Field key for distinguishing deer mice *Peromyscus maniculatus blandus* and white-footed mice *Peromyscus leucopus tornillo* in south-central New Mexico

By

Jennifer K. Frey, PhD
Department of Fishery and Wildlife Sciences
P.O. Box 30003, MSC 4901
Las Cruces, New Mexico 88003-8003
(505-646-7055)
jfrey@nmsu.edu

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Methods

I used discriminant function analysis to develop a model for distinguishing between deer mice (*Peromyscus maniculatus blandus*) and white-footed mice (*Peromyscus leucopus tornillo*) in south-central New Mexico. The model was based on external measurements recorded on skin tags associated with standard dry voucher specimens in the New Mexico State University Collection of Vertebrates. In order to verify identity, deposit voucher specimens in an established research museum and allow an expert to examine the material for confirmation.

Specimens Used for Discriminant Analysis

Note: Sample sizes are not reflective of the species relative abundance! Both species are generally rare to uncommon in this region with the exception of *P. leucopus*, which can be very abundant in certain riparian habitats.

*Peromyscus maniculatus* (N=51):
- **Dona Ana County**: 6713, 6214, 12918, 8228, 8227, 7633, 7632, 3629, 3630, 3631, 7639, 7631, 6216, 6218, 4935, 4936, 52, 5778, 4939, 5779
- **Otero County (White Sands National Monument)**: 1656, 1657, 5159, 1653, 1116, 1122, 1123
- **Luna County**: 13452, 13453, 131454, 131455, 13456, 13456, 13458, 13459, 13456, 13460, 13461, 13462, 13463, 13464, 13465, 13466, 13467, 13468, 13469, 13470, 13471

*Peromyscus leucopus* (N=22):
- **Dona Ana County**: 6194, 6195, 6196, 6197, 6198, 6199, 6200, 6201, 6202, 6293, 6204, 6205, 6206, 6207, 6208, 6209, 5776, 7615, 12917, 6210, 6211, 6212
Results

The model based on the discriminant function analysis had high predictive power. A total of 96% of the specimens were correctly classified as to their a priori species designation (as labeled on skin tag). Specimens incorrectly classified include one *P. maniculatus* from the Rio Grande Valley, Dona Ana County (NMSU 4839) and two *P. leucopus*, one from near Columbus, Luna County (NMSU 13454) and one from eastern Dona Ana County (NMSU 6212). Significant geographic variation was detected among the three populations of *P. maniculatus*. Means, ranges and standard deviations (in parenthesis) of the two species are in Table 1. To develop a key, I used the model to classify imaginary specimens with various measurements for tail and (these are the most accurate measurements on live animals and are strong discriminating variables). Figure 1 presents the results of this analysis, which represents the final field key for identifying these two species in the region.

Table 1: Mean, range and standard deviation of external measurements

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Tail</th>
<th>Hindfoot</th>
<th>Ear</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><em>P. maniculatus</em></td>
<td>152</td>
<td>63</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>130-185 (12.9)</td>
<td>43-89 (7.6)</td>
<td>16-22 (1.2)</td>
<td>12-19 (1.5)</td>
</tr>
<tr>
<td><em>P. leucopus</em></td>
<td>168</td>
<td>78</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>152-192 (10.1)</td>
<td>70-90 (5.8)</td>
<td>21-24 (1.0)</td>
<td>16-19 (0.7)</td>
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