Vaidya, V.G. and N.N. Godbole. University of Poona, India. First report of genus Chymomyza (Drosophilidae) from India: Chymomyza pararufithorax sp. nov.

The genera of Drosophilidae other than Drosophila so far reported from India are Gitonides, Leucophenga, Scaptomyza, Zaprionus and Cacoxenus. To this list is here added the genus Chymomyza represented by C. pararufithorax sp. nov.

DESCRIPTION OF THE MALE IMAGO: General features and head: Body about 2.2 mm in length. Eyes dark red with pile. Antenna yellowish brown, third segment pubescent. Arista with about 4 branches above and 3 below including terminal fork. Palpus with a few prominent setae. First oral prominent, about twice the length of the second. Carina broad below and narrow above. Second orbital about 1/2 the third and about 2/5 the first. Postverticles small.

Thorax: Thorax dark brown, shining. Humerals 2, upper longer. Acrostichal hairs in 8 somewhat irregular rows. Dorsocentrals 2 long. Cross distance between dorsocentrals about two times the length distance. Prescutellars absent. Anterior scutellars slightly divergent. Posterior scutellars crossing each other. Sterno-index about 1.1.

Legs: Yellowish. Forefemur, tibia and proximal tarus dark. Preapicals on all three tibiae and apicals on first and second. Forefemur swollen, with a row of few prominent bristles.

Wings: Wing with a white patch apically. Costa and cell R_1 black. Costal index about 0.9. 4th vein index about 1.8. 4C-index about 1.5. 5 X-index about 1.7. C 1 bristles 2. C 3 bristles on basal 3/4.

Abdomen: 1 T yellowish. Remaining tergites totally black and shining.

Periphallic organs: Dark brown.

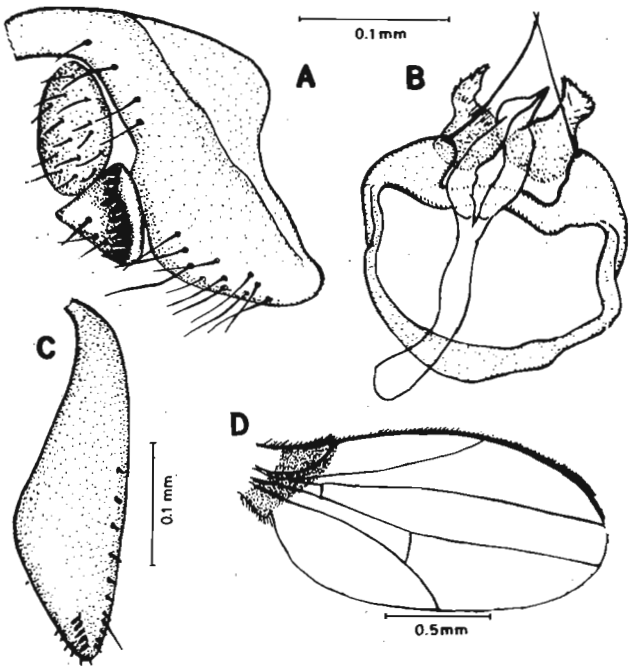

Figure: Chymomyza pararufithorax sp. nov. A. Periphallic organs. B. Phallic organs. C. Egg guide. D. Wing.

Genital arch broader below with about 4 setae on its dorsal half and about 11 setae on its ventral half. Heel absent. Toe rounded. Primary clasper roughly triangular with a sinuous row of 11 teeth and with about 3 marginal bristles. Anal plate roughly oval, separate from the genital arch and with about 15 long setae.

Phallic organs: Aedeagus simple, long and curved. Apodeme of aedeagus short. Novasternum with two long submedian lobes. Anterior paramere elongate, apically hairy. Posterior paramere absent. PI about 0.8.

Rectal index about 2.2.

DESCRIPTION OF THE FEMALE IMAGO: Similar to male. Egg guide: Lobes pale yellow, swollen in the middle, broadly rounded at the tip, with about 15 marginal teeth. Five discal teeth arranged in a row. One subterminal hair. Basal isthmus short and narrow.

