

Grant Eligible Conservation Fund 2009–2010



Annual Report of Activities & Synopsis of Funding Recipient Projects

For the period of April 1, 2009 to March 31, 2010



Conserving Alberta's Wild Side



Our Mission

ACA conserves, protects and enhances fish, wildlife and habitat for all Albertans to enjoy, value and use.

Our Vision

An Alberta with an abundance and diversity of fish, wildlife and their habitats, where future generations continue to use, enjoy and value our rich outdoor heritage.

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Front Cover Photo: Pronghorn crossing wildlife-friendly fence in snow.
Photo: Alberta Fish and Game Association, trail camera
From the project 'Pronghorn antelope migration corridor fencing enhancement'
(AFGA; 030-00-90-160)

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Executive Summary

Funded by the province's hunters and anglers, ACA's Grant Eligible Conservation Fund supports annually a variety of projects both small and large which benefit Alberta's wildlife and fish populations, as well as the habitat they depend on. Operational since 2002, this Fund has provided more than \$8.5 million to 492 projects carried out in Alberta by the conservation community. Furthermore, the funding provided by the GECF continues to leverage six times its value in conservation dollars, estimated at approximately \$53.4 million—money that has been directly used for conservation work in Alberta.

In 2009-2010 this popular grants program received 116 applications requesting just under \$2.7 million. A total of \$997,462 was granted to 68 projects. The aim of this report is to document the procedures for 2009-2010 and to provide an overview of activities and results of projects financially supported through the GECF in 2009-2010.

Overview:

116 funding requests were received requesting a total dollar value of almost \$2.7 million.

A total of \$997,462.00 was granted to 68 projects: 19 small grants and 49 large grants.

Project budgets ranged from \$700.00 to \$44,000.00.

1. Introduction:

The Alberta Conservation Association (ACA) believes it is our responsibility to join and support the collective effort to conserve, protect and enhance Alberta's biological natural resources. One of the ways in which ACA does this is to make grants to other members of the conservation community. The projects supported by the Grant Eligible Conservation Fund (GECF) are intended to enhance and supplement ACA activities, and aid in the delivery of ACA's Vision, Mission and Strategic Business Plan. ACA has been awarding conservation grants since 1997, with the GECF process starting in 2002-2003. The GECF has granted over \$8.5 million dollars since 2002-2003 to 492 conservation projects implemented in Alberta; these projects have leveraged an estimated \$53.4 million in conservation work across the province. \$1 million dollars were made available for the 2009-2010 GECF funding cycle, after the selection procedure, a total of \$997,462.00 was granted to 68 projects. This document provides an overview of GECF activities for the 2009-2010 funding cycle and a brief synopsis for each of the funded projects carried out between April 1, 2009 and March 31, 2010.

2. The Funding Cycle

The funding priorities, guidelines and application forms were made available to the public mid November 2008 via the ACA website, by email to existing contacts and by environmental list servers. Details of the 2009-2010 funding cycle are in the table below:

2009-2010 FUNDING CYCLE DATES

Posting of the Guidelines and Application Forms on ACA's website	November 6, 2008
Window to receive completed applications	January 1-30, 2009
Proposal Review Committee adjudication meeting	February 27, 2009
ACA Board approval and notification of applicants as to funding status	March, 2009
Cooperative Project Agreements signed, initial payments made and project work begins	April 1, 2009
Interim reports due & second payments made (if required)	September 1, 2009
Final report due & final payments made (if required)	March 15, 2010
Projects end	March 30, 2010

3. Funding Eligibility:

The GECF supports a wide variety of applicants and project types. Anyone with a suitable project working in Alberta can apply to the GECF for funding, with the exception of ACA staff and ASRD staff. Certain items or project types are not covered by the GECF, for example land acquisition, emergency funding or over-head costs. The eligibility criteria and funding priorities are outlined in the document "Project Submission Guidelines for Funding 2009 - 2010" (see Section 4 Funding Priorities and Appendix A: *Project Submission Guidelines for Funding 2009 - 2010*). For the first time this year the funding priorities for 2009 – 2010 were set by ACA staff and not taken directly from the ACA Strategic Business Plan. The funding priorities were meant to guide applicants and applications relating to the funding priorities had a better chance of receiving funding than those that did not. The funding priority that was added in 2008-09, "Recruitment and Retention of Hunters, Anglers and Trappers", was not included this year as a new program was set up to deal with recruitment and retention of hunters, anglers and trappers. Applications relating to this were directed to the new program.

The GECF offers small grants for projects with budgets of \$3,000 and under and large grants for projects with budgets over \$3,000. In 2009-2010 the small grants maximum was raised from \$2,500 to \$3,000. The small grants have a simplified application form; although the eligibility criteria and funding guidelines are the same for both small and large grants.

The GECF is now widely known amongst the conservation community working in Alberta and applications were received from a diverse cross-section of the population including: individuals, community groups, grassroots organizations, provincial and national institutes, and leading scientific researchers.

4. Major Funding Priorities GECF 2009–2010

This text is Section C of the *Project Submission Guidelines for Funding 2009–2010*, which can be found in full in Appendix A:

All applicants to the GECF should be aware that this grant is fully funded by the hunters and anglers of Alberta. All proposals should be able to demonstrate how the proposed project will aid ACA in meeting its mission of conserving, protecting and enhancing fish, wildlife and habitat for all Albertans to enjoy, value and use. To help direct potential applicants the following list of priority areas has been developed. While the GECF will accept applications that do not relate to these suggested areas, projects that address one or more of these priority areas will have a higher probability of being funded than those that do not.

1. Habitat enhancement activities specifically listed on provincial recovery plans for Alberta's endangered species (to be done in cooperation with recovery teams).
2. Site specific enhancements of habitat, structures and facilities aimed at increasing recreational angling or hunting opportunities, improving habitat or increasing wildlife/fish

productivity on the site (i.e. planting/seeding vegetation, development of new fisheries access sites, nest box initiatives, food plot trials and cover plot trials, spawning bed enhancement, etc.).

3. Urban fisheries development, including : initial evaluation of water quality aspects of existing ponds to determine their suitability for fish stocking; purchase of equipment required to ensure suitable water quality for fish stocking (e.g. aeration equipment); fish stocking in public ponds; promotion of an urban fishery (including natural water bodies).
4. Stewardship Initiatives (e.g. on-going maintenance of conservation sites or fisheries access sites; adopt a fence; property inspections for invasive weeds; manual weed control; grass mowing).
5. Impacts of non-native species on persistence of native species.
6. Improvements and innovation in matching sportsmen with landowners (e.g. facilitating hunter access to depredating waterfowl, elk and deer).

Please note: Land Acquisition applications are not reviewed by the Grant Eligible Conservation Fund. Direct all Land Acquisition proposals to the Habitat Securement Fund via Darren Dorge, ACA. Applications relating to Retention and Recruitment of Hunters, Anglers and Trappers should contact Todd Zimmerling, ACA, regarding the new program.

5. Proposal Review Process

The ACA Board of Directors appointed a Granting Committee comprised of three board members and ten citizens of Alberta, who refereed and assessed the grant applications based on the established funding criteria. The proposal review meeting was held on February 27th, 2009 at the Percy Page Centre, Edmonton, Alberta.

Reviewers were tasked with providing rankings for the respective proposals based on the funding priorities and guidelines provided by ACA and providing funding recommendations for suitable proposals to the ACA Board.

Proposals were evaluated on their merit and content using a three-tiered ranking system:

- A:** Top proposals; recommend funding in whole or in part.
- B:** Proposal contains merit, recommend funding in whole or in part if funds available.
- C:** Do not recommend funding.

The list of funding recommendations made by the Granting Committee was then approved by the ACA Board at the March Board Meeting.

6. Funding Allocations:

For the 2009-2010 funding cycle a total of \$1 million dollars was made available for project funding via the GECF. Between the 1st and 30th of January (deadline for applications was Friday January 30th, 2009 4:30pm MDT), 116 funding requests (26 small grant requests and 90 large grant requests) were received requesting a total dollar value of \$2,690,368.90. The Granting Committee recommended supporting 68 projects with funding of \$997,462 and these recommendations were approved by the ACA Board. 19 small grants and 49 large grants were awarded. The project budgets ranged from \$700 to \$44,000. The funding success for applications was higher than average this year with 59% of applicants receiving partial or full funding (the average success rate of applications since the GECF began is 54%). 37% of the funding requested was granted (the average percentage of funding granted to funding requested is 38%). 25 of these projects (37%) had been funded by the GECF in previous years and 43 projects were new to the GECF. Two approved projects did not proceed; one due to insufficient co-funding and the other due to staffing issues. No funding was disbursed to these two projects. Several projects were granted extensions due to unforeseen circumstances.

All projects approved for funding by the Granting Committee signed the Cooperative Project Agreement with the approved proposal and budget appended. The Cooperative Project Agreement outlines the reporting and payment schedules and other contractual obligations between ACA and the grant recipient. All grant recipients provided interim and final project reports. If the project was completed at the time of the interim report, then this one report was taken as the final project report. For the full copy of the Cooperative Project Agreement used in 2009-2010 see Appendix B.

7. Synopsis of Approved Projects for 2009–2010

A summary description of each of the 68 approved project containing the project's objectives, activities and deliverables can be found in Part II of this report. Each section is in alphabetical order by organization.

SMALL GRANTS (UNDER \$3,000)

Alberta Stewardship Network Society, 2009 Grassroots Awards for Environmental Stewardship (3rd Annual), \$1,290.00

Alberta Stewardship Network Society, 2009 Stewards in Motion VII Workshop, \$2,350.00

Andrew Stiles, Nest box deployment with youth to inspire stewardship, \$2,500.00

Ann & Sandy Cross Conservation Area, Conservation Discovery Education 2009, \$3,000.00

Camps for Children Educational Association, Phase 3 Riparian area fencing project, riparian area brochure printing and fish pond stocking at Aspen Ranch Outdoor Education Facility, \$3,000.00

Cochrane Branches and Banks Environmental Foundation, Big Hill Creek habitat enhancement and interpretive sign project, \$3,000.00

Cows and Fish, 2010 Alberta environmental stewardship calendar, \$3,000.00

Fort Saskatchewan Fish and Game Association, Nature walking trails and birdhouse placement, \$2,000.00

Friends of Fish Creek Provincial Park Society, Baseline study of amphibians in Fish Creek Provincial Park, \$3,000.00

Friends of Kerbes Pond Society, Maintaining and operating of existing aeration system, \$1,200.00

Helen Schuler Nature Centre, Rattlers, People & Parks: Lethbridge Rattlesnake Conservation Program, \$1,500.00

Helen Schuler Nature Centre, 2nd Annual city-wide coulee clean-up, \$2,500.00

Lethbridge College, Soil bioengineering and bank enhancement along the Oldman River, \$3,000.00

Oneway and District Fish and Game Association, Blue-bird house project, \$700.00

Prairie Conservation Forum, Invasive alien plant education, Alberta, \$2,500.00

University of Alberta Chapter of the Wildlife Society, Urban deer project, \$1,500.00

University of Alberta, Evaluating the abundance of the western grebe (*Aechmophorus occidentalis*) in Alberta, \$3,000.00

University of Alberta, Management of earthworm invasions in Alberta, \$3,000.00

Weaselhead/Glenmore Park Preservation Society, Invasive plant project at the Weaselhead Natural Environment Park, \$3,000.00

LARGE GRANTS (OVER \$3,000)

Alberta Fish and Game Association, Pronghorn antelope migration corridor fencing enhancement, \$25,000.00

Alberta Fish and Game Association, Volunteer Habitat Lands Stewardship, \$27,000.00

Alberta Fish and Game Association, Operation Grassland Community, \$35,000.00

Alberta Foothills Network, Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions, \$37,000.00

Alberta Hunters Who Care, Wild Game for Foodbank Program, \$20,000.00

Alberta Invasive Plants Council, Weed Wise Alberta, \$31,000.00

<p>Alberta Native Plant Council, Adopt-a-Plant Alberta 2009, \$13,688.00</p> <p>Beaverhill Bird Observatory, Elson's nest box trail and grid, \$5,000.00</p> <p>Beaverhill Bird Observatory, Beaverhill Lake Natural Area, stewardship and monitoring, \$6,000.00</p> <p>Bird Studies Canada, The Prairie & Parkland Marsh Monitoring Program: Years 2-5, \$25,000.00</p> <p>Bow Valley Habitat Development, Horse Creek railway culvert and stream channel modifications and enhancement measures, \$6,951.00 – PROJECT DID NOT PROCEED</p> <p>Bow Valley Habitat Development, A comprehensive fisheries study on Bighill Creek, \$10,506.00</p> <p>Castle-Crown Wilderness Coalition, SAR in the Castle Wilderness, \$17,000.00</p> <p>Chuck Priestley, Bat Hibernacula Monitoring in Alberta Caves - A Volunteer Monitoring Program, \$5,289.90</p> <p>Cows and Fish, Developing urban fisheries improvements and enhancing riparian sites through stewardship, \$20,000.00</p> <p>Ducks Unlimited Canada, Ecology and population affiliations of moulting and fall staging Barrow's goldeneye at Cardinal Lake, Alberta, \$18,000.00</p> <p>Federation of Alberta Naturalists, Stewards network for Alberta's Important Bird Areas, \$15,000.00</p> <p>Federation of Alberta Naturalists, Riparian water quality improvement project, \$20,000.00</p> <p>King's University College, Reproductive ecology of endangered populations of limber and whitebark pine in Alberta, \$15,000.00</p> <p>Laval University, Ecology, conservation, and population dynamics of mountain goats in</p>	<p>Alberta, \$18,683.00</p> <p>Lesser Slave Lake Bird Observatory, Migratory and breeding bird research in Northern Alberta, \$22,000.00</p> <p>Miistakis Institute, Developing a private land conservation strategy for the Crowsnest Pass, \$20,907.00</p> <p>Mountain View County, Riparian area management improvements, \$25,000.00</p> <p>Nature Conservancy of Canada - Alberta Region, Effectiveness and compliance monitoring of Nature Conservancy of Canada Properties in Alberta, \$44,000.00</p> <p>Partners in Habitat Development, Eastern Irrigation District, Partners in Habitat Development, \$18,000.00</p> <p>Rangeland Conservation Service Ltd, Small mammal wildlife habitat enhancement berms: Wildlife movement across pipeline rights-of-way, \$10,000.00</p> <p>Red Deer County, Off the Creek Program, \$25,000.00</p> <p>Society of Grassland Naturalists - Medicine Hat Interpretive Program, Moths and butterflies of Medicine Hat and area, \$8,000.00</p> <p>Town of McLennan, McLennan Pond fishery enhancement project (Dock structure installation), \$5,000.00</p> <p>Trout Unlimited Canada, Late fall fisheries investigation in diversion canals of Southern Alberta, \$7,000.00</p> <p>Trout Unlimited Canada, East Slopes Fishery Enhancement Program, \$31,000.00</p> <p>Trout Unlimited Canada - Bow River Chapter, Bow River riparian fencing project, \$10,000.00 – PROJECT DID NOT PROCEED</p> <p>University of Alberta, Russian thistle (<i>Salsola kali</i>) impact on ungulate habitat in the montane grasslands of Jasper National Park, \$8,500.00</p>	<p>University of Alberta, Floristic survey of Kootenay Plains and Coyote Lake Nature Sanctuary, \$13,400.00</p> <p>University of Alberta, Predicting the spread of CWD from Saskatchewan into Southern Alberta, \$16,357.10</p> <p>University of Alberta, Effects of roads and road access management on grizzly bear (<i>Ursus arctos</i>) habitat use and movement, \$18,500.00</p> <p>University of Alberta, Ecology and behaviour of grizzly bears (<i>Ursus arctos horribilis</i>) in response to open-pit mining, and implications for management and conservation, \$20,000.00</p> <p>University of Alberta, Long-term vegetation and population monitoring for managing the Ya Ha Tinda elk herd, \$20,000.00</p> <p>University of Alberta, Lynx cycles and barriers: Evaluating dispersal versus climate change in flatlining populations, \$20,000.00</p> <p>University of Alberta, Does petroleum development affect burrowing owl nest-site selection, reproductive success or nocturnal space use? \$23,520.00</p> <p>University of Alberta, Habitat and prey selection of a re-established cougar (<i>Puma concolor</i>) population, \$25,750.00</p> <p>University of Alberta, Ecological effects of sportfish stocking and aeration in Boreal Foothills lakes, \$28,370.00</p> <p>University of Alberta, Effects of access management on elk in Southwestern Alberta, \$32,200.00</p> <p>University of Alberta, Restoration of rough fescue grassland on oil and gas sites in Central Alberta, \$33,800.00</p> <p>University of Idaho, Genetic diversity analysis of Southern Alberta plains sharp-tailed grouse (<i>Tympanuchus phasianellus jamesi</i>), endangered sage-grouse (<i>Centrocercus</i></p>	<p><i>urophasianus</i>), and their hybrids, \$20,000.00</p> <p>University of Lethbridge, Examining resiliency of bull trout populations to brook trout invasives, \$20,000.00</p> <p>Water Matters Society of Alberta, Land and water - Connecting science, stewardship and public awareness, \$5,000.00</p> <p>Western Sky Land Trust Society, The Bow and Beyond, \$14,000.00</p> <p>Woodlot Extension Program/ Woodlot Association of Alberta, Riparian reforestation and wildlife enhancement of Beaverlodge Watershed - Phase II, \$36,000.00</p>
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8. GECF project contribution to the funding priorities

In total, 68 projects were approved for funding in 2009-2010, 66 of which were carried out. This year new funding priorities were set by ACA staff and approved by the ACA Board of Directors. All projects selected were to support ACA with meeting its mission of conserving, protecting and enhancing fish, wildlife and habitat for all Albertans to enjoy, value and use. However it was not a prerequisite for funding that the proposed project directly deal with one of the funding priorities. The funding priorities were used to further guide and direct applicants by providing priority areas of specific interest to ACA. As mentioned proposals did not have to relate to the funding priorities, but applications that did address one or more of the funding priorities fared better in the project selection procedure. Whether or not a project relates to a funding priority is to some degree subjective. Some projects clearly addressed one or more of the funding priorities, whilst others indirectly related to a funding priority. Applicants were asked to specify how their projects related to the ACA mission and funding priorities and this information was used to determine which of the selected projects for 2009-10 contributed to ACA's funding priorities. 11 of the 66 projects did not address one of the funding priorities (of these 4 were small grants). For a complete overview of project contribution to the ACA Funding Priorities 2009-2010, see Table 1 below and Appendix C.

The project's relationship to the funding priorities was determined by the application and therefore occasionally a project will have only a loose or indirect connection with the Funding Priority mentioned in the application form. For example, although 13 projects mention a link with Funding Priority 1: Habitat enhancement activities specifically listed on provincial recovery plans for Alberta's endangered species (to be done in cooperation with recovery teams), only seven projects specifically mentioned species with recovery plans, i.e. burrowing owl (UofA 030-00-90-115; AFGA Operation Grassland Community 030-00-90-127), ferruginous hawk (AFGA Operation Grassland Community 030-00-90-127); grizzly bear (UofA 030-00-90-116; UofA 030-00-90-154), woodland caribou (Alberta Foothills Network 015-00-90-132), western spiderwort (Alberta Native Plants Council 015-00-90-133), limber pine and whitebark pine (King's University College 030-00-90-161), and had habitat-related projects.

From the table above, it is clear that not many projects deal with making improvements and innovation in matching sportsmen with landowners. The one project that mentioned this funding priority is Alberta Foothills Network 'Maintaining the Foothills' natural and economic values – working cooperatively to find balanced solutions' (015-00-90-132). The project application mentions that the AFN "will look for opportunities to provide increased opportunities for hunters to help manage ungulate populations in the Foothills. [They] will also look for opportunities to engage the trapping industry to engage in the Provincial Governments wolf control programs."

TABLE 1: NUMBER OF PROJECTS RELATING TO THE ACA FUNDING PRIORITIES FOR 2009-2010

Funding Priority	# of Projects	Percentage (%)
#1 Habitat enhancement provincial recovery plans for Alberta's endangered species	13	20
#2 Site specific enhancements of habitat	26	39
#3 Urban fisheries development	5	8
#4 Stewardship Initiatives	25	38
#5 Impacts of non-native species on persistence of native species	12	18
#6 Matching sportsmen with landowners	1	2
None	11	17

Grant Eligible Conservation Fund Project List 2009-2010

PART II: 2009-2010 GECF Project Summaries

Pronghorn antelope migration corridor fencing enhancement

Alberta Fish and Game Association

Grant: \$25,000

Project Code: 030-00-90-160

Project Status: New (implementing recommendations of research supported by GECF in 2007-08); Completed

Recent analysis of migration routes and seasonal home ranges has allowed researchers and managers to assess areas where pronghorn move with difficulty due to linear disturbances such as roads, railways, and fences. Fences in particular have been shown to create particular difficulties for pronghorn as they are unwilling to jump fences and are generally unable to go under fences that are less than 16" off the ground. Local knowledge and past experience has shown that fences with smooth bottom wires constructed at least 18" off the ground can facilitate pronghorn movements. Alberta Fish & Game Association's (AFGA's) split the fencing replacement work into two phases: first phase of the *Pronghorn Antelope Travel Corridor Enhancement Project* began took place April 2-5, 2009 and Phase 2 of the fencing work was conducted July 9-12, 2009. Funding for this project was provided by the AFGA, the ACA Grant Eligible Conservation Fund, the Ministers Special License Program, and EnCana. Vital logistical support was provided by provincial and federal government departments, conservation agencies, local volunteers and Fish & Game clubs, and the Southern Alberta Bowhunters Association. Through collaboration with these key partners, the Project Manager was able to oversee planning, coordination, and execution of this wildlife-friendly fencing project. Thanks to the hard work and commitment of 45 volunteers, 80 kilometres (50 miles) of hazardous barbed wire was removed and double-stranded smooth wire was installed in its place in various targeted areas in southern Alberta, namely the north boundary of Canadian Forces Base (CFB) Suffield, a key migration corridor north of Medicine Hat, and Antelope Creek Ranch west of Brooks.

Deliverables/Results:

A Press Release was distributed to 162 key media sources for Phase 1 and for Phase 2, 260 media sources in Alberta. Uptake was positive with expressions of interest from the CTV television, various radio stations/programs, newspapers and magazines.

Motion cameras were strategically placed at five heavily traveled fence crossings for one month.

80 kilometres (50 miles) of hazardous barbed wire was removed and double-stranded smooth wire was installed in its place.



