Table 1. Distribution of different species of Drosophila in Agumbe (Western Ghats), South India.

Sites:	1	2	3	4	5	Total
Subgenus: Sophophora						
D. eugracilis	21	17	4	26	12	80
D. malerkotliana	69	27	53	85	105	339
D. pseudoananassae	9	-	-	8	11	28
D. bipectinata	28	15	-	18	21	82
D. anomelani	35	22	29	41	13	140
D. agumbensis*	-	10	8	-	15	33
D. montium	-	3	18	13	22	56
D. rhopaloa**	15	4	-	21	3	43
Subgenus: Drosophila						
D. nasuta	75	65	33	48	57	278
D. neonasuta	18	11	9	14	16	68
D. grandis**	2	-	-	-	-	2
Subgenus: Scaptodrosophila						
D. mundagenesis	5	3	8	1	4	21
Total	277	177	162	275	279	1170
No. of species	10	10	8	10	11	

*New species described by the authors
**Reporting for the first time from India

pseudoananassae, D. bipectinata, D. anomelani, D. agumbensis, D. montium and D. rhopaloa (melanogaster species group) - belong to subgenus Sophophora; four species - D. nasuta, D. neonasuta, D. immigrans (immigrans species group) and D. grandis - belong to subgenus Drosophila; and only one species - D. mundagenesis - belongs to subgenus Scaptodrosophila. 33 flies of a new species, D. agumbensis (Prakash and Reddy 1978b), 43 flies of D. rhopaloa and 2 flies of D. grandis were collected for the first time in this locality and are new additions to the Indian Drosophila fauna. Among the species collected, only three (D. malerkotliana, D. anomelani and D. nasuta) were found in large numbers in almost all the sites, indicating the occurrence of favorable habitats for the colonization of these species, while the other species were found to be present in small numbers only in some sites. Differences in regard to the number and composition of Drosophila species between sites can be correlated not only with ecological attributes of the species but also with the colonizing or invastive abilities of the species concerned. It is clear from the collection data that the members of the melanogaster species group in particular are dominant, as evidenced not only by their large numbers but also in the variety of species. The members of the immigrans species group occupy the next place. These findings are in conformity with the earlier reports of Reddy and Krishnamurthy (1974) and Prakash and Reddy (1978b), and corroborate the suggestion of Bock and Wheeler (1972), who regarded the Indian subcontinent as the general area for the origin of melanogaster species group, and southeast Asia in general for the origin and wide speciation of both melanogaster and immigrans species groups.

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Effect of proximal X-chromosome deletions on male fertility.

It was claimed by Lifschyts and Lindsley (1972) that deficiencies that included both su(f) and bb are male sterile, whereas deficiency for either su(f) or bb alone are male fertile. Later Schalet and Lefevre (1973) observed that many of the deficiencies for both su(f) and bb they have tested are male fertile when covered by the long duplication y^+mal^+.

Whereas no one disputes that some proximal X-chromosome deficiencies are male sterile, the genetic concomitants remain undefined. We decided to investigate the factors leading to male sterility of such deficiencies. For this purpose a sample of 14 su(f) deficiencies were picked up by means of the characteristic phenotype of su(f)/Df(1)su(f) females. In addition nine deficiencies were obtained from Dr. A. Schalet and two from Dr. G. Lefevre. The extents of all these deficiencies were determined by testing their survival in combination with y^+mal^+, y^+Ymal^{126}, Dp(1;f)3, B^SYy^+ and 1(1)Q464, 1(1)Q56, 1(1)R10-10, 1(1)Q463, 1(1)X-4, and 1(1)R-9-18.

Of the total of 25 su(f) deficiencies 9 were deficient for both su(f) and bb. Each of these was tested for viability and male fertility in combination with each of 3 different Y chromosomes carrying a duplication for different amounts of the base of the X. The results of these tests are summarized in the accompanying table. The upper left quadrant of the table contains an ordered list of the loci tested at right end of the X. The constitutions of the deficient X's and the duplicated Y's with respect to these loci are indicated in the lower left and upper right quadrants respectively. The lower right quadrant tabulates the phenotypes of the various combinations (l=lethal, F=fertile, S=sterile and WF=weakly fertile with <3 progeny per male. Briefly these observations suggest that males carrying short X-deficiencies and short duplications or long X-deficiencies and long duplications are fertile, whereas males carrying short deficiencies and long duplications are sterile; it is important to note that all three duplicated Y's are male fertile in combination with normal X chromosome.

	34	LB14	11P1	E-54	Q464	Q56	R10-10	X-3	D-19	Q463	X-4	R-9-18	su(f)	bb	y^+Ymal^+	y^+Ymal^{126}	+
wild type	+	+	+	+	+	+	+	+	+	+	+	+	+	+	F	F	F
X-15	+	+	+	+	+	+	+	+	+						F	S	S
X-1	+	+	+	+	+	+	+	+	+						F	WF	S
17-87	+	+	+	+	+	+	+	+	+						F	WF	S
GA-90	+	+	+	+	+	+	+	+							F	WF	S
GA-42	+	+	+	+	+	+									1	S	S
A209	+	+	+	+	+										1	WF	F
R-44	+	+	+												1	F	F
R-25	+	+	+												1	F	F
mal^{12}	+	+													1	1	F
B^SYy^+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

The 16 su(f) deficiencies that carried bb^+ were also tested in combination with the duplicated Y chromosomes; all viable combinations were male fertile. In addition three bb deficiencies were tested with these duplicated Y chromosomes. Df(1)bb^{1-158}, Df(1)bb^{1-74} and bb^1 are long, intermediate and short bb deficiencies respectively that have not lost su(f). When tested for male fertility in combination y^+Ymal^+, bb^{1-158} was sterile, bb^{1-74} and bb^1 produced 0.6 and 9.6 progeny per male respectively. Males carrying each of these bb deficiencies in combination with y^+Ymal^{126} produced 32.8, 68.7 and 95.6 progeny respectively.

Thus male sterility seems to result from an as yet imperfectly defined interaction of a deficiency for bb in the proximal heterochromatin of the X chromosome and a duplication for euchromatic elements at the right end of the X chromosome.

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