Grant Eligible Conservation Fund 2013–2014

Annual Report of Activities & Synopsis of Funding Recipient Projects

For the Period of April 1, 2013 to March 31, 2014

Alberta Conservation Association

Conserving Alberta's Wild Side

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Conserving Alberta's Wild Side

www.ab-conservation.com

Our Vision

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

Our Mission

ACA conserves, protects and enhances fish and wildlife populations and their habitats for Albertans to enjoy, value and use.

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Photo: Nathalie Stanley

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Volunteers carrying out restoration work in the Castle Crown region.
Photo: Castle Crown Wilderness Coalition

Executive Summary

Funded by the province's hunters and anglers, ACA's Grant Eligible Conservation Fund (GECF) 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 $11.8 million to 707 projects carried out in Alberta by the conservation community. Furthermore the funding provided by the GECF continues to leverage approximately six times its value in conservation dollars, estimated at approximately $74 million - money that has been directly used for conservation work in Alberta.

This popular grants program received 96 applications (70 to GECF Part A and 26 to Part B) requesting just over $2.18 million in 2013-2014. A total of $799,918 was allocated to 56 projects (35 GECF Part A projects and 21 GECF Part B projects). The aim of this report is to document the procedures for 2013-2014 and to provide an overview of activities and results of projects financially supported through the GECF in 2013-2014.

KEY PROGRAM HIGHLIGHTS for the GECF 2013-2014:

GECF Part A: Conservation Support and Enhancement received 70 funding applications requesting a total dollar value of $1,277,280. A total of $469,917 was allocated to 35 projects: 10 small grants and 25 large grants.

GECF Part B: Research received 26 funding applications requesting a total dollar value of $904,361. A total of $330,001 was allocated to 21 projects. Project budgets ranged from $600 to $42,000.

Project budgets ranged from $700 to $39,500.

1. Introduction

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 2002-03. The GECF has granted $11.8 million dollars since 2002-03 to 704 conservation projects implemented in Alberta; these projects have leveraged an estimated $74 million in conservation work across the province. For 2013-14 a total of $470,000 dollars were made available for the GECF Part A: Conservation Support and Enhancement and $330,000 for GECF Part B: Research. After project selection, a total of $469,917 was granted to 35 Part A: Conservation Support and Enhancement projects and $330,001 was granted to 21 Part B: Research projects. This document provides an overview of GECF activities for the 2013-14 funding cycle.

Some project stats from GECF funded projects in 2013-14: two award winners; 5,000+ birds banded, 42,000+ ha under sustainable management; 700+ nest boxes built and installed; 2,700+ non-native trout removed from streams; 230+ garbage bags of invasive weeds removed; 800+ people attending conservation-related events; 50+ presentations given on GECF projects; education outreach to 10,000+ people; and countless volunteer hours. The list goes on. In Part II of this report, you can read about all the achievements of the projects that received funding in 2013-14.

2. The Funding Cycle

The funding priorities, guidelines and application forms were made available to the public October 10, 2012 via the ACA website, by email to existing contacts and by environmental list servers. Details of the 2013-2014 funding cycle are in the table below:

2013-2014 FUNDING CYCLE DATES

Posting of the Guidelines and Application Forms on ACA's website	October 10, 2012
Window to receive completed GECF Part B applications	November 1, 2012 - December 1, 2012
Window to receive completed GECF Part A applications	January 1-31, 2013
GECF Part B adjudication meeting	February 10, 2013
GECF Part A adjudication meeting	March 7, 2013
ACA Board approval and notification of applicants as to funding status	End of March 2013
Cooperative Project Agreements signed, initial payments made, and project work begins	From April 1, 2013
Interim reports due & second payments made (if required)	September 1, 2013
Final report due	March 15, 2014
Projects end & final payments made (if required)	March 31, 2014

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 Alberta Environment and Sustainable Resource Development (AESRD) staff. Certain project types and budget items are not covered by the GECF, for example land acquisition, emergency funding or over-head costs. Since fiscal year 2009–10, funding priorities have been used by the GECF to guide applicants in drafting their applications. The list of funding priorities remained the same as 2012-13, with a total of 14 priorities for both GECF Part A and Part B (see Section 4: Major Funding Priorities GECF 2013-14). The GECF does accept applications that do not relate to these suggested areas; however, projects that address one or more of these priority areas have a better chance of being funded than those that do not. The eligibility criteria and funding priorities can be found in full in the document "*Project Submission Guidelines for Funding 2013-2014*" (this document is available from the GECF Project Administrator).

The GECF Part A: Conservation Support and Enhancement offers small grants for projects with budgets of $3,000 and under and large grants for projects with budgets over $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: community groups, grassroots organizations, provincial and national institutes, as well as leading scientific researchers

4. Major Funding Priorities GECF 2013 – 2014

This text is taken from Section C of the *Project Submission Guidelines for Funding 2013 – 2014*.

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, culvert removals, 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 the persistence of native species.
6. Improvements and innovation in matching sportsmen with landowners (e.g. facilitating hunter access to depredating waterfowl, elk and deer).
7. Develop and validate inventory tools to determine the relative density and range of ungulate species using innovative techniques such as trail cameras or passive DNA samples.
8. Evaluate the effect of pesticides or herbicides on upland game birds (sharp-tailed grouse, pheasant, gray partridge) food availability and/or quality in agricultural landscapes.
9. Evaluate the effect of recreational access (mode, timing, duration) on wildlife & fish populations and habitat.
10. Investigation of methods for reducing the spread and/or impact of wildlife or fish related diseases.
11. Evaluate the impact of various harvest management regimes on fish or wildlife populations (e.g. fish size limits, three-point or larger elk requirements, etc.).
12. Evaluate the social demographics of hunting and angling to determine the factors influencing the decision to become involve in hunting or angling and the reasons why people opt out in a particular year.
13. Evaluate the effect of biological solutions of carbon sequestration on grasslands and treed lands.
14. Effects of agricultural run-off on fisheries.

5. Proposal Review Process

The ACA Board of Directors appointed Adjudication Committees for both the GECF Part A: Conservation Support and Enhancement and GECF Part B: Research.

GECF Part A: Conservation Support and Enhancement Review Process:

The GECF Part A adjudication committee consisted of three citizens of Alberta representing conservation organizations in Alberta, one public-at-large member of the ACA Board of Directors, and one ACA staff member and is chaired by a member of the ACA Board of Directors. Adjudicators were tasked with providing rankings and making funding recommendations for all GECF Part A applications based on the funding priorities and guidelines provided by ACA.

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 proposal adjudication meeting was held on March 7th, 2013 at ACA's Sherwood Park office, Alberta. The list of funding recommendations made by the Adjudication Committee was then approved by the ACA Board at the March 2013 Board Meeting.

GECF Part B: Research Review Process:

The application deadline for GECF Part B: Research was earlier than that for the GECF Part A to allow for a more rigorous academic review procedure; the same procedure tried and tested for many years by the ACA Grants in Biodiversity Program. All applications were sent out for review by experts in the subject of the research application. An attempt was made to get at least two reviews per application. The adjudication committee consisted of a representative from each of Alberta's three largest universities (University of Alberta, University of Calgary and University of Lethbridge), an industry representative, ACA's Wildlife Program Manager, ACA's Fisheries Program Manager and ACA's Board of Directors Academic Representative (who also acts as Chair of the meeting). Two adjudicators were assigned to review (using the application and academic reviews) and rank application using the three-tiered ranking system. Funding recommendations were

then made after the ranking process. The GECF Part B: Research adjudication meeting was held on February 10th, 2013 at the University of Alberta.

6. Funding Allocations

For the 2013-2014 funding cycle a total of $800,000 was made available for project funding via the GECF: $470,000 for GECF Part A: Conservation support and enhancement and $330,000 for GECF Part B: Research. Of the 70 applications requesting almost $1.28 M to GECF Part A: Conservation Support and Enhancement, 35 were funded (a 49% success rate for applications receiving full or partial funding). Of the 70 applications to GECF Part A, 15 were small grant applications (requests of $3,000 or under). 10 of the 15 small grant applications were awarded (a 67% success rate), whilst 25 of the 55 large grants (a 45% success rate). Of the 35 GECF Part A projects funded in 2012-13, 25 (71%) had been funded in previous years and 10 were new to the GECF.

GECF Part B: Research received 26 applications requesting a total of $904,360 for the 2013-14 competition, of these 21 were funded (a success rate of 81% for applications receiving full or partial funding). 7 (33%) of the funded research projects had been funded in previous years and the other 14 were new to the GECF.

One of the approved GECF Part A projects did not use the grant money allocated (Clearwater County, "Caring for my Land" - Riparian fencing, $6,000), as the grant recipient had trouble finding participants that could complete within the time frame of the grant. Two GECF Part B Research projects were not accepted: Alberta Innovates Technology Futures (AITF), Analysis of hunter participation in Alberta 2000-2012, $6,700 and Foothills Research Institute (FRI), Grizzly bear habitat use and movement in the grasslands of south-west Alberta, $20,000. The AITF project did not find any partner funding and could not carry out the project with the partial funding allocated by ACA. The FRI project did not proceed due to a decision by AESRD to delay initiation of the project and the applicant was not be able to effectively implement the proposed project with only partial funding support from ACA. Several projects were granted extensions due to unforeseen circumstances, which in most cases was due to the large-scale flooding event of June, 2013.

All projects approved for funding signed the Cooperative Project Agreement with the approved proposal and budget appended, with the exception of the two research projects mentioned above (Clearwater County returned the funds after the project was set up). The Cooperative Project Agreement outlines the reporting and payment schedules and other contractual obligations between ACA and the grant recipient. All grant recipients provided project reports. If the project was completed at the time of the interim report (September 1st), then this one report was taken as the final project report

7. Synopsis of Approved Projects for 2013 – 2014

A summary description of each of the 56 approved projects containing the project's objectives, activities and deliverables can be found in Part II of this report. The list below is in alphabetical order by organization for GECF Part A: Conservation Support and Enhancement and Part B: Research.

GECF Part A: Conservation Support and Enhancement

Small grants $3,000 and under

70th Gold Bar Scouts, 70th Gold Bar Scouts black-capped chick-a-dee birdhouse project, $1,800

Alberta Riparian Habitat Management Society (Cows & Fish), Southern Alberta Grazing School for Women - promoting habitat and improved grazing stewardship to livestock producers, $2,000

Camrose Wildlife and Stewardship Society, Camrose Purple Martin Festival, $2,500

Crowsnest Pass Quad Squad, McGillivray bridges repairs, $3,000

Edmonton Nature Club, 2013 Snow Goose Chase, $1,000

Friends of Fish Creek Provincial Park Society, Amphibian Monitoring Program and habitat restoration project, $3,000

King's University College, Faith-based organizations and conservation: engaging volunteers in recovery plans of the endangered limber pine, $2,995

Onoway & District Fish and Game Association, Bluebird/bathouse project, $700

Trout Unlimited Canada, Stewardship license project, $1,800

Weaselhead/Glenmore Park Preservation Society, Weaselhead Invasion Plant Program, $3,000

Large Grants (over $3,000)

Alberta Fish and Game Association, Pronghorn antelope migration corridor project, $35,975

Alberta Fish and Game Association, Collaborating with Stakeholders in Alberta's Grassland Region to apply sustainable land-use and to link urban, rural and ecological communities, $39,500

Alberta Riparian Habitat Management Society (Cows & Fish), Developing westslope cutthroat trout riparian habitat improvement action plans and implementing habitat management improvements, $10,000

Ann & Sandy Cross Conservation Area, Wildlife friendly fencing project, $9,000

Battle River Watershed Alliance, Ferry Point Reach riparian restoration project, $12,000

Beaverhill Bird Observatory, Stewardship and monitoring of wildlife at Beaverhill Lake, $18,100

Calgary Bird Banding Society, Cypress Hills migratory and breeding landbird monitoring, $17,400

Castle-Crown Wilderness Coalition, Inventory mapping and restoration in the Castle, $20,000

Clearwater County, "Caring for my Land" - Riparian fencing, $6,000 *(project did not proceed)*

Cold Lake High School, Northern Lights SD69, Migratory/upland game bird habitat enhancement, $10,000

Crowsnest Conservation Society, Maintaining and restoring Crowsnest River riparian areas, $15,000

Edmonton and Area Land Trust, Bird and mammal monitoring and habitat restoration, $9,000

Highway Two Conservation, Riparian improvement project, $12,000

Lesser Slave Lake Bird Observatory Society, Monitoring of migratory and breeding birds in the Lesser Slave Lake area, $25,250

Mountain View County, Riparian area management improvement fund, $12,000

Municipal District of Greenview, Swan Lake infrastructure upgrades, $35,000

Nature Alberta, Living by Water project - Homesite Consultation Program 2013, $26,000

Nature Alberta, Engaging Albertans in bird habitat conservation, $15,000

Northern Alberta Institute of Technology, Fisheries habitat improvements in the Sturgeon River Watershed, $26,197

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chapter, Conserving and restoring Arctic grayling in the Upper Pembina River Watershed - database development (Year 3), $14,900

Partners in Habitat Development, c/o Eastern Irrigation District, Partners in Habitat Development, $10,000

Red Deer County, Conservation Partners 2013, $25,000

Red Deer Fish and Game Association, Kneehill Valley pond, $7,800

Smoky Applied Research and Demonstration Association, Riparian area protection and enhancement project, $7,000

Trout Unlimited Canada, Mallard Point habitat enhancement point, $30,000

GECF Part B: Research

Alberta Innovates Technology Futures, The Alberta Boreal deer project: White-tailed deer habitat selection and density in Alberta's Boreal Forest, $15,000

Alberta Innovates Technology Futures, Analysis of hunter participation in Alberta 2000-2012, $6,700 (*Grant not accepted*)

Alberta Innovates Technology Futures, Mesocarnivore diversity in mixed-use landscapes: the Cooking Lake Moraine project, $5,000

Ducks Unlimited Canada, Evaluating the sustainability of landscape change for waterfowl in the western boreal forest, $5,000

Ducks Unlimited Canada, Institute for Wetland and Waterfowl Research, Incorporating wetland carbon values into spatially explicit tools to inform land use decisions, $7,500

Foothills Research Institute, Grizzly bear habitat use and movement in the grasslands of south-west Alberta, $20,000 (*Grant not accepted*)

Laval University, Population demography and life-history variation in mountain goats of Alberta, $7,500

Montana Cooperative Wildlife Research Unit, University of Montana, Developing a grey wolf population monitoring framework for southwest Alberta, $5,000

University of Alberta, Smooth brome invasion into native grasslands: plant-soil feedbacks and invasional meltdown, $33,599.80

University of Alberta, Human access management in central-western Alberta: implications for movement and behaviour of grizzly bears (*Ursus arctos*), $25,000

University of Alberta, Persistence of the Ya Ha Tinda elk population: the role of calf survival, $20,000

University of Alberta, Phylogeography of a neotropical migratory forest songbird: identifying conservation units, $20,000

University of Alberta, Evaluating the efficacy of setback distances as a tool for protecting critical habitat for ferruginous hawks in Alberta, $20,000

University of Alberta, Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta, $20,000

University of Alberta, Understanding the spawning habitat and reproductive requirements of the endangered western silvery minnow (*Hybognathus argyritis*), $17,000

University of Alberta, Using wetland-dependent wildlife to monitor landscape change, $7,510

University of Calgary, Experimental translocations of Ord's kangaroo rats, $14,631.20

University of Calgary, Characterizing the nature of Didymo blooms in Alberta streams with RNA sequencing, $16,000

University of Saskatchewan, Infectious pathogens and migration in blue-winged teal (*Anas discors*): Transport routes and impacts of infection, $25,000

University of Sherbrooke, Experimental management of bighorn sheep, $9,560

Wildlife Conservation Society Canada, Ecology of bats overwintering in the Canadian prairies, $30,000

8. GECF project contribution to the funding priorities

In total, 56 projects were approved for funding in 2013-2014: 35 Part A: Conservation support and enhancement projects and 21 Part B: Research projects. Again this year funding priorities were set by ACA staff and approved by the ACA Board of Directors. The funding priority list stayed the same in 2013-14. 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; and the funding priorities were used to further guide and direct applicants by providing priority areas of specific interest to ACA. Proposals did not have to relate to the funding priorities, but applications that address one or more of the funding priorities fare 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 only indirectly related to a funding priority. Applicants were asked to specify how their projects related to ACA's mission and funding priorities and this information was used to determine which of the selected projects for 2013-2014 contributed to ACA's funding priorities (see Table 1). Four (one GECF Part A projects and three GECF Part B projects) of the 56 projects did not address any of the funding priorities. For a complete overview of project contribution to the ACA Funding Priorities 2013-2014, see Appendix A.

