

## **Alberta Conservation Association 2008/09 Project Summary Report**

**Project name:** *Petro-Canada Sustainable Grasslands Program*

**Project leader:** Paul Jones

**Primary ACA staff on this project (including seasonals):**

Paul Jones, Maria Didkowsky, Doug Manzer, and Lance Engley

### **Partnerships**

Petro-Canada

University of Calgary

Alberta Sustainable Resource Development – Public Lands Division

### **Key findings**

- The extent of tree and shrub encroachment in the grasslands has been identified as a major knowledge gap, and using air photo analysis to document this landscape change is seen as a high priority from a land manager's perspective.
- Responses to a survey conducted following a presentation to the Foothills Fescue Restoration Forum, indicated that tree and shrub encroachment is seen as a significant issue and fire is seen as an effective measure for dealing with this encroachment.
- Funding agreements were completed with the University of Calgary to support three projects in the dry mixedgrass natural subregion.
- Report was completed documenting life history requirements and human disturbance effects for sage grouse.
- Interim report on the silver sagebrush project was completed.

### **Abstract**

In common with the Alberta Conservation Association (ACA), Petro-Canada has indicated an interest in supporting the development of a program of conservation focusing on innovations in sustainable land use management in Alberta's Grassland Natural Region. The program will be based on the concepts of ecosystem restoration and management, including biodiversity conservation, social, and economic missions, and associated innovations in mitigation and post-operational reclamation practices. Three projects are currently being delivered in the dry mixedgrass natural subregion by graduate students at the University of Calgary - one on sage grouse, one on silver sagebrush reclamation and one on pronghorn antelope. ACA is delivering a fourth project looking at tree and shrub encroachment in the foothills fescue natural subregion.

As a part of the foothills fescue project, we gave a presentation entitled "Shrub and Tree Encroachment in the SW Foothills" at the Foothills Fescue Restoration Forum. Following the

presentation, we conducted a survey with the forum participants. Several themes were consistent throughout the survey. First, tree and shrub encroachment were seen as an issue and fire was thought to be an effective means to deal with this issue. We conducted a second survey of select provincial land managers and found that the extent of tree and shrub encroachment in the grasslands is a major knowledge gap, and that using air photo analysis to document this landscape change is seen as a high priority. Loss of diversity was seen as the most significant issue resulting from tree and shrub encroachment and the montane area was seen as the highest priority natural subregion. We used the results of this survey to provide the foundation for a workshop with Public Lands and Forestry which resulted in the identification of three target areas: Bob Creek, Porcupine Hills and Carbondale. Based on these findings we initiated air photo analysis and collection of historic photos for the three focal areas, with completion slated for 2009-2010.

## **Introduction**

As Alberta's economy and human population continue to grow, grassland landscapes are experiencing significant cumulating surface disturbance from a variety of land-use pressures, particularly from rapid development of hydrocarbon reserves, expansion of transportation infrastructure, cultivation, rural residential development, and urban sprawl. Balancing demands for such a wide variety of land uses is an enormous challenge. Current land management systems are under stress from unprecedented levels of activity, yet the knowledge and tools necessary for effectively dealing with such a complex issue are poorly understood and implemented. There is a recognized need for increasing the multidisciplinary knowledge base, and developing the interdisciplinary skills, tools, and practices required to resolve current competition for land, while conserving biodiversity and natural capital, the basis for long term wealth and societal well-being. Grassland conservation and sustaining the species, ecosystems, cultures and economies that depend on them is of common interest to wildlife and land management agencies. In common with the Alberta Conservation Association (ACA), Petro-Canada has indicated an interest in supporting the development of a program of conservation focusing on innovations in sustainable land use management in Alberta's Grassland Natural Region. The program will be based on the concepts of ecosystem restoration and management, including biodiversity conservation, social, and economic missions, and associated innovations in mitigation and post-operational reclamation practices.