Photo of pronghorn by wildlife friendly fence from AFGA trail camera.

Volunteer Habitat Lands Stewardship

Alberta Fish and Game Association

Grant: \$27,000

Project Code: 015-00-90-131

Project Status: New; Completed

The AFGA through its Wildlife Trust Fund has acquired singularly and in partnership 80 conservation properties across rural Alberta for a total area nearing 33,000 acres. This land is managed and preserved as high-quality wildlife habitat while at the same time providing recreational and educational opportunities for Albertans. In order to maintain this high quality the properties require ongoing inspection and collection of various data to ensure proper management. AFGA staff has identified a great opportunity to involve Albertans in this stewardship activity which will ensure the future of these critical wildlife habitats and will indeed give them a deeper understanding of their place in the ecosystem. Initially, this project was conducted on a trial basis in 2008 on 20 properties to determine the degree of public acceptance and involvement. The end result indicated that the Volunteer Stewardship program was extremely well received by other organizations, volunteers and the general public to the point that a waiting list for volunteers was established. In 2009-10, meeting locations were chosen to be central to properties that currently did not have stewards assigned. Meetings were held in the following locations: Stettler, Buffalo Lake Moraine, June 18, 2009; Calgary, Bass Pro Shop, July 16, 2009; Valleyview, July 22, 2009; Caroline, July 28, 2009; Medicine Hat, September 22, 2009; Edmonton, October 14, 2009; Bonnyville, October 17, 2009; Lethbridge, October 25, 2009. A Power Point presentation was created for the meetings outlining the role and history of the Wildlife Trust Fund and the Volunteer Stewardship Program. 62 committed individuals were recruited to cover just over 30 properties.

Deliverables/Results:

A Stewardship Training Manual was developed: 34-page manual outlining the background and importance of the program, responsibilities of stewards, and features all of the necessary forms for enrolment and reporting (250 copies printed)

241 people attended eight sessions alerting them to conservation activities. AFGA recruited and trained volunteer stewards for all but approximately 20 properties, some of which were acquired later during the year.

Operation Grassland Community

Alberta Fish and Game Association

Grant: \$35,000

Project Code: 030-00-90-127

Project Status: Funded by ACA since 1999; Completed

Operation Grassland Community (OGC) is a habitat stewardship program of the Alberta Fish & Game Association. The primary goal of OGC is to work with landholders and land managers in southern Alberta to maintain and enhance native prairie habitats for species at risk and associated wildlife. This year, OGC's objectives were to: 1) protect upland, wetland, and riparian habitat in the grassland region for wildlife with emphasis on avian species at risk and their associated wildlife species; 2) improve and enhance quantity and quality, and promote sustainable stewardship of grassland habitats for cohabiting

cattle, species at risk, and other harvested and non-harvested wildlife; 3) monitor trends and distributions in Alberta burrowing owl and loggerhead shrike populations; 4) increase public awareness of threats to native grassland habitats and; 5) maintain and increase prairie conservation partnerships.

OGC main activities included: 1) engaging landholders to commit to five-year voluntary stewardship agreements to protect prairie habitats; 2) completing habitat enhancement projects for the benefit of two priority avian species in Alberta: burrowing owl and ferruginous hawk, both listed as endangered in Alberta; 3) completing Species At Risk Conservation Plans with OGC members to provide practical Beneficial Management Practices for our four focal species; 4) conducting the 2009 annual burrowing owl and loggerhead shrike census with participating members; 5) producing annual OGC newsletter, "Prairie Acres" and submitting several OGC-related articles to local and regional media and; 6) participating in various working groups, on recovery teams, and with other prairie conservation partnerships.

Deliverables/Results:

To date, 15 new members have joined OGC, volunteering to protect over 45,000 acres of native prairie. OGC successfully renewed another 77 members for an additional five years. OGC staff finalized four burrowing owl foraging habitat enhancement project with four OGC members. Each project included the installation of an off-site watering system and fencing of a nearby dugout within five km of an active burrowing owl nest site. Unfortunately, the cost of native seed mixes within the target area was prohibitive to OGC membership. Consequently, OGC stewardship coordinators could not find members interested in converting crop or hayland into grassland this year. Therefore, OGC directed funds towards the cost-share of six cattle oilers in partnership with three OGC members. The oilers are placed near five active burrowing owl nest sites. In addition, staff personally delivered salt blocks to approximately 12 ranching members. Staff also re-assessed 37 sites where 2004 and 2005 Beneficial Management Plans for burrowing owl and loggerhead shrike were developed, and assessed seven existing projects completed in previous years to ensure the project was functioning as prescribed in the agreements. Finally, OGC partnered with AltaLink and ATCO Electric to provide and install three ferruginous hawk nesting platforms to OGC members in southern Alberta. AltaLink installed one artificial nesting platform this summer and ATCO Electric installed another two structures (for two OGC members).

OGC produced one newsletter, "Prairie Acres"; wrote and submitted six new articles; and produced a new fact sheet debunking common misconceptions about species at risk legislation this year. OGC also completed the 2009 burrowing owl and loggerhead shrike census and greatly increased the level of participation for both censuses. Results were tabulated and passed on to provincial and federal recovery team chairs, as well as reported in annual newsletter and local newspaper. Finally, OGC staff worked hard to network with various other prairie conservation groups and agencies throughout the year and participated in several meetings, conferences and tradeshow

Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions

Alberta Foothills Network/Federation of Alberta Naturalists

Grant: \$37,000

Project Code: 015-00-90-132

Project Status: New; Extension granted until September 30, 2010

This project is part of a larger program aimed at ensuring that industrial activities within the Foothills Natural Region do not preclude sound fish and wildlife conservation practices. This specific project has the following objectives: A.) to work with various stakeholders including first nations, hunting and fishing organizations, recreation organizations, environmental organizations, industry and government agencies to expand existing, and establish new, protected areas in the Foothills Natural Region. Where protected areas expansion is not possible, or feasible, industrial deferrals will be sought. A science-based approach will be used to nominate protected areas and will be done in conjunction with the recommendations of other ongoing processes such as the Land-use Framework and the Alberta Caribou Committee. B.) Inform Albertans about the values of the Foothills Natural Region using various means including: website updates, video podcasts posted on the internet, a column in the quarterly magazine 'Nature Alberta' entitled 'Focus on the Foothills', public presentations, and media releases. Project deliverables include videos - using a combination of motion capture, and still images, stories that make the Foothills such a unique and important place will be told.

Deliverables/Results:

Three videos are anticipated: titles to be completed under this project are "Alberta's Foothills Natural Region – An Opportunity to Balance Economic and Ecological Values"; "Maintaining Caribou Habitat – Opportunities to Achieve Values beyond Caribou"; "Personal Perspectives and Stories from Alberta's Foothills".

Media releases to be sent throughout the project when warranted.

The Alberta Foothills Network has an on-going column in "Nature Alberta".

Wild Game for Foodbank Program

Alberta Hunters Who Care

Grant: \$20,000

Project Code: 030-00-90-110

Project Status: Funded by ACA 2002-03, 2003-04, 2008-09; Completed

The objective is to use a renewable food source (wild deer, elk or moose), which is harvested and donated by hunters; this high quality meat is then distributed through the Edmonton Foodbank following a stringent handling and inspection process. This is done in coordination with both the general hunting season and cull hunts to support the CWD management program. Usually between 15 and 20 thousand pounds of wild game is donated annually by hunters to this program. The 2009 season saw a donation of 23,000 pounds of wild game (elk, moose and deer).

Deliverables/Results:

23,000 pounds of wild game (elk, moose and deer) were processed, frozen and delivered to the Edmonton Foodbank.

Weed Wise Alberta

Alberta Invasive Plants Council

Grant: \$31,000

Project Code: 002-00-90-125

Project Status: New; Completed

The goal of the Weed Wise Alberta program has been to raise awareness of the threat of invasive plants to the natural/native environment through the development of educational tools and communication that will help raise awareness to reduce the impact of human-induced disturbance of the natural ecosystem. The objectives included:

1) to encourage protection and good stewardship of Alberta's natural capital by developing invasive plant management educational tools which would foster sustainable land use by industry, municipalities, landowners and recreationists; and, 2) to improve communication and promote effective, science-based invasive plant management protocols through educational tools including Weed Wise Training Kits, Best Management Tip Sheets, and supporting Fact Sheets. During the developing the Weed Wise Training Kits, six presentations were made along with consultative meetings with 12 stakeholders, AIPC also attended five related meetings where information was shared informally and/or through displays and handouts.

Deliverables/Results:

Three Weed Wise Training Kits were developed for municipal employees, the oil and gas sector and stewardship groups. (see www.invasiveplants.ab.ca/TrainTrainer.htm)

Best management Tip Sheets were developed for municipal employees, industrial development/oil & gas industry, forestry sector, seed mixes, stewardship and recreation. Fact Sheets on invasive plants have been produced and posted to the website on yellow clematis, cleavers, field bindweed, hoary cress, diffuse knapweed, Himalayan balsam, baby's breath, Dame's rocket, salt cedar and articles appeared in the AIPC Newsletter, *The Invader*, that spotlighted sulfur cinquefoil, Himalayan balsam and sea buckthorn.

Stewardship resource pages have been researched and links posted to the website www.invasiveplants.ab.ca.

Adopt-a-Plant Alberta 2009

Alberta Native Plant Council

Grant: \$13,688

Project Code: 015-00-90-125

Project Status: New; Completed

The Adopt-a-Plant Alberta (APA) program was initiated in 2005; since 2006 between 33 and 43 volunteers have participated in the program each year. Unfortunately most of the native plant species considered rare and potentially at risk in Alberta lack adequate information on their population sizes and distributions to determine whether they meet the criteria for protection. APA has successfully completed its 2009 program. 45 volunteers received training and participated in rare plant surveys and group events throughout the field season. 57 rare plant observations were recorded during rare plant surveys conducted by individual volunteers and three rare plant group surveys. In addition, APA volunteers participated in a number of successful stewardship activities for plant species at risk including

removal of baby's breath from western spiderwort habitat in the Pakowki Lake Sandhills, population survey of tiny cryptanthus and removal of baby's breath at the Ranchlands site (Medicine Hat), an inventory and assessment of browsing/seed pod production of the pinhorn yucca population, and assistance with the five-year provincial survey of western blue flag. A pamphlet on the invasive species baby's breath was written and printed for distribution and a three year summary of the APA program was produced for the ASRD Species at Risk report series.



Deliverables/Results:

Data of rare plant and lichen was submitted to ANHIC.

Pamphlet on baby's breath (see: www.ab.adoptaplant.ca/apa/webfiles/Babys%20Breath-6.pdf)

Report on APA's activities and results between 2005 – 2008 published on ASRD's SAR program website: Alberta Species at Risk Report No. 134: see: www.srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/documents/SAR134-Adopt-A-PlantAlberta-AVolunteer-BasedConservationInitiativeForRarePlantsAndLichens-Mar-2010.pdf

2009 Grassroots Awards for Environmental Stewardship (3rd Annual)

Alberta Stewardship Network Society

Grant: \$1,290

Project Code: 002-00-90-122

Project Status: New; Completed

The Alberta Stewardship Network's (ASN) third annual "Grassroots for Environmental Stewardship" awards recognize exemplary stewardship efforts by community stewardship groups and individuals in conserving, enhancing, and protecting local habitat. The awards were presented at the ASN's 'Stewards In Motion 7 Workshop' in Fort MacLeod on June 25, 2009. In 2009 the program was expanded to include the following four award categories:

- 1) Community Stewardship Group, 2) Individual Commitment, 3) Stewardship Project, and 4) Supporting Agency.

Deliverables/Results:

The award presentation took place June 25, 2009.

The 2009 award winners were:

- 1) Community Stewardship Group – Moose Lake Stewardship Group
- 2) Individual Commitment – Marina Krainer
- 3) Stewardship Project – Medicine Hat Interpretive Program
- 4) Supporting Agency – Alberta Sustainable Resource Development.

2009 Stewards in Motion VII Workshop

Alberta Stewardship Network Society

Grant: \$2,350

Project Code: 002-00-90-123

Project Status: New; Completed

Steward in Motion VII was the seventh annual ASN workshop serving to network, celebrate and build capacity among community stewards and stewardship groups. This year's workshop was held in partnership with southern Alberta community stewardship groups in Fort MacLeod on June 25, 2009 with 80 people in attendance.

Deliverables/Results:

2009 Stewards in Motion VII Workshop.

Conservation Discovery Education 2009

Ann & Sandy Cross Conservation Area

Grant: \$3,000

Project Code: 002-00-90-124

Project Status: Funded by ACA since 2008-09; Completed

The Conservation Discovery Education Programs 2009's objective was to engage over 6,100 youth in hands-on nature and conservation programming. The program is designed to expand knowledge, awareness and appreciation of conservation issues, as well as improve critical thinking skills for creating positive change and contribute to participant action. Programs offered included: School Programs - provided on-site outdoor day school programs for 4,500 students that enhance the Alberta Education curriculum in science, social studies, math, art and physical education, and Outreach Programs - nature was brought into the classroom for 1,600 students. These hands-on programs bring conservation discovery into the schools. Based on the Alberta Education curriculum, activities from their six on-site day school programs are adapted for students to explore nature and conservation issues at school and in their own backyards. Self-guided Programs - supported 360 participants in self-guided programs and hikes for groups such as Girl Guides, Boy Scouts and hiking groups.

Deliverables/Results:

177 Conservation Discovery Education Programs delivered to over 4,800 youth from January to November 2009.

Engaged over 3,900 school participants in hands-on nature and conservation exploration at the Ann & Sandy Cross Conservation Area.

Brought conservation discovery into the schools (Outreach programs) for over 680 students (over 25 classes).

Over 150 participants were assisted in self-guided exploration of the Area.

Program fees were subsidized for three high needs schools.

The Conservation Education 2009 program had six volunteers participate as Educators.

They met their goal of engaging youth in hands-on nature and conservation programming and bringing nature into the classroom, expanding knowledge, awareness and appreciation of conservation issues.

Elson's nest box trail and grid

Beaverhill Bird Observatory

Grant: \$5,000

Project Code: 030-00-90-156

Project Status: New; Completed

Elson's bluebird and tree swallow nest box trail was established in 1995. Elson passed away in 2002 leaving the trail unattended. Beaverhill Bird Observatory's (BBO) goal was to re-establish this trail of 300 bluebird boxes, repair boxes as needed, clean them, and monitor them in 2009. In addition BBO wanted to add duck boxes to the Natural Area to monitor waterfowl breeding. Finally, the BBO collaborated with the Golondrinas de las Americas project to monitor two grids of 50 tree swallow boxes at Beaverhill Lake. The BBO repaired and monitoring all the boxes along Elson's nest box trail and also monitored 148 tree swallow nest boxes (three grids, a new one with 48 boxes was added). 12 duck boxes were built, BBO advertised during talks to establish a network of volunteers to collect data at boxes, and put together a short video on nest boxes and how to monitor them.

Deliverables/Results:

Elson's Bluebird and Tree Swallow nest box trail was re-established and all monitoring completed.

Video was produced on nest boxes and how to monitor them.

Two articles in Willet newsletters about Golondrinas Tree Swallow project (see: www.beaverhillbirds.com/docs/willetv23n1.pdf www.beaverhillbirds.com/docs/willetv22n2.pdf).

Paper in natural history journal on Elson's bluebird trail was written and sent for publication.

Beaverhill Lake Natural Area, stewardship and monitoring

Beaverhill Bird Observatory

Grant: \$6,000

Project Code: 030-00-90-124

Project Status: Funded by ACA since 2006-07; Completed

The goal of this project was to continue stewardship of the Beaverhill Lake Natural Area. The Beaverhill Bird Observatory's objectives were to complete fencing to protect the area, monitor the birds in the area, and conduct interpretive programs on and off site to inform the public about the importance of the natural area and how birds are an indicator of the health of an ecosystem. They successfully completed fencing the Natural Area, monitoring the birds in the spring, summer, and fall (using mistnetting and banding, census, point counts, and bird boxes), and they conducted two major on-site and many off-site interpretive programs.

Deliverables/Results:

North fence completed.

The BIG Birding Breakfast was held on May 30, 2009 and Steaks and Saw-whets was held on October 2 and 3, 2009, as well as many off-site interpretive programs. An estimated 3,000 people come into contact with BBO's programs.

Spring, summer and fall monitoring reports completed. These have

been compiled into the annual report. Reports on stewardship initiatives were in Willet newsletter.

Spring, summer, and fall bird monitoring was completed (using mistnetting and banding, census, point counts, and nest boxes). Data was submitted to the banding office and to SRD as per their permit requirements.

The Prairie & Parkland Marsh Monitoring Program: Years 2-5

Bird Studies Canada

Grant: \$25,000

Project Code: 030-00-90-153

Project Status: Funded by ACA since 2008-09; Completed

This project aims to link the occurrence of wetland-associated migratory birds to habitat characteristics at varying levels of spatial scale (i.e., marsh-specific to landscape-level habitat attributes); the overall goal being to enable the development of spatially-explicit Decision Support System (DSS) models that will serve efforts to conserve and manage habitats for wetland-associated birds within the Prairie Habitat Joint Venture (PHJV) delivery area. To achieve this overarching goal, the project (1) seeks to gather geographically extensive waterbird and habitat data that is comprehensive in its spatial and temporal replication, and (2) use the resulting data to advance the development of spatially-explicit DSS models for waterbirds. While the purpose of the current work is to conduct a habitat-based study that will permit the development of predictive species-habitat models, this effort also serves as the initial step toward the longer-term goal of developing a sustainable long-term monitoring program for wetland-associated birds with the region. The project reports to, and receives guidance from, the PHJV Science Working Group; this serves to ensure Joint Venture-level direction such that program goals are tailored to address specific information gaps that have kept the PHJV from advancing 'all-bird' conservation planning. The project is designed to remedy information deficiencies for a suite of waterbirds that breed within the region. Aims of the project are consistent with the North American Waterfowl Management Plan (NAWMP) vision in that: (1) it will strengthen NAWMP's biological foundation by increasing the scientific base of knowledge on waterbird-habitat relationships, and (2) it incorporates a landscape-level approach to sampling. The project addresses the current Alberta NAWMP information priorities to (1) develop a habitat-based tool to predict distribution and occurrence of species of waterbirds, and (2) provide a means to investigate the value of current NAWMP conservation programs to waterbirds and other wetland-associated species. In addition to these two aims, information from this project will also be useful to efforts geared at setting PHJV bird population and habitat objectives, both of which are current PHJV Implementation Plan goals. Main activities included: developing and implementing the sampling framework, hiring and training technical crews for fieldwork, contacting landowners for permission to access land, initial preparations and study site set up, on-ground bird and habitat data collection, GIS-related tasks, data entry and analysis, and reporting. A first season of post-pilot study field-based data collection was completed during spring/summer 2009. Increased seasonal staffing permitted expanding the PHJV-wide sampling effort to 27 study sites (AB 19; MB 5; SK 3); there are now 516

stations established within the three Prairie Provinces (AB = 316; MB = 115; SK = 85). During 2009, a total of 2,365 bird surveys were completed (stations are visited 3-5 times each). The information from bird surveys, combined with information from on-ground habitat sampling and quantified landscape characteristics from a GIS database, provides a database to begin assessing relationships between habitat features and waterbird occurrence.

Deliverables/Results:

Deliverables include: a geo-referenced meta-database that is shared with all partners; periodic reports and/or presentations that provide updates on results of analyses and overall program progress; and upon completion of field-based data collection related to the current program phase (i.e. 2009-2012), the submission of a comprehensive final report that summarizes in its entirety the study's results, conclusions, and recommendations.

A comprehensive fisheries study on Bighill Creek

Bow Valley Habitat Development

Grant: \$10,506

Project Code: 020-00-90-153

Project Status: New; Completed

The primary objectives of this fisheries study were as follows: 1.) to identify and document any spawning activity by sport fish on Bighill Creek; 2.) to confirm the successful incubation of trout eggs on Bighill Creek and Millennium Creek; 3.) to determine whether juvenile trout are utilizing small feeder springs along the Bighill Creek; 4.) to collect baseline data on water quality on all feeder springs to Bighill Creek and the main stem of Bighill Creek; 5.) to assess the fish habitat and identify any negative impacts on water quality on Bighill Creek; 6.) to conduct a volunteer angling survey to assess the existing sport fishery on the stream; 7.) to outline possible measures to improve fish habitat and water quality along the Bighill Creek; 8.) to conduct a thermal logging program of the Bighill Creek annual water temperature range will be completed. A trout trapping program began April 2009 on the Bighill Creek to determine the success of the incubation of both brook trout and brown trout eggs from the 2008 fall spawning period. Trapping of all small feeder springs along the creek was carried out during the summer months of 2009. Water quality sampling and analysis were also completed over the summer months. During August 2009, a fish habitat assessment was completed along the entire reach of the Bighill Creek. Starting in the fall 2009, another spawning survey was completed, as a follow up to one that was carried out in 2008. During the open angling season of 2009, a volunteer angling survey, using catch and release methods, was completed on the Bighill Creek.

Deliverables/Results:

Final project report for ACA: A comprehensive fisheries study of the lower reach of Bighill Creek and tributaries: 2008-2009: Town of Cochrane, Alberta.

Horse Creek railway culvert and stream channel modifications and enhancement measures

Bow Valley Habitat Development

Grant: \$6,951.00 (not disbursed)

Project Code: 020-00-90-154

Project Status: New; Not Completed

The primary objective of this proposed project was to modify a railway culvert and pool habitat to allow fish migration upstream in Horse Creek. As this project didn't receive the co-funding required, the project did not go ahead this year.

Deliverables/Results:

Project not carried out.

Phase 3 Riparian area fencing project, riparian area brochure printing and fish pond stocking at Aspen Ranch Outdoor Education Facility

Camps for Children Educational Association

Grant: \$3,000

Project Code: 020-00-90-150

Project Status: Related projects funded by ACA since 2007-08; Completed

The objectives of Phase 3 of the riparian area fencing project were: to protect the riparian areas from cattle on Aspen Ranch and to make them accessible to the general public for the purpose of educating them as to the importance of such areas, as well as, to help them become aware of the flora and fauna of the area. Project activities included: 1) removing existing west side riparian fence that fell down and replace it with new appropriate one – new posts were put in to accommodate a barbless, mobile electric fence for public safety; 2) installing new portable electric fence along south-east portion of riparian area. This was completed, however, in the fall and early winter the moose population destroyed the fencing. The riparian area self guide tour pamphlets were printed and made available to the general public free of charge when they come to visit the facility. The ponds have been stocked with fish and were made available free of charge for public use.