The most cited funding priorities continue to be: #2 Site specific enhancement of habitat...(55%) and #4 Stewardship initiatives (51%); these are both broad funding priorities under which many Part A and several Part B projects fit. For 2013-14, the third most cited funding priority was #1 Habitat enhancement provincial recovery plans for Alberta's endangered species (23%), followed by funding priority #5 Impacts of non-native species on persistence of native species (19%), and then #9 Evaluate the impact of various harvest management regimes (15%). Funding priorities #1, #2, #4, and #5 have been the top four priorities since funding priorities were introduced. Three of the 14 funding priorities (#6, #8, and #12) have still not been addressed by funded projects, this reflects the fact that very few applications were sent in dealing with these funding priorities. This year we received an application specifically related to funding priority #12; this project was allocated partial funding, but as no co-funding was secured the project could not proceed. Again this fiscal year there were few proposals related to urban fisheries development (#3) and fisheries in general. Several funding priorities are better suited to research project, specifically funding priorities #7 - #14. It does not appear that applicants are targeting certain funding priorities when drafting their applications, perhaps because of the specific nature of some of the funding priorities. Perhaps we will see this in years to come.

Table 1: GECF projects in relation to ACA funding priorities since the funding priorities were introduced

Funding Priority	2013-14 % of projects (53 projects funded in 2013-14*)	2012-13 % of projects (60 projects funded in 2012-13)	2011-12 % of projects (52 projects funded in 2011-12)	2010-11 % of projects (47 projects funded in 2010-11)	2009-10 % of projects (68 projects funded in 2009-10)
#1 Habitat enhancement provincial recovery plans for Alberta's endangered species	23	15	19	21	19
#2 Site specific enhancements of habitat	55	57	50	53	38
#3 Urban fisheries development	8	2	8	9	7
#4 Stewardship Initiatives	51	50	54	51	37
#5 Impacts of non-native species on persistence of native species	19	25	19	23	18
#6 Matching sportsmen with landowners	0	0	0	0	1
#7 Develop and validate inventory tools… ungulates	4	2	6	2	n/a
#8 Evaluate the effect of pesticides or herbicides on upland game birds	0	0	0	0	n/a
#9 Evaluate the effect of recreational access on wildlife & fish populations	15	15	10	6	n/a
#10 Investigation of methods for reducing the spread of wildlife or fish diseases	4	8	4	0	n/a
#11 Evaluate the impact of various harvest management regimes	6	7	10	2	n/a
#12 Evaluate the social demographics of hunting and angling	0	0	0	0	n/a
#13 Evaluate the effect of biological solutions of carbon sequestration on grasslands & treed lands	2	2	2	n/a	n/a
#14 Effects of agricultural run-off on fisheries	4	0	n/a	n/a	n/a
None of the funding priorities	8	8	10	9	16

**Only projects that proceeded are included in this table*

PART II: GECF Project Summaries

Night research on the Ord's kangaroo rat. Photo: Lia Brands

Grant Eligible Conservation Fund Part A: Conservation Support and Enhancement

70th Gold Bar Scouts black-capped chickadee birdhouse project

70th Gold Bar Scouts

Grant: $1,800

Project Code: 030-00-90-223

Project Status: New; Completed

By installing species specific birdhouses (nesting boxes) in the City of Edmonton Gold Bar Park area, this project is intended to enhance the nesting habitat for the chickadee within the urban forest. This in turn, provides viewing and educational opportunities for the Scouting youth, their families, and the general public, as well as potentially producing the outdoor conservationists of the future! Boys and girls in Beavers, Cubs and Scouts, ranging in age from five to 14 years, built two birdhouses each for a total of 50. One birdhouse from each set was placed within the Gold Bar Park area, the second was placed in or near the youth's residence yard. The ongoing maintenance programme for the birdhouses installed in the public parks will include: repairing damaged birdhouses; replacing missing birdhouses; moving unproductive birdhouses; checking for nests; and cleaning-out the birdhouses. A spreadsheet and picture slide show recording all this information will also be maintained. Another 30 birdhouses will be built and installed in the same park area, Fulton Place Community League Hall, and Gold Bar Community League Hall by Feb 2015.

Deliverables:

50 black-capped chickadee birdhouses.

A youth-developed PowerPoint presentation.

A spreadsheet documenting birdhouse locations and birdhouse activities.

A set of photos documenting the project from start to completion.

Pronghorn antelope migration corridor project

Alberta Fish and Game Association

Grant: $35,975

Project Code: 030-00-90-160

Project Status: Funded since 2009-10; Completed

Project Website: www.afga.org/antelope-corridor-enhancement.html

Migratory corridors are important in ensuring pronghorn remain at sustainable populations. Fences in particular create great difficulties for pronghorn as they are unwilling to jump over them. Traditional barbed wire fences' lower strands are generally very low so that crawling under often results in serious scrapes that can significantly impact the antelope's health. Page wire fencing is also present which does not allow any passage of pronghorn. This project will, in the case of barbed wire fencing, remedy this situation by replacing lower barbed wire strands with smooth wire and at the same time raising them to a height easily navigable by the pronghorn. Where page wire fencing is encountered the entire fence will be replaced, again with

a smooth wire lower strand at the appropriate height. The project objectives were to: 1.) remove barriers and minimize impediments on migration corridors for antelope, 2.) increase public awareness of antelope and effects of man-made barriers, 3.) illustrate the efficacy of on-the ground projects based on scientific research, 4.) enhance hunters' image as proactive conservationists. The project goal was to manipulate/install a minimum of 50 miles of fencing to wildlife friendly standards. The main activities conducted were: to identify pinch points on migratory routes; acquire consent from the landholder to access property; remove lower strand of barbed wire; install smooth wire; remove page wire and install upper strands with barbed wire and lowest strand with smooth wire; re-space upper barbed wire to facilitate crossing by deer and elk.

Deliverables:

97 miles (156 km) of fence have been replaced, manipulated, or removed to facilitate antelope migration. For more details on the project sites see the ACA final report.

An article on this project appeared in Alberta Outdoorsmen in June 2013, and two additional news releases were distributed via their contact list.

Collaborating with Stakeholders in Alberta's Grassland Region to apply sustainable land-use and to link urban, rural and ecological communities

Alberta Fish and Game Association

Grant: $39,500

Project Code: 030-00-90-127

Project Status: Funded since 1999 as Operation Grassland Community; Completed

Project Website: www.afga.org/operation-grassland.html

The goal of this project was to collaborate with stakeholders across Alberta's prairie region to develop, implement, evaluate, and adapt management actions that protect and enhance wildlife habitats, and support diverse socio-economic interests, and create greater urban awareness of the critical role of ranching in the long-term sustainability of prairie wildlife. In collaboration with stakeholders involved in their design, to implement, monitor, evaluate, and adapt pilot projects that demonstrate sustainable wildlife habitat management approaches (with focus on Species at Risk; e.g., burrowing owl, ferruginous hawk, Sprague's pipit, and loggerhead shrike). Other objectives include: linking urban and rural audiences through on-site "demonstration days", with special invitation to a broad cross-section of Albertans; to produce and widely distribute associated digital and print media (targeting both urban, acreage, and farm/ranch audiences; to protect wildlife habitats through five-year voluntary stewardship agreements, and renew expiring agreements; to create Species at Risk Conservation Plans (SARC plans - partnership with MULTISAR); to monitor annual trend and distribution in burrowing owl and loggerhead shrike. Also the project targeted an urban audience, to produce and widely distribute a videography of a ranch to ranch road trip and increased awareness of the value of wildlife and their habitats, the interrelationship between a sustainable environment and sustainable economy, and land use solutions that balance multiple interests. The project strives to increase and maintain strong connections with land managers, and program partners.

Deliverables:

Habitat enhancements/ sustainable land-use applications: Two-day Land EKG training course (four OGC members; two OGC staff); Three large Land EKG projects implement range and ecological monitoring, analysis, and adaptive management (a fourth project slated for early spring); Economic and wildlife management strategies established for > 40 monitoring sites that will benefit habitats for SAR and other wildlife across an estimated six-eight sections (2,000 ha) of prairie habitats. Development of habitat measures for wildlife habitat quality. These new measures will be incorporated with standard/routine Land EKG production measures in 2014-15. OGC-Land EKG production of instructional on-line video for land mangers outlining compatibility among grazing management and grassland wildlife goals using Land EKG. In-depth year-end interviews with Land EKG participants (March 17-21, 2014) to assess experience with Land EKG techniques, and develop next steps.

Three open houses in late March & early April 2014, with locations, caterers, and invitations/guests in Edmonton, Calgary, and Lethbridge.

One steering forum meeting to confirm and document adaptive management needs, and commitments to their implementation (PHASE IV 2014-15); >85% of stakeholders involved in original steering forum (PHASES II & III) committed to continue into PHASE IV; three-six new land managers joining collaborative effort with commitment to project implementation on new lands in PHASE IV.

A final report outlining pilot projects and their evaluations completed March 2014.

Protect wildlife habitats through new and renewing voluntary stewardship agreements: Nine new members, adding >24,000 ha to prairie habitats under OGC stewardship agreements. 19 renewals, renewing ~ 17,000 ha for voluntary protection.

Promote/Implement Beneficial Management Practices through Species at Risk Conservation Plans (SARC plans): three SARC plans completed and delivered.

Monitor annual trends and distribution in burrowing owl and loggerhead shrike: 200 OGC members involved in the annual census of burrowing owl (23rd year). Results provided to recovery teams and published in OGC newsletter & other suitable media. The 2013 loggerhead strike census was not completed due to limited funding.

Increasing urban appreciation of prairie & strengthening urban-rural connectivity: Two complimentary films produced & launched: "The Conservation Caravan" (12 min.), & "Road to a Sustainable Prairie" (4 min.) Conservation Caravan >1,200 views to date through email notifications alone.

Successful on-site ranch and ecology demonstration/ outdoor dinner celebration (guests: 'influential' urbanites active in the local food movement).

Official public launch of new "Road to a Sustainable Prairie" film (and screening of the Conservation Caravan) through public open house format: Edmonton (March 24th), Calgary and Lethbridge (April 8th & 15th). This begins an aggressive promotions push province- and Canada-wide.

Additional Awareness Activities (various media – print, t.v., radio, web): Prairie Acres newsletters (two mail-outs, three e-versions), OGC articles (12), Conservation Caravan featured in Western Producer Magazine and Edmonton and Calgary's 'Avenue' magazine; blog posts on OGC's website (seven); 95 OGC tweets (@OGC_AB); Meetings/conferences/ workshops (18); Presentations (six).

On-going promotions through new website (launched February 2013), including regular blog (See www.grasslandcommunity.org/ "news").

Partner in development/ implementation of the Southern Alberta Grazing School for Women.

20 OGC members participated in 'birding walks on the range'.

Southern Alberta Grazing School for Women - promoting habitat and improved grazing stewardship to livestock producers

Alberta Riparian Habitat Management Society (Cows & Fish)

Grant: $2,000

Project Code: 020-00-90-165

Project Status: Funded since 2011-12; Completed

In 2013, the Cows and Fish two-day grazing school for women was successfully developed and delivered in Foremost on July 24- 25, 2013. In addition to four speakers and the organizing committee of seven, 23 attendees took part in the event. Mornings were spent indoors, listening to speakers, while afternoons were spent outdoors, learning practical hands-on learning field techniques, all intended to improve skills and management knowledge. The project aim was to offer a setting for learning and inquiry, and for hands-on opportunities, so that participants could practice what they are hearing and then apply realistic, practical strategies to improve the sustainability on their own farms and ranches. The first objective was met in that Cows and Fish successfully provided valuable content that helped attendees understand grazing management to sustain healthier landscapes. The list of things that were listed as learned about was broad, and included items from the many presentations and topics covered, but included: "Proper stocking rates", "Identify some prairie grasses and forbs", "Identify riparian health (how to do it)". The second objective was to successfully influenced skills and knowledge that attendees will use on their farm or ranch: 94% of attendees (who have land they manage) indicated that the school would influence their grazing management practices and 96% indicated they would incorporate practices they learned about at the school. One of the very positive results found from follow up feedback surveys after the school was that the impact of the school is much greater than just the individuals that attend—they directly influence the management of others by attending.

Deliverables:

Summary articles promoting the event or reporting on the event carried by local papers and municipal district/county newsletters. County of Warner, Chinook Applied Research Association and Operation Grassland Community each reached out to their ratepayers/ members with information about the grazing school.

Grazing school, over two days, completed and delivered to 23 attendees plus four speakers and seven committee members (three additional women had registered but were unexpectedly unable to attend for personal reasons).

Evaluation summary from school is complete. Evaluations were completed by 24 of the attendees or speakers. Based on the evaluation (feedback) forms received, Cows and Fish know the school met their objectives in terms of influencing knowledge and grazing management practices. Based on the evaluations, the overall impact was high: Of those with grazing to manage (a couple people no longer manage directly): 94% said it would influence their grazing management (one person said 'maybe'); 96% said they would incorporate practices they learned at the school (one person said 'maybe').

All topics rated quite highly, but the top five topics, with the most 'most valuable' ratings were: Range Health and Grazing Principles and Practices; Stocking Rates/ Record Keeping; Watering System demonstration; Riparian Health (field session); Plant Identification and Range Health (field sessions).

Developing westslope cutthroat trout riparian habitat improvement action plans and implementing habitat management improvements

Alberta Riparian Habitat Management Society (Cows & Fish)

Grant: $10,000

Project Code: 020-00-90-167

Project Status: Funded since 2011-12; Completed

The purpose of this project is to identify riparian habitat issues and develop action plans which will lead to improved threatened westslope cutthroat trout (WSCT) (*Oncorhynchus clarkii lewisi*) habitat along southwestern Alberta streams, expanding on initial work completed in 2011, ultimately leading to management change or restoration. Working collaboratively with experts (including Joint Recovery Team members) on this species, five riparian sites along streams with remaining pure populations of WSCT were selected and examined. Using this information, recommended action plans were then developed for each site based on examining current riparian ecosystem condition, identifying the management and land use issues on site, then developing stewardship management recommendations that address both site-specific concerns. To involve experts and stakeholders in the process, and increase commitment to management change and implementation, one field tour was held to discuss the issues and needs for the project and the relationship of riparian management and aquatic, fish habitat needs. The tour was attended by 15 individuals from a diversity of land use and management sectors and generated excellent discussion and questions. Then an experts meeting was held, sharing draft results and the group helped determine the priority needs for a stakeholder workshop. The stakeholder workshop, attended by 47 people, included presentations on riparian health results and issues found, showcased numerous sector examples of successful actions already taken, and involved a discussion to identify solutions and garner support for habitat improvements. Group discussions were very valuable, engaged and enthusiastic – there is a lot of interest in working together to address barriers to improvement and help improve riparian habitat for WSCT. Six management changes /restoration activities with partners and landowners involvement have been confirmed and/or completed and Cows and Fish have numerous other commitments already for the coming year that will also benefit WSCT habitat and riparian health.

Deliverables:

Expert discussion to prioritize site selection and methods: A list of streams was collected, and where applicable, reach locations within those streams which are priorities for riparian sampling. In addition, the selected streams have been prioritized as well.

Stakeholder tour: Cows and Fish partnered with Public Lands (Rangeland Management) and the local Stock Association to set this up. The tour was held in October, 2013.

Stakeholder workshop: This was held this in February, 2014, with input from key partners.

Riparian habitat recommended stewardship action plan: Riparian health was examined on five reaches to identify habitat threats and human impact, to develop reach-specific management recommendations for stewardship action. Following data entry and validation, recommended stewardship action plans were completed to address human-induced riparian habitat loss and degradation. These were provided to the respective landowner/land manager.