Three projects are currently being delivered in the dry mixedgrass natural subregion by graduate students at the University of Calgary (U of C) - one on sage grouse, one on silver sagebrush reclamation and one on pronghorn. ACA is delivering a fourth project looking at tree and shrub encroachment in the foothills fescue natural subregion.

For the foothills fescue project our objectives are threefold: The first is to explore the historical data that is available for this landscape and to determine what projects are occurring in the southwestern foothills. The second objective is to determine the extent to which perceived and actual levels of tree encroachment and understory change have occurred in the south west

montane area of Alberta. If a problem with tree and shrub encroachment is found to exist, the final objective will be to develop support for establishing a technical group to design and implement a program that will restore natural variability in the rangeland ecosystems in this area.

## **Methods**

Through a consultative approach between representatives from ACA, Petro-Canada and the U of C, we developed a Terms of Reference to guide the scope, direction and accountability for the Petro-Canada Sustainable Grasslands Program. Together we identified two natural subregions to focus our efforts - foothills fescue and dry mixedgrass. Project concepts are vetted by ACA, Petro Canada and the U of C (where the U of C is the lead delivery agent). For the three projects where the U of C is the lead delivery agent, we have contractual agreements outlining project scope, deliverables and project budget.

For the ACA lead foothills fescue project, we undertook stakeholder meetings and surveys to better understand the issue of encroachment from land managers and landowners perspectives. Using these results we identified target areas to focus our analysis of landscape change, and initiated a photo-interpretation contract to determine the extent of forest encroachment in these target areas using two sets of air photos (1949-52 and 2006).

## **Results**

We completed and signed contribution agreements with the U of C to provide assistance to graduate students for the delivery of the sage grouse, silver sagebrush and pronghorn antelope projects. For the sage grouse project a report titled “Sage-grouse (*Centrocercus urophasianus*) life history requirements and documented human disturbance effects” has been completed as a deliverable and two workshops have been completed to help identify critical habitat for sage grouse in Alberta and Saskatchewan. The results of these workshops will subsequently facilitate the development of land use guidelines. For the silver sagebrush project the field season was completed where reclamation attributes for silver sagebrush at well sites and control areas were examined and a report titled “Reclamation and Restoration of Silver Sagebrush Communities: A Case Study of Beneficial Management Practices for Energy Developments in Southeastern Alberta” was completed. All three students provided a presentation on their project and progress to date to the steering committee in February 2009.

As a part of the foothills fescue project, we gave a presentation entitled “Shrub and Tree Encroachment in the SW Foothills” at the Foothills Fescue Restoration Forum. Following the presentation, we conducted a survey with the forum participants. Nine people completed the survey, including ranchers, natural historians, ecologists, and consultants. Several themes were consistent throughout the survey. First, tree and shrub encroachment were seen as an issue and fire was thought to be an effective means to deal with this encroachment. Tree and shrub encroachment was seen as being the main reason that forage abundance has declined in the foothills, followed by lack of fire (Figure 1). Fire is often seen as a negative and destructive

force. Respondents to the survey were asked to rank the positive effects of fire, and unanimously, improving diversity was seen as the most important effect of fire (Figure 2). Two other positive effects were maintaining native fire dependant grasslands and improving forage availability. Several priority areas of the southwest foothills were identified where tree and shrub encroachment is an issue, including Bob Creek Wilderness area, Highway 22 corridor, Porcupine Hills, and south of Pincher Creek towards Beauvais Lake Provincial Park.

We also conducted a survey of Public Lands and Forestry staff to determine, from a land manager's perspective, what the knowledge gaps are and areas of priority for the air photo analysis. From the land manager's perspective, conducting an air photo analysis of landscape change was the highest priority in terms of knowledge gap (Figure 3), loss of diversity was seen as the most significant issue resulting from tree and shrub encroachment and the montane area was seen as the highest priority natural subregion.

We used the results of this survey to provide the foundation for a subsequent workshop with Public Lands and Forestry which resulted in the identification of three target areas: Bob Creek, Porcupine Hills and Carbondale. These target areas are consistent with the results of the survey completed at the Foothills Fescue Restoration Forum. Air photo analysis and collection of historic photos was initiated for the three target areas, with completion slated for 2009-2010.

