Alberta Conservation Association
2013/14 Project Summary Report

Project Name: Pronghorn Program Phase III: Facilitating Movement by Pronghorn

Wildlife Program Manager: Doug Manzer

Project Leader: Paul Jones

Primary ACA staff on project:

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Partnerships

Alberta Fish and Game Association
Bushnell
Cabelas Canada
Canadian Forces Base Suffield
Onefour Research Station
Safari Club International – Northern Alberta Chapter (Hunting Heritage Fund)
TD Friends of the Environment Foundation
World Wildlife Fund
Writing-on-Stone Provincial Park

Key Findings

- We mapped over 67,000 km of fence lines in 630 townships in southeastern Alberta with an accuracy of 72%.
- Our winter trials in 2012/13 did not show a strong preference by pronghorn to cross at modified "goat-bar" locations.
- Over the 83 days that we had trail cameras set along fence lines in summer 2013, we captured over 300,000 images of cattle, pronghorn and other species.
- We prioritized key areas where fences limit pronghorn movement and provided these locations to Alberta Fish and Game Association to guide its volunteer-based Pronghorn Antelope Travel Corridor Enhancement Project.

Introduction

Having evolved on the prairies of North America, pronghorn 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. Pronghorn may cross under fence lines in some locations, but it slows down their movements making them susceptible to predators and in some cases strips hair off their backs causing lacerations and making them vulnerable to infection and frostbite. Pronghorn may also become entangled and perhaps trapped and die. 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. Our project is helping to identify 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 and 4) increase the profile of pronghorn and the conservation challenges they face in Alberta through presentations and publications.

Methods

We mapped fence lines in the Grassland Natural Region by identifying thin linear features from satellite images in a geographic information system (GIS). These features on the images represent trails that are created when cows or wildlife repeatedly walk parallel to a fence. Using fence line data from the provincial government and MULTISAR, combined with data collected from the field, we evaluated the effectiveness of our mapping approach. Based on our mapping information, we provided Alberta Fish and Game Association with recommendations for where its volunteers could address serious fence issues.

During the winter of 2012/13, we set up 36 trail cameras at Canadian Forces Base (CFB) Suffield to assess if pronghorn selected to cross fence lines at locations modified by us to reduce the perceived barrier. The cameras were in place over the winter and were removed in May (2013), when we began processing images and categorizing behaviour as 1) successfully crossed under, 2) successfully crossed over, 3) successfully crossed through, 4) attempt to cross, 5) lingering at the site or 6) paralleling fence. We used a study design that looks at the difference before and after a treatment to determine if there was a difference in mean attempts per day and mean crossings per day by pronghorn between the control and enhanced sites. We began our winter 2013/14 trials in October using 52 trail cameras and tested whether fences modified using carabineers/quick links improved permeability for pronghorn. We also monitored use of open gates by wildlife.

During summer 2013, we also assessed how domestic livestock and pronghorn react to goat-bars of different colour (white, tan and green/brown) by placing cameras at known pronghorn crossing sites and also at control sites on the Onefour Research Station for 83 days.

Results

We mapped over 67,000 km of fence lines in 630 townships in the Grassland Natural Region. We determined that our maps had an overall accuracy rate of 72%.

After the removal of 36 trail cameras from CFB Suffield in May 2013, we have processed images from 25 of the cameras. Images of pronghorn were the most common, followed by elk, coyote and deer (Figure 1). At the control sites, pronghorn typically paralleled the fence, as predicted. Behaviour of pronghorn at sites where goat-bars were in place was most commonly

classified as lingering, whereas at historical crossing sites, behaviour was most often classified as attempting to cross, followed by successfully crossing (Figure 2). We recorded pronghorn successfully crossing a fence, not only by going under, but surprisingly by also going over and between the wires.

In summer 2013, we had trail cameras in place for 83 days at the Onefour Research Station. Most of the photos were of domestic livestock, followed by pronghorn, mule deer and a suite of grassland birds. We are currently processing these images.