Riparian health overall stewardship management plan report: Hull, K., Ambrose, N and A. Rawluk, 2013. 2013 Riparian Health Inventory Project (Year 3): Westslope Cutthroat Trout Priority Streams: A Summary of the Riparian Health Status and Habitat Improvement Needs for Five Priority Westslope Cutthroat Trout Sites in the South Eastern Slopes of Alberta. Alberta Riparian Habitat Management Society (Cows and Fish). Report No. 043

Riparian management changes and habitat improvements: Worked with stakeholders and partners to influence change on six sites; Cows and Fish continue to working with partners land managers, allotment holders, landowners, and other land users. Those projects completed completed and committed include: two involving addition of physical changes (e.g. fencing and/or off-site watering) (one of these will include grazing changes as well); one site with completed restoration work; one bridge committed to be installed and one other site with commitment to work with the producer on how to reduce traffic through the stream.

Wildlife friendly fencing project

Ann & Sandy Cross Conservation Area

Grant: $9,000

Project Code: 015-00-90-206

Project Status: Funding since 2012-13; Completed

The Ann & Sandy Cross Conservation Area (ASCCA) consists of 4,800 acres of mixed grasses, timber, numerous freshwater springs and the headwaters of Pine Creek. In order to effectively manage for fire hazards on the property and protect the natural state of Pine Creek, the ASCCA has developed a spring and winter grazing plan. However in order to properly manage grazing distribution on the property, the ASCCA requires fences which can inhibit the natural movement of wildlife within the Conservation Area. In order to reduce fatalities and serious injuries and minimize the impact of the movement of wildlife throughout the property, the ASCCA builds fences according to previously researched wildlife friendly fencing protocols (particularly, Montana Fish, Wildlife and Parks, "Landowners Guide to Wildlife Friendly Fences; How to Build Fence with Wildlife in Mind"; and a pilot fencing project on the ASCCA). Due to the installation and replacement of wildlife friendly fencing, and to the use of a spring and winter grazing plan, the Habitat Manager has identified a noticeable change in the range of the resident elk on the property. Elk have been spotted in areas that they could not previously access reflecting the success of the ASCCA's current grazing management plan and wildlife friendly fencing project. This phase of wildlife friendly fencing included adding 2,509 feet of three-wire internal fencing on the property, specifically along Pine Creek to improve water quality and protect the resource; and to replace 4,458 feet of existing fence along the border on 85th street with wildlife friendly four-wire fencing. 1,000 feet of buck and rail fencing was proposed to be part of this project but was rejected and was not installed. This project was facilitated by the Habitat Manager Reg Rempel and a group of volunteers contributing over a total of 958 volunteer hours, with the remainder of the project contracted out to Nordmann Contracting.

Deliverables:

2,509 feet of new internal wildlife friendly three-wire fencing has been installed.

5,776 feet of existing external wildlife friendly four-wire fencing has replaced old five-wire and page fencing along the property boundaries.

Ferry Point Reach riparian restoration project

Battle River Watershed Alliance

Grant: $12,000

Project Code: 015-00-90-210

Project Status: New; Completed

Project Website: www.battleriverwatershed.ca/riparian

The Battle River Watershed Alliance launched the Ferry Point Reach Riparian Restoration Project to improve fish habitat and water quality in the Battle River. The focus of the Riparian Restoration Project is to strengthen the health of riparian areas in the agricultural area identified to support fish and fish habitat, decrease nutrient levels in the river, increase biological biodiversity and promote the health of a river that watershed community members and their children can enjoy, access, and thrive on. Together with the Alberta Riparian Habitat Society (Cows and Fish) and landowners, the project identifies riparian restoration projects appropriate for their land and operation. With money received from Environment Canada, PennWest and ACA, they worked with and helped fund the restoration work and these projects, over time, will hopefully increase biodiversity, improve river bank stability, increase water quality, and improve fish habitat and fish populations. These projects should also have long term economic benefits to the landowners in livestock health and crop production. Another important goal of this project is to increase landowner awareness of the significance of riparian areas in the river ecosystems health and to our communities. The project included several landowner meetings, a riparian research report, riparian health assessments, on-the-ground restoration projects including off-site watering systems, tree plantings, fencing, and educational visit from students. A photo journal will be produced by August 2014 and distributed to the local community, funders and to landowners across the Battle River watershed.

Deliverables:

Initial Landowner Information Meeting and confidential one-on-one landowner meetings to discuss potential projects on their land, completed prior to this project.

Build Battle River riparian research file in Access (Ongoing).

Ferry Point Reach Riparian Restoration Project information webpage: see www.battleriverwatershed.ca/riparian

Riparian Research Report Draft by August 2014.

Elementary School Tour/Riparian Education day: One classroom; approximately 25 students and one teacher were involved.

Riparian Health Assessments: Nine assessments were done with an overall rating of 75% unhealthy and 25% healthy but with problems.

Landowner meeting/site tour (Completed Fall 2013).

Photo journal competition (Fall 2014).

Landowner riparian projects (Spring-Fall 2013-2014).

Evaluation completed projects (anticipated Summer 2014).

Project report (anticipated Fall 2014)

Stewardship and monitoring of wildlife at Beaverhill Lake

Beaverhill Bird Observatory

Grant: $18,100

Project Code: 030-00-90-124

Project Status: Funded since 2006-07; Completed

Project Website: www.beaverhillbirds.com/index.php

Beaverhill Lake is nationally and internationally recognized for waterfowl migration and observation. More than 270 species of birds have been reported here. The goal of this project is to continue working as stewards of the Beaverhill Lake Natural Area, monitoring the wildlife in the region and engaging the public about the importance of Beaverhill Lake, the wildlife, forests and wetlands. The project objectives in 2013 were to monitor the migrating and resident birds in the Beaverhill Lake Natural Area with netting, nest boxes, and nest baskets; monitor bats in the Beaverhill Lake Natural Area; initiate a tree swallow geolocator program in collaboration with University of Manitoba; initiate a mammal trail monitoring project using trail cameras and winter snow tracking; give public presentations/ demonstrations; have two major on-site public events and at least three minor formal events throughout the season and maintain public access to Beaverhill Lake Natural Area. Spring migration monitoring was conducted and 324 birds were captured, 17.20 birds/100 net hours. The fall songbird migration monitoring was completed October 9, 2013 (capture rate was 15.6 birds/100 net hours, 55 species). From September 10th through November 14th the BBO captured 199 saw-whet owls, (16.1 owls/100 net hours), two Boreal and three long-eared owls. The bat detector recorded little brown myotis, northern myotis, Eastern red bat, silver-haired bat, big brown/silver-haired, and hoary bats over the last two years. All 150 tree swallow boxes were monitored, the Elson Bluebird Box Trail was expanded to 450 boxes and a new house wren nest box grid was established. Forty geolocators were placed on tree swallows. The duck and saw-whet owl boxes, and long-eared owl baskets were also monitored. Two trail cameras were installed along two game trails in the Natural Area and white-tailed deer, moose, coyotes, hares, grouse were detected. Winter snow tracking by volunteers was conducted on six visits and microtines, short-tailed and long-tailed weasel, porcupine, hares, moose, deer, coyotes, red squirrel, red fox, muskrat, and grouse were found. Long-tailed weasel tracks were observed on all visits within the Natural Area. Twelve presentations were given throughout the year. The BIG Birding Breakfast was held June 1st with 42 people attending. The Steaks and Saw-whets event was held October 4 and 5 with over 100 people observing saw-whet owls captured on both nights. Numerous other groups visited the Natural Area throughout the winter. Trail maintenance was done before the Steaks and Saw-whets event.

Deliverables:

Annual Beaverhill Bird Observatory report (it will be posted on the BBO website).

Data submission to AESRD on birds, bats, terrestrial mammals.

Article in Nature Alberta on results of mammals monitoring from trail cameras and snow tracking - submitted for next deadline.

Publish results of the number of long-tailed weasels found and the habitats they were using.

Publish a paper on two seasons of bat detector results (2012 and 2013): report to be sent to publication.

Cleared trails and maintained road access to Natural Area. Mowing was not done and will be done in spring.

Two major on-site presentations, four minor on-site presentations and more than five off-site talks or demos more on-site and off-site talks done than proposed.

Cypress Hills migratory and breeding landbird monitoring

Calgary Bird Banding Society

Grant: $17,400

Project Code: 030-00-90-188

Project Status: Funded since 2011-12; Completed

Project Website: chipmigration.wordpress.com/

After a two-year pilot, the Calgary Bird Banding Society (CBBS) ran the second official year of standardized landbird migration monitoring in the unique Cypress Hills of Alberta in 2013. During spring and fall migration, and breeding studies, a total of 1999 new individuals were banded in 2013. Daily observations were obtained concurrently throughout the migration seasons and over 200 species of birds have been detected. These numbers and exceptional diversity reiterate how ecologically significant the area is for migrant stop-over, and that habitats in the Cypress Hills provide productive habitat for a large diversity of breeding bird species. The main objective was to facilitate the continuation of two main projects which are effective tools for documenting population status and trends, and habitat effectiveness. Following the guidelines set by the Canadian Migration Monitoring Network (CMMN), results will contribute to Canada's national framework for the Conservation of Species at Risk through reporting on the status of landbird species. Increases and declines of certain populations can be a reliable indicator of the health of not just particular species but also of their ecosystems. Monitoring Avian Productivity and Survivorship (MAPS) is a coordinated long-term program whose goal is to provide data on breeding landbird populations. The banding station also provides environmental education opportunities for school groups and the general public. Increasing the public's understanding and appreciation of wild birds and their habitats is essential to the conservation of our resources.

Deliverables:

The annual technical report with results of the project will be published upon completion of the project and made available on the CBBS website at www.calgarybirdbandingsociety.org/.

A blog website is currently available at chipmigration.wordpress.com/ and updated with highlights throughout the active migration season.

Camrose Purple Martin Festival

Camrose Wildlife and Stewardship Society

Grant: $2,500

Project Code: 030-00-90-191

Project Status: Funded since 2011-12; Completed

The Camrose Wildlife and Stewardship Society (CWSS) committee held its 4th Annual Camrose Purple Martin Festival on June 23rd, 2013. The festival was a one-day public celebration of nature, birds, and greenspace, with a focus on purple martins. The festival involved a collaboration of city, non-governmental, education, university, and wildlife conservation organizations. The Festival's mission is to provide a high profile, community-based nature tourism event to showcase the vision and work of the CWSS. The CWSS strives for a greenspace network that enhances community values and quality of life for City of Camrose and area residents. The objectives of the festival were to: 1) encourage participation in nature-based activities, particularly community members, schoolchildren, and nature enthusiasts; 2) raise awareness and develop interest in wildlife conservation, particularly purple martins; and 3) enhance the purple martin nest box program and volunteer participation. The festival included several activities, including nest box demonstrations, keynote presentations by Myrna Pearman from the Ellis Bird Farm and Glen Hvenegaard from the University of Alberta, panel discussions on attracting and maintaining martin colonies, a bus tour, a walking tour, children's activities, and information booths. Project deliverables included 80-90 educated and satisfied festival participants, an evaluation summary of the festival, three new nest boxes for purple martins, local and provincial press coverage (newspapers and radio), growing local interest in becoming a purple martin landlord, an enhanced list of contacts for future activities, and an updated festival planning manual. Many positive and glowing comments were received about the event.

Deliverables:

The event attracted 80-90 people to the festival

Festival evaluations were collected from participants, regarding likes, dislikes, future interest, and economic impacts. A summary was presented to the Camrose Purple Martin Festival steering committee.

Supported the purple martin nest box program by erecting three new nest boxes.

Four articles local newspapers and coverage by CKUA and CFCW about purple martin conservation. For example, see: issuu.com/camrosebooster/docs/06-18_the_camrose_booster. Increased participation in the purple martin landlord volunteer program.

Created a list of people to contact regarding future stewardship and educational activities.

Improved the planning manual for future versions of the Camrose Purple Martin Festival.

Inventory mapping and restoration in the Castle

Castle-Crown Wilderness Coalition

Grant: $20,000

Project Code: 015-00-90-189

Project Status: Funded since 2008-09 (not funded in 2011-12); Completed

The Castle-Crown Wilderness Coalition (CCWC) has continued to work with AESRD invasive plant staff to identify and map areas of invasive species. Hawkweed was a specific target for this year and staff attended a hawkweed workshop hosted by AESRD to better be able to identify the various types. Each year CCWC works to extend their knowledge and reach areas they have not worked in before. This year new locations in the Carbondale and the South Castle Rivers were found containing burdock, hounds tongue, blueweed and mullein. AESRD plant staff has stated that they would like the West and South Castle valleys free of invasive plants and believe that by continuing to work together this is achievable. CCWC staff and volunteers covered a good deal of area this year and with the new signage more people are stopping by interested in the work that is being done, with some choosing to stop and help. CCWC continue to have a presence at fairs festivals and events with their education booth. The outreach education includes information from the CCWC and partners on plant identification, watershed health and best practices in the backcountry and how what CCWC does affects wildlife and fish populations. Information on aquatic invasive species has now been included in their educational outreach. CCWC are finding that people, especially anglers are very keen to know how they can help to keep aquatic invasive species out of Alberta. This year the booth was also set up in the Castle to speak directly with the people recreating there. This was a great opportunity to give out maps and information and to explain the damage done to spawning beds when ORV's go through rivers and streams. CCWC coordinate with industry and others who are working to eradicate non-native species. Staff and volunteers attended a field day with Shell on the work they are doing to reclaim old well sites. Volunteers were invited to come out and help with field projects like the West Castle Wetland weed pull and the Shoreline Clean up. Both of these events had good turnouts. Volunteers were informed of upcoming projects and information shared from the Crowsnest Pass weed crew and from National and AB Parks projects as well. CCWC have also been taking an active role in the Headwaters Action Plan and the westslope cutthroat trout recovery plan. Information collected is shared with government and stakeholders and infractions are reported directly to Conservation Officers.

Deliverables:

AESRD Invasive Plant Survey Information Sheets submitted for each site, to be added to mapping inventory. – 230 sheets were submitted for entry.

CCWC Stewardship Reports submitted for all sites visited by staff, stewards and hike leaders. – Stewardship information is included on the plant survey forms for those sites. Eight other stewardship forms were received.

Invasive plant removal and clean up done at staging areas. - Staging areas visited; Syncline both trail heads, Middle Kootenay, Table Mtn., North Kootenay, South Fork Lakes, Carbondale Staging area, Carbondale Fire Tower Look Out, Grizzly Creek on the S Castle River.

Work with AESRD when appropriate to repair and close illegal trails and clean random camping sites. – Where possible signs and barricades have been put back and illegal trails blocked. Staff again spent quite a bit of time cleaning up after random campers and removing their makeshift toilets. Unfortunately illegal trails are popping up faster than they can take care of them and they are seeing more evidence of motorbikes high into the alpine.

Visit and monitor sites historically visited by the CCWC and add new sites and areas on foot, horseback and bicycle throughout the backcountry and Front Range Canyons of the Castle: Historic sites were visited and many are looking better. New sites were found in the Carbondale and South Castle Rivers.

Host and attend outreach events, educating on invasive species, wildlife, watersheds and species at risk: hosted two field outreach days, several building days for the kiosk, and attended fairs and festivals. CCWC are also taking an active role in the Headwaters Action Plan and the WSCT Recovery Plan and sharing invitations and information with members.

Outreach and education events were ongoing throughout the year: The CCWC continues to offer outreach opportunities. CCWC hosted John Weaver to speak on his work in the SE Slopes and a Bear & Cougar Awareness evening and also had Jim Rennie speak to their members and the general public on the 2012 Amphibian Survey in the Crowsnest Pass Area.

"Caring for my Land" - Riparian fencing

Clearwater County

Grant: $6,000

Project Code: 015-00-90-204

Project Status: New; Not completed, grant money returned

"Caring for my Land" is a program initiated by Clear Water Landcare, a sub-committee watershed stewardship initiative, under the governance of the Clearwater County Agricultural Service Board. The program was heavily influenced by Red Deer County's "Off the Creek" program. With permission from Ken Lewis, Conservation Coordinator at Red Deer County, Clearwater County developed a similar pilot program including application process. The intent of the program is to achieve on the ground practice change for watershed protection and enhancement. The project objective was to identify and co-fund two significant riparian fencing projects and project activities were to focus on two fish bearing streams in Clearwater County. Unfortunately this project didn't proceed as planned as they could not secure the fencing project sites as hoped. Due to weather related delays early on, cost overrun matters, uncertainty with the current landowner and the lack of a second landowner site, Clearwater County were unable to complete either project by the onset of winter and Clearwater County were unable to carry over the funding into 2014-15.

Deliverables:

Project did not proceed as planned.

