

Alberta Conservation Association 2017/18 Project Summary Report

Project Name: Pronghorn Movement and Enhancement (Fence Trials)

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Project Leader: Paul Jones

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Partnerships

Alberta Environment and Parks
Alberta Fish & Game Association
Bushnell
Cabelas Canada
Canadian Forces Base Suffield
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 processed trail-camera images from our fence-crossing trials taken from November 2016 to December 2017 at Canadian Forces Base Suffield in southern Alberta. Pronghorn were the most common species attempting to cross fences, followed by mule deer, white-tail deer, elk, and coyote.
- We consistently have four ungulate and one carnivore species that attempt (successfully and not successfully) crossing at the identified sites, which suggests the crossing sites are communal in nature. Further study is required to assess the spatial and temporal niche partitioning by these species around known fence-crossing sites.
- Our paper on the use of goat-bars, clips, and smooth wire by pronghorn was accepted by the journal *Wildlife Society Bulletin*.

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 also may become entangled in fences and perhaps become trapped and die (Jones 2014). A solution is to replace the bottom wire with smooth wire and move it up to 45 centimetres; however, this is expensive and takes a lot of effort. There are alternatives that should allow pronghorn to freely cross a fence, though 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) evaluate fence design alternatives to improve movement for pronghorn, 2) evaluate fence modifications proposed for ungulates and sage grouse (*Centrocercus urophasianus*) and the potential impact these modifications might have on pronghorn fence crossing success, 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 communicate the conservation challenges they face in Alberta through presentations, publications, and social media.

Methods

We began our fence-modification trials in October 2016, deploying 32 trail cameras at known pronghorn crossing sites on CFB Suffield. The purpose of these trials was to assess how pronghorn react to sage grouse reflectors and white PVC pipe on the top wire (visual marker for ungulates jumping over). We also continued our collaboration with the University of Montana and The Nature Conservancy in Montana by deploying 30 cameras on the Matador Ranch. We have begun processing all images from Alberta and Montana. 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 looks at the difference before and after at control sites (known-crossing sites left unchanged) to those with modifications (either sage grouse reflectors or white pvc pipe) to determine if there was a difference in mean failed and mean successful attempts per day. We also finalized and had our paper accepted by the *Wildlife Society Bulletin* on the use of modified fences (goat-bar, clips, and smooth wire) by pronghorn.

Results

After the instillation of 32 trail cameras on CFB Suffield in October 2016, we have continued to process images from the cameras up to December 2017. Events of pronghorn were the most common, followed by mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), and coyote (*Canis latrans*) (Figure 1). We explored the relationship between use of the different sites prior to and after the instillation of the modifications and it appears there is no real change in use (successful and unsuccessful crosses) of the sites for most of the ungulates (Figure 2). The exception is elk where there appears to be less use of the sites following the instillation of modifications

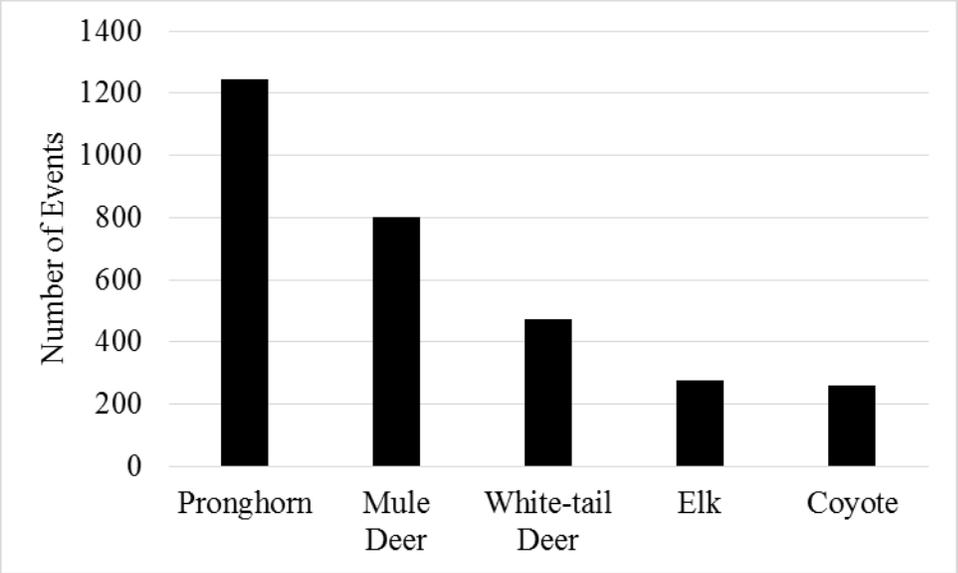


Figure 1. Number of crossing (successful and unsuccessful) events captured by remote trail cameras at known-crossing sites by four ungulates and one carnivore on CFB Suffield, October 2016 – December 2017.

