

Mule deer in the Boundary Region: Proposed research and discussion



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The Boundary

Deer Herd

- “... (it is) difficult to cast the mind to those earlier days when deer roamed through the foothills in bands of thirty or forty” (Martin Burrill, Grand Forks Gazette, Dec 23, 1905)
- 1914 first Fish and Game Protective Association Formed
- Concern of over-harvest related to mule deer led to Spalding report (1968)
- “The Boundary must be considered as one of the best mule deer and whitetail deer areas of the Province”

History

- Large fires 1908 and 1930s
- “Very good hunting in 1930s, hunters could spot their game from the Cochrane ranch. Nowadays, this same sidehill is so thickly over-grown with second-growth fir and pine that game cannot be seen from the bottom of the valley.” (Spalding, 1968)
- Successive changes in regulations from no regulations; 4 deer; 100+ day buck, 20 day antlerless; draw for antlerless; 60 day 4 pts or better

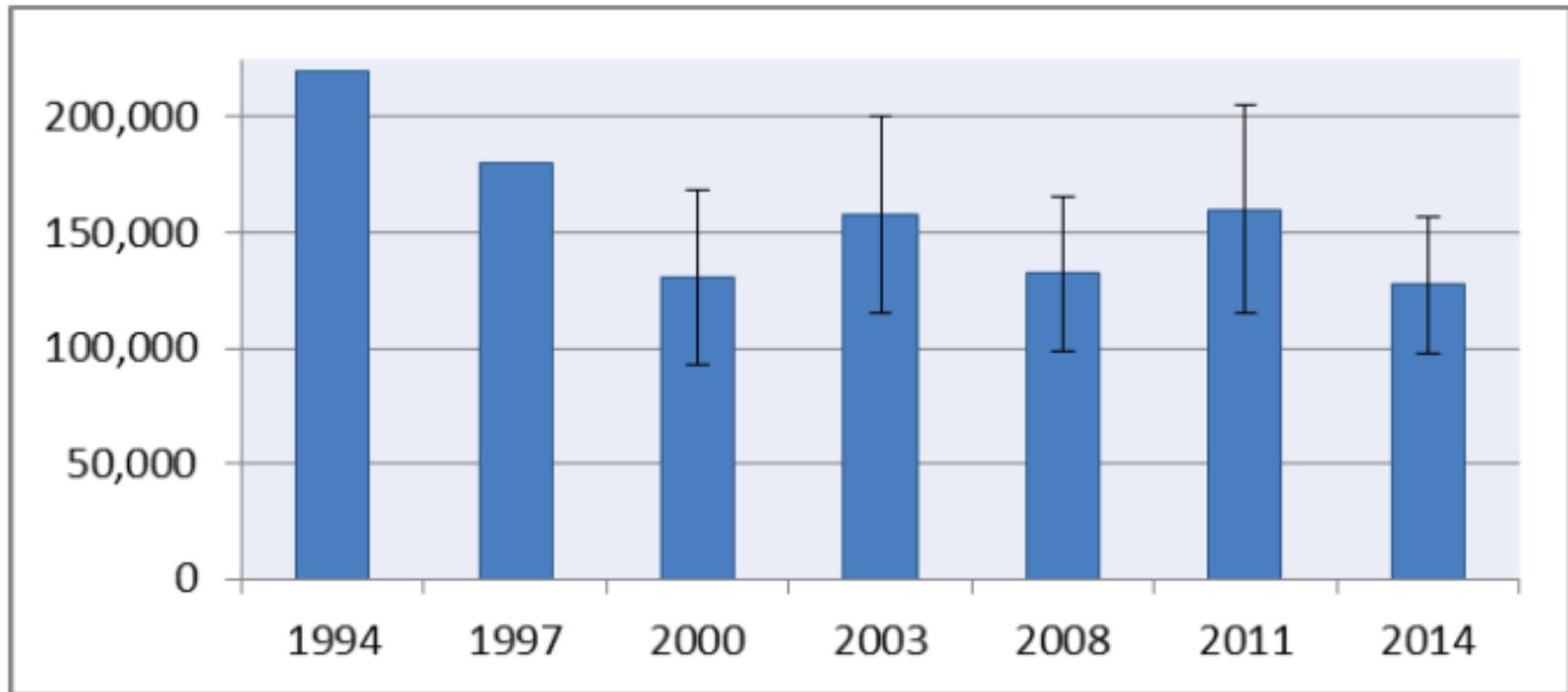
Boundary MD Harvest 40 yrs of Reg Changes

1966-67

2011

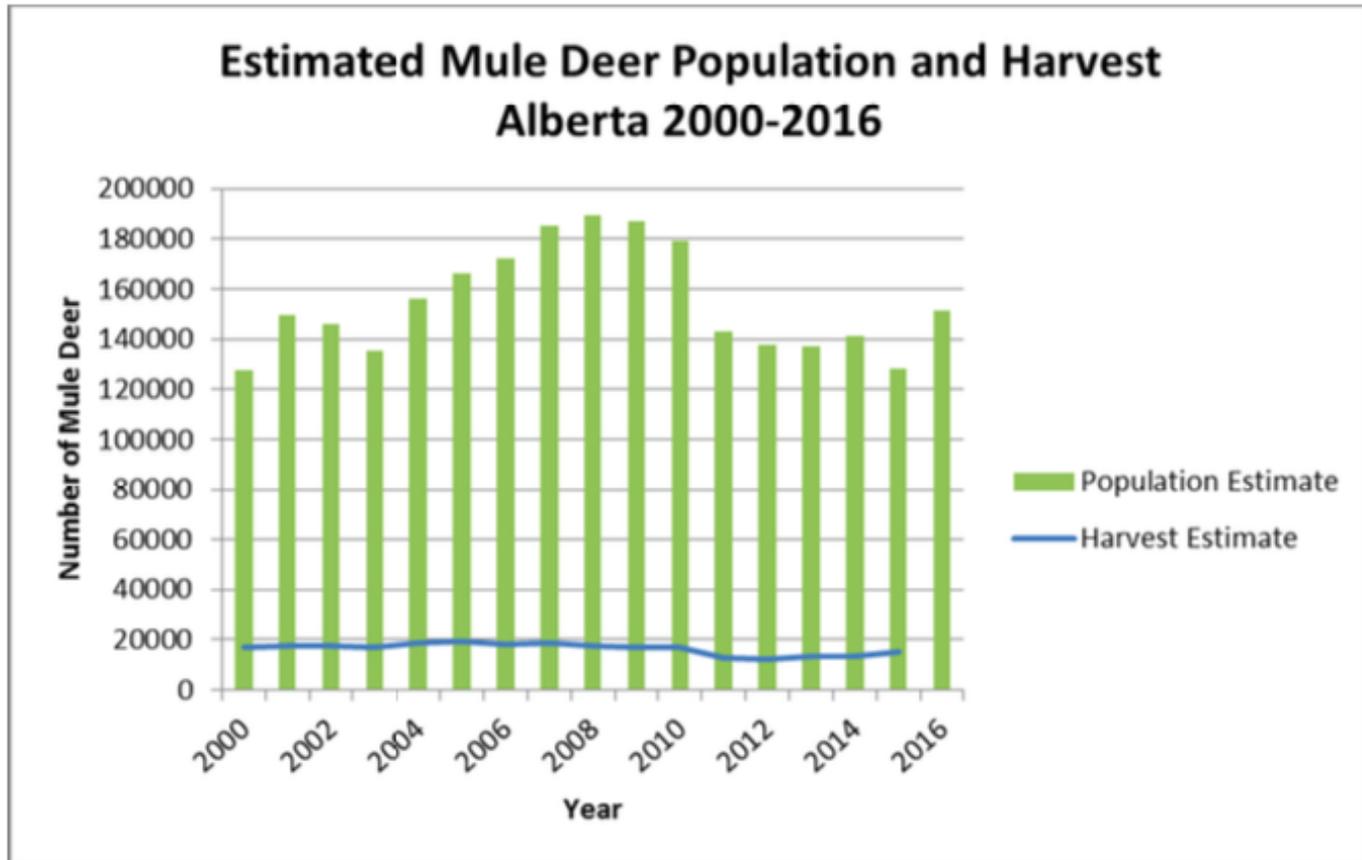
Buck	Antlerless	Total	Buck	Antlerless	Total
1755	1170	2925	660	75	735