Migratory/upland game bird habitat enhancement

Cold Lake High School, Northern Lights SD69

Grant: $10,000

Project Code: 015-00-90-208

Project Status: New; Extended until end June, 2014

Cold Lake High School students involved in the Outdoor Pursuits engage in numerous learning activities focussing on conservation, habitat, hunting ethics, and the importance of stewardship in maintaining and enhancing wildlife habitat. As a part of an effective teaching program, the teachers strive to involve students in meaningful, engaging, and authentic learning activities and assessments. Combining classes with colleagues to manufacture the nest boxes/platforms involves two groups of students in these activities. This multi dimensional approach to learning addresses different learning styles of students, puts theory to practise, and enables students to have a direct impact on habitat in their local area. The upland game bird enhancement program would again allow students to be involved directly in a tangible development of wildlife habitat that they themselves may take advantage of in the future. The students have: 1.) In cooperation with the design studies class, engaged in research to design nest boxes and nesting platforms for migratory game birds that will be of appropriate size, shape, location, and materials. 2.) In cooperation with the design studies class, manufacture and construct the nest boxes/platforms; 3.) Participated in research of proper location, and the actual installation of the nest boxes/platforms with cooperating land owners; 4.) Research appropriate food plot development sources that would support local upland game bird species. 5.) Engage in preparation and seeding of food plots on local participating landowner's property.

Deliverables:

60 nest boxes constructed and installed at several locations, including Cold Lake Provincial Park, Cold Lake Golf Course and several individuals homes, by outdoor education students. Some of the boxes were used by ducks (largely common merganser). Students will continue to monitor and maintain the next boxes.

Five acres of private land was seeded with native seed to increase habitat for upland game birds.

Maintaining and restoring Crowsnest River riparian areas

Crowsnest Conservation Society

Grant: $15,000

Project Code: 015-00-90-191

Project Status: Funded since 2011-12; Completed

Project Website: crowsnestconservation.ca/our-work/conserve-the-crow-protect-the-flow/

Weed infestations along Crowsnest River have modified native riparian vegetation and wildlife habitat, and increased river bank erosion, causing increased sedimentation in the river, compromised river integrity, modified stream flows and disruption of long-standing trout spawning areas. The overarching goal is to restore and maintain native riparian habitat with resulting beneficial effects for local water quality, trout habitat and adjacent riverine habitat for game mammals and birds along Crowsnest River and additional trickle-down benefits to the integrity of the Oldman River watershed. 2013 marked the third successful year of Crowsnest Conservation Society's partnership with the Municipality of Crowsnest Pass on the *Maintaining and Restoring Crowsnest River Riparian Areas* project. The program has grown since 2011 and is divided into four main components: 1.) Removing weeds from riverbanks; 2.) Planting native shrubs and trees, and seeding native grasses in riparian areas; 3.) Increasing educational opportunities for the community and landowners; 4.) Monitoring weed species' presence and abundance in riparian areas.

Deliverables:

Update the plant-monitoring database in spring and fall of 2013 (Completed). Data is compiled in Municipal and Crowsnest Conservation files, and major findings are presented in the 2013 Crowsnest River Riparian Report, see crowsnestconservation.ca/resources/.

Organize four community weed pull/planting events, one per month in through the summer, weather permitting: Weed pulls were held: Riverside Memorial Park in Blairmore (June 2013), Drum Creek in Hillcrest (July 2013), and Crowsnest River in Coleman (August 2013). A planting event was held at Crowsnest River between Frank and Blairmore (September 2013). The Riparian Restoration Technician hand pulled and removed 88 bags of invasive species. At community

weed pull events, volunteers removed 57 bags of weeds at targeted locations. 81 trees and shrubs were planted in 2013.

Workshops presented prior to each weed pull event for volunteers and for local landowners by the Agricultural Fieldman and the Riparian Restoration Technician.

Workshop by Cows and Fish was held on riparian health to Crowsnest Pass community, focusing on local landowners (June 25th).

Prepare and distribute educational material (hard copy or electronic brochures on weed identification and removal techniques) to private landowners. The Riparian Restoration Technician met with 78 private landowners in riparian areas and distributed weed brochure packages ("Weed Wise Gardening in Alberta", "Be on the Lookout for these Invasive Plants!" and "Crowsnest Pass Agriculture & Environmental Services, Riparian Area Health").

Annual progress report at the end of the season, summarizing weed removal and planting activity was completed. The *2013 Crowsnest River Riparian Report* summarizes all the activity of the 2013 *Maintaining and Restoring Crowsnest River Riparian Areas* project.

Future program funding, 2014 to 2016, will come directly from Alberta Agriculture and Rural Development to the Municipality to continue building on past program achievements and will focus on continuing the work to maintain and protect valuable riparian areas within Crowsnest Pass.

McGillivray bridges repairs

Crowsnest Pass Quad Squad

Grant: $3,000

Project Code: 015-00-90-202

Project Status: New; Extended until October 31, 2014

Due to the narrowness of the six bridge crossings on McGillivray Creek, which is native westslope cutthroat trout habitat, users are currently fording beside the bridges to access the trail. The project objectives are to mitigate the disturbance of the watercourse by widening the bridges and providing non-destructive repair and maintenance which will encourage OHV traffic to utilize the bridge; thereby minimizing the impact on the native westslope cutthroat trout habitat. This provincial trail is groomed and maintained and heavily used by all off-highway traffic: ATV's, bikes, hikers as well as equestrian. The bridges are in dire need of maintenance and widening as ATV's are being built wider than the bridges.

Deliverables:

Due to the extensive flooding in the project area that occurred in June 2013, only two of the six bridges have been widened and re-decked at the time of the final report. Crowsnest Pass Quad Squad plan to have the widening and re-decking of the remaining bridges completed prior to October 31, 2014

Bird and mammal monitoring and habitat restoration

Edmonton and Area Land Trust

Grant: $9,000

Project Code: 030-00-90-226

Project Status: Similar project funded in 2012-13; Completed

The goal of this project was to perform several stewardship tasks at Edmonton and Area Land Trust's (EALT) properties. This project had three objectives: (1) increase EALT's capacity to monitor bird and animal populations on several properties, (2) increase habitat suitability for cavity nesting birds by installing nestboxes for several species, (3) reduce the extent of noxious weeds adjacent to a lake shoreline to enhance habitat suitability for waterfowl and promote healthy native vegetation. Working with volunteers, local businesses, a Grade Six class and local stewards, EALT completed all components of this project with great success. Motion sensor cameras continue to deliver photos and videos of wildlife on EALT properties, and nest boxes will provide homes for cavity nesting waterfowl and songbirds for many years to come. With the help of volunteers and funding from ACA, EALT has made large strides in controlling the extent of noxious weeds in a riparian on the Glory Hills property, through manual and chemical weed control methods.

Deliverables:

Installation of 45 nest boxes for cavity nesting birds.

Installation of five motion sensor cameras to capture images and monitor wildlife on EALT properties.

Several volunteer days to manually remove noxious weeds, as well as chemical control of some of the noxious weeds.

Several social media posts, including photos of wildlife captured on motion sensor cameras.

ACA acknowledged in the EALT 2013 Annual Report.

2013 Snow Goose Chase

Edmonton Nature Club

Grant: $1,000

Project Code: 015-00-90-184

Project Status: Funded in 2012-13; Completed

Project Website: www.snowgoosechase.ca/

The Snow Goose Chase is an annual event organized by the Edmonton Nature Club (ENC) where inner-city school children and some low income families are taken on guided bus tours to the Tofield/Beaverhill Lake area in late April to observe the annual spring bird migration, dominated by large flocks of snow geese. The trip also included stops at various venues where wildlife–oriented displays and interactive exhibits are provided. The ENC is concerned about the lack of environmental literacy and awareness of natural processes among the general public and therefore is using this event to expose children, who would not normally have an opportunity to have direct contact with an important aspect of the natural world.

Deliverables:

The 14th Annual Snow Goose Chase was held April 27, 2013 in the Tofield/Beaverhill Lake area east of Edmonton. Nine buses of children and three buses for the paying public took part. A team of up to 70 volunteers made the event quite memorable for many participating. All plans went very smoothly and the weather cooperated.

Amphibian Monitoring Program and habitat restoration project

Friends of Fish Creek Provincial Park Society

Grant: $3,000

Project Code: 020-00-90-169

Project Status: Funded since 2011-12; Completed

The goal of the 2013 Amphibian Monitoring Program and Habitat Restoration Project was to engage citizens in the appreciation of nature and wildlife as well as in the restoration of riparian habitat. Although restoration objectives were drastically hindered by the June floods due to the destruction of access roads, Friends of Fish Creek Provincial Park Society achieved their amphibian monitoring targets and, a Riparian Health Inventory was supported along the lowest reach of Fish Creek. The 2013 amphibian monitoring season began with comprehensive volunteer training in species identification and monitoring methods. Six amphibian monitoring teams were trained and equipped with monitoring kits and collectively dedicated 75 hours to amphibian monitoring at engineered and natural wetlands in Fish Creek in 2013. These teams collected presence data for three species of amphibians and data was shared with interested organizations, including Kris Kendell of ACA. Cows and Fish were contracted to conduct a RHI of the lowest reach of Fish Creek (Bridge 11 to the confluence). The findings of this inventory will help to inform the planned 2014 restoration projects along this reach. The 2013 Watershed Public Awareness Campaign was kicked off with the Creekfest water festival on July 21st and featured public walks, minibus tours, public talks, displays at community events and more (friendsoffishcreek.org/event/creekfest/). Although a few events scheduled to take place during the flood had to be cancelled, it could be argued that their public awareness work was enhanced by the flood as it peaked public interest in water and watershed issues. In the fall, six flood tours were hosted on their new electric minibus, most of which were sold out.

Deliverables:

Various media products, such as press releases, Public Service Announcements, articles, posters, and social media outreach were used to promote watershed campaign messages and events were completed.

Watershed Stewardship brochure and flyer highlighting action residents can take to protect wetlands and the life that depends on them.

Watershed Stewardship display for use at community events throughout the watershed providing information about how we can work together to protect water and also details of monitoring program reports and related upcoming learning opportunities and events.

Photographic documentation relating to the Riparian Health Inventory, including a powerpoint summarizing the findings.

Recognition on Youth in the Parks website/information under volunteer opportunities-Award(s) to most dedicated Amphibian Monitor(s) at Friends of Fish Creek Volunteer Appreciation BBQ and Social.

Riparian improvement project

Highway Two Conservation (Westlock County)

Grant: $12,000

Project Code: 015-00-90-209

Project Status: New; Completed

The goal for the riparian improvement project is to increase awareness of possible alternatives for producers in cropping situations that could be used to reduce impact on water quality. Highway Two Conservation planned to work with producers to establish, protect or enhance ten acres of riparian buffers along flowing bodies of water. As well the project was to educate area youth on how riparian areas work and their connection to water quality. Water quality parameters would be tested. A riparian nursery was established for free woody species stocked for area producers. Riparian inventories and assessments were conducted along bodies of water to determine change. Workshops to generate interest in the project had strong registration but poor attendance. A letter campaign to generate interest was undertaken and more of a one-on-one approach adopted. This resulted in more interest with five sites tentatively booked. Staffing became an issue during the first year of this project and presented unforeseen challenges. 1,500 cuttings were taken from native trees to generate woody species stock. Of these, over 1,000 were successfully established for use in project sites. Water testing was performed in three rounds. The first round included four separate sites and the following two included three sites. These samples were sent to lab for analysis in an attempt to establish a water quality baseline on one tributary within the Athabasca Basin. Education days were hosted in three municipalities, reaching 323 students and including information on invasive plants, water quality and aquatic invertebrates. Native grass seed was sourced and purchased for use in project sites. Riparian inventories were performed by Cows and Fish to establish a vegetative baseline on healthy sites along one water body. Aerial and historical data was compiled to help direct where to focus the projects attention.

Deliverables:

1,000 native trees were generated and planted for the season, coordination of project sites on going, planned for spring 2014.

250lbs native seed sourced but not planted as coordination of project sites on going, planned for spring 2014.

Five sites under consideration currently to act as riparian buffer zone, spring 2014.

Less phosphorous and nitrogen being introduced to the water column: these effects will not be measurable for years, anticipated for fall 2018.

Faith-based organizations and conservation: engaging volunteers in recovery plans of the endangered limber pine

King's University College

Grant: $2,995

Project Code: 030-00-90-225

Project Status: New; Completed

Volunteer-based conservation efforts are critical for cost-leveraging the recommended recovery actions for the endangered limber pine in Alberta. The King's University College, a Christian post-secondary institution, is acting upon five years of limber pine research by providing a volunteer-based, limber pine recovery initiative, for

students and church youth groups that want to practically express their stewardship values. In 2013, this project received a small grant for a pilot year trial of a five-year initiative that annually plans to enhance one population of limber pine in the Crowsnest Pass (five in total) that lacks adequate natural regeneration. The long term objectives are to: 1) implement recommended recovery actions for the endangered limber pine, 2) promote, educate, and engage faith-based organizations in local conservation activities, and 3) test whether cattle disturbance versus seedbed type, and white pine blister rust infection, influences seedling survivorship. Activities in 2013 included site visits with landowners, a seed collection with a youth group, and greenhouse seed germination trials for future seedling restoration plantings. An in-kind donation of 580 three-year-old seedlings by AESRD (Smokey Lake Seed Collection Centre) enabled the project to progress beyond the project's initial goals, and involve 25 volunteers from McKernan Baptist Church, in an August restoration planting near Lundbreck, Alberta. A grazing trial was also established, and involved 34 students from The King's University College in monitoring seedling survivorship in October, during a three-day educational field trip. Fall seedling survivorship was good (88 %), but the critical stage for assessing survivorship will be in the first spring. While browsing occurred in approximately 30 % of the seedlings, differences in seedling survivorship between grazing trials were primarily attributable to slope position, and site exposure (greater mortality occurred on steeper, open sites) rather than trampling or grazing pressure. Long-term seedling survivorship, and mortality caused by white pine blister rust (the principle cause of endangerment) will be monitored annually, and reported in undergraduate theses, and journal articles. This project continues to partner with AESRD to plant available seedlings in future years, and to include this community-based conservation initiative in provincial recovery plan implementation and reporting.

Deliverables:

A written report on the project was provided to Recovery Team members for limber pine, in June, 2013.

The number of seedlings planted, volunteer planters, individuals attending educational field tours, and grazing research trail was reported Jan 10th, 2014 to Robin Gutsell, Wildlife Policy Branch, AESRD for inclusion in the Species at Risk Website for limber pine under the heading of "citizen science" and "research".

Dr Vern Peters attended and reported on the limber pine restoration project at the Western Insect and Forest Disease Conference in Waterton National Park, AB (instead of the Whitebark Pine Ecosystem Foundation meeting).

Two B.Sc. theses were completed addressing: 1) first year seedling survivorship and height growth of volunteer plantings of limber pine, and 2) greenhouse study of germination and survivorship of competing conifer species relative to seedbed types (soils were collected from the limber pine planting site).

This project was featured on The King's University College webpage for one month as a "Crowd sourcing" fundraising initiative for Alumni and King's supporters.

Monitoring of migratory and breeding birds in the Lesser Slave Lake area

Lesser Slave Lake Bird Observatory Society

Grant: $25,250

Project Code: 030-00-90-128

Project Status: Funded since 1999, GECF funded since 2004-05; Completed

The first goal of this project was to document the population status and trends for migratory and breeding bird species within the boreal forest at Lesser Slave Lake. The Lesser Slave Lake Bird Observatory (LSLBO) completed three core monitoring programs this season: Spring and Fall Migration Monitoring, Monitoring Avian Productivity and Survivor (MAPS) Program and the Northern Saw-whet Owl Fall Migration Monitoring program. This season represented the 20th consecutive year of avian population data collection by the LSLBO. All migration monitoring data was forwarded to the Canadian Migration Monitoring Network and Bird Studies Canada for analysis to detect any significant changes in species population trends that may be reflective of changes in critical habitat. During the three programs, over 2,500 birds were captured in mist nets where staff collected valuable important biometric and population demographic information during the banding process. In addition, field work was continued on a special Canada Warbler Research Project to identify key breeding habitat requirements for this threatened boreal forest species (SARA). Final reports were completed for all projects and provided to stakeholders and funders. The second goal of this project was to increase public awareness of conservation issues affecting migratory and breeding birds in the boreal forest. LSLBO Banding Lab Tours, school fieldtrips, public outreach programs, and on-line webinars were provided to over 6,500 adults and children through the Boreal Centre for Bird Conservation. The goal of this year-round education and research centre is to "nurture stewards of the boreal forest" and a wide range of exciting, hand-on programs was provided to visitors of all ages on the importance of the boreal forest for all of us. Program resources and lesson plans have been shared with educators across Alberta.