MATERIAL: Holotype: Male: Poona (India) July 1972 (Vaidya & Godbole). Deposited with the Department of Zoology, University of Poona, Poona-7, India.

Paratypes: 7 males, 2 females. 1 male deposited with Prof. T. Okada, Department of Biology, Tokyo Metropolitan University, Tokyo, Japan.

HABITAT: The flies were collected in vegetable garden plots by sweeping with net. They appear only in the wet season. It was not possible to rear them in the laboratory.

RELATIONSHIP: This new species seems to be allied to Chymomyza rufithorax (de Meijere) from Indonesia. It resembles C. rufithorax in having yellowish orange mesonotum, white apex of wing and foreleg with black femur and tibia. It however differs from the later species in

having black fore metatarsus.

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A case of sex chromosome meiotic drive that is age dependent.

An age dependent case of meiotic drive involving the sex chromosomes has been found. Attached-X males of the constitution $Y^S X.Y^L$, $In(1)24^L$ + $X.Y^S$ $A2^R$, y $\overline{v}$/Dp(1;f)60g, y^{31d} produce equal numbers of $\overline{XY}$ and Dp60 bearing sperm for the first six days after emergence, but for the next six days (days 7-12), they produce, on the average, nearly twice as many duplication bearing sperm as $\overline{XY}$ bearing sperm. (See Table 1). The attached-XY is composed of the left end of In(1)24, which carries Y^S distally and is essentially a reinversion of In(1)EN, and

Table 1. Number of progeny by age of parental male.

Paternal age (days)	Regular Progeny y ♀	Regular Progeny y^{31d} w^{sp} ♂	Exceptional Progeny ♀ nondisj.	Exceptional Progeny ♂ nondisj.	Total progeny	average no. prog/male	♂/♀ ratio
1-2	652	684	1	0	1337	191.0	1.05
3-4	1491	1511	4*	4	3010	430.0	1.01
5-6	835	877	0	0	1712	285.3	1.05
7-8	262	477	0	1	740	148.0	1.82
9-10	236	491	0	0	727	145.4	2.08
11-12	370	600	0	4	974	243.5	1.62

* Recovered as a cluster from one mating.

the right end of a detached attached-X, A2, which carries $Y^L(X.Y^L)$. Thus, the euchromatin is in normal sequence, except for a small distal duplication (Novitski, DIS 25:122). Dp(1;f)60g is an X-chromosome duplication carrying the tip of $In(1)sc^8$ and at least one complete dose of the X heterochromatin. It is marked by y^{31d} from sc^8. It occurred spontaneously in a triploid female and was recovered along with its reciprocal exchange product, C(1)RA60g (Mohler, DIS 34:52).

The experimental procedure was as follows: Single males less than 36 hours old were mated to 3 y w^{sp} virgin females. Every two days, the males were transferred to new virgin females without etherization. The females were subcultured every three days for a total of 12 days. There was no change in the sex ratio in the subcultures. A total of 9 males were tested. The number of fertile males for each successive brood was 7, 7, 6, 5, 5, and 4.

For the first six days, males produced $\overline{XY}$ and Dp60 bearing sperm in equal numbers. The slight excess of males over females for the first six days is not significant ($X^2 = 1.46$). There is an obvious excess of male progeny starting with the seventh day. Nondisjunction in the males was low throughout the experiment. The nine exceptions included 7 nullo-$\overline{XY}$, Dp sperm.

There was also a drastic drop in the total number of progeny after day 6, although part of this was due to fewer fertile males in the later broods. On a per male basis, there is still a large drop in the number of progeny after day 6. Although controls were not run on these experiments, this type of a drop in total progeny was not expected, based on an examination of similar brooding experiments taken from the literature (Hiraizumi and Watanabe, Genetics 63:121; Yanders, Genetics 51:481). Considering all progeny, 63% were recovered over the first 6 days, whereas for comparable experiments, the average is around 53%. For just Dp60 progeny, 57% were recovered over the first 6 days. All of this suggests that part of the drop in total progeny is probably due to the missing $\overline{XY}$ sperm, but that all of the drop cannot be accounted for by dysfunction of the $\overline{XY}$ bearing sperm.

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