Mule deer declined across the west for several decades, including in BC

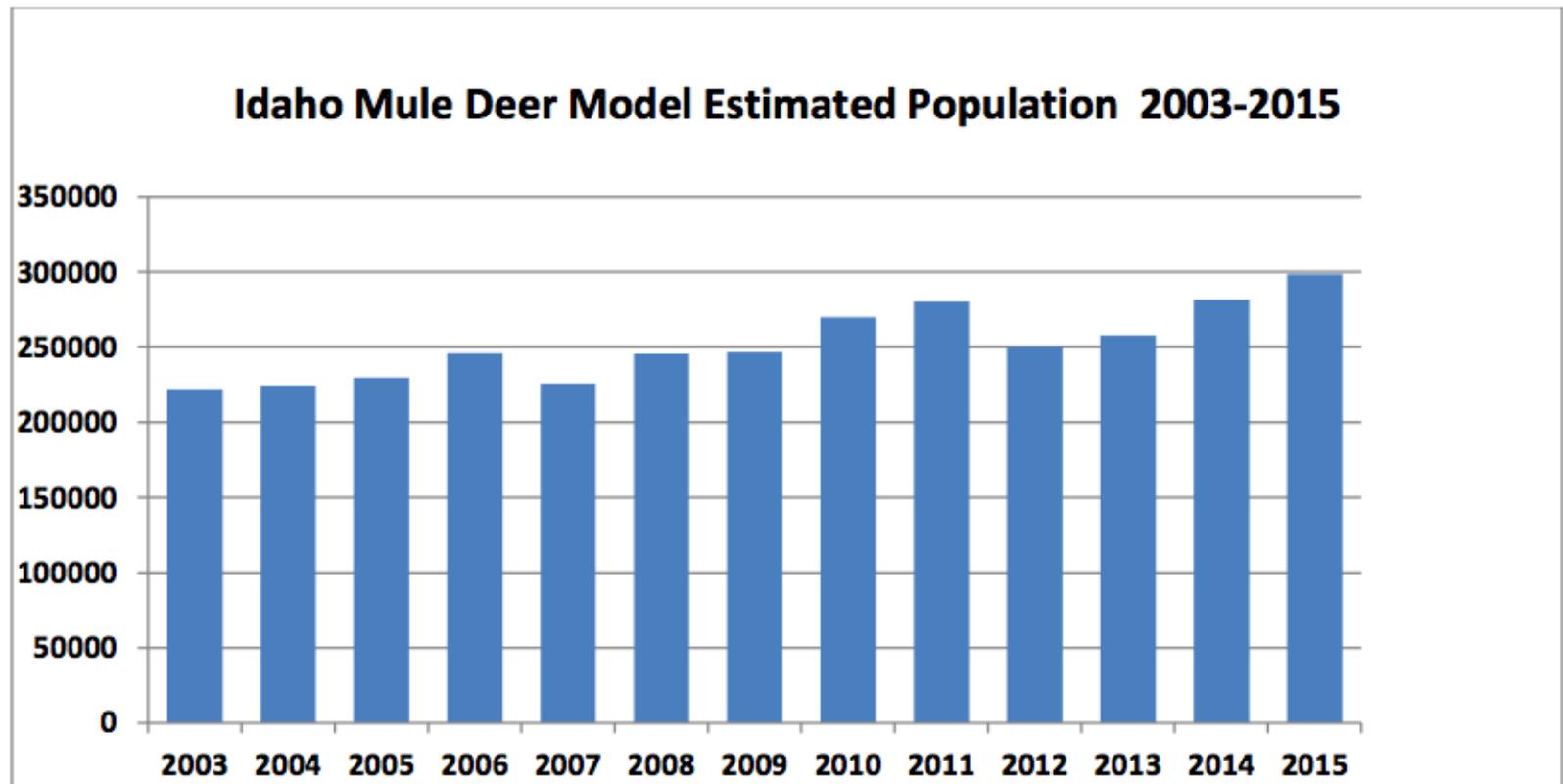


Black-tailed deer population trends in British Columbia.

But recently, many herds have increased or stabilized:



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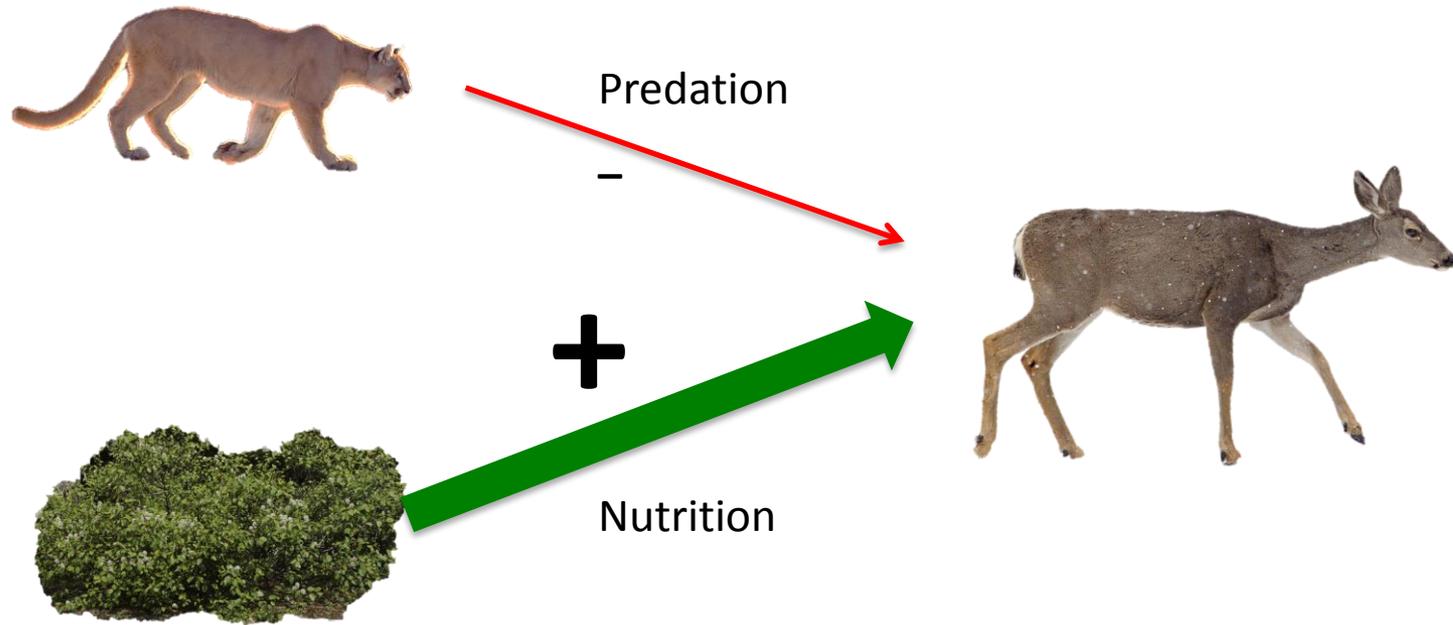


Estimate from the Salmon River drainage south. Estimates are midpoint of Confidence Limits based on Integrated Population Model.

Advances in mule deer research:



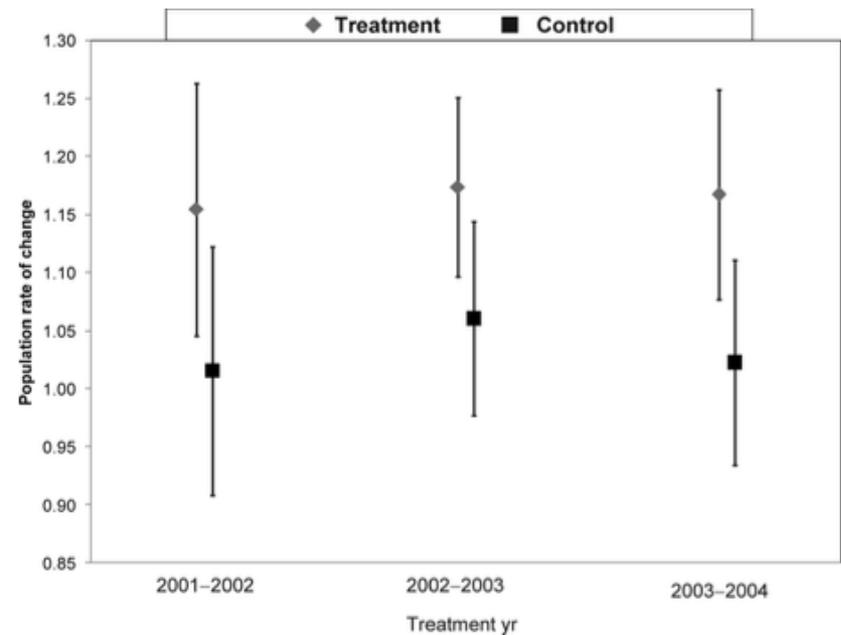
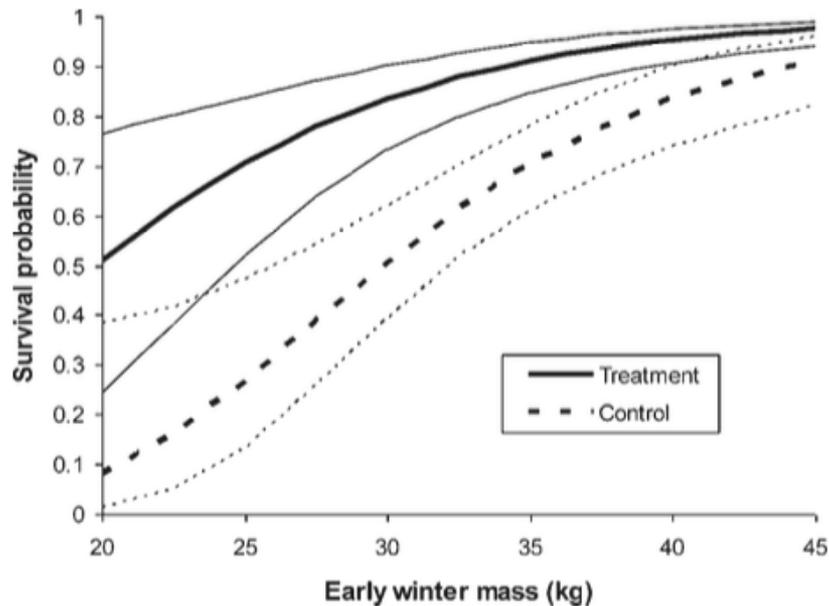
Bottom-up: nutrition pathway



