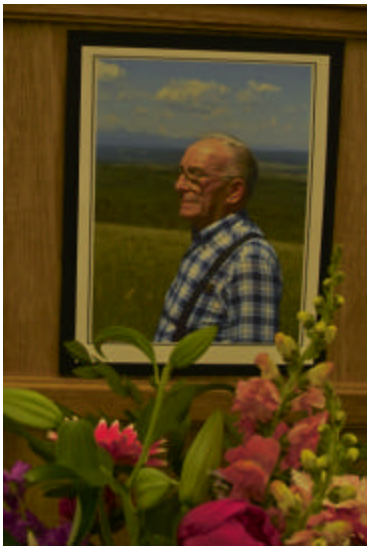
Grassland and Grouse:

An Adaptive Management Action Plan for the Protection and Enhancement of Native Grassland Habitat at the Ann and Sandy Cross Conservation Area 2005-2008



Sandy CROSS CONSERVATION FOUNDATION

Prepared by Ann and Sandy Cross Conservation Area staff

January 2005

Dedicated to the memory of Sandy Cross and to all the future generations who will enjoy his legacy

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1. Executive Summary

> "As we look at the world that we have inherited from our ancestors, it is impossible not to think of the generations who will come after us. The wild prairie that we leave to them will be our legacy."
>
> (Savage, 2004)

Gazing into the future, the staff and Board of Directors of the Ann and Sandy Cross Conservation Area foresee an Area with healthy, diverse native grassland with minimal non native species and an abundance of flourishing native grasses, forbs and wildlife. We hope this vision will become a reality through the Grassland and Grouse Project, a three year Adaptive Management Action Plan.

The Ann and Sandy Cross Conservation Area is fortunate to have between 4 and 8% native grassland still intact. Unfortunately, the remaining native grassland is not in pristine condition as aggressive non native species, such as smooth brome grass (*Bromus inermis Leyss*.), thistle (*Cirsium arvense* (L.) Scop), toadflax (*Linaria vulgaris* P. Miller), leafy spurge (*Euphorbia esula* L.) and burdock (*Arctium minus* (Hill) Bernh.) have invaded the native grassland.

The grassland cannot be taken back to the pristine state it was in prior to European settlement of the prairies; however, the diversity of native grasses and forbs can be increased at the expense of the introduced and aggressive weedy species. The Alberta government proclaimed Rough Fescue (*Festuca scabrella*) as Alberta's Provincial Grass in 2003. The Ann and Sandy Cross Conservation Area is proud to host this provincial grass on site and would like to ensure its continued survival into the future.

The goal of this project is to protect and enhance biodiversity on the remaining native grassland at the Ann and Sandy Cross Conservation Area. In order to achieve this goal the Area will implement such programs as 'Wage War on the Invasives', and 'Garden the Grassland'.

This plan is guided by the principles of ecosystem management, ecological integrity, adaptive management, project management, and most importantly, a desire to support the Area's first Guiding Principle, 'to protect habitat and provide space for native species of wildlife'. This project is also undertaken in memory of Sandy Cross, who passed away at 89 years of age on December 13, 2003. He loved both the native grassland and the sharp-tailed grouse.

For the Grouse Component of this project the focus will be on monitoring for sharp-tailed grouse (*Tympanuchus phasianellus*) and other grassland bird species, assessing habitat suitability, and developing plans for potential future management actions. After not having been seen for years, sightings of sharp-tailed grouse have occurred recently and this suggests that they are once again using the Area in some capacity. Sharp-tailed grouse are listed as a sensitive species in the 2000 edition of the *General Status of Alberta Wild Species* and in *Prairie: A Natural History*, Savage points out that grassland birds have been in decline in the last two hundred years (Savage, 2004).

For the Grassland Component 5 sites will be defined and different proven management techniques will be utilized at each site. In keeping with the tenets of adaptive management a variety of tools will be selected to determine the most successful means of protecting the native grassland habitat, i.e., mowing, weed whipping, selective grazing, biological weed controls, manually hand pulling weeds, limited use of herbicides and others based on the research and actions taken in this project. Attempts will be made to encourage the patchiness found naturally on the native prairie.

Monitoring using a Global Positioning System (GPS) and mapping using a Geographic Information System (GIS) will form critical components of the project.

The community, including neighbours and volunteers, will be involved in all stages of the action plans. Numerous ongoing partnerships will be developed as well. Youths and others will be educated through education programs, internet resources and on site signage.

The Ann and Sandy Cross Conservation Area is an important protected area set within a changing landscape. In the future the Area will become even more valuable as a benchmark and refugia for native species of plants and wildlife. Conservation Area staff and Board members take seriously the obligation to manage the Area with due consideration to these important values. We also take seriously our role in sharing this important information with others.

2. Introduction to the Ann and Sandy Cross Conservation Area

The Ann and Sandy Cross Conservation Area is a 4800 acre day use nature preserve located on the southwest doorstep of the City of Calgary, Alberta. The land was donated by Ann and Sandy Cross in two installments for the purposes of habitat protection and conservation education for children and others. The Area is managed by the Sandy Cross Conservation Foundation, a not for profit organization founded in 1996 (Charity number 89877 6331 RR 0001).

The three Guiding Principles of the Area are:

1. To protect habitat and provide space for native species of wildlife.
2. To offer conservation education programs, particularly for young people, without jeopardizing area wildlife and habitat.
3. To manage human use of the area through a system of entry by appointment only.

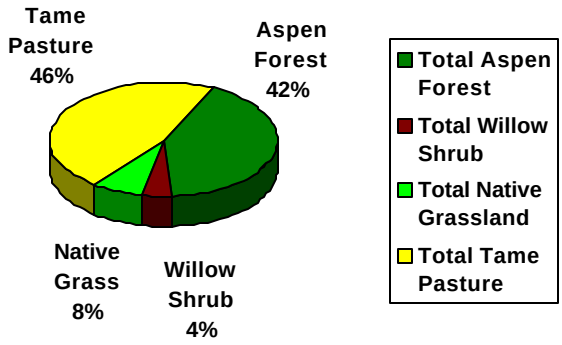
The Area has been operational since 1992 when the first manager was hired and the initial education programs were developed. Since then over 45,000 school children and others have participated in the Area's award winning education programs. Education programs include the Chevron Open Minds School, the Suncor Energy Foundation Nature Discovery day school program and a variety of Conservation Education programs for people of all ages. The Area was thrilled to receive the Emerald Award for Excellence in Environmental Education in 2002.

A well developed and active volunteer program has been in place since 1992. In 2003 97 volunteers contributed over 5900 hours to the Area. The volunteers live in nearby rural communities or the city of Calgary.

The Conservation Area is comprised of approximately 42% Aspen forest, 46% pastures of introduced grasses (tame pastures), 4% willow shrub and 8% native grassland (Gilson, 1998, p. 73). The percent given for the native grassland is deceiving as Gilson (1998) points out that data gathered for the evaluation of individual grassland patches suggests that only half of any given patch can be considered

native (due to inroads by non native species). He notes that a more realistic native grassland percentage would be between 2 and 4.6% of the total Conservation Area (Gilson, 1998, p. 70).

Figure 1- Vegetation Cover as a Percentage of the Total Area. (Gilson, 1998, p. 73).



Current management techniques used on the Area include haying, cattle grazing, weed control, water protection and enhancement, and fencing. The Area is committed to intensive management as impacts from beyond the boundaries will only increase in the future.

3. Project Goal, Objectives, Scope and Timeline

3.1 Goal

The goal of the project is to protect and enhance biodiversity on the remaining native grassland on the Ann and Sandy Cross Conservation Area.

