Alberta Conservation Association
2007/08 Project Summary Report

Project name: Index of Elk Condition

Project leader: Robert Anderson

Primary ACA staff on this project: Robert Anderson and Shevenell Webb

Partnerships:

None

Key findings

- After discussions with other elk experts, this project was discontinued based on the high pregnancy rate of free-ranging elk in the Central East Slopes of Alberta, the lack of past success with the methods in question, and the low probability that a student would be able to make significant advances towards developing the desired techniques.
- We will be assessing alternative ways to measure the success of treatments for the Ungulate Winter Range Restoration Program such as counting elk cow:calf ratios.

Introduction

One of the species-level objectives of the Alberta Conservation Association (ACA) Ungulate Winter Range Restoration Program is to significantly improve population condition for target species, including elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), and moose (*Alces alces*). An external review of the program (Hornbeck 2004) concluded that there is currently no way to assess whether the program is successful at improving population condition for ungulates. Hornbeck (2004) recommended comparing population numbers in treated and untreated study areas to assess the effectiveness of the program; however, the drawback to this approach is that population numbers are affected by a variety of factors beyond simply habitat condition. A population parameter more closely related to habitat quality is required to assess program efficacy.

Habitat quality influences body condition, which plays an important role in reproductive success in ungulates (Leslie et al. 1996; Seip and Bunnell 1985; Thorne et al. 1976). Fecal nitrogen levels have been proposed as an index for comparing diet quality in a variety of ungulates (Leslie and Starkey 1987). Reproductive output, as indicated by pregnancy rates, can be indexed through analysis of fecal steroid levels (Stoops et al. 1999). Both of these measures have potential to be used as indicators of habitat condition created by program treatments.

The objective of this project was to develop an effective and efficient index that could be used as an indicator for the Ungulate Winter Range Restoration Program. Our goal was to also provide a tool for non-invasive, yet accurate, estimation of population-level pregnancy rates, which are an important component of population modelling and the hunting allocation process.

Methods

A component of this project was initiated in fiscal year 2006 as a pilot project, which was to be primarily conducted by an undergraduate student at the University of Alberta. Unfortunately, we were not able to follow through on this option due to unforeseeable circumstances of one of the project partners. The project was subsequently deferred and the remaining budget was reallocated.

For fiscal year 2007, the ACA explored the option of sponsoring an Industrial NSERC (National Science and Engineering Research Council) graduate position. This student was expected to incorporate this project into a Master of Science or Ph.D. thesis. This option would have allowed the ACA to pursue the development of an important tool that improves delivery of Delegated Administration Organization (DAO) responsibilities, while limiting the associated staffing costs.

As part of the recruitment process, we met with University of Alberta professors, Drs. Evelyn Merrill and Mark Boyce during fall 2007. Several key points were made during the discussion including:

- Similar approaches have been tried in other jurisdictions, but have never been completely successful.
- Elk pregnancy rates tend to be high (> 80%) in the Central East Slopes so there is limited variation, which would make it difficult to assess elk condition from pregnancy rates alone.
- In order to get a wider range in pregnancy rates, it might be necessary to get samples from a broader geographic range, which would complicate conclusions because of differences in habitat conditions.
- It was suggested that cow:calf ratios be estimated during the summer months using Aerial Ungulate Surveys to compare important population parameters from among treatment/ control areas for assessing whether species-level objectives were met for the ACA Ungulate Winter Range Restoration Program.

Results

Following our meeting with Drs. Merrill and Boyce, we decided not to pursue a student for this project for the foreseeable future. As a result, the remainder of the budget allocated for fiscal year 2007 was redirected to other programming in the East Slopes Region.

Conclusion

For the time being, it does not appear that development of a monitoring indicator based on elk fecal pellets will be worth pursuing. If, however, further evidence is presented in the literature that provides more promise of developing these variables as a successful index for evaluating the effectiveness of habitat treatments, this project may be revisited. In the interim, we will explore alternative methods.

Communications

N/A

Literature cited

Hornbeck, G.E. 2004. Review and assessment of ACA's ungulate habitat enhancement activities in Alberta. Unpublished report prepared for the Alberta Conservation Association, Edmonton, Alberta.

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Seip, D.R.; and F.L. Bunnell. 1985. Nutrition of Stone's sheep on burned and unburned ranges. Journal of Wildlife Management 49(2): 397-405.

Stoops, M.A, G.B. Anderson, B.L. Lasley, and S.E. Shideler. 1999. Use of fecal steroid metabolites to estimate the pregnancy rate of a free-ranging herd of tule elk. Journal of Wildlife Management 63: 561-569.

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