from this study that central Baja California may be a boundary for the geographical range of *D. pseudoobscura*. However, one of us (W. B. Heed, unpublished) has records of a few *D. pseudoobscura* individuals collected from the Cape Region in the early spring of 1970, and the winter of 1981. Future collecting in the extensive date palm plantation in Mulegé and the higher elevations of the Sierra de la Giganta north of La Paz and the Sierra de la Laguna in the Cape Region will be required to determine if indeed central Baja has become a species boundary for *D. pseudoobscura*.

Table 1. Site locations and percentage of gene arrangements listed from Northernmost to Southernmost along Baja California and mainland Sonora.

<table>
<thead>
<tr>
<th>Location</th>
<th>ST</th>
<th>AR</th>
<th>SC</th>
<th>CH</th>
<th>TL</th>
<th>PP</th>
<th>N</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Antonio Mesa</td>
<td>58</td>
<td>24</td>
<td>8</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>72</td>
<td>Dobz. and Epling, 1944</td>
</tr>
<tr>
<td>Santo Tomas and Guadalupe</td>
<td>60</td>
<td>28</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>32</td>
<td>ibid</td>
</tr>
<tr>
<td>Observatory Road</td>
<td>75</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>20</td>
<td>this study</td>
</tr>
<tr>
<td>El Socorro</td>
<td>93</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>28</td>
<td>Anderson et al., 1991</td>
</tr>
<tr>
<td>Desemboque (mainland)</td>
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<td>33</td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>ibid</td>
</tr>
<tr>
<td>Punta Prieta</td>
<td>33</td>
<td>0</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>this study</td>
</tr>
<tr>
<td>San Borja</td>
<td>67</td>
<td>13</td>
<td>20</td>
<td>0</td>
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<td>0</td>
<td>84</td>
<td>Anderson et al., 1991</td>
</tr>
<tr>
<td>Isla Cedros</td>
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<td>15</td>
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<td>0</td>
<td>0</td>
<td>26</td>
<td>Dobz. and Epling, 1944</td>
</tr>
<tr>
<td>Isla S. Pedro Nolasco (main)</td>
<td>8</td>
<td>63</td>
<td>25</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>Jefferson et al., 1974</td>
</tr>
<tr>
<td>San Ignacio</td>
<td>25</td>
<td>0</td>
<td>75</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>this study</td>
</tr>
</tbody>
</table>

1 Number of chromosomes.
2 Fewer individuals were collected, but several were testcrossed to infer the chromosomes of both parents of captured adult.

Table 2. Number of individuals captured by baiting according to species1 and site sampled.

<table>
<thead>
<tr>
<th>Site</th>
<th>pse</th>
<th>mel</th>
<th>sim</th>
<th>bus</th>
<th>hyd</th>
<th>moj</th>
<th>nig</th>
<th>mai</th>
<th>ald</th>
<th>ari</th>
<th>spe</th>
<th>ham</th>
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<td>0</td>
<td>0</td>
<td>3</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Punta Prieta</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>65</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>San Ignacio</td>
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<td>11</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A. Bahia Concepcion</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B. Punta Agua Verde</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C. Todos Santos</td>
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<td>20</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D. Santiago</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>43</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>


Acknowledgments: Chromosomes were analyzed in the laboratory of Dr. M. G. Kidwell, C. S. Babcock was supported by a NIH Postdoctoral Training Grant, and this work was supported by an NSF grant to W. J. Eiges and R. DeSalle.


The larval pupation site preference (PSP) is an important event in *Drosophila* preadult development; because the place selected by the larvae can have decisive influence on their subsequent survival as pupae (Sameoto and Miller, 1968). Investigations on PSP in various species such as *D. melanogaster*, *D. simulans*, *D. willistoni*, *D. pseudoobscura*, *D. nigrospiracula*, *D. mettleri*, *D. ananassae*, *D. bipectinata*, and *D. malerkotliana* (Sokal, 1966; Sameoto and Miller, 1968; DeSouza, et al., 1968; Markow, 1979; Fogelman and Markow, 1982; Sokolowski, 1985; Singh and Pandey, 1991; Pandey and Singh, 1993) have been made. In most of these studies, the influence of various factors on PSP has been investigated by measuring the pupation height (the distance a larva pupates above the surface of the food medium). The PSP has also
been studied in different species namely, *D. melanogaster*, *D. simulans*, *D. gibberosa*, *D. mauritiana*, *D. yakuba*, *D. ananassae*, *D. rajasekari*, *D. hydei*, *D. nasuta nasuta*, *D. n. albomicans*, *D. n. kepulauana*, *D. sulfurigaster sulfurigaster*, *D. s. neonasuta*, *D. immigens*, *D. rubida*, and *D. pararubida* by analyzing the percentage of pupae pupated at different sites viz., cotton, glass wall, and medium in the cultures (Barker, 1971; Shirk, et al., 1988; Shivanna, et al., 1996). These investigations have been focused on understanding the interspecific differences in the larval PSP by employing only one strain for every species analyzed. Further, the knowledge on intraspecific differences with regard to the pupation height in two species of *Drosophila* is only preliminary (Singh and Pandey, 1991). Present studies were undertaken to unravel the nature and extent of variations if any, with regard to the intraspecific larval PSP employing 5 wild type strains of *D. melanogaster* under constant environmental conditions. Oregon-K, Oregon-R, Berlin, Ithaca, and Canton-S were the wild type strains of *D. melanogaster* used in the present study.

