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## FURTHER RECORDS OF TWO MORE DROSOPHILID SPECIES (DIPTERA : DROSOPHILIDAE) FROM KASHMIR, INDIA

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Altogether seventeen species representing two genera of Drosophilidae are collected from Kashmir valley, India. Among them, *D. kashmirensis* belonging to the *polychaeta* species group of the genus *Drosophila* is discovered as a new species, whereas *Scaptomyza himalayana* Takada is recorded for the first time from India. A key to the species of the *polychaeta* species group is provided. The metaphase chromosomes of *D. kashmirensis* consist of 2 unequal pairs of rods, 1 pair of metacentric and 3 unequal pairs of submetacentric chromosomes.

(Key words: *Drosophila*, new species, key, Kashmir)

During recent years there have been numerous efforts to explore the Indian fauna of Drosophilidae. As a result, several ecologically interesting areas of the Indian subcontinent could be surveyed, yielding considerable data on Indian Drosophilidae (See Gupta, 1974; Prakash and Reddy, 1977; Sajjan and Krishnamurthy, 1975; Dwivedi *et al.*, 1979; Singh and Gupta, 1981; Gai and Krishnamurthy, 1982). However, a vast area of the subcontinent still awaits exploration. Parshad and Duggal (1966) carried out some field collections in different places of Kashmir valley. These studies yielded a total of twenty species including *D. pentaspina*, *D. epiobscura* and *D. ebonata* detected as the new species. This paper embodies the results of our recent field collections carried out in this region during June 1983.

The species under study were largely collected by net-sweeping over leaf foliage, fallen flowers, decaying fruits and also by using different fermenting

fruits as bait in small containers. The metaphase chromosome preparations were made from the neuroblast cells of the third instar larvae following air-dried technique of Guest and Hsu (1973).

### Genus *Drosophila*, Fallen

*Drosophila* Fallen 1823, Geomyzides Sueciae 2:4. Type-species: *Musca funebris* Fabricius; Sweden.

### Subgenus *Drosophila* Fallen, S. Sr.

*Drosophila* Fallen 1823, Geomyzides Sueciae 2:4. Type-species: *Musca funebris* Fabricius; SWEDEN; Sturtevant 1939, Proc. Nat. Acad. Sci. 25:139; Sturtevant 1942, Univ. Texas Publ. 4213:30,

### The *polychaeta* species group

Reddish brown species; three pairs of post-sutural dorsocentral bristles; large elliptical aedeagus; ventral receptacle relatively short and loosely coiled.

***Drosophila* (*Drosophila*) *kashmirensis* sp. nov.**

Male and female: Average body length of male 2.8 mm and of female 3.09 mm. Arista with 3-4 dorsal and 2 ventral branches in addition to the terminal fork. Antennae with second segment brown; third segment little darker. Frons including ocellar triangle brownish. Orbitals in ratio of 12:7:17. Second oral bristle half the length of first oral bristle. Palpi brown, with one prominent apical seta. Carina light brown, greatest width of cheek one-fifth greatest diameter of eye. Clypeus dark. Eyes dark red.

Acrostichal hairs regular, in eight rows. Anterior scutellars convergent; posterior ones crossing each other. One additional pair of bristles in the line of dorsocentrals present. Anterior dorsocentral subequal to the posterior dorsocentral; distance between anterior and posterior dorsocentral  $\frac{3}{5}$  of the distance between two anterior dorsocentrals. Mesonotum and scutellum gray, becoming slightly darker with age. Humerals two, equal. Thoracic pleura yellowish brown sterno-index 0.76.

Legs yellowish brown. Preapicals on all three tibiae; apicals on first and second tibiae.

Abdomen, tergites shiny yellow, with well developed dark brown apical bands, broadly interrupted medially.

Wings (Fig. 1, D): Clear, posterior crossveins distinctly darker. Two unequal bristles on the apex of first costal section; heavy bristles on about basal two-thirds of third costal section.

C-index 4V-index 4C-index 5X-index

♂	3.14	2.10	0.97	1.5
♀	3.09	2.13	0.89	1.4

Halteres shiny yellow. Average wing length in male 2.86 mm and in female 3.06 mm.

Periphallalic organs (Fig. 1, A): Epandrium pubescent, pale yellow, narrow, triangularly pointed at lower tip and with about 17 marginal bristles. Surstylus much broader than long, with 9 stout large black teeth arranged in a straight row on outer margin and with 3 ventral setae. Cerci pubescent, fusiform, separated from genital arch, upper portion with about 25 bristles, lower tip narrowing and with 5-6 stout setae.

