Félix R., J. Guzmán and A. de Garay Arellano. Genetics and Radiobiology Program. National Commission of Nuclear Energy. Mexico City, Mexico. CO_2 sensitivity of Drosophilid flies from a location in the outskirts of Mexico City.

Among natural populations of Drosophilids some individuals are readily found which show a physiological anomaly, sharply outlined and easy to recognize, when brought in contact with carbon dioxide. Sensitive flies will not recover after being anaesthetized with CO_2 but, rather, will remain paralyzed and eventually die (L'Héritier and Teissier, 1945). In most respects the infection is typical of those caused by animal viruses (L'Héritier, 1958; Seecof, 1962), but there are several aspects of the infection which make it noteworthy.

CO_2-sensitive strains show a maternal effect which assures sensitivity to all the progeny, whereas non-stabilized lines tipically throw resistant as well as sensitive progeny (Goldstein, 1949). The non-stabilized hereditary transmission pattern is also displayed by flies that receive sigma virus initially by infection (L'Héritier, 1951).

From June 1969 to May 1970, a survey was made on the distribution of CO_2-sensitivity of D. melanogaster collected at six locations from the south-west of Mexico City. The bait used for trapping was fermented cantaloupe, and the proportion of sensitive flies was obtained by submitting all the collected samples to the treatment with pure CO_2 at 8° during 15 minutes.

A first survey of Drosophilid species gathered in the same traps was done from October 1969, to March, 1970. Since the flies were trapped incidental to collecting samples of D. melanogaster, and since but one collecting technique was employed, the list of species is no doubt incomplete.

The distribution of the collected species; immigrans, hydei, busckii, pseudoobscura and Drosophila sp. (repleta group) shows a scarce dispersion into the trapping sites located in the urban area. It was possible to collect significant, although small, numbers of adults of the five species, only in location 1 (See: Felix, R. et al., 1971). The dominant population at this trapping site was a non-identified species of the repleta group. As location 1 is situated in a house in the outskirt of the city, the collected specimens are immigrants from the non-urban area surrounding this place, scarcely inhabited by man, and with an abundant arboreus vegetation (Cupressus lindleyi Krotsch, Casuarina equisetifolia L., Eucalyptus globulus L. and Schinus molle L.)

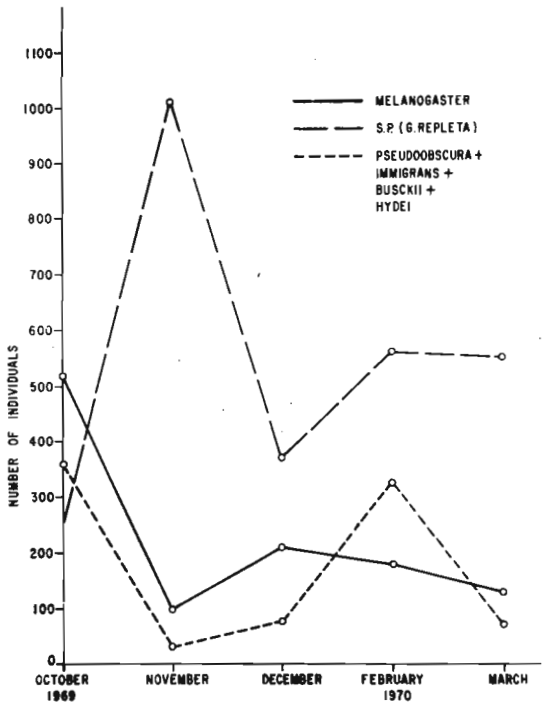

Table 1 shows the relative abundance of each species and its percentage of CO_2-sensitivity throughout the winter months. Drosophilids, other than D. melanogaster do not migrate into urban area, as only about 300 individuals belonging to the five species named above were collected at five trapping sites located in the densely inhabited urban area, at distances from 3.43 to 8.80 Km. apart from location 1 (Fig. 1).

Fig. 1. Relative abundance of Drosophilid species collected at location 1.

The data on the sensitivity related to sex, shows that the values for males are consistently larger than that for females (excluding D. busckii). The species which showed the largest proportion of CO_2-sensitivity is D. immigrans. No sensitive flies were found among 145 tested females of D. pseudoobscura, which constitutes an interesting feature of this species in a suburban area.

Table 2 shows the relative abundance, as compared to D. melanogaster, collected at the same traps, of the five species from the locations 1, 9 and 19.

Table 1. Relative abundance and percentage of CO_2 sensitivity of Drosophilid species collected at location 1. N, number collected; S, number of sensitive flies; %S, percentage of sensitive flies ± standard error.