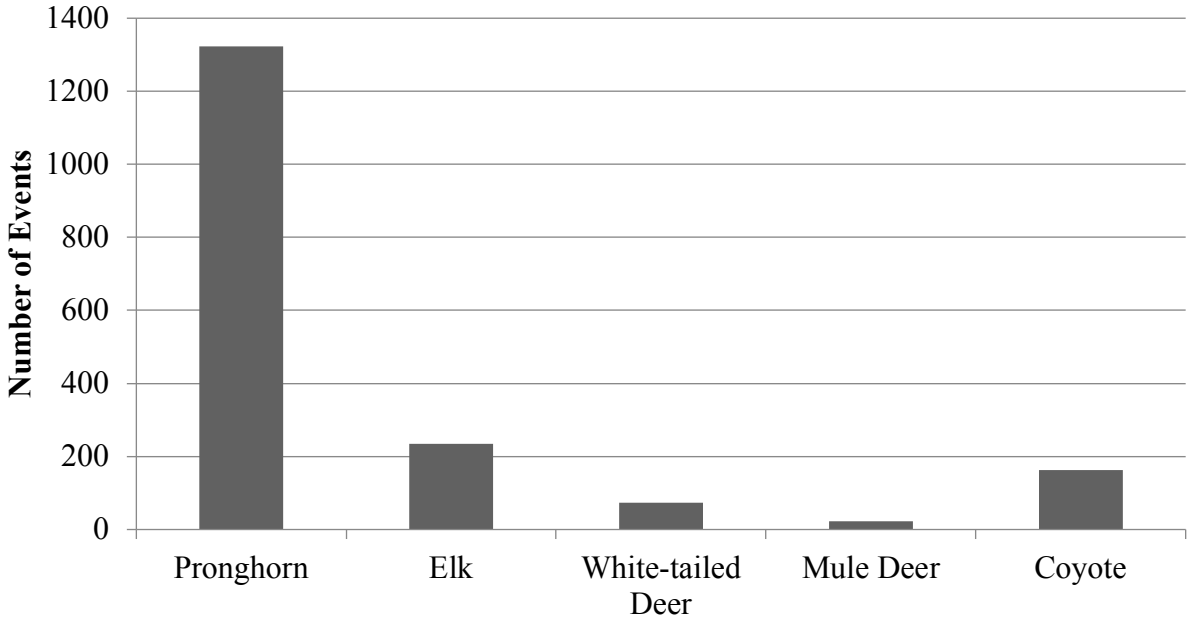

Figure 1. Number of events of pronghorn, elk, white-tailed deer, mule deer and coyotes captured by 25 cameras on Canadian Forces Base Suffield as part of the fence modification evaluation project, October 2012 to May 2013.

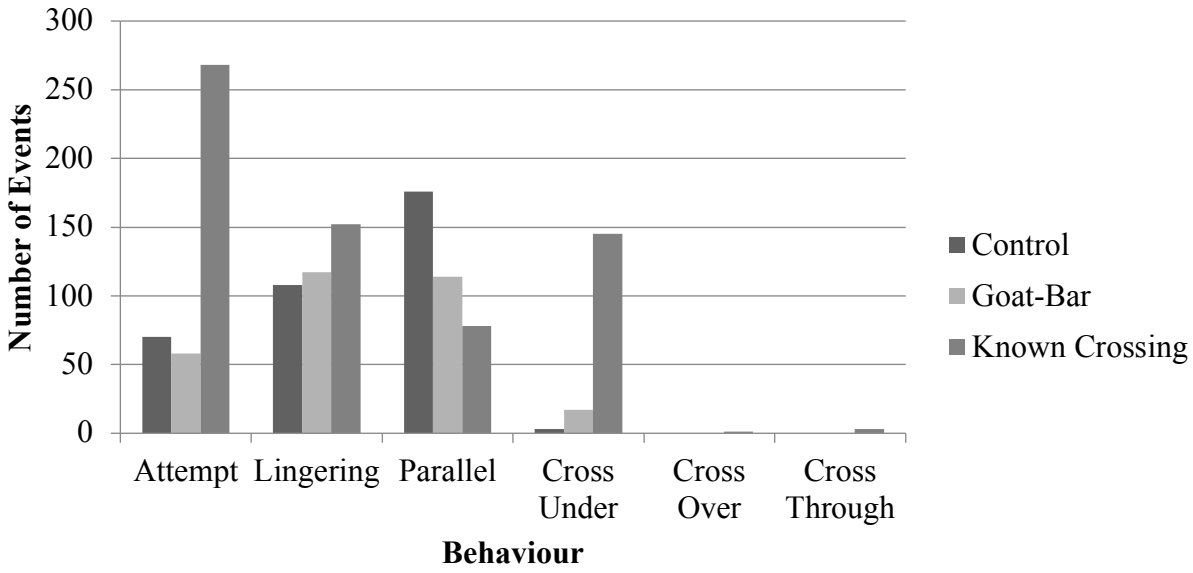

Figure 2. Number of events of pronghorn behaviour classified into six behaviours at control, goat-bar and known crossing sites by 25 cameras on Canadian Forces Base Suffield as part of the fence modification evaluation project, October 2012 to May 2013.

