offspring (Anderson *et al.*, 1977) and courtship songs of offspring (Noor, 1998). Flies were identified as *D. pseudoobscura* (pseudo), *D. persimilis*, *D. miranda*, *D. subobscura*, and *affinis*-subgroup *Drosophila*.

All *affinis*-subgroup flies captured in California are assumed to be *D. azteca*. Recently, Pascual *et al.* (1997) reported that *D. athabasca* had invaded California. We attempted to use the RAPD markers suggested by Pascual *et al.* (1997) to identify positively the *affinis*-subgroup species that we captured, but several individuals had combinations of bands that were suggested to be unique to each of the two species. Dr. Rhonda Snook positively identified several individuals that we captured as *D. azteca* using a genital comb characteristic.

Table 1. Proportions of *obscura*-group species collected

Site	%pseudo	%persimilis	%miranda	%subobscura	%"azteca"	N*
AFC, UT	24	0	0	75	<1**	252
FLAG, AZ	100	0	0	0	0	94
MATHER, CA	11	69	2	1	17	148/38
MSH, CA	12	8	2	30	47	273/27
PARA, CA	------------------26----------------			16	58	25***

* The first number is the total number of flies captured, while the second number denotes the number of females used to calculate the relative proportions of *D. pseudoobscura*, *D. persimilis*, and *D. miranda*.

** Probably *D. athabasca*, only 1 male captured.

*** No females that were *D. pseudoobscura*, *D. persimilis*, or *D. miranda* were captured.

The spread of *D. subobscura* into Utah is startling. Genetic studies of the recently established population(s) in Utah, the older populations in the northwest, and the ancestral populations in Europe may yield information on how this species has spread so quickly over such a vast region.

References: Anderson, W.W., F.J. Ayala, and R.E. Michod 1977, J. Hered. 68:71-74; Beckenbach, A.T., and A. Prevosti 1986, Am. Midl. Nat. 115:10-18; Noor, M.A., 1995, Pan-Pacif. Entomol. 71:71-74; Noor, M.A.F., 1998, Dros. Inf. Serv. 81:134-136; Pascual, M., J. Balanya, A. Latorre and L. Serra 1997, Mol. Ecol. 6:293-296.

Jones, C.D., and H.A. Orr. Department of Biology, University of Rochester, Rochester, NY 14620. Test of a *Drosophila simulans* balancer and a remapping of chromosome 3.

Although its genetics does not rival that of *D. melanogaster*, *D. simulans* has an large number of genetic markers, compound chromosomes, and other genetic tools. Most mutations in *D. simulans* are alleles of mutations in *D. melanogaster*. *D. simulans* is also karyotypically quite similar to *D. melanogaster*. However, the two species differ in a large inversion on *3*R. Unfortunately, this inversion difference has caused confusion about the *D. simulans* third chromosome map.

Here, we remap the *D. simulans* third chromosome using a newly created multiply marked stock and test the utility of inversion In(*3*R)*Ubx* (81F1 to 89E) as a balancer for *3*R (Coyne and Sniegowski 1994).

To remap chromosome 3, male *jv st e osp pe* flies were crossed to wildtype females (Solway-Hochman), and F_1 females were then backcrossed to *jv st e osp pe* males. The resulting progeny were genotyped. To test the balancer, male *jv st e osp pe* flies were crossed to female In(*3*R)*Ubx*, *Ubx*/*Dl*. *Ubx*/+ F_1 females were then backcrossed to *jv st e osp pe* males, and their progeny genotyped. We then compared the recombination distances between markers in these two cross to assess the possible use of In(*3*R)*Ubx* as a balancer.

Remapping of chromosome *3*: Sturtevant showed that *jv*, *st*, and *pe* (an allele of *pink*) are all allelomorphic to *D. melanogaster* mutations (Sturtevant 1929; Sturtevant and Novitski 1941). *e* is also allelic to *ebony* in *D. melanogaster* (J.A. Coyne, pers. comm.). *jv* is the most distal marker shared by both *D. simulans* and *D. melanogaster*. Thus, we anchored our map at *jv* (19.2 cM). The other markers were then positioned according to their recombination distances as determined in the present study (Table 1).

The order of the markers was checked and did not differ

Table 1. Marker map positions (*N* = 1014 flies). Kosambi's formula was used to correct recombination distances ("Corrected map position" column).

Marker	Uncorrected map position	Corrected map position
jv	19.2	19.2
st	46.3	49.5
e	59.4	63.0
osp	68.6	72.3
pe	97.3	104.9

Table 2. Test of In(*3*R)*Ubx* as balancer (*N* = 739 control flies and *N* = 584 experimental flies)

	Percent recombination	
Interval	Control Cross	Experimental Cross
st - *e*	13.1	12.0
e - *osp*	9.2	8.6
osp - *pe*	28.7	21.1

from that of the map reported in Flybase. Moreover, our new map positions roughly agree with the positions of the homologous *D. melanogaster* loci, taking into account the large inversion difference on *3*R.