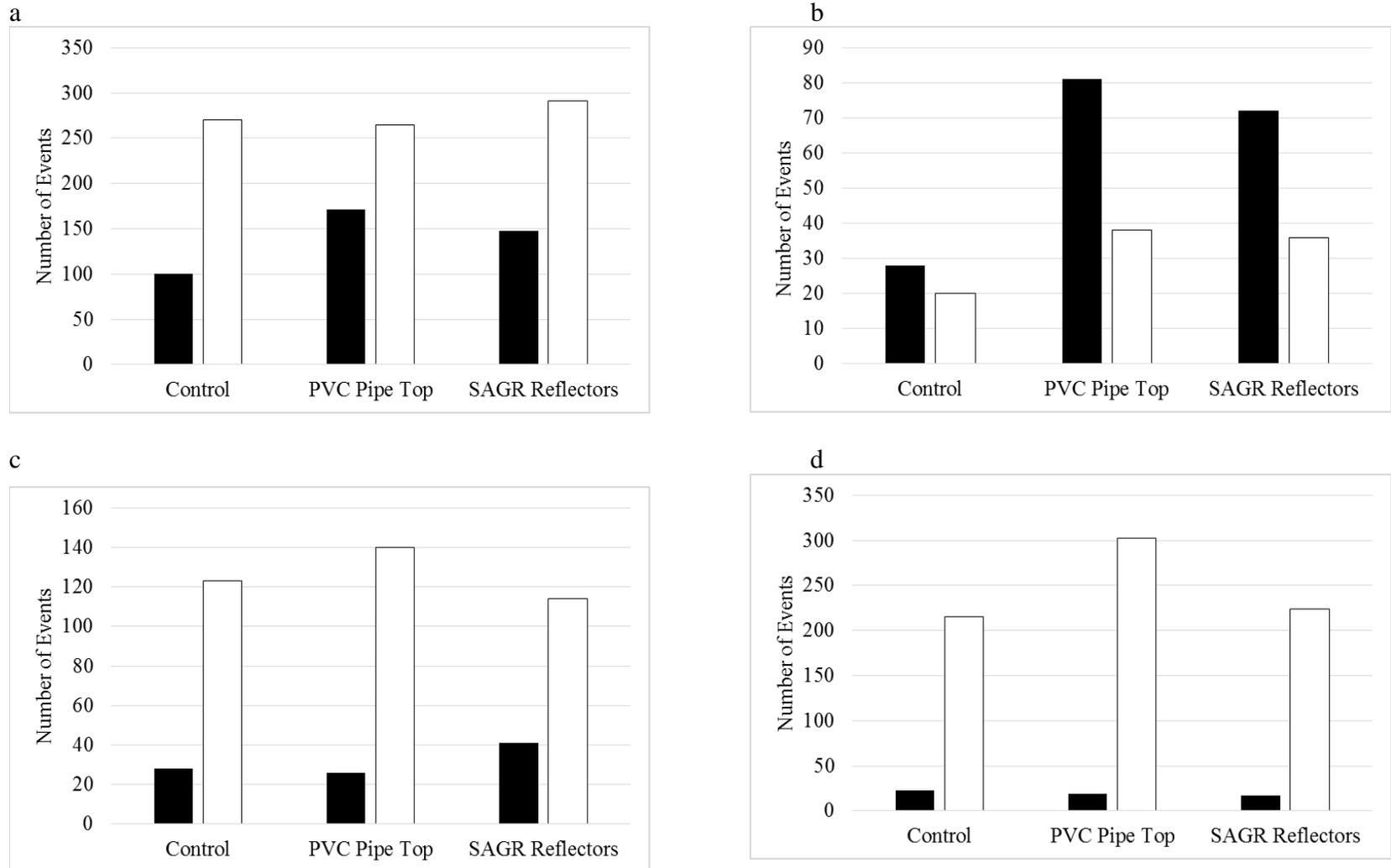


Figure 2. Number of events by pronghorn (a), elk (b), white-tailed deer (c), and mule deer (d) at the three treatment types during the before (black bars) and after (white bars) periods captured by 32 trail cameras on Canadian Forces Base Suffield as part of the fence modification evaluation project, October 2016 to December 2017. The before period represents 84 days and the after period represents 330 days. Events represent estimated group size between 1 – 335 animals.

Conclusions

Though there appears to be no difference in use of crossing sites, until we complete the analysis that separates successful from unsuccessful crossings by time period (before and after) we cannot say definitely that the modifications do not impact pronghorn. In addition, we recorded events of four ungulates and one carnivore species using the same set of known-crossing sites, presumed to be just pronghorn, which speaks to the communal nature of these crossing locations. Further study is required to assess the spatial and temporal niche partitioning by these species around known fence-crossing sites. As results become available, information will be disseminated to stakeholders, wildlife managers, and conservation groups to support efforts to restore movement patterns that have been relied on for thousands of years by pronghorn.

Communications

Publications

- Jones, P.F., A. Jakes, D. Eacker, B. Seward, M. Hebblewhite, and B. Martin. 2018. Evaluating responses by pronghorn to fence modifications across the Northern Great Plains. *Wildlife Society Bulletin* (in press)
- Jakes, A., C.C. Gates, N.J. DeCesare, P.F. Jones, J.F. Goldberg, M. Hebblewhite, and K. Kunkel. Classifying the migration behaviors of pronghorn on their northern range. *Journal of Wildlife Management* (in review).
- Burkholder, E., A. Jakes, P.F. Jones, M. Hebblewhite, and C. Bishop. To jump or not to jump: mule deer and white-tailed deer crossing decisions. *Wildlife Society Bulletin* (in review).

