The Background

Southwestern Alberta is a provincial hotspot of carnivore-agricultural conflicts. The Waterton Biosphere Reserve’s (WBR) Carnivores and Communities Program (CACP) focusses on decreasing conflicts between large carnivores and people in an agricultural landscape by supporting the community through collaborative projects, capacity building, and educational outreach. The program began in 2009 and operates in the municipalities of Ranchland, Pincher Creek, Willow Creek, and Cardston. We evaluated the CACP’s bear safety workshops, deadstock removal program, and attractant management projects by collecting survey data on participants’ perspectives of the CACP’s effectiveness relative to reducing economic costs and human safety risks, and completing an analysis of carnivore conflict data.

Social Survey

In 2018, we used an online survey to evaluate the effectiveness of the CACP directly from the program participants’ perspectives and experiences. The survey was organized into the following sections: demographics, general awareness and motivation to participate, safety risks and sense of security associated with large carnivores, assessment of attractant management and deadstock removal programming, and communications and future direction.

Occurrence Records

We used southwestern Alberta occurrence records (i.e. Fish and Wildlife complaint data) from 1999 through 2016 to evaluate trends over time in large carnivore (i.e. grizzly bear, black bear, cougar, wolf) incident type.

\[\text{Incident} = \text{situation where the large carnivore caused property damage, obtained anthropogenic food, killed or attempted to kill livestock or pets, or was involved in a vehicle collision.}\]

We focussed on incidents related to the deadstock removal program and attractant management projects (e.g. electric fence, grain bin upgrades). We further focussed on grizzly bear incidents because all CACP attractant management projects have been designed predominantly to mitigate bear-agricultural conflicts.
Result Highlights

- 116 completed surveys (62.1% Ranchers)
- 1,696 incident records that fell within our study area

Awareness

Table 1: Survey respondents’ level of awareness for various components of the Carnivores and Communities Program (n = 116).

<table>
<thead>
<tr>
<th>Component</th>
<th>Aware (%)</th>
<th>Unsure (%)</th>
<th>Unaware (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General information about the Carnivores and Communities Program</td>
<td>87.9</td>
<td>4.3</td>
<td>8.5</td>
</tr>
<tr>
<td>Deadstock removal program</td>
<td>92.2</td>
<td>1.7</td>
<td>6.0</td>
</tr>
<tr>
<td>Availability of financial supports for electric fencing</td>
<td>52.6</td>
<td>7.8</td>
<td>39.7</td>
</tr>
<tr>
<td>Cost-sharing opportunities to improve grain/feed storage</td>
<td>59.5</td>
<td>9.5</td>
<td>31.0</td>
</tr>
<tr>
<td>Bear Safety Training</td>
<td>85.3</td>
<td>3.4</td>
<td>11.2</td>
</tr>
</tbody>
</table>

Safety Concerns

- Of the large carnivores present, grizzly bears were the biggest safety concern
  - 27.6% of survey respondents said they felt very unsafe around grizzly bears, while 52.6% felt a little unsafe
  - 50% of survey respondents had personally experienced personal/family safety issues related to grizzly bears

Bear Safety Workshops

- 49.5% of respondents said the bear safety workshops increased their sense of safety
- 61.2% of workshop participants said they now carry bear spray as a result of the training

“The bear awareness course is a fantastic program and I encourage everyone I know that spends time on the land to take it.”

-Rural Resident Survey Respondent
**Result Highlights—continued**

**Attractant Management**
- 67.9% of survey respondents said the program is effective at reducing conflicts
- Occurrence records showed a decrease in grizzly bear attractant incidents post-CACP implementation

**Deadstock Removal**
- 75.5% of survey respondents said the program helps reduce carnivore conflicts
- 84.6% of survey respondents said they want the program to continue
- Occurrence records showed a decrease in deadstock incidents post-CACP implementation (Figure 2)

The deadstock removal program “is an integral part of attractant management and is directly beneficial to a large number of people.”
- Rancher Survey Respondent

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**Figure 1**: Total (in black) grizzly bear incidents from 1999–2016 in southwestern Alberta ($y = 4.45x - 2.01$, $R^2 = 0.70$, $p < 0.001$). Also shown are incidents related to attractants. Blue identifies attractant incidents prior to the start of the CACP ($y = 1.16x + 6.2$, $R^2 = 0.52$, $p = 0.02$), while red identifies attractant incidents post-CACP implementation ($y = -3.05x + 43.21$, $R^2 = 0.30$, $p = 0.16$).

**Figure 2**: Total combined deadstock incidents for grizzly bears, black bears, cougars, and wolves in southwestern Alberta 1999–2016. Blue identifies deadstock incidents prior to the start of the CACP ($y = 0.99x + 2.27$, $R^2 = 0.56$, $p = 0.01$), while red identifies deadstock incidents post-CACP implementation ($y = -2.16x + 21.82$, $R^2 = 0.51$, $p = 0.05$).
Occurrence Reporting

- Occurrence records only represent events that are reported. Occurrence records likely underrepresent the extent of carnivore activity in southwestern Alberta. (Table 2)

Table 2: Percent of respondents indicating whether they report various carnivore interactions always, more than half the time, less than half the time, or never.

<table>
<thead>
<tr>
<th>Reason for calling</th>
<th>Always</th>
<th>&gt; half the time</th>
<th>&lt; half the time</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety concerns (n = 95)</td>
<td>30.5</td>
<td>14.7</td>
<td>21.1</td>
<td>33.7</td>
</tr>
<tr>
<td>Stored grain or feed damage (n = 51)</td>
<td>29.4</td>
<td>7.8</td>
<td>13.7</td>
<td>49.0</td>
</tr>
<tr>
<td>Livestock Depredation (n = 52)</td>
<td>46.2</td>
<td>25.0</td>
<td>11.5</td>
<td>17.3</td>
</tr>
</tbody>
</table>

"While local officials try hard to deal with our concerns, they are often limited by time, resources and jurisdiction. Often we do call at least to notify them of a problem, though in some cases we are able to deal with it ourselves."

- Rancher Survey Respondent

Still Work To Do

- Both occurrence records and social survey data indicate grizzly bear depredation of livestock is increasing despite the CACP. Potential reasons for increased depredation include an increased and geographically expanded grizzly bear population, the existence of problem bears, and/or the reduced capacity of government staff to respond to potential problem bears.

Take Home Message

We haven’t solved all the problems, but we believe that the CACP is a good news story. The results of our collaborative research clearly show that the CACP is having a positive impact and making progress towards reducing conflicts between people and large carnivores. We believe the CACP’s work provides a successful example of a community-based program that helps people and large carnivores better coexist on the landscape.

Additional Information

Please contact us at info@watertonbiosphere.com for additional information.

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