Phallic organs (Fig. 1, B): Aedeagus pale yellow, large and elliptical, with narrowly rounded tip apically, basal

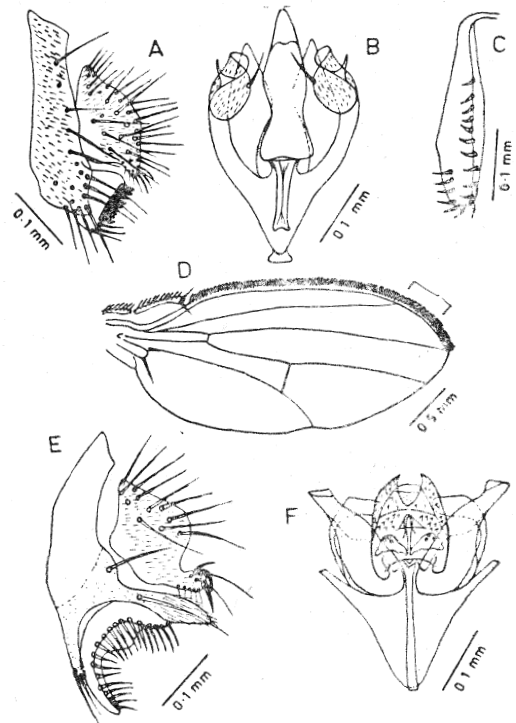


Fig. 1: *Drosophila kashmirensis* Sp. nov.: A,Periphallalic organs; B, Phallic organs; C, Egg-guide; D, Wing ♂; *Scaptomyza himalayana* Takada; E,Periphallalic organs; F, Phallic organs.

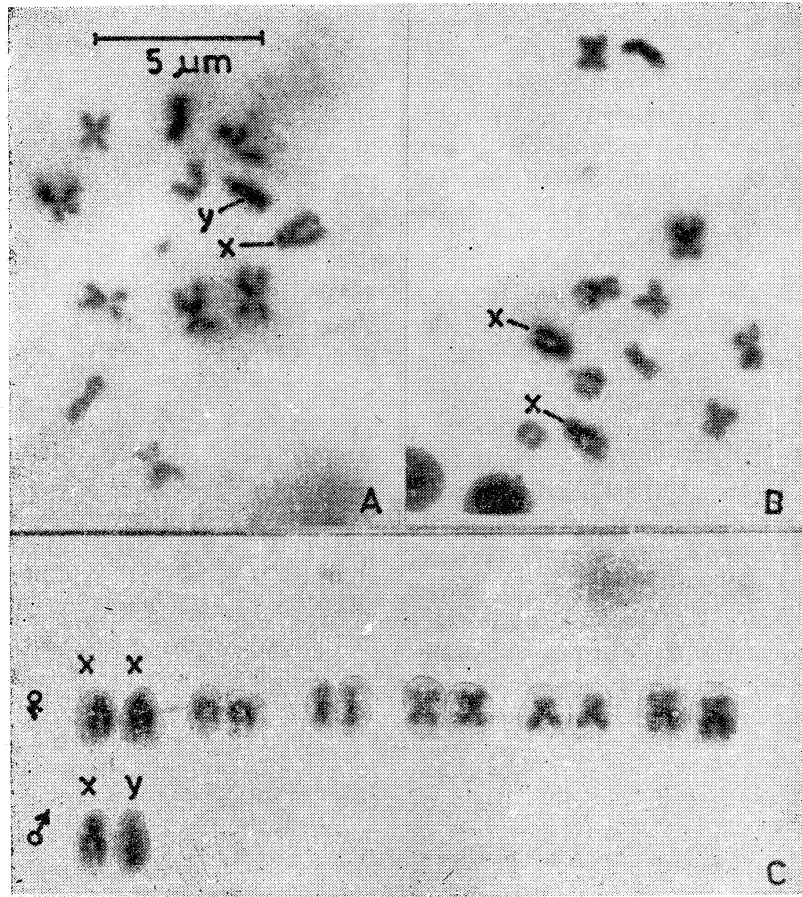


Fig. 2: Metaphase chromosomes of *Drosophila kashmirensis*: A, male plate; B, female plate; C, karyotype of male and female.

apodeme of aedeagus short, about half the length of aedeagus. Anterior gonapophyses large and without sensilla. Posterior gonapophyses obscure. Novasternum with a pair of submedian spines. Ventral fragma narrow, triangular.

