

## **Alberta Conservation Association 2015/16 Project Summary Report**

**Project Name:** Pronghorn Resource Enhancement and Monitoring

**Wildlife Program Manager:** Doug Manzer

**Project Leader:** Paul Jones

**Primary ACA staff on project:**

Jennifer Baker, Megan Jensen, Paul Jones and Blair Seward

### **Partnerships**

Alberta Fish & Game Association

Bushnell

Cabelas Canada

Canadian Forces Base Suffield

Onefour Research Station

National Fish and Wildlife Foundation

Safari Club International – Northern Alberta Chapter (Hunting Heritage Fund)

TD Friends of the Environment

The Nature Conservancy

University of Montana

World Wildlife Fund

### **Key Findings**

- We prioritized key areas where fences limit pronghorn movement and shared this information with Alberta Fish & Game Association to guide fence modification work as part of their Pronghorn Antelope Travel Corridor Enhancement Project.
- Our fence crossing trials from winter 2014/15 using trail cameras revealed that images of pronghorn were most common, followed by elk, coyote and deer. A significant increase in the number of images has been achieved by switching the placement of camera locations to known historical crossing sites versus random locations.
- We are collaborating on a companion project in Montana to improve migration and movement patterns with fence modifications tested over a longer time frame.
- We published a peer-reviewed paper on the variability of pronghorn habitat selection patterns in *The Prairie Naturalist*.

### **Introduction**

Having evolved on the prairies of North America, pronghorn (*Antilocapra americana*) have not developed an instinct to jump vertical obstacles. The proliferation of fencing that followed cattle ranching into Alberta poses a serious barrier to pronghorn movement (Gates et al. 2012).

Pronghorn may cross under fence lines in some locations, but it slows down their movement making them susceptible to predators and in some cases strips hair off their back causing lacerations and making them vulnerable to infection and frostbite. Pronghorn may also become entangled in a fence line and perhaps trapped and die (Jones 2014). A solution is to replace the bottom wire with smooth wire and move it up to 45 cm; however, this is expensive and requires a lot of effort. There are alternatives that should allow pronghorn to freely cross a fence, although most are in need of evaluation. We are identifying fences that need to be modified, exploring different ways to do this more efficiently and increasing the public's understanding of the conservation challenges pronghorn face in Alberta.

Primary objectives for this work are to 1) map fence lines that inhibit pronghorn movement, 2) evaluate fence design alternatives to improve movement for pronghorn, 3) share our information with our partners, particularly those working to modify existing fence lines along key migration routes across the northern sagebrush steppe, and 4) increase the profile of pronghorn and the conservation challenges they face in Alberta through presentations, publications and social media.

## **Methods**

We met with interested landowners and Alberta Fish & Game Association (AFGA) to discuss modifying fences to make them pronghorn and wildlife friendly. We then provided AFGA with a map of fence lines to be modified for each participating landowner to assist with planning fence modification weekends and coordinating volunteers.

During the winter of 2014/15, we assessed pronghorn use of fences with the bottom smooth wire at 45 cm from the ground on Canadian Forces Base (CFB) Suffield using 50 trail cameras. We removed all cameras from CFB Suffield on April 20, 2015, and began processing images.

We classified images into six behaviours: 1) successfully crossed under, 2) successfully crossed over, 3) successfully crossed through, 4) failed attempt to cross, 5) lingering at the site, and 6) paralleling fence. We used a study design that examines the difference before and after a treatment to determine if there was a difference in mean failed and mean successful attempts per day between the known crossing sites where the wire was lowered, known control sites where the wire was not lowered, modified sites (smooth wire), and control sites. We began our winter 2015/16 trials in September 2015 by deploying 48 cameras on CFB Suffield. We also began collaborating on a companion project in Montana in the spring of 2015 in which our partners are trialing fence modifications that will be in place for a longer time frame (13 to 14 months versus 4 to 4.5 months in Alberta). During the summer of 2015, we also assessed how domestic livestock react to fences with a smooth bottom wire at 45 cm by placing cameras at modified and control sites on Sandstone Ranch.

## Results

After removing the 50 trail cameras from CFB Suffield in April 2015, we processed all images from the cameras. Images of pronghorn were the most common, followed by elk (*Cervus elaphus*), coyote (*Canis latrans*) and deer (*Odocoileus* sp.) (Figure 1). Since switching from a completely randomized design in 2012, we have seen a 6- to 13-fold increase in the number of images we capture per winter field season for our four primary species of interest (Figure 2). The increase is partially, but not completely, due to an increase in the number of cameras used per field season (Figure 3).