Deliverables/Results:

Fencing was completed, but suffered from damage by moose.

Self guide tour pamphlets (see: www.aspenranchcanada.com/ranch_areas/riparian.htm)

The pond was stocked.

SAR in the Castle Wilderness

Castle-Crown Wilderness Coalition

Grant: \$17,000

Project Code: 015-00-90-135

Project Status: New; Completed

Castle-Crown Wilderness Coalition's (CCWC) staff, hikers, and volunteer stewards are the largest cohort of eyes on the ground in the Castle Wilderness. CCWC wants to tune those eyes to the possibility

of seeing Species-at-Risk (SAR), and being aware of likely habitat, reporting their observations to the appropriate agencies, and making the information public in appropriate ways. The specific project objectives were to: discover who else is working on SAR in the Castle Wilderness, and collaborate as appropriate; train CCWC's staff and interested volunteers as SAR spotters; search for, and report sightings of any known SAR as well as Data Deficient species, reporting to appropriate agencies e.g. Alberta Fish and Wildlife, Fish and Wildlife Management Information System database and/or the Alberta Natural Heritage Information Centre; create outreach materials and do public outreach as appropriate. CCWC hired staff in April, recruited volunteers and begin outreach at the May AGM; trained staff and volunteers; generated with partners a list of prioritized needed tasks by early July; removed invasive species where appropriate. All information has been posted to the website, shared with the media and incorporated into public presentations.

Deliverables/Results:

Lead staff became educated regarding SAR work in the region, contacted MultiSAR, signed staff up to work with MultiSAR on harlequin duck census, arranged a public presentation by MultiSAR staff on their current work in the Southwest, introduced MultiSAR staff to CCWC staff and volunteers, ensured that reporting forms are available.

Two CCWC staff worked with a northern leopard frog census crew at Beauvais Lake.

Four CCWC staff and volunteers worked with MultiSAR harlequin crew in the Oldman, and three worked in Lynx Creek.

Many hikers observed birds, small and large mammals, amphibians, fish, and plants, including unusual algae. Reports either have been or will be submitted; unfortunately a severe flood before Christmas in the office building, which necessitated closing the office for a month, has resulted in a delay in report entering and posting.

Over 3,000 km were hiked by guided recreational hikers (a different hike each week, from May 16 to Sept 5), who were taught new observational skills (and had a great time in the Castle!).

About 1,000 km of backcountry were hiked and observed by staff and trained volunteers.

New outreach tools and materials were developed and used by our outreach staff, particularly at Canmore and South Country folk festivals. These tools are available for future events.

Big Hill Creek habitat enhancement and interpretive sign project

Cochrane Branches and Banks Environmental Fdn

Grant: \$3,000

Project Code: 015-00-90-12

Project Status: New; Completed

Branches and Banks seeks to provide opportunities for the citizens of Cochrane and surrounding communities to enhance the local natural habitat while learning to appreciate the connection between their community and the larger Bow River watershed. The 2009 project was a two day project. This is a significant expansion for Branches and Banks. The extra day was directed at developing a sense of stewardship with school age participants from schools in Cochrane. Both project days involved a creek clean-up, removal of

invasive species and the planting of a total of 1300 native trees and shrubs. There will be an environmental education program on-site on the planting day, where specialists will speak to small groups of the participants during the day to highlight the ecology of the area. In addition, Branches and Banks developed a second interpretative sign, which will show many of the species living in the Big Hill Springs Creek. The cold, snowy inclement weather on the public day (June 6) had a significant impact on the number of members of the public attending the event. It was the smallest number for Branches and Banks, but the trees all got planted.

Deliverables/Results:

This year Cochrane Branches and Banks planted approximately 1300 trees and bushes once again along the Big Hill Creek within the Cochrane Ranche with over 350 participants.

The joint project with Grade I – IV students from Glenbow Elementary School was a huge success. An estimated 300 students helped out with planting 200 - 350 little trees.



2010 Alberta Environmental Stewardship Calendar

Cows and Fish

Grant: \$3,000

Project Code: 002-00-90-121

Project Status: New; Completed

The objectives of the 2010 Alberta Environmental Stewardship Calendar were to engage environmental stewards to implement best management practices in order to enhance wildlife and fisheries habitat; and to distribute these calendars to environmental stewards as an environmental education and outreach tool. A committee consisting of numerous environmental agencies collaborated to: 1.) solicit funding from environmental agencies to fund the calendar; 2.) organize a photo contest, wherein photos are submitted to the committee in the following categories: grazing management, integrated crop management, nutrient management, people in agriculture, rural landscapes, soil conservation, water bodies and riparian management, wildlife and habitat conservation, winter scenes and woodlot management; 3.) write educational and environmentally inspiring facts to accompany each photograph; 4.) hire a publisher to print the calendar; and 5.) distribute calendars. 1500 calendars were printed and distributed. Engaged and more educated readers of the calendar are anticipated. New contacts were

made through the calendar's distribution. This will be valuable for future collaboration. 250 photo entries were provided, which was an excellent representation of stewardship images. From these, 52 images were chosen (one for each week). A positive, unexpected result was a request from Westlock News to do an article on the photo contest winner and the calendar. This story was published in the local newspaper and promoted the calendar. The positive stewardship messages to enhance habitat were throughout the calendar and were well received.

Deliverables/Results:

1500 copies distributed (1900 planned but 1500 printed due to budget limitations)

Article in the Westlock News on the photo contest winner and the calendar.

Developing urban fisheries improvements and enhancing riparian sites through stewardship

Cows and Fish

Grant: \$20,000

Project Code: 020-00-90-157

Project Status: New; Completed

The project objectives were to: 1.) engage and work with riparian landowners within residential areas; 2.) identify issues from residential riparian areas; 3.) provide suggested improvements to all landowners and their groups to target riparian issues, including through 20 follow up requests; 4.) provide learning and hands-on opportunities to understand how to address identified issues at three knowledge and management enhancement events; 5.) provide urban riparian and fisheries related enhancement information to urban naturalists; 6.) evaluate and share results of urban riparian enhancement project with broad audience. In order to develop and improve the urban fisheries opportunities, Cows and Fish focused on improving riparian habitat within urban and developed areas, through several activities. One key activity was to identify issues and evaluate the current status of health, followed by providing management techniques information to the landowner and the group. As part of this process, individual landowner visits helped identify current management, concerns and areas to focus on that promote urban fisheries and riparian stewardship. To support the promotion of an urban fishery within the community as well as specific riparian landowners, Cows and Fish provided educational learning and hands-on training to better understand the riparian area, including its value for fish habitat. They worked with individual residents who are riparian homeowners along the Elbow and Bow Rivers, with support from the City of Calgary. Cows and Fish promoted improvement in the urban fishery through several local community events like the Branches and Banks event in Cochrane.

Deliverables/Results:

Field evaluation completed for application of riparian health inventory in urban residential setting.

Invitation letter generated and sent to all riparian homeowners along the two rivers, with assistance from City of Calgary.

Information was developed which included a request to homeowners for involvement, and this was created for community newsletters within the City of Calgary and for the City of Calgary website. This

information was provided to community associations in the area (at least one printed it) and to the City for inclusion on their website.

Mapping of potential sites completed; stratification not required/possible because there were almost no extra potential sites.

36 landowners engaged and interacted with. 36 Riparian health inventories completed. (This is more than the required deliverable of 30).

Five requests for follow up have been met. 14 additional landowners requested follow up and seven attended a hands-on learning event, demonstrating planting techniques and the value of riparian vegetation.

New riparian health summary format was created including riparian plant species recommendations and sources for these plants as well as contact information for relevant supplies and supporting organizations (including ACA). All 36 landowners will receive this information.

Ecology and population affiliations of moulting and fall staging Barrow's goldeneye at Cardinal Lake, Alberta

Ducks Unlimited Canada

Grant: \$18,000

Project Code: 030-00-90-152

Project Status: New; Completed

Barrow's Goldeneye (BAGO), a relatively uncommon diving duck with a world population estimated at less than 200,000 birds, spend up to four months per year on moulting and fall staging habitats, yet we have very little understanding about the ecology of this species during this period. The discovery of Cardinal Lake as a significant moulting and staging site for BAGO has provided an opportunity to develop our understanding of the post-breeding ecology of this under-studied sea duck. The objectives of this study aim to further our knowledge of basic aspects of moulting and staging ecology (phenology, behaviour, habitat use, survival), as well as provide insights into population affiliations of BAGO moulting in the Peace Parklands of northern Alberta (site use, site fidelity). In the 2009 field season, DUC monitored BAGO use of Cardinal and Leddy Lakes, captured and banded approximately 600 moulting BAGO. A variety of body measurements were taken from captured individuals, and 50 birds were fitted with VHF radio transmitters so that foraging, movement, and survival could be monitored on a weekly basis throughout the moulting and staging periods. An additional 20 birds were implanted with satellite transmitters (PTTs) to monitor large-scale and longer term movements of ducks from the Peace Parklands of Alberta to their wintering and breeding sites. This first field season was very successful, with high quality data being collected to support all project objectives. Preparations for a second season are well under way.

Deliverables/Results:

The project is currently involved with data entry, proofing, summarization, and analysis of data collected during the 2009 field season, so no deliverables other than progress reports from Sept. 2009 and March 2010, as well as progress reports for the Sea Duck Joint Venture and Alberta North American Waterfowl Management Plan Partnership (in which ACA support was acknowledged) have

been produced yet.

At least three formal presentations and up to seven published papers are expected as a result of this work, in which ACA will be given proper acknowledgment.

Stewards network for Alberta's Important Bird Areas

Federation of Alberta Naturalists / Nature Alberta

Grant: \$15,000

Project Code: 030-00-90-158

Project Status: New; Completed

The overall goal is to preserve critical bird habitat in the province. Important Bird Areas (IBAs) are priority areas where threatened, restricted-range, biome-restricted and congregatory birds occur. The IBA program has been developed to recognize, monitor and protect these critical areas. The program is a cooperative initiative among individuals and local, provincial, national and international organizations that recognize the importance of birds. Together, these people and organizations are working to ensure that bird 'hot spots' are maintained. In Alberta the majority of IBAs are associated with water bodies and as such will help ensure that recreational opportunities are maintained and enhanced. This project has the following objectives: 1) to develop material that will be used to attract more local individuals and groups into taking on stewardship activities at IBAs across Alberta, 2) to compile a user friendly information collection package for IBA stewards, ensuring that stewards look for and collect similar information when they visit their IBA, 3) to obtain stewardship coverage at 50% of Alberta's IBAs (24 sites). In principle, FAN will be looking for at least a 5-year commitment from stewards. Even though some stewards have been active during the 2009 season, the focus in 2009 was on getting stewards in place for the 2010 season. During 2009 resources were created that will be used to build partnerships among groups and organizations that are active at IBAs in Alberta and to attract stewards. Deliverables include: a pamphlet to showcase the IBA Stewards Network; two short videos of Alberta's IBAs, which will be posted on the FAN website and used for education & outreach; media releases; a project summary article will be written for the fall issue of Nature Alberta.

Deliverables/Results:

Pamphlet: This is still being developed in partnership with other provincial and national-level partners. Partial funding was received from ACA for this project. Even though some work was done on this, FAN were not able to focus on this deliverable.

Videos: A short video "Why Important Bird Areas are so important/ Become a Caretaker" was completed. ACA was acknowledged in the video. A short video "Important Bird Areas" is in the final editing stage.

Media Involvement: The 2009/2010 was mainly a project development year. As the work progressed FAN decided that it was premature to go to the media about the Important Bird Areas program. They anticipate doing media events during 2010/2011.

Publications: The column Eyes on IBAs was published in the fall issue of Nature Alberta. The article entitled "Important Bird Areas Program – Across Alberta and Beyond" showcased the IBAs, goals of the IBA program, and encouraged readers to visit an IBA. The second part of the article focused on the 'Ministick, Joseph and Oliver Lakes' IBA.

Riparian water quality improvement project

Federation of Alberta Naturalists / Nature Alberta

Grant: \$20,000

Project Code: 015-00-90-129

Project Status: Funded by ACA since 2003-04 with the exception of 2008-09); Completed

For a number of years FAN has conducted projects focusing on the relationship between natural shorelines and shoreline communities by ensuring that permanent and seasonal residents have the knowledge and tools necessary to understand their effect on fisheries, habitat or wildlife resources and water quality in their communities. This three year project is intended to build on this base and focus on the users of the shorelines to engage them as stewards of that landscape. The ultimate goal is to have shoreline residents achieve sustained behavioural change resulting in improved water quality, and fish and wildlife habitat along natural lakes. The FAN strategy incorporates the delivery of the following project tools to Alberta's lake-shore communities thus building local capacity for positive stewardship of fisheries, habitat and wildlife resources: the "Shoreline Resident Consultation" is a component of the project that teaches residents about the positive actions they can make to maintain healthy shorelines; the Workshop-in-a-Box is a tool developed to educate local citizens and community groups, such as cottage associations, municipalities, and land owner associations and others so that they may be strategic in their local shoreline efforts; the "Shoreline Action Challenge" acts as a catalyst and documentation tool for actual on-the-ground changes. The project was to be delivered to the communities of Wabamun Lake, Moose Lake, Pigeon Lake, and Sylvan Lake. However, the Riparian Water Quality Improvement Project did not secure full funding for the project. Consequently, FAN was unable to outreach to all target communities as previously anticipated. Focus was placed at Wabamun Lake, Pigeon Lake, and Moose Lake.

Deliverables/Results:

The deliverables were less than anticipated due to reduced funding and lack of volunteers.

Six volunteers participated in the Shoreline Resident Consultations and none of these volunteers participated in the Shoreline Action Challenge. No reasons were stated as to why no-one participated in the Challenge however it is hypothesized that lack of drive to achieve successful outreach was the primary reason.

The Project Manger distributed posters, books, and informational brochures as requested to support community groups.

16 presentations/displays to target communities were attended, including: Earth Day, Skeleton Lake Stewardship Association Town Hall, Regional Planning Meeting – Pigeon Lake, Moose Lake Watershed Society Water Workshop, Green Communities Workshop, Sylvan Lake Environmental Workshop, Wizard Lake Awareness Day, Lac Ste Anne County East workshop, City of Edmonton Naturalists Outreach Night, to name a few.

Two summer interns (rather than three) were hired and trained to perform Shoreline Consultations. Both were returning students of a post-secondary institution.

One volunteer appreciation event (rather than two) was held during the 2009-2010. Liaisons representing each of the target communities

in which the Project was active gathered in Edmonton to meet and share lessons learned. The benefit of this event is to allow residents to gather and share stories of their communities. Shared stories help residents identify that their problems/issues are not unique and what works in one community may work in another.

A total of 54 households (goal was 60 households) participated in the Shoreline Consultations program.

Nature walking trails and birdhouse placement

Fort Saskatchewan Fish and Game Association

Grant: \$2,000

Project Code: 030-00-90-145

Project Status: New; Extended until 30 September 2010

Fort Saskatchewan Fish and Game Association wants to expand the trail system at their clubhouse/cabin located on approx 80 acres off of Range Rd 205 between Twp Roads 540 & 542. This property is located adjacent to the west boundary of Elk Island Park. Ft Saskatchewan FGA currently has a pond which will eventually be stocked with trout, and has some walking trails which need improvements. In addition to expanding the trail system, various bird houses will be installed along the trails, as well as informative signage regarding the diversity of wildlife found in this area for those people using the trail system. By expanding the trail system it is felt that more people will visit the site and enjoy nature and the wildlife. The trails will no doubt be used by wildlife, making travel in the area easier for them, especially in winter. Ft. Saskatchewan Fish and Game Association have purchased some new trail equipment (chain saw & brush whacker) and have started on trail improvement. The project was delayed pending renewal of the club's lease with Strathcona County, which was expected to happen by April 30th.

Deliverables/Results:

Work on expanding the walking trail system was started late summer and early fall of 2009, completion of the trails and signage is anticipated to be completed in September, 2010.

Baseline study of amphibians in Fish Creek Provincial Park

Friends of Fish Creek Provincial Park Society

Grant: \$3,000

Project Code: 030-00-90-151

Project Status: New; Completed

This amphibian baseline inventory is a continuation of an effort that began in 2008, in order to evaluate the current amphibian species status and distribution within Fish Creek Provincial Park (FCPP). Basically the Friends of Fish Creek are determining what identified species of amphibians inhabit FCPP, and where they exist within FCPP. Since Amphibians are an indicator species of the health of wetland ecosystems, the inventory of these animals across FCPP will help determine the state of the water and environment that sustains them. Volunteer Amphibian Monitors aided in the collection of data for this program. In 2009, water quality testing in some of FCPP's natural and engineered wetlands was applied to this ongoing Amphibian Monitoring Program. Six of the pre-determined pond sites (2 -West region, 2 -Central region, 2 -East region) were chosen for sampling

and analysis in order to determine the water quality in these various wetland sites. These samples were then compared with the regular water quality monitoring data of Fish Creek, in which monthly water sampling and analysis takes place over the spring and summer months through the Friends' Water Quality Monitoring Program, which has been in place for the three past seasons.

Wood frog Site N1 Voiters flats May 2009. Photo: Shannon & Fran Kavanagh (volunteer monitors)

Deliverables/Results:

27 volunteers participated in the Amphibian Monitoring program, providing 734 hrs of time to the program in 2009.

Volunteers either monitored as individuals or went out in pairs or as teams and conducted 128 positive amphibian observation visits. The species of amphibians observed in both 2008 and 2009 were the wood frog, boreal chorus frog and the tiger salamander.

220 is the total number of seen observations and calling (heard) observations combined; of this total 136 observations were made regarding seeing and counting amphibians, while 84 detected frogs calling and were given a call index number (15 being wood frog calls and 69 boreal chorus frog calls).

The 136 seen/counted observations further broken down to 48 wood frog observations, 74 boreal chorus frog observations, 3 tiger salamander observations, and 3 were unidentified species of tadpole larvae observations.

Report: Water Quality Monitoring Report 2009. Friends of Fish Creek Provincial Park Society. Prepared By: 1461222 Alberta Ltd. Naomi Parker

Maintaining and operating of existing aeration system

Friends of Kerbes Pond Society

Grant: \$1,200

Project Code: 020-00-90-151

Project Status: New; Completed

Friends of the Kerbes Pond Society were able to install an aeration system at Kerbes Pond in 2008. With ACA support, the Society has kept this system operating through 2009-10.

Deliverables/Results:

The local community and Central Alberta Fishermen have already enjoyed the results of a healthier fish pond. More families are coming out every day to enjoy the pond.

Rattlers, People & Parks: Lethbridge Rattlesnake Conservation Program

Helen Schuler Nature Centre

Grant: \$1,500

Project Code: 030-00-90-150

Project Status: New; Completed

A small population of Prairie rattlesnakes exists in the city of Lethbridge. The future survival of this population depends on the attitudes and values that local residents and park users place on this species. The goals of the Rattlers, People & Parks: Lethbridge

Rattlesnake Conservation Program was to: promote appreciation of the Lethbridge population of prairie rattlesnake among city residents; raise awareness among people living within and adjacent to prairie rattlesnake habitat that the species is “blue-listed” in Alberta; the population of rattlesnakes within Lethbridge is small; and that rattlesnakes and their den sites are protected. Activities included: the design and manufacture of 3 interpretive signs that list various ways the western prairie rattlesnake contributes to the local ecosystem. The distribution of 1150 brochures to residences in Lethbridge where there is a high level of western prairie rattlesnake and human contact. Interpretive programs were developed and delivered (“point of contacts”) in areas of western prairie rattlesnake habitat. Guest speaker, Kris Kendall of the Alberta Conservation Association, spoke on “Reptiles and Amphibians of Alberta” in May, 2009 and guest speaker, Reg Earnst, spoke at the Helen Schuler Nature Centre on the topic of the western prairie rattlesnake, October 31, 2009. A sample of residents surveyed about their opinions and knowledge of the western prairie rattlesnake. As a result of the program a greater number of city residents are able to list at least two ways in which they can positively contribute to the successful conservation of the prairie rattlesnake. An increased number of local residents are able to list at least three ways in which they can decrease their own encounters with the prairie rattlesnake.

Deliverables/Results:

1150 brochures were delivered to homes adjacent to prairie rattlesnake habitat in May 2009. Additional brochures are available at City Hall, the Nature Centre and on the City of Lethbridge website (download from: www.lethbridge.ca/NR/rdonlyres/0A45A58D-FD3A-4A1E-A0EA-443E360FF7D6/11441/RattlesnakeBrochuredec2008_lores.pdf).

Three new interpretive signs featuring the Prairie Rattlesnake have been installed in areas with high incidence of human-prairie rattlesnake encounters.

The interpretive staff from the Helen Schuler Nature Centre delivered a rattlesnake survey in the Lethbridge area. Overall the respondents seemed to be well informed about the species and indicated support and confidence in the programs surrounding the rattlesnake species. There is an increase in public awareness of the Prairie Rattlesnake, not just its presence in particular areas of Lethbridge but an increase in what the public now knows about it and why protection of it is essential.

2nd annual city-wide coulee clean-up

Helen Schuler Nature Centre

Grant: \$2,500

Project Code: 015-00-90-124

Project Status: New; Completed

The goals of the 2nd annual city-wide coulee clean-up aimed to remove garbage and invasive plant species from natural areas in the City of Lethbridge using community volunteers. Volunteers were trained to recognize the importance of habitat protection using brochures, brief training sessions, group clean-ups, and by removing both garbage and knapweed. Groups of all sizes were assembled and assigned an area of approximately 2 km, provided bags, gloves, area maps, data collection sheets, knee pads and trowels where needed, and a selection of fact sheets for future use. In total, over 500

participants removed 565 bags of garbage, numerous truckloads of construction debris, and 24 bags of spotted and diffuse knapweed.

Deliverables/Results:

Increased number of volunteer participants, amount of garbage removed from natural areas, and number of km cleaned within natural areas.

Increased community awareness of the event and why it was created.

Informed the community about the types of things and garbage trends found within natural areas of the City of Lethbridge.

A temporary brochure was developed explaining: What is a weed?; Why weeds can be bad?; and What you can do to prevent the spread of weeds?

Two guest speakers contributed their time to speak about the use of bio-controls on invasive plants and invasive plant identification.

Two games were developed and used at the coulee clean-up celebration: one on native plant and invasive plant identification and another on how to make conscious decisions to prevent the spread of invasive species (Wheel of Weeds).