3.2 Objectives

The project will be guided by the following objectives:

1. To apply a variety of land management techniques to enhance and protect biodiversity on the native grassland. Techniques may include: mowing, hand pulling weeds, selective grazing, biological weed control, weed whipping, appropriately placed fencing, limited herbicide use and others to be determined.
2. To determine sharp-tailed grouse use of the Area over 3 years and develop a plan for future consideration of sharp-tailed grouse and other native bird species on the grasslands at the Area.
3. To establish and utilize an ongoing monitoring and mapping protocol (including GIS and GPS tools) to update and monitor the baseline information on native species biodiversity on the native grassland at the Area.
4. To create awareness of the importance of native grassland through education efforts aimed at Area visitors and Albertans via on site programs and signage as well as Internet resources.
5. To create awareness of the importance of native grassland and maintain ongoing partnerships and community involvement via the delivery of a comprehensive communication plan.
6. To develop and adopt a plan for the next 3-5 years (i.e., 2008-2013) based on the results achieved in this project.

3.3 Scope

The following limitations will define the scope of the project. The project will:

- ⇒ take place from 2005 to 2008
- ⇒ focus on lands within the Conservation Area boundaries
- ⇒ focus on native grassland and native wildlife species, with specific focus on the sharp-tailed grouse
- ⇒ focus on native grassland protection and will not include large scale restoration of non native lands back to native
- ⇒ use an adaptive/experimental approach
- ⇒ be limited by the time, money, equipment, supplies and human resources available.

3.4 Project Timeline

2005- 2006

In 2005-2006 the focus will be on Objective 1 (Grassland Action Research), Objective 2 (Grouse Research and Monitoring), Objective 3 (Monitoring and Mapping), as well as Objective 4 (Education) and Objective 5 (Communication). In this first year the project will be initiated and the focus will be on research and determining the best course of action through on the land experimentation. The Monitoring component will focus on updating the native grassland baseline inventory using GPS technology and existing monitoring protocols. The Education component will consist of native grassland enhancements for school programs, Conservation Education programs and staff and volunteer training on grasslands, as well as web based grassland interpretation. Communication will include project branding, project announcements and regular updates.

2006- 2007

In 2006-2007 the focus will again be on Objectives 1, 2, 3, 4 and 5. By this time the project will be well underway and we will continue to undertake Grassland Action Research, Grouse Research and Monitoring, Monitoring, Education and Communication. We will add GIS technology to the Monitoring and Mapping tool kit. As Adaptive Management criteria dictate plans for this second year will be modified based on our findings from Year 1.

2007- 2008

In 2007-2008 all objectives will be undertaken, including the addition of Objective 6, which states that we will plan the next phase of the Project, i.e., the next three-five year timeline. At this time we will more seriously consider the future of any restoration work on the native grassland.

4. Background

4.1 Need for Project

Smooth brome (*Bromus inermis Leyss*.) was introduced as a forage species in Alberta due to its palatability and nutritional value for grazing animals; however, it is an extremely aggressive invader of native ecosystems. In 2001 Alberta Environment included smooth brome on its list of problem introduced forages due to its persistence as an invader of native ecosystems (Parker, 2003).

At the Ann and Sandy Cross Conservation Area smooth brome is invading the native grassland patches at an alarming rate. Through monitoring efforts Gilson (1998, p. 5) noted that the native grassland

patches on the Conservation Area may account for only two to three percent of the total Area. The reasons for the decline in native grass cover are many and may include: historic land clearing and seeding with non-native species, suppression of wildfires, changes in historical grazing patterns, increases in types and distributions of weedy species, lack of aggressive weed control measures, invasion by aspen and other woody species and so on.

This project is aimed at reducing the influx of brome and other weedy species into the remaining native patches and perhaps laying the ground work for more aggressive native grassland restoration in the future.

Kentucky bluegrass (*Poa pratensis L.*) is a widespread non native species and as it is extremely difficult to contain, it will not be considered a weedy species for the purposes of this project; although it must be monitored to ensure it does not become the next problem grass.

Reg Rempel has had the opportunity to be actively involved as the Habitat Manager at the Ann and Sandy Cross Conservation Area since the fall of 1985. In that time he has witnessed many changes to the habitat and wildlife, e.g., sharp-tailed grouse have reappeared in the last 2 years after not having been seen for many years and the grassland wild flowers have been declining, replaced by brome in the native grassland. He has witnessed first hand the loss of biodiversity in the native grassland.

4.2 Research Projects on Area

Over the last 10 years a number of habitat-related research projects have been undertaken on behalf of the Ann and Sandy Cross Conservation Area. The relevant ones will be summarized below.

4.2.1 Neil Gilson Master Thesis

In a Masters thesis titled "Monitoring Ecosystem Indicators on the Ann and Sandy Cross Conservation Area" undertaken for the Area through the Environmental Design (EVDS) program at the University of Calgary Neil Gilson recommended five management goals for the Conservation Area:

1. The protection and enhancement of existing native grassland.
2. The control of weeds in tame pasture.
3. The restoration of native forage/grassland.
4. The protection and enhancement of riparian areas.
5. The development and implementation of an ongoing monitoring system.

(Gilson, 1998, p. 153-155)

⇒ **This native grassland protection project is designed specifically to reach the first goal, as well as touch on goals number three and five.**

Regarding the native grassland, Gilson (1998) noted that the integrity of this community is being threatened. He pointed out that the invading fingers and patches of smooth brome are visible to anyone walking through the native grassland and he recommended giving the remaining native grass patches highest priority as they are the most threatened community on the Area.

Gilson recommended three native grassland management goals:

1. Maintain or enhance the quality of native grasslands in terms of the historical native species diversity and composition.
2. Prevent the invasion of native grasslands by aggressive exotic grass or weed species.
3. Maintain the ecological function of native natural disturbance processes by allowing natural processes to take place, or by implementing management practices that mimic the effects of natural processes.

(Gilson, 1998, p.89)

His suggested management actions for the native grassland include the development of a deferred grazing rotation, restriction of grazing to fall and winter, development of a controlled burning cycle, active control of exotic grass and weed species and active promotion of native species through reseeding and transplanting.

⇒ **It is believed that while the benefits of prescribed burning would be numerous, this technique is too fraught with public relation issues and is therefore not feasible at this time. Therefore this project will focus on the grazing regime and active control of weeds, prior to consideration of reseeding and transplanting on the native grassland.**

4.2.2 Adams and Glasgow Report

In a report entitled, "Managing Wildlife Habitat and Populations on the Ann and Sandy Cross Conservation Area", Barry Adams and Bill Glasgow (1999) on behalf of the Alberta government, presented the following objectives for managing the native grassland:

> Objective 1- Maintain the current patches of rough fescue and mixed grass patches at approximately 7 and 2 percent of the total conservation area.
> Objective 2- Maintain or enhance the current diversity, distribution and abundance of wildlife and plant species within the native grassland patches.
> Objective 3- Maintain vigor and nutrient cycling processes using livestock grazing as the major management tool.
> Objective 4- Minimize encroachment by woody plant species and soft (tame) grasses through close monitoring and intensive site management.
> (Glasgow & Adams, 1999, p. 16)

They recommended the use of GIS as a mapping tool to help define the native grasslands and baseline their current condition. Adams and Glasgow also recommend the continued use of winter grazing on native plant communities as fescue is well adapted to this grazing, i.e., winter grazing exposes the crown of the plant to the sun and this encourages the plant to produce tillers and spread out. They also advised that encroachment into the grassland and localized patches of weeds should be treated annually and ongoing monitoring should be included in the management program.

Adams and Glasgow do not consider the full blown restoration of tame pasture back to native grassland to be a viable option; however, they do recommend that the Area continue experimental research into native fescue restoration and that the Area experiment with reseeding tame pasture on small areas to start. They recognize that any experimental reseeding of areas would require vegetation control treatment for a period of 3 to 5 years prior to reseeding.