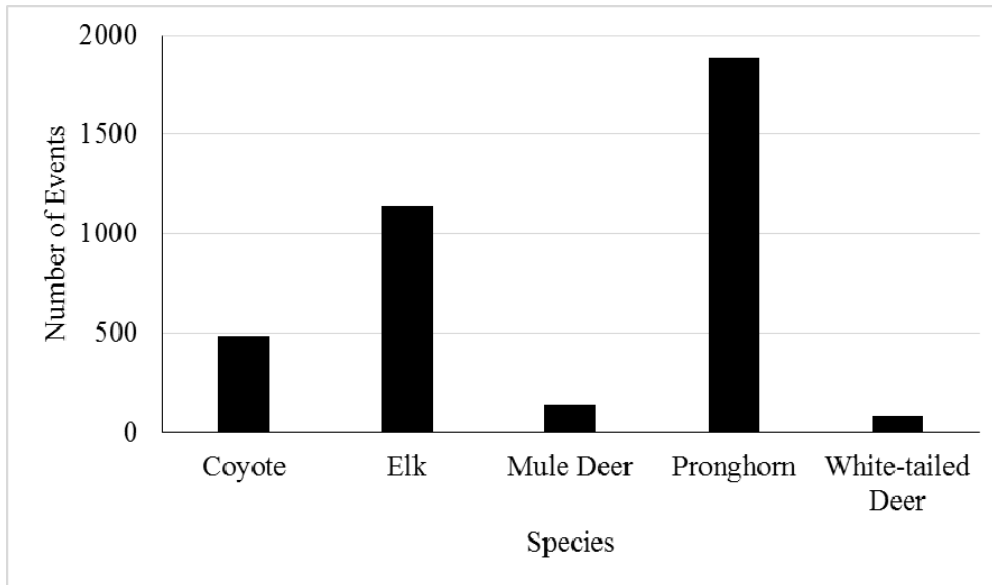


Figure 1. Number of events of pronghorn, elk, white-tailed deer, mule deer and coyotes captured by 50 cameras on Canadian Forces Base Suffield as part of the fence modification evaluation project, October 2014 to April 2015.

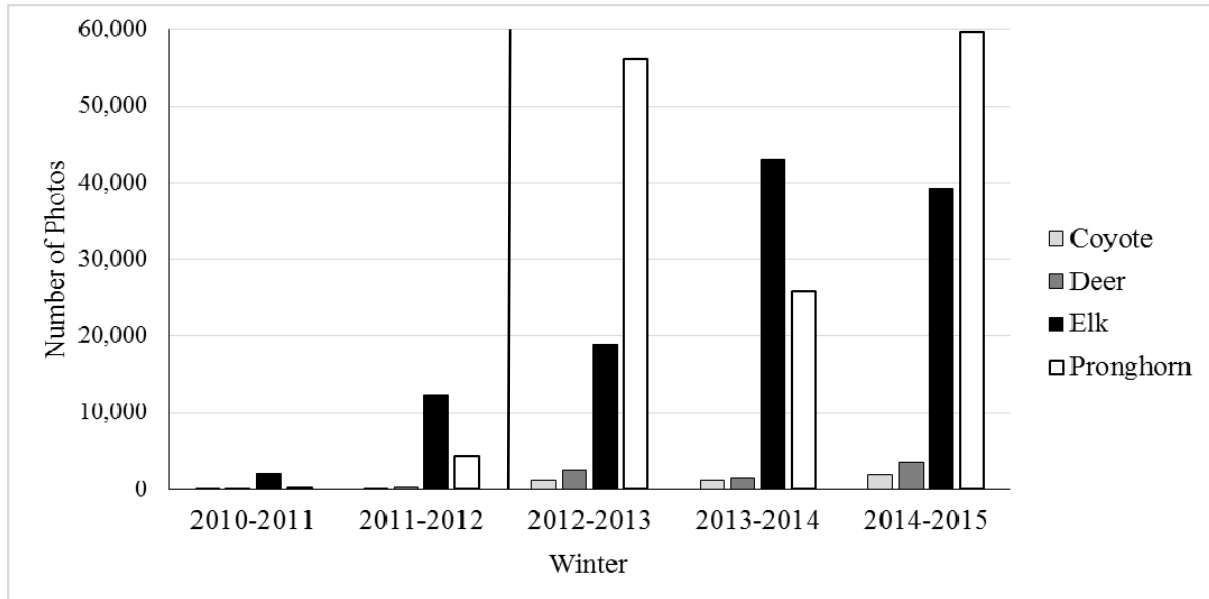


Figure 2. Number of images per priority species captured by trail cameras on Canadian Forces Base Suffield as part of the fence modification evaluation project, November 2010 to April 2015. Bars to the left of the black line represent the number of images captured using a completely randomized design, whereas those to the right represent images captured with the modified study design based on identified known pronghorn crossing sites.

