

Alberta Conservation Association 2013/14 Project Summary Report

Project Name: Sharp-tailed Grouse Habitat Inventory and Stewardship

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Primary ACA staff on project:

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Partnerships

Alberta Environment and Sustainable Resource Development
Blueberry Mountain Grazing Reserve
Wanham Grazing Reserve

Key Findings

- Lek occupancy was negatively associated with greater forest cover within 1,600 m of leks.
- Although human observers were more reliable at detecting active lek sites on a given day, song meters had the advantage of being left out for a four-day period that improved detection probability overall.
- We found a lek abandoned at a site that was reseeded two years prior at Wanham Grazing Reserve.
- No active lek sites were found at Blueberry Mountain Grazing Reserve.

Introduction

Sharp-tailed grouse populations are likely declining in some areas of Alberta, particularly those where open grassland habitats are fragmented and converted for other uses. In order to measure population change, an inventory tool is needed that can be applied over a broad area. In 2011, we trialled a modified approach for detecting leks using remote listening devices (Song Meters; Wildlife Acoustics, Inc. 2009) at distances up to 1,000 m from active lek sites. Based on the success of this approach, we used song meters and human observers to record presence or absence of sharp-tailed grouse at 43 historical lek sites in northwestern Alberta. Our objective was to develop an efficient way of measuring occupancy (MacKenzie et al. 2006) over time and across broad spatial extents.

Additionally, we are interested in continuing to work closely with managers of provincial grazing reserves to include habitat retention for sharp-tailed grouse as a component of pasture management. Lek sites at the Wanham Grazing Reserve have been monitored since 2007 and have been the focus of continuing adaptive management and monitoring. Of special interest in 2013/14 was observing if a historical lek site was affected after a reseeded treatment back to

grass in fall 2011. We also initiated work with the Blueberry Mountain Grazing Reserve to search for active lek sites and to discuss adaptive management approaches for benefiting cattle grazing and wildlife habitat.

Methods

We randomly selected 42 sites from a historical data set of approximately 100 lek sites that had been visited at various intervals in the past 20 years. We measured land cover within 1,600 m of a given lek site, which generally captures most of the breeding complex for grouse near a lek (Pepper 1972). At each site between April 15 and May 15, observers recorded presence or absence, total number of grouse and environmental variables. They also placed song meters at the same location as the observer and recorded sound for one hour each on four subsequent days, starting at 30 minutes prior to sunrise. Recorded sound files from the song meters were replayed at a later time to determine activity or inactivity. Environmental covariates (temperature, wind speed and precipitation) during days of song-meter sampling were determined using data from Environment Canada. We modelled sharp-tailed grouse activity over five days of sampling using program presence (MacKenzie et al. 2006) to estimate occupancy and detection rates across habitat gradients.

In addition, we visited extra sites at the Wanham Grazing Reserve using the above survey protocol (except for placement of song meters) to monitor lek activity. We also searched open grasslands on the Blueberry Mountain Grazing Reserve for lek activity and used a geographic information system (GIS) to identify potential suitable breeding habitat.

Results

Although human observers detected lek activity more reliably, the use of song meters greatly improved detections because of the ability to sample over a longer period. In this way, inclement weather that typically impedes detection of lek activity could be countered by multiple days of sampling.

Although we predicted higher occupancy at lek sites having greater amounts of grassland habitat within 1,600 m, we observed a stronger, albeit negative, association with forested habitat (Figure 1). The proportion of area surrounding a lek site that was occupied by cropland was negatively related to lek occupancy but was also a relatively poor predictor compared to the forest variable.