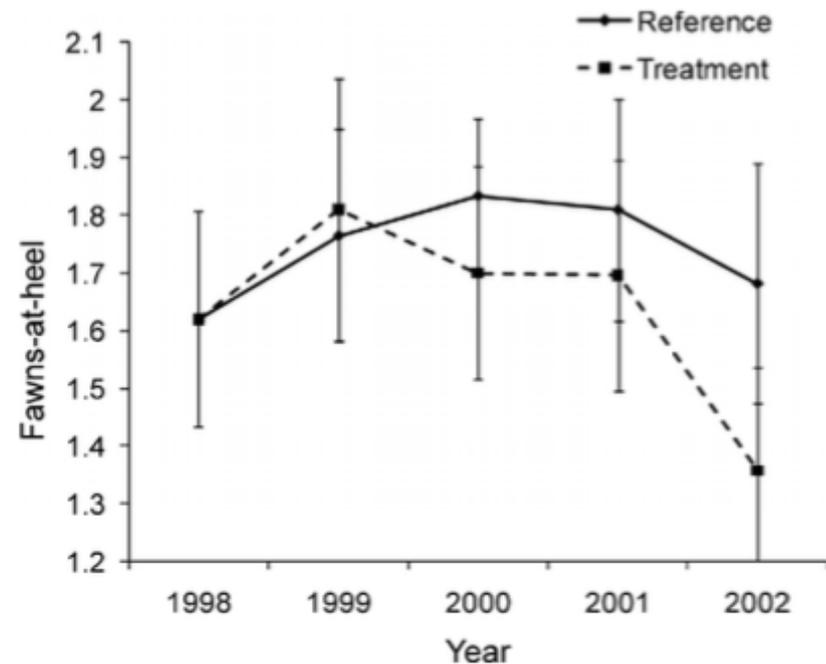
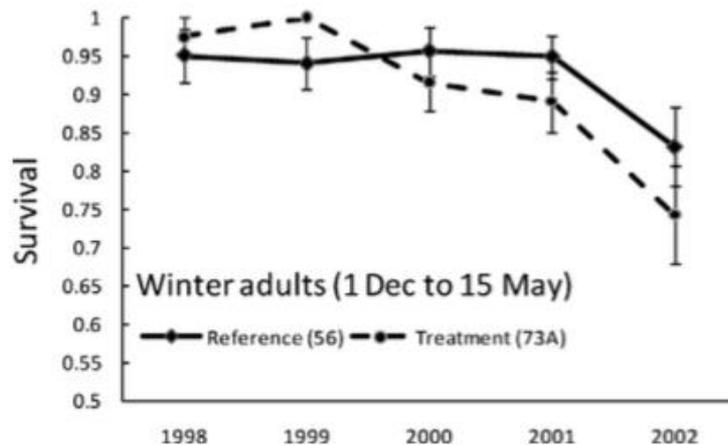
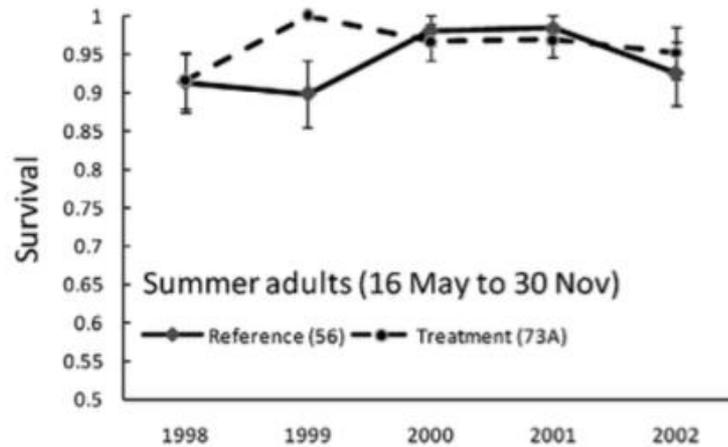
Nutrition: affects survival and reproduction



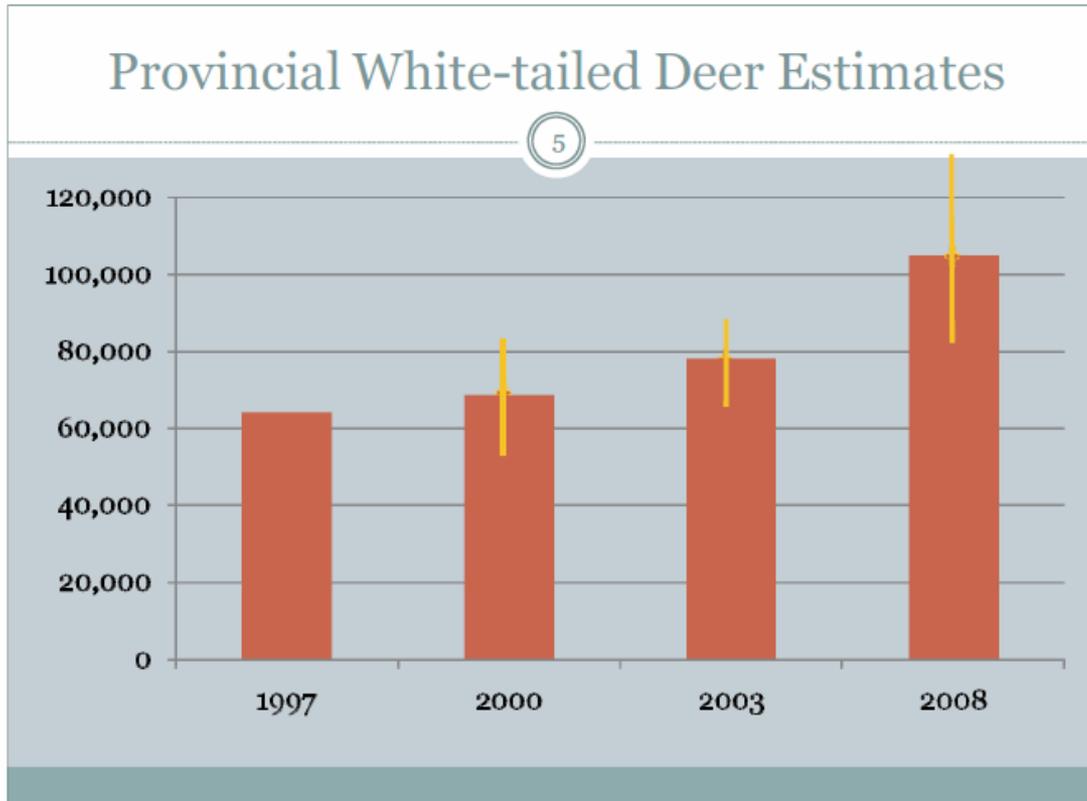
Improving nutrition → Increased survival and pop growth