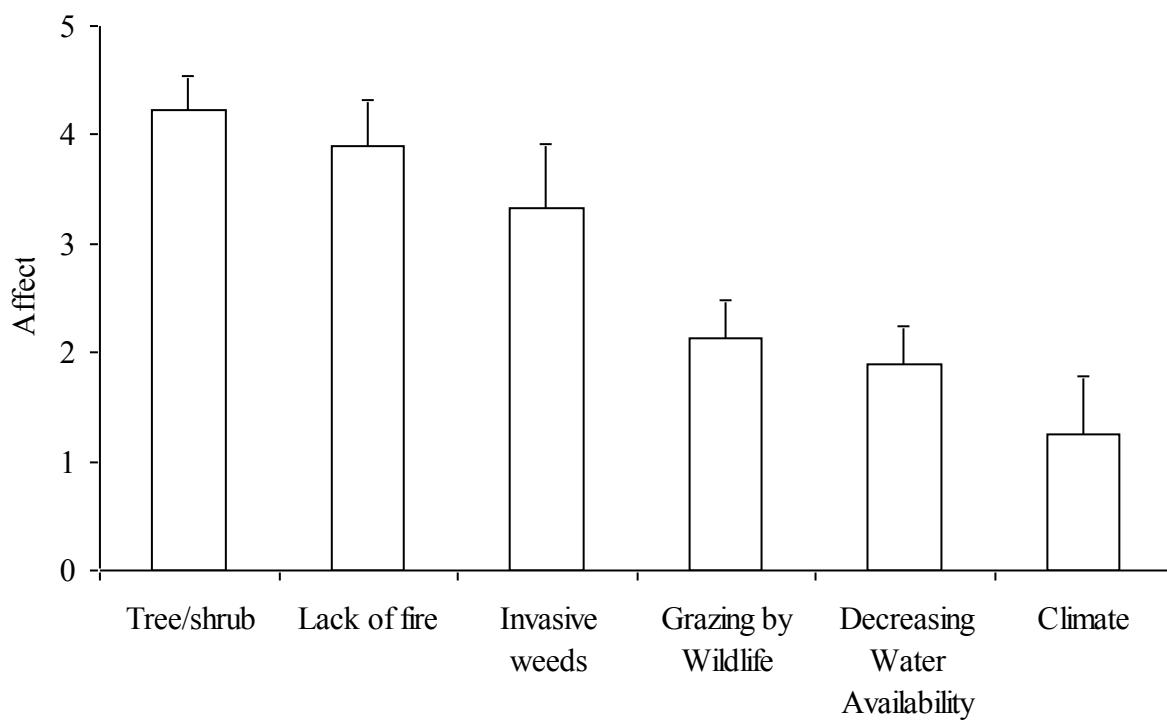


Figure 1. Six possible causes of forage loss as ranked by participants from the Foothills Fescue Restoration Forum. Each were given a relative affect on forage loss with 5 being a strong affect and 0 being no affect.