Conclusions

Pronghorn predominately cross under a fence, but if the bottom wire is too low, the fence becomes a barrier. Pronghorn appear to be using existing "traditional" sites for crossing fences and avoiding or ignoring sites with goat-bars, although this needs further evaluation. As results become available, we will disseminate information to stakeholders, wildlife managers and conservation groups to help increase the effectiveness of efforts to restore movement patterns that have been relied on by pronghorn for thousands of years.

Communications

Publications

- Jones, P.F. 2014. Scarred for Life: The Other Side of the Fence Debate. Human-Wildlife Interactions (In press, Spring 2014).
- Jones, P.F., B. Seward, L. Seward, and H.M. Dorchak. 2014. Opening Up the Prairies: Evaluating the Use of Goat-bars by Pronghorn. Proceedings of the Pronghorn Workshop (In press).
- Seward, B., P.F. Jones, and A.T. Hurley. 2014. Where Are All the Fences: Mapping Fences from Satellite Imagery. Proceedings of the Pronghorn Workshop (In press).
- Jones, P.F., M. Grue, M. Suitor, J. Landry-DeBoer, C. Gates, D. Eslinger, K. Morton, and D. Bender. Variability in the Selection Patterns of Pronghorn in the Northern Sagebrush Steppe of Canada. The Prairie Naturalist (Submitted March 2014).

Presentations

- Backs Against the Fence: Using Citizen Science to Keep Pronghorn Antelope Moving (P. Jones) – Wildlife in the Wind Speaker Series, April 2, 2013 (28 people).
- The Life of the Pronghorn on the Prairies (P. Jones) – Writing-on-Stone Provincial Park, July 26, 2013 (51 people).
- The Life of the Pronghorn on the Prairies (P. Jones) – Beauvais Lake Provincial Park, August 10, 2013 (57 people).
- The Life of the Pronghorn on the Prairies (N. Mackintosh) – Writing-on-Stone Provincial Park, August 30, 2013 (37 people).
- Under the Wire: Keeping Pronghorn Antelope Moving (P. Jones) – Alberta Fish and Game Association fencing weekend, September 28, 2013 (22 people).
- Pronghorn Antelope: A True Conservation Story (P. Jones) – Lethbridge College, November 19, 2013 (10 people).
- Under the Wire: Keeping Pronghorn Antelope Moving (P. Jones) – Magrath Rod and Gun Club, March 7, 2014.

Media

- "Fencing Posing Problems for Pronghorn Migration in Alberta" (N. Kuhl) – *Lethbridge Herald*, April 4, 2013.
- "Researchers Study Wildlife Friendly Fences" (B. Glen) – *The Western Producer*, April 11, 2013.

Volunteers

- Three volunteers contributed over 75 hours to the pronghorn project.

Key Contacts

- Dr. John Byers – University of Idaho
- Dr. Sue Fairbanks – Iowa State University/Oklahoma State University
- Dr. Andrew Hurley – University of Lethbridge
- Christine Paige - Ravenworks Ecology

Literature Cited

N/A

Photo Captions

Pronghorn buck with one horn sheath already shed approaches fence at a known crossing site.
Photo: Alberta Conservation Association
[filename: Photo1_Pronghorn_2013-14_ACA.jpg]

Two pronghorn bucks discuss how each got on the other side of the fence at a known crossing site. Photo: Alberta Conservation Association
[filename: Photo2_Pronghorn_2013-14_ACA.jpg]

Lark buntings (*Calamospiza melanocorys*) hanging out at one of the camera sites on the Onefour Research Station. Photo: Alberta Conservation Association
[filename: Photo3_Pronghorn_2013-14_ACA.jpeg]