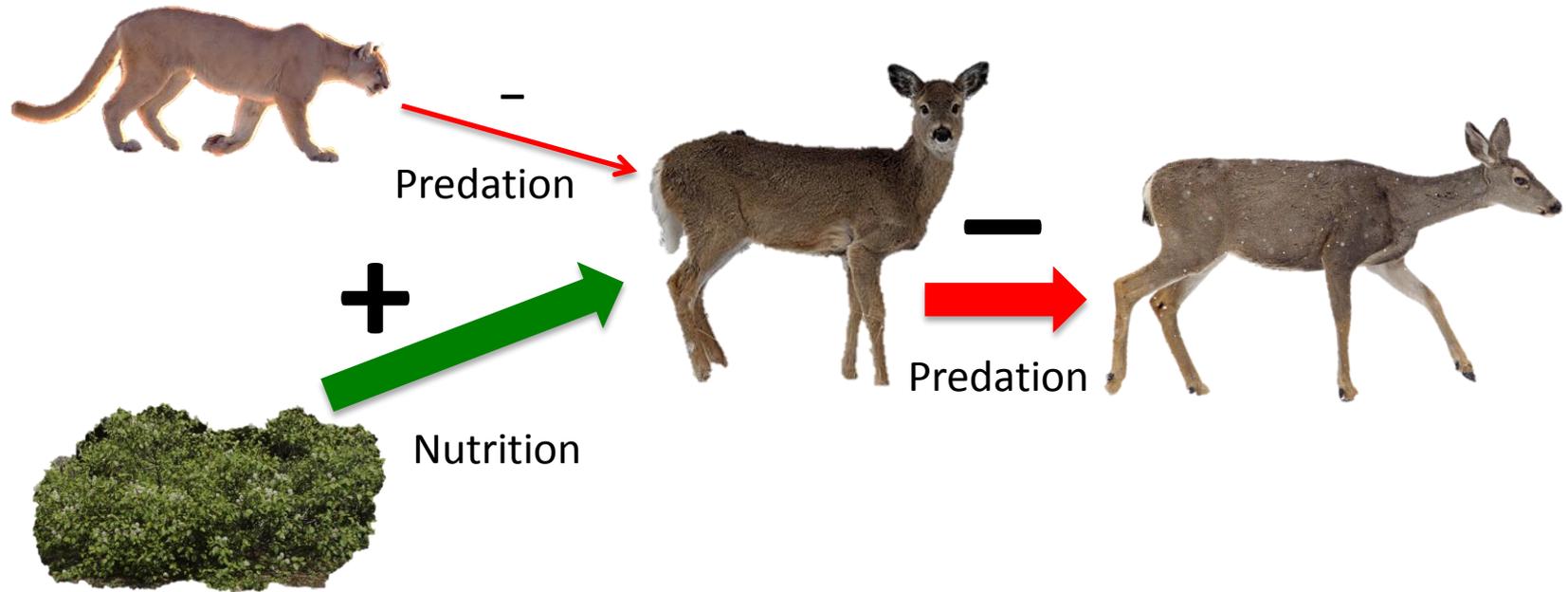
Removing predators → No change in survival or pop growth



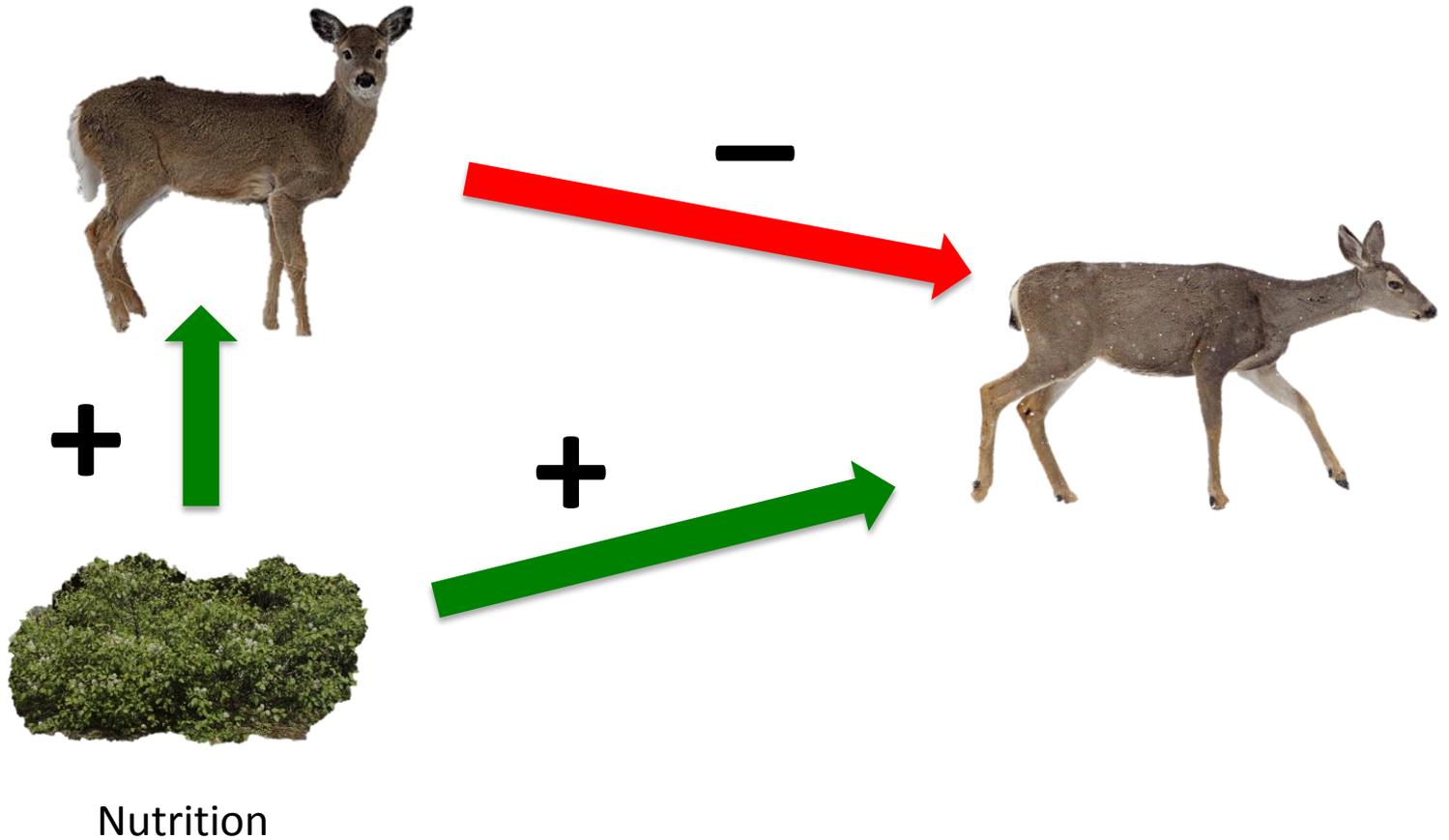
The rise of the white-tail: A mule deer competitor?



Top down: Predation pathway



Bottom up: Compete for nutrition

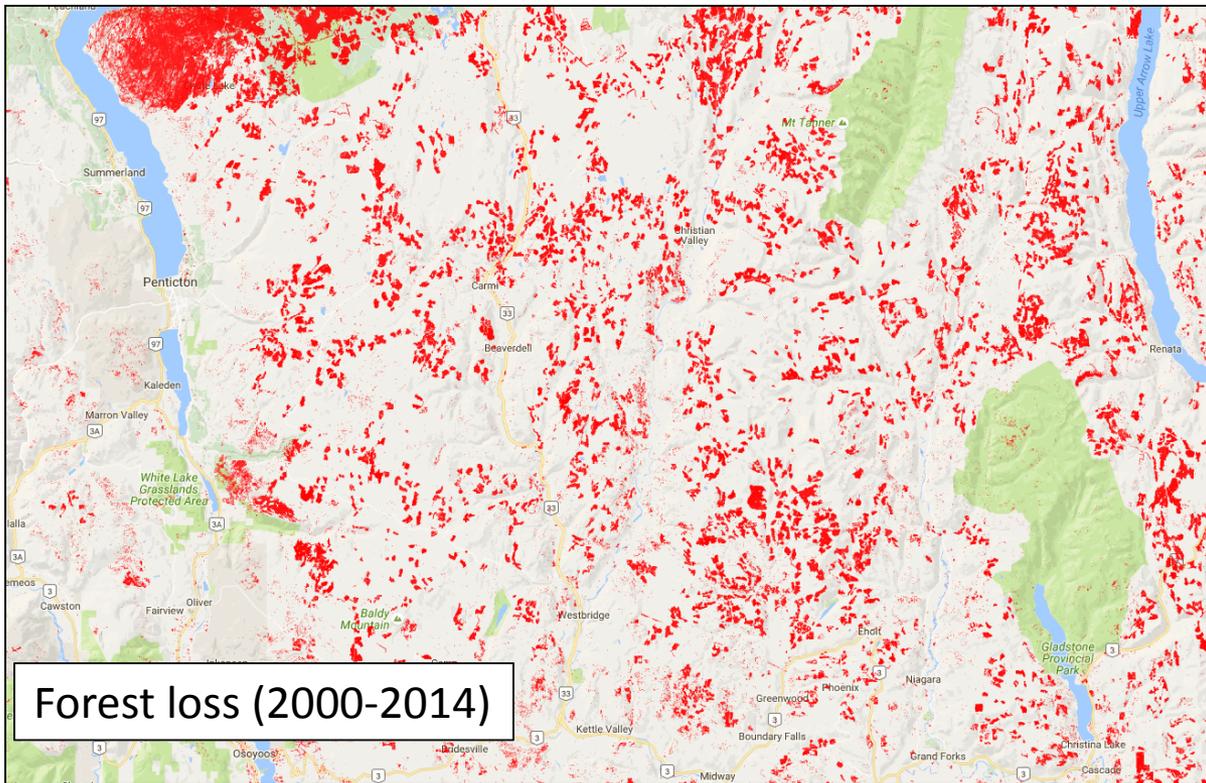


Our proposed research:

