

SCIENTIFIC NOTE

ALTITUDINAL VARIATION OF MORPHO-PHENOTYPIC TRAITS OF *DROSOPHILA NASUTA***B. R. Guruprasad* and S. N. Hegde**

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Morphometric variation observed in natural population is frequently attributed to natural selection but the roles of non-genetic modification by the environments have been neglected (Coyne and Beecham, 1987). In *Drosophila* studies on several species have shown the adaptive nature of the body size. Latitudinal clines and seasonal changes have also been reported in *D. malenogaster* (David & Bocquet, 1975). Although a few such studies have been made to analyze the morphological variation in natural populations (Persons 1983, Hegde et al., 2000) there are no reports on altitudinal variation of morphometric traits. Therefore present investigation was undertaken to study the variation in morphometric traits such as sternopleural bristles, scutellar bristles and wing length of *D. nasuta* in four different altitudes of Chamundi hill located in Mysore (South Karnataka, India).

To study morphometric traits of *D. nasuta* flies were collected from 680, 780, 880, 980m altitudes of Chamundi hill situated at 11° 36' N latitude and 76° 55' N longitude. The total height of the hill from the foot is only 400m. This hill is covered by the scrub layers with small patches of evergreen type forest. *D. nasuta* is the most common and abundant species in this hill throughout the year (Hegde & Krishnamurthy) hence this species was used. The flies were captured using net sweeping method. The males obtained from nature were directly used for making measurements. One *D. nasuta* female obtained from the F₁ progeny of each at the naturally inseminated female (Isfemale line) were used for measuring morphological traits. Fifty males and fifty females from each altitude were used for the analysis.

To analyze the morphometric traits the sternopleural bristles, of the left sides of the body and scutellar bristles on the thorax were counted then the left wing of each fly was removed from the base, mounted on a transparent glass slide with a drop of water and measured from the humeral cross vein to the tip of the wing with a ocular micrometer (1unit = 100µm) under microscope (100x). The means and standard errors of all these three characters were calculated and analysis of variance followed by DMART was made calculated separately for both male and females.

The scrutiny of table 1 shows that the female *D. nasuta* has more number of sternopleural and scutellar bristles than males. The wing length of females was also more than males. These morphometric characters are the indices of size, hence it can be concluded that as in most *Drosophila*, *D. nasuta* females are larger than males. Table 1 also shows variation in morphometric characters of male and females of *D. nasuta*. The sternopleural bristles number in males varied from 7.48 in 680m altitude to 7.90 in 980m. While in females is varied from 6.80 in 680m to 7.34 in 780m. The difference in the number of sternopleurals between 680 and others were significant while between 780m 880m and 980m difference was insignificant. In males the mean number of scutellar bristles increased (4.08 to 6.16) with the increase in altitude. In females mean number of scutellar bristles

varied from 4.20 in 680m to 4.43 in 880m. However the differences in the number of scutellar bristle was significant in males and not in females.

The mean wing length varied from 1.78 in 680m altitude to 2.90 in 980m in males, while it varied from 1.89 in 680m to 3.00 in 980m in females. The difference in wing length at different altitudes was statistically significant (table1). The interesting feature of the study is that there is a progressive increase in these metric traits in males with the increase in altitude. While in females no such increase is noticed. This indicates that the male size increase with altitude. In females on the other hand, although differences exist in these traits, at different altitudes, there is no distant trend. The absence of clinal variation in the metric traits in females suggests that they are more heterogenous than males. This is because the females are exposed to higher selection pressures than males.

Table 1. Metric characters for males and females in different altitudes of Chamundi hill.

Altitude	male			females		
	Sternopleural	Scutellar	Wing length	Sternopleural	Scutellar	Wing length
680	7.48 ± 0.149 ^a	4.08 ± 0.038 ^a	1.78 ± 0.110 ^a	6.80 ± 0.105 ^a	4.20 ± 0.075 ^a	1.89 ± 0.013 ^a
780	6.90 ± 0.095 ^b	4.10 ± 0.049 ^a	2.59 ± 0.008 ^b	7.28 ± 0.094 ^b	4.30 ± 0.095 ^a	1.85 ± 0.015 ^a
880	7.00 ± 0.098 ^b	4.14 ± 0.054 ^a	2.62 ± 0.005 ^c	7.20 ± 0.085 ^b	4.50 ± 0.122 ^a	2.84 ± 0.014 ^b
980	7.90 ± 0.112 ^b	6.16 ± 0.052 ^b	2.90 ± 0.005 ^c	7.34 ± 7.054 ^b	4.43 ± 0.056 ^a	3.00 ± 0.015 ^b
F value	6.096*	1.769*	18.081**	7.687*	0.654	14.375**

*P<0.01; **P<0.001

The strains with same alphabet in superscript are not significantly different at 5% level according to DMART.

LITERATURE CITED

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