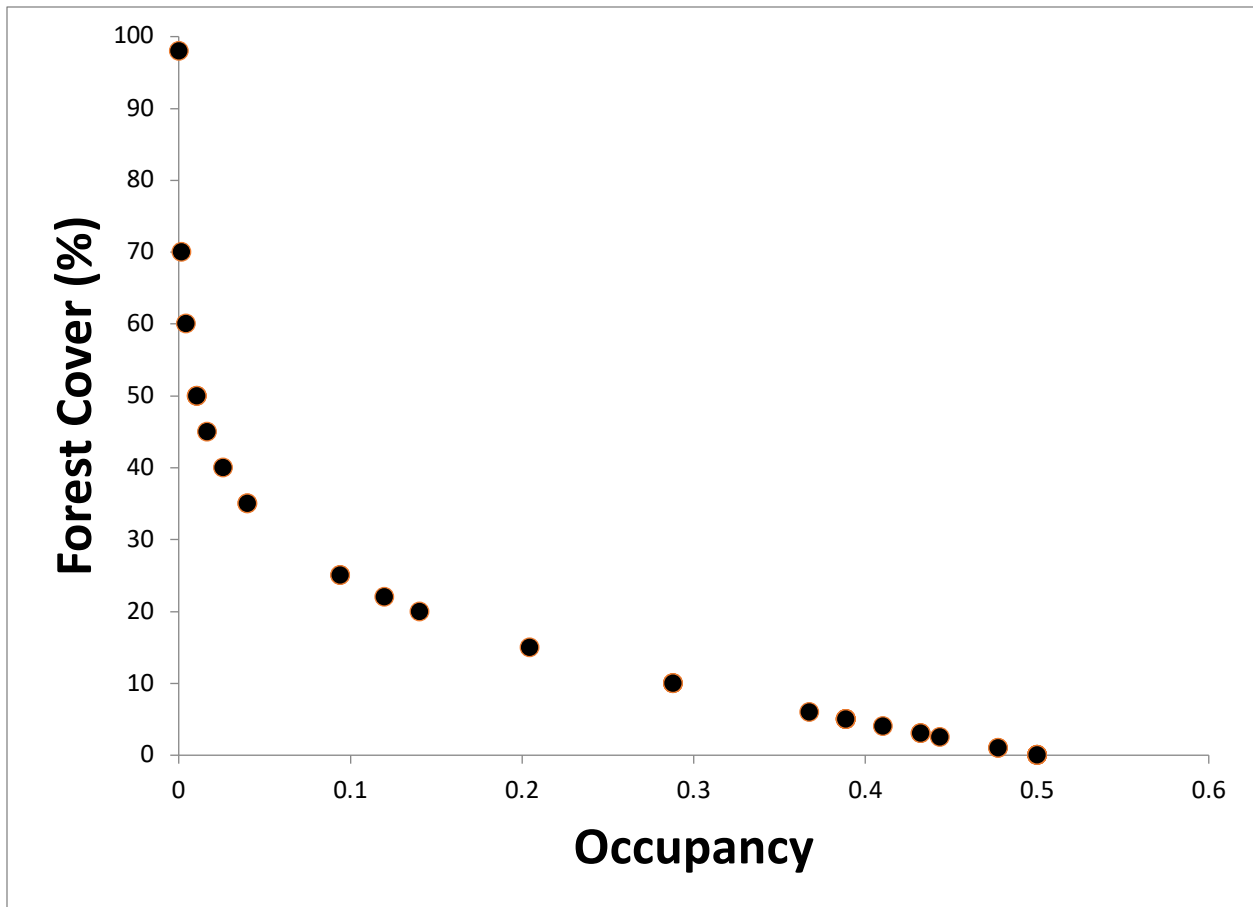


Figure 1. Occupancy rates of historical lek sites in relation to availability of forest cover within 1,600 m of the lek site. Occupancy rates increase as forest cover declines.

Conclusions

Our results suggest that a monitoring program at known lek sites may be made more efficient if including the use of song meters. These meters can be used to detect occupancy over periods of inclement weather and other stochastic events. However, they also require more time after the survey period to unravel their results. Additionally, lek occupancy was negatively associated with greater amounts of forest within 1,600 m of the lek. This could suggest that manipulation of forested habitat (i.e., logging or prevention of aspen encroachment) may benefit the retention of active leks, or could even promote colonization of leks in forested landscapes.

Discussions with grazing reserve managers to maintain nesting cover within grazing reserves continues to be received positively. As we continue to work with this group, we hope to maintain an effective style of adaptive management to tailor habitat prescriptions to match grazing reserve needs with the needs of breeding sharp-tailed grouse.

Communications

- Delivered presentation at the Wanham Grazing Reserve association general meeting.
- Delivered presentation at the Blueberry Mountain Grazing Reserve association general allocation meeting.
- Delivered poster presentation at the Wildlife Society Conference in Jasper, Alberta.

Literature Cited

MacKenzie, D.I., J.D. Nichols, J.A. Royle, K.H. Pollock, L.L. Bailey, and J.E. Hines. 2006. Occupancy estimating and modeling: inferring patterns and dynamics of species occurrence. Academic Press, Boston, Massachusetts, USA. 344 pp.

Pepper, G.W. 1972. The ecology of sharp-tailed grouse during spring and summer in the aspen parklands of Saskatchewan. Saskatchewan Department of Natural Resources. Wildlife Report Number 1, Regina, Saskatchewan, Canada.

Wildlife Acoustics, Inc. 2009. Song meter user manual. Concord, Massachusetts, USA.

Photo Captions



Field broken down for reseeding pasture. Note 100 m buffer retained at lek site. Photo: Robb Stavne

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