

Alberta Conservation Association 2007/08 Project Summary Report

Project Name: Habitat Selection by Pronghorn Antelope in Alberta

Project Leader: Paul Jones

Primary ACA staff on this project: Mike Grue, Paul Jones and Julie Landry-Deboer

Partnerships:

Alberta Antelope Guides

Alberta Fish and Game Association, Zone 1

Alberta Professional Outfitters Association, Legacy Fund and Wildlife Management Fund

Alberta Tourism, Parks and Recreation

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

Key findings

- Pronghorn antelope demonstrated selection for habitat at the landscape level that changed among seasons (fawning, summer and winter) and over years (2003, 2005 and 2006).
- It is important to study habitat selection over a series of years in order to detect how animals interact with their environment under varying conditions.

Introduction

Among the diversity of prairie wildlife in North America, the pronghorn antelope (*Antilocapra americana*) is the most specialized and representative large mammal that currently roams free. Pronghorn antelope are considered to be an obligate grassland species across their range (Yoakum 2004; Wood 1989; Barrett 1982). They are found in large expanses of native prairie, along foothills and in river valleys, in habitats that are typically flat to rolling and where the grade does not exceed 10% (Yoakum 2004). Though pronghorn antelope in Alberta will experience high mortality due to severe winters, and low fawn survival, their fate is also directly linked to land use practices (Barrett 1982). Since the late 1970's, little work has been done on pronghorn antelope in Alberta, particularly as it relates to land use practices and its influence on resource selection by pronghorn antelope.

The purpose of the project is to define the influence of land cover (native and anthropogenic) and disturbance sources on the distribution and resource selection patterns of pronghorn antelope in Alberta. The objectives are to: 1) define selection of seasonal home ranges on the basis of habitat components and anthropogenic features (2nd order selection, Johnson 1980), 2) determine relative selection of specific habitat and land cover influences within seasonal home

ranges (3rd order selection, Johnson 1980), and 3) develop resource selection function models to define and map pronghorn antelope habitat in Alberta. We have completed preliminary analysis associated with objective 1.

Methods

Analysis of the pronghorn GPS data was performed on locations contained within Alberta. We completed our analysis at the landscape level. We compared the seasonal ranges (fawning, summer, and winter), separate for each year, by comparing the make up of the pronghorn seasonal ranges to available ranges, equal in size to the mean pronghorn seasonal ranges, randomly distributed throughout the Antelope Management Areas (AMA). We examined the mean percent native prairie, mean density of roads (express highways, arterials, and collectors), mean well site density, mean low pressure and mean high pressure pipeline densities between the used and random seasonal ranges using the Kruskal-Wallis test.

Results

The fawning range size varied from one year to the next and averaged 39 km² over the three years (Figure 1). The preliminary results indicate pronghorn antelope inhabited areas with habitat characteristics generally in proportion to its availability across the landscape. The following were notable exceptions: for 2004, pronghorn selected fawning ranges that had significantly higher native prairie composition, while in 2006 the density of low pressure pipelines was significantly lower than the available ranges.

The summer range size varied from one year to the next and averaged 93 km² for years 2 and 3 (Figure 1). The preliminary results indicate pronghorn antelope were generally inhabiting areas with habitat characteristics in proportion to its availability. An exception was found in 2006, when pronghorn selected summer ranges that had a significantly higher density of well sites than the available ranges.

The winter range size varied tremendously from one year to the next, but averaged 150 km² over the three years (Figure 1). The native prairie composition of winter ranges was not significantly different in 2003-2004 and 2005-2006 but in 2006-2007 the pronghorn ranges had significantly higher native prairie composition, than available ranges. In 2003-2004 the pronghorn winter ranges had significantly lower densities of wells but in 2006-2007 the opposite occurred with the winter ranges having significantly higher densities of wells than available ranges.