⇒ **This project seeks to incorporate as many of the Adams and Glasgow recommendations as possible.**

4.2.3 Control of Smooth Brome in Native Grassland

In 1997 Debra Brown completed a Master thesis entitled "Smooth Brome in Foothills Fescue Grassland" through the University of Alberta. Debra undertook experiments on brome at the Ann and Sandy Cross Conservation Area over the 1994 and 1995 growing seasons. She experimented with sheep and cattle grazing, mowing, Glyphosate (Round-Up) and fire, in an attempt to determine which technique best controlled the brome grass. Her results showed that the most effective technique was Glyphosate as it reduced the brome tiller density by 50% (Brown, 1997). No other treatments came close to this level of impact on the brome. In all of her treatment plots bluegrass increased and she recommended keeping careful watch over the bluegrass to ensure it does not become the next aggressive dominator.

Overall Brown determined that no one treatment alone is effective and that a combination of tools, chosen on a site specific basis, may be the most effective at controlling brome grass. She determined that management on mixed areas, i.e., where a mix of native and introduced grasses are present, will require the ability to understand and balance treatment impacts on both native and introduced species.

After sitting idle for 10 years Brown's plots were reanalyzed in 2004. The preliminary results indicate that brome is still dominant in all plots and that native forbs (wildflowers) have flourished. The final report from the University of Alberta is pending.

⇒ **This project seeks to incorporate as many of Brown's recommendations as possible and takes into account the updated results from her study plots. Based on her recommendations Glyphosate will be used in a limited capacity.**

4.3 Area Management Considerations

The following sections outline the principles that guide this project.

4.3.1 Conservation Area Vision (approved September 27, 2004)

We are recognized from the local to the international level as a leader in conservation. We achieve this by working collaboratively with the community and a broad range of partners; sustainably managing our benchmark landscape for ecological integrity; and fostering awareness, appreciation and action through leading edge conservation education.

⇒ **Based on this vision the Area believes that a native grassland protection project should be undertaken to not only ensure success for the Area but to exemplify the leadership and leading edge qualities espoused in the Vision.**

4.3.2 Management Planning at ASCCA

The Board of Directors has committed to using an ecosystem management approach to address both the internal and external environments at the Ann and Sandy Cross Conservation Area. Plans are underway for both these aspects; including an overall Internal Ecosystem Management Plan (in progress) and an External Ecosystem Management Plan (in progress). Preliminary work on both these plans led to the conclusion that the native grassland was by far the most threatened environment and therefore should be addressed immediately. Other priority management issues, such as protection of riparian areas and overall weed control, will continue to be addressed through the Area's regular operations. Despite this unnatural division into internal and external ecosystems, it is important to see the Ann and Sandy Cross Conservation Area as nested within a larger sustainably managed landscape. To this end the external environment is being addressed through another project in conjunction with the University of Calgary.

⇒ **This project does not include environments external to the Conservation Area; instead it is focused specifically on the Area's most threatened habitat, the native grassland. Other management issues will continue to be addressed through the Area's regular management plans.**

4.3.3 Ecological Integrity and Ecosystem Based Management

The Area strives for ecological integrity, as described by Parks Canada's Panel on Ecological Integrity, "An ecosystem has integrity when it is deemed characteristic for its natural region, including the composition and abundance of native species and biological communities, rates of change and supporting processes" (ParksCanadaAgency, 2000, p. 2).

Ecological integrity is a management goal and the task at hand is to determine how to measure it and manage the Area to achieve this goal. Starting with enhancing and protecting the native grassland the Area hopes to work towards achieving ecological integrity at the Conservation Area.

The Area is also guided by the principles of ecosystem management, which has been defined by Mike Quinn (2002, p. 371) as:

> "Ecosystem based management is an approach to guiding human activity using collaborative, interdisciplinary, and adaptive methods with the long term goal of sustaining desired future conditions of ecologically bounded areas, that in turn, support healthy, sustainable communities."

Ecosystem management relates directly to the Area's first Guiding Principle and provides a framework within which to answer the questions, "How do we continue to provide habitat and space for native species of wildlife?" and "How can we best mimic the natural disturbance regimes found on the Ann and Sandy Cross Conservation Area?"

We are committed to retaining as many pieces of the ecosystem as possible, in keeping with Aldo Leopold's words, "To keep every cog and wheel is the first precaution of intelligent tinkering" (Aldo Leopold in Savage, 2004).

This grassland protection plan aims to take into account the following 10 themes/principles of ecosystem management (Grumbine, 1994):

1. **Hierarchical Context:** the need to take a systems perspective
2. **Ecological Boundaries:** using natural, not political boundaries
3. **Ecological Integrity**: protecting total native diversity and the ecological patterns and processes that maintain that diversity
4. **Data Collection:** more research and data collection required, as well as more sharing and use of data
5. **Monitoring:** to create ongoing feedback loops
6. **Adaptive Management:** seeing management as a learning process, using experimentation and modifying as needed
7. **Interagency Cooperation:** working together to overcome management challenges
8. **Organizational Change:** being willing to make changes within organizations to assist in the implementation of ecosystem management
9. **Humans Embedded in Nature:** recognizing that humans are part of the ecosystem

too

10. **Values:** recognizing that human values will always play a dominant role in ecosystem management.

⇒ **Every attempt will be made to take these ecosystem management principles into account wherever feasible, e.g., data collection, monitoring and adaptive management are keystone aspects of the project and the project is based on ecological integrity and using ecological boundaries (i.e., grassland boundaries, not fencing).**

4.3.4 Adaptive Management

An adaptive management approach will be utilized for this project. According to Norton and Steinemann (2001) adaptive management is an iterative, adaptive form of management which includes experimentalism, a multi-scalar approach, and a sensitivity to place. They also note that adaptive management is holistic and community-based and often directly linked to ecosystem management as the methods and processes favoured by ecosystem-based managers. Peer review and evaluation will be built into the program as a means of ensuring we are proceeding according to known techniques. External reviews will also provide the objectivity required by the project.

⇒ **To employ adaptive management means utilizing different approaches, learning and adapting as plans progress. This seems applicable for a project focused on seeing positive results; i.e., if something is working well its use should be expanded and likewise if something is not working it should be abandoned. As a not for profit organization it is imperative that the Area makes the best use of limited resources.**

4.3.5 Project Management

A project management approach has been taken since the Grassland and Grouse Plan is "… a sequence of tasks with a beginning and an end that is bounded by time and resources and that produces a unique product or service. This means that a project produces something that has never existed before; a deadline or target date when the project must be done and a budget that limits the amount of people, supplies, and money that can be used to complete the project" (Baker, Baker, & Campbell, 2003, p. 4).

It is a results-oriented plan that falls outside of the regular operations of the Ann and Sandy Cross Conservation Area and to ensure an organized and successful project careful consideration has been given to critical project management components such as performance levels, time frames, budgets and scope (Groves, 2003).

4.3.6 Restoration

Ecological restoration has been defined as "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed" (Groves, 2003, p. 210). As Groves (2003) points out restoration can best be thought of as occurring along a continuum with reclamation and re-vegetation of heavily

damaged areas at the one end, and improving existing but degraded ecosystems at the other end.

To date there has been limited success with reclamation of non native areas back to native species. For this reason we propose that the first step should be to try and save the native areas that we do have left. In the long run this should be less expensive than trying to reclaim areas once they have become degraded and are no longer in a native state. We will experiment with restoration on a small degraded site to enable us to learn more about restoration and its feasibility for use on a larger scale at the Area.