Deliverables:

All deliverables have been completed as planned for this project: The following documents were submitted with the final report:

- 2013 LSLBO Annual Report
- 2013 Canada Warbler Research Project Field Summary Report
- 2013 Summer Warbler Newsletter

All data available upon request for all monitoring programs

Journal article based on results of the Canada Warbler Research Project will be provided to the ACA upon acceptance by peer reviewed journal.

Riparian area management improvement fund

Mountain View County

Grant: $12,000

Project Code: 015-00-90-102

Project Status: Funded since 2005-06; Completed

Project Website: www.mountainviewcounty.com/riparian

Mountain View County (MVC) has been in partnership with ACA since 2000 and has received an ACA grant since 2005, along with money from the County, to run a Riparian Area Management Improvements

Program. Funding is offered to producers who want to protect, restore or maintain the health of their riparian areas, encourage biodiversity and maintain water quality for fish habitat using the following means: permanent riparian fencing; vegetation for buffer strips; off-site watering systems; and creek crossings. The funds received from ACA are used to pay 25-100% of the material costs for fence building, a creek crossing, native plant seeds and trees and up to 50% of an off-site watering system. The County puts out a call for applications in the Mountain View Gazette, the local radio and on the County website. Once all of the applications are in, the agriculture staff reviews and rates each project. The rating is based on MVC Environmentally Significant Areas, the effect the project will have on wildlife and fish species, if it is going to be an exclusion or riparian pasture project, and if the project is part of an overall manure management plan. Assistance in completing the application form is available through MVC agriculture staff. A presentation is made on each project to the Agriculture Service Board. Once they have seen all the projects and their rating, the funding for the projects is allocated. A riparian health assessment is done on each project before it is completed and again in five years, once their contract commitments are completed. The contract with the County also allows the site to be used for demonstration purposes. This program encourages the principles of Beneficial Management Practices like controlled/rotational grazing, water supply and manure management, and chemical application setbacks. The health of the watersheds within the County has improved and there has been increased awareness of the importance of riparian areas for biodiversity, wildlife habitat, fish distribution and population. Upon review of the Riparian Area Management Improvements Program, it shows that well over 100 different projects have been funded throughout the watersheds in MVC. These projects have been very successful, the five-year follow-up riparian health assessment was completed on a number of projects in the summer of 2012, 2013 and more are scheduled for 2014. All of the project riparian areas came out with a score higher than the initial riparian health assessment that was done the year the project was completed. These scores are confirmation that the Riparian Area Management Improvements Program is successful in MVC.

Deliverables:

Nine riparian area management projects were completed this year funded by ACA's GECF and four projects funded by MVC (one is a shared project). This results in eleven more producers (one producer completed two projects) who are aware of the importance of beneficial management practices and sustainable agriculture. The projects included 2.86 kilometers of finished riparian fence, protecting 60 hectares of riparian area. There were six riparian fences, five watering systems and one creek crossing completed in 2013. The landowner's projects are all complete.

Profile sheets have been completed for each project that is funded.

Riparian Health Assessments for 2013/14 projects have been completed.

Environmental Farm Plans were completed with three of the producers who received funding in 2013.

Each applicant has signed a contract with the County stating their project area is available for tours.

A number of newspaper articles have run on this program and the projects that have been funded.

Swan Lake infrastructure upgrades

Municipal District of Greenview

Grant: $35,000

Project Code: 020-00-90-203

Project Status: New; Completed

Swan Lake is a trout stocked lake located in NW18-70-25-W5th in the Municipal District of Greenview (MD Greenview). The goal of this project is to provide Greenview residents and visitors a safe, clean recreational area where they can camp, picnic, fish or just relax and enjoy nature. The project's objective and activities were to provide a safer grade for launching boats into the lake, some clearing to open up the view to the lake and the visitor area, trail clearing and some bench viewing areas with wheelchair access to dock systems where all people can fish from shore safely. Swan Lake is a respectable fishery which produces good sizes and numbers of healthy fish, which attracts Greenview residents, as well as visitors year round from far and wide, to come use and enjoy this recreational area. M.D. Greenview is planning future camping upgrades, including additional camping stalls, new washrooms, a fish cleaning station and a gazebo.

Deliverables:

Complete dock system was installed August 29, 2013. Since changing the slope of the boat launch and the application of a gravel base, the site is functioning very well without the concrete pads and in the MD Greenview's view concrete pads are not needed at this time.

Living by Water project - Homesite Consultation Program 2013

Nature Alberta

Grant: $26,000

Project Code: 015-00-90-129

Project Status: Funded since 2003-04 (not funded 2008-09, 2012-13); Completed

Project Website: naturealberta.ca/programs/living-by-water

Across Alberta, residents have moved from urban centers to permanent and summer homes situated on the shorelines of recreational lakes. Additionally, many urban dwellers seek properties that are near or on a man-made or natural stormwater or wetland. Often these residents are unaware of the deleterious effects their actions in the home and yard can have on the conditions of the shoreline and water quality. Nature Alberta encourages all individuals to connect with nature and become environmental stewards of the natural spaces that they live by. The Living by Water (LBW) Program's goal is to educate Albertans on issues of water quality, lake health, and shoreline best management practices. The Homesite Consultation Program is the core of the Living by Water Project and is central to educating shoreline residents about the effect their actions have on riparian habitats and lake ecosystems. Through the Homesite Consultation Program shoreline residents are offered a free and confidential one-on-one assessment of their shoreline property and practices in and around their lake home. The goal of these assessments is to educate residents on riparian and lake ecology while letting them know what they are already doing that contributes positively to shoreline health and what changes they can make towards shoreline best management practices. Shoreline Advisors responsible for carrying out the assessments also attend and participate in educational workshops and seminars geared towards shoreline residents and lake watershed groups across the province. During the

2013 Homesite Consultation Program, advisors successfully completed 119 rural consultations: 100 of these were initial consultations with new participants and 19 were follow-ups with participants who received an initial consultation two years ago. In addition to reaching out to 119 families, the project participated in eight community workshops and outreach initiatives further broadening the reach of Nature Alberta's stewardship messages. The LBW program also encourages urban residents and community leagues to be good stewards of Alberta's urban lakes. Nature Alberta continues to work on fostering relationships with municipalities including the County of Strathcona and The City of Edmonton to work towards providing educational workshops and resources to citizens living next to stormwater ponds and wetlands.

Deliverables:

100 initial homesite consultations across ten Alberta Lakes were completed.

19 follow-up consultations were completed.

The Homesite Consultation Program was extended to three lakes: Little Beaver Lake, Gull Lake, and Spring Lake.

Annual reports detailing the trends occurring at each lake for 2013 and how 2013 compared to previous years were prepared by the Shoreline Advisors and Program Coordinator and distributed to the volunteer contact at each of the participating lakes. The data from all completed follow-up visits including those done in 2013 was analyzed and showed that each resident who had participated in the project has made at least one positive change.

There was little uptake of the Urban Naturalist program in Edmonton, but continued to distribute the Nature Alberta book "Living near Urban Lakes: your guide to everyday living in Urban Lake communities" to interested parties and continue to work with the City of Edmonton and their programs to increase awareness of those living on a stormwater pond.

A Living by Water project brochure was created, which included urban lake and biodiversity information. These brochures have been taken to all attended events and distributed to project participants. In addition, Nature Alberta is working with the County of Strathcona to produce a storm water ponds brochure, to be distributed in Strathcona County, Edmonton, Devon and Leduc. LBW has produced and continues to distribute an Urban Lake Living brochure. Nature Alberta also assisted Pigeon Lake with a brochure about the birds of Pigeon Lake and also produced a more generic Birds of Alberta Lakes brochure. However, Nature Alberta are moving away from printing brochures and putting more information on these topic and biodiversity on their website (naturealberta.ca/programs/living-by-water) and then use social media (Facebook and Twitter) to drive people to these sources of information.

LBW was represented at seven stewardship events province-wide.

LBW conducted a workshop for the Friends of the Little Beaver Lake, as well as two other workshops, and also helped plan an educational "walk and talk" afternoon event at Pigeon Lake.

Engaging Albertans in bird habitat conservation

Nature Alberta

Grant: $15,000

Project Code: 015-00-90-207

Project Status: Similar IBA projects have been funded 2003-04, 2006-07 and since 2009-10 (except 2012-13); Completed

Project Website: naturealberta.ca/programs/bird-conservation

To celebrate the 15th anniversary of the Important Bird Areas (IBA) program in Alberta, Nature Alberta undertook a promotional campaign that had three main objectives: To reconnect Albertans with these important habitat areas and the birds that use them; To engage IBA visitors in hands-on citizen science that contributes data to bird population managers; and To challenge visitors to think about their actions and how they impact birds and their habitat. Over the term of this project, Nature Alberta made progress in promoting and increasing public awareness of Alberta's 48 IBA sites. Bird Conservation staff visited ten IBA sites across the province, often meeting with site caretakers, in order to better understand the unique opportunities these sites have for birders and other naturalists. Several of these visits were shared with the public via seven Nature Alberta website blogs and three articles in Nature Alberta magazine. An additional 13 site visits were reported to Nature Alberta by caretakers, Alberta Parks staff and other nature groups. The Bird Conservation team also participated in several public engagement events such as the Bluebird Festival at Ellis Bird Farm, a Children's Nature Camp in Hanna, Edmonton's Roots for Trees Festival, etc, all with a focus on the IBAs and how bird conservation is benefitted by the preservation of IBA sites and other habitat via public stewardship. This promotion led to an increase in data collection at several sites, as well as the successful recruitment of new caretakers. In addition to the above promotional activities, Nature Alberta also produced a 60-page Guide to Alberta's IBAs, which showcased each site, providing information about each area, general birding ethics and tips, as well as data collection sheets that provide the public with an opportunity to collect and send in data after visiting an IBA. Distribution of this resource province-wide is ongoing. Nature Alberta also produced two brochures – one promoting the IBA program and one as a guide to the common birds of Alberta lakes. Although the focus of this project was on the IBA sites, it reinforced the need/desire from the public for more bird conservation information. This will inform Nature Alberta's bird conservation and citizen science programming moving forward.

Deliverables:

Guide to Alberta's IBAs: 2,000 copies printed; about half distributed to date. An electronic copy has also been made available on Nature Alberta's website (naturealberta.ca/wp-content/uploads/2013/02/PDF-of-IBA-Guide-for-electronic-copies.pdf).

Excel spreadsheet showing a summary of site visits, total species, etc. The spreadsheet has been created and Nature Alberta continues to add data as it comes in from caretakers and others.

Three articles in Nature Alberta magazine, as well as seven Nature Alberta website blogs (naturealberta.ca/category/important-bird-areas)

Fisheries habitat improvements in the Sturgeon River Watershed

Northern Alberta Institute of Technology (NAIT)

Grant: $26,197

Project Code: 020-00-90-204

Project Status: Funded since 2010-11; Completed

Project Website: www.nait.ca/74273.htm

The key environmental issue that this project addresses is the degradation of fish habitat caused by the loss or destruction of riparian buffers in the Sturgeon River Watershed. The project goals are: 1) to engage stakeholders in hands-on restoration, best management practices, and citizen science monitoring activities; and 2) to assess the effectiveness of restoration activities and best management practices within the watershed. This year's project objectives and activities were to: 1) engage stakeholders in restoration (planting and bank stabilization) of rural and urban impacted riparian habitat with native plant species, especially at sites identified in 2010-2012 field seasons; 2) provide off-stream watering demonstrations and technical assistance for farmers to adopt this technology, to help protect/restore riparian areas; 3) conduct riparian health assessments (RHA's) in partnership with Cows and Fish, to engage landowners and stakeholders in implementation of best management practices on their land, including habitat restoration and off-stream watering; and 4) involve NAIT students, research staff, and the community in assessing water quality, aquatic biodiversity, and riparian health at 22 permanent sampling sites throughout the watershed. In 2013, this project hosted nine restoration events, involving 170 volunteers from various community and school groups. Over 5,000 m2 of riparian habitat was replanted with native shrubs and trees. The project hosted a workshop for landowners in conjunction with Cows and Fish and County of Lac Ste. Anne, titled "Healthy Cows – Healthy Rivers: Off-site watering technology, livestock benefits, and cost saving opportunities". Off-site watering equipment was set up for demonstration purposes on a property along the Sturgeon River where cattle are in the river and the landowner was interested in testing the technology. Technical assistance was provided to the landowner by county and NAIT staff. RHA's were conducted at the 22 permanent sampling sites throughout the watershed and at restoration sites prior to restoration activities. RHA's have been used to further identify sites for future restoration projects, and to provide pre-restoration baseline data so we can evaluate the effectiveness of restoration work on riparian health. Summer research staff collected water quality and aquatic biodiversity data at the 22 long-term monitoring sites throughout the watershed.

Deliverables:

Summary report of water quality and biodiversity data collected 2010-2013, to be included in the future development of a Watershed Management Plan and used for assessment of trends in the watershed. Summary report completed March 2014.

27 Riparian Health Assessments were completed (including 22 long term sites and five RHAs at three additional restoration sites). Data has been summarized and has been included in the final report.

Nine planting events in 2013, involving 170 volunteers, and planted +5,000m2 of riparian habitat. Restoration sites designed to test planting methodologies, and plant establishment and survival rates of different native plant species.

Evaluation of establishment success of native vegetation mixes at the planting sites, at end of growing season; Data has been collected and has been included in final report.

Implementation of off-stream livestock watering and habitat restoration demonstration sites by landowners to showcase and foster interest in implementing these best management practices: Off-stream watering equipment was set up on the Dunstall property for demonstration purposes in 2013. NAIT are working with County of Lac Ste. Anne to establish partnerships with landowners interested in adopting off-stream watering.

Publication (video) of historical local knowledge of the natural history of the Sturgeon River watershed for distribution on project website and potentially on partner websites: Collection of historical local knowledge and natural history of the Sturgeon River Watershed is completed. Project staff met with Meghan Meyers (City of St. Albert), David Trew (NSWA), and Ruth Juliebo (NAIT Department of Marketing and Communications, who will be producing the video) to develop an outline for the video. Filming and interviews are scheduled for spring/summer 2014. Video completion by October, 2014.

Conserving and restoring Arctic grayling in the Upper Pembina River Watershed - database development (Year 3)

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chpt

Grant: $14,900

Project Code: 020-00-90-197

Project Status: Funded since 2012-13; Completed

Project website: www.nlft.org/grayling/grayling-history/

Northern Lights Fly Tyers/ Trout Unlimited Canada Edmonton (NLFT/TUC) has embarked on a multi-year program to conserve Arctic grayling in the Upper Pembina watershed. Historically, streams in this area provided high-quality sport fishing for residents of Central Alberta. For a variety of reasons, many of the grayling populations have been extirpated and those that remain are in a precarious state. In 2011, volunteers from NLFT/TUC undertook an angling survey at 23 sites and temperature data loggers were deployed at 13 sites. In 2012, additional angling sites were added and pelvic fin tissue samples were collected as a contribution to a graduate research program on grayling genetics at the University of Alberta. In the 2013 phase of the program, the water temperature analysis continued at major tributaries in the study area and angling was focused on Dismal and Rat Creeks. Key additional activities in 2013 included:

- Establish a fish trap on Dismal Creek during Spring to record grayling spawning movements. No fish were caught, suggesting that the historic spawning migration no longer existed, and leading to speculation that a massive logjam downstream may be implicated.
- Backpack electrofishing on Dismal and Rat Creeks to capture information about the presence of young fish that would not be sampled using angling techniques. Eight species of fish were captured, but only a few Arctic grayling, confirming the depleted state of the populations.
- Recording grayling numbers by snorkeling, angling and PIT tagging Arctic grayling at a suspected overwintering hole on the Pembina River.
- Raising project awareness by placing conservation signs at key access points in the study area.

Deliverables:

Progress and final reports filed after completion of field activities; report includes a summary of angler catch and effort; water temperature sampling locations and tabular data were also summarized.

Completed angler catch forms, habitat descriptions, site coordinates (UTM's) and water temperature data was forwarded to AESRD for detailed analyses and reporting.