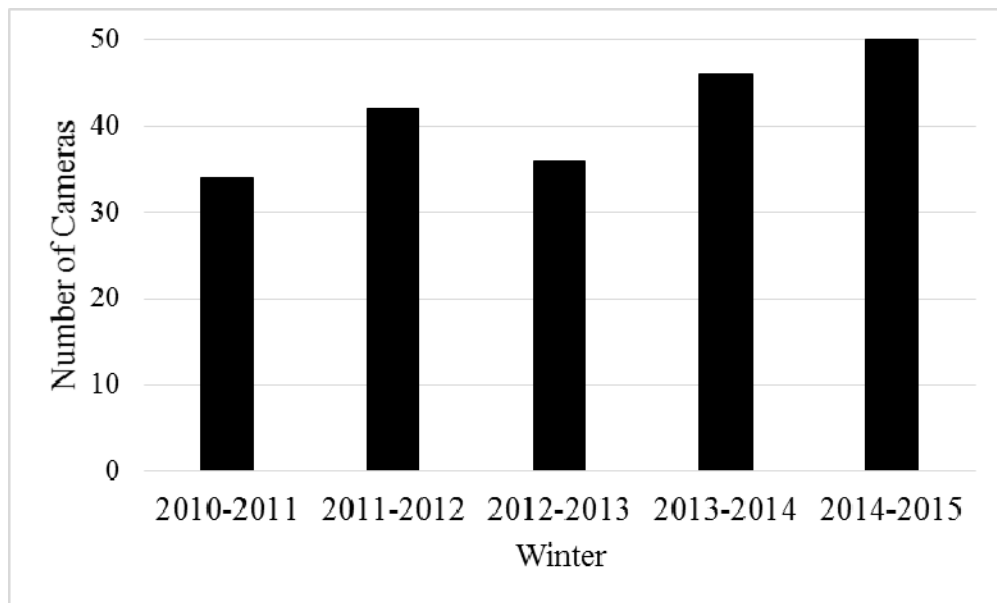


Figure 3. Number of cameras used on Canadian Forces Base Suffield as part of the fence modification evaluation project, November 2010 to April 2015.

## Conclusions

Pronghorn predominately cross under a fence, but if the bottom wire is too low, the fence becomes a barrier. Pronghorn appear to use existing “traditional” sites for crossing fences, and evidence of preferential crossings at modified sites is weak thus far. The acceptance of modified crossing sites may be a learned behaviour that develops over time with visual sight cues. The question of how long it takes for pronghorn to become comfortable using modified sites may be answered through our pronghorn work in Montana. As results become available, we will disseminate information to stakeholders, wildlife managers and conservation groups to increase the effectiveness of efforts to restore movement patterns that have been relied on for thousands of years by pronghorn.

## Communications

### *Publications*

- Jones, P.F., M. Grue, M. Sutor, J. Landry-DeBoer, C. Gates, D. Eslinger, and D. Bender. Variability in the selection patterns of pronghorn; are they really native prairie obligates? *The Prairie Naturalist* 47: 94–109.

### *Presentations*

- Use of remote cameras to document pronghorn interactions with fencing (A. Jakes, B. Nickerson, P. Jones), Matador Science and Research Workshop, June 18, 2014 (60 people).
- Evaluating the use of modified fence sites by pronghorn in Alberta (P. Jones), Lethbridge College, December 1, 2015 (8 people).
- Evaluating the use of modified fence sites by pronghorn in Alberta (P. Jones et al.), 11th Prairie Conservation and Endangered Species Conference, February 18, 2016 (60 people).
- Evaluating the use of modified fence sites by pronghorn in Alberta (P. Jones), 2016 Prairie University Biological Symposium, February 20, 2016 (20 people).
- The wandering pronghorn: how do we keep them moving? (P. Jones), Oyen Rod and Gun Club, February 27, 2016 (160 people).

### *Media*

- An innovative fence modification project aims to protect North America’s pronghorn antelope (C. Scott), *Living on Earth* (partner article).
- An innovative fence modification project aims to protect North America’s pronghorn antelope (C. Scott), Jefferson Public Radio, Southern Oregon (partner article).
- An innovative fence modification project aims to protect North America’s pronghorn antelope (C. Scott), WBFO, Buffalo, New York (partner article).
- Video of three pronghorn crossing under a fence at a known crossing site, ACA’s Facebook page.

### Key Contacts

- Dr. Mark Hebblewhite – University of Montana
- Dr. Andrew Hurley – University of Lethbridge
- Dr. Andrew Jakes – University of Montana (Postdoctoral fellow)
- Christine Paige – Ravenworks Ecology
- Dr. Carl Schwarz – Simon Fraser University

### Literature Cited

Gates, C.C., P. Jones, M. Sutor, A. Jakes, M.S. Boyce, K. Kunkel, and K. Wilson. 2012. The influence of land use and fences on habitat effectiveness, movements and distribution of pronghorn in the grasslands of North America. Pages 277–294. *In*: M.J. Somers and M. Hayward, editors. *Fencing for conservation: restrictions of evolutionary potential or a riposte to threatening processes?* Springer-US, New York, New York, USA.

Jones, P.F. 2014. Scarred for life; the other side of the fence debate. *Human-Wildlife Interactions* 8: 150–154.

### Photos



Pronghorn and mule deer hanging out at a known pronghorn crossing site. Photo: Alberta Conservation Association



Mule deer buck takes to the sky in an attempt to clear the fence at Sandstone Ranch. Photo: Alberta Conservation Association



The aftermath of a fight. Photo: Alberta Conservation Association



Badger on high alert crossing under the fence. Photo: Alberta Conservation Association