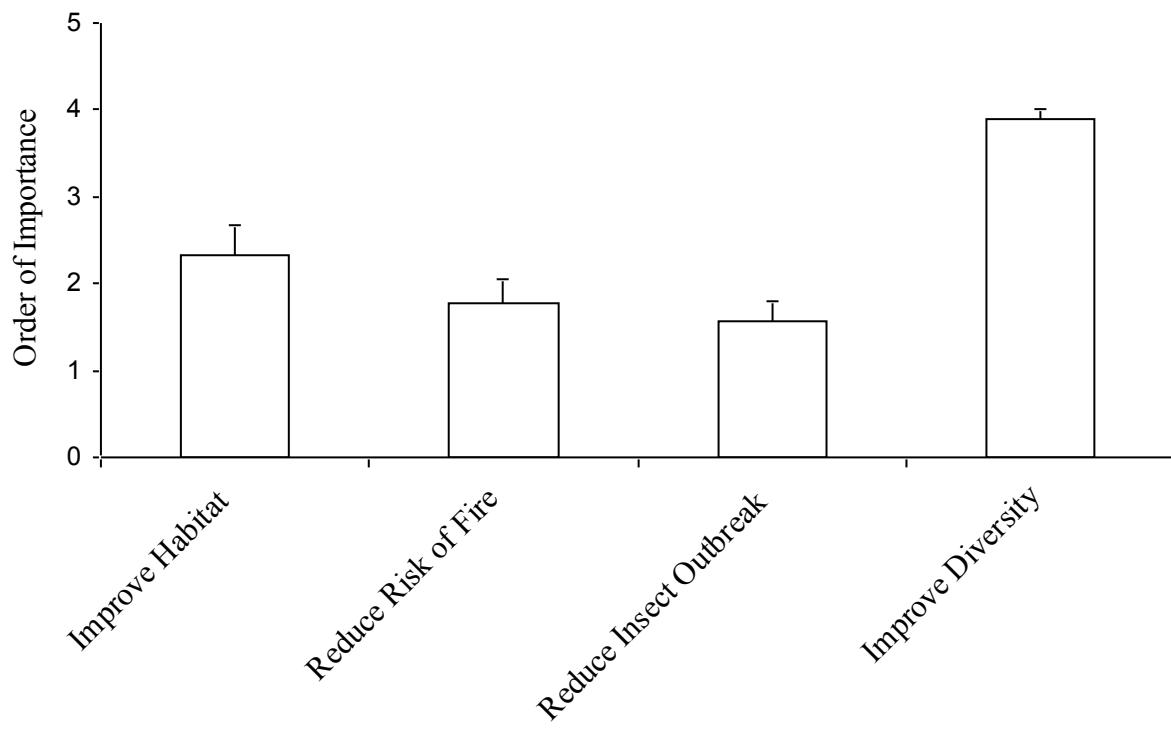
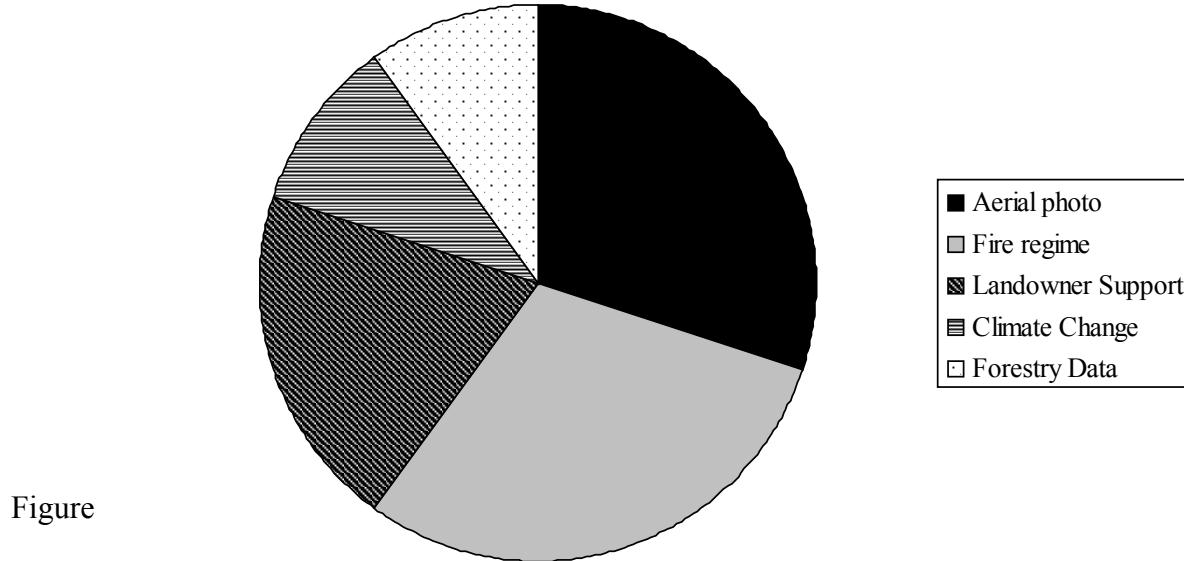


Figure 2. Order of importance ranking the positive effects of fire on the landscape as determined through a survey with participants at the Foothills Fescue Restoration Forum (0 is least important and 5 being most important).