⇒ **The Grassland and Grouse Project is focused on the degraded ecosystem end of the continuum as it is believed that it will be more cost effective and less time consuming to enhance and protect what is left rather than trying to restore the native grassland after it is gone.**

4.3.7 Scales

Biodiversity and the ecological processes and natural disturbances that sustain biodiversity occur at a variety of scales, including both spatial and temporal scales.

At the largest scale the project focuses on the Ann and Sandy Cross Conservation Area as a whole. This represents a landscape or Ecosite scale, although it is realized that the landscape is much broader than the area encompassed by the Ann and Sandy Cross Conservation Area.

Within the Ann and Sandy Cross Conservation Area the next scale involves dividing the land into different vegetation zones, i.e., aspen forest, native grassland, riparian areas and so on. This Ecoelement scale includes the native grassland areas which account for 2-4.6 % of the Conservation Area. These native grassland areas are the focus of this project.

For ease of organization the native grassland areas have been divided into 5 main sites (e.g., Sites 1 through 5). Site specific action plans have been developed for each of the five sites. Actions may be taken at the site scale or at a smaller sub-site scale, i.e., patch or plot. For example, at Site 1 on Section 16 all the native grassland may be grazed in the winter while mowing and hand weeding may be undertaken on sub sites, i.e., smaller patches of native grassland within Site 1.

Regarding the temporal scale, our plans will attempt to mimic natural disturbances found historically in a native grassland area (Savage, 2004). Plans will also attempt to account for natural grassland succession and to recreate a mosaic, or the natural patchiness, found on the native grassland.

5. Action Plans

5.1 Grouse Component

5.1.1 Summary

The sharp-tailed grouse is the flagship wildlife species for this project; although it is recognized that other native species will benefit from the monitoring, research and enhancement efforts. At this time the Area is not planning any habitat modifications or reintroduction of the sharp-tailed grouse.

The Grassland and Grouse Project works to protect and conserve sharp-tailed grouse and other native species by protecting the native grassland. It is important to note that the grassland actions listed earlier will be implemented to best support sharp-tailed grouse populations on the Area.

The Alberta Conservation Association (ACA) recommends that "The main direction to follow in habitat management (for sharp-tailed grouse) should be maintaining and improving the health of the grassland ecosystem with substantial considerations given to the specific habitat requirements for sharp-tailed grouse and other prairie wildlife species" (Millar, 1999).

The ASCCA takes on this timely project to conserve a species whose numbers are declining. Alberta Sustainable Resource Development has recently upgraded the sharp-tailed grouse status to yellow or "sensitive" or "a species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk" (Alberta Sustainable Resources Development, 2003).

The Grouse Component of this project will involve work to support the goals and objectives of the *North American Grouse Management Plan- A Prospectus,* and follow the monitoring and enhancement protocol outlined in the ACA's *Sharp-tailed Grouse Habitat Enhancement Strategies Implemented for Southern Alberta: Making a Difference on the Ground.*

Other reference documents considered:

- The United States Department of Agriculture (USDA) (1999). *Sharp-tailed grouse (Tympanuchus phasianellus) Fish and Wildlife Habitat Management Guide Sheet,* Minnesota Department of Natural Resources.
- Hays, D.W., M.J. Tirhi and D.W Stinson. 1998. Washington state status report for the sharp-tailed grouse. Wash. Dept. Fish and Wildlife. Olympia. 57 pp.

Sharp-tailed Grouse Monitoring will take place on Sites 1, 2 and 3.

We chose these sites as grouse have been sighted in these areas and the native grassland patches in these areas provide good representation of sharp-tailed grouse habitat. We also selected Sites 2 and 3 as they are close to our educational center and offer an excellent educational opportunity for our visitors.

5.1.2 Actions

1. Establish a **monitoring program** and **monitor** for sharp-tailed grouse to determine the status of their use of the Ann and Sandy Cross Conservation Area. The monitoring program will include recording sightings of other grassland birds as well. The project seeks to answer the following questions:
    - ⇒ Are the grouse nesting on the Ann and Sandy Cross Conservation Area?
    - ⇒ If so, how many birds are present and when and how are they using the Area?
    - ⇒ What other native birds are utilizing the Area and what are their levels of abundance?

2. **Research** sharp-tailed grouse habitat needs and **compare** the habitat at the Ann and Sandy Cross Conservation Area to the ideal habitat for these birds. The project seeks to answer the following questions:
    - ⇒ What is ideal sharp-tailed grouse habitat?
    - ⇒ How suitable is the habitat at the Conservation Area?
    - ⇒ What would we need to do (if anything) to the habitat to ensure that the grouse continue using the Area?
    - ⇒ What can we do to maintain the native grassland habitat for other native species of birds?

3. **Use information** from the research and monitoring to develop **future plans** for the sharp-tailed grouse, i.e., consider ways to keep them on the Area (if they are found to be using it on a permanent sustainable basis). Future plans for management of other grassland birds will also be considered.

5.1.3 Grouse Component Timeline

2005-2006	2006-2007	2007-2008
Inventory (sharp-tailed grouse and other native species)	Complete inventory	
Inventory habitat components for sharp-tailed grouse and other priority species	Monitor (sharp-tailed grouse and other priority native species)	Monitor (sharp-tailed grouse and other priority native species)
Assess limiting factors for sharp-tailed grouse and develop future habitat enhancement plan	Implement and monitor habitat enhancement efforts based on limiting factor research for sharp-tailed grouse	Continue to implement and monitor habitat enhancement efforts based on limiting factor research for sharp-tailed grouse
Complete grassland actions for sites 1, 2 and 3	Complete grassland actions for sites 1, 2 and 3	Complete grassland actions for sites 1, 2 and 3
Map and document locations and data in GIS, using GPS	Map and document locations and data in GIS, using GPS	Map and document locations and data in GIS, using GPS
Share information with partners and the community	Share information with partners and the community	Share information with partners and the community
Complete year 1 management report	Complete year 1 management report	Complete year 1 management report
		Develop future plans for the maintenance and enhancement of the sharp-tailed grouse populations and habitat

5.2 Grassland Component

5.2.1 Summary

The focus of this project is the protection and enhancement of the remaining native grassland and native species of plants found on the Ann and Sandy Cross Conservation Area. To be able to do this the Area plans to "Wage War on the Invasives". For the purposes of this project invasives include smooth brome grass (*Bromus inermis Leyss*.) and noxious weeds such as thistle (*Cirsium arvense* (L.) Scop), toadflax (*Linaria vulgaris* P. Miller), leafy spurge (*Euphorbia esula* L.), crested wheat grass (*Agropyron pectiniforme* R. & S.) and burdock (*Arctium minus* (Hill) Bernh.). As mentioned earlier, Kentucky bluegrass (*Poa pratensis L.*) is so widespread that it will not be considered an invasive for the purposes of this project.

5.2.2 Actions for Grassland Component

1. Divide native grassland into **5 sites** and develop an **Action Plan** for each site, considering both the Ecoelement scale - i.e., all the Area's native grasslands, divided into the 5 Sites; and Sub-Site scales, i.e., the patches or plots within the larger sites.
2. Monitor results of actions and **modify** plans accordingly.

5.2.3 Grassland Action Plans by Site

The overall land base consists of a total of 4800 acres in Township 22, Range 2, West of the 5th meridian. The Area includes Section 4, Section 5, East half of 6, East half of 7, Section 8, Section 9, Section16, Section 17, and the East half of 18.

It is compromised of approximately 42% Aspen, 46% Pastures of introduced grasses (tame pasture) 4% Willow shrub and a maximum of 8% native grassland. The native grassland accounts for approximately 313 acres in total. These 313 acres have been divided into 5 Sites- see map in Appendix.

