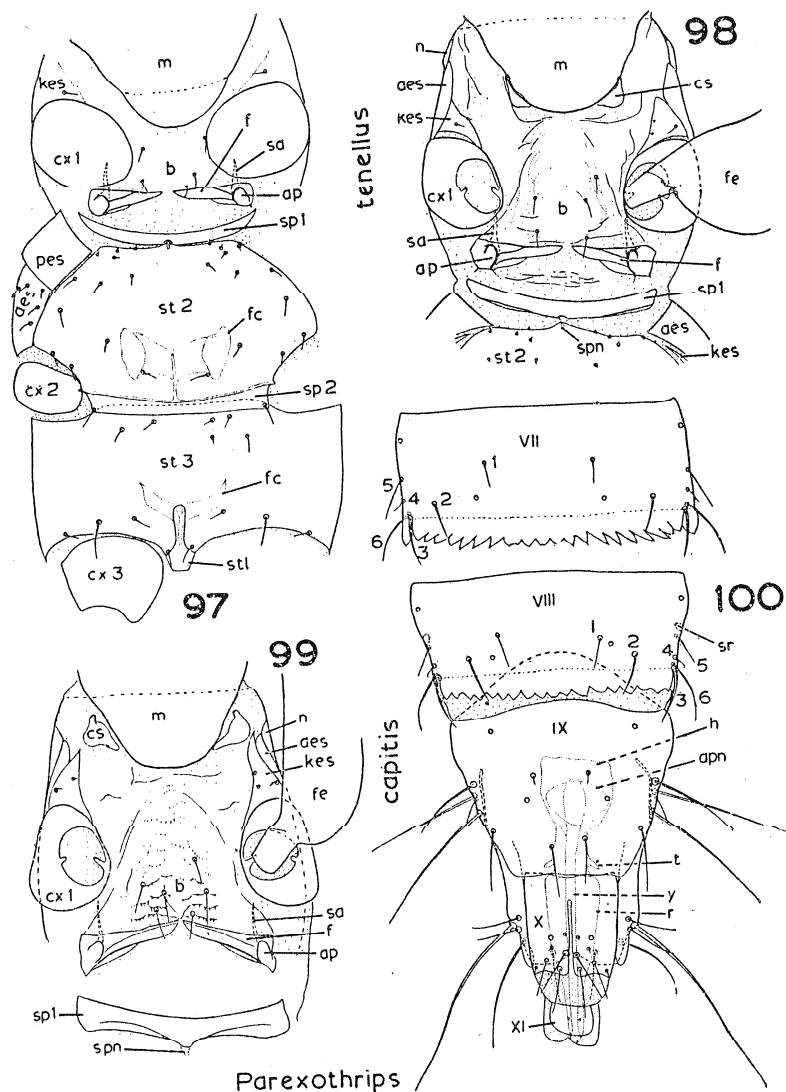
This species closely resembles *D. bryani* Malloch, from Samoa, but is distinguishable from it in the appearance of male epandrium. In *D. mundagensis* male the anteroventral margin of the epandrium is not sharply angular while it is sharply angular in *D. bryani* (Dr. T. Okada, personal communication, 1971). It also differs from other species of *Scaptodrosophila* reported from India by Gupta and Ray-Chaudhuri (1970). It differs from *D. chandraprabhiana* Gupta and Ray-Chaudhuri and *D. silvalineata* Gupta and Ray-Chaudhuri in having the thoracic region unicoloured. It differs from *D. latifshahi* Gupta and Ray-Chaudhuri, *D. paratriangulata* Gupta and Ray-Chaudhuri and *D. krishnamurthyi* Nirmala and Sreerama Reddy in the nature of testis, wing indices and in the number of teeth and their arrangement on the surstylus.

The specific name is after the locality Mundage from where these flies were first collected.

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Figs. 97-100. *Parexothrips* : 97, *tenellus*, thoracic setana, ♀ (holotype); 98, same, ventral view of anterior part of thorax, ♀ (Delhi); 99, *capitatus*, ♀, prosternum; 100, *capitatus*, terminal abdominal segments of ♂.