D. melanogaster was recorded in 9 locations followed by *D. malerkotliana* (7) > *D. rajashekari* and *P. striata* (5) > *D. takahashii* (4) > *D. bipectinata* (3) > *D. neonasuta* (1 in Kengeri). Interestingly this is the first record of *P. striata* in the study area and it was found to occur in large proportions followed by *D. melanogaster*. Considering their role in scavenging and as bioindicators, long term research on urban populations of *Drosophilids* needs to be undertaken for better understanding of their spatio-temporal distribution in urban areas, their diversified ecological roles as well to aid in conservatory measures.

Table 2. Diversity indices of heterogenous assemblages of drosophilid species in different areas.

	Sites of collection										
Alpha diversity indices	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
Taxa_S	5.0	3.0	4.0	3.0	3.0	3.0	4.0	4.0	3.0	5.0	2.0
Individuals	15.0	6.0	4.0	13.0	5.0	4.0	5.0	10.0	4.0	16.0	7.0
Dominance_D	0.3	0.5	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.8
Simpson_1-D	0.7	0.5	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.7	0.2
Shannon_H	1.4	0.9	1.4	0.9	1.0	1.0	1.3	1.2	1.0	1.4	0.4

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Electrophoretic variants of esterase in two closely related species of *Drosophila: D. bipectinata* and *D. malerkotliana.*

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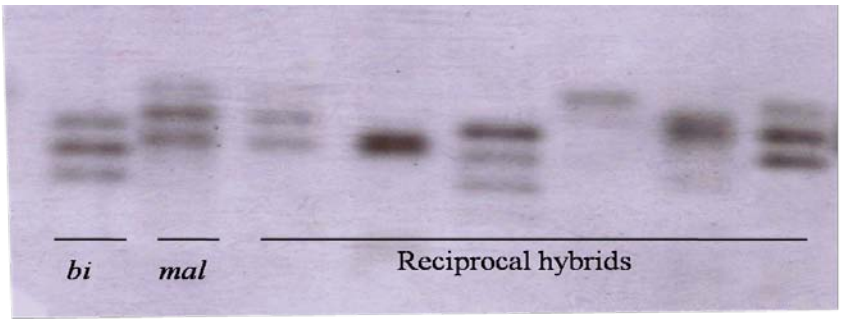
Bock and Wheeler (1972) very vividly described the phylogenetic relationships among the four species of *Drosophila bipectinata* species complex. Their explanation on this complex fascinated a number of workers to elucidate the evolutionary relationships among the four species of this complex by employing cytological and molecular investigations. These four closely related and morphologically quite similar species are *D. bipectinata, D. parabipectinata, D. malerkotliana,* and *D. pseudoananassae*. This complex is part of the *ananassae* subgroup of the *melanogaster* species group (Bock and Wheeler, 1972). The two species of this complex, *i.e*., *D. bipectinata* and *D. malerkotliana*, are sympatric over most of their geographic distributions. Under the laboratory conditions, these two species are crossable and produce hybrids whose females are fertile but males are sterile (Gupta *et al*., 1980).

Studies with regard to electrophoretic variants of enzymes have been one of the interesting aspects for *Drosophila* workers (Ayala and Powell, 1972; Ayala, 1975; Ayala *et al.*, 1974; Prakash, 1977; Mulley *et al.*, 1979; Cavener and Clegg, 1981; Santos *et al.*, 1989; Prout and Barker, 1993; Moraes and Sene, 2002; Kumar and Singh, 2014). Many polymorphic enzyme loci have been depicted from the natural populations of *Drosophila*. Esterase enzyme is known to be represented by more than one locus in a number of species of *Drosophila*. In *D. ananassae*, this enzyme is represented by three distinct polymorphic loci in the natural and

laboratory populations derived from different parts of India (Kumar and Singh, 2012, 2013, 2014; Krishnamoorti and Singh, 2013). Protein polymorphism in *bipectinata* species complex has also been undertaken by some workers (Yang *et al.*, 1972; Hegde and Krishnamurthy, 1976).

In the present note electrophoretic variants of esterase enzyme of the two species of *bipectinata* species complex, *i.e*., *D. bipectinata* and *D. malerkotliana* and also their hybrids are portrayed. Two laboratory stocks, one containing flies of *D. bipectinata* and the other of *D. malerkotliana* were subjected to allozyme analysis. Reciprocal hybrids derived from the crosses of these two species were also employed for allozyme analysis. For allozyme analysis, a single fly was homogenized in 50 µl 20 mM Tris buffer (pH 7.4) and the homogenate was centrifuged at 12000 rpm at 4°C for 10 minutes (Kumar and Singh, 2013). Supernatant was subjected to 8% native polyacrylamide gel electrophoresis in 25mM Tris and 250 mM Glycine electrode buffer (pH 8.2) at 200V for 4 hour at 4°C. In-gel staining for specific enzyme was carried out by adopting the methods proposed by Shaw and Prasad (1970).

A dimeric esterase of *D. bipectinata* and *D. malerkotliana* shows electrophoretically detectable variation in laboratory populations. We could find the expression of three clear cut electrophoretic variants, being expressed in the ratio of 1:2:1 in both the species of this complex. However, a marked difference in the distance covered by variants of both the species was recorded. Three bands observed in a heterozygous individual showed homozygosity for slow and fast bands on either sides, whereas the middle one resulted due to presence of both slow and fast. This arrangement was observed in the heterozygotes of both the species except that the migration pattern differed in them. In a homozygous individual, we could observe either a slow or a fast band only. The variations in the zymogram pattern of the two species clearly indicate genetic variation at this locus, that might have resulted due to amino acid substitution/s. Hybrids obtained from the crosses of both the species did not exactly follow the parental pattern of expression. The bands expressed in the photograph (Figure 1) and in other gel preparations, we observed certain bands to be more intense indicating the expression of common genes of both the species in the hybrids. In hybrids, various genotypic combinations were also seen but in a majority of them, bands matching with both parents were witnessed.



bi=Drosophila bipectinata; mal=D. malerkotliana

Figure 1. Photograph showing the electrophoretic variants of *Drosophila bipectinata* and *D. malerkotliana* and their hybrids.

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