Site 1- Section 16
This site consists of approximately 127 acres of native grassland including a mix of Aspen, Willow and Tame pasture. It is an ideal site for testing a native grassland focused grazing regime, including the use of fencing to protect native grass patches from cattle grazing at inappropriate times. One of the exclusion plots on the land may be moved to this area to act as a control plot for comparison with the surrounding areas undergoing brome and weed control treatments.

Actions by Location within Site 1

Section by Quarters		**Ecoelement**	**Grazing**
Sections	Acres	**127 acres**	**Pastures**
SE 9	6	*Actions : Mowing, tame pasture grasses	9,K,L
SW 9	13	woody species, weeds	9,L,F
NE 9	10	Grazing, timely to stop tame pasture grasses	9,A
NW 9	8	from propagating, slowing down woody	9,J
SE 16	18	encroachment, Hand pulling, weeds	16,C
SW 16	22	**Sub-site**	16,C
NE 16	17	**2-m2**	16,C
NW 16	33	* Action : Reference plot	16,C
		* Sharp-tailed Grouse Monitoring	

Site 2- Hill by upper parking lot
This small area near Belvedere House is comprised of only 2 acres; however, it is an ideal site for an educational/interpretive sign and for undertaking a gardening/labor intensive approach, i.e., Garden the Grassland. The hillside consists of remnant native grassland with a patch of native grassland that was reintroduced to the area in 1998. This small plot is ideal for hand pulling weeds, a biological control Sub-site for Canada thistle as well as reseeding native grass seeds collected on the Area.

Actions by Location within Site 2

Section by Quarters		**Ecoelement**
Sections	Acres	**2 acres**
NE 17	2	* Action : biological control, education site
		Gardening, reseeding
		Sub-site
		4-m2
		* Action : Biological Control
		* Sharp-tailed Grouse monitoring

Site 3- Hillside below Belvedere House
This site consists of 53 acres of Fescue and Parry's oat grass mixed along with Aspen and tame pasture. It is an ideal site for an education program focus as many school and youth group participants use this trail. It is also an ideal site for 'Garden the Grassland' i.e., labor intensive actions, including mowing,

especially around the native grassland patches (i.e., donuts!). The Sub-Site should be used as a biological control for Canada thistle.

Actions by Location within Site 3

Sections by Quarters		**Ecoelement**
Section	Acres	**53 acres**
NE 17	36	* Trail Systems involved
SE 17	17	a. Fescue Trail b. Ranchers Trail
		* Action : Mowing, tame pasture grasses
		woody species, Hand pull weeds
		biological control, education site
		Sub-site
		4-m2
		* Action : Biological Control
		* Sharp-tailed Grouse monitoring

Site 4- Pine Creek Valley
The Pine Creek valley consists of 82 acres of hillside with native grassland found mainly on the drier south facing slopes. The bottomlands have been converted to brome. In the valley the native grassland is under threat from these introduced soft grasses and aggressive weeds such as Canada thistle. Techniques suitable to the valley include mowing tame grasses and woody species. The existing exclusion plot should be used as a control. The threat from the upper ridge is the encroachment of Aspen.

Actions by Location within Site 4

Section by Quarters		**Ecoelement**	**Grazing**
Section	Acres	**82 acres**	**Pastures**
SE 17	7	* Trail Systems involved	
SW 17	9	a. Pine Creek Trail b. Fescue Trail	
SE 18	5	Action : Mowing, tame pasture grasses	
NE 8	14	woody species, weeds	8,F,A
NW 8	32	**Sub-site**	8,E
NE 7	15	**Size to be determined**	7,A
		* Action : Mowing, woody species, Aspen	

Site 5- Section 4, Southeast corner
In this corner of the property the native grassland consists of 49 acres and is under threat from Crested Wheat grass, a non-native species used in reclamation in the past. This provides an ideal opportunity for experimenting with full-blown restoration using a native seed mix. Herbicides will be required to destroy the invasive species prior to reseeding.

Actions by Location within Site 5

Section by Quarters		**Ecoelement**	**Grazing**
Section	Acres	**49 acres**	**Pastures**
SE 4	49	* Action : Mowing tame pasture grasses	4C
		woody species, weeds	
		Sub-site	
		Size to be determined	
* Action : Herbicide Wicking Crested Wheat			

5.2.4 Description of Applications

Mowing with a Rotary Cutter
This is a proven labor intensive approach requiring manpower and equipment such as a Tractor and Rotary Cutter. It is useful for controlling the following:

Weeds: To control the spreading of seeds and the encroachment into the native grassland
Tame grasses: To control the spreading of seeds and the encroachment into the native grassland
Woody Species: To control the encroachment of Aspen, Buck Brush, and some Willow.

Biological control
This is a leading edge approach requiring information as to its location and monitoring.
It is useful for controlling the following: Canada thistle, Leafy Spurge.

Hand pulling/weed whipping
This is a micro-management approach to control the invasive species areas that are too small for mowing.

Timely Grazing
This is an approach to stop the encroachment of woody species and to stop the tame pastures from going to seed.

Herbicide application
This is an approach to delete the growth of Crested Wheat grass, a non native species. See Health and Safety risks identified in section 8.1.

5.2.5 Native Grassland Component Timeline

2005-2006	2006-2007	2007-2008
Map and document locations using GPS-GIS in May and document data May to Sept	Document data all sites, GPS-GIS May to Sept	Document data all sites, GPS-GIS May to Sept
Reference Sub-site #1 setup May	Monitor Sub-site	Monitor Sub-site
Site #2 and #3 Set up Sub- sites (biological control)	Monitor Sub-sites	Monitor Sub-sites
Grassland Actions: Site #1 Mowing, tame grasses, woody species, weeds, hand pull mid July to end July. Grazing, July-Aug, Mid Oct to End of Dec _____ Site #2 and #3 Gardening, July-Aug Mowing, tame grasses, woody species weeds hand pull early July to mid July Re-seeding, to be determined _____ Site #4 Mowing, tame grasses woody species and weeds, Aug to mid Aug Sub-site, Aspen mowing (size to be determined) early Aug. Grazing, July _____ Site #5 Mowing, tame grasses woody species and weeds, mid Aug Grazing, July and September Sub-site to be determined by mid June Herbicide application for Crested Wheat, early July	Grassland Actions: Site #1 Mowing, tame grasses, woody species, weeds, hand pull mid July to end July. Grazing, July-Aug, Mid Oct to End of Dec _____ Site #2 and #3 Gardening, July-Aug Mowing, tame grasses, woody species weeds hand pull early July to mid July Re-seeding, monitor _____ Site #4 Mowing, tame grasses woody species and weeds, Aug to mid Aug Sub-site, Aspen mowing and monitor. Grazing, Aug _____ Site #5 Mowing, tame grasses woody species and weeds, mid Aug Grazing, June and Aug Sub-site to be monitored Herbicide application for Crested Wheat, early July	Grassland Actions: Site #1 Mowing, tame grasses, woody species, weeds, hand pull mid July to end July. Grazing, July-Aug, Mid Oct to End of Dec _____ Site #2 and #3 Gardening, July-Aug Mowing, tame grasses, woody species weeds hand pull early July to mid July Re-seeding, monitor _____ Site #4 Mowing, tame grasses woody species and weeds, Aug to mid Aug Sub-site, Aspen mowing and monitor Grazing, Sept _____ Site #5 Mowing, tame grasses woody species and weeds, mid Aug Grazing, July and Sept Sub-site to be monitored Herbicide application for Crested Wheat, early July
share information with partners and the community	share information with partners and the community	share information with partners and the community
complete year 1 management report	complete year 2 management report	complete year 3 management report
		Develop future plans for the maintenance and enhancement of the biodiversity of the Grasslands.

