

**Alberta Conservation Association
2009/10 Project Summary Report**

Project Name: *Habitat Selection by Pronghorn in Alberta*

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Project Leader: Paul Jones

Primary ACA staff on this project:

Paul Jones, Mike Grue

Partnerships

Alberta Fish and Game Association – Zone 1

Alberta Fish and Wildlife

Alberta Parks and Recreation

Alberta Professional Outfitters Association (Legacy Fund and Wildlife Management Fund)

Alberta Antelope Guides

Canadian Forces Base Suffield

Foundation for North American Wild Sheep – Eastern Chapter

Safari Club International

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

Safari Club International – Alberta Chapter

University of Calgary

Key findings

- We classified female pronghorn into three groups based on the habitat features each group used for fawning.
- Winter seasonal ranges were larger than either of the fawning or summer ranges.
- Females that used grasslands for fawning showed the strongest habitat selection patterns across the three seasons followed by those that used cultivation or those that used a mixed habitat.
- Awareness of pronghorn ecology was elevated through television, news media and general popular articles.

Introduction

Pronghorn (*Antilocapra americana*) are commonly referred to as the most specialized and representative large mammal that currently roams free among the diversity of prairie wildlife in North America and are largely considered by some to be an obligate grassland species (Yoakum 2004). Although pronghorn in Alberta commonly experience high mortality due to severe winters and low fawn survival, their survival is also influenced by land use activities (Barrett 1982). Our focus is to examine how the distribution of pronghorn is associated with habitat and anthropogenic features. Specifically, we: 1) examined the selection of seasonal home ranges on the basis of habitat and anthropogenic features (second order selection, Johnson 1980), 2) examined the selection of specific habitat and land cover attributes within seasonal home ranges (third order selection) and 3) developed RSF models at the second order to map pronghorn habitat in Alberta. We predicted that pronghorn would select seasonal ranges with a significantly higher proportion of native prairie and would modify their use of space within their seasonal ranges to avoid anthropogenic features such as roads and well sites. Our preliminary analysis was completed on a yearly basis and produced mixed results, particularly for the first two years of capture. We attributed these results to having captured animals in native, cultivation and mixed landscapes. Our work in the current year built on those preliminary findings reported in 2009, with an emphasis on exploring how animals that live primarily in native grasslands, cultivated areas, or a mix of the two interact differently with their environment.

Methods

We used detrended correspondence analysis to examine the attributes of the fawning ranges and classified our study animals into separate groups which could then be used to look for selection within each group. The groups were named Native, Cultivation and Mixed. To complete the second order analysis we constructed seasonal ranges using the 95% fixed kernel method, and compared the attributes of the different seasonal ranges to available ranges for each of the three groups. We looked for selection relative to environmental variables and anthropogenic features by comparing used versus available habitat within seasonal ranges. For the third order analysis, we used a similar approach comparing pronghorn use of environmental and anthropogenic features within each seasonal range. For our third step, we worked collaboratively with Andrew Jakes at the University of Calgary, applying logistic regression to test a priori candidate models for habitat selection of pronghorn over three seasons (fawning, summer and winter) and assessed the predictive ability using K-fold cross validation.

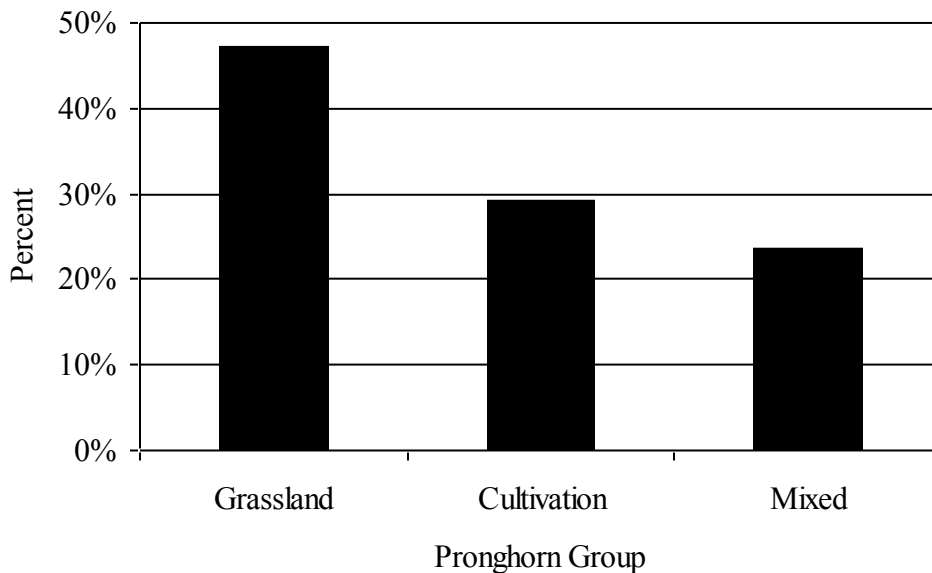


Figure 1: Percent of study animals grouped as Grassland, Cultivation, or Mixed based on the characteristics of fawning ranges in the northern sagebrush steppe of Canada, 2004-2006.

Results

Based on the results of the detrended correspondence analysis we were able to classify our study animals into one of three groups: 1) Grassland, 2) Cultivation and 3) Mixed, with almost half of our animals being in the Grassland group (Figure 1). For all three groups of pronghorn the winter seasonal ranges were larger than either of the fawning or summer ranges (Figure 2). The selection of habitat types (e.g. grass, shrub, annual crop, etc) was stronger at the second order than the third order for all groups of pronghorn with the grassland group showing the strongest selection patterns. A manuscript with all the results at the second and third order was completed and will be submitted in 2010 for peer-reviewed publication. The models developed at the second order for the fawning, summer and winter periods poorly predicted habitat for each group of pronghorn. This suggests either some other process may be in play or that building models at the third order maybe a more appropriate scale.