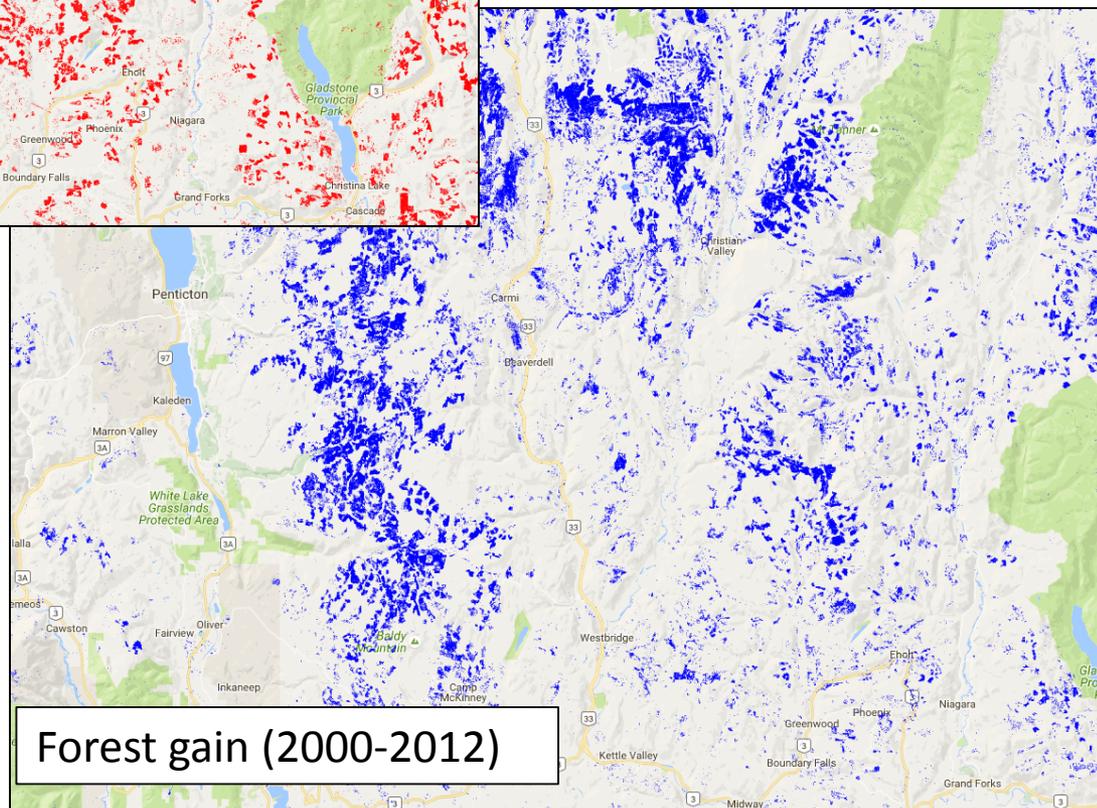
How do mule deer in the Boundary
respond to landscape change?

