number of insertions in the genome. However, previous results from *in situ* hybridization analysis have shown some differences in the position of *P* elements in several *D. willistoni* subgroup species (Daniels and Strausbaugh, 1986; Lansman *et al.,* 1985). In some cases *P* mapped at the chromocenter while in others at few euchromatic sites.

Recently we have analyzed two other *D. willistoni* strains (17A2 and WIP 11A) by Southern blot and by *in situ* hybridization with *P* elements and we found strong differences between a freshly collected strain (17A2) and an old laboratory stock (WIP 11A) concerning *P* element genomic position (Regner *et al.,* 1996). These differences are reflected by the finding of 24 euchromatic insertion sites in the 17A2 strain and the unique chromocenter mapping of *P* in the old stock WIP 11A. These studies suggested that wild strains are still capable of transposition, while old stocks are not, probably because of the insertion of *P* elements in heterochromatin, as proposed by Stofford (1976), Spradling and Rubin (1983), and Devlin *et al.* (1990).

If transposition is still able to occur in *D. willistoni* under certain special conditions, is it possible that invasion and re-invasion of the populations by *P* elements would result in periods of genomic disturbances proportional to the amount of complete elements, followed by their accumulation in heterochromatic "hot spots"? Responses to such questions probably should be done by studies including a wide spectrum of *D. willistoni* natural populations, and the present is a preliminary attempt to do that. By the other hand, strains coming from places closer to the limits of the *D. willistoni* geographical distribution show higher polymorphism in *P* sequences probably because they are subject to lower selective pressures when in heterochromatin. In contrast, those strains coming from Central and South Brazil show lower polymorphism, but a large quantity of deleted elements. Those deleted *P* elements may be a potential source for transposition induction under appropriate environmental conditions.

Recently, however, Clark *et al.* (1995) found the presence of four major *P* element families in the genome of *D. willistoni*, being possible the coexistence of more than one member of these subfamilies in the same genome. Such findings need to be considered in order to establish evolutionary relationships among species, groups of species, and other upper taxa, as done by Clark and Kidwell (1997). So, a finer characterization of the *P*-homologous sequences present in the natural populations of this species needs to be done before raising hypotheses to explain variability such as that here described.

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References: Black, D.M., M.S. Jackson, M.G. Kidwell, and C.A. Dover 1987, EMBO J. 6:4125-4135; Clark, J.B., T.K. Altheide, M.J. Schlosser, and M.G. Kidwell 1995, Mol. Biol. Evol. 12:902-913; Clark, J.B., and M.G. Kidwell 1997, PNAS, USA 94: 11428-11433; Daniels, S.B., and L.D. Strausbaugh 1986, J. Mol. Evol. 23: 138-148; Daniels, S.B., K.R. Peterson, L.D. Strausbaugh, M.G. Kidwell, and A. Chovnick 1990, Genetics 124: 339-346; Devlin, R.H., D.G. Holm, K.R. Morin, and B.M. Honda 1990, Genome 33: 405-415; Ehrman, L., and J.R. Powell 1982, *In*: M. Ashburner, H.L. Carson, and J.N. Thompson, Jr. (eds), *The Genetics and Biology of* Drosophila, 3b: 193-225. Academic Press, New York; Jowett, T., 1986, *In:* Roberts, D.B., Drosophila, *A Practical Approach*, pp. 275-286. IRL Press, Washington, D.C.; Kidwell, M.G., 1994, J. Heredity 85: 339-346; Lansman, R.A., S.N. Stacey, T.A. Grigliatti, and H.W. Brock 1985, Nature 318: 561-563; Marques, E.K., M. Napp, H. Winge, and A.R. Cordeiro 1966, Dros. Inf. Serv. 41: 187; O' Hare, K., and G.M. Rubin 1983, Cell 34: 25-35; Regner, L.P., M.S.O. Pereira, C.E.V. Alonso, E. Abdelhay, and V.L.S. Valente 1996, J. Heredity 87: 190-211; Rio, D.C., 1990, Ann. Rev. Genet. 24: 543-578; Robertson, H.M., and W.R. Engels 1989, Genetics 123: 815-824; Spassky, B., R.C. Richmond, S. Pérez-Salas, O. Pavlovsky, C.A. Mourão, A.S. Hunter, H. Hoenigsberg, Th. Dobzhansky, and F.J. Ayala 1971, Evolution 25: 129-143; Spradling, A.C., and G.M. Rubin 1983, Cell 34: 47-57; Stofford, J.B., 1976, *In:* M. Ashburner and E. Novitski (eds): *The Genetics and Biology of* Drosophila 1c: 955-1018. Academic Press, NewYork.

