Large Animal Warning and Detection System (LAWDS)
Wildlife-Vehicle Crash Mitigation

Map of Canada showing crash mitigation statistics for different regions.
Wildlife-Vehicle Crashes

Why Are They a Concern?

- Property Damage

- Human Injuries
  (Deer: 5% ; Moose: 20%)

- Fatalities
  (Deer: 0.05% ; Moose: 0.4%)
When Do Crashes Occur?

- **Dawn and dusk** are traditionally times of high wildlife vehicle collision.
- **Deer** are involved in approximately 80% of wildlife vehicle collisions. Peak collisions during **May and November**.

The driver sustained serious neck injuries in this collision with a moose.
Collision occurred on Highway 97, north of Summit Lake, BC, in 2004
Where Do Crashes Occur?

- Where creeks and drainages intersect roads
- Good habitat and forage near the roadside
- Water source nearby
- Long, wide, straight stretches of road
Crash Mitigation Requirements

- Reliably detects the presence of large animals on the roadway platform
- Automatically alerts travelers for as long as a large animal stays on the roadway platform
- Minimal impact to the environment
LAWDS on Hwy 416
Features of LAWDS

- **Detect** and track **animals** present anywhere within the ROW **at all times**

- **Eliminates false alarms** from birds, falling leaves and precipitation.

- Requires **fewer sensors**, which entails **less digging** leaving a **smaller environmental impact**
Features of LAWDS

- Requires almost **no vegetation clearing**
- **All-weather** operation and advanced animal detection and tracking procedure.
LAWDS In Action

AUG: Remote Traffic Monitor

Traffic Statistics
- Last Updated: 13 Apr 2012 02:43:46
- Beacon Status: 
  - Animal Detection History:
    - Detections (past 12 hr): 3
    - Last Detection:
      - Time: 13 Apr 2012 02:43:46
      - Location: 75.62315W, 45.01660N

Northbound Vehicles
- Average speed (km/h): 133.32
- Volume (past 1hr): 14

Southbound Vehicles
- Average speed (km/h): 71.23
- Volume (past 1hr): 10
LAWDS In Action

AUG: Remote Traffic Monitor

Traffic Statistics

Last Updated: 13 Apr 2012 02:43:49

Beacon Status:

Animal Detection History

Dates (past 12 hr):

Last Detection:

Time: 13 Apr 2012 02:43:49

Location: 75.6231W, 45.04553N

Northbound Vehicles

Average speed (km/h): 132.81

Volume (past 1 hr): 14

Southbound Vehicles

Average speed (km/h): 112.50

Volume (past 1 hr): 12

© OpenStreetMap: Map data 2012 OpenStreetMap
LAWDS In Action

AUG: Remote Traffic Monitor

Traffic Statistics

Lost Updated: 13 Apr 2012 02:43:52

Detection Status:

Animal Detection History

Detections (past 12 hr): 3

Last Detection

Time: 13 Apr 2012 02:43:52
Location: 75.62311W, 45.041857N

Northbound Vehicles

Average speed (kph): 122.03
Volume (past 1hr): 14

Southbound Vehicles

Average speed (kph): 112.30
Volume (past 1hr): 13

24 Apr 2012 17:15 | Playback in progress...
LAWDS In Action

Current Vehicle Data:
- Vehicle 1: 107.84 km/h
- Vehicle 2: 88.26 km/h

Traffic Statistics:
- Last Updated: 13 Apr 2012 02:44:32
- Traffic Count:
  - Northbound:
    - Average speed (km/h): 102.46
    - Volume (past 1hr): 14
  - Southbound:
    - Average speed (km/h): 112.17
    - Volume (past 1hr): 11

Last Detection:
- Time: 13 Apr 2012 02:44:02
- Location: 75.6232W, 45.0667N
Intelligent Highway Traffic Monitoring

LAWDS can...

• Determine and record Location, Speed, Heading and Timestamp for all vehicles within the monitored ROW

• Distinguish between cars and trucks

• Record and analyze road traffic data (e.g. avg speed of NB and SB traffic, traffic volume)
LAWDS can analyze the behavioural effects of the beacon and sign on motorists

<table>
<thead>
<tr>
<th></th>
<th>Beacon ON</th>
<th>Beacon OFF</th>
<th>% reduction in speed</th>
<th>Absolute reduction of speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average speed day (km/h)</td>
<td>89.30</td>
<td>105.58</td>
<td>15 %</td>
<td>16.28</td>
</tr>
<tr>
<td>Average speed night (km/h)</td>
<td>89.58</td>
<td>110.10</td>
<td>15 %</td>
<td>16.52</td>
</tr>
</tbody>
</table>

Data: June 15-July 30, 2012
Thank You!