Figure

3.

Knowledge gap priorities for the southwest foothills based on a survey of Public Lands and Forestry Staff (first, second and third priorities were included).

## Conclusions

Petro-Canada has taken a proactive approach to the conservation of grasslands and initiated a program with the ACA and U of C. Petro-Canada has committed to a three year program with a budget of \$200,000 to initiate projects under the Petro-Canada Sustainable Grasslands Program. Four projects will be delivered under this initial three years, with the potential to develop a long term partnership with Petro-Canada and the U of C contingent upon the results of this pilot program. Specifically for the foothills project, relationships with government and landowners are being established that may facilitate a long term program restoring grasslands in the southwest corner of Alberta. The three projects delivered through the University of Calgary provide information and results pertinent to the work being completed under the Northern Sagebrush Steppe Initiative.

## Communications

### ACA:

- Article “Petro-Canada Sustainable Grasslands Applied Research Program” in ACA Magazine
- Article in Foothills Fescue Restoration Forum Newsletter (Hard Grass Advocate): Call for Data “Tree encroachment in the Southwest Foothills of Alberta”
- Article in Foothills Fescue Restoration Forum Newsletter (Hard Grass Advocate): “Tree encroachment on grasslands in the Southwest Foothills of Alberta”

- Presentation to Petro-Canada Sustainable Grassland Program steering committee entitled “Is Forage Loss a Problem in the Southwest Foothills of Alberta?” May 20, 2008
- Presentation to Alberta Conservation Association’s Provincial Wildlife Team “Is Forage Loss a Problem in the Southwest Foothills of Alberta?” June 23, 2008
- Presentation to Foothill Fescue Restoration Forum “Shrub and Tree Encroachment in the SW Foothills” November 26, 2008
- Presentation to managers of SW foothills “Shrub and Tree Encroachment in the SW Foothills” December 9, 2008
- Presentation to Petro-Canada Sustainable Grassland Program steering committee entitled

#### University of Calgary

- Presentation to Sage-grouse critical habitat working group titled “Sage-grouse and anthropogenic effects” by Janna So on July 17, 2008.
- Presentation to Petro-Canada Sustainable Grassland Program steering committee titled “Cumulative Effects of Development on Pronghorn Distribution and Movements in the Northern Sagebrush Steppe (NSS)” by Andrew Jakes on February 13, 2009
- Presentation to Petro-Canada Sustainable Grassland Program steering committee titled “Sage-grouse and anthropogenic effects” by Janna So on February 13, 2009
- Presentation to Petro-Canada Sustainable Grassland Program steering committee entitled “Reclamation and Restoration of Silver Sagebrush Communities: A Case Study of Beneficial Management Practices for Energy Developments in Southeastern Alberta” by Laura Hickman on February 13, 2009
- Newspaper article - International pronghorn antelope study expanding – newspaper article in the Great Falls Tribune – February 12, 2009. Highlights the capture event of February and the ongoing work with pronghorn under the Northern Sagebrush Steppe Initiative.
- Website Article – “Sage Advice” at [www.ucalgary.ca](http://www.ucalgary.ca) on August 2008
- T.V. interview - CTV Lethbridge interview August 18, 2008 - An interview in the field of Laura Hickman and Cormack Gates, project supervisor, discussed the importance of reclamation and restoration as part of good stewardship and land management in silver sagebrush communities
- Radio Interview - CBC Wild Rose Country interview - September 16, 2008 - Interview focused on reclamation and restoration efforts in silver sagebrush community and possible effects of project outcome on future reclamation policy