Staff and volunteers learned to identify three invasive plant species and the reporting process to the City of Lethbridge Pest Management Team, also learned about proper disposal of bagged weeds.

A brochure on coulee stewardship was developed and 500 copies printed.

Nest box deployment with youth to inspire stewardship

Andrew Stiles

Grant: \$2,500

Project Code: 030-00-90-147

Project Status: New; Completed

Birdhouse building was used as a way of inspiring youth to make a difference on the landscape. Thanks to this ACA funding, materials were obtained to construct 300 bluebird nest boxes, as well as 30 duck boxes and an osprey platform. While these structures certainly enhanced habitat, more importantly they gave young people a chance to see the culture of stewardship in action. 88 First Nations youth built boxes for their Reserve and were encouraged to adopt other stewardship activities within their reach. Girl Guides, Boys clubs, and Nature Conservancy volunteers were also involved in the process.

Deliverables/Results:

300 bluebird nest boxes, as well as 30 duck boxes and an osprey platform were constructed with various youth groups.

Bat Hibernacula Monitoring in Alberta Caves - A Volunteer Monitoring Program

Chuck Priestley

Grant: \$5,289.90

Project Code: 030-00-90-159

Project Status: New; Completed

The project objectives were to: 1) conduct a winter hibernating bat survey in Wapiabi Cave during the 2009/2010 season and 2)

determine whether hibernating bats in Wapiabi Cave have the fungal pathogen, White-nose Syndrome. Sections of the cave (65% of the cave) were surveyed during the winters of 1999 and 2008. In addition to re-sampling those sections, bats will be counted in the 'French Extension' portion of the cave. Wapiabi Cave is located 25km west of Nordegg along the boundary between the Foothills and Rocky Mountain Natural Regions. The 2009/2010 Wapiabi hibernacula survey was successful. The team was able to confirm that little brown bats were using the cave again during the winter. Locations of hibernating bats were mapped and abundance was documented. During this survey 12 bats were found in the cave. White-nose Syndrome (WNS) was not detected during the survey.

Deliverables/Results:

Data for the presence of hibernating bats has been added to our database (including map of locations).

Presence of White-nose Syndrome was not detected. This is critical information to wildlife managers in Alberta (and beyond).

Reproductive ecology of endangered populations of limber and whitebark pine in Alberta

King's University College (Dr. V. Peters)

Grant: \$15,000

Project Code: 030-00-90-161

Project Status: New; Completed

Limber pine (*Pinus flexilis*) is endangered at the northern limits of its range, primarily due to white pine blister rust that kills both adult and juvenile trees. Recovery plans in Alberta will require rapidly identifying populations where the capacity for natural population growth exists, and mitigation measures in declining populations. They tested the effects of infection level, seed production, and pre-dispersal seed predation on regeneration density in a heavily infected and a lightly infected metapopulation of limber pine. Differences in cone predation in low seed years relative to blister rust levels were minor compared to the much greater production of cones in the heavily infected metapopulation. Greater seed availability did not result in better regeneration success, as the lightly infected metapopulation had 24 times more seedlings regenerating. The results suggest that red squirrels are more active cone predators in the northern part of the limber pine range, than reported in the central Rocky Mountain States. Preliminary findings suggest an uncoupling of seed availability and regeneration processes in northern limber pine populations. This phenomenon could occur from a variety of causes including greater mortality of seedlings from blister rust, disperser limitation with the mutualistic Clark's nutcracker, or differences in germination microsites and cattle grazing between metapopulations.

Deliverables/Results:

Population Viability Assessments:

1. Cone predation by red squirrels has been obtained from 17 populations for two non-mast years (2008 and 2009).
2. Cone production between 1998-2009 has been obtained from six foothills populations of limber pine, and one population of whitebark pine.
3. Limber pine seedling regeneration (both density and timing) has been obtained from six foothills populations.

4. A 2009 census of WPBR was repeated at numerous populations spanning the range of limber pine by project partners from CFS and Parks Canada.

Contact has been maintained with the Whitebark and Limber Pine Recovery team, and the Principal Investigator has been asked to serve on the Scientific Advisory Committee that reviews the recovery plans. Project findings will be discussed in these contexts.

B.Sc. theses completed at The King's University College, Edmonton, AB:

Connelly, S. Seed predation of limber pine (*Pinus flexilis*) between and with metapopulations. 10 pgs.

Douma, J. 2009. The use of cone scars to determine the reproductive history of limber pine in the foothills of Alberta. 12 pgs.

Ehizojie, J. 2009. Spatial modeling of red squirrel habitat use: a GIS approach. 30 pgs.

Van hoffer, D. 2009. Midden development in pure and mixed limber pine stands. 14 pgs.

Vandenham, L. 2009. The regeneration dynamics of limber pine in the Front Range of the Rocky Mountains. 15 pgs.

Vandervalk, L. 2009. Seed predation of limber pine (*Pinus flexilis*) in single versus mixed species stands. 16 pgs.

B.Sc. theses in progress:

Gondwe, E. 2010. The use of size variation in cone scars to estimate aborted cones. Expected completion, April 30 2010.

Published Articles:

Peters, V.S., and Vandervalk, L. 2009. Cone predation of limber pine by red squirrels. *Nutcracker Notes*. 17:10-12.

Additional theses will likely be generated from data/samples in 2011 and more papers are expected to be completed between 2010- 2012.

Ecology, conservation, and populations dynamics of mountain goats in Alberta

Laval University (Dr. S. Côté)

Grant: \$18,683

Project Code: 030-00-90-117

Project Status: Funded by ACA since 2004-05; Completed

Research on the ecology, population dynamics, and management of mountain goats (*Oreamnos americanus*) on Caw Ridge was initiated following a decline in goat populations in west-central Alberta during the 1980's. The project goals are to measure variation in individual survival and reproductive success in both sexes using marked animals, identify factors that affect population size, monitor dispersal, and examine whether mountain goats can habituate to helicopter and all-terrain-vehicle traffic. They combine the monitoring of life-history traits of marked individuals with field observations of behavior to determine the factors influencing population size. Summarized below are some of the main findings of the study so far. Kid production increases with female age from four to six years, peaking at 80% at eight to twelve years and decreasing afterwards. Because of the late age of primiparity and increasing kid production with age, much of the recruitment of yearlings in the population is contributed by females aged eight to twelve years. Adult survival is greater for

females than males. For both sexes, survival is lower for two-year-olds than for older goats and it shows clear evidence of senescence, for females beginning at ten years of age and for males from eight years of age. Survival of adult females is similar to that of other female ungulates of similar body size but survival of adult males appears lower. Paternity is highly skewed, with a few males siring the majority of offspring. Male yearly reproductive success increases with age until apparent reproductive senescence at nine years, but mass is a stronger determinant of siring success than age, horn length or social rank. Predation seems to play a limited role on population dynamics. Predation on small, isolated populations of mountain ungulates could vary with the behavior of individual predators in a density-independent fashion, and therefore may be highly unpredictable. Native mountain goat populations are sensitive to overharvest if adult females are shot. They have a low natural recruitment rate and show little evidence of density-dependence or of compensatory responses to hunting. Hunting mortality thus appears additive. Mountain goats are very sensitive to helicopter disturbance: helicopters should not be allowed to fly within two kilometers of mountain goat habitat.

Deliverables/Results:

The Caw Ridge study is the leading research project on mountain goats in North America, as demonstrated by the number and quality of publications that have resulted from this work, by its value in training graduate students and by the frequent references to this study found in the Management Plan for mountain goats in Alberta. The value of this long-term project is becoming more and more evident, with the publication of results on individual reproductive strategies and population dynamics. The results of this work provide important biological information to manage mountain goat hunting and conservation in Alberta and elsewhere.

Recently, ten papers have been published on the mountain goat study in renowned International scientific journals, with another paper currently in press and a paper under review (see list below). eight oral presentations were given on the mountain goat project this year. Finally, a 30-min documentary on Dr. S. Côté and his work on mountain goats at Caw Ridge was shown on the TV series *Humanima* during winter 2009. All scientific communications are listed below.

Scientific publications from the Caw Ridge research published or submitted in 2009-2010:

Ezard, T.H.G., S.D. Côté and F. Pelletier. 2009. Eco-evolutionary dynamics: disentangling phenotypic, environmental and population fluctuations. *Philosophical Transactions of the Royal Society Series B*, 364, 1491-1498.

Hamel, S., S.D. Côté and M. Festa-Bianchet. 2010. Maternal characteristics, environment, and costs of reproduction in female mountain goats. *Ecology* in press.

Hamel, S. and S.D. Côté. 2009. Foraging decisions in a capital breeder: trade-offs between mass gain and lactation. *Oecologia*, 161, 421-432.

Hamel, S. and S.D. Côté. 2009. Maternal defensive behaviour and golden eagle predation in mountain goats. *Western North American Naturalist*, 69, 115-118.

Hamel, S., S.D. Côté, J.-M. Gaillard and M. Festa-Bianchet. 2009. Individual variation in reproductive costs of reproduction: high quality females always do better. *Journal of Animal Ecology*, 78, 143-151.

Hamel, S., J.-M. Gaillard, M. Festa-Bianchet and S.D. Côté. 2009. Individual heterogeneity in quality and reproductive success in three contrasted populations of large herbivores. *Ecology*, 90, 1981-1995.

Hamel, S., M. Garel, M. Festa-Bianchet, J.-M. Gaillard and S.D. Côté. 2009. Spring normalized difference vegetation index (NDVI) predicts annual variation in timing of peak faecal crude protein in mountain ungulates. *Journal of Applied Ecology*, 46, 582-589.

Pelletier, F., J. Mainguy and S.D. Côté. 2009. Rut-induced hypophagia in male bighorn sheep and mountain goats: foraging under time budget constraints. *Ethology*, 115, 141-151.

Poissant, J., A.B.A. Shafer, C.S. Davis, J. Mainguy, J.T. Hogg, S.D. Côté and D.W. Coltman. 2009. Genome-wide cross-amplification of domestic sheep microsatellites in bighorn sheep and mountain goats. *Molecular Ecology Resources*, 9, 1121-1126.

Mainguy, J., S.D. Côté, M. Festa-Bianchet and D.W. Coltman. 2009. Father-offspring phenotypic correlations suggest intralocus sexual conflict for a fitness-linked trait in a wild sexually dimorphic mammal. *Proceedings of the Royal Society B*, 276, 4067-4075.

Mainguy, J., S.D. Côté and D.W. Coltman. 2009. Multilocus heterozygosity, parental relatedness and individual fitness components in a wild mountain goat *Oreamnos americanus* population. *Molecular Ecology*, 18, 2297- 2306.

Shafer, A.B.A., S.D. Côté and D.W. Coltman. Hot spots of genetic diversity descended from multiple Pleistocene refugia in an alpine ungulate. *Evolution*, submitted February 2010.

Scientific communications of the Caw Ridge study presented in 2009-2010:

Côté, S.D. 2009. Reproductive strategies of mountain goats: insights from a long-term study, University of Alberta, AB, Canada (Invited speaker).

Garel, M., S. Hamel and H. Santin-Janin. 2009. Le NDVI comme proxy de la végétation: études de cas et applications chez les ongulés. Comportement et écologie de la faune sauvage (CEFS), INRA, Castanet-Tolosan, Toulouse, France (Invited speaker).

Godde, S., D. Réale and S.D. Côté. 2009. Facteurs affectant le réseau social et les affinités sociales chez les femelles de la chèvre de montagne (*Oreamnos americanus*). 34e Congrès Annuel de la Société Québécoise pour l'Étude Biologique du Comportement, Université du Québec à Trois-Rivières, QC, Canada.

Shafer A.B.A. and S.D. Côté. 2010. Caw Ridge's mountain goats: insights from a long-term study. 2010 Annual meeting of the Alaska chapter of the Wildlife Society. Anchorage, AK, USA (Invited speaker).

Shafer A.B.A., S.D. Côté and D.W. Coltman. 2010. Temporal and geographic patterns of mountain goat genetic differentiation: a focus on Alaska. 2010 Annual meeting of the Alaska chapter of the Wildlife Society. Anchorage, Alaska, USA (Invited speaker).

Shafer, A.B.A., J. Poissant, S.D. Côté and D.W. Coltman. 2009. Phylogeographic and dispersal patterns of the North American mountain goat (*Oreamnos americanus*). 5th World Conference on Mountain Ungulates, Granada, Spain.

Shafer, A.B.A., S.D. Côté and D.W. Coltman. 2009. Mountain goats on

mountaintops: metapopulations and long-distance dispersal. 3rd Annual Meeting of the Canadian Society for Ecology and Evolution, Dalhousie University, Halifax, NS, Canada.

Théorêt-Gosselin, R. and S.D. Côté. 2010. Étude du développement de l'indépendance menant au sevrage chez la chèvre de montagne. 1er colloque de biologie de l'Université Laval, QC, Canada.

Copies of all reports, popular and scientific articles are available. ACA has been acknowledged in all oral presentations (ACA logo on the first and last slide of all PowerPoint presentations) and papers (ACA mentioned in the acknowledgements section).

Migratory and breeding bird research in Northern Alberta

Lesser Slave Lake Bird Observatory

Grant: \$22,000

Project Code:030-00-90-128

Project Status: Supported by ACA since 1999, GEFC funding since 2004-05; Completed

The overall goal of this project is to provide population monitoring data for bird species in the Slave Lake Area. Analysis and interpretation of the Lesser Slave Lake Bird Observatory (LSLBO) long term dataset can be used to detect changes in species populations, help to focus future research on potential causes or habitat changes, and to initiate conservation efforts. A main objective of this 2009 project was to document population status and trends for migratory and breeding birds in the Slave Lake area through the successful completion of three core monitoring programs: Spring and fall migration monitoring including banding of 2311 birds, MAPS Breeding Birds Program including banding of 302 birds, and the Northern Saw-whet Owl Fall Monitoring Program. Since 1994, the LSLBO has banded over 52,000 birds and recorded the observation of almost 1 million birds. In addition, the LSLBO continues research work on the Canada Warbler Study and partnered with other researchers on a variety of boreal forest focused projects. To help increase public awareness of the important monitoring and research work the LSLBO society, they have created a strong education and community outreach program that continues to grow every year. During this project, LSLBO educators made contact with over 11,500 people from across Alberta, including over 3,500 students and teachers who participated in their curriculum based environmental education programs.

Deliverables/Results:

2009 Annual Report

2009 data is available to ACA upon request.

15 year Technical Report.

Warbler Newsletters

New Boreal Centre Facebook page has a link to the ACA.

Soil bioengineering and bank enhancement along the Oldman River

Lethbridge College

Grant: \$3,000

Project Code: 015-00-90-126

Project Status: New; Completed

The project objectives were to:

- 1.) to enhance and stabilize streambanks in key areas along the Oldman River;
- 2.) to mitigate soil erosion that is occurring at these key locations with native vegetation planting;
- 3.) to utilize these activities as a means to encourage public participation and awareness (urban setting);
- 4.) to utilize the site(s) as a hands-on, educational experience in bioengineering for college students in Environmental Science;
- 5.) to enhance cooperation between government and non-government organizations.

The project location was changed from the Helen Schuler Nature Centre to the Paradise Canyon Golf Course based on recommendations from DFO. Appropriate bioengineering methods were selected for the location. Live cuttings were collected and preserved. Brush and cuttings were utilized for brush layering and live staking techniques. Initiated and completed brush layering and live staking along one stretch of eroding bank utilizing several different aspects to these techniques (i.e. hormone, spacing of live stakes, latex coating, degree of brush extension). Lethbridge College established a standing relationship with the golf course to continue utilizing bioengineering techniques as a long standing method for bank stabilization such that no further public moneys for funding will be required.

Deliverables/Results:

Native cuttings of willow and red osier dogwood were harvested within 100km of the site for stabilizing the site.

Signage will be posted along the site to advertise the contributors and the sensitivity of the banks.



Photo: Lethbridge College Oldman River bank enhancement

Developing a private land conservation strategy for the Crowsnest Pass

Miistakis Institute

Grant: \$20,907

Project Code: 015-00-90-130

Project Status: New; Completed with short extension

The goal of this project was to build on the existing capacity and success of private land conservation in the Crowsnest Pass (CNP) by understanding through a collaborative approach the opportunities within the region for continued private land conservation, specifically in relation to wildlife movement across Highway 3. The private land assessment project identifies and relates land conservation needs and initiatives, with private land securement opportunities, gaps, and costs for the region. The project aimed to build partnerships between land trust organizations and develop a comprehensive land securement strategy that supports the broader conservation goals in the region, and is of use to all area land trusts. The strategies would be set in the context of understanding the opportunities and role of land management agencies. A series of interviews were undertaken with land trusts, government agencies and landowners from the CNP. Interviews were summarized and information synthesized to identify barriers and opportunities for conservation of private lands from the interviewed participants different perspectives. A number of themes were identified from the interview synthesis and were used to guide workshop discussions to explore a collaborative approach to private land conservation in the region. All participants were interested in participating in a workshop to explore the idea of a collaborative approach to private land conservation and a number of opportunities were identified if the groups took a coordinated approach. A report was released to participants prior to the workshop held April 26 – 27, 2010. The workshop was attended by Trout Unlimited, Alberta Conservation Association, the Nature Conservancy of Canada, Southern Alberta Land Trust Society, Alberta Fish and Game Association, Alberta Sustainable Resource Development – Fish and Wildlife, Alberta Sustainable Resource Development – Public Lands, the Municipality of Crowsnest Pass and Devon Energy. An agreement was reached to move forward designing a coordinated approach to conservation in the Crowsnest Pass.

Deliverables/Results:

A report summarizing the interview process and highlighting key workshop themes has been produced: Private Land Conservation Assessment in the Crowsnest Pass. Report 1: Summary of Interviews. Jan 2010. Prepared by Kim Good, Tracy Lee and Justin Thompson, Miistakis Institute

Riparian Area Management Improvements

Mountain View County

Grant: \$25,000

Project Code: 015-00-90-102

Project Status: Funded by ACA since 2005-06; Completed with extension

The goal of having a Riparian Areas Management Improvements Program in Mountain View County is to help improve or preserve

the health of our riparian areas. This program has helped improve water quality and wildlife habitat throughout the County. Producers are becoming aware of the importance of sustainable agriculture and beneficial management practices. ACA has helped fund thirteen exclusion and riparian pasture fencing projects this past year. Along with that Mountain View County helped to fund five off-site watering projects, three riparian fencing projects and one creek crossing. All of these projects are going to improve the riparian health of the project area. Livestock producers are keeping their cattle out of riparian areas by using off-site watering systems; this will reduce the amount of manure that has potential of entering water bodies and improve the water quality for future fish habitat.

Deliverables/Results:

There were thirteen riparian area management improvements completed this year in five different watersheds. This results in thirteen more producers who are aware of the importance of beneficial management practices and sustainable agriculture. Together these projects protect 11.7km of waterway.

Project profile sheets will be completed for each project that is funded which will be available to be printed for distribution.

The only unexpected results that came up were the number of producers postponing their projects because of the low cattle prices and high feed costs due to drought, resulting in the project requiring an extension.

Due to the severe drought and abnormal summer conditions Riparian Health Assessments for 2009 projects were delayed until the summer of 2010. The results from the riparian health assessments will be made available.

Projects are available for tours.

Effectiveness and compliance monitoring of Nature Conservancy of Canada Properties in Alberta

Nature Conservancy of Canada - Alberta Region

Grant: \$44,000

Project Code: 015-00-90-104

Project Status: Funded by ACA since 2006-07; Completed

The objective was to support and enhance NCC's conservation activities through annual monitoring of NCC properties. In 2009, NCC monitored 209 properties that conserve approximately 155,000 acres (62,700 ha) through the work of 16 Summer Conservation Interns, four of which were funded by the ACA. Under this specific project, NCC utilized the four Summer Conservation Interns for monitoring NCC properties in the Bow Natural Area, Porcupine Hills Natural Area, Castle Crown Natural Area and Crowsnest Pass Natural Area (44 properties totalling 31,600 acres). Monitoring for all properties was complete as of August 28, 2009. Monitoring each property was done in reference to the Baseline Inventory that is completed for each property after it is conserved by NCC. The biodiversity present on each property was monitored, including wildlife and plant species inventories, range and riparian health and other effectiveness measures. A monitoring report was produced for each property monitored. Utilizing the baseline inventory and subsequent monitoring reports, NCC is able to establish effectiveness of the conservation work in terms of securement activities (targeting critical

conservation targets) and ongoing stewardship of the properties for its conservation targets. Management plans are created from the information collected in the Baseline Inventory, with annual updates with the data collected during the monitoring process. Management plans are implemented by full-time Conservation staff as necessary. Data collected on species occurrence from the monitoring reports will be forwarded to the ANHIC and ASRD's FWMIS database. Finalized monitoring reports and revised management plans will be available by spring 2010. Landowner toolkit are still being distributed as an on-going activity and the website revised to include these documents and up-dates on the summer interns.

Deliverables/Results:

Monitoring reports have been produced for each property visited during the summer of 2009.

Management plans revised as necessary by the Conservation staff.

Data collected on species occurrence from the monitoring reports has been forwarded to ANHIC and ASRD's FWMIS database.

Website up-dated and email newsletter "The Leaflet" has been sent (in Sept and Oct 2009).

Blue-bird house project

Onoway and District Fish and Game Association

Grant: \$700

Project Code: 030-00-90-102

Project Status: Funded by ACA since 2006-07; Completed

The project goal is to involve as many of the local population as possible, both young and old, in the construction and location of the bird-houses. The project objective is to increase the blue-bird population in the area, and to make the general population aware of the need for these types of projects, in order to encourage the return of this species to the area. The local scout troop helped with construction, as well as some of the club members. In total 252 houses were built, and as in previous years, the two different patterns were used. The Onoway Public Library was designated, again this year, as the official pick-up location, and the houses went very quickly. The club is receiving increasingly more requests for bird-houses and information about their location every year. They get a lot of feedback from the general population regarding blue-bird sighting in the houses they have put up. A number of "blue-bird trails" have been established by interested people, and they keep us informed as to which style of house appears to attract more blue-birds. An unexpected result of distributing the bird-houses through the local Regional Library, is that many people were made aware of the services provided to the district by the library, and indeed were not even aware that there is a library in Onoway!

Deliverables/Results:

252 houses were built and distributed.