	October		November		December		February		March			Mean
Species	N/S	%S	N/S	%S	N/S	%S	N/S	%S	N/S	%S	Totals	%S
D. immigrans												
	110/19	17.3 ±3.60	18/0	0.0	19/0	0.0	2/0	0.0	2/0	0.0	110	17.3 ±3.60
	80/7	8.7 ±3.15	3/0	0.0	12/0	0.0	1/0	0.0	2/0	0.0	80	8.7 ±3.15
	190/27	13.7 ±2.48									190	13.7 ±2.48
D. hydei												
	36/9	25.0 ±7.21	12/2	16.7	11/0	0.0	33/0	0.0	11/1	9.1	69	12.50 ±2.97
	25/1	4.0 ±3.92	5/0	0.0	6/0	0.0	11/0	0.0	4/0	0.0	36	2.00 ±1.24
	61/0	16.4 ±4.73					44/0	0.0			105	8.20 ±1.89
D. melanogaster												
	261/33	12.6 ±2.05	60/1	1.8 ±1.33	126/3	2.3 ±1.65	90/3	3.3 ±1.88	73/2	2.7 ±1.87	610	4.54 ±1.40
	255/20	7.8 ±0.60	41/2	4.8 ±3.33	82/0	0.0	93/3	3.2 ±1.82	56/2	3.5 ±2.46	527	3.86 ±1.79
	516/53	10.3 ±1.57	101/3	3.0 ±1.67	208/3	1.4 ±0.31	183/6	3.3 ±1.21	129/4	3.1 ±1.53	1,137	4.21 ±0.71
Drosophila sp. (repleta group)												
	165/20	12.1 ±2.59	849/3	0.4 ±0.21	202/0	0.0	410/17	4.1 ±0.98	427/5	1.2 ±0.50	2,053	3.56 ±0.26
	88/9	10.2 ±3.23	161/1	0.6 ±0.61	174/0	0.0	152/0	0.0	125/0	0.0	700	2.16 ±0.54
	253/29	11.4 ±3.35	1010/4	0.4 ±0.20	376/0	0.0	562/17	3.0 ±0.74	552/5	0.9 ±0.40	2,753	3.14 ±0.11
D. busckii												
	50/1	2.0 ±2.07	11/0	0.0							61	1.00 ±1.27
	30/2	6.7 ±2.05	12/0	0.0							42	3.35 ±2.75
	80/3	3.7 ±2.11	23/0	0.0							103	1.85 ±1.32
D. pseudoobscura												
	78/2	2.5 ±1.76			19/0	0.0	191/2	1.1 ±0.71	69/1	1.4 ±1.41	357	1.25 ±0.57
	17/0	0.0			6/0	0.0	89/0	0.0	33/0	0.0	145	0.00
	95/2	2.1 ±1.46			25/0	0.0	280/2	0.7 ±0.48	102/1	1.0 ±0.93	502	0.95 ±0.42

Table 2. Relative abundance of species collected at locations 1, 9 and 19. N, number collected; sp./mel., species/melanogaster.

		October		November		December		February		March			
Species	Loc.	N	sp./mel.	N	sp./mel.	N	sp./mel.	N	sp./mel.	N	sp./mel.	Totals	sp./mel.
Melanogaster	1	516	1.00	101	1.00	208	1.00	183	1.00	129	1.00	1,137	1.00
"	9	34	1.00	0	-	22	1.00	0	-	25	1.00	81	1.00
"	19	238	1.00	64	1.00	0	-	0	-	0	-	302	1.00
Sp. (repleta)	1	253	0.49	1,010	10.00	376	1.81	562	3.07	552	4.28	2,753	2.42
"	9	3	0.09	12	-	5	0.23	0	-	0	-	20	0.25
"	19	0	-	0	-	0	-	0	-	19	-	19	0.06
Pseudoobscura	1	95	0.18	0	-	25	0.12	280	1.53	102	0.79	502	0.44
"	9	0	-	0	-	3	0.14	0	-	22	0.88	25	0.31
"	19	0	-	0	-	0	-	0	-	0	-	0	-
Immigrans	1	190	0.37	21	0.21	31	0.15	3	0.02	5	0.04	250	0.21
"	9	34	1.00	13	-	0	-	0	-	2	0.08	49	0.60
"	19	4	0.02	0	-	0	-	0	-	0	-	4	0.01
Hydei	1	61	0.11	17	0.17	17	0.08	44	0.24	15	0.11	154	0.14
"	9	0	-	0	-	4	0.27	0	-	9	0.36	13	0.16
"	19	0	-	0	-	0	-	0	-	0	-	0	-
Busckii	1	80	15.5	23	-	0	-	0	-	0	-	103	0.09
"	9	44	1.29	0	-	0	-	0	-	0	-	44	0.54
"	19	0	-	0	-	0	-	0	-	0	-	0	-

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Gupta, J.P. Banaras Hindu University, Varanasi, India. Key to Indian species of subgenus Scaptodrosophila.

During last few years taxonomists and geneticists in India have reported several new and unrecorded species of Drosophila, among which seven species belong to the subgenus Scaptodrosophila so far. A taxonomic key is given here to distinguish them with an addtional note on their distribution.

1. Mesonotum and scutellum unicolorous.....2
   Mesonotum and scutellum not unicolorous.....3
2. Tarsal segments of male fore legs with many long curved upright hairs .....latifshahi Gupta and Ray-Chaudhuri
   Tarsal segments of male fore legs with no such hairs.....4
3. Mesonotum and scutellum with silvery white striations arranged longitudinally .....silvalineata Gupta and Ray-Chaudhuri
   Mesonotum and scutellum with scattered silvery white spots arranged longitudinally .....chandraprabhiana Gupta and Ray-Chaudhuri
4. Posterior parameres forming a triangular flap-like structure .....paratriangulata Gupta and Ray-Chaudhuri
   Posterior parameres not forming a triangular flap-like structure.....5
5. Heel observable and produced into a large spur-like projection .....ebonata Parshad and Duggal
   Heel observable but not produced into a spur-like projection.....6