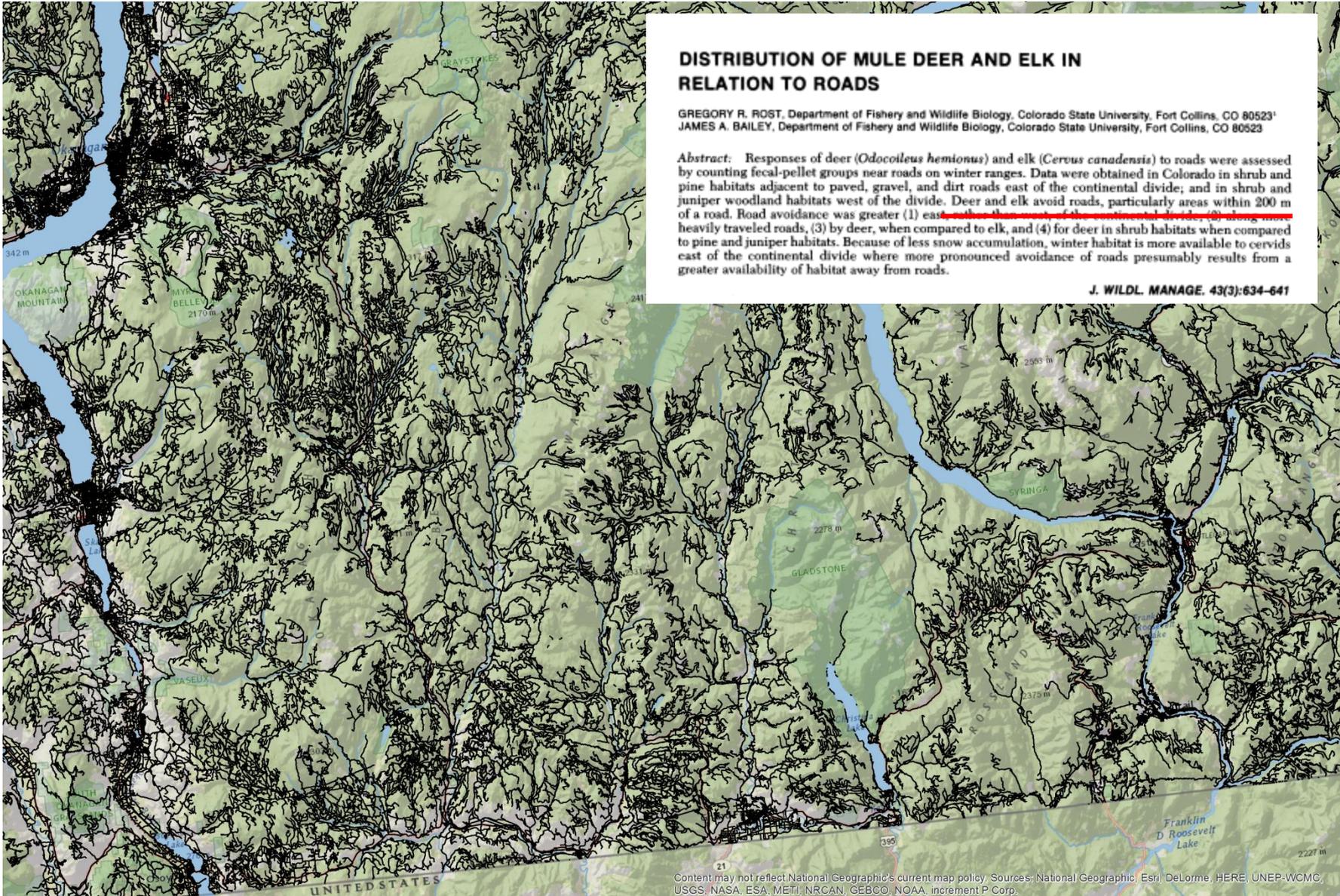






A dynamic, mosaic of regeneration





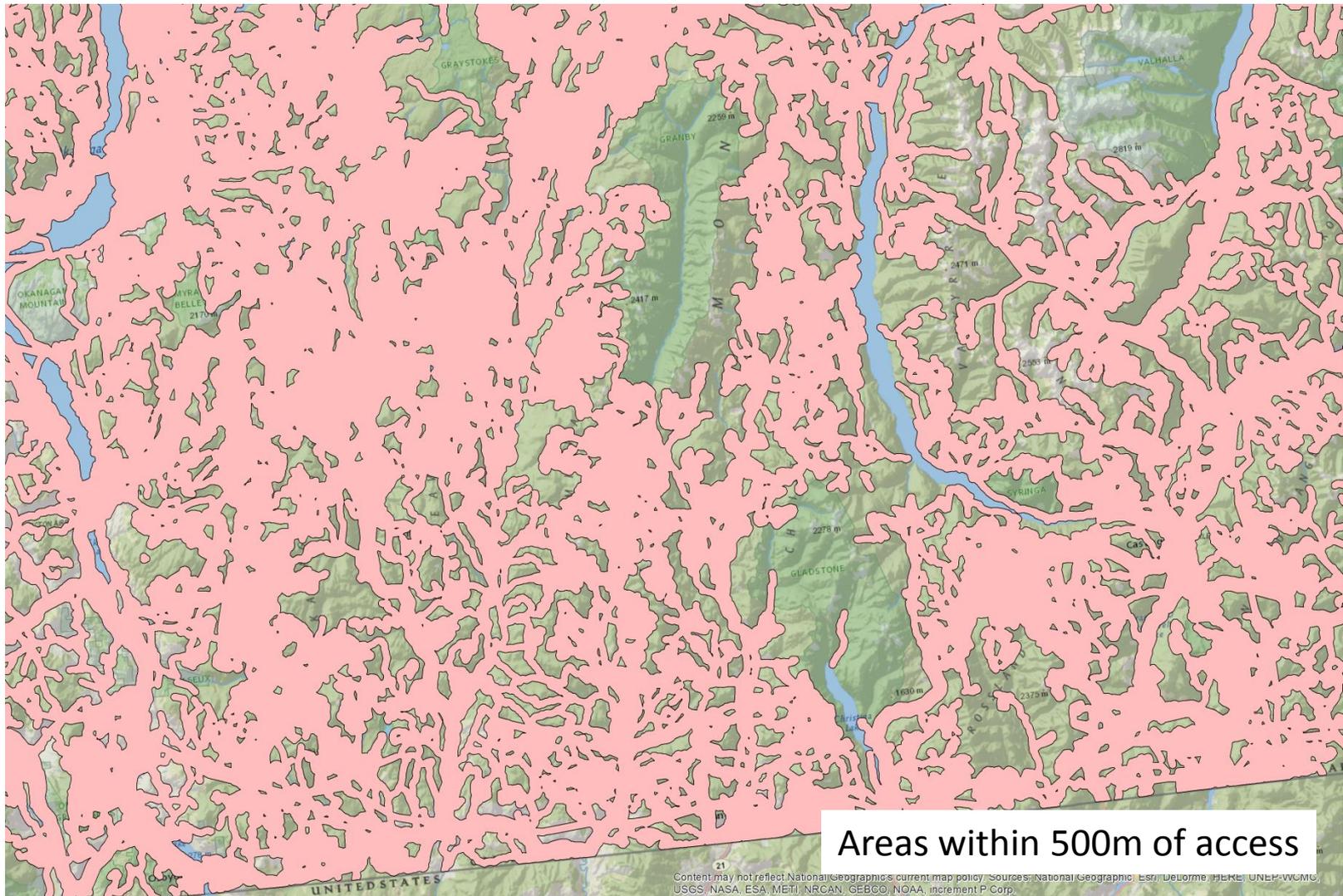
DISTRIBUTION OF MULE DEER AND ELK IN RELATION TO ROADS

GREGORY R. ROST, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523
JAMES A. BAILEY, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523

Abstract: Responses of deer (*Odocoileus hemionus*) and elk (*Cervus canadensis*) to roads were assessed by counting fecal-pellet groups near roads on winter ranges. Data were obtained in Colorado in shrub and pine habitats adjacent to paved, gravel, and dirt roads east of the continental divide; and in shrub and juniper woodland habitats west of the divide. Deer and elk avoid roads, particularly areas within 200 m of a road. Road avoidance was greater (1) east of the continental divide, (2) along more heavily traveled roads, (3) by deer, when compared to elk, and (4) for deer in shrub habitats when compared to pine and juniper habitats. Because of less snow accumulation, winter habitat is more available to cervids east of the continental divide where more pronounced avoidance of roads presumably results from a greater availability of habitat away from roads.

J. WILDL. MANAGE. 43(3):634-641

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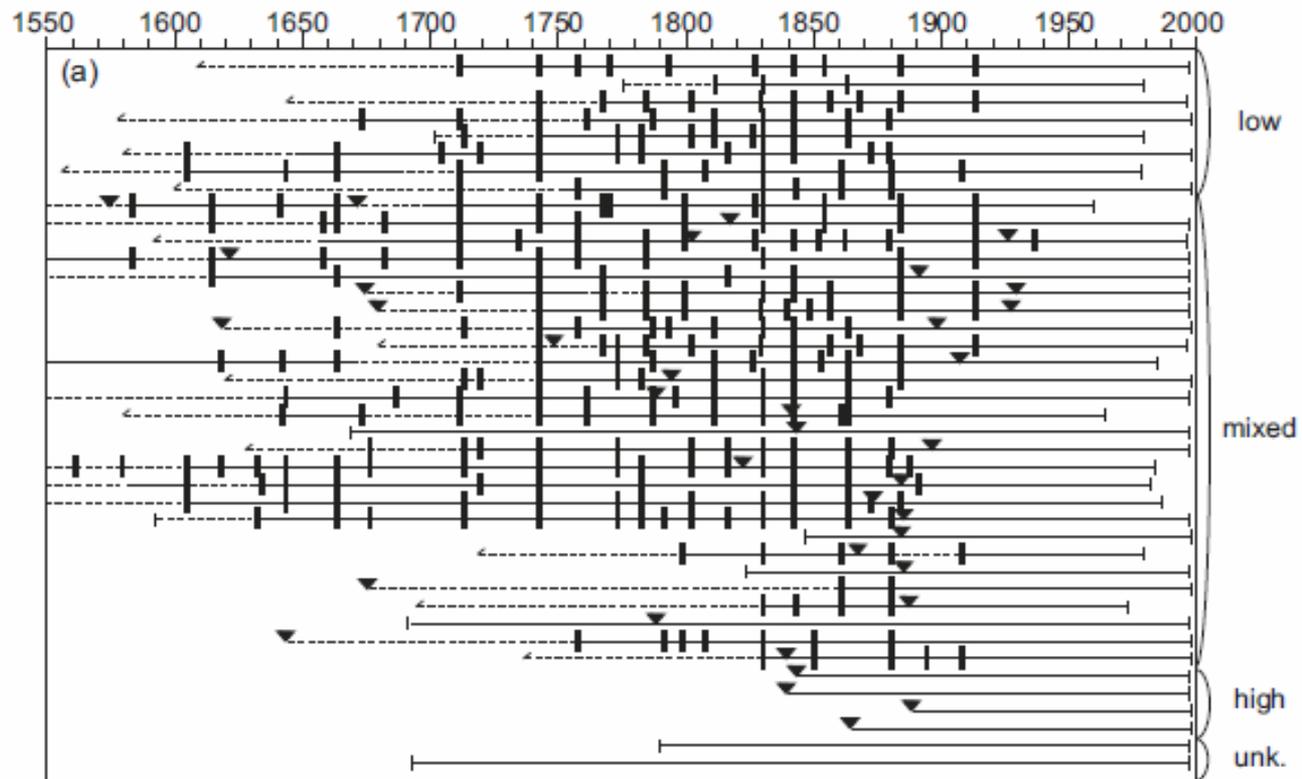


