Electrified wildlife barriers at fence ends and at access roads

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Wildlife Guards
Wildlife Guards

For species N≥10

- Mule deer
- White-tailed deer
- Black bear
- Coyote
- Mountain lion
- Bobcat
- Raccoon

<table>
<thead>
<tr>
<th>Species</th>
<th>Huijser et al. 2016</th>
<th>Allen et al. 2013</th>
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</thead>
<tbody>
<tr>
<td>Mule deer</td>
<td>671</td>
<td>1354</td>
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<tr>
<td>White-tailed deer</td>
<td>32</td>
<td>11</td>
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<tr>
<td>Black bear</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>Coyote</td>
<td>22</td>
<td>271</td>
</tr>
<tr>
<td>Mountain lion</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Bobcat</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Raccoon</td>
<td>29</td>
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</tbody>
</table>

Ungulates vs. Species with paws

Wildlife Vehicle Collision Reduction and Habitat Connectivity Pooled Fund Study, TPF-5(358)

Reduce
- Wildlife Vehicle Collisions
- Habitat Connectivity
- Implement Cost Effective Solutions
<table>
<thead>
<tr>
<th>Traffic volume</th>
<th>Traffic speed</th>
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<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Melon farm</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Melon farm</td>
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<tr>
<td>Melon farm</td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Parks Canada</td>
<td>Medium</td>
</tr>
<tr>
<td>Thompson Falls</td>
<td>High</td>
</tr>
</tbody>
</table>
Many low volume access points!

Low cost:
A few hundred
A few thousand
Ten thousand
Not $100k+

Not a pain:
Drive-over
Drive-thru
Up to 7 black bears eating melons at the same time!
Map of Melon Patch

Fence
8-9kV

Some barriers less
5kV bump gates

1 barrier 10kV
Electric Fence

8-10kV
Simple, relatively inexpensive
For bears
Not for ungulates
Gates = Road ecology!

- 1 swing gate
- 1 drive-over wires
- 2 bump gates
- 1 drive-over mat (Crosstek)
Barrier effect

![Bar graph showing the effectiveness barrier (% for different types of barriers and their corresponding counts (N).]

- Swing gate: N=9
- Bump-gates (no net): N=32
- Bump-gates (with net): N=24
- Drive-over wires: N=35
- Drive-over mat: N=2

**Legend**
- **Barrier types**:
  - Swing gate
  - Bump-gates (no net)
  - Bump-gates (with net)
  - Drive-over wires
  - Drive-over mat

**Effectiveness barrier (%)**

- **Swing gate**
- **Bump-gates (no net)**
- **Bump-gates (with net)**
- **Drive-over wires**
- **Drive-over mat**

The graph illustrates the effectiveness barrier for various types of barriers, with the counts (N) indicating the number of observations for each category.
Modification
The weakest spot...

Digging under the fence

Bear crawl

Up bear yoga

Evidence
One for the road…
Fence Fixes

- Lower wires
- Additional wire
- 2\textsuperscript{nd} wire hot (not ground)
- Light scare
- Sound scare
It is a system!

• Fix one point?

• Another point now becomes the weakest spot

• Stepwise approach to eliminate all weak spots!

• The same with a transportation corridor!
Addiction was broken

Black bear observations
7 locations monitored with a camera
Regardless of which side of the fence or electrified barriers the bears were on

95% lower in 2021 (N=24) than in 2020 (N=527)
Farmer’s perspective

2020: 80% reduction in melon loss due to bears
2021: Near 100% reduction in melon loss due to bears
2022: Poor fence maintenance, bears are back!
Operation and Maintenance

• Need to be certain that electricity is ON
• Bump gates are easily damaged
• Commitment to maintenance?
Thank you!

Project partners:
Melon farmers (Cassie & Faus Silvernale)
People and Carnivores (Bryce Andrews)
Crosstek (Tim Hazlehurst)

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