

Alberta Conservation Association 2011/12 Project Summary Report

Project Name: *Wildlife Habitat Initiative in Low Disturbance Zones – Habitat Resources and Movement Corridors in Southwest Alberta*

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Partnerships

Alberta Sustainable Resource Development, Fish and Wildlife Division
Anatum Ecological Consulting
Devon Canada

Key Findings

- Captured approximately 42,000 trail camera photographs at 11 mineral lick sites in 2011.
- Documented a variety of unique species at one or more of the 11 mineral licks monitored in 2011, including key ungulates such as mountain goats, bighorn sheep, moose, elk, mule deer and white-tailed deer.
- Observed other species passing through mineral licks, including grizzly bear, black bear, cougar, lynx, wolf, coyote, snowshoe hare and porcupine.
- The largest number of individuals of the same species documented at one time was 23 mountain goats, 18 mule deer, 15 bighorn sheep and 10 wolves.
- Completed a GIS habitat map that highlights areas with low levels of human disturbance in our southwest Alberta study area. The map depicts multiple forms of human disturbance by including layers for roads, forestry cuts, ATV trails and pipelines.

Introduction

An important step in the conservation of wild places and wild species is to identify their location and value and put this information into a structure that can be easily understood. If this process is done effectively, both the resource manager and resource user will be able to make arguments and decisions regarding trade-offs between ecological goods and services and other uses of our natural resources. Informed decisions regarding these trade-offs should lead to better management and conservation of Alberta's biological resources. This work will not only help conserve 'Alberta's Wild Side', but will also promote the maintenance of recreational opportunity for future generations to use and develop their own conservation ethic for wild species and wild places.

Our primary project goal is to identify important wildlife habitat features that lie within areas of currently low levels of human disturbance. Our specific objectives are to identify areas of low disturbance, map coarse-scale habitat features within those areas, and document use of a select number of resource-rich, fine-scale habitat features. We have begun this process by locating a subset of the mineral licks in southwest Alberta and monitoring seasonal variation in their use. We hypothesize that the peak period of use for all species using mineral licks is largely driven by plant phenology (the variable timing of seasonal plant growth) and that growth peaks relatively consistently from year to year. We expect to see yearly variation in the date the lick is first visited in the season, but very little change in the timing of peak use among years.

Methods

In 2011, we compiled a comprehensive spatial dataset of anthropogenic disturbances for southwest Alberta and performed a modeling/mapping exercise to identify areas with currently low levels of human disturbance. This process involved a spatial overlay of both linear and surficial human disturbances including roads, trails, cutlines, pipelines, power lines, cutblocks, industrial wellsites and facilities, built-up areas, developed areas and some forms of agriculture. Prior to this overlay, we applied recommended buffer distances from the Alberta Biodiversity Monitoring Institute to linear features to more accurately reflect the area of human footprint per feature. Once compiled, we intersected the disturbance layers with a 1 km square grid throughout the entire study area, and then calculated and mapped the percent of human disturbance per 1 km grid cell. This final product (disturbance model) will provide the basis for predicting coarse-scale wildlife movement corridors and the context for assessing the integrity of coarse and fine-scale habitat features.

We also monitored trail cameras at 11 mineral lick sites along the Rocky Mountains, primarily north of the Crowsnest Highway. We incorporated approximately 42,000 photographs from trail cameras into a database and processed these manually to document species assemblage, abundance, gender and age class (if possible), time of day and time of year. We collected additional ecological information at each site, including data on soils, dominant plant community types, proximity to water, proximity to anthropogenic disturbances and visible signs of wildlife presence observed in the area and at the lick. We will continue to monitor these sites and the seasonal variation in their use by various species, and we will explore potential travel routes to and from what we predict to be seasonally-important resources for ungulates.

Results

Big game species documented as ‘using’ or consuming substrate at mineral licks monitored in 2011 included mule deer, white-tailed deer, elk, moose, mountain goat and bighorn sheep. Trail camera photographs from these sites also captured the presence of several carnivores including black bear, grizzly bear, cougar, wolf, coyote and wolverine. The largest number of individuals of the same species documented at one time was 23 mountain goats, 18 mule deer, 15 bighorn sheep and 10 wolves.