Egg-guide (Fig. 1, C): Lobe yellowish, narrowing proximally and broadly rounded distally, with 14 marginal and 4 discal brown teeth. Basal isthmus narrow.

**Holotype:** One male from Shalimar Garden, KASHMIR, INDIA June, 1983,

Collectors Kumar and Gupta.

**Paratypes:** 20 ♂♂, 17 ♀♀, collection data same as holotype.

All type species are at present deposited in the "*Drosophila* Collection" Deptt, of Zoology, Banaras Hindu University, VARANASI, INDIA. 4 ♂♂ and 3 ♀♀ from the paratype series are also deposited in the "*Drosophila* collection" of the Department of Biology, Tokyo Metropolitan University, Setagaya-Ku, JAPAN.

Chromosomes (Fig. 2): The chromosome number in this species as revealed by air-dried technique consists of  $2n=12$ , comprising 2 unequal pairs of rods, 1 pair of metacentric and 3 unequal pairs of submetacentric chromosomes. The *X* and the *Y* chromosomes represent the larger pair of rods, the *Y* being completely hetero-chromatic.

**Relationship:** The presence of three pairs of post-sutural dorsocentral bristles and its large elliptical aedeagus warrant its inclusion in the *polychaeta* species group of genus *Drosophila*, where it closely resembles *D. polychaeta* Patterson and Wheeler in having identical rows of acrostichal hairs, second oral bristle half the length of first oral bristle, but distinctly differs from it in having well developed dark brown abdominal bands (abdomen grayish brown uniformly in *polychaeta*), and narrow triangular ventral fragma (broad in *polychaeta*).

The above relationship has been further strengthened on the basis of chromosomes. Since both the species possess chromosome number  $2n = 12$ . However, the present species clearly differs from *D. polychaeta* in having a small pair of submetacentric chromosomes instead of a pair of dot chromosomes.

**Distribution:** INDIA.

Genus *Scaptomyza* Hardy

*Scaptomyza* Hardy, 1849. Berwickshire Nat. Club. Proc. 361. Type-species: *Scaptomyza graminum* Fallén; EUROPE.

*Parascaptomyza* Duda, 1924 Arch. Naturgesch. 90A(3):203. Type-species: *Drosophila pallida* Zetterstedt; EUROPE.

**Scaptomyza (Parascaptomyza) himalayana** Takada

**Male and Female:** Antennae with second segment brownish black; third segment pale brown. Frons including ocellar triangle dark brown. Face and cheek yellowish brown, greatest width of cheek one-fifth greatest diameter of eye.

Anterior dorsocentral, little smaller than the posterior one; distance between anterior and posterior dorsocentrals about  $5/8$  of the distance between two anterior dorsocentrals. Other details as described by Takada (1970).

Periphallallic organs (Fig. 1, E): Genital arch yellowish brown, lower portion of genital arch narrow having two large bristles; posterior margin with a long conical process at middle, with two apartly placed basal bristles, under margin concave. Anal plate pubescent, upper portion with 11 large bristles; lower portion protruded in the form of secondary clasper, having 3 teeth at tip, lower one largest, upper portion with two large hairs; lower portion with 4-5 fine setae. Clasper bow-shaped, with a row of about 20 long bristles like teeth.

Phallic organs (Fig. 1, F): Aedeagus pale yellow, compact, apically notched, connected with a transverse membrane and covered with several wart-like structures. Anterior parameres small, dark brown, with about 3 apical sensilla. Hypandrium with large processes obliquely truncate apically. Ventral fragma slightly longer than broad, anteriorly with lateral projections.

Specimens examined: 100 ♂♂, 42 ♀♀ Gulmarg, 52 ♂♂ and 77 ♀♀ Shalimar Garden, Kashmir Vally. June 1983.

**Distribution:** NEPAL, JAPAN and INDIA (new record).

KEY TO SPECIES OF THE *POLYCHAETA*  
SPECIES GROUP

- 1 4V-index below 2.0.....*illota* Williston  
 — 4V-index 2.0 or above 2.0..... 2  
 2 Legs dark brown.....  
 .....*asper* Lin and Tseng  
 — Legs yellowish or yellowish brown..... 3  
 .....  
 3 Abdomen grayish brown uniformly, without  
 distinct apical bands.....  
 .....*Polychaeta* Patterson and Wheeler  
 — Abdomen yellowish, with well developed  
 dark brown medially interrupted apical  
 bands.....*kashmirensis* Sp. nov.

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