are maintained the homeostasis (Fridovich, 1975) that results in the integrity and fidelity of the DNA. Carbamates are known to inhibit proteins (Cornman, 1954; Rannug and Rannug, 1984). But from the present results of the wing mosaic assay, it is possible that the same mechanism may not be operating with Sevin in wing disc cells of *Drosophila*.

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## *Drosophila lowei* collections from Mount Lemmon, Arizona, in 2009.

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The *Drosophila pseudoobscura* subgroup inhabits western North America and contains seven species (Lakovaara and Saura, 1982; Heed and O'Grady, 2000), but four of these species have reportedly not been collected in over a decade nor are there living cultures of them. The relationships of four of the species within the pseudoobscura subgroup are well supported by allozymes (Figure 1; Lakovaara *et al*., 1976), and a phylogeny reconstructed using the mitochondrial gene *cytochrome oxidase II* (Beckenbach *et al*., 1993) revealed that *D. lowei* diverged from *D. pseudoobscura* approximately 8.4 Mya (Aquadro *et al*., 1991; Beckenbach *et al.*, 1993). The next closest ancestors to *D. pseudoobscura*, species of the *D. affinis* subgroup, diverged approximately 17Mya (Aquadro *et al*., 1991; Beckenbach *et al*., 1993). Genomic sequence data and establishment of laboratory stocks of *D. lowei* may enhance comparative studies within the pseudoobscura subgroup. Scientific collections of *D. lowei*, however, have not been undertaken since those made for Beckenbach *et al*. (1993).

First collected in 1960 in Santa Catalina Mountains near Tucson, Arizona (Heed *et al*., 1962), *D. lowei* has also been documented in the Chiricahua Mountains and Mongollon Rim in Arizona and near Pikes Peak, Colorado (Heed *et al*., 1969). Like other southern species of the pseudoobscura subgroup (Heed and O'Grady, 2000), *D. lowei* is restricted to highlands and is found in highest

abundance in pine and fir forests at elevations greater than 7000ft in Arizona and 6000ft in Colorado in late summer to early fall (Heed *et al*., 1969). Males of *D. lowei* have two sets of sex combs, which are reduced in number (proximal sex comb: 4-6 teeth, distal sex comb: 3-4 teeth) and prominence as compared to *D. pseudoobscura* (Heed *et al*., 1969; Figure 2).

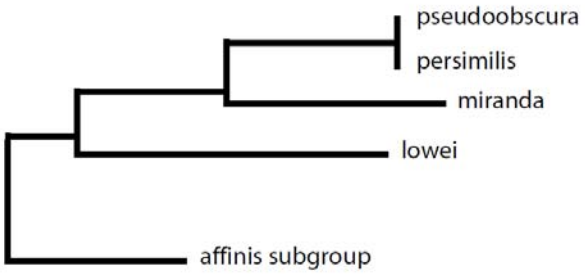


Figure 1. Schematic of *Drosophila pseudoobscura* subgroup in accordance with the phylogenetic reconstruction of Beckenbach *et al*. (1993) using the mitochondrial gene, *cytochrome oxidase II*.

Figure 2. *Drosophila lowei* sex combs. *D. lowei* is distinguished from other flies in the *pseudoobscura* subgroup by its sex combs. It has 3-4 teeth in the distal sex comb and 4-5 teeth on the proximal sex comb. *Drosophila pseudoobscura* from the Santa Catalina Mountains has 4-5 distal sex comb teeth and 6-8 proximal sex comb teeth.

Table 1. Counts of obscura group Drosophila captured on 30-31 August 2009 from banana traps set on Mount Lemmon near Tucson, AZ. Flies identified as *Drosophila macroptera* and *D. rubrifrons* were also found in qualitatively equal abundance to flies of the obscura group.

| Location | Lat. | Long. | Elevation | lowei ♂ | pseudoobscura ♂ | *azteca* ♂ |
|---|---|---|---|---|---|---|
| Box Camp Trail | 32°25'8.184"N | 110°44'28.637"W | 7856 ft | 25 | 1 | 1 |
| Upper Solider Camp Rd | 32°25'28.382"N | 110°44'12.191"W | 7963 ft | 12 | | |
| Mount Bigelow Rd | 32°24'54.479"N | 110°43'42.273"W) | 8323 ft | 63 | 1 | |

From 26-31 August 2009, banana traps were set on Mount Lemmon near Tucson, AZ. Three main locations were used (Table 1), and collections were made by aspirating flies from hanging buckets and bottle traps. Flies were most abundant at dusk, but were also found near traps in early morning when the temperature was between 14.5-18.5°C. Of note, the more successful collections were made on two nights when storms were imminent. Male flies, morphologically concordant with the species description of *D. lowei*, were obtained, and the collection data are recorded here (Table 1). Sanger sequencing of two putative male *D. lowei* for a 543bp fragment of the mitochondrial gene *cytochrome oxidase II* (primers: COIIf: ACATGAGCTAATTTAGGTTTACAAGAT, COIIr: AATTAGTTTGGTTTAATCGTCCA) confirmed the morphological species identification (GenBank Accession number: GU060632). Of particular note is their extremely high abundance relative to other obscura-group *Drosophila* at these sites at this collection time (Table 1). This high abundance along with the detailed locality and collection information provided here should assist other investigators seeking to obtain new collections of this species.

One generation has successfully eclosed at room temperature (~23°C) in the lab. Larval development has been facilitated by providing a layer of instant media (Formula 4-24® Instant Medium, Carolina Biological Supply Company) over the standard sugar-yeast-agar media.

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**Sexual behavioral plasticity of *D. melanogaster* of Chamundi hill**.

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*Drosophila* is a widely used and well suited model system for studying evolutionary response to extreme temperature (Hoffmann and Parsons, 1991). Phenotypic plasticity is the ability of an organism to alter its physiology, morphology, and behavior in response to changes in its environment. The capacity of a given genotype to produce different phenotypes in different environments is of growing interest among evolutionary biologists (David *et al.,* 2006). This emphasizes the fact that phenotypic plasticity is also a target of natural selection. Different aspects of sexual behavior, such as courtship latency, mating latency, and copulation duration, are good estimates of reproductive fitness of both the sexes. These behavioral traits are also genetically determined. Hence the obvious question that arises is, like phenotypic traits, whether these behavioral traits are also influenced by temperature or not. The author has tried to address this question using *D. melanogaster* flies collected from natural conditions.

To study the effect of different temperatures on sexual behavior, natural populations of *D. melanogaster* collected at domestic locality Chamundi hill, Mysore, were used. The flies were collected by keeping the quarter pint milk bottles containing mashed banana in kitchen and stores of a few houses at the top of the Chamundi hill, Mysore. Then the flies were sexed, and the females were individually placed in vials containing food so as to develop isofemale lines. When progeny appeared, equal numbers of them from each isofemale line were separately distributed to different culture bottles and reared under different temperature regimes: 12ºC, 22ºC, and 32ºC.

Sexual behavior acts, such as courtship latency, mating latency, and copulation duration, of 25 pairs involving each isofemale line were recorded (Hegde and Krishnamurthy, 1979). To identify the difference in sexual behavior at different temperatures, one way analysis of variance (ANOVA) followed by Duncan's multiple range test (DMRT) were used. The data on qualitative sexual activities, such as courtship latency, mating latency, and copulation duration of *D. melanogaster* at three different temperatures, is reported in Table 1. The courtship latency was highest at 12ºC (119.2 ± 10.8). The courtship latency increased up to 22ºC and then decreased with increasing temperature. Mean courtship latency, mating latency, and copulation duration at different temperatures, such as