Why does the moose cross the road?

Sterling Highway MP 58-79 Improvement Project
Jim’s Landing to Sterling

John Morton
Kenai National Wildlife Refuge
Caribou (n=11), brown bear (n=55) and moose (n=54) avoid the Sterling development corridor and cross in the project area.
Only 3 landscape-scaled corridors remain for north-south wildlife movement (<20% of area historically available)
Glenn Highway divides Anchorage moose into 2 genetically distinct subpopulations

Bayesian clustering - based on microsatellite allelic frequency (n = 40)

- Introduction

- Methodology

- Results

- Discussion

- Conclusion
WILDLIFE-VEHICLE COLLISIONS

Sterling Highway MP 58 – 79
2000 to 2007 (n = 168)
22.4 WVC/year

Source: Alaska State Troopers

Traffic Volume (AADT)

Source: Alaska DOT

Moose 81%
Black Bear 14%
Brown Bear 2%
Caribou 3%

Source: Alaska DOT
Vehicle collisions kill as many moose as harvested by hunters (~250 per year)

$7 - $9 million per year on Kenai Peninsula!

<table>
<thead>
<tr>
<th></th>
<th>Deer</th>
<th>Elk</th>
<th>Moose</th>
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<tbody>
<tr>
<td>Vehicle repair costs per collision</td>
<td>$1,840</td>
<td>$3,000</td>
<td>$4,000</td>
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<tr>
<td>Human injuries per collision</td>
<td>$2,702</td>
<td>$5,403</td>
<td>$10,807</td>
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<tr>
<td>Human fatalities per collision</td>
<td>$1,671</td>
<td>$6,683</td>
<td>$13,366</td>
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<tr>
<td>Towing, accident attendance and investigation</td>
<td>$125</td>
<td>$375</td>
<td>$500</td>
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<tr>
<td>Monetary value animal per collision</td>
<td>$2,000</td>
<td>$3,000</td>
<td>$2,000</td>
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<tr>
<td>Carcass removal and disposal per collision</td>
<td>$50</td>
<td>$100</td>
<td>$100</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$8,388</strong></td>
<td><strong>$18,561</strong></td>
<td><strong>$30,773</strong></td>
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Sterling Hwy MP 58-79 project components

- Repave the existing highway
- Construct passing lanes
- Widen highway shoulders to 8’
- Improve drainage and hydrologic connectivity
- Maintain 55 mph posted speed
- Wildlife enhancement features
Typical Section
Wildlife Overpass
Wildlife
Underpass
Map 3. Hot spots (sum of WV Collisions, Wildlife Hotline, and GPS Crossings) along the Sterling Highway.
MP 75.3 8’x8’ underpass
MP73.4 20’x16’ underpasses (2), EFMR 104’x18’ bridge
East Fork of Moose River

OLD
10’ culvert

NEW
104’ X 18’ bridge
Moose Fence

• 2.3-mile (x 2) Fence 9-ft tall with 1-ft gap at bottom
Moose Fence

- 2.3-mile (x 2) fence 9-ft tall with 1-ft gap at bottom
- 22 jump-outs alternating every 1/8-mile
MP 64.8 14’x14’ underpass
MP 61.9, 58.2 14’x14’ underpasses
Additional Components

- Mystery Creek realignment/gravel pit restoration
- Skyline Trail pedestrian underpass/kiosk
- New paved pullouts at Lily Lake and MP 73.4
- Paving pullout at MP 62.7
- Turn lanes at Skilak Lake Road intersections
- Improved access road to Jean Lake
- Fish habitat in revetment along Kenai River braid at MP 57.8
- Improved hydrologic connectivity
Mystery Creek Road/Gravel Pit

- Extract 5.5 acres gravel from existing MP 63.4 material pit
- Realign road through gravel pit to improve safety/provide parking area
- Existing road access closed and partially reclaimed
- Spruce saplings translocated by YCC for reclamation
$10.5 million wildlife mitigation

<table>
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<tr>
<th>Milepost</th>
<th>Structure (net clearance)</th>
<th>Cost</th>
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<tr>
<td>75.3</td>
<td>structural plate pipe-arch 8’ X 8’</td>
<td>$550,410</td>
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<td>73.4</td>
<td>structural plate horizontal ellipse 20' X 16'</td>
<td>$1,255,690</td>
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<td>structural plate horizontal ellipse 20 X 16'</td>
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<td>additional fill for 6a and 6B (~ 20,000 yd³ )</td>
<td>$508,405</td>
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<td>71.4</td>
<td>East Fork Moose River bridge (104’ X 18’)</td>
<td>$2,473,104</td>
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<td>64.8</td>
<td>structural plate underpass 14' X 14'</td>
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<td>61.9</td>
<td>structural plate underpass 14’ X 14'</td>
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<td>58.2</td>
<td>structural plate underpass 14’ X 14'</td>
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<td>retaining walls for wildlife undercrossings</td>
<td>$718,189</td>
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<td>cast-in-place retaining wall (Jean Lake)</td>
<td>$1,752,622</td>
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<td>71.3-73.6</td>
<td>moose fence, 9’ high,</td>
<td>$487,041</td>
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<td>22 jump-outs</td>
<td>$398,323</td>
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MP 58–79 project total cost $71 million (bid amount)

- 93.4% Federal funds
- $10.5 million wildlife mitigation
  - $1.5 million NWRS-WO funds
  - $1.3 million gravel
- $0.6 million Skyline Trail underpass
  - $1 million FLAP grant
Do they work?
$400K post-construction monitoring of wildlife and invasive plants

- 1st structures for wildlife outside of Anchorage area in Alaska
- 1st use of certified weed-free gravel and soil on a highway project in Alaska
- 1st time ADOT&PF has taken responsibility for invasive plant management
Cooper Landing Bypass

4 large underpasses and 1 vegetated overpass (1st in Alaska!) will be constructed
Partnership and Collaboration!

Andy Loranger, John M. Morton, Lynnda Kahn, Rick Ernst – Kenai NWR
Cynthia Ferguson, Christopher L. Post, Kathy Shea, Drew Vonlindern, Shaun Combs – Alaska DOT&PF
Steven Noble, Richard Pribyl, Zaid Hussein – Dowl HKM

THANK YOU