Singh, B.K., and R.S. Fartyal. Cytogenetic Laboratory, Department of Zoology, Kumaun University, Naini Tal, India. Drosophilidae collected from Chaubatiya Garden, Ranikhet, Kumaun, India.

The Drosophilidae is a large family of world wide distribution. In recent years, our studies particularly in Kumaun region, which is located in the north-eastern periphery of the state Uttar Pradesh of the Indian subcontinent, have yielded considerable data on the Indian species (Singh and Bhatt, 1988; Singh and Negi, 1989, 1992; Singh and Dash, 1993). However, the authors believe that these data in no way furnish a complete picture of the Drosophilid species inhabiting this region since a vast area still awaits exploration. This note deals with the Drosophilid survey of Chaubatiya garden from May 1996 to April 1997.

Chaubatiya garden is located in Ranikhet, Almora district of the Kumaun region at an elevation of about 7025 feet from the sea level. It has an area of about 30 acres and is mainly characterized by the presence of *Quercus* sp.,

Table 1. Drosophilidae collected from Chaubatia Garden from May 1996 to April 1997

Drosophilid species	Number of flies collected												Total number of flies		Sex ratio
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Male	Female	(approx.)
Genus—*Drosophila*															
Sub-genus—*Drosophila*															
D. immigrans	72	87	118	195	109	95	60	35	15	11	36	64	408	489	4:5
D. lacertosa	26	35	61	79	31	08	—	—	—	—	—	—	99	141	3:4
Sub-genus—*Sophophora*															
D. nepalensis	68	85	101	176	181	105	65	18	—	—	—	28	487	340	5:4
D. bifasciata	21	28	62	74	30	09	—	—	—	—	—	—	114	110	3:3
D. jambulina	28	41	86	41	18	22	—	—	—	—	02	15	136	117	3:3
D. suzukii indicus	15	29	65	48	31	15	10	—	—	—	—	02	129	86	3:2
Sub-genus— *Dorsilopha*															
D. busckii	39	55	61	28	08	—	—	—	—	03	48	85	211	116	5:3
Genus— *Zaprionus*															
Z. indianus	45	53	78	69	25	19	01	—	—	—	—	—	111	179	3:5
Genus — *Leucophenga*															
Leucophenga sp.*	—	—	—	03	02	—	—	—	—	—	—	—	03	02	3:2
												Total	1698	1580 = 3278	

Note: The species marked with (*) is not identified and expected to be a new species.

Rhododendron arboreum, *Pinus roxburghii*, *Cedrus deodara*, *Rubus laciocarpus*, *Myrica esculenta*, *Pyrus communis*, *Pyrus malus*, *Prunus* sp., *Prunus domestica*.

Several traps, usually small tin containers containing fermenting banana, pineapple, or some other local fruits, were placed at different places under cool and shady areas. Flies were obtained by net sweeping over these traps as well as by sweeping over natural habitat. In order to procure the maximum number of flies, collections were made several times during the day. The collected flies were then sorted out, some were transferred to culture vials containing *Drosophila* food medium for raising their progeny, and the rest were preserved in 70% alcohol for further study.

A total of 3278 flies belonging to different genera of the family Drosophilidae were collected since May 1996 to April 1997 (Table 1). Our observation shows that during summer and rainy seasons all the species shown in the table were present but during winter only a few species were present in the collection, *e.g., Drosophila immigrans* and *Drosophila nepalensis*, which shows that these species have marked preference for the colder climate. Besides the known species, one species belonging to the genus *Leucophenga* was not identified and it is expected that it is a new species.

References: Singh, B.K., and M. Bhatt 1988, Oriental Insects 22: 147-161; Singh, B.K., and N.S. Negi 1989, Proc. Zool. Soc. Cql. 40: 19-26; Singh, B.K., and N.S. Negi 1992, Senckenbergiana Biol. 72: 321-327; Singh, B.K., and S. Dash 1992, Proc. Zool. Soc. Cql. 46(2): 131-140.

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Stock List:

Wild Stocks

1. *Drosophila immigrans*
2. *Drosophila nepalensis*
3. *Drosophila jambulina*
4. *Drosophila melanogaster*
5. *Zaprionus indianus*