Conclusions

Pronghorn are commonly considered grassland obligates but we were able to classify our study animals, based on habitat attributes into three groups including one using cultivated landscapes. Continued awareness of pronghorn ecology and movement within Alberta and the larger Northern Sagebrush Steppe is needed.

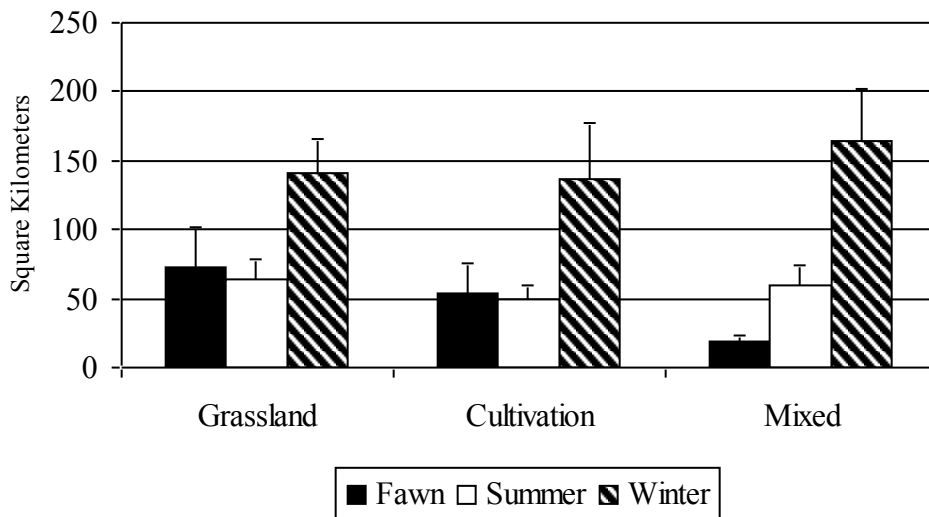


Figure 2: Size of seasonal ranges for three groups of pronghorn in the northern sagebrush steppe of Canada, 2003-2007.

Communications

Television:

- “Protecting Pronghorn” – Television interview on the Alberta Primetime program on Access.

Radio:

- “Westerners Stand Up For Pronghorn Antelope” – Radio story on Radio Canada International – TheLink – (Tuesday August 18, 2009).
- Radio interview - CBC Radio Wild Rose Country – fencing project interview with Kevin Wilson.

Print:

- “Pronghorns get Free Rein on the Prairie” – Article in The Globe and Mail (Monday August 17, 2009).
- Crossing the Imaginary Line: Understanding the connectivity of the Northern Sagebrush Steppe – Prairie Conservation Forum Newsletter, Fall 2009.
- Article “Pronghorn Survival: Navigating a Fragmented Landscape” in ACA’s Conservation Magazine.
- “Highways, fences and a fragmented landscape shape habitat use and movement of pronghorn in Alberta” – Article in the Prairie Conservation Forum Newsletter – April 2009.
- “Crossing the Imaginary Line: Understanding the connectivity of the Northern Sagebrush Steppe” – Article in the Prairie Conservation Forum Newsletter – September 2009.

Poster:

- Pronghorn Ecology and Movement in the Northern Sagebrush Steppe (P. Jones, M. Grue and M. Sutor) at the Jenner Check Station – September 28 to 30, 2009.

- Pronghorn Ecology and Movement in the Northern Sagebrush Steppe (P. Jones, M. Grue and M. Sutor) at the Manyberries Check Station – October 19 to 21, 2009.
- Comparison between pronghorn age and horn score in southern Alberta (K. Morton, P. Jones and M. Grue) at the Manyberries Check Station – October 19 to 21, 2009.
- Pronghorn habitat selection and movement in the Northern Sagebrush Steppe (Paul F. Jones, Mike Sutor, Mike Grue, Cormack Gates, Dale Eslinger, Kim Morton, and Darren Bender) at the 9th prairie Conservation and Endangered Species Conference – February 25 to 27, 2010.
- Pronghorn habitat selection and movement in the Northern Sagebrush Steppe (Paul F. Jones, Mike Sutor, Mike Grue, Cormack Gates, Dale Eslinger, Kim Morton, and Darren Bender) at the Northern Sagebrush Steppe Initiate and Crossing the Medicine Line Joint Meeting – March 3 to 4, 2010.

Website:

- Web site (www.albertapronghorn.com) – updated to convey program info to interested stakeholders.

Literature cited

Barrett, M.W. 1982. Ranges, habitat, and mortality of pronghorns at the northern limits of their range. Ph.D. Thesis, University of Alberta, Edmonton, Alberta. 226 pp.

Johnson, D.H. 1980. The comparison of usage and availability measurements for evaluating resource preference. *Ecology* 61: 65-71.

Yoakum, J.D. 2004. Habitat characteristics and requirements. *in* Pronghorn: ecology and management. Pages 409-445. *In*: B.W. O’Gara and J.D. Yoakum (editors) Wildlife Management Institute, University Press of Colorado, Boulder, Colorado. 903 pp.



Paul Jones in the field looking at pronghorn habitat.
Photo: Carla Koenig, ACA



Group of pronghorn along Highway 1, east of Medicine Hat on their migration north
Photo: Paul Jones, ACA



Group of pronghorn in native habitat on CFB Suffield
Photo: Paul Jones, ACA



A buck and doe pronghorn in a modified habitat
Photo: Paul Jones, ACA



Pronghorn bucks on ridge top.
Photo: Paul Jones, ACA