In order to maintain uniformity with regard to age and density of larval populations during development, eggs of synchronized age were collected by modified Delcour technique (Ramachandra and Ranganath, 1986). Fifty first instar larvae were transferred into each culture vial (3" x 1") containing equal amounts of wheat cream agar medium. These cultures were raised at a constant temperature of 22 ± 1°C and a relative humidity of 80%. Further, 50 μl of fresh yeast solution per vial was added every alternate day to maintain moisture. After pupation of the larvae, the number of pupae at different sites were counted.

The mean and percentage of pupation in each case was calculated based on the data obtained from 10 replicates (Table 1). It is evident that the larvae of all wild type strains prefer to pupate on glass walls of the culture vial. Among different strains, maximum preference to pupate on the glass walls is observed in the case of Oregon-K strain; while the extent of preference to pupate on glass wall is minimum (89.6%) in the case of Canton-S larvae. Further, 9% of Oregon-R and Canton-S larvae are seen to pupate in the medium; while the percentage of pupation in the medium in Oregon-K is 5.4.

The data on PSP was analyzed by two-way ANOVA to test the significance of variation in PSP among different wild type strains. Such an analysis revealed that the differences between strains at all three sites were insignificant, whereas the differences in preference between sites in all five strains analyzed were found to be significant (df = 2, F = 4012.44, p < 0.001) at 1% level.

Intraspecific variations in larval PSP has been studied by measuring pupation height employing five strains of *D. bipectinata* and seven strains of *D. malerkotliana* (Singh and Pandey, 1991). Such a study has revealed significant intraspecific variation in pupation height only in the case of *D. bipectinata*; but not in the case of *D. malerkotliana*. Present study reveals absence of intraspecific variations in larval PSP in the case of *D. melanogaster* and confirms the findings of Barker (1971), Shirk, et al. (1988), as well as of Shivanna, et al. (1996) made by using only one wild type strain.

Acknowledgments: We thank Prof. H.A. Ranganath, Chairman of our department and Prof. Dr. W.-E. Kalisch, Ruhr Universität Bochum, Bochum, Germany for their constant encouragement. One of us (NS) is grateful to The University Grants Commission, New Delhi for scholarship.


<table>
<thead>
<tr>
<th>Strain*</th>
<th>Cotton</th>
<th>Glass</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td></td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Oregon-K</td>
<td>0.3 ± 0.47</td>
<td>46.6 ± 1.23</td>
<td>3.1 ± 1.33</td>
</tr>
<tr>
<td>Oregon-R</td>
<td>0.6 ± 0.85</td>
<td>44.9 ± 1.74</td>
<td>4.5 ± 1.52</td>
</tr>
<tr>
<td>Berlin</td>
<td>0.5 ± 0.70</td>
<td>46.2 ± 1.49</td>
<td>3.3 ± 1.42</td>
</tr>
<tr>
<td>Ithaca</td>
<td>1.0 ± 1.17</td>
<td>45.1 ± 1.74</td>
<td>3.9 ± 1.74</td>
</tr>
<tr>
<td>Canton-S</td>
<td>0.7 ± 0.47</td>
<td>44.8 ± 1.33</td>
<td>4.5 ± 1.27</td>
</tr>
<tr>
<td>Mean</td>
<td>0.62 ± 0.73</td>
<td>45.52 ± 1.51</td>
<td>3.86 ± 1.46</td>
</tr>
</tbody>
</table>

* Stocks obtained from *Drosophila* Stock Centre, Dept. of Studies in Zoology, University of Mysore, Mysore-570 006, India.