Partners in Habitat Development

Eastern Irrigation District

Grant: \$18,000

Project Code: 015-00-90-103

Project Status: Supported by ACA from 1998 to 2002; GEFC funding since 2005-06; Completed

The Partners in Habitat Development program is a long term habitat initiative developed to mitigate the loss of wildlife habitat in Southern Alberta agricultural regions. Degradation of wildlife habitat within the region can be attributed to many factors including urbanization, more intensive agricultural practices, irrigation infrastructure upgrades and increases in industrial activities. The PHD program works with agricultural producers, conservation organizations and watershed groups to create, preserve and restore wildlife habitat within Southern Alberta. This is achieved through habitat plantings, fencing projects, construction projects, and education programs. The emphasis of the PHD program is placed on creating habitat to benefit upland game birds, however, these activities also provide habitat to other wildlife species and environmental benefits such as decreased soil erosion, improved water quality and increased carbon sequestration. Results for activities completed this year are listed below. Monitoring of wildlife populations was ongoing through the year. A number of presentations were delivered and a number of displays were attended at various venues servicing a variety of audiences throughout the year.

Deliverables/Results:

47,934 shrubs and trees planted by PHD staff as field shelterbelts, riparian buffers or in block formations during spring 2009. A total of 15,973 shrubs and trees were planted by landowners who received assistance from the PHD in design and securement of stock.

A total of 4.9 kilometers of fencing installed to protect wildlife habitat.

Two landowners were provided with grass seed to establish 74 acres to permanent cover.

One landowner was provided with 15 acres of giant wild rye seed to establish a plot of winter cover.

Two landowners were assisted with establishment of drip irrigation systems (total of 2400 meters) on their newly planted habitat sites.

Follow-up meetings with existing landowners and initial contact with new landowners interested in the program is ongoing.

Invasive alien plant education, Alberta

Prairie Conservation Forum

Grant: \$2,500

Project Code: 002-00-90-120

Project Status: New; Completed

Invasive weeds are a growing concern in Alberta, with many species well established and taking over native ecosystems. The objective was to make Albertans aware of this growing problem by providing information about what invasive weeds are, the threat they pose, and what can be done to help prevent their spread. A weed display was taken to many events throughout Alberta. Several talks were also given and materials distributed. The result was increased weed awareness, knowledge of where to learn more, and a personal appeal to help be part of the solution.

Deliverables/Results:

The main deliverable for this project was to get the invasive plant display to 15 events throughout Alberta (such as the Cows and Creeks Best of Both Public Gathering and the Alberta Stewardship Network workshop); this has been completed. In addition to a few slideshows, weed posters, Weedwise gardening brochures and Telus Weed ID booklets were given out. For a full listing of the events attended, see the GEFCF project final report.

Small mammal wildlife habitat enhancement berms: Wildlife movement across pipeline rights-of-way

Rangeland Conservation Service Ltd

Grant: \$10,000

Project Code: 030-00-90-162

Project Status: New; Completed

The purpose of this project was to determine if construction of small mammal wildlife enhancement berms would provide a means of connectivity across newly cleared linear development features (e.g. pipeline or powerline rights-of-way). The specific objectives were: to assess physical use of small mammal wildlife enhancement berms using animal tracking; to determine which species are using wildlife enhancement berms (species or family); to compare use of berms to other rights-of-way without berms; to make recommendations to development industry for future clean-up activities; and to evaluate whether future study should occur to include larger animals or other habitat enhancements (e.g. plantings). Rangeland Conservation Service Ltd. (RCS) engaged in a trial study in which one season of winter tracking along pipeline rights-of-way was conducted where habitat enhancement berms had been constructed to determine if use by small mammals was occurring. Five wildlife berms were visited after three snowfalls between December 2009 and March 2010. Tracks from nine species (or to the level of family) were recorded during tracking (deer, horse, coyote, wolf, lynx, lagomorphs, squirrel, mustelid and microtine). With the exception of wolf tracks observed paralleling the pipeline right-of-way, all species were observed in the forest patches adjacent to the pipeline rights-of-way and represented the species assemblage that were present to possibly cross the rights-of-way. Tracks of deer, horse, coyote, lagomorphs, squirrel and microtine crossed the pipeline rights-of-way. Wolf and lynx tracks were observed on the rights-of-way but tracks did not cross from one

forest patch across the right-of-way into another forest patch. Weasel tracks were not observed on the right-of-way. Red squirrels, weasel and microtines were observed crossing between forest patches by directly crossing on the habitat enhancement berms.

Deliverables/Results:

A description of the project with acknowledgement of ACA as the funder was published in the Foothills Restoration Forum's newsletter in February 2010: Skilnick, J.L. 2010. Potential Movement Corridors for Small Mammals. Rangeland Conservation Service Ltd. The Hard Grass Advocate. 3(1): 6-7

A report entitled "Enhanced berms as movement corridors across pipeline rights-of-way in forest habitats for small mammals: Potential clean-up recommendations to industry." Rangeland Conservation Service Ltd, 18 pp.

RCS proposed to present the preliminary findings both to the Alberta Society of Professional Biologists and Canadian Association of Petroleum Producers (e.g. CAPP's Annual Environmental Issues Seminar).



Example of a small mammal berm constructed from organic materials (i.e., non merchantable timber). Photo: RCS.

Off the Creek Program

Red Deer County

Grant: \$25,000

Project Code: 015-00-90-128

Project Status: Funded by ACA since 2006-07; Completed

The goal of the Off the Creek Program is: to provide financial and technical resources to Red Deer County (RDC) landowners, to help them protect or restore riparian function on their lands. The Off the Creek program project objectives for 2009-10 were: 1) to support RDC landowners in protecting and/or restoring riparian habitat on their land, by providing financial and technical resources for their on-the-ground projects; 2) to protect and/or restore riparian habitat in RDC (this protection and/or restoration of the habitat came about through fencing, off-stream watering, establishing buffer zones, and other riparian management projects, completed by participating landowners); and to assist in the development of a riparian management plan for each of the completed projects. These objectives were met by: promoting the Off the Creek Program to landowners directly via one-one conversations, and passively via print media and displays at public events. RDC then worked with interested

landowners in developing their funding applications, which were on-the-ground action plans about what they'd like to do to protect/restore riparian function on their land, and how much those actions would cost. A committee of the Red Deer County Agricultural Services Board then decided how much Off the Creek Program funding each landowner would receive. The landowners completed the projects, with technical assistance as needed from the Conservation Coordinator. The process of a long-term relationship and development of long-term riparian management plans for the projects was begun.

Deliverables/Results:

21 projects were initiated by 18 landowners, throughout Red Deer County.

286 acres of riparian area are now being protected or restored by these 21 projects.

1488 Animal Units are now "under new, sustainable management approaches", when it comes to their access or use of these riparian acres. In addition, one project's anticipated outcome is to reduce the impact of snowmobilers on a river bank/riparian area. Another project's anticipated outcome is a stabilized bank, reducing the effects of erosion and downstream siltation.

For every Off the Creek (i.e. "public") dollar that went to voluntary, on-the-ground action by landowners, those landowners contributed almost \$2 (in cash, time, and equipment). The total value of the 21 projects in 2009-10 was \$130,000 (not including the human resources contributions made by RDC). Of that, the ACA contributed \$25,000, a 5:1 return on ACA's investment.

An unexpected result from the project is that two of the projects were completed without any Off the Creek dollars being spent. In one case, a landowner requested funding for a pump to pump water from a new well he was drilling, so that he would no longer have to water his cows out of a creek. He ended up with an artesian well, so he did not need a pump, and did not need Off the Creek program funds. In the other case, the landowner was looking for funding to



Solar panel. Photo: Red Deer County

stabilize his creek bank with "hard engineering" methods (i.e. riprap). By working with the landowner, it was decided that he would try a "soft engineering" method: bioengineering. In the end, the materials (willow cuttings) and labour were the only costs associated with this project, which were contributed by the landowners, and by staff from RDC and Agriculture and Agrifood Canada. In both cases, promotions of the Off the Creek Program were what initiated the conversations that ultimately led to the actions.

Between April 2009 and March 2010, Off the Creek Program advertisements have appeared in the County News ten times, and ten articles in the County News have discussed the Off the Creek Program (County News circulation ca. 10,000, published once per month)

An article about the Off the Creek Program ran in the November 2009 edition of Alberta Beef Magazine.

Between April 2009 and March 2010, the Off the Creek Program has been displayed/featured, with staff, at many public events e.g. the Waskasoo Creek Info Night (Apr 09) and the Grey Wooded Forage Association AGM (May 09) to name a few.

Off the Creek Program Brochure (distributed at above public events and to interested landowners who call in).

Off the Creek Program Updates (No. 1 distributed in spring 2009, No. 2 distributed in August 2009, No. 3 – Year-in-Review, distributed in March 2010).

Off the Creek Program information on the Red Deer County website.

Moths and butterflies of Medicine Hat and area

Society of Grassland Naturalists - Medicine Hat Interpretive Program

Grant: \$8,000

Project Code: 030-00-90-165

Project Status: New; Completed

The project's objective was to gather information about the local moths and butterflies and use it in preparing and presenting interpretive programs that will help the public develop a better understanding, encourage involvement and the appreciation our natural world. The survey of Moths of Medicine Hat and area has been done for 2009. Information and photographs of the specimens found here in 2009 were sent to Strickland Museum to be part of the provincial inventory. The public enjoyed the three interpretive lead programs and as a result many volunteers that continued to help with this project. Volunteers who helped in the capture and cataloguing of moths were willing to help with this year's survey as well. Team Home Depot volunteered their time to complete the wild flower and butterfly garden planting beds. This year the planting beds will have interpretation to continue the public awareness of native plants and butterflies. Native species of wild flowers provided by the City of Medicine Hat Parks and Outdoor Recreation Department will be used in the garden planting beds.

Deliverables/Results:

Volunteers & part time staff were recruited and two training sessions were held by April 20, 2009.

Survey protocol and schedules were established by April 30, 2009.

Survey of local moths carried out from May to October, 2009.

Analysis of results was done from August 2009 through January 2010.

Data was offered to Strickland Museum, as it has been completed.

Flowerbeds with native species were planted May 2009, monitored and photographed summer & fall.

Development of backyard habitat interpretive materials for moths & butterflies was completed by March 31, 2010.

Planning for other interpretive media was done by March 31, 2010.

McLennan Pond fishery enhancement project (Dock structure installation)

Town of McLennan

Grant: \$5,000

Project Code: 020-00-90-152

Project Status: New; Completed

The main objectives of this project were: to promote utilization for angler harvest of the annually stocked rainbow trout (stocked annually by ACA/Province) in McLennan Pond (aerated since 2003); to meet the growing demand for a sustainable 'put and take' fishery; and to alleviate some of the fishing pressure on some of the neighbouring fishing lakes and rivers. The installation of dock structures improves accessibility of the pond, improves safety, and permits a more enjoyable angling experience (especially for fly fishing since the banks are steep and/or impeded by shoreline willows). The fishing dock has been installed and walking trails to the dock have been built. Gates at the walking trail entrances have been opened and marked for safety and better access.

Signs, to include the ACA logo, will be ordered for the entrance of the campground as well as at the site. A publication will be put in Town of McLennan tourism pamphlet and a new publication from Economic Development to acknowledge ACA funding of the dock. McLennan Pond has been registered with the Alberta Fishing Guide for inclusion in the 2010 edition. The site will be promoted at the Smoky River Visitor Information Center Tourism booth in Falher.

Deliverables/Results:

The Fishing dock is installed and completed.

Walking trails to the dock have been built.

Late fall fisheries investigation in diversion canals of Southern Alberta

Trout Unlimited Canada

Grant: \$7,000

Project Code: 020-00-90-116

Project Status: Funded by ACA since 2005-06; Completed

Numerous irrigation diversion structures exist on river systems and on-stream reservoirs in southern Alberta. However, most of these structures do not have operable fish exclusion devices to keep wild sportfish in our rivers from entering diversion canals. Wild sportfish that enter irrigation canals are generally lost to the fishery when canal structures prevent fish from returning to the river system. Until Trout Unlimited Canada's (TUC) Fish Rescues began in 1996, the extent of the problem was very poorly documented and received little attention. The project objective was to safely remove fish from

these canal systems by use of various collection techniques, and then replace them into their home waters. A small staff of junior biologists was hired and trained in how to properly capture, identify and work with a variety of species. Another objective that has evolved over the course of this project is to educate volunteers of all ages about issues facing these species. It also provides a teaching opportunity to engage these volunteers and allows us to show them a wide variety of species, how to properly handle them and explain each species' role in the ecosystem. Once again all collected fish were identified, counted and measured (depending on species). The final results included 437 volunteers helping to save over 30,000 fish across 11 field days despite the poor weather.

Deliverables/Results:

The results of the project included 437 volunteers collecting 30,503 fish over 11 days.

The 2009 final report "Late fall fisheries investigations in diversion canals of southern Alberta, 2009. Trout Unlimited Canada Technical Report No. AB-016" has been completed and it currently can be found under the "Technical Reports" section on our website (www.tucanada.org/reports/AB-016_FishRescue_2009.pdf)

East Slopes Fishery Enhancement Program

Trout Unlimited Canada

Grant: \$31,000

Project Code: 020-00-90-155

Project Status: This project funded by ACA since 2008-09, Quirk Creek component was funded in the past by the GEFCF; Completed

Much of the landscape in Alberta's East Slopes has been impacted by human activities. Many of the small creeks and rivers in these areas play a critical role for local fisheries and the greater ecosystem. They often are nurseries and rearing habitat for the larger rivers downstream. Therefore TUC developed this project to address some of these issues with locals that reside in these areas in hopes to implement small scale changes on the ground that benefit these systems, now and into the future. The goal of this project was to develop and implement unique rehabilitation efforts in Alberta's East Slopes region, specifically Drywood Creek, Bill Griffiths Creek, and Quirk Creek. To accomplish TUC placed emphasis on a few projects to restore, rehabilitate and study areas impacted by differing land use activities. A major component of these projects included engaging locals with educational programming providing tools for them to make informed decisions on their landscape. TUC believes that this was a very fruitful endeavour with exceptional buy-in from the community. Community awareness, enhancement projects and localized research were utilized to develop this effort. The project deliverables included: reports on population estimates completed in the Drywood Creek watershed; reports document all fencing projects along the Drywood Creek watershed; a report documenting the enhancement efforts along Bill Griffiths Creek including updated inventory work and a photo log of the 2009 work; a report of the Quirk Creek surface water quality monitoring project.

Deliverables/Results:

Drywood creek project in 2009:

One population estimate on Yarrow Creek

One population estimate on Drywood Creek

Four miles of fencing along the Drywood Creek (on two producers properties)

Two off-site water systems were constructed and installed along the Drywood Creek

Three portable calf shelters were built and placed on site (used as shelter now that cattle have been removed from the riparian vegetation)

Two educational events on the creeks focused at youth, students and local residents- these hands on experiences included discussions on the environment, handling fish, and BBQ's.

Reports: Inventories from the Drywood Creek and Yarrow Creek drainage "Drywood and Yarrow Creeks – Fisheries Assessments, 2009. Trout Unlimited Canada Technical Report No. AB-017" (www.tucanada.org/reports/AB-017_YarrowCk_2009.pdf)

Bill Griffiths Creek Project in 2009:

Completed electroshocking of two sections of the creek

Installed hiding cover habitat in eight locations of the creek

Hosted educational event for locals including a tour of the area and a BBQ.

Report documenting the enhancement efforts along Bill Griffiths Creek including updated inventory work and a photo log "Bill Griffiths Creek habitat enhancement project, 2009. Trout Unlimited Canada Technical Report No. AB-018" (www.tucanada.org/reports/AB-018_BillGriffiths_2009.pdf)

Quirk Creek Project in 2009:

Two population estimates along the creek

Worked with students from the U of C on a detailed mark / recapture study

Administered fish identification quiz to anglers to participate in the ongoing research project along the creek

Hosted five supervised angling research excursions into the Quirk Creek valley, introducing new anglers to the study (16 anglers)

Expanded the stewardship project to include five other local creeks
19 unsupervised trips into Quirk Creek

Population estimates from Quirk Creek: Earle, J.E., A.J. Paul, and J.D. Stelfox. 2010. Quirk Creek population estimates and one-pass electrofishing removal of brook trout – 2009. Unpublished report, Fish and Wildlife Division, ASRD, Cochrane, Alberta. (www.tucanada.org/reports/AB-020_QuirkCreek_2009.pdf)



Bill Griffiths Creek Treatment section 2009. Photo: TUC

Reports produced by partnership agencies detailing the brook trout removal efforts of Quirk Creek: Earle, J.E., J.D. Stelfox and B.E. Meagher. 2010. Quirk Creek brook trout suppression project – 2009. Unpublished report, Fish and Wildlife Division, ASRD, Cochrane, Alberta. (www.tucanada.org/reports/AB-021_QuirkCreek_2009.pdf)

Bow River riparian fencing project

Trout Unlimited Canada - Bow River Chapter

Grant: \$10,000 (not disbursed)

Project Code: 020-00-90-114

Project Status: Funded by ACA since 2007-08; Project did not go ahead

This project intended to address the severe bank degradation, soil compaction, and slumping caused by cattle throughout much of the Bow River watershed, but specifically between Calgary and Carseland. In response, the Bow River Chapter of Trout Unlimited devised a project that will manage cattle grazing activities along the river for the benefit of the river's ecosystem, recreational users, and landowners alike. TU Bow River Chapter's goal with this project was to work with each landowner to help develop and implement the best grazing management strategy for each specific property. Although the project had a very positive response from a few landowners for this past year with regards to the project, none of them were able to commit to having the project done this year. In addition, TUC - BRC received some opposition to the project from one landowner on the north side of the river. In addition to these difficulties, the project managers have found it increasingly difficult to find the time to pursue the landowners and administer the project. The project did not proceed and grant money was not disbursed.

Deliverables/Results:

None, as the project did not go ahead as planned.

Urban deer project

University of Alberta Chapter of the Wildlife Society (UACTWS)

Grant: \$1,500

Project Code: 030-00-90-149

Project Status: New; Completed

The project goal is to study deer living in an urban environment, and seek ways to mitigate negative human-wildlife encounters. In particular, UACTWS is studying deer movements within an urban landscape with the aim of reducing deer-vehicle collisions. To this end, the main activity is a radio-telemetry program, in which deer are captured, collared, and radio-tracked within the city limits. These activities not only further our knowledge of deer, but provide the students that run the project with valuable research experience and training. In total five VHF radio collars were purchased in the fall of 2009 with the funds supported by the ACA. The 2010 trapping season was successful in collaring two female white tailed deer, adding to the two collared in 2009. Students were regularly getting telemetry points on the four deer collared. This will continue for future years. These four deer are extensively using the river valley, sometimes even in close proximity to each other. The UACTWS are strongly encouraging the use of this data, along with track/scat analysis, to further study habitat use.

Deliverables/Results:

Publication of results in peer-reviewed journal is in revision.

Project results were presented as part of an undergraduate thesis (by Rob Found) in April, 2009. It was chosen best ecology undergraduate research project for 2008-09.

FWMIS site will be updated in Summer 2010, with complete telemetry data.

Project was presented at the 2009 International Parks Forum in Canmore, March 2009 (by Rob Found)

New deer traps were constructed in 2009, and old ones repaired, and used winter 2009 and 2010 trapping seasons.

Project has had impacts outside of Alberta as Winnipeg, MN urban deer project has been consulting with the UACTWS during their own planning.

ACA support is acknowledged in all signage around trapping locations and on the UACTWS website highlighting the project (www.ualberta.ca/~uactws)

Evaluating the abundance of the Western Grebe (*Aechmophorus occidentalis*) in Alberta

University of Alberta (Dr. M. Boyce)

Grant: \$3,000

Project Code: 030-00-90-146

Project Status: New; Completed

Not only is the western grebe in decline in the province of Alberta, but their listing as a Species of Concern warrants special attention. Continued research can help provide the necessary basis for appropriate conservation strategies. Research has been done already to assess where the western grebe is likely to occur in Alberta's NE Boreal region, but further evaluation is needed to validate these models and to assess what changes in habitat may be responsible for this decline in abundance, and in some cases, total loss of colonies. The goal of this project was to assess the decline of the western grebe relative to features of its habitat. The main activities included shoreline surveys to characterize western grebe habitat on lakes on which grebes have been known to exist in the past. The researcher also conducted both occupancy and abundance surveys for western grebe. It was determined that western grebes were more likely to persist (i.e. continue to occupy historical lakes) on lakes with little surrounding forest, increased amounts of bulrush along the shoreline (a habitat requirement) and increased development surrounding the lake. The relationship with development is attributed to a preference by both grebes and humans for large, fish-bearing lakes. These findings have been presented at multiple scientific conferences and have been part of a successfully defended MSc. thesis.

Deliverables/Results:

Data from this project has been made available to project partners (ASRD).

Results concerning detectability were shared as an oral presentation to the Canadian Society of Ornithologists (21 August 2009) and to the thesis committee on this project. Results concerning habitat effects on western grebe were presented at the Wildlife Society Meeting and to the Canadian Society of Environmental Biologists in fall 2009.

Final analyses were completed in winter 2009/2010, and overall results were successfully defended as part of a MSc. thesis on 3 March 2010.

Manuscripts will be prepared to submit to peer reviewed conservation biology journals in the near future (summer 2010).