5.3 Monitoring and Mapping Component

5.3.1 Summary
To effectively undertake this project the following tools and techniques will be required: monitoring using GPS and a mapping tool, i.e., GIS.

5.3.2 Action
1. Update the Area's **monitoring protocol** and initiate it in Year 1 (2005-2006) to update the baseline inventory showing the current state of the native grassland. Use **GPS** to accurately mark locations for future reference. Baseline monitoring assessments will be completed in Year One and monitoring will continue in subsequent years.
2. **Monitor** the native grassland in Years 2 and 3 to note differences. Use exclusion plots as controls.
3. In Year 2 establish a **GIS** system including mapping and database tools (using existing GIS as a base).

6. Creating Awareness- Communication and Education

6.1 Communication

The purpose of the communication plan is to develop and deliver a community action and awareness campaign that will engage all of our partners in the Grasslands and Grouse project.

Partners include all of those individuals, agencies and corporations who work to support the ASCCA in some way. We have identified our current partners or stakeholders as: volunteers, sponsors, clients, neighbours, media, Government (three levels), regulators, collaborators and friends, suppliers, employees, contractors, board members and the community.

6.1.1 Three Year Communication Plan

Year	Action	Who and when	# of hours and cost of project
2005-2006	Create Branding for project – project identity - logo	Emerge Visuals	20 hrs @ 55/hr= $1,100
	Website page development	Lexicom	50 hrs @ 75/hr= $3,750
	Monthly updates to project partners Create G and G phone line to deliver messages and updates community and project partners on action plans: update weekly	ASCCA	($60 /month)= $2,100
	Develop Community Action & Awareness Campaign	ASCCA	60 hrs = $1,200
	Brochures/Delivery local community	ASCCA	30/10 hrs = $2,300
	G and G Newsletter (monthly online)	ASCCA	8 hrs/mo. = $1,920
	Project Launch – (June) April announcement	ASCCA	20 hrs = $400
	Education Programs (Conservation Education – three series of programs) Brochure and Deliver	ASCCA/Emerge/ Mint	240 hrs = $20,000
	Partner meeting	ASCCA	25 hrs = $500
	Recruit volunteer and partner participation # of meetings per year on site Open Houses #	ASCCA	36 hrs = $900
	Trade shows – Mayor's Expo/ Leaders' Fair Teachers Convention/ ACA Conference	ASCCA	40 hrs = $800
	Develop year end report	ASCCA	40 hours = $800

2006-2007	Monthly updates to project partners Broadcasts Website updates Community Awareness & Action Campaign – get people involved, more volunteer recruitment Continue with internal and community communications (Brochures/Delivery) Education Programs (Conservation Education – three series of programs) Brochure and Deliver Partner meeting Trade shows – Mayor's Expo/ Leaders' Fair Teachers Convention/ ACA Conference Year End Report	ASCCA ASCCA Lexicom ASCCA ASCCA ASCCA/Emerge/ Mint ASCCA ASCCA ASCCA	($60/mo) = $2,100 10 hrs = 200 10 hours = $550 120 hrs = $2,400 30/10 hrs = $2,300 240 hrs = $20,000 $400 40 hrs = $800 40 hrs = $800
2007-2008	Monthly updates to project partners Broadcasts Website updates Community Awareness & Action Campaign – get people involved, more volunteer recruitment Continue with internal and community communications (Brochures/Delivery) Education Programs (Conservation Education – three series of programs) Brochure and Deliver Partner meeting Trade shows – Mayor's Expo/ Leaders' Fair Teachers Convention/ ACA Conference Year End Report Evaluation & Assessment for next 4 years	ASCCA ASCCA Lexicom ASCCA ASCCA ASCCA/Emerge/ Mint ASCCA ASCCA ASCCA	($60/mo) = $2,100 10 hrs = 200 10 hours = $550 120 hrs = $2,400 30/10 hrs = $2,300 240 hrs = $20,000 $400 40 hrs = $800 40 hrs = $800

6.1.2 Year One Plan (2005-2006)

2005-2006 Highlights	Action	Media	Audience	Cost
Jan.	Introduction	Cross Current/ Community Newspapers	Volunteers & Potential Partners	$600
	Establish/confirm partnerships	Internet/ Phone	Potential Partners (supporters)	$400
March	Develop Brochure		Partners	$2,100
	Design Logo	Emerge Designs		$1,100
	Organize projects & volunteers	Open House	Volunteers	$1,200
	Develop Website	Internet	Partners	$3,750
	Monthly updates via Broadcasts	Internet	Partners and other organizations	$50
April	Develop Ads	Community Newsletters	Partners	$700
	Send out PSA's Contact Media	Radio & TV	Calgary and Area	$400
	Distribute Brochures	Mail/News stands	Partners	$900
	Volunteer meeting	Newsletter/ internet	Volunteers	$200
	Create Information Flyers/inserts	Belvedere House	Partners	$300
	Website Update	Internet	Partners	$200
	Photograph Area	All forms	Calgary and Area	$400
	Monthly updates via Broadcasts	Internet	Partners and other organizations	$150
	Conservation Education	All	Calgary and Area	$7,500
July	Start monthly reports on project	newsletters/ internet	Partners	$400
	Website update	internet	Partners	$200
	Photographs	All	Partners	$50
	Monthly updates via Broadcasts	Internet	Partners and other organizations	$150
September	Progress Report	Newsletter	Partners	$200
	Photographs	All	Partners	$50
	Website update	Internet	Partners	$200
	Conservation Education	All	Calgary and Area	$7,500

December	Website update	Internet	Partners	$200
			Total	1,4750
Jan- April 2006	TBA	TBA	TBA	

*Note: the year does not officially start until May 2005 when funding is approved.

6.2 Education

6.2.1 Three Year Plan

Grassland Enhancement for School Programs - 2005-2008
The goal of this initiative is to enhance the Area's existing education materials and programs with leading edge grassland information in partnership with Alberta Environment.

Offering Continuing Education Programs focused on the Grassland - 2005-2008
Over the three years, we plan to offer several programs focused on the grassland ecosystem as a part of our Conservation Education continuing education programs. We will also offer staff and volunteer training.

Web-based Grassland Interpretation - 2005
To enhance the Area's current Web site so that students and teachers can better utilize it while at school, we plan to include grassland information, including a virtual tour of the grassland, available on the site. This will be in partnership with Alberta Environment and Lexicom.

Native Grassland Interpretive Garden - 2006
Our vision is to create an interpretive garden for all Area visitors in a native grassland area adjacent to the visitor centre, Belvedere House.

Organized Group Program Revision - 2006
We plan to enhance the Area's current program for organized groups such as Guides, Scouts and Junior Forest Wardens by putting more emphasis on the grassland ecosystem, grassland activities and what people can do to help protect the grassland.

Visitor Centre Interactive Grassland Display - 2007
We plan to expand the current interactive indoor forest ecosystem display to include the grassland ecosystem.

Grassland and Grouse Project Planning – 2007-2008
We will take this time to reflect on the last three years of the Grassland and Grouse program and assess what we should do in the next three-five years for the educational component of this project.

6.2.2 Year One- Education Initiatives

Grassland Enhancement for School Programs
April 2005 - March 2008
The goal of this initiative is to enhance existing education materials and programs with leading edge grassland information in partnership with Alberta Environment. Alberta Environment has created an excellent package focusing on Alberta grasslands for Grades 7-9 based on the Alberta curriculum. This

resource fits wonderfully with the Cross Conservation Area's Care for the Land junior high school program. We plan to utilize this resource to update all our programs with current grassland information and activities. Simultaneously, we would like to incorporate our own grassland activities and ideas into our existing programs. The Area's volunteer educators have requested more information and activities focused on grassland ecosystem. We plan to provide resources and training sessions for our staff and volunteers to enhance their knowledge of the grassland ecosystem. The Open Minds week-long school programs will also benefit from extra grassland information and activities. We plan to continue our work with teachers to develop their programs for their visits to the Area putting and emphasis on teaching about the grassland.