Areas within 500m of access

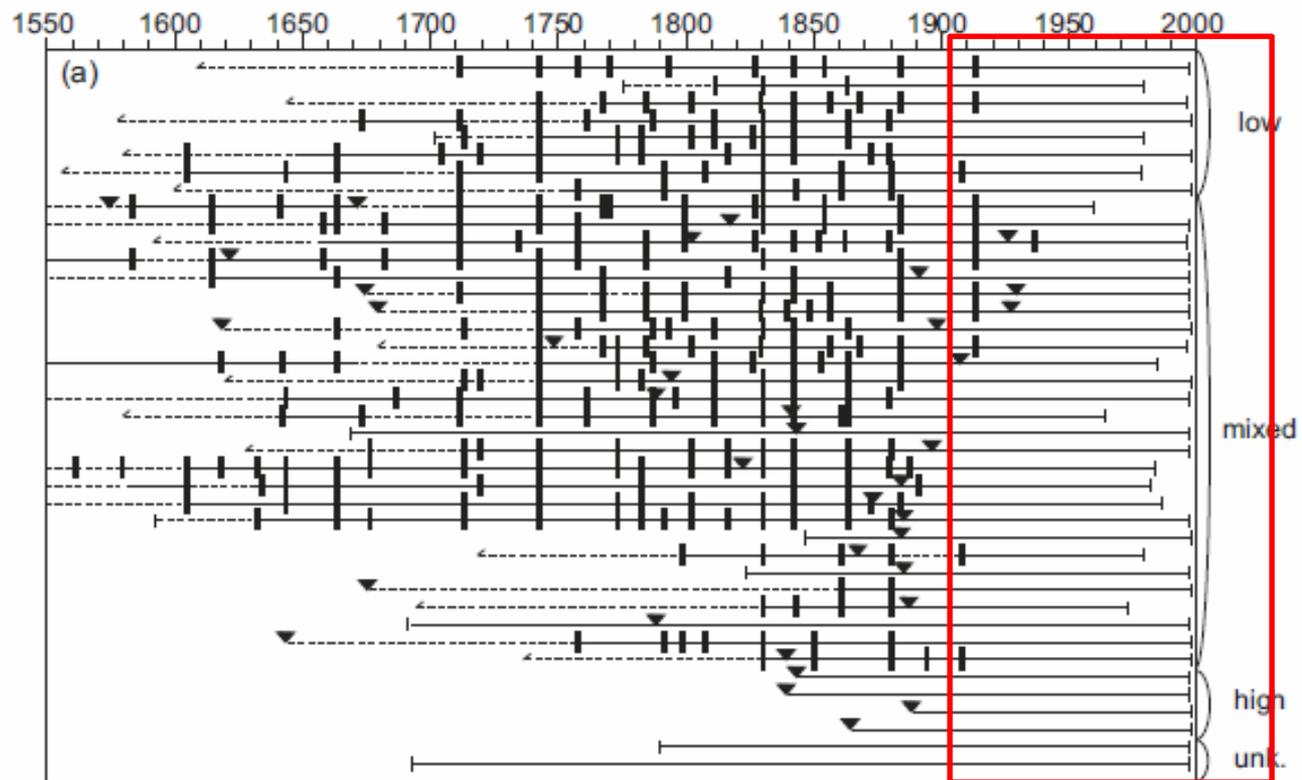
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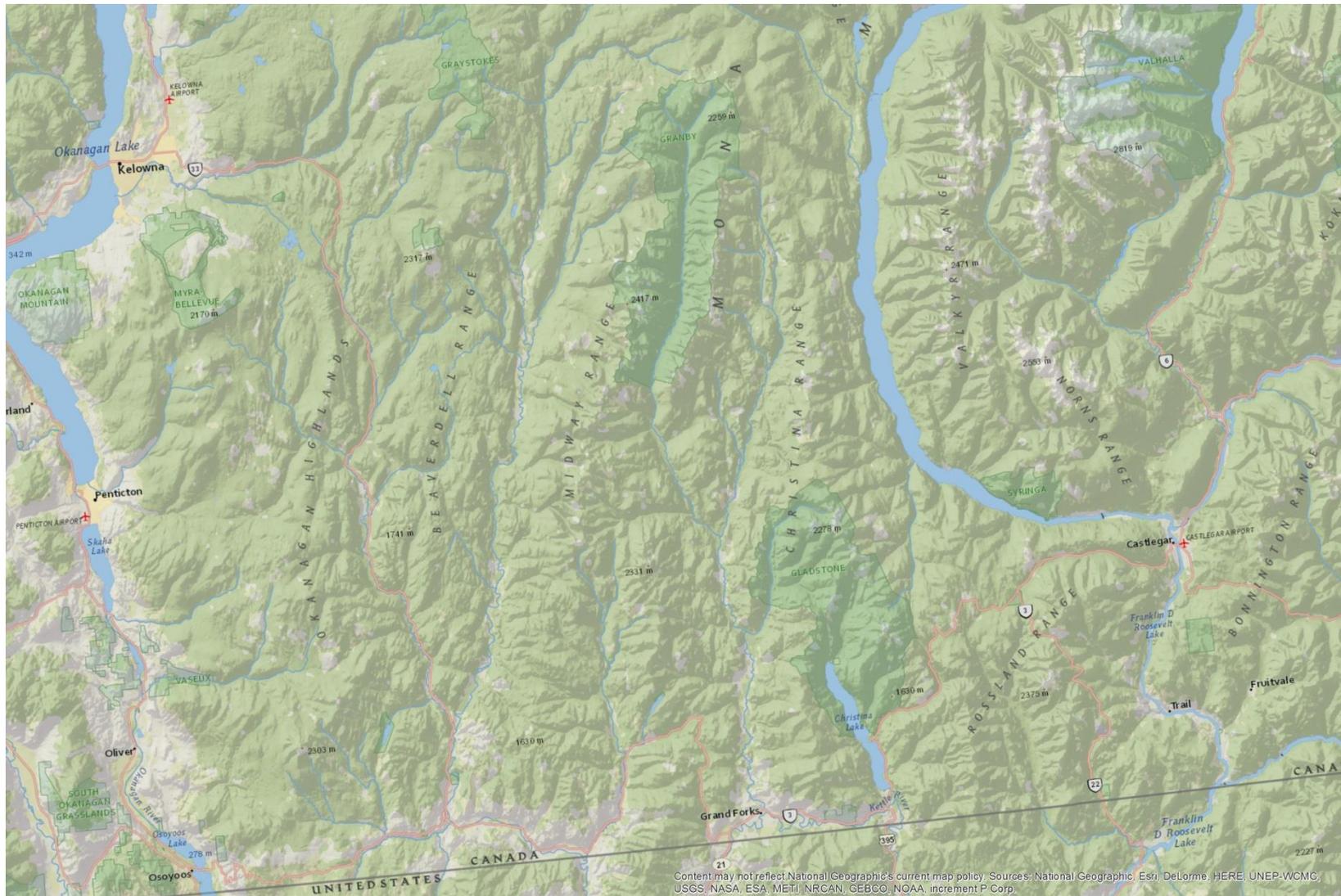
Urbanization;
Tree encroachment