Test of *3*R balancer: Because it is not linked to *Ubx*, the distal marker *jv* was not scored in this cross. As Table 2 shows, *Ubx* is not a useful balancer. There is no significant suppression of recombination between *st* and *e*, nor between *e* and *osp*. There is weak suppression of recombination between *osp* and *pe* ($\chi 2$ =6.741, P = 0.0094).

References: Coyne, J.A., and P.M. Sniegowski 1994, Dros. Inf. Serv. 75:36; Sturtevant, A.H., 1929, Contributions to the genetics of *Drosophila simulans* and *Drosophila melanogaster*. Carnegie Institute; Sturtevant, A.H., and E. Novitski 1941, Genetics 26:517.

Hegde, S.N., V. Vasudev, V. Shakunthala, and M.S. Krishna. Drosophila Stock Centre, Department of Studies in Zoology, University of Mysore, Manasagangotri, Mysore-570006, India. ***Drosophila* Fauna Of Palni Hills: Tamilnadu, India.**

Paini hills form the southern part of western ghats and are situated at 10:13° N latitude 77:32°E longitude. The tallest mountain peak has an altitude of 2,333 meters above the sea level, and the foot of the hills has an altitude of just about 300 m. The annual rainfall is about 165 cm and temperature in the area ranges from 8.3 °C to 20 °C. The vegetation consists of shrubby jungles at the foot and, as altitude increases, the forest composition changes to moist deciduous to evergreen type. The moutain peaks have huge eucalyptus trees, *Acanthospermum hispidium*, *Grewia hirsuta, Hibiscus* species, *Euphorbia* species, and so forth.

Table 1. Distribution of different species of *Drosophila* in Palni hills.

	Altitude (in meters)											
Species	350	475	800	950	1050	1150	1450	1650	1750	1800	2300	Total
Subgenus: *Sophophora*												
D. bipectinata	157	24	3	04	9	46	—	—	—	—	—	243
D. malerkotliana	54	150	182	474	461	568	91	—	—	—	—	1980
D. takahashii	—	—	—	—	—	4	4	12	10	—	—	30
D. mysorensis	—	17	4	—	—	16	45	12	12	3	—	109
D. anomelani	—	—	—	—	4	2	—	3	3	—	—	12
D. rajasekari	—	—	12	3	2	2	2	—	—	—	—	21
D. sahyadrii	—	—	—	—	—	—	—	—	2	8	—	10
*D. palniensis**	—	—	—	—	—	—	—	—	—	—	4	04
Subgenus: *Drosophila*												
D.n. nasuta	31	—	19	10	43	35	40	—	—	—	—	178
D.s. neonasuta	14	25	23	06	59	72	57	31	—	—	—	287
D. formosona	—	—	—	—	—	2	34	—	17	8	—	61
D. brindavani	—	1	8	11	9	6	—	—	—	—	—	35
Subgenus: *Scaptodrosophila*												
D. nigra	8	—	—	—	1	—	—	—	—	—	—	09
Genus: *Phorticella*												
Phorticella striata	4	13	20	19	4	4	—	—	—	—	—	64
No. of species	6	6	8	7	9	11	7	4	5	3	1	
Total No. Captured	268	230	271	527	592	757	273	58	44	19	04	3043

* New species

Collections of *Drosophila* were made in hill ranges using net sweeping as well as bottle trapping methods from 11 different altitudes (350, 475, 800, 950, 1050, 1150, 1450, 1650, 1750, 1800 and 2300 m above sea level). These collections yielded a total of 3043 individuals. The catch included twelve species of *Drosophila* and one species of *Phorticella.* Table 1 shows that *D. malerkotliana* with 1980 individuals was the most common and abundant species (65.14%), next was *D. s. neonasuta* with 287 individuals, while *D. bipectinata* was the third largest with 243 individuals (7.89%). The remaining 529 (14.43%) individuals were shared by other species.

Number of flies obtained at 350 m altitude was higher than at 475 m. Then the number of flies increased with increasing altitude up to 1150 m and again declined gradually. From Table 1, it is also clear that some species, namely *D. bipectinata, D. malerkotliana, D. n. nasuta, D. s. neonasuta, D. brindavani* and *Phorticella striata,* were seen only up to 1450 m. *D. takahashii, D. anomelani, D. sahyadrii* were not seen in lower altitude but they were seen sparsely in high