from http://www.doacs.state.fl.us/pi/enpp/ento/zaprionusindianus.html; Tsacas, L., 1980, Bulletin de la société entomologique de France 85: 141–154; van der Linde, K., G.J. Steck, K. Hibbard, J.S. Birdsley, L.M. Alonso, and D. Houle 2006, Fla. Entomol. 89: 402–404; Vilela, C.R., 1999, Dros. Inf. Serv. 82: 37–39; Vilela, C.R., E.P. Teixeira, and C.P. Stein 2001, Mosca-africana-do-figo, *Zaprionus indianus* (Diptera: Drosophilidae) (in Portuguese). Histórico e Impacto das Pragas Introduzidas no Brasil. E. F. Vilela, R. A. Zucchi and F. Cantor. Ribeirão Preto SP, Holos**:** 48–52; Yassin, A., P. Capy, L. Madi-Ravazzi, D. Ogereau, and J.R. David 2008, Mol. Ecol. Res. 8: 491-501.

Studies on the body melanisation of *D. malerkotliana* of Mysore.

Guruprasad, B.R.[1], Anand K. Tiwari, and S.N. Hegde. [1]Kannadabharthi College, Madekari, Indian Institute of Advanced Research Gandhinagar, and Department of studies in Zoology Manasagangotri, Mysore -570006.

Melanisation is a common phenotypic trait and is conserved in diverse insect taxa and *Drosophilids.* The *Drosophilids* family is composed by 65 genera and more than 3500 described species that occur in a number of ecosystems all over the world (Bachli, 1998; Guruprasad *et al.,* 2009). Body melanisation has been analyzed in about a dozen species. Diverse *Drosophilids* vary in their melanin patterns (continuous or interrupted stripes or even on the wing), but data on geographical populations and their fitness consequences are limited. In the present investigation, we analyzed the four populations of *D. malerkotliana* from diverse attitudinal localities (680-980m) in Chamundi hill Mysore (Guruprasad and Hegde, 2006). It is a small mountain with scrubby forest spread all around. It was an uninhabited area thirty years ago with a small temple at the hilltop, which has now become a famous tourist spot with a small township with a population of 3000. This hill is covered by the scrub layers with small patches of evergreen type forest. *D. malerkotliana* is the most common and abundant species in this hill throughout the hill (Guruprasad *et al.,* 2009) and to address the following question: to study melanisation of *D. malerkotliana* along with altitude gradients and influence of altitude on it.

To study melanisation in *D. malerkotliana*, wild flies were collected by net sweeping from each of the four altitude sites from 680-1000m of Chamundi hill in Sept 2009. The flies collected were transferred to fresh food vials and brought to the laboratory. Males of *D. malerkotliana* were identified and isolated and were directly used for morphometric analysis. As there was difficulty in identifying the females, all females collected were individually placed in separate vials containing food so as to develop isofemale lines. After three days when sufficient eggs are laid each female again was transferred to fresh vials. These eggs were allowed to develop and when the adults emerged, they were used for identification. On the basis of identification of the progeny, their mothers were also identified and *D. malerkotliana* fifty female flies were used to measured body melanisation. Melanisation was estimated from a lateral view of the female abdomen giving values ranging from 0 (no melanisation) to 10 (complete melanisation) for six abdominal segments 12^{th} to 17^{th}, and scores were weighted with relative sizes of the respective segments. Since the abdominal segments differ in size (*i.e*., 0.60, 0.72, 0.81, 0.91, 0.81, 0.61 and 0.33 for 2^{nd} to 7^{th} segments, respectively), these relative sizes were multiplied with segments wise melanisation scores. The present melanisation was calculated as (sum of observed weighted melanisation scores of abdominal segments per fly divided sum of the relative size of each abdominal segment * 10 per fly)* 100 (Ravi

Parkash *et al.*, 2008). The total body melanisation per fly was also estimated through image analysis. Means, standard errors, and Duncan's Multiple Range Test (DMRT) was applied for the data to know the significant difference between the altitudes.

Table 1. Shows percent of melanisation (M±SD) of (2^{nd}+3^{rd} +4^{th}) and (5^{th}+6^{th}+7^{th}) abdominal segments in wild populations of *D. malerkotliana*.

Altitudes	Abdominal Segments	
	(2^{nd}+3^{rd} +4^{th})	(5^{th}+6^{th}+7^{th})
680m	13.09 ± 2.03[a]	20.53 ± 3.64[a]
780m	12.06 ± 3.04[a]	21.38 ± 4.14[a]
880m	15.03 ± 5.40[b]	22.53 ± 3.04[b]
980m	15.43 ± 5.02[b]	29.03 ± 5.14[c]
F- value	5.013*	12.231**

*P<0.01; **P<0.001
The strains with same alphabet in superscript are not significantly different at 5% level according to DMART

The scrutiny of Table 1 shows wild populations from four altitude localities of *D. malerkotliana* along with mean and standard error of melanisation. According to the Table, *D. malerkotliana* have shown contrasting levels of variations in body melanisation in three anterior (2^{nd}+3^{rd} +4^{th}) versus three posterior (5^{th}+6^{th}+7^{th}) abdominal segments. The melenisation sum of three posterior segments is higher as compared with sum of three anterior segments (Table 1). Results from Duncan's Multiple Range Test (DMRT) show a difference in melanisation at different altitudes was statistically significant (F-value = 5.013, F-value = 12.231). The interesting feature of the study is that with an increase in altitude there is a slight increase in melanisation this is more in case of the posterior segments (5^{th}+6^{th}+7^{th}) compared to anterior segments. This shows there is a significant difference in melanisation between altitude of 680 and 980 and not in 780 and 880m. According to the Ravi Parkash *et al.* study in *D. melanogaster*, melanisation changes are significantly higher as compared with laboratory populations. Quantitative traits such as body melanisation vary due to genetic attributes and their interaction with environmental factors (Witttkopp *et al.,* 2003). We found significant phenotypic divergence in body melanisation along an altitudinal gradient. Thus, our present study reflects the ecological factors that are present on different altitudes as some influence on the melanisation.

References: Bachli, G., 1998, Higher Brachycera, Science Herald, Budapest; Guruprasad, B.R., and S.N. Hegde 2006, Dros. Inf. Serv. 89**:** 29-31; Guruprasad, B.R., S.N. Hedge, and M.S. Krishna 2009, Journal of Insect Science 10: 123; Parkash, Ravi, V. Sharma, and B. Kalra 2008, Fly 2:3: 111-117; Witttkopp, P.J., S.B. Carroll, and A. Kopp 2003, Trends Genet 19: 495-504.