Management of earthworm invasions in Alberta

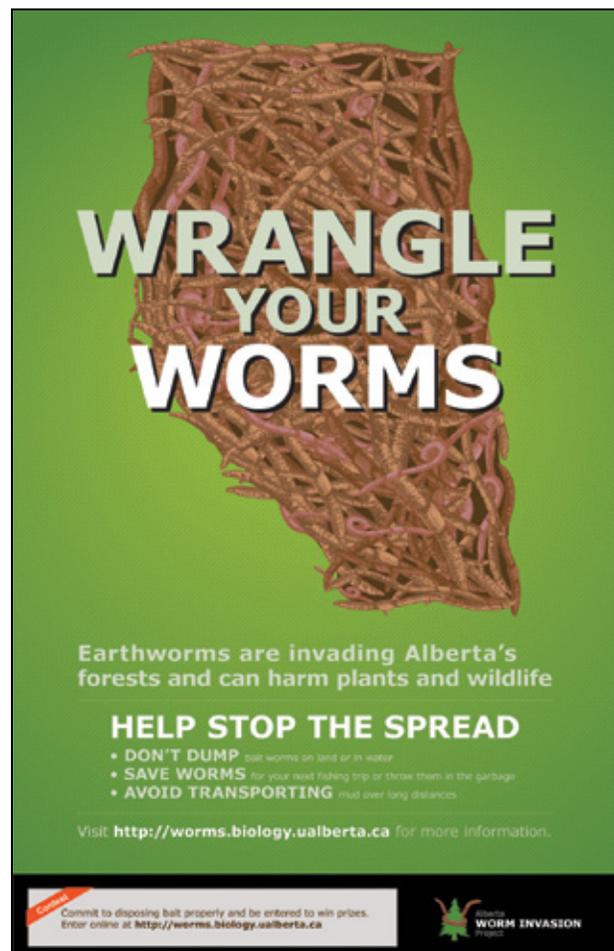
University of Alberta (Dr. E. Bayne)

Grant: \$3,000

Project Code: 030-00-90-148

Project Status: New; Completed

Non-native earthworms are currently invading forests in Alberta and can have significant negative impacts on these systems. Their previous research has identified bait abandonment by anglers as a key pathway by which earthworms are introduced to forested systems. Because earthworms are extremely difficult to remove once they invade, prevention of invasions via awareness programs is believed to be the most effective method of control. Therefore, the main objective of this project was to develop a public awareness/education program to discourage anglers from dumping their earthworm bait. To address this objective, they created posters, FAQ sheets, and a website. As well, ASRD and ACA surveyed 2236 anglers about bait



use and awareness of earthworm invasions. These surveys indicated that only 15.8% of the anglers were aware that earthworms were not historically found in most of Alberta. As well, out of the anglers who used earthworms as bait, 40% dumped their bait on land or in the water. These results suggest that this project is needed and hopefully significant changes in those percentages will occur after this program has been running for some time. The secondary objective was to examine the impacts of non-native earthworms on leaf litter decomposition and white spruce (*Picea glauca*) growth. To achieve this objective, a mesocosm experiment was conducted in the greenhouse. Earthworms did not have a significant effect on white spruce growth, white spruce biomass, or mycorrhizal colonization. However, there was a significant reduction in the thickness of the leaf litter layer when earthworms were present, as well as a significant reduction in bulk density of the organic layers. It is possible that the time length of this experiment was too short for effects to be observed on white spruce seedlings. However, studies of similar lengths have reported strong impacts of earthworms on plants. The observations of significant impacts on the leaf litter layer also suggest that the length of the experiment was not an issue and that white spruce is likely not strongly influenced by earthworm invasions. Further research on other boreal plant species is needed to examine whether these species are less likely to be impacted by earthworm invasions than those found in hardwood forests.

Deliverables/Results:

Posters/FAQ sheets have been designed and distributed to some stores in Edmonton. The majority are being distributed this spring by Walleye Master Tackle & Bait with their bait shipments to stores across Alberta.

The project website is located at worms.biology.ualberta.ca/

Results of the greenhouse experiment are being written up for submission to a peer-reviewed journal.

ASRD is also now planning to include earthworms in their ads about non-native species in the Alberta Guide to Sportfishing Regulations and on signs they are planning to post near some boat launches. As well, Michael Short from Let's Go Outdoors did a TV clip and radio interview about the project, which aired just prior to the start of the fishing season.

Russian thistle (*Salsola kali*) impact on ungulate habitat in the montane grasslands of Jasper National Park

University of Alberta (Dr. A. Naeth)

Grant: \$8,500

Project Code: 030-00-90-123

Project Status: Funded by ACA since 2008-09; Completed

Invasive plant species are a threat to native ecosystems, and are a particular concern in national parks which have been established for the protection of native ecosystems. In Jasper National Park, Russian thistle (*Salsola tragus* L.) has invaded areas of native montane grassland, important to the winter survival of bighorn sheep (*Ovis canadensis* Shaw). Russian thistle in Jasper National Park is near the northern limit of its current range. Past research on this species and its management has been conducted in agricultural systems or in natural areas in arid regions of the United States. The goal of this research was to provide improved understanding of the biology and management of Russian thistle in Jasper National Park. Specific objectives were to investigate the biology of Russian thistle including its movement during wind dispersal, seed production, and germination and growth response to soil texture, litter depth and climate; to assess the effect of wildlife grazing on Russian thistle establishment, spread and persistence; and to determine the effectiveness of integrated weed management techniques for controlling Russian thistle. Field and greenhouse studies were implemented in 2008 and completed in 2009. Russian thistle in the study area occurs in two distinct habitats, grasslands and naturally disturbed sand dune areas. Russian thistle plants in grassland habitats were significantly smaller, produced less seed and traveled less distance during winter dispersal. Russian thistle travelled up to 4.2 km during the winter. With soil seed contact, litter depth did not inhibit performance or survivability; without soil contact, thick litter reduced germination and plant performance. Russian thistle responded positively to increased greenhouse temperature and drier conditions. Seven control treatments involving herbicide, types of seeding mixes, hand pulling and grazing exclusion were investigated. Grazing exclusion was the best field management option, increasing litter and biomass of native plant species, while reducing Russian thistle density and biomass.

Deliverables/Results:

Quantitative data on Russian thistle infestation within the lower Athabasca Valley of Jasper National Park has been collected and analyzed.

Experimental plots for longer term assessment of habitat recovery and use have been established.

Master of Science (MSc) thesis was completed in December 2009.

Results were presented to the Jasper Leaseholders Working Group in December 2009.

Hard copy of thesis delivered to Parks Canada.

Publication in a peer reviewed scientific journal in 2010 (in progress).

Floristic survey of Kootenay Plains and Coyote Lake Nature Sanctuary

University of Alberta (Dr. J. Hall)

Grant: \$13,400

Project Code: 015-00-90-122

Project Status: New; Completed

The main objective of this study was to conduct thorough floristic surveys of two ecologically important areas in Alberta: (1) Kootenay Plains including the Kootenay Plains Ecological Reserve, the Thompson Creek and Crescent Falls provincial recreation areas, as well as selected areas outside these parks; and (2) Coyote Lake Nature Sanctuary, a Nature Conservancy of Canada (NCC) Property in central Alberta. The specific objectives for each area were to (a) collect specimens; (b) identify collections; (c) generate species lists for each locality; (d) add collection information to their existing, searchable and online database; and (e) deposit specimens in ALTA and with Nature Conservancy. In total, 818 vascular plant specimens were collected and identified to species. All collection information is data-based and accessible at museums.ualberta.ca/vascularplants/index.aspx. In addition, species lists have been compiled for each location. The vast majority (90%) of the specimens are mounted and labelled with duplicate specimens set aside for NCC. Through these collections, the species list for Coyote Lake has been expanded by 40%. Furthermore, the project has contributed substantially to the documentation of 240 species from the Kootenay Plains. Both lists include rare and invasive species. These specimens are crucial for conservation efforts because they represent irreplaceable permanent records of species in these areas at specific times. Moreover, they are publically available for building distribution maps, documenting invasive species and subsequent impact on native species.

Deliverables/Results:

Permanent records of all reproductive vascular plants from the two target regions, housed in the Vascular Plant Herbarium: 818 collections.

Data-based specimen information for all collections, was added to their on-going, publically available database: 818 completed.

Documentation of rare plants, which includes a report to the Alberta Natural Heritage Information Centre

Report of survey and species lists to the Provincial Government Parks and Protected Areas Central Region

One student trained in plant collecting, herbarium specimen processing, data basing and plant identification.

Predicting the spread of CWD from Saskatchewan into Southern Alberta

University of Alberta (Dr. E. Merrill)

Grant: \$16,357

Project Code: 030-00-90-164

Project Status: related project supporting CWD management funded in 2006-07 & 2007-08; Completed

Chronic wasting disease (CWD) is a fatal transmissible spongiform encephalopathy (TSE) occurring in North American cervids that is now found in deer in Alberta. Hunter harvest data from 2002-2007 from Saskatchewan was used and the results of disease testing to identify CWD-positive and negative deer. In comparing CWD-positive deer to CWD-negative deer the researcher found CWD-positive deer were more likely male mule deer and deer killed near a location from which a CWD-positive deer was previously harvested had a high probability of having the disease. When they controlled for species, sex and distance to known CWD sources, animals harvested along the Saskatchewan river, farther from small drainages, in more rugged country, and within areas with a high extent of agricultural fields within three km were more likely to have be CWD-positive. These environmental factors were formulated into a "landscape relative risk factor" or RRL to be input into a spread model. The researcher also found >50 deer harvested per 9-km² grid cell was necessary to detect the presence of a CWD-positive deer in hunter killed samples. Composition of the kill (species and sex) increased the probability of detecting the disease both this effect decreased over time, which they attributed to increasing prevalence of CWD in the study area over time. The probability that a deer with CWD would be harvested from a 9-km² grid cell with no previous record of a CWD-positive deer harvested from the cell would occur in the next year depended on the number and composition of the harvest, the average distance of the cell to all grid-cells from that which a CWD-positive deer had been harvested, and the risk of the disease based on landscape characters, i.e., RRL. Predictions of CWD spread are in progress and final results will be available in July.

Deliverables/Results:

Three presentations on the project have been given to date: Third International CWD conference in Park City, UT in July 2009; Alberta-Saskatchewan Biologist meeting in Lloydminster, SK Sept 2009; Alberta Chapter of The Wildlife Society Annual meeting, Red Deer, AB March 2010

A manuscript to be submitted to the *Journal of Wildlife Management* is in preparation. Expected submission is July 2010.

Summary of results will be provided in July 2010 as part of the Final Project Report for the Northern Border CWD-Deer Study, which will be provided to all funding partners. The project is available at ursus.biology.ualberta.ca.

Effects of roads and road access management on grizzly bear (*Ursus arctos*) habitat use and movement.

University of Alberta (Dr. M. Boyce)

Grant: \$18,500

Project Code: 030-00-90-116

Project Status: Funded by ACA since 2008-09; Completed

The goal of this project is to examine the effects of roads and access management on grizzly bear habitat use and movement and assess the utility of access management as a conservation strategy. The objectives are to 1) examine grizzly bear habitat selection and movement near roads, 2) examine these relationships during times of different road access 3) investigate the effects of scale on these relationships, 4) evaluate the effectiveness of gating roads on seasonal human use of the roads, and 5) develop predictive models that will aid managers and planners. Main activities included deploying GPS collars on grizzly bears and monitoring them, remotely downloading GPS data from collars and visiting locations on the ground to document activity and the presence of food items, and statistical modeling of habitat use, movement, and grizzly bear-human conflict. Field work for this project concluded in October of 2009. All GPS collars were successfully deployed and data have been recovered. Over 250 used grizzly bear locations and 250 random locations have been visited on the ground. Behaviours have been documented and the presence or absence of key bear foods was determined. At this point they are analyzing data and preparing results for publication.

Deliverables/Results:

One paper has been accepted for publication in the Philosophical Transactions of the Royal Society B. This paper examined the correlations in movements over time for grizzly bears, elk, cougars and wolves. Data from the GPS collars deployed on grizzly bears was used as part of this study. ACA was acknowledged as a funder. Other pertinent results are currently being prepared for publication.

Results were presented at the Wildlife Society Conference in Fall 2009, as well as the 3rd International Conference on Bear-People Conflicts held in Canmore in Fall 2009. Further results were presented at the Alberta Chapter of the Wildlife Society Conference on March 13th 2010. ACA was acknowledged as a project funder at all presentations.

The researcher also intends to provide managers, and planners with models capable of predicting changes in grizzly bear habitat use and movement, with the management of road access, in 2010.

Ecology and behaviour of grizzly bears (*Ursus arctos horribilis*) in response to open-pit mining, and implications for management and conservation

University of Alberta (Dr. M. Boyce)

Grant: \$20,000

Project Code: 030-00-90-154

Project Status: Funded by ACA since 2008-09; Completed

The goal of this project is to investigate the effects of open-pit mining on grizzly bear ecology and behaviour by focusing as case study on active (Cheviot) and reclaimed (Luscar and Gregg River) mines in west-central Alberta, south of Hinton. Effects of mining on bears will be analyzed during different mining phases: before vs. during active mining, and separately for reclaimed mines, because bears are likely to respond differently to these stages of development. The project uses pioneering technologies (camera and pedometer devices attached to GPS radiocollars) to acquire unprecedented fine-scale data that allows understanding of bear behaviour on and around mine sites. These technologies will allow informed decisions on bear and habitat conservation and restoration through environmental mitigation, management and planning of open-pit mining activities. The objectives of this study are to understand bear movement (through GPS radiocollars) and foraging (through investigations of GPS location clusters and bear scat analysis) in relation to mining activities and human use of recreational trails on and around mine sites (from trail camera data). Data and statistical inferences from this project will allow formulation of management/planning strategies that enable decrease in probability of human-bear conflict around industrial sites, and ensure bear population recovery. Notably, this study quantifies bear impact on ungulates and thus will allow application of ungulate harvest quotas that recognize the important role of bears as predators. Close collaboration with mining companies and direct relevance of this research to the Alberta Grizzly Bear Recovery Plan will ensure the data, statistical models and suggestions from this study will influence mine mitigation and future planned development in the province, to accommodate the interests of Alberta hunters and other outdoorsmen. The project has generated substantial interest from a variety of organizations many of which have decided to join the project as partners. Data acquired in the first 2 years of fieldwork (2008 and 2009) have revealed some interesting patterns listed briefly below.

1. All radio-collared bears used reclaimed mines in spring/early summer.
2. Individuals varied in number and biomass of ungulates consumed (some bears made many kills but exclusively calves, other bears made fewer kills but predominantly adult ungulates, whereas a few bears were almost exclusively vegetarian).
3. Uncollared grizzly bears were photographed by trail cameras on mine trails that received heavy use by people, suggesting that human-bear conflict potential is high
4. There was substantial variation between 2008 and 2009 in bear movements and behaviour. Bears radiocollared in 2008 mostly used areas away from mines, often high in the mountains, whereas bears radiocollared in 2009 often used areas on reclaimed mines and in the Foothills, having proportionally much more meat in their diet than mountain bears.

Given variability recorded in bear behaviour in 2008 and 2009, it is important that fieldwork extends into 2010 as well, in accordance with the original project plan.

Deliverables/Results:

In 2009, most effort has been invested into data collection therefore the most significant deliverables are represented by data collected during the study.

Oral presentations:

The Wildlife Society Annual Meeting and Conference, Monterey, California (September 20-24, 2009); 'Autocorrelation patterns determined by ecology and behaviour' [Boyce M.S., Cristescu B., Knopff K., Morehouse A., Northrup J.M., Pitt J., & Stenhouse G.B.]

Society for Conservation Biology Annual Meeting and Conference, Beijing, China (July 11-16, 2009); 'Finding harmony between grizzly bears and humans using access management' [Boyce M.S., Chetkiewicz C.-L.B., Cristescu B., Nielsen S., Northrup J., Roever C., Stenhouse G.B.]

Western Black Bear Workshop, Reno, Nevada, USA (May 18-21, 2009); 'Bear movement in human-altered landscapes' [Northrup J.M., Cristescu B., Stenhouse G.B., Boyce M.S.]

Poster presentations:

Alberta Chapter of the Wildlife Society Annual Meeting and Conference, ACTWS, Red Deer, Alberta, Canada (March 12-13, 2010); 'Grizzly bear use of ungulates on and around open-pit mines'; prize for best poster [Cristescu B., Stenhouse G.B., Boyce M.S.]

The Wildlife Society Annual Meeting and Conference, Monterey, California (September 20-24, 2009); 'Grizzly bear movements and predictions from resource selection functions' [Cristescu B., Northrup J.M., Stenhouse G.B., Boyce M.S.]

The Wildlife Society Annual Meeting and Conference, Monterey, California (September 20-24, 2009); 'Grizzly bear movement decisions in human-altered landscapes' [Northrup J.M., Cristescu B., Stenhouse G.B., Boyce M.S.]

Journal articles:

Boyce M.S., Pitt J., Northrup J.M., Morehouse A., Knopff K., Cristescu B. & Stenhouse G.B. – Autocorrelation patterns determined by ecology and behaviour. *Philosophical Transactions of the Royal Society of London. B*. In press

Schwab C., Cristescu B., Boyce M.S., Stenhouse G. B. & Ganzle M. (2009) Bacterial populations and metabolites in the feces of free roaming and captive grizzly bears. *Canadian Journal of Microbiology*, 55, 1335-1346.

Popular articles:

Cristescu B. & Boyce M.S. (2010) Grizzly bears and mining development. Rationale and objectives of a study on the effects of industry on bears. Newsletter of the International Association for Bear Research and Management. In press

Cristescu B. & Boyce M.S. (2010) Grizzly bears as predators. *Alberta Outdoorsmen*, January Issue.

Statistical analyses for two other manuscripts are currently underway (to investigate bear movement choice and relate gut microflora from scat to bear diet respectively), but the bulk of publications will occur in 2011-2012.

Website:

The project-dedicated website (www.ualberta.ca/~cristesc/grizzly_project.htm) has been regularly updated. The purpose of the website is to provide an overview of the project in layman's language. In addition to accessing the information posted on the website, project partners receive regular updates on project progress in the form of interim and/or yearly reports.

Lynx cycles and barriers: Evaluating dispersal versus climate change in flatlining populations

University of Alberta (Dr. M. Boyce)

Grant: \$20,000

Project Code: 030-00-90-155

Project Status: New; Completed

This project focuses on mechanisms driving the ten-year population cycles of the Canada lynx (*Lynx canadensis*) in southern portions of their range by evaluating the predator dispersal versus the seasonal-forcing hypothesis. The *predator dispersal hypothesis* presumes that southern cycles were not locally driven, but rather were the effect of swamping by immigrating individuals. As a result, the disappearance of cycles in the southern range could be a product of barriers to dispersal produced by human-induced habitat fragmentation. An alternative hypothesis, the *seasonal-forcing hypothesis*, depicts key aspects of seasonality as sustaining the ten-yr oscillator. Consequently, weakened seasonality resulting from climate change could be reducing the seasonal forcing that sustains regular ten-year cycles in the southern portions of the range of lynx.

Currently progress has been achieved on all of the project's objectives.

1. Nearly completed quantitative documentation of trapping records showing how the ten-year cycle breaks down at southern latitudes.
2. Have done a preliminary analysis using their first set of DNA samples (n=91) and found that no barriers to gene flow are evident using these locations. However, this may be a product of insufficient sampling, as their final sample size will be quite large. Additionally, alternative programs such as GENEPOP and SPAGeDI might give a better indication of the more subtle dynamics in this system.
3. Have seven radio-collared lynx, which are all transmitting data through the ARGOS satellite system to the project's email. They have found evidence of the longest recorded lynx dispersal (1800 kms) made by a lynx originally from BC, which terminated near their field location. As a side note, they have found that lynx in the Central Eastern Slopes area depend on larger alternative prey than previously documented in the species' literature.
4. In the process of narrowing the index to characterize seasonality in lynx.

In addition to the results and field progress, they have maintained a high level of outreach and environmental education.

Deliverables/Results:

Five collaborative meetings with the Alberta Trappers Association locals, three collaborative meetings with SRD, three formal presentations at Trappers' Conventions, several informal presentations at Red Deer River Naturalists and other local outreach venues, three educational articles in Trapper's magazines and the Alberta Outdoorsmen magazine, and pertinent information about the project

and lynx biology/behaviour has been communicated on the project website..

Project technical reports (Sept. 2010 and Dec. 2010).

Access to the project's compiled fur harvest database documenting detailed lynx harvest from the pre-1920s via the Alberta Fisheries and Wildlife Management Information System, which will assist in the statistical analysis of furbearers (September 2010),

Peer-reviewed publications planned for April 2010, August 2010, January 2011, October 2011, December 2011.

Long-term vegetation and population monitoring for managing the Ya Ha Tinda elk herd

University of Alberta (Dr. E. Merrill)

Grant: \$20,000

Project Code: 030-00-90-134

Project Status: Funded by ACA since 2008-09; Completed

Since 2001, Drs. Hebblewhite and Merrill in collaboration with project partners have monitored 169 radio-collared adult female elk and one-two wolves in two-three wolf packs/yr to determine how changes in adult elk population dynamics are affected by human (harvest, habitat management), natural factors (predation, climate), and natural vegetation dynamics. Alberta Fish & Wildlife also have collected long-term population data since 1972 on population size and calf recruitment. In these efforts, focus was on understanding the changing migratory behaviour of elk. Combined, these studies of elk population dynamics at Ya Ha Tinda (YHT) represent one of the longest-term population studies of elk in a system with intact natural predators. The long-term objective is to continue the past population monitoring while assessing short-term management actions on vegetation and elk responses. Project objectives are: 1.) to determine vegetation and elk summer distribution in response to the on-going burning program of forested areas adjacent to the (YHT) winter range complex; 2.) to assess long-term trends in forest encroachment in fescue grasslands in and around YHT from historical photography and relate these to fire history and climatic trends in the area; 3.) to continue past efforts to determine remotely sensed vegetation production, elk distribution, migratory behaviour, seasonal abundance on YHT winter range, and demography (survival, pregnancy rates, age structure) of individually marked elk in the (YHT) elk population; 4.) in the long-term, conduct both annual and periodic long-term demographic analyses that will guide population and harvest management of elk in this predator-prey system under spatial and temporal variation in forage resources influenced by climatic variation. The project activities included: continued photo interpretation; spring pellet group plots; long-term grassland productivity sampling, grassland encroachment transects sample, summer elk telemetry & aerial survey flights; fall pellet group counts; photo interpretation and vegetation data analysis; vegetation data analysis; helicopter capture of 8 elk to replace GPS collars; winter telemetry and survey flights. The analysis of long-term changes in extent of vegetation types (grassland, shrubland, mixed forest and coniferous forest) is based on analysis of aerial photography from 1952 and 1992 in the Red Deer drainage at 4 study sites: Scotch Camp (SC), Tyrell Creek (TC), West Lakes (WL), and the Ya Ha Tinda (YHT). Grasslands have decreased between 3-23% across the study sites with a concomitant increase of 5-21% in forest cover from 1952

to 1992. A total of 87 transects were sampled across the four study sites in summer 2009 sampling 870 herbaceous plots and 435 shrub plots. Graminoids were highest in grasslands (817-995 kg/ha) but total forage availability including woody browse was highest in shrublands particularly in WL. Herbaceous productivity was lowest at the TY site. Quantitative changes in the nutritional carry capacity of habitat for elk are being analyzed and results are expected in the form of an MSc thesis in January 2011. Monitoring of seasonal elk abundance and distribution was continued by conducting summer aerial telemetry flights, recoding summer and winter relocations of elk YHT of individually marked females, and spring and fall pellet group surveys. Summer aerial telemetry flights were conducted in July and September 2009 and maximum of 234 non-migratory animals were counted in and around YHT over summer, with a cow: calf ratio of 100:23. Migratory status of marked elk were determined daily by recording absence or present on the YHT range during 15 June to 31 August, with resident elk being located >65% of the time at YHT, non-residents being located <20% of the time, and partly migratory elk being variable within these bounds. Of the 84 elk monitored during the summer, 40% were assumed migrants, 35% residents, and 25% partly migratory. The maximum winter count to date has been 460 elk, with a cow: calf ratio of 100:27 (n = 711) classified. Pellet group counts in 25-m² plots (n = 367) within the main grassland and extending into cutblocks, burned areas, and neighbouring forest were completed September 2008 and May 2009 and repeated again in Sept. 2009. There has been a two-fold drop in mean winter pellet abundance since 2001. Conversely, summer use of grasslands has increased two-fold. Detailed summer use of the YHT is being monitored with seven (2009-2010) and nine (2010-2011) GPS-collared adult elk. All seven collars employed in winter 2009 were retrieved in March 2010. Preliminary inspection indicates all were resident elk as anticipated. Habitat selection of these elk relative management actions will be analyzed during in winter 2011. Tooth samples from 2001-present from mortalities in the area have been analyzed, while results from pregnancy tests of elk captured in 2009 and 2010 are still pending.