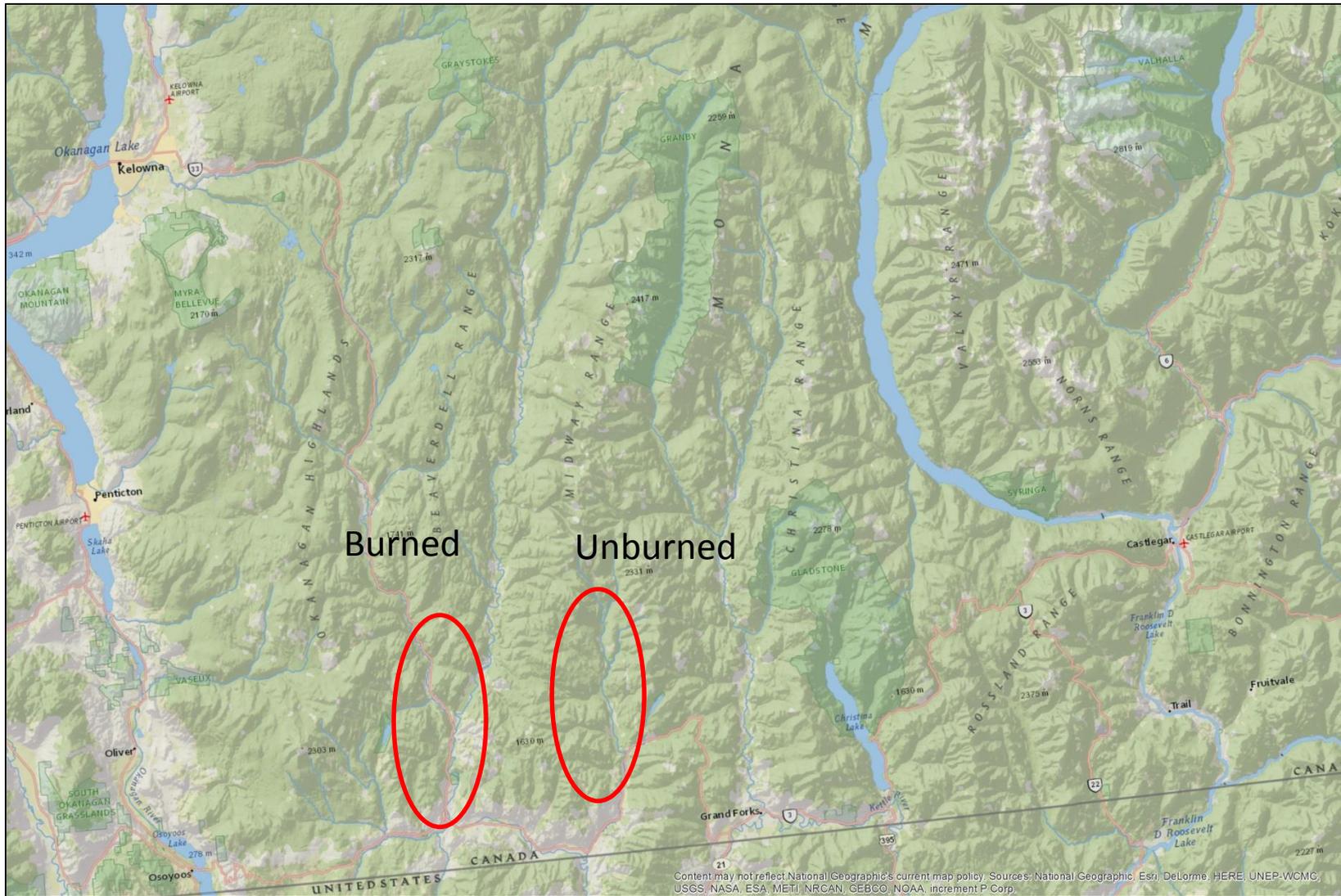
Heyerdahl et al .
2012



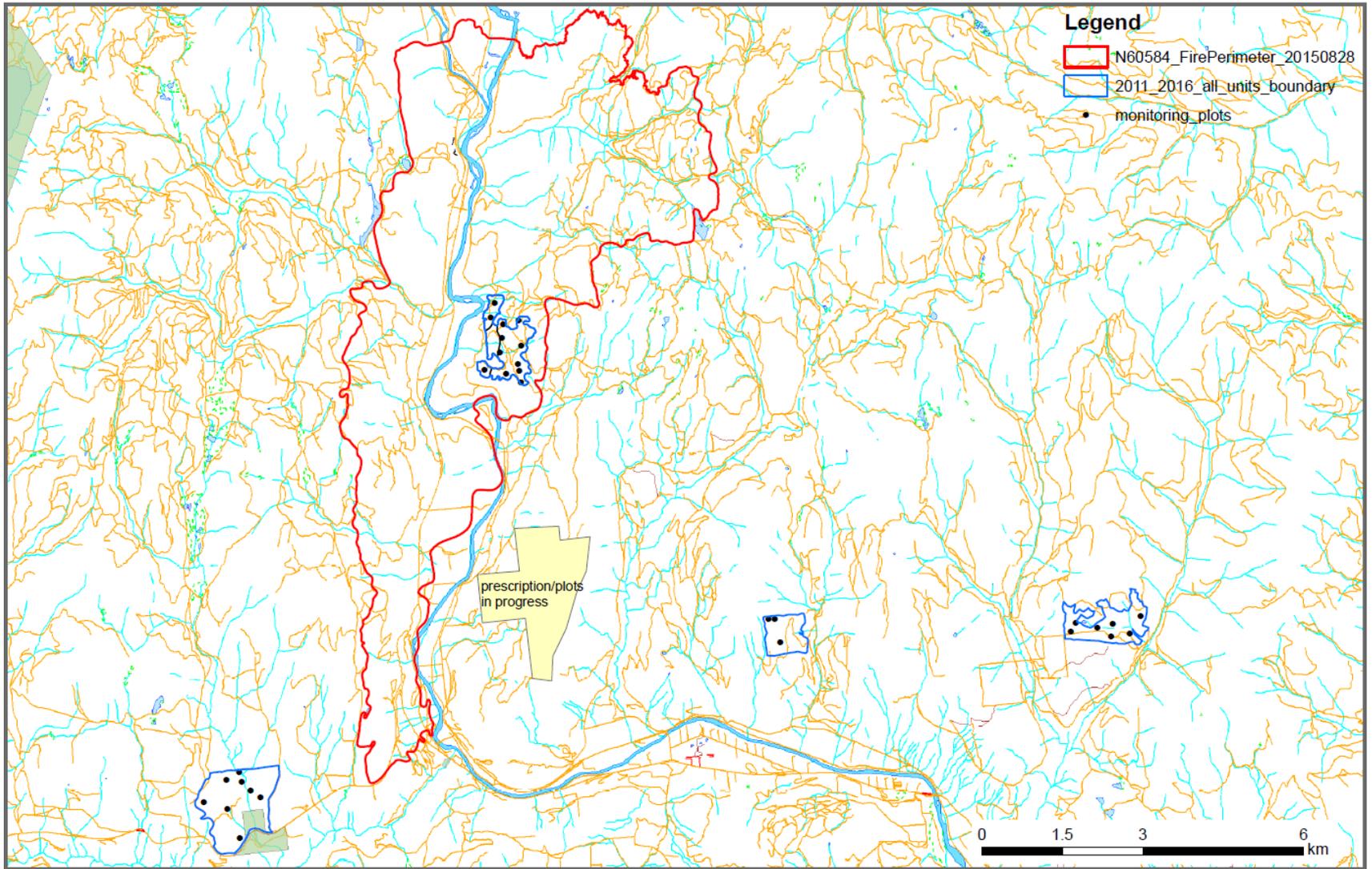
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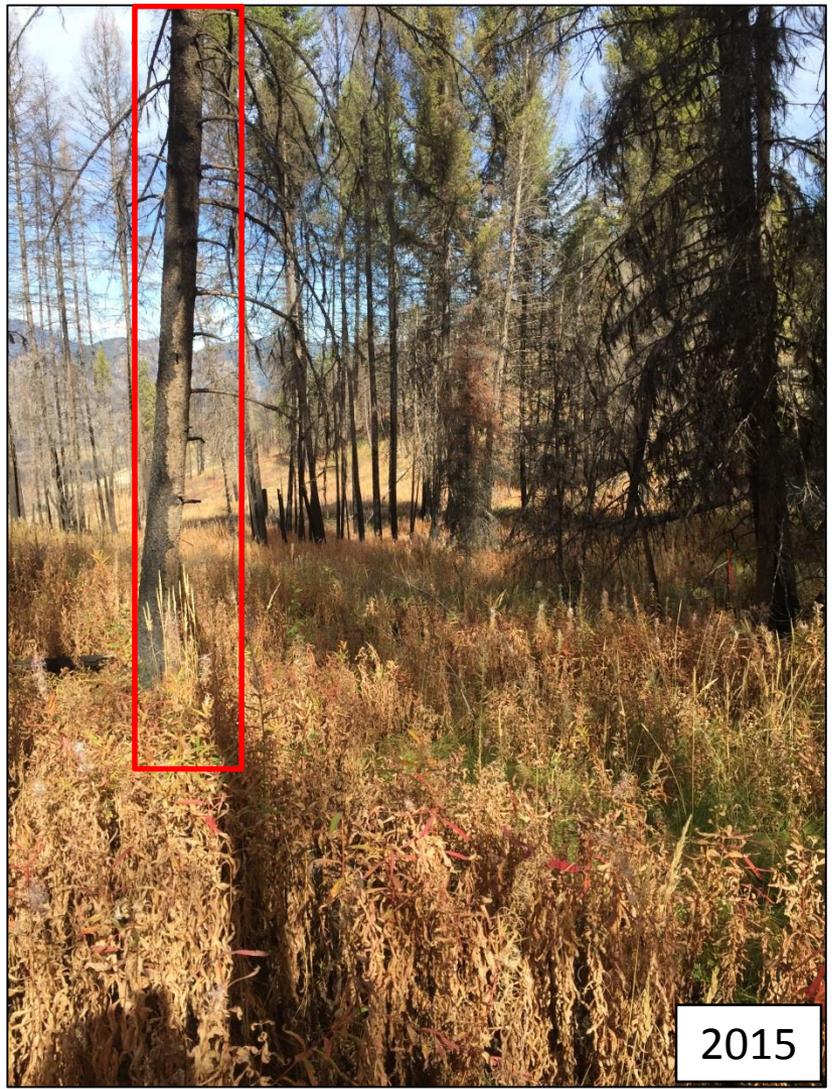
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Rock Creek Fire





Proposed research focus:

1. Identify key drivers of mule deer **population dynamics** in the Boundary Region
1. Focus on how **landscape change** affects nutrition and survival of females and fawns.

Proposed research questions:

1. How does deer nutrition on the landscape change following disturbance (fire and timber harvest)?

Proposed research questions:

2. How does deer habitat selection, exposure to predators, and seasonal migration of deer change following disturbance?

Proposed research questions:

3. What are the effects of disturbance on deer survival, reproduction, and population growth?

Proposed research questions:

4. How does disturbance affect mule deer mortality from starvation, disease, predation, and hunting mortality?

Proposed research questions:

5. How does weather interact with disturbance to affect deer?

Approach:

- A. Capture & monitor adult female deer (~90) and fawns (~150) deer.
- Fit adult female with GPS collars
 - Fit fawns at birth with VHF radio collars

Need for volunteers in monitoring for birth/death events

Approach:

B. Measure deer nutrition in different habitat types

This info will be used to make a mule-deer “food map.”

Need for volunteers in measuring veg

Approach:

- C. Use remote cameras to measure:
 - Relative abundance of muleys, white-tails, and predators
 - Group composition (doe:fawn ratios)

Need for volunteers in deploying and checking cameras

Approach:

D. Collect detailed weather data, including:

- Temperature
- snow depth

Need for volunteers in winter weather monitoring

Approach:

- E. Using all this information (A-E), plus satellite imagery, model optimal landscape configurations that meet both forestry and wildlife objectives under different wildfire scenarios

Collaborators, Funders, Partners

- BC Wildlife Federation
- Government
- Granby Guides & Outfitters
- Grand Forks Wildlife Association
- Habitat Conservation Trust Foundation
- Industry
- Okanagan Nation Alliance
- Okanagan Region BC Wildlife Federation
- The Wildlife Stewardship Council
- University of British Columbia
- University of Idaho

Discussion:

1. What do you think drives the mule deer in the Boundary region?
2. How can we improve this project's design?