Presentations

- Evaluating responses by pronghorn to fence modifications across the Northern Great Plains. (A. Jakes) – Matador Science Symposium, June 14, 2017 (50 people).
- Evaluating the use of modified fence sites by pronghorn in the Northern Sagebrush Steppe (P. Jones) – America's Grasslands Conference, November 15, 2017 (10 people).
- Behavioural responses by three prairie ungulates to an invisible barrier. (P. Jones) – University of Lethbridge Bio4500 Seminar Course, February 1, 2018 (35 people).

Media

- "Study finds best fence for safe pronghorn passage." *Great Falls Tribune*, May 4, 2017.
- Live radio interview on *The Prairie Naturalist* out of Regina, Saskatchewan on pronghorn and fences. May 11, 2017.
- "What's the best way for pronghorns to squeeze under fences?" *Billings Gazette*, June 15, 2017.
- "What's the best way for pronghorns to squeeze under fences?" *Casper Star Tribune*, June 16, 2017.
- "Study finds best fence for safe pronghorn passage." *US Today*, June 19, 2017.
- "What's the best way for pronghorns to squeeze under fences?" *The Montana Conservationist*, June 21, 2017.
- "How can the pronghorn cross the fence?" *Cool Green Science*, June 26, 2017.

- "Buck's run-in with barbed wire is why we need pronghorn-friendly fences." Earth Touch News Network, July 19, 2017.
- Right to Roam Podcast interview with Dr. Jakes on pronghorn and fences. September 2, 2017.
- "Don't fence me in: can better fences make better neighbors of ranchers and wildlife?" *Sierra Magazine* by Meredith Sweet Walker, December 20, 2017.

Key Contacts

- Dr. Mark Hebblewhite – University of Montana
- Dr. Andrew Jakes – University of Montana (Post-doc)
- 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



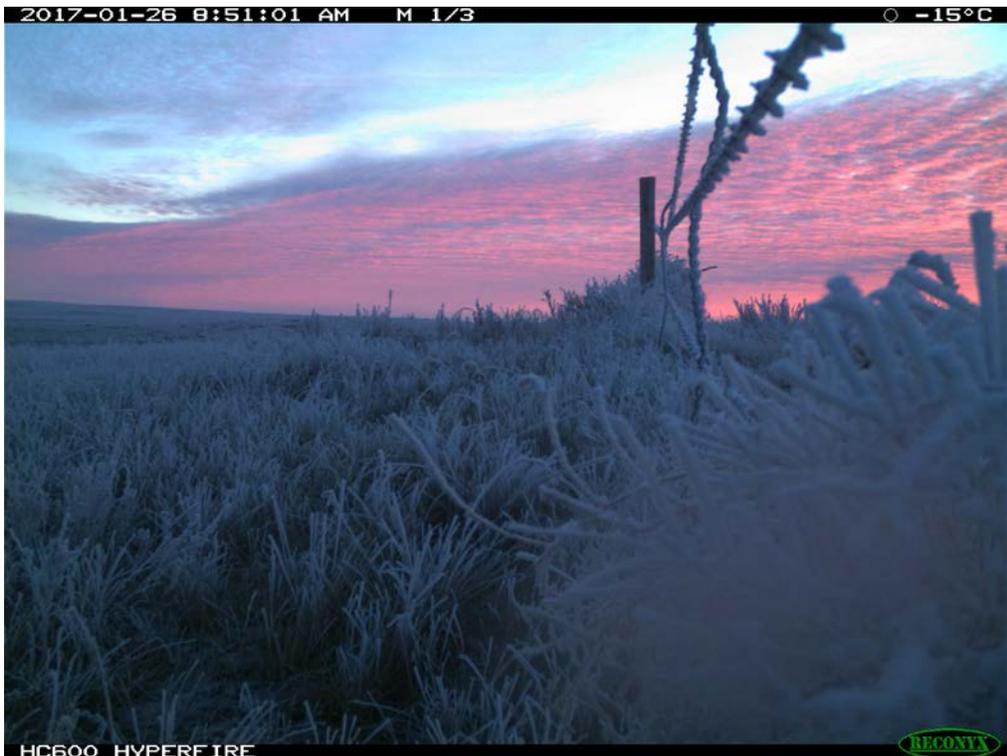
Male pronghorn placing face on ground in order to get under the bottom wire of a fence.
Photo: Alberta Conservation Association



Male pronghorn diligently watching raptor as it flies overhead.
Photo: Alberta Conservation Association



Female pronghorn with yellow ear tag in her right ear. Ear tag likely from the GPS collar study conducted between 2003 and 2007. Photo: Alberta Conservation Association



Frosty morning out on the prairies. Photo: Alberta Conservation Association