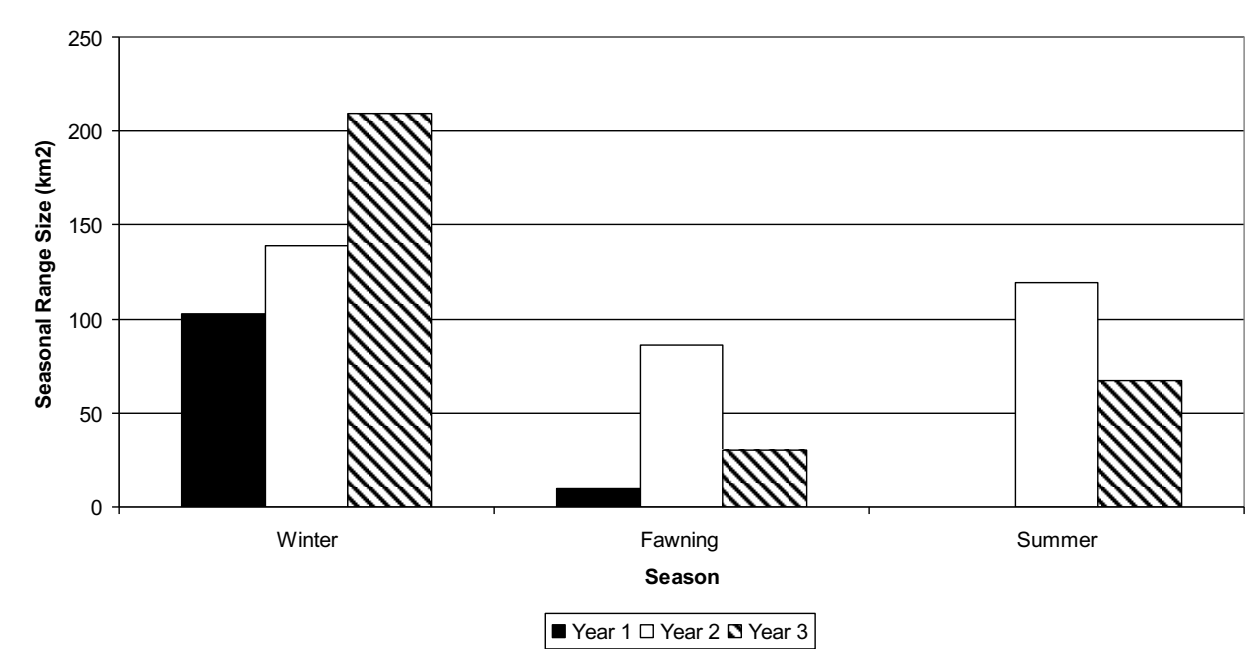


Figure 1. Winter, summer and fawning seasonal range sizes for pronghorn antelope in Alberta, 2003 – 2007.

Conclusion

At the landscape level, selection of seasonal range characteristics by pronghorn appears to be very variable by season and by year. For the fawning and summer ranges, habitat use appeared to be equal to availability for the most part while in winter pronghorn exhibit greater selection of attributes comprising their winter ranges.

Communications

- CBC Radio 1 (Winnipeg) – interview discussing why pronghorn antelope appeared in Manitoba this spring.
- Newspaper article on the project in the Great Falls Tribune on February 17, 2008.
- Newspaper article on the project in the Medicine Hat News on March 11, 2008.
- Website developed to convey program info (www.albertapronghorn.com). Website address sent to all attendees at the 22nd Biennial Pronghorn Workshop. Site has been viewed in the U.S.A and Mexico.
- Abstract submitted for a paper at the 23rd Biennial Pronghorn Workshop.
- Co-host for the 23rd Biennial Pronghorn Workshop to be held 13-16 May 2008 in Canmore. Currently, 20,000 in sponsorship funds have been secured, in addition to the \$2,000 received from the ACA.

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(1): 65-71.
- Wood, A.K. 1989. Comparative distribution and habitat use by antelope and mule deer. *Journal of Mammalogy* 70(2): 335-340.
- Yoakum, J.D. 2004. Habitat characteristics and requirements. Pages 409-445. *In*: B.W. O’Gara and J. D. Yoakum, editors. *Pronghorn: ecology and management*. Wildlife Management Institute, University Press of Colorado, Boulder, Colorado. 903 pp.



Mike Grue holding pronghorn antelope just before releasing it. (Photo: ACA)



Pronghorn antelope in agricultural field. (Photo: ACA)



Pronghorn antelope in native prairie habitat. (Photo: Mike Sutor)