Volunteer angling data, including Arctic grayling length and weight, from the 2011, 2012, and 2013 seasons are being entered into the provincial FWMIS data base (submitted to AESRD by April 30, 2014).

Electronic files were created (digital, geo-referenced photographs of angling sites, typical & unique habitats, adverse land use features, etc.).

Conservation signage providing information about the project, the funding sources, the importance of adhering to angling regulations, and the depleted status of Arctic grayling in the watershed was posted at many key access locations in the study area. The signs indicated that conservation work was underway in the area and provided contact information for project leaders.

A PowerPoint presentation of the key findings of the project was scheduled to be presented at the NLFT/TUC meeting on March 25, 2014 and at the Edmonton Trout Fishing Club meeting on April 1, 2014.

Articles will be submitted to Conservation published by ACA (for use as desired), and Currents published by TUC in National published *FlyFusion Magazine*.

Photographs from some of the angling trips and the work at the fish trap have been posted on the club web site.

The Arctic Grayling Conservation program was a key factor in NLFT-TUC receiving the *National Recreational Fisheries Award*, for 2013, from Fisheries and Oceans Canada.

Bluebird/bathouse project

Onoway & District Fish and Game Association

Grant: $700

Project Code: 030-00-90-224

Project Status: Funded from 2006-07 until 2009-10; Completed

Over the years Fish and Game Clubs have come together with like-minded community and youth groups to educate each other in wildlife and bird habitat. Some years ago it was revealed that very few bluebirds were being spotted in the area due to dysfunctional nesting areas. As a community, through efforts of volunteers, youth groups, and with the funding from concerned Associations such as ACA, Onoway and District Fish and Game Association have been able to bring the bluebird population back to our specific area environment for all to enjoy. The houses have solved the nesting problem. Working with young people and teaching carpentry skills as well as conservation education has been and will continue to be a fulfilling objective. The interaction with community groups and youth will hopefully educate and draw interest from future generations, and hopefully they will have a better understanding of conservation and habitat needs of local wildlife through a hands-on approach.

Deliverables:

270 birdhouses were constructed and erected throughout the County of Lac Ste. Anne. Close to 300 hours were used by volunteers to see this project through to completion.

To the surprise of Onoway and District Fish and Game Association, they continually receive requests every year for more birdhouses.

Onoway and District Fish and Game Association issued Guidelines along with each house with care and maintenance instructions.

Partners in Habitat Development

Partners in Habitat Development, c/o Eastern Irrigation District

Grant: $10,000

Project Code: 015-00-90-103

Project Status: Funded since 2005-06; Completed

The Partners in Habitat Development (PHD) program is an initiative developed to mitigate for the loss of wildlife habitat in Southern Alberta agricultural regions due to upgrading the irrigation infrastructure, more intensive agricultural practices and increases in industrial activities. The PHD program works with private landowners to create, preserve, and restore critical wildlife habitat areas. A total of 21,240 trees and shrubs were planted by the PHD program in the spring of 2013. These trees and shrubs were planted in multi-row shelterbelts, in riparian areas, in block planting formations or along drainage ditches. The PHD program assists in fencing existing habitat areas and newly created habitat from livestock access. There was a total of 2,100 meters of fencing distributed and installed to protect existing habitat and newly planted habitat from livestock access. The Partners in Habitat Development Program continued its monitoring program by completing a number of wildlife surveys throughout 2013. A number of landowners interested in initiating future habitat projects have been met by a PHD Technician.

Deliverables:

- 21,240 trees and shrubs have been planted and fabric mulch has been applied on 11 PHD habitat project sites.
- 2.1 kms of fence has been installed on 2013 habitat sites.
- Planning for 2014 habitat projects has been initiated.

Conservation Partners 2013

Red Deer County

Grant: $25,000

Project Code: 015-00-90-128

Project Status: Funded since 2006-07; Completed

Project Website: www.rdcounty.ca/207/Conservation

The goal of the Conservation Partners initiative was to work with interested landowners who wish to implement actions on their land (especially, but not exclusively, on land that has been determined to be Environmentally Significant), which conserve or improve riparian and native range habitat in Red Deer County (RDC). Interested landowners were invited to complete an application form that describes what they wanted to do on their land. The application form included a budget, a description of the project and its impact on range and riparian health. Applications were reviewed, and successful applicants entered into written funding agreements with RDC. The program was intended to be a cost-shared program. Landowners were expected to cover a significant portion of the costs for the projects they wished to do. The objectives of Conservation Partners 2013 were:

1. Support RDC landowners in enhancing and stewarding riparian and/or native range habitat on their land, by providing financial and technical resources for their on-the-ground projects. Emphasis will

be placed on working with landowners who own land identified by RDC as being Environmentally Significant.

2. Enhance riparian habitat in RDC. This enhancement will come about through fencing, off-stream watering, establishing buffer zones, and other riparian and native range management projects, completed by participating landowners.
3. Reduce potential negative impacts of agriculture on fisheries (when the on-the-ground projects happen on agricultural land adjacent to fish-bearing water bodies).
4. Assist landowners in developing an informal "Management Plan" for each of the completed projects.

Deliverables:

21 on-the-ground projects initiated by 14 landowners; three of these projects were in the Raven/North Raven watershed: 270 acres of riparian area, 96 acres of native range area, nine acres of wetlands/ sloughs/lakes and eight miles of river and creek are now being protected or restored by these 21 projects. 1182 Animal Units are now "under new, sustainable management approaches", when it comes to their access or use of these riparian acres. In addition, two of these projects are helping protect shallow groundwater.

A Riparian Health Assessment (RHA) was completed by RDC for one of the 2013 projects. For some of the projects, RHAs are not applicable, so photo monitoring points will be establishing for these projects instead (one of these was completed in 2013). RHAs or photo-monitoring points for the remainder of the projects will be done in 2014. All applicants describe their initial management plans for their projects, in their applications.

Between April 1, 2013 and March 15, 2014, Conservation Partners advertisements have appeared in the County News 11 times, and 11 articles in the County News have discussed Conservation Partners (County News circulation ca. 10,000, published once per month).

There are three videos about Conservation Partners available on-line (links available here: www.rdcounty.ca/207/Conservation).

An ag. news website did a couple videos that also discussed elements of Conservation Partners (most easily found by going to www.realagriculture.com and typing "riparian" in their search tool).

Between April 1, 2013 and March 15, 2014, the Conservation Partners initiative has been displayed/ featured/ presented, with staff, at the following public events: Clearwater County's Cows Creeks and Communities Workshop – *Display and Presentation* (Apr), Grey Wooded Forage Association Annual General Meeting - *Display* (May), Pine Lake Healthy Lake Day – *Display and Presentation* (June), Sylvan Lake Farmers Market - *Display* (June), the Red Deer County / Lacombe County / Clearwater County / Grey Wooded Forage Association Controlled Grazing School – *Display and Presentation* (June), the Medicine River Watershed Society Annual General Meeting – *Display* (June), the Red Deer County Enterprising Ag Tour – *Display* (July), Taste of Markerville event – *Display* (July), Red Deer County Clubroot Workshop – *Display and Presentation* (Oct), Red Deer River Watershed Alliance General Meeting – *Display* (Oct), Alberta Agriculture "Watershed BMP Project Producer Meeting – *Display* (Oct), Agri-Trade – Display (Nov), Red Deer River Watershed Alliance Annual Stewardship Group Meeting – *Display and Presentation* (Feb), Red Deer County Weeds Workshop – *Display and Presentation* (Mar).

Kneehill Valley pond

Red Deer Fish and Game Association

Grant: $7,800

Project Code: 020-00-90-166

Project Status: New; Extended until end July 2014 due to floods

The project objective is to get the Kneehill Valley pond, a closed previously-stocked rainbow trout pond located on private land, stocked again. The previous landowner had sold the land and the new landowner agreed to continue the 25 year lease which expired in 2009. In 2010, the landowner approached Red Deer Fish and Game Association (RDFGA) to take over a new lease on the Pond. Various repairs were made to the spillway under the coordination of RDFGA. A MOU was signed between the landowner, the gas company, and RDFGA to facilitate a donation of $9,000 to bring power in to the pond for a future aeration proposal. This was done in July, 2012. In September of 2012, a local contractor and volunteers constructed a secure electrical, compressor and aeration line system to the edge of the pond. The pond has an existing fence around it and all cattle operations have been removed from around the pond. This grant is to pay for extra gravel, a compressor system, and 1,600 feet of diffuser line and diffusers to aerate the pond.

Deliverables:

Due to flood conditions in June, 2013, the repaired area of the spillway suffered more erosion. Rock will be replaced where it has eroded by the contractor. Once that is completed, the work of hooking up the compressors and initiating aeration will begin (Project still not complete as of end Sept, 2014).

Riparian area protection and enhancement project

Smoky Applied Research and Demonstration Association

Grant: $7,000

Project Code: 015-00-90-205

Project Status: New; Completed

In the spring of 2013 SARDA performed an aerial survey flight to photographically document runoff on watercourses from livestock operations, and locate potential riparian area project sites within the MD of Greenview. The flight timing corresponded with the spring snow-melt on the landscape in the Valleyview area. The passengers were those persons associated with environmental organizations. Upon completion of the flight the photographed livestock wintering sites were analysed to determine where there were pronounced deficiencies in riparian area and manure management. To determine the specific remedial measures required, a few multi-agency action plan meetings with SARDA, watershed organizations and conservation agencies were undertaken. Once remedial sites in need of action are identified, a couple of landowners were contacted and recruited as co-operators. Two sites saw riparian enhancement activities initiated in the 2013 spring and summer, of which included protective livestock exclusion fencing along a riparian area and an alternative livestock watering systems. Over the course of the 2013 calendar year three seminars / meetings pertaining to Environmental Farm Plans (EFP), riparian area management and farm watering systems were undertaken to educate and encourage best management practices. The meeting speakers included and government water specialists, conservation agency persons (Cows and Fish, Alberta Agriculture, etc.), private industry (farm equipment and service provider), and SARDA representatives.

Deliverables:

Completed an aerial surveillance flight (April 22, 2013) in the Valleyview during the spring melt run-off period, to obtain photographic documentation of over utilized riparian areas and sites where livestock pen manure nutrients were leaching into adjacent watercourses.

Completed a Riparian Health Site Inventory (August 16, 2013) for use in preparing a Riparian Health Assessment, with the work performed by Cows and Fish.

For the Maclean livestock watering system project, the majority of the watering system component materials were delivered, with main waterline piping and valve connections in place. Once the newly built dugout is filled with water this spring (2014), the livestock watering distribution system will be completed. The system is to include a dugout aeration system, with the water setup to be pumped to the sheep livestock pasture/pens from the dugout using a gas powered pump. In time the gas-powered unit is to be replaced by by a solar-powered unit.

For the Herr Ranches project, the riparian area / water development project, protective riparian area fencing was installed in two locations. The second site was delayed in being fully completed due to the ranchers late fall haying operations, however, approximately 95% of riparian fencing has completed (posts installed with 1/3 of the wire still to be strung), with the balance scheduled to be completed by May 2014. A sign for the Herr Ranches site has been fabricated and will be installed in spring 2014. The sign indicates the funding partners, including ACA.

At each of the three presentations to date (Valleyview, Spirit River and High Prairie), ACA was recognized as an important major sponsor of the activities and projects.

Stewardship license project

Trout Unlimited Canada

Grant: $1,800

Project Code: 020-00-90-196

Project Status: Funded in 2012-13; Completed

Project Website: www.tucanada.org/index.asp?p=2028

The goal of the Stewardship License Project is to demonstrate that angler awareness and education can be used as a management tool to help protect and restore native populations of fish across Alberta's east slopes. Many anglers recreate in these areas, but as Trout Unlimited Canada's (TUC) fish identification testing has demonstrated, many of these seasoned anglers cannot always correctly identify the species they are targeting. TUC believe that increasing angler knowledge through the addition of voluntary fish identification testing would be a valuable tool to the future of fisheries management in this province. An educated angler is a better angler for protecting the resource. The first step of this project involves volunteer anglers take a fish identification test which consists of 16 images of the four primary species being targeted in the water bodies included in the project. Each year participants have to take the test to ensure they are retaining information and using the preferred identification features. Secondly, anglers new to the project are then required to attend a supervised angling effort so that they can learn proper handling techniques, understand more about the rivers included in the project, meet other likeminded anglers, and discover more about the project's goals. Thirdly, anglers are provided a Fish Research License (AKA the "Stewardship License") that allows them to retain unlimited numbers of invasive species in specified rivers, as long as they record their catch rates and submit information following their outings. Over the course of 2013, over 200 anglers were tested and accrued over 1,800 hours of effort to harvest over 2,700 non-native trout from the waters included in the project.

Deliverables:

218 anglers were tested and 17 supervised outings were conducted.

During the 454 volunteer angler outings (both supervised and unsupervised) completed as part of the project, volunteers removed 2,355 brook trout and 360 rainbow trout over 1,817 hours of angling effort. In total there were 3,824 fish caught over the course of the outings.

The total volunteer effort was higher than expected with the issues of the flooding that southern Alberta experienced, and TUC were very enthusiastic to see this high level of effort put forwards.

Project report: Stelfox, J. D., L. J. Peterson, J. E. Earle, and B. E. Meagher. 2014. Stewardship Licence Pilot Project: 2013 progress report. Unpublished report, Environment and Sustainable Resource Development, Fisheries Management Branch, Cochrane, Alberta (Electronic copy can be found here: www.tucanada.org/files/1/2013 Stewardship License Project Report.pdf).

Mallard Point habitat enhancement point

Trout Unlimited Canada

Grant: $30,000

Project Code: 015-00-90-203

Project Status: New; Extended until October 2014 due to floods

Project Website: www.tucanada.org/index.asp?p=2163

Mallard Point is located at the north end of Calgary's Fish Creek Provincial Park. In 1995 Trout Unlimited Canada (TUC) initiated a project to allow flow into the side channel by removing depositional materials that had accumulated in the mouth over time. This increased flow into the side channel, enhancing opportunities for fish, wildlife and improved riparian health. Mallard Point meanders for 3.2 km before empting back into the Bow River, making it one of the longest side channels of the Bow River. Our challenge is to stabilize annual flows into Mallard Point by re-designing the intake to naturally function and benefit this entire ecosystem, for today and tomorrow. This project aims to increase spawning potential in the side channel, improve riparian habitat, create overwintering and rearing capacity and improve the ecosystem for a large variety of species found in this region. Currently the potential for sustaining this urban fishery is limited due to low flows and limited cover; this project will maintain consistent flows annually into the channel and provide increased angling opportunities. Working together with the Bow River Chapter, TUC is working to improve the functionality of the Mallard Point side channel by: Enhancement and restoration of spawning and rearing habitat, for all fish; Incorporating educational activities and signage to raise awareness in the community; Augmenting flows to encourage natural self-scouring over time; Regenerating and improving riparian health; Protecting and enhancing Poplar Island Nature Preserve; Develop a formalized foot access for Bow River users (rafters and boaters). Due to the extensive flooding that this reach of the river experienced in June 2013, the project plans and surveys were altered significantly and TUC were not able to conduct the construction phase of this project as planned in 2013.

Deliverables:

Due to the extensive flooding on the Bow River, the project planning and surveys were altered significantly. Additionally TUC were not able to conduct the construction phase of this project as planned in 2013.

TUC have augmented the design and plan the work to be completed in August and September of 2014.

TUC have written updates on this project on the TUC website www.tucanada.org/index.asp?p=2163 and are still developing signage for the project to be installed upon completion.

Weaselhead Invasive Plant Program

Weaselhead/Glenmore Park Preservation Society

Grant: $3,000

Project Code: 015-00-90-127

Project Status: Funded since 2009-10; Completed

Project Website: theweaselhead.com/invasive-plant-program/

The ultimate goal the Weaselhead/Glenmore Park Preservation Society's Invasive Plant Program is the maintenance of biodiversity and naturally functioning ecosystems in the Weaselhead Natural Environment Park (204 ha riparian area of white spruce and balsam poplar where the Elbow River flows into the Glenmore Reservoir, Calgary). The goal of the Invasive Plant Program is to prevent non-native plant species interfering with ecosystem function and reducing biodiversity. The Weaselhead wetlands help maintain water quality and quantity in the adjacent reservoir and provide important habitat for terrestial and aquatic wildlife. The Program objectives are to: raise public awareness of invasive species and how to prevent their introduction and spread; prevent the establishment of invasive plants that interfer with the goal above; reduce the abundance of invasive plants already established that interfer with the goal above; and ensure native vegetation recovers after weeding. The main activities are to: include information about invasive species in education programs, on the website and at public events; locate and remove invasive plants before they establish in the Park; hold weeding workshops to remove invasive plants already established; collaborate with the City of Calgary to control species that cannot be removed by volunteers; monitor recovery of native vegetation after weeding; collect data to improve effectiveness of weed control; and track invasive plant species distribution and abundance over time on a GIS.

