Effectiveness of Wildlife Guards at Access Roads

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Introduction

We investigated how effective a particular type of wildlife guard design was as a barrier to mule deer (*Odocoileus hemionus*) and white-tailed deer (*O. virginianus*) movement. The wildlife guards were designed to keep deer from accessing the right-of-way along a future section of U.S. Highway 93 on the Flathead Indian Reservation. We also opportunistically investigated the effectiveness of the wildlife guard design as a barrier to other medium to large mammal species for which we had a sample size of ≥10: black bear (*Ursus americanus*) and coyotes (*Canis latrans*).

Wildlife Guard Design

Both wildlife guards had 2.4-m high fencing on each side, parallel and perpendicular to U.S. Highway 93. Each wildlife guard consisted of a steel grate placed over a backfilled depression supported by concrete foundation walls. The grates were 6.8 m wide in the direction parallel to the traffic on U.S. Highway 93 by 6.6 m long in the direction perpendicular to traffic. Each grate was formed by smaller 8-cm x 10-cm rectangles, made of a combination of 6-mm and 130-mm steel. The depressions were approximately 76 cm deep and were filled with concrete which we had a sample size of ≥10: black bear (*Ursus americanus*) and coyotes (*Canis latrans*).

Methods

To evaluate the effectiveness of the wildlife guards as a barrier to wildlife movements, we monitored wildlife movements for 2 years with cameras; one camera was placed at each of the 2 wildlife guards and one in a large culvert (about 7.7 m wide, 3.5 m high) near a wildlife guard (61 m south).

Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Number approached</th>
<th>Crossed</th>
<th>% crossed</th>
<th>Did not cross</th>
<th>% effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>White-tailed deer</td>
<td>32</td>
<td>2</td>
<td>63</td>
<td>30</td>
<td>93.3</td>
</tr>
<tr>
<td>Black bear</td>
<td>11</td>
<td>6</td>
<td>54.5</td>
<td>5</td>
<td>95.5</td>
</tr>
<tr>
<td>Coyote</td>
<td>12</td>
<td>10</td>
<td>83.3</td>
<td>2</td>
<td>91.7</td>
</tr>
<tr>
<td>White-tailed deer + coyote</td>
<td>12</td>
<td>10</td>
<td>83.3</td>
<td>2</td>
<td>91.7</td>
</tr>
</tbody>
</table>

Most deer (93.5%, n = 46), black bear (100%, n = 48), and coyote (94.7%, n = 57) crossed the road using the crossing structure instead of the wildlife guard.

Management Implications

- Wildlife guards can substantially reduce deer intuitions into the fenced right-of-way.
- Installing a wildlife crossing structure in the immediate vicinity of wildlife guards may increase the effectiveness of the wildlife guard.
- The guard design was of sufficient length; no animals jumped across a guard in one leap.
- Concrete ledges may be mitigated by adding chain-link fencing or mesh at a diagonal to cover the concrete ledge or bringing the fence over the concrete ledge in its entirety.

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