Deliverables/Results:

Project reports: Parks Canada progress report June 2009

Pending student theses: MSc thesis: Long-term dynamics of grassland carrying capacity for elk in the Red Deer River drainage, AB. University of Alberta. Expected completion: January 2011

MSc thesis: Demographic analyses and habitat selection of elk at Ya Ha Tinda, University of Montana. Expected completion: May 2013. Journal articles will follow theses completion.

Does petroleum development affect burrowing owl nest-site selection, reproductive success or nocturnal space use?

University of Alberta (Dr. E. Bayne)

Grant: \$23,520

Project Code: 030-00-90-115

Project Status: Funded by ACA since 2008-09; Completed

The objective of this project is to develop mitigation techniques to help reduce energy sector impacts on the endangered burrowing owl. The project has three main goals toward which the researchers have made considerable progress in the past year: 1) determine the impacts of energy-sector footprint on burrowing owl reproduction; 2) determine whether burrowing owls are avoiding, attracted to, or neutral with respect to each component of industrial infrastructure and each industrial activity; 3) With respect to gas & oil infrastructure and activities, communicate recommendations for i) modifying management of burrowing owls, ii) defining & 'effectively protecting' critical habitat from destruction, and iii) outlining any additional data needs for future work. This year 60 burrowing owl nests were discovered and monitored and the number of young produced at each was determined. Preliminary analysis has shown a positive relationship between road density surrounding nest sites and fledging rate from successful nests, but a negative relationship with nest success. From the nests monitored, 19 adult male owls were tracked with micro GPS dataloggers during their nocturnal foraging activities. Resources selection analysis shows that the owls are attracted to roads and this attraction may be because of the higher abundance of small mammals. This could explain why more young are produced if the nest does not fail and higher nest failure could be from higher mortality while hunting on roads. Analysis is ongoing and one more field season is planned for this upcoming field season. They plan to track an additional 15 owls in areas with paved roads and sound producing structures to add to the under-represented data.

Deliverables/Results:

The first objective was to collect the field data which is completed for year two of a three year project. Partnership development has been every effective and a team has been developed that engages a lot of different partners. One more year of data collection is needed to track owls near paved roads and sound producing structures and add to other under-represented data. This upcoming year (2010/2011) will be the final year for data collection.

Habitat and prey selection of a re-established cougar (*Puma concolor*) population

University of Alberta (Dr. M. Boyce)

Grant: \$25,750

Project Code: 030-00-90-163

Project Status: New; Completed

In the present research study, the ecology of the re-establishing, isolated cougar population in Cypress Hills Interprovincial Park was examined. Specifically, the researchers wanted to determine the population composition and density, and address the concerns about livestock depredation and human safety by determining whether cougars were selecting wild or domestic prey and whether they were choosing to stay in high or low human-use areas. Field-intensive

methods were used to address the project's objectives. Using GPS radiocollars, they have been able to track long-term movements of cougars, including seasonal effects and movements relative to the park town site, and locate kill sites to determine prey species. Also motion-activated wildlife cameras were used to monitor un-marked cougar presence and distribution, as well as assess the location of prey species. In winters 2008 and 2009, the researchers captured and placed Lotek GPS4400S radiocollars on six adult cougars, four females and two males and monitored the cougars' home ranges from April 2008 to December 2009, identified 534 clusters of GPS points to investigate for potential kill sites, and located 301 kill sites from collared and unknown cougars, with deer making up the majority of prey items (77%). Motion-activated wildlife cameras were also used to monitor cougar and wildlife presence and distribution throughout the park from 2007-2009. 75 events of cougars captured on wildlife cameras during that 30-month time period.

Deliverables/Results:

Publications:

Bacon, M., and M.S. Boyce. 2009. The Prairie Cougar: an update from research in Cypress Hills Interprovincial Park. Safari Club Northern Alberta Chapter Newsletter 5 (7): 16-17.

Knopff, K., A. Knopff and M. Bacon. 2009. North of 49: Insights from ongoing cougar research in Alberta, Canada Wild Cat News 5: 26-41.

Bacon, M., K. Knopff, and M.S. Boyce. 2009. Eastward movement of cougars in Canada: an update from Cypress Hills Interprovincial Park. Wild Felid Monitor 2 (2): 19.

Knopff, K., A. Knopff and M. Bacon. 2009. GPS collar failures in cougars by canine puncture of the battery case. Wild Felid Monitor 2 (2): 21.

Conference Presentations:

The Wildlife Society 16th Annual Conference, Monterey California, September 2009

Cougar diet in southern Alberta and Saskatchewan: comparing GPS location cluster methods with scat analysis ~ Michelle Bacon, Greg Becic and Mark Boyce, poster session

The Alberta Chapter of The Wildlife Society Annual Conference, Red Deer Alberta, March 2010

Do GPS Clusters Really Work? Comparing technology with scat analysis for cougars in southeast Alberta ~ Michelle Bacon and Mark Boyce, paper presentation.

The project's M.Sc. candidate undertook an enormous public outreach campaign after learning how the lack of knowledge in the community about cougars was stemming the fear of this newly returned predator. From July 2007 to December 2009, 58 presentations were given about cougars and the project's research, including 16 to rural public schools in Alberta and Saskatchewan. A Cougar Interest Group was organized consisting of a group of representatives from government and local interest groups, and held meetings twice a year to share information and discuss research findings and community concerns with stakeholders in the region. Park and resource management staff were trained so that they could share information about cougars to the public and ensure the knowledge would still be available when the project was finished. A brochure about cougar biology, safety and this research was prepared which is now available in the Cypress Hills visitor center. All funding agencies were acknowledged in every presentation and in the brochure.

Ecological effects of sportfish stocking and aeration in Boreal Foothills lakes

University of Alberta (Dr. W. Tonn)

Grant: \$28,370

Project Code: 020-00-90-140

Project Status: Funded by ACA since 2006-07; Completed

The central goal of this study is to apply principles of impact assessment to the basic question: what are the consequences of trout stocking and lake aeration on invertebrate, fish, and amphibian communities in small boreal foothills lakes? Because of the popularity of the stocking-and-aeration program, and plans to continue and expand it, there is a need to examine how these management actions impact the lakes' native communities. The current paucity of information is unsettling, but the flip-side is that the management program is essentially a whole-lake experiment, for which impact-assessment protocols are available. 2009, the second year of a BACI experiment, builds upon our multi-lake Control-Impact comparative design of 2005-2007, and also featured several new aspects. The specific objectives for the 2009 field season were to continue: 1) collection of trout tissue, forage fish, and invertebrate samples for stable isotope analysis; from ten lakes (four stocked, four unstocked but fish-bearing, two fishless); 2) collection of trout stomach contents for diet documentation in the six stocked lakes; 3) mark/recapture sampling to estimate forage fish populations in three stocked and three unstocked lakes; 4) 24-hour forage fish sampling in two stocked and two unstocked lakes to determine daily feeding, activity and habitat use of forage fishes; 5) collection of quantitative invertebrate samples (littoral and limnetic) from all ten study lakes (same as #1); 6) collection of epilimnetic water samples from all 13 study lakes; 7) visual transect surveys for amphibians at all lakes, with a particular focus on Fiesta Lake. Two new initiatives were introduced in 2009; studies were initiated on (a) effects of stocked trout on pelagic invertebrates, and (b) a comparison of trout effects with those of native forage fish on pelagic and littoral invertebrates. As well, ACA began aerating Birch Lake (stocked) during the winter of 2009-2010. Birch Lake has been sampled irregularly since 2005, but ACA's announcement offered another opportunity for a new BACI-designed experiment that focuses on aeration only. Field sampling during May-August 2009 addressed these eight objectives. Sample and data analyses are proceeding during the fall-winter. A new MSc student was successfully recruited to focus on zooplankton responses to trout stocking (and forage fish) and to initiate a BACI study of aeration effects on zooplankton in Birch Lake.

Deliverables/Results:

No effects of stocking/aeration in Fiesta Lake, relative to changes in control lakes over the same before/ after period, were found for mean length or abundance for any of the three forage fish species (Linear mixed models, $p > 0.05$). As well, there was no difference in any of the above parameters between before and after time periods within Fiesta Lake itself ($p > 0.05$). Preliminary analysis of zooplankton samples has revealed a diverse assemblage; 12 cladoceran species, three calanoid copepod species, three cyclopoid copepod species, and 14 rotifer species have been identified.

Presentations to ACA/ASRD staff and public at outreach meetings in Rocky Mountain House (December 2009)

Presentations at provincial, regional, national, and international conferences: Ecological Society of America, Albuquerque, NM; and Canadian Conference for Fisheries Research, Winnipeg, MB; Alberta Lake Management Society, Edmonton, AB

Articles for peer-reviewed scientific journals: From the project's earlier research, one paper has recently been published (on stable isotope methodology) and one (on comparisons of forage fish in stocked vs. unstocked lakes) has recently been accepted for publication. Two more manuscripts (comparing littoral macroinvertebrate communities and wood frog populations in stocked and unstocked lakes) are progressing well and should be submitted by summer.

Hanisch, J.R., W.M. Tonn, C.A. Paszkowski, and G.J. Scrimgeour. 2010. $\delta^{13}C$ and $\delta^{15}N$ Signatures in Muscle and Fin Tissues: Non-lethal Sampling Methods for Stable Isotope Analysis of Salmonids. *N. Amer. J. Fish. Mgt.* 30:1-11.

Nasmith, L.E., W.M. Tonn, C.A. Paszkowski, and G.J. Scrimgeour. 2010. Effects of stocked trout on native fish communities in boreal foothills lakes. *Ecol. Freshw. Fish:* in press.

Effects of access management on Elk in Southwestern Alberta

University of Alberta (Dr. M. Boyce)

Grant: \$32,200

Project Code: 030-00-90-118

Project Status: Funded by ACA since 2008-09; Completed

The goal of this project was to evaluate the effects of access routes (including roads and trails) on elk habitat selection, movement, and survival. Specifically, the researcher wanted to detail the effectiveness of the access management plan initiated in the Castle Special Management Zone in SW Alberta as a way to mitigate the effects of industrial development. An excellent foundation has been laid to answer these questions very thoroughly with the vast amounts of data collected and have indeed already begun answering these questions through analysis. Approximately 50 elk have been equipped with GPS radio collars after completion of the spring captures. At the end of this capture period the researchers have collared about 140 elk over the duration of the project. Motorized activity is monitored on roads and trails to monitor the elk response to varying levels and types of activity and to evaluate the effectiveness of gating at reducing traffic volume. The traffic data that has been compiled over the past several years has been processed and summarized (daily traffic volume trends classified by road type, time of day, weekend vs weekday, etc.). In collaboration with the researcher's grizzly bear project a traffic model was developed that was applied to the entirety of the study site to predict traffic volumes on roads they were unable to sample. This data has been incorporated into the roads and trail layer in ArcMap. Currently they are using counter data and traffic volumes derived from this model to analyze data in a variety of ways. At the moment they are using it to assess avoidance/selection of access routes based on traffic levels as a first cut analysis. Elk survival continues to be monitored bi-weekly and GPS data downloaded quarterly. They just finished downloading the third year's worth of data. To date, over 600,000 GPS locations have been accumulated making this project one of the largest studies ever conducted on elk. As noted above, the field work for the access management portion of the project is drawing to an end and the data analysis phase will be

the primary focus over the next year.

Deliverables/Results:

The project brochure has been completed and widely distributed. Presentations have been given at local, national, and international level conferences. Study updates are provided to the steering committee and are also posted on the study website (www.montaneelk.com). They are currently working on manuscripts that will result in publications, including a manuscript that examines the effects of traffic volume on elk and grizzly bear selection/avoidance of roads. They were invited to publish some of their early results in a special section of the Philosophical Transactions of the Royal Society:

Boyce MS, Pitt JA, Northrup J, Morehouse A, Knopff K, Cristescu B, and G Stenhouse (2010) Temporal autocorrelation functions (ACFs) for movement rates from GPS radio telemetry. *Philosophical Transactions of the Royal Society, B*: *In press*.

Through collaborative efforts, a paper was recently published using data collected with colleagues at the University of Calgary and an additional manuscript pending publication:

Muhly T, Boyce MS, Creasey R, Hebblewhite M, Paton D, Pitt JA, M Musiani (2010) Habitat dependent risk effects of wolves (*Canis lupus*) on elk (*Cervus elaphus*) and domestic cattle (*Bos taurus*). *OIKOS: In press*.

Laporte I, Muhly T, Pitt JA, Alexander M, M Musiani (2010) Effects of wolves on elk and cattle behavior: implications for wolf conservation in livestock production areas. *PLOS One*: *Submitted*.

Restoration of rough fescue grassland on oil and gas sites in Central Alberta

University of Alberta (Dr. A. Naeth)

Grant: \$33,800

Project Code: 015-00-90-120

Project Status: New; Completed

The goal of this research program is to restore native rough fescue grassland following oil and gas disturbance. The objectives were as follows: to determine the effect of straw on recovery of rough fescue, native grasses and competitor species on well sites; to determine if hay as a native seed source will result in recovery of rough fescue grassland; to determine if pipelines left to natural recovery will succeed in a return to native grassland; to determine the reliance of rough fescue on arbuscular mycorrhizal fungi (AMF). Two natural gas well sites, one in rough fescue grassland and one 1 ha field site, were treated with straw as a soil amendment. Sites were seeded with rough fescue and native grasses and non-native kentucky bluegrass and smooth brome. In years two and three, vegetation on the well sites was assessed for species identification, percent cover, density and bare ground. Soil samples were taken to measure soil water, carbon nitrogen, phosphorus, potassium, pH and electrical connectivity. The results indicated straw is a useful soil amendment for reclaiming rough fescue, and may inhibit unwanted agronomic species. Native hay, as a seed source, was applied to a natural gas pipeline right-of-way. Three natural gas pipelines were constructed using minimum disturbance techniques and left to natural recovery (no seeding). Seed bank samples were taken from the pipelines and grown in the greenhouse. Vegetation assessments including species identification, percent cover and bare soil were conducted on the pipelines in years

two, three and four. Results show native hay is a viable seed source for reclaiming rough fescue grassland and minimum disturbance pipelines will return to native grasslands, although bare ground persists after three years.

Deliverables/Results:

A presentation on effects of straw on smooth brome was made at the Alberta Native Plant Council conference in Edmonton, April 2009.

A progress report and presentation were made to the Rumsey Technical Committee in October 2009 and a progress report submitted in March 2010. The committee consists of representatives from Alberta Sustainable Resource Development, Alberta Environment, Alberta Parks and Tourism, Husky Energy, Canadian Natural Resources, the Alberta Wilderness Association and the Alberta Native Plant Council.

A peer reviewed paper on the effects of straw on the growth of smooth brome published in the *Ecological Restoration (Restoration Notes)* journal in June 2010.

A peer reviewed paper on the results of hay as a native seed source has submitted to the journal of *Rangeland Ecology and Management* in March 2010.

Peer reviewed papers on the results of the pipeline natural recovery and the AMF experiment will be submitted to appropriate journals in 2010.

A PhD dissertation is expected in fall 2010.

Genetic diversity analysis of southern Alberta plains sharp-tailed grouse (*Tympanuchus phasianellus jamesi*), endangered sage-grouse (*Centrocercus urophasianus*), and their hybrids

University of Idaho (Dr. K. Reese)

Grant: \$20,000

Project Code: 030-00-90-157

Project Status: New; Completed

Plains sharp-tailed grouse (*Tympanuchus phasianellus jamesi*) originally occupied 21 U.S. states and eight provinces, but have been extirpated from eight states. Populations have been greatly reduced due to habitat loss and conversion of native land to agriculture, especially in the eastern and southern portions of their range. Sharp-tailed grouse are also extensively hunted throughout their range, including Alberta. Greater sage-grouse (*Centrocercus urophasianus*) are endangered at both the provincial and national levels in Canada. Historically, they inhabited three Canadian provinces (AB, SK, and BC) and 16 U.S. states, but presently occur only in southeastern Alberta, southwestern Saskatchewan, and 11 states. The current Canadian population is estimated at ~600 individuals and has decreased by 66%-92% since the 1970s. As the human population increases in the province and industrial and agricultural development expands, habitat for grouse continues to decrease and become fragmented. Habitat fragmentation can result in small populations that are at risk of losing genetic variability due to isolation and stochastic processes. This loss of genetic diversity can increase the probability of population extinction, reduce that population's ability for future adaptive change, and decrease individual fitness. Decreased genetic diversity is expected to be more evident in lekking species since only a small

proportion of grouse males are believed to mate. Both microsatellites and mitochondrial DNA (mtDNA) were used to evaluate the level of genetic diversity, genetic structure, and assess possible genetic causes for the population decline for both species of grouse. The researcher found that sage-grouse in Alberta are part of a single population and sharp-tailed grouse in southern Alberta belong to two populations separated by the South Saskatchewan River. Both species have high genetic diversity, but several leks are showing decreased variability suggesting isolation of some sort. Together, their findings suggest that both species of grouse in Alberta are part of genetically diverse populations that maintain genetic connectivity through dispersal.

Deliverables/Results:

Alberta Sage-Grouse are a segment of one panmictic population, the Northern Montana population (Alberta, Saskatchewan, and Montana north of the Missouri River). Generally, genetic diversity is high, with the exception of one lek, which has low allelic richness, and another recently discovered lek, which has low heterozygosity. Sage-grouse in Alberta also exhibited no isolation-by-distance indicating that birds disperse across the entire Alberta range.

Southern Alberta sharp-tailed grouse were found to be part of two separate populations: North of the South Saskatchewan River (NSSR) and South of the South Saskatchewan River (SSSR). Most of the genetic variation within sharp-tailed grouse is at the lek level. There is a significant isolation by distance pattern within the SSSR population, but not the NSSR population. Overall, sharp-tailed grouse have high genetic diversity, but NSSR has less diversity than SSSR. Several leks are showing evidence of decreased heterozygosity and allelic richness suggesting that these leks may be coming isolated. Isolation-by-distance was not significant within either sharp-tailed population, but the South Saskatchewan River was a significant barrier to dispersal.

Deliverables include: Laboratory work (DNA extraction, microsatellite genotyping, mtDNA sequencing) – May 2009 – December 2009; Data analysis and development of new analysis techniques – January 2010 – May 2011; Education (Public talks given by K.L. Bush) June 2009 – May 2011; Scientific Papers – papers will be written as each segment of the project is completed (January 2010 – May 2011)

Examining resiliency of bull trout populations to brook trout invasives

University of Lethbridge (Dr. J. Rasmussen)

Grant: \$20,000

Project Code: 020-00-90-156

Project Status: New; Completed

Brook trout invasiveness has been identified as one of the main threats to native fish assemblages in Alberta mountain streams. By examining the root causes of this invasiveness and how native fishes may naturally resist such invasion, we may be able to better predict or manage the spread of this exotic species, as well as strategically restore areas already invaded. The specific objectives of this project are to compare areas of low and high invasiveness of brook trout in the South Saskatchewan River basin in order to: a) determine if a suite of measurable habitat features can be associated with streams containing brook trout resistant populations of bull trout, and b) examine whether migratory populations of bull trout are more resistant to brook trout invasion and hybridization compared to resident populations. All work completed to date has been field

based. Data collected from the first field season is currently being analyzed to determine if a suite of quantifiable habitat measures can be used to predict brook trout abundance in nine streams. Preliminary data analyses have suggested that in some streams, there are elevational gradients of exotic brook trout abundance relative to native bull trout. This gradient may be explained by temperature preferences or other measured habitat features, but additional data from subsequent field seasons and more replicate sites are needed to examine whether these features can be confidently modeled.

Deliverables/Results:

Project objectives and results thus far were orally presented at the Salvelinus confluens Curiosity Society international conference, September 1-3, 2009.

Results of this study will be published in a peer reviewed scientific journal, likely the *Canadian Journal of Fisheries and Aquatic Science*. Results of this study will also be presented at the Canadian Conference for Fisheries Research (CCFFR).

Land and Water - Connecting science, stewardship and public awareness

Water Matters Society of Alberta

Grant: \$5,000

Project Code: 002-00-90-126

Project Status: New; Completed

Water Matters completed, produced, printed, and released: *Making the Connection: Land and Water in Alberta*. The 50 page report is geared at helping Albertans understand the value of watersheds from an ecological goods and services (EG&S) perspective, the cumulative impacts of multiple land uses and the importance of incorporating EG&S into land use decision-making. The report was informed by science and practical case studies from Alberta that illustrate how land use is connected to water quality and quantity. The research conducted was particularly helpful to inform Water Matters work in Southern Alberta where significant land use decisions are being made that will affect future water resources in this region. *Making the Connection* was released on March 12, 2010. A variety of factors delayed the completion and subsequent outreach on this report to January 2010. While the final report was not published until recently, Water Matters incorporated the key information and messages from *Making the Connection* into 12 presentations reaching 250 people directly. Outreach efforts to communicate the key information in the report supports their broader goal to ensure communities throughout Alberta become more aware about the critical linkage between land use and water resources and the important role that land stewardship activities can play in protecting water resources. While not directly funded by the ACA, Water Matters also completed a survey of 42 leaders in Alberta who engaged in stewardship activities. The survey resulted in a report: *Advancing Stewardship in Alberta: Perspective of Lead Stewards* in 2009.