Deliverables:

Main result of this Program is steady progress in removing non-native species and restoring native vegetation cover in the Park. One unexpected result (of monitoring) was the observed decline of a patch of creeping bellflower due to natural causes. In 2014 the Society hope to investigate the reason for this.

Raised awareness of invasive species and how to prevent their introduction/spread: 3,900 people introduced to the issue of invasive species and how to prevent their introduction/spread and 136 people learnt about invasive plants through direct involvement with the Program.

No new weed species establish; those already established are reduced in abundance: Black henbane and burdock outbreaks were reported and removed; a leafy spurge colony was discovered, reported to the City of Calgary and a biocontrol agent released; five European barberry plants that had been located by Society volunteers were treated by the City; 235 Peking cotoneaster and 270 tartarian honeysuckle plants were removed; 88 x 75L bags of invasive flowers/seeds were removed.

136 volunteers donatated 800 hours of their time to stewardship activities.

Third year of data was collected on native vegetation recovery after weeding (publication of results postponed to 2014 as 2013 data affected by floods).

Data collection on effectiveness of control of cotoneaster was interrupted by Park closure in the summer (completion postponed to 2014).

Joint action plan developed with City of Calgary for restoration of native grassland: baseline data collected, discussion with City ongoing, draft plan completed.

A weed management strategy for 2014 developed: final version complete.

GIS updated.

Grant Eligible Conservation Fund Part B: Research

The Alberta Boreal deer project: White-tailed deer habitat selection and density in Alberta's Boreal Forest

Alberta Innovates Technology Futures (Dr. M. Hiltz)

Grant: $15,000

Project Code: 030-00-90-217

Project Status: New; Completed

Woodland caribou are declining in Alberta's northeast, and increased predation following elevated wolf densities is implicated. Wolf numbers are increasing in part due to white-tailed deer, which provide alternate prey for wolves. White-tailed deer are increasing in numbers and range in Alberta's northeast boreal forest, changing wolf-caribou dynamics. Although it is known deer are expanding, our understanding of deer distribution within the expansion zone remains very limited. The research team are using a novel statistical approach that uses a combination of satellite collars on white-tailed deer, and remote cameras, to estimate deer density, occupancy dynamics, and habitat selection in the vicinity of the East Side Athabasca River (Christina) caribou herd. In 2013-2014, 34 white-tailed deer were Clover-trapped in 103 trap nights (33 captures per 100 trap nights). 16 adult female white-tailed deer were satellite-collared. Of these, three deer have died, and one collar is malfunctioning. Combined with 2012-2013 collared deer, there are 16 active satellite collars collecting GPS telemetry locations. These data are currently being collated for density analysis and resource selection analysis in 2014-2015. In 2011, 60 Reconyx remote cameras were deployed in a stratified systematic sampling design, and have been monitoring them since. Camera data were collected quarterly and images analysed, yielding a serial detection dataset on white-tailed deer. In 2013-2014, this dataset was modeled, breaking continuous data into monthly surveys and three-month seasons fit to white-tailed deer biology. Multi-year hierarchical occupancy models were used to determine how deer occupancy fluctuates in response to severe winters. White-deer residency (number of months with deer at a site) in relation to forest composition and anthropogenic footprint was also modeled using generalized linear

models. From this analysis, the researchers conclude:

1. Though the detectability of white-tailed deer via cameras is very high, the encounter rate of collared deer of cameras was low.
2. White-tailed deer distribution fluctuates among seasons.
3. White-tailed deer distribution shrinks in a severe winter, but rebounds quickly the following spring; expansion continues in the study area.
4. A combination of the amount of upland deciduous cover, and the percent of anthropogenic disturbance in the landscape, best explained annual white-tailed deer distribution in the region of Alberta's northeast boreal forest.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

The 2013 Annual Report was completed and released; as promised it included summaries of results to date, preliminary conclusions, and next steps for data collection and analysis:

Fisher, J.T., M. Hiltz, L. Nolan, and L. Roy. 2013. White-tailed deer in boreal Alberta: The effects of winter severity and landscape development on expansion. Petroleum Technology Alliance of Canada (PTAC) Resource Access and Ecological Issues Forum, Calgary, Alberta, November 28th 2013

The 2013-2014 Fiscal Year-End Report was released March 31st 2014. It contains updated modelling of the camera data, describing annual fluctuations of deer in relation to winter severity, and deer habitat selection models, as well as summary analysis of deer telemetry data.

Results presented of this year's project at:

Fisher, J.T., M. Hiltz, L. Nolan, and L. Roy. 2014. White-tailed deer expansion in boreal Alberta: The effects of winter severity and landscape development. Alberta Chapter of the Wildlife Society Conference, Jasper, Alberta, March 7-9 2014.

Analysis of hunter participation in Alberta 2000-2012

Alberta Innovates Technology Futures (Dr. S. Chai)

Grant: $6,700

Project Code: 030-00-90-219

Project Status: New; allocated grant money not accepted.

This project was going to investigate hunter demographics in Alberta, focusing on turn-of-the-century trends that have never been analyzed (2000 to 2012). The research was to build on previous work conducted on hunter demographics in Alberta up to 2000 which showed a continued decline in hunter participation since the 1980s, in accordance with the general trend in North America. Project objectives are (i) to investigate hunter demographics (2000-2012) using the Recreational Licensing Management system (RELM), and (ii) to investigate the factors that influence hunter participation. A questionnaire was to be designed and administered with a sample size of at least 500 hunters across Alberta to understand the reasons behind demographic trends, especially the factors that influence the decision to participate in hunting in a given year. Factors that influence the decision to participate in hunting could include the cost of licenses, understanding regulations, potential disease transmission, interacting with landowners, and the availability of leisure time. The questionnaire was to be administered to a stratified random sample of hunters (past and active) to ensure adequate representation across the five major Wildlife Management Units. An online questionnaire was to be conducted using electronic mailing addresses contained in RELM to recruit participants. Understanding hunter demographic trends in Alberta will better equip wildlife managers to sustain this important stewardship activity and will provide insights from the hunter's perspective about the status of wildlife in Alberta.

Deliverables:

The grant was not accepted; the project was allocated partial funding from ACA and did not secure adequate co-funding to proceed.

Mesocarnivore diversity in mixed-use landscapes: the Cooking Lake Moraine project

Alberta Innovates Technology Futures (Dr. J. Fisher)

Grant: $5,000

Project Code: 030-00-90-221

Project Status: New; Completed

The Cooking Lake Moraine Project investigates how protected areas, private woodlots, and connectivity within an agricultural / rural-residential landscape affect mammalian diversity in Alberta's heartland. The project goals are to (1) measure mesocarnivore diversity within this mixed multi-use landscape; (2) statistically relate species occurrence to habitat composition and connectivity, and (3) test for connectivity with adjacent landscapes by examining the genetic structure of reintroduced fisher (*Pekania pennanti*) populations. In 2013-2014, the project team was assembled, including multiple agencies: Alberta Innovates Technology Futures; Alberta Parks; AESRD; ACA; University of Alberta – Augustana; and University of Victoria. The project team from these agencies created the experimental design based on GIS landsat data. Field operations were launched in November 2013. 61 sampling points were deployed across the Cooking Lake Moraine in a systematic design of four-km x four-km grid cells, on public and private lands, within a diversity of landscapes of varying connectivity and composition. At each site – baited with beaver fat and O'Gorman's scent lure - the repeat occurrence of mammalian species was sampled using non-invasive hair trapping (barbed wire wrapped tree) and camera trapping (Reconyx PM85). The researchers sampled monthly between December and March, when food is scarce and animals seek bait. 40,286 photos and 196 hair samples were collected as of March 13th 2014. Fishers were detected via cameras at 23 of 48 sites checked (48% naïve occupancy), indicating that this reintroduced species is widespread across the Moraine landscape and occupying a variety of habitat types. In some cases more than one fisher was present at the same site. Wildlife such as moose (*Alces alces*), white tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), least (*Mustela nivalis*) and short-tailed weasels *(Mustela erminea*) and domestic animals such as the domestic dog (*Canis lupis familiaris*) were also detected, illustrating that mammalian diversity is high across this landscape. Hair samples are being sent to Wildlife Genetics International for genetic identification and microsatellite analysis. Finally, 19 landowners were contacted to discuss this project and seek their buy-in. These efforts were very successful, and several landowners have contacted the project asking for involvement. This research was highlighted at the BioBlitz staged by ACTWS, ACA, and Beaver Hills Initiative (BHI). Sampling will continue in the 2014-2015 year to understand seasonal and annual changes in mammalian community composition, and in fishers' distribution across the landscape in relation to multiple landscape uses.

Deliverables:

The 2014 Annual Project Report has been complete; it includes analysis

and interpretation of all genetic and camera data collected to that date.

The project report will be made available to landowners and BHI. Photographs from camera-trapping are being made available to landowners to show them the species occurring on their lands. Arrangements are being made to develop a research project website, with scheduled completion mid-summer 2014.

The full project report will be made available to ACA, Alberta Tourism, Parks and Recreation (Parks & Protected Areas) and AESRD (Wildlife Division) personnel for use in further monitoring, status assessment, and conservation efforts.

Evaluating the sustainability of landscape change for waterfowl in the western boreal forest

Ducks Unlimited Canada (Dr. S. Slattery)

Grant: $5,000

Project Code: 030-00-90-222

Project Status: New; Completed

The goal of this work is to strengthen the scientific underpinnings of wildlife habitat conservation efforts in the Western boreal forest, ranging from land use planning to development of best management practices. More specifically, the objectives of this research are to: a) better identify which industrial landscape changes have the most important effects on waterfowl populations and b) determine sustainable levels of those changes relative to population goals. The researchers are using aerial surveys to examine how waterfowl pair and brood abundance vary with both amount of landscape change (roads, pipelines, seismic lines, and cumulative), and distance from individual changes, while accounting for sources of variation due to detection probability and habitat associations. To do this, they are sampling across gradients of these landscape changes, and further stratifying by Ecoregion, and location relative to oils sands development. Two breeding surveys were conducted (May 17 - 21 and June 4-7) and two brood surveys (July 9-17 and August 13-20) on 101 grids. Breeding surveys were timed to coincide with peak availability of indicated breeding pairs (IBP) of early and late nesting species. Brood surveys were also timed for early and late nesting species, plus the researchers attempted to observe broods at 20-30 days post-hatch. Both IBP and brood surveys were started approximately two weeks later than usual due to a late spring thaw and delayed breeding season. Surveys were flown using two Bell 206 Jet Ranger helicopters, four observers (two per machine), digital voice recorders, and ARCGIS moving map software. Waterfowl, grebes, and loons were counted on all open water within grids occurring in basins >20m in diameter or in linear flowing systems. In addition they are using high resolution imagery of grids to supplement/update habitat and landscape change data in their existing GIS layers. Raw counts of breeding adults and broods, plus other data, have been entered and proofed, and are in the process of being analyzed. Hierarchical mixed models are being used for these analyses, which estimate detection probability, then use that information to estimate effects of landscape characteristics on abundance. Such an approach allows the researchers to examine relationships with landscape changes while statistically controlling for potential confounding effects of observation error and underlying relationships between habitat characteristics and duck abundance. Analyses are being conducted at both the local (basin) and regional (grid) scales. Preliminary results are expected to be available in April 2014.

Deliverables:

The project is proceeding as planned. The 2013 fieldwork was completed on schedule, without any unexpected delays or changes in plans. Data entry and proofing is complete, plus GIS processing of high resolution imagery. The project is now in the analysis phase and preliminary results by late April. Preparations are being made for the 2014 field season.

The only scheduled deliverables for this period are communication of project status based on the 2013 field season. However, the researchers expect to develop a more detailed progress report and an oral presentation once the 2013 data is analyzed.

Incorporating wetland carbon values into spatially explicit tools to inform land use decisions

Ducks Unlimited Canada, Institute for Wetland and Waterfowl Research (Dr. D. Howerter)

Grant: $7,500

Project Code: 015-00-90-201

Project Status: New; Completed

The goals of the proposed project are to better evaluate the benefits of wetlands as biological solutions for carbon storage and sequestration, and to ensure these carbon values are managed wisely in both prairie and boreal Alberta. The specific objectives include the development of a geospatial planning tool which will map wetland carbon distributions and better inform land use decisions. Also, the researchers plan to use existing data to validate carbon sequestration estimates used within the developing Wetland Ecosystem Services Protocol in southern Alberta. Finally, Alberta's proposed wetland carbon protocol will be aligned with new international standards, leading to greater consideration of both prairie and boreal wetlands. Activities will include literature reviews, geospatial modeling, and comparison of predicted vs. measured carbon flux values. By August 2015, the researchers expect to deliver a consolidated database of recent carbon investigations, a geospatial planning tool, two peer-reviewed journal articles, and an updated wetlands carbon protocol for Alberta. Overall, it is expected that this multi-pronged approach will develop stronger linkages between wetlands and carbon values. By increasing the recognition of this link within government and industry, these results will help leverage greater wetland retention and restoration, and thereby improved habitat conservation for wetland-dependent wildlife species.

Deliverables:

Consolidated database from recent carbon investigations.

Geospatial planning tool to facilitate scenario planning and understanding of impacts of land use change on carbon stores (completion date: 31 July 2014).

Two peer-reviewed journal articles (completion date: 31 May 2015). Tentative titles include:

a. Predicting impacts of landscape change on the distribution of subsurface carbon in mineral and peat wetlands.

b. Rapid assessment methods for carbon sequestration: A test of the Wetland Ecosystem Services Protocol in Alberta (WESPAB).

Updated wetland carbon protocol for Alberta that better represents both prairie and boreal ecosystems. (completion date: 31 July 2015).

Grizzly bear habitat use and movement in the grasslands of south-west Alberta

Foothills Research Institute (Dr. T. Larsen)

Grant: $20,000

Project Code: 030-00-90-215

Project Status: New; allocated grant money not accepted.

Human-caused mortality, habitat loss, and population fragmentation associated with human activities (industry, agriculture, and recreation) threaten the persistence of grizzly bears in Alberta. This is particularly true in the south-west where sustainable mortalities are twice that of other areas due to relocations following human-bear conflicts on private agricultural land. Despite this, there is evidence that the population is expanding eastward into the prairie. Whether this is related to dispersing individuals from adjacent populations or simply seasonal forays of bears that reside in the nearby Rocky Mountains is unclear. Generally, there is a lack of information on which to base management decisions in the prairie, particularly regarding the habitat use and movement of grizzly bears. In addition, educating landowners is needed to reduce conflicts. The project objectives were: 1) capture and fit grizzly bears (n=10) with satellite GPS collars in the prairie; 2) visit bear locations to determine activity (foraging, resting), diet, food availability, and other habitat attributes; 3) help local managers to mitigate human-bear conflicts by educating landowners about 'resident' grizzly bears; 4) map natural and anthropogenic habitat features; and 5) develop models to better understand the habitat use and movement of grizzly bears. This will generate other important information (survival, reproduction, sex-age-classes, and denning) that managers can use to achieve desired objectives for the area.

Deliverables:

The researcher did not accept the grant; the primary reason for this is based on a recent decision by AESRD to delay initiation of the project at this time. Second to this, the proposed project could not be effectively implemented with only partial funding support from ACA.