Continuing Education Programs focused on the Grassland
April 2005 - March 2008
This year, we plan to offer three programs focused on the grassland ecosystem as a part of our Conservation Education continuing education programs. Our first grassland program on Ground squirrels will run this winter facilitated by University of Lethbridge professor, Dr. Gail Michener. It will focus on the Ground squirrel's role in a healthy Prairie ecosystem. We will continue these informative programs in the spring and fall. With research and recruiting experts in the field for presentations, we plan to continue to make these programs new and innovative. This also follows the Area's vision of being leading edge and providing opportunity for PD for volunteer educators, teachers and the public. We will also offer staff and volunteer training.

Web-based Grassland Interpretation
April 2005 - March 2006
To enhance the Area's current Web site so that students and teachers can better utilize it while at school, we would like to have grassland information, including a virtual tour of the grassland, available on the site. It will allow additional ways for teachers and their students to access current information about the grassland from their school. Since there are limited opportunities to actually visit a grassland site, this project would help to extend and expand the learning opportunities on the grassland. Alberta Environment has expressed interest in developing this project with us. This site can also post up-to-date information, which can be accessed by everyone. Alberta Environment would like to partner on this initiative and enhance this project by providing technical support and possibly funding.

7. Partners

We hope to partner with the following groups over the duration of this three year project:

Alberta Environment
Alberta Community Development
Alberta Sustainable Resource Development
Alberta Sport, Recreation, Parks and Wildlife Foundation
Alberta Native Plant Council
Alberta Fish and Wildlife
Alberta Municipal Affairs
Alberta Infrastructure
Alberta Fish and Game
Alberta Parks and Protected Areas
Cows and Fish Program
Alberta Natural Resources Conservation Board
Fish Creek Provincial Park
Friends of Fish Creek
Environment Canada
NAWMP
Canadian Wildlife Service
Agriculture Canada
Alberta Conservation Association
Alberta Prairie Conservation Forum
Alberta Research Council
Alberta Cattle Commission
Alberta Wilderness Association
Buck for Wildlife
Bragg Creek Environmental Coalition
Calgary Field Naturalists

City of Calgary Parks and Recreation
Canadian Nature Federation
Canadian Wildlife Federation
ChevronTexaco
CPAWS
Federation of Alberta Naturalists
Foothills Forage Coop Association
Grassland Naturalists of Alberta
Helen Schuler Coulee Center
Inglewood Bird Sanctuary
Kananaskis Country
Land Stewardship Centre
Lethbridge Community College
Lethbridge Naturalist Society
MD of Foothills
Millarville Horticulture Club
Ducks Unlimited Canada
Nature Canada
Canadian Forces Base - Suffield
Nature Conservancy of Canada
Pheasants Forever
Parks Canada
Prairie Farm Rehabilitation Administration (PFRA)
Parkland Community Services
Rocky Mountain Elk Foundation
SERG members
SALTS
Society for Range Management
Soil and Water Conservation Society (SWCS) – Alberta Chapter
Suncor Energy Foundation
Sonoran Institute
The Wildlands Project
University of Alberta
University of Calgary
University of Lethbridge
Weaselhead Glenmore Park Preservation Society
Weaselhead Natural Area
Wild Canada
World Wildlife Fund
Wildlife Habitat Canada (WHC)
Nose Hill Park Preservation Society
Prairie Conservation Action Plan (PCAP).
Active Environmental
Tera Environmental
Jacques Whitford Environmental
Pheasants Forever
Multi Sars Program

8. Risk Assessment

A risk assessment was undertaken and the following three risks identified.

8.1 Health and Safety

Herbicide use may pose a threat; although the risk will be minimized by ensuring:

- ⇒ a certified and licensed herbicide applicator oversees the use of the herbicide
- ⇒ all staff and volunteers using the herbicide are fully trained
- ⇒ the only herbicide used will be Round-Up, a widely used garden herbicide that does not build up in the food chain and therefore does not pose a threat to wildlife
- ⇒ the herbicide is only used for spot applications, via spot spraying or wicking, with the exception of the small crested wheat grass strip in section 4 where it will be sprayed
- ⇒ the herbicide is properly and safely stored when not in use.

Public and staff/volunteer safety may be endangered through this project; however the risks are minimal and will be further minimized by the following procedures:

- ⇒ Adherence to the Cross Conservation Area's Safety and Risk Management Policy (in place since 1998), including safe equipment use, proper equipment maintenance and adequate training
- ⇒ Appropriate signage placed in work areas.

8.2 Environmental Impacts

The project should have a positive influence on native plants and wildlife and a negative influence on the aggressive weedy species. Negative impacts may include effects of tractors and other equipment. These impacts will be mitigated by proper use of the equipment and avoiding work on the land when the ground is wet.

8.3 Project Risks

There is a risk that the project will take more time and resources than anticipated; however, the risk will be minimized by:

- ⇒ Initially planning the project in as much detail as possible to adequately estimate the human resources, time and finances required to successfully complete the project
- ⇒ Recognizing that this is a major project that will involve all staff and volunteers to some extent, therefore other work plans must be developed accordingly
- ⇒ Recognize that this is a three year project and in some cases this may not be long enough to see results. To continue to monitor beyond the initial three years.

⇒ **It is believed that the risks of not undertaking the project are greater than the risks associated with the project. No major negative impacts from this project are expected as the Area works to enhance and protect the most threatened habitat at the Ann and Sandy Cross Conservation Area.**

9. Evaluation Plan

Plans to measure the effectiveness of the Project will include the following in 2005-2006:

Overall
Met the objectives?
Achieved what we set out to achieve?
Completed the Action Plans as stated?
Modified plans accordingly, i.e., adaptive management?

Research and Action-Grassland and Grouse
Complete baseline inventory (sharp-tailed grouse and other native species)
Complete baseline inventory (of native grassland)
Complete research of habitat components for sharp-tailed grouse and other priority species
Determine limiting factors for sharp-tailed grouse and develop habitat enhancement plan in yr. 2
Complete grassland Action plans for sites 1-5
Establish, map and document sites and subsite locations and data in GIS, using GPS.
Complete year 1 management report
Assess management objectives for year 2

Communications
Deliver partner and community meetings (2 Open Houses)
Participate in 3 trade shows yearly
Recruit volunteers for project
Create Grassland and Grouse section in our agency newsletter the Cross Current
Project launch (June 2005)
Develop information brochure
Community Action & Awareness Campaign developed
Create G and G update (phone) line.