Deliverables/Results:

The scientific background which is now a comprehensive published report is complete:

Beveridge M., and D. Droitsch. *Making the Connection: Water and Land in Alberta*. February 2010. Water Matters Society of Alberta (www.water-matters.org/pub/making-the-connection)

Invasive plant project at the Weaselhead Natural Environment Park

Weaselhead/Glenmore Park Preservation Society

Grant: \$3,000

Project Code: 015-00-90-127

Project Status: New; Completed

Over the years Weaselhead/Glenmore Park Preservation Society members and staff have observed the progressive encroachment of a whole suite of woody and herbaceous non-native plants into the Weaselhead Natural Environment Park with concern. A riparian health inventory conducted by Cows and Fish in 2007 gave a vegetation health-rating borderline between 'healthy' and 'healthy, but with problems' – the 'unhealthy' issues all relating to the presence of invasive plants. This project is aimed at preventing further colonization of the Park by invasive species and on controlling or eradicating those that are already there. To prevent further colonization the Society wishes to change the choices people make (e.g. in selection of garden plants) by raising awareness of the way invasive plants are introduced and why they are damaging; and it wishes to set up a volunteer team of 'early detection' stewards, to actively look for new invasive species in the Park in order that they can be eradicated before they become established. To control/eradicate existing infestations the Society organized yearly volunteer weeding workshops. The Park is owned by the City of Calgary therefore measures undertaken by the Society were carried out in partnership with the City under its Adopt-a-Park Scheme, and complimented any action undertaken by City employees under its *Invasive Plant Strategic Management Plan*. 2009/10 saw the first steps in achieving this goal. Baseline data on the extent of the problem was gathered and entered into a GIS. Education of the public on the issue of invasive species was built into the Society's ongoing education activities and publicity events. Pilot volunteer weeding workshops were held. An 'Early Detection Rapid Response' (EDRR) volunteer team was set up. The Society partnered with the City of Calgary in trials of Caragana control methods, with Nature Calgary/City of Calgary in developing EDRR protocols, and with SAIT/City of Calgary in collecting data on the distribution of invasive species and preparing a GIS from this data. A Weed Management Plan for 2010 based on the knowledge and experience gained in 2009 has been completed.

Deliverables/Results:

Prioritised list of invasive plants already present in the Park for control or removal - completed.

Prioritised list of likely potentially invasive plants, not yet in the Park, for early detection focus by volunteer stewards.

Three one-day pilot weeding workshops for volunteers targeted at three different species and two invasive species education days that included some weeding. – four completed.

Team of six early-detection stewards trained in identification of 18 non-native species and data recording. Stewards to be committed to actively look for these plants in the Park twice per year. Six volunteers were recruited in 2009, however the Society has increased the team to 12 for 2010 (so that volunteers can work in pairs). Currently 14 people are interested in volunteering.

Design, printing and laminating of the 15 identification charts that will be used in the field by the Early Detection volunteers to remind

them of what they are looking for – completed 30th Jan. 2010 except for printing and laminating. This has been delayed till after a meeting with the City on the 24th March as there may be some changes to the species targeted for early detection by the City of Calgary/Nature Calgary.

Updated education programs incorporating invasive species component: currently over 4,000 school children and 700 adults per year participate in educational field-trips organised and delivered by the Society – completed.

New section on the Society's website promoting the project and presenting information about invasive plants and issues associated with them. Some information was added to the website in Feb. 2010, the rest will be added shortly.

Evaluation of data collected and revision of priorities; preparation of weed management plan for 2010 – two surveys of the Park, one of woody invasives, and one of non-native herbaceous plants and grasses, have been completed and the data entered into a GIS. Data has been analysed and forms the basis of the 2010 Weed Management Plan.

The Bow and Beyond

Western Sky Land Trust Society

Grant: \$14,000

Project Code: 015-00-90-134

Project Status: New; Extended until September 30, 2010

The goal of this project was to complete the final stages of The Agrium Nodwell Nature Preserve while having a strong start to a new initiative 'The Bow and Beyond'. ACA funds supported the final stages of land improvements which included survey, signage (entry and boundary) and weed & riparian assessment (through completion of the baseline assessment). Main activities included: RFP for survey and entry signage; screening and hiring of contractors; working with contractors to design and/or install signage and/or boundary signage; completion of the baseline assessment. Work bees occurred on the land on two occasions (one during the week and one on the weekend) which involved Western Sky volunteers and employees from the local Agrium Carseland plant. An in-depth Baseline Assessment was completed in October and amongst many other things noted both the variety and location of weeds, and direction for riparian improvements. It also brought to light the presence of rare species of both flora and fauna. With this information in hand, the management plan, which will be used to identify suitable management activities for the coming year(s), was fine tuned. Staff and volunteer time was utilized to identify Bow land ownership. With this information in hand, the Society extended a mailed invitation to all land owners to a land owner forum (where ACA was recognized) hosted in Carseland. This forum was also advertised by creating and posting posters in key rural communities and, through a partnership with Wheatland County, advertising for this event occurred in inserts in the Strathmore Standard. By delivery of this forum, 2 land owners have expressed preliminary interest in land conservation. Further, they identified existing relationships with land owners amongst the Western Sky Land Trust Society Board and newly formed Advisory Committee (an additional group of individuals who are very active in the community, believe in the Society's mandate but do not have the time to sit on a Board). At present, members of the Board, Advisory,

Lands Committee and staff are actively contacting all land owners to understand if meetings can be set to describe the Western Sky Land Trust and the voluntary conservation options available. The Advisory Committee works to further the Society's mandate in both land and fund development areas. With a strong belief in the importance of outreach and awareness, presentations were given to key stakeholder groups, meetings were set with the majority of fly fishing shops in Calgary and significant planning has been undertaken to host the Watershed Forum which includes creating an invite list and polling participants to understand their interest in this forum and proposed topics. With their feedback in hand and current commitments, it was been decided that the Watershed Forum be postponed until September.

Deliverables/Results:

Management Plan

Survey

Fencing/Boundary Posts and Signage

Work bee clean-up day

Weed & Riparian Assessment/Report/Recommendation

Landowner Research

Awareness Campaign – on-going

Information Forum

Riparian reforestation and wildlife enhancement of Beaverlodge Watershed-Phase II

Woodlot Extension Program/Woodlot Association of Alberta

Grant: \$36,000

Project Code: 015-00-90-121

Project Status: Funded by ACA since 2008-09; Completed

The goal is to restore degraded habitat and improve water quality along the Beaverlodge River Watershed through the planting of riparian buffers and upland forests. The objective of the project aims to work with landowners in this watershed to reforest degraded riparian and buffer zones. Overgrazed pastures and cultivated farmland with no trees along the waterways are the primary focus of this work. The main activities of Phase II were to reforest 50 more acres along the Beaverlodge River and its tributaries, build more community awareness regarding the project, and continue to acquire media coverage of the project activities through signage, presentations at conferences and through articles written in media. Signs were installed at co-operators farms. A project factsheet, newsletter and PowerPoint Presentation were developed regarding the work conducted. The project area has been mapped showing location of co-operators and areas reforested. Cows and Fish completed riparian health inventories at ten planting sites that will be used as benchmarks to assess improvements habitat quality. The ultimate goal would be to continue this work next year in Phase III such that a total of approximately 150 acres are planted and the three-year project is completed. The intent of the project is to inspire other municipalities, landowners and organizations to consider projects similar to these ones in other areas of Alberta by using the work the Woodlot Extension Program has carried out as an example. The project results and achievements surpassed expectations.

Deliverables/Results:

100 of 150 acres reforested and nearly 45 000 trees planted (since 2008-09).

Signage of sites and media coverage completed (www.peacecountrysun.com/ArticleDisplay.aspx?archive=true&e=1578222).

Participation of 13 different landowners in project.

Local landowner discovered to lead in the development of watershed group.

Invited to present regarding this community project at both the Community Planning Association of Alberta Conference and the World Agroforestry Congress in Nairobi, Kenya.

Finalist in the 2009 Emerald Awards for a Community Group (www.emerald.foundation.ca/emerald_awards/past_recipients/2009/west_county_watershed_group)

Poster-sized map of project area developed including project locations, area planted and color-coded assessment of stream bank health.

Factsheet and newsletter completed.

Ten Riparian Health Assessments completed by Cows and Fish to be used as benchmarks.

Tree planting pledge to United Nations The Billion Tree Campaign: (www.unep.org/billiontreecampaign/search/index.asp)

Project manuscript published in the Agroforestry as a Tool For Landscape Restoration Book.

APPENDIX A

Project results in relation to GECF Funding Priorities 2009-2010



FUNDING PRIORITY #1

13 Projects

Habitat enhancement activities specifically listed on provincial recovery plans for Alberta's endangered species (to be done in cooperation with recovery teams).

Alberta Fish and Game Association, *Operation Grassland Community*, \$35,000.00 (030-00-90-127)

Alberta Foothills Network, *Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions*, \$37,000.00 (015-00-90-132)

Alberta Native Plant Council, *Adopt-a-Plant Alberta 2009*, \$13,688.00 (015-00-90-133)

Castle-Crown Wilderness Coalition, *SAR in the Castle Wilderness*, \$17,000.00 (015-00-90-135)

Federation of Alberta Naturalists, *Stewards Network for Alberta's Important Bird Areas*, \$15,000.00 (030-00-90-158)

King's University College, *Reproductive ecology of endangered populations of limber and whitebark pine in Alberta*, \$15,000.00 (030-00-90-161)

Lesser Slave Lake Bird Observatory, *Migratory and Breeding Bird Research in Northern Alberta*, \$22,000.00 (030-00-90-128)

Lethbridge College, *Soil bioengineering and bank enhancement along the Oldman River*, \$3,000.00 (015-00-90-126)

University of Alberta, *Does petroleum development affect burrowing owl nest-site selection, reproductive success or nocturnal space use?*, \$23,520.00 (030-00-90-115)

University of Alberta, *Ecology and behaviour of grizzly bears (Ursus arctos horribilis) in response to open-pit mining, and implications for management and conservation*, \$20,000.00 (030-00-90-154)

University of Alberta, *Effects of access management on elk in Southwestern Alberta*, \$32,200.00 (030-00-90-118)

University of Alberta, *Effects of roads and road access management on grizzly bear (Ursus arctos) habitat use and movement*, \$18,500.00 (030-00-90-116)

University of Alberta, *Restoration of rough fescue grassland on oil and gas sites in Central Alberta*, \$33,800.00 (015-00-90-120)

FUNDING PRIORITY #2

26 Projects

Site specific enhancements of habitat, structures and facilities aimed at increasing recreational angling or hunting opportunities, improving habitat or increasing wildlife/fish productivity on the site (i.e. planting/seeding vegetation, development of new fisheries access sites, nest box initiatives, food plot trials and cover plot trials, spawning bed enhancement, etc.).

Alberta Fish and Game Association, *Operation Grassland Community*, \$35,000.00 (030-00-90-127)

Alberta Fish and Game Association, *Pronghorn antelope migration corridor fencing enhancement*, \$25,000.00 (030-00-90-160)

Alberta Foothills Network, *Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions*, \$37,000.00 (015-00-90-132)

Andrew Stiles, *Nest Box deployment with youth to inspire stewardship*, \$2,500.00 (030-00-90-147)

Beaverhill Bird Observatory, *Elson's Nestbox Trail and Grid*, \$5,000.00 (030-00-90-156)

Bird Studies Canada, *The Prairie & Parkland Marsh Monitoring Program: years 2-5*, \$25,000.00 (030-00-90-153)

Camps for Children Educational Association, *Phase 3 Riparian Area Fencing Project, Riparian Area Brochure Printing and Fish Pond Stocking at Aspen Ranch Outdoor Education Facility*, \$3,000.00 (020-00-90-150)

Cochrane Branches and Banks Environmental Foundation, *Big Hill Creek habitat enhancement and interpretive sign project*, \$3,000.00 (015-00-90-125)

Cows and Fish, *2010 Alberta environmental stewardship calendar*, \$3,000.00 (002-00-90-121)

Cows and Fish, *Developing urban fisheries improvements and enhancing riparian sites through stewardship*, \$20,000.00 (020-00-90-157)

Ducks Unlimited Canada, *Ecology and Population Affiliations of Moulting and Fall Staging Barrow's Goldeneye at Cardinal Lake, Alberta*, \$18,000.00 (030-00-90-152)

Fort Saskatchewan Fish and Game Association, *Nature walking trails and birdhouse placement*, \$2,000.00 (030-00-90-145)

Lesser Slave Lake Bird Observatory, *Migratory and Breeding Bird*

Research in Northern Alberta, \$22,000.00 (030-00-90-128)

Lethbridge College, *Soil bioengineering and bank enhancement along the Oldman River*, \$3,000.00 (015-00-90-126)

Mountain View County, *Riparian Area Management Improvements*, \$25,000.00 (015-00-90-102)

Onoway and District Fish and Game Association, *Blue-bird house project*, \$700.00 (030-00-90-102)

Partners in Habitat Development, *Eastern Irrigation District, Partners in Habitat Development*, \$18,000.00 (015-00-90-103)

Rangeland Conservation Service Ltd, *Small mammal wildlife habitat enhancement berms: Wildlife movement across pipeline rights-of-way*, \$10,000.00 (030-00-90-162)

Red Deer County, *Off the Creek Program*, \$25,000.00 (015-00-90-128)

Town of McLennan, *McLennan Pond fishery enhancement project (Dock structure installation)*, \$5,000.00 (020-00-90-152)

Trout Unlimited Canada, *East Slopes Fishery Enhancement Program*, \$31,000.00 (020-00-90-155)

University of Alberta, *Ecological effects of sportfish stocking and aeration in Boreal Foothills lakes*, \$28,370.00 (020-00-90-140)

University of Alberta, *Evaluating the abundance of the western grebe (Aechmophorus occidentalis) in Alberta*, \$3,000.00 (030-00-90-146)

University of Alberta, *Long-term vegetation and population monitoring for managing the Ya Ha Tinda elk herd*, \$20,000.00 (030-00-90-134)

University of Alberta, *Lynx Cycles and Barriers: Evaluating dispersal versus climate change in flatlining populations*, \$20,000.00 (030-00-90-155)

Woodlot Extension Program/Woodlot Association of Alberta, *Riparian reforestation and wildlife enhancement of Beaverlodge Watershed - Phase II*, \$36,000.00 (015-00-90-121)

FUNDING PRIORITY #3

5 Projects

Urban fisheries development, including : initial evaluation of water quality aspects of existing ponds to determine their suitability for fish stocking; purchase of equipment required to ensure suitable water quality for fish stocking (e.g. aeration equipment); fish stocking in public ponds; promotion of an urban fishery (including natural water bodies).

Bow Valley Habitat Development, *A comprehensive fisheries study on Bighill Creek*, \$10,506.00 (020-00-90-153)

Camps for Children Educational Association, *Phase 3 Riparian Area Fencing Project, Riparian Area Brochure Printing and Fish Pond Stocking at Aspen Ranch Outdoor Education Facility*, \$3,000.00 (020-00-90-150)

Cows and Fish, *Developing urban fisheries improvements and enhancing riparian sites through stewardship*, \$20,000.00 (020-00-90-157)

Friends of Kerbes Pond Society, *Maintaining and operating of existing aeration system*, \$1,200.00 (020-00-90-151)

Town of McLennan, *McLennan Pond fishery enhancement project (Dock structure installation)*, \$5,000.00 (020-00-90-152)

FUNDING PRIORITY #4

25 Projects

Stewardship Initiatives (e.g. on-going maintenance of conservation sites or fisheries access sites; adopt a fence; property inspections for invasive weeds; manual weed control; grass mowing).

Alberta Fish and Game Association, *Operation Grassland Community*, \$35,000.00 (030-00-90-127)

Alberta Fish and Game Association, *Volunteer habitat lands stewardship*, \$27,000.00 (015-00-90-131)

Alberta Foothills Network, *Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions*, \$37,000.00 (015-00-90-132)

Alberta Native Plant Council, *Adopt-a-Plant Alberta 2009*, \$13,688.00 (015-00-90-133)

Alberta Stewardship Network Society, *2009 Grassroots Awards for Environmental Stewardship (3rd Annual)*, \$1,290.00 (002-00-90-122)

Alberta Stewardship Network Society, *2009 Stewards in Motion VII Workshop*, \$2,350.00 (002-00-90-123)

Beaverhill Bird Observatory, *Beaverhill Lake Natural Area, Stewardship and Monitoring*, \$6,000.00 (030-00-90-124)

Castle-Crown Wilderness Coalition, *SAR in the Castle Wilderness*, \$17,000.00 (015-00-90-135)

Chuck Priestley, *Bat Hibernacula Monitoring in Alberta Caves - A Volunteer Monitoring Program*, \$5,289.90 (030-00-90-159)

Federation of Alberta Naturalists, *Stewards Network for Alberta's Important Bird Areas*, \$15,000.00 (030-00-90-158)

Federation of Alberta Naturalists, *Riparian Water Quality Improvement Project*, \$20,000.00 (015-00-90-129)

Helen Schuler Nature Centre, *2nd Annual city-wide coulee clean-up*, \$2,500.00 (015-00-90-124)

King's University College, *Reproductive ecology of endangered populations of limber and whitebark pine in Alberta*, \$15,000.00 (030-00-90-161)

Lesser Slave Lake Bird Observatory, *Migratory and Breeding Bird Research in Northern Alberta*, \$22,000.00 (030-00-90-128)

Miistakis Institute, *Developing a private land conservation strategy for the Crowsnest Pass*, \$20,907.00 (015-00-90-130)

Nature Conservancy of Canada - Alberta Region, *Effectiveness and compliance monitoring of Nature Conservancy of Canada Properties in Alberta*, \$44,000.00 (015-00-90-104)

Partners in Habitat Development, *Eastern Irrigation District, Partners in Habitat Development*, \$18,000.00 (015-00-90-103)

Prairie Conservation Forum, *Invasive alien plant education, Alberta*, \$2,500.00 (002-00-90-120)

Red Deer County, *Off the Creek Program*, \$25,000.00 (015-00-90-128)

Trout Unlimited Canada, *Late fall fisheries investigation in diversion canals of southern Alberta*, \$7,000.00 (020-00-90-116)

University of Alberta, *Restoration of rough fescue grassland on oil and gas sites in Central Alberta*, \$33,800.00 (015-00-90-120)

University of Alberta, *Floristic survey of Kootenay Plains and Coyote*

Lake Nature Sanctuary, \$13,400.00 (015-00-90-122)
 University of Alberta, *Lynx Cycles and Barriers: Evaluating dispersal versus climate change in flatlining populations*, \$20,000.00 (030-00-90-155)
 Weaselhead/Glenmore Park Preservation Society, *Invasive plant project at the Weaselhead Natural Environment Park*, \$3,000.00 (015-00-90-127)
 Western Sky Land Trust Society, *The Bow and Beyond*, \$14,000.00 (015-00-90-134)

FUNDING PRIORITY #5 **12 Projects**

Impacts of non-native species on persistence of native species.

Alberta Fish and Game Association, *Operation Grassland Community*, \$35,000.00 (030-00-90-127)
 Alberta Invasive Plants Council, *Weed Wise Alberta*, \$31,000.00 (002-00-90-125)
 Helen Schuler Nature Centre, *2nd Annual city-wide coulee clean-up*, \$2,500.00 (015-00-90-124)
 King's University College, *Reproductive ecology of endangered populations of limber and whitebark pine in Alberta*, \$15,000.00 (030-00-90-161)
 Prairie Conservation Forum, *Invasive alien plant education, Alberta*, \$2,500.00 (002-00-90-120)
 University of Alberta, *Restoration of rough fescue grassland on oil and gas sites in Central Alberta*, \$33,800.00 (015-00-90-120)
 University of Alberta, *Floristic survey of Kootenay Plains and Coyote Lake Nature Sanctuary*, \$13,400.00 (015-00-90-122)
 University of Alberta, *Ecological effects of sportfish stocking and aeration in Boreal Foothills lakes*, \$28,370.00 (020-00-90-140)
 University of Alberta, *Management of earthworm invasions in Alberta*, \$3,000.00 (030-00-90-148)
 University of Alberta, *Russian thistle (Salsola kali) impact on ungulate habitat in the montane grasslands of Jasper National Park*, \$8,500.00 (030-00-90-123)
 University of Lethbridge, *Examining resiliency of bull trout populations to brook trout invasives*, \$20,000.00 (020-00-90-156)
 Weaselhead/Glenmore Park Preservation Society, *Invasive plant project at the Weaselhead Natural Environment Park*, \$3,000.00 (015-00-90-127)

FUNDING PRIORITY #6 **1 Project**

Improvements and innovation in matching sportsmen with landowners (e.g. facilitating hunter access to depredated waterfowl, elk and deer).

Alberta Foothills Network, *Maintaining the Foothills' natural and economic values - Working cooperatively to find balanced solutions*, \$37,000.00 (015-00-90-132)

NONE OF THE FUNDING PRIORITIES **11 Projects**

Alberta Hunters Who Care, *Wild Game for Foodbank Program*, \$20,000.00 (030-00-90-110)
 Ann & Sandy Cross Conservation Area, *Conservation Discovery Education 2009*, \$3,000.00 (002-00-90-124)
 Friends of Fish Creek Provincial Park Society, *Baseline study of amphibians in Fish Creek Provincial Park*, \$3,000.00 (030-00-90-151)
 Helen Schuler Nature Centre, *Rattlers, People & Parks: Lethbridge Rattlesnake Conservation Program*, \$1,500.00 (030-00-90-150)
 Laval University, *Ecology, conservation, and populations dynamics of mountain goats in Alberta*, \$18,683.00 (030-00-90-117)
 Society of Grassland Naturalists, *Moths and Butterflies of Medicine Hat and Area*, \$8,000.00 (030-00-90-165)
 University of Alberta Chapter of the Wildlife Society, *Urban deer project*, \$1,500.00 (030-00-90-149)
 University of Alberta, *Habitat and prey selection of a re-established cougar (Puma concolor) population*, \$25,750.00 (030-00-90-163)
 University of Alberta, *Predicting the spread of CWD from Saskatchewan into Southern Alberta*, \$16,357.10 (030-00-90-165)
 University of Idaho, *Genetic diversity analysis of Southern Alberta plains sharp-tailed grouse (Tympanuchus phasianellus jamesi), endangered sage-grouse (Centrocercus urophasianus), and their hybrids*, \$20,000.00 (030-00-90-157)
 Water Matters Society of Alberta, *Land and water - Connecting science, stewardship and public awareness*, \$5,000.00 (002-00-90-126)



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