We predict that the peak period of mineral lick use by all species will be relatively consistent from year to year. In order to test this hypothesis we will require more data to be collected and

added to our existing database in 2012. This valuable data will also enable us to generate queries and make further comparisons and observations, such as the timing of mineral lick use by two different species (Figure 1).

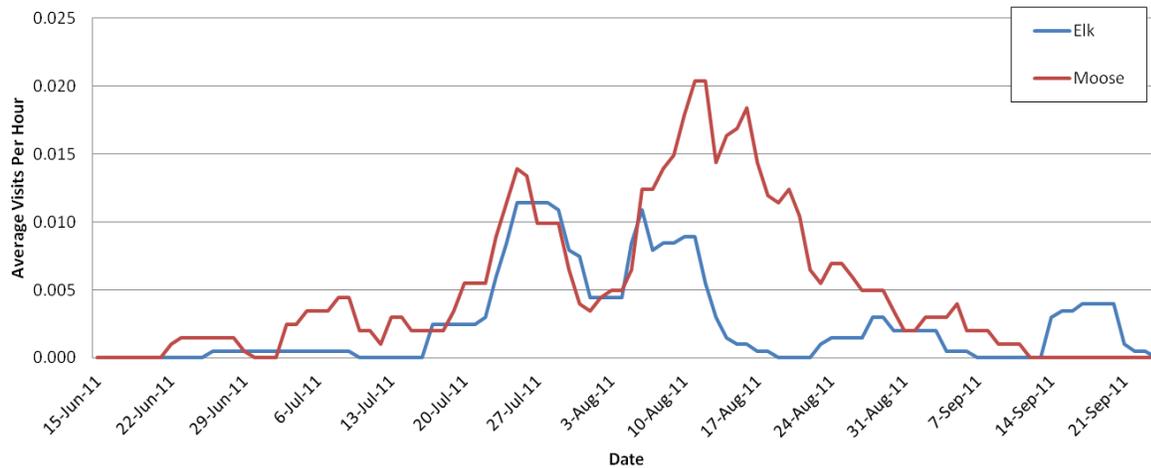


Figure 1. Seasonal variation in use by moose and elk visiting a low elevation mineral lick.

Conclusions

The development of a mineral lick inventory will be of significant value for land use planning in the southwest part of Alberta. We view this work as a first step in a process of identifying key habitat features in low disturbance zones and working to conserve these wild places and the wild species that occupy them.

In 2012, we will continue to collect and analyze data gathered at approximately 12 mineral lick sites. These additional data will enable us to more accurately identify the daily and seasonal variation of mineral lick use by individual species. Knowledge gained will include information such as the date the lick is first visited in the season, last date visited, peak season of use and how species use changes throughout the year. Gathering and analyzing data like these will allow us to expand upon our knowledge of these unique habitat features and their importance to wildlife that depend upon these resource-rich areas at critical stages of their life cycle. We will build upon this knowledge by compiling a spatial database and bibliography of other important wildlife habitat features and resources and relate them to disturbance levels within our study area. Using our low disturbance zones analysis as a foundation, we will also perform spatial modeling that will allow us to predict coarse-scale habitat features like wildlife movement corridors and landscape linkages.

Communications

- Mineral lick working group discussions (Alberta Conservation Association, Alberta Sustainable Resource Development and Anatum Ecological Consulting).

Literature Cited

Jones, R.L., and H.C. Hanson. 1985. Mineral licks, geophagy, and biochemistry of North American ungulates. Iowa State University Press, Ames, Iowa, USA. 301 pp.

Watts, T.J., and S.D. Schemnitz. 1985. Mineral lick use and movement in a remnant desert bighorn sheep population. *Journal of Wildlife Management* 49: 994–996.

PHOTO CAPTIONS



This mountain goat's instinct to consume mineral-rich soil at a lick seems to out compete its low tolerance to human presence while biologists make observations and monitor the site. (Photo: Mike Verhage)



Mineral licks can attract large numbers of ungulates and smaller groups, such as these two bull elk that we documented repeatedly visiting the same lick throughout the season. (Photo: Mike Jokinen)



A trail camera captured photographs of a large wolf pack wandering through a remote mineral lick site in mid-September. (Photo: Mike Jokinen)



Alberta Conservation Association staff member, Mike Jokinen, secures one of his camera traps, which will provide valuable information on daily and seasonal use of mineral licks by mountain goats at this high alpine site. (Photo: Mike Verhage)