Website page enhanced developed

Education
Complete Grassland Enhancement for 2 school programs
Deliver 3 conservation education programs to the community
Web based grassland education component developed

Socio –Economic Indicators for 2005-1006
Jobs created Number of jobs- 1 full time and 2 seasonal jobs
Number of volunteer hours- 2500
Number of volunteers- 30-35
Number of partners- 25
Number of youth involved in Grassland and Grouse related School programs- 2500
Number of people involved in conservation education programs- 200
Number of conservation education brochures distributed -9000
Number of people visiting the Grassland and Grouse information on website - 1000
Number of local residents participating in the project- 10
Number of Grassland and Grouse Project brochures distributed- 9000
Volunteers participating directly in project Number of volunteers- 30-35
Volunteer person-months Number of person months- 8 months
People directly affected by project (those immediately involved) Number of people- 7-15
Youth groups directly involved in project Number of youth groups- 5
Individual youth involved in project Number of individual youth- 1000
Federal departments involved Number of departments- 2
Provincial or Territorial departments involved Number of departments- 2
Municipal governments involved Number of governments- 1
Project recognition/awards Number of awards-1
Media reports on project Number of media reports- 6
Public events organized Number of events-two open houses
# of people trained- 45

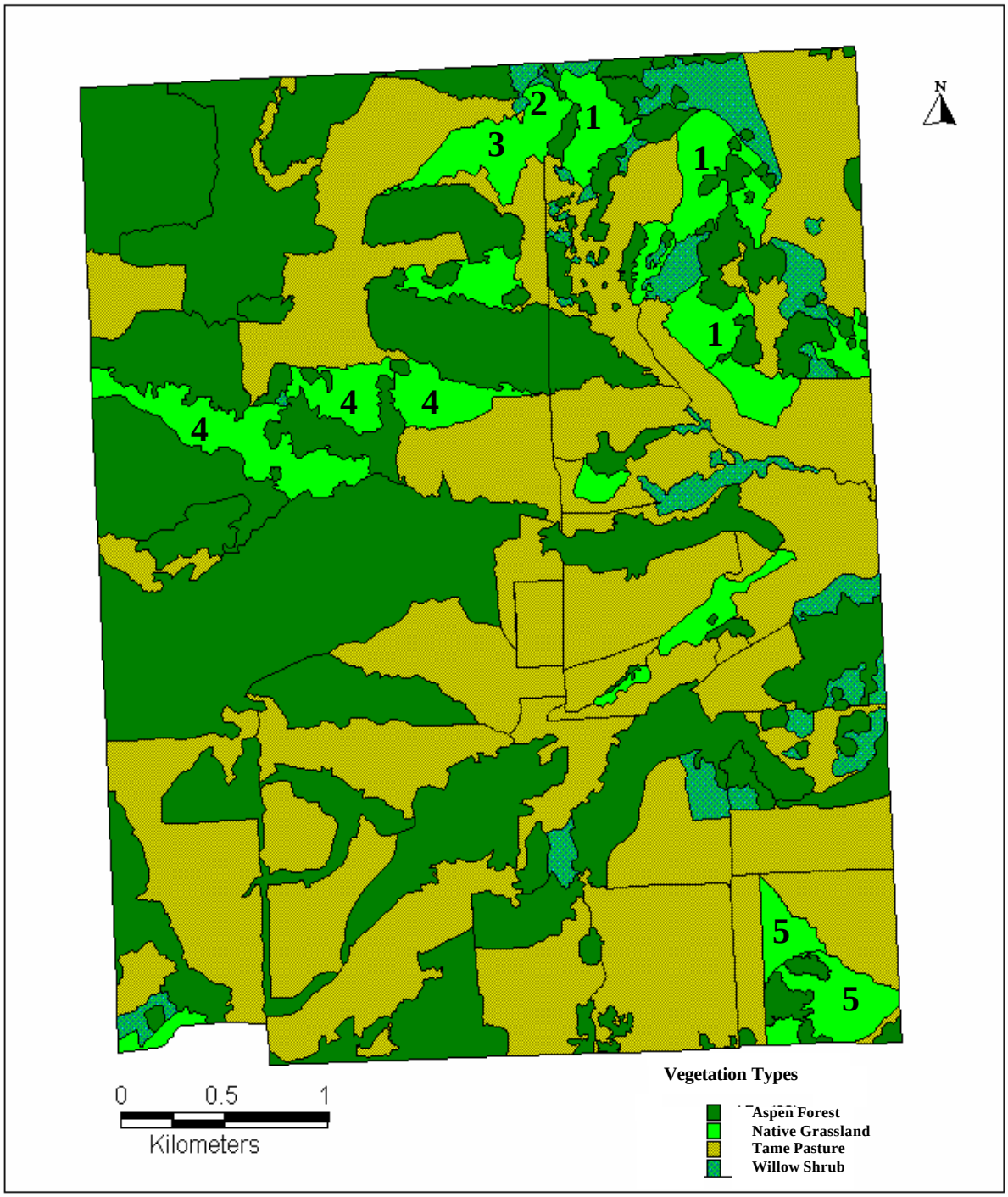
Nature Indicators for 2005-2006
Other species protected or restored (flora, fauna) Number of species- 44 birds and 12 mammals
Number of acres of native grassland protected- 313
Number of native plant species protected- 20
Number of species at risk protected -1 sharp-tailed grouse (sensitive)
Acres of weed species affected- 400
Amount of land enhanced- 313 acres

10. Appendices

10.1 Three Year Budget (Draft)

Grassland and Grouse Budget 2005-2007				
EXPENSES		**2005**	**2006**	**2007**
Staff costs				
ASCCA staff		$ 45,000	$ 45,000	$ 45,000
Project Coordinator		$ 40,000	$ 40,000	$ 40,000
Contract (seasonal)		$ 14,700	$ 14,700	$ 14,700
Volunteer contribution		$ 25,000	$ 25,000	$ 25,000
Subtotal		*$ 124,700*	*$ 124,700*	*$ 124,700*
Project costs				
Equipment		$ 100,000	$ 16,500	$ 16,500
Overhead		$ 15,000	$ 15,000	$ 15,000
Education		$ 20,000	$ 20,000	$ 20,000
Comm. And Promotions		$ 50,000	$ 30,000	$ 30,000
Total Expenses		**$ 309,700**	**$ 206,200**	**$ 206,200**
REVENUE				
Partners				
Fed Govt.	EcoAction	$ 24,000	$ 10,000	$ 10,000
	On Site	$ 6,000	$ 6,000	$ 6,000
AB Govt.	CIP	$ 60,000	$ 15,000	$ 15,000
	AIP	$ 20,000	$ 10,000	$ 10,000
ACA		$ 40,000	$ 10,000	$ 10,000
EcoTrust		$ 10,000	$ 10,000	$ 10,000
Calgary Foundation			$ 10,000	$ 10,000
Canadian Natural Resources		$ 20,000	$ 10,000	$ 10,000
Precision Drilling		$ 10,000	$ 10,000	$ 10,000
Others		$ 20,000	$ 15,000	$ 15,000
Subtotal		**$ 210,000**	**$ 106,000**	**$ 106,000**
Gifts in kind				
ASCCA staff		$ 45,000	$ 45,000	$ 45,000
volunteers		$ 25,000	$ 25,000	$ 25,000
education		$ 15,000	$ 15,000	$ 15,000
overhead		$ 15,000	$ 15,000	$ 15,000
subtotal		***$ 100,000***	***$ 100,000***	***$ 100,000***
Total Revenue		**$ 310,000**	**$ 206,000**	**$ 206,000**
Excess of Revenue over Exp		$ 300	$ (200)	$ (200)

10.2 Map showing Sites



Ann and Sandy Cross Conservation Area
Grassland and Grouse Project Sites

10.3 References

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10.4 Websites

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http://www.albertapcf.ab.ca/index.htm - Accessed January 20, 2005

10.5 Photo Credits

Title page- visitors and bus- Mike Sturk

Title page- Sandy Cross- Carolyn Sandstrom and Russ Amy

Title page- Grouse - http://www.dfw.state.or.us/ODFWhtml/springfield/sharptail.JPG

Fescue- Prairie Conservation Forum- http://www.albertapcf.ab.ca/index.htm

Grouse- http://www.fredmiranda.com/hosting/showphoto.php?photo=24519&papass=&sort=1&thecat=500

Crocus field- Prairie Conservation Forum- http://www.albertapcf.ab.ca/index.htm

Prairie with hill in background- http://www.landfood.unimelb.edu.au/research/natveg/landscape.html

Grassland hills and Tipi pictures by Carolyn Sandstrom and Russ Amy.