Population demography and life-history variation in mountain goats of Alberta

Laval University (Dr. S. Côté)

Grant: $7,500

Project Code: 030-00-90-117

Project Status: Funded 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 objectives are 1) to measure variation in individual survival and reproductive success in both sexes using marked animals, 2) to identify the causes of this variation, particularly in regard to the marked recent decline and 3) quantify variation in population sex-age structure among years, and identify factors that affect population size. The continued monitoring of life-history traits of marked individuals with field observations are combined to determine the factors influencing population size and recruitment. Below some of the main findings of the study so far are summarized. Kid production increases with female age from three to six years, peaking at about 80% at eight-12 years and decreasing afterwards. Because of the late age of primiparity and increasing kid production with age, much of the recruitment in the population is contributed by females aged eight to 12 years. Kid survival averages 60% and is negatively influenced by harsh conditions during winter, but is strongly positively influenced by kid mass. Both kids' development and maternal care have a direct and strong positive impact on offspring survival. Adult survival is greater for females than for males. Some males disperse, especially those with higher genetic diversity. For both sexes, survival is lower for two-year-olds than for older goats. Survival shows clear evidence of senescence, for females beginning at 10 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. Predation on small, isolated populations of mountain goats could vary with the behavior of individual predators in a density-independent manner, and therefore may be highly unpredictable. The recent decline in the population could be attributed to increased predation. 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. Caw Ridge is the leading research project on mountain goats worldwide by its duration, proportion of animals marked and scientific productivity.

Deliverables:

Recently, five papers have been published on the mountain goat study in high-profile international scientific journals (see list below). The researchers have also submitted a revised version of one paper. Five presentations were given on the mountain goat project this year, including two invited seminars. All scientific communications are listed below.

Scientific publications from the Caw Ridge research published or submitted in 2013-2014:

Hamel, S., N. G. Yoccoz and J.-M. Gaillard. 2014. A standardized approach to estimate life history trade-offs in evolutionary ecology. Oikos 123:151-160.

Côté, S. D., S. Hamel, A. St-Louis and J. Mainguy. 2013. Do mountain goats habituate to helicopter disturbance? Journal of Wildlife Management 77: 1244-1248.

Martin, J. G. A., M. Festa-Bianchet, S. D. Côté and D. T. Blumstein. 2013. Detecting between-individual differences in hind foot length in populations of wild mammals. Canadian Journal of Zoology 91: 118-123.

Godde, S., L. Humbert, S. D. Côté, D. Réale and H. Whitehead. 2013. Correcting for the impact of gregariousness in social network analyses. Animal Behaviour 85: 553-558.

St-Louis, A., S. Hamel, J. Mainguy and S. D. Côté. 2013. Factors influencing the reaction of mountain goats towards all-terrain vehicles. Journal of Wildlife Management 77: 599-605.

Théorêt-Gosselin, R., S. Hamel and S. D. Côté. Why care? The role of maternal behavior and offspring development in the survival of mountain goat kids. Oecologia, revised version submitted January 2014.

Scientific communications of the Caw Ridge study presented in 2013-2014:

Hamel, S., N. G. Yoccoz and J.-M. Gaillard. 2014. The use of mixture models in ecology and evolution : some examples describing cohort effects in ungulates. Nordic Oikos Meeting 2014, Stockholm University, Stockholm, Sweden.

Côté, S. D. 2013. La recherche fondamentale et la gestion de la faune: enjeux et contraintes. Université du Québec à Rimouski, Rimouski, QC, Canada.

Hamel, S. 2013. Quantification de différents processus écologiques et évolutifs: coûts de reproduction, trajectoires ontogéniques, et compétition interspécifique. Invited seminar, Sherbrooke University, Québec, Canada.

Hénault-Richard, J., K. S. White and S. D. Côté. 2013. Effort reproducteur et utilisation de l'espace d'un ongulé alpin durant le rut. 38th Annual Meeting of the Société Québécoise d'Étude Biologique du Comportement, Montréal, QC, Canada.

Shafer, A. B. A. 2013. Tracking your animal: novel eco-evolutionary inferences from merging GPS telemetry and genetic data. Behaviour and Evolution Seminar Series, University of Bielefeld, Bielefeld, Germany.

Developing a grey wolf population monitoring framework for southwest Alberta

Montana Cooperative Wildlife Research Unit, University of Montana (Dr. D. Ausband)

Grant: $5,000

Project Code: 030-00-90-220

Project Status: New; Completed

Project Website: www.umt.edu/mcwru/personnel/ausband/default.aspx

Gray wolf populations are difficult to monitor because wolves tend to be elusive, occur in low densities, and live in remote and inaccessible terrain where surveying is difficult. In 2010, the researchers began collaborating with AERSD (Fish and Wildlife Division, Lands Division) and other stakeholders (Tourism, Parks and Recreation, Rocky Mountain Forest Range Association) to develop and test a framework that would be useful for annual wolf population monitoring in southwest AB. The goal is to have a suite of tested methods that managers can choose from depending on their current needs and budgets. Additionally, the resulting genetic data will be used to generate pack pedigrees as part of a broader study looking at the effects of human-caused mortality on packs and wolf population growth in Alberta, Idaho, and Yellowstone National Park, Wyoming. The project objectives are: 1.) deploy field methods useful for finding and documenting wolves, 2.) refine and adjust field methods as needed, 3.) develop patch occupancy model that can be used for continued long-term wolf population monitoring in southwest AB, 4.) combine data from Alberta with data from Idaho and Yellowstone National Park to answer questions about wolf pack social ecology and population demography under different management regimes. Field surveys for wolves were conducted in 2012 and 2013. Additionally, Alberta big game hunters were surveyed for wolf sightings in 2012 and 2013. This data has been used in an occupancy model to generate preliminary estimates of wolf pack abundance and distribution in the study area. Preliminary estimates range between six-11 wolf packs from the international border to Highway 1. The laboratory results for the genetic analyses of the 2013 collected samples were recently received (ACA supported analyses) and are in the process of generating pack pedigrees that will allow the researchers to look at the effects of human-caused mortality on packs. Individual genotypes were obtained for 45 wolves in 2012 and 38 individuals in 2013. Field surveys and access were hampered in 2013 due to June flooding and resulting damage. A decrease in individuals found in 2013 should not be interpreted as a population decline.

Deliverables:

Preliminary analyses estimate six-11 wolf packs from the international border to Hwy 1. They continue to refine and adjust models to obtain more precise estimates. Field surveys yielded many wolf detections in 2012 and 2013; a minimum of 45 and 38 wolves were documented, respectively in the study area.

Winter 2013/Spring 2014 – data analyses and interim progress report.

Project progress report: Ausband, D.E., S.B. Bassing, M. Mitchell. Progress Report for Testing monitoring techniques for wolves in southwest Alberta. Montana Cooperative Wildlife Research Unit, University of Montana April 21, 2014, 30 pp.
See: www.umt.edu/mcwru/personnel/ausband/AB_Monitoring_Framework_Progress_Report_4_2014.pdf

Smooth brome invasion into native grasslands: plant-soil feedbacks and invasional meltdown

University of Alberta (Dr. J. Cahill)

Grant: $33,599.80

Project Code: 015-00-90-200

Project Status: New; Completed

Smooth brome, *Bromus inermis*, is one of a small number of plants able to invade the native grasslands of Alberta. Further, invasion is typically associated with loss of biodiversity and reduced ecosystem services. Therefore, the goal of this project was to determine in which areas, or under which conditions brome poses a bigger threat in terms of both impact and expansion. Further, the researchers aimed at understanding the mechanisms for its invasion and the possibilities for cascading effects on other invasive species, which could lead to an invasional meltdown. A field survey was performed to determine smooth brome's rate of expansion, biotic and abiotic factors that govern expansion, impacts on biodiversity and ecosystem function – at three sites along a precipitation gradient. Additionally, using a greenhouse and field experiment, the role of plant-soil feedback was tested and competition in facilitating smooth brome invasion. Further, in the greenhouse experiment the smooth brome effect was also evaluated on other invasive species and the potential, due to its high-density growth, to enhance the competitive ability of other invasive species. This project's results to date indicate that brome's expansion rate is greater in more northern sites, but that it imposes as great a threat to diversity across all sites (73% reduction in species richness). In terms of the conditions that determine brome's expansion and impact, field collected samples are still being processed and analysis are pending. Results from the field and greenhouse experiment show that plant-soil feedbacks may be important, although in a species-specific manner. Smooth brome seems to grow better in native soils than in its own soils (negative feedback), posing risks of continued spread into grasslands. In contrast, some native and other invasive species grow and compete better in brome-invaded areas or brome-invaded soil, potentially being of value for restoration. Therefore, soil remediation in smooth brome areas may not be important to control smooth brome, but it may be critical to prevent other invasive species becoming dominant in those areas. Overall, this project, once results are finalized, will provide fundamental information for new management strategies to control smooth brome's invasion and to prevent a potential invasional meltdown.

Deliverables/Results:

Preliminary results can be found in the ACA GECF final report.

Upon the finalization of sample processing, the researchers will conduct the appropriate statistical analyses and modeling, leading to publication and dissemination of information to stakeholders.

The project's website is currently under construction and will be launched in the fall.

Human access management in central-western Alberta: implications for movement and behaviour of grizzly bears (*Ursus arctos*)

University of Alberta (Dr. M. Boyce)

Grant: $25,000

Project Code: 030-00-90-211

Project Status: Funded in 2012-13; Completed

The primary recommendation laid out by the Alberta Grizzly Bear Recovery Plan (2008) is the reduction of human-caused grizzly bear mortality through human access management in high-quality bear habitats. This project aims to investigate the influence of recreational activity on grizzly bear movement and behaviour, as well as testing novel density estimation techniques using trail cameras. At present, 80 cameras are deployed over a 5,000 km2 region gathering all-year-round data on a range of recreational use types and all species of large mammals, including grizzly bear. These cameras have taken over 300,000 images since April 2012, documenting 21,915 independent events consisting of 23 different species and six different recreational activities. Concurrent GPS data on satellite-collared bears within the study region (eight in 2011, six in 2012, six in 2013) provide information on grizzly bear movement and habitat selection. Preliminary results showed variation in grizzly bear home range location, with the majority of bear locations focusing in and around protected areas. Additionally, bears were shown to be using trails, however further analysis needs to be done to understand how this use relates to concurrent recreational activity. The trail camera data showed that there was huge variation in the amount of certain types of recreation between different land use types, with ATV use dominating the public land, where access restrictions are non-existent. Hunter activity was almost exclusively within the mineland and Whitehorse Wildland Park, with a small number of ATV hunters in the crown lands. Temporal activity of recreational users was shown to be highly consistent, with activity peaking at 2pm each day and the highest frequency of use in August of each year. Final analyses will be undertaken beginning November 2014, once all three proposed years of data collection have been completed. These will involve building step selection functions and occupancy analyses aimed at identifying how grizzly bears are moving and distributed across the landscape in response to different magnitudes of recreational activity on trails and seismic lines. Additionally, the grizzly bear images from the cameras will be applied within a spatially explicit capture-recapture model and the accuracy and precision of the density estimate will be directly compared with that achieved using DNA bait station data. The results of these analyses will help inform management in how to best implement access management strategies aimed at grizzly bear recovery, as well as develop new, cost-efficient methods of monitoring said recovery.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

This project involves a three-year field effort, and final analyses aimed at delivering the anticipated products will occur once the complete dataset has been collected. These analyses will commence at the end of 2014, and will be completed by the following year.

Persistence of the Ya Ha Tinda elk population: the role of calf survival

University of Alberta (Dr. E. Merrill)

Grant: $20,000

Project Code: 030-00-90-204

Project Status: Funded in 2003-04, 2008-09, 2009-10, 2012-13; Completed

Project Website: yahatinda.biology.ualberta.ca/

To address the persistence of the Ya Ha Tinda (YHT) herd, the researchers have two key objectives: (1) continue to monitor migratory movements, pregnancy rates, and cause-specific mortality of collared cow elk, and (2) initiate a study to determine the seasonal survival of calves and cause-specific mortality. Main activities are continuing long-term collaring of cow elk, capturing and radio ear tagging elk calves, determining bed site characteristics and cow-calf behaviours, and relating calf survival to cow habitat selection. Twenty-six adult cow elk were free range darted in February and March 2013; 20 of these cow elk were checked for pregnancy and fit with vaginal implant transmitters (VITs). As a result, sixteen calves were captured via ground monitoring the VITs in May and June 2013. Calves were equipped with radio ear tags and from a distance, were monitored one-three times daily for mortality. Four of the 16 calves were still alive as of March 2014. Mortality causes are attributed to about an equal mix of bears, wolves, and a cougar. In addition to collaring/tagging efforts, a preliminary analysis was also conducted using a novel method that uses GPS locations of cow elk to identify birth sites of elk calves through a clustering analysis. The researchers applied the tested method to GPS-collared elk on the eastern slopes of west-central Alberta over the period 2002-2012. Because of high nutritional requirements during calving and high vulnerability of calves, pregnant cows trade off predation risk at the broad scale calving area for forage biomass and security cover at the local scale (birth site). Observations of ear-tagged, collared, and/or un-collared elk yielded summer natality estimates of 21:100 calves to cows for residents (n = 61), and 45:100 calves to cows for migrants (n = 39). The end goal is to incorporate new information on calf survival into our population models to predict persistence of the YHT herd segments and the population as a whole.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

The Ya Ha Tinda website was completed in 2013, and maintenance and updates are ongoing.

Thesis on migration patterns by Scott Eggeman was completed in May 2012 and publications are expected in 2014.

Analysis of elk selection of burned areas is expected to be completed and a manuscript submitted in 2014.

An article was written for Alberta Outdoorsmen, which acknowledged ACA contributions.

An analysis and publication of past data on timing, movements, and characteristics of calving areas were initiated. Methods will be further tested and validated with calving data from 2014, and the analysis is expected to be completed and a manuscript submitted by 31 December 2014.

Presentations were given at the Gordon Research Conference on Predator-Prey Interactions (Jan. 2014), Alberta Chapter of The Wildlife Society (March 2014), and at the Ya Ha Tinda Stakeholders' Meeting (Feb. 2014), at which ACA was acknowledged.

Phylogeography of a neotropical migratory forest songbird: identifying conservation units

University of Alberta (Dr. E. Bayne)

Grant: $20,000

Project Code: 030-00-90-216

Project Status: New; Completed

Population and subspecies are simple concepts that nonetheless remain unclear in avian ecology. This is especially true for species covering large spatial extents of continuous habitat (e.g. boreal forest) with individuals also distributed in isolated areas. In this study, genetic and functional connectivity of different ovenbird (*Seiurus aurocapilla*) populations throughout the species' range are being investigated. Geolocators can inform on migratory connectivity by recording time of sunset and sunrise to infer individuals' geographic areas through their annual cycle. Low migratory connectivity implies that all populations are wintering in the same area (i.e. mixing) and are influenced by similar winter conditions whereas high connectivity suggests that they occupy different non-overlapping wintering areas and populations need to be considered as different management units. In 2012, geolocators were fitted on 13 ovenbird males in New Brunswick and Slave Lake (Lesser Slave Lake Bird Observatory, Alberta). In 2013, additional units were installed on individuals from Cypress Hills and in the Fort McMurray area and increased the sample size in LSLBO (20 geolocatos per study area, n = 60). Another objective was to collect feather samples in areas for which genetic difference and variation in feather mite communities among populations are expected owing to isolation (Cypress Hills and Newfoundland) or distance (Alberta and New Brunswick). Preliminary results from geolocators retrieved in Alberta (n = 1) and New Brunswick (n = 4; 2013) suggest strong migratory connectivity as individuals from New Brunswick would overwinter in the Caribbean Islands whereas the individual from Alberta overwintered in southern Mexico (i.e. Yucatan Peninsula). Genetic analyses are being conducted from feather mites (n = 77) and ovenbirds (n = 376) captured in seven locations across Canada (LSLBO, Fort McMurray, Cypress Hills, Thunder Bay, Ottawa, New Brunswick, and Newfoundland). In 2014, the researchers will recapture as many ovenbirds with a geolocators as possible in the three study areas across Alberta. Using such intrinsic (genetic) and extrinsic (geolocators) markers will provide evidence of functional connectivity or lack thereof in this species with a boreal-wide distribution and generate guidelines pertaining to subspecies- and population-specific management plans of forest birds in Alberta and across Canada.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

Scientific papers regarding the taxonomy of feather mites in birds, the genetic markers developed, and the investigation of host-parasite co-evolutionary relationships are examples of papers that will result from this study. However, more importantly is the applied contribution of this study. A scientific paper presenting both broad- and fine-scale populations structure in this boreal-wide forest songbird will provide guidelines regarding the relevant management units to consider in conservation plans aiming at maintaining healthy population of forest songbirds. This study will provide a framework for similar studies aiming to test alternative possible distributions for other species based on a priori knowledge of a species' ecology. Manuscripts are expected to be submitted to peer-reviewed journals in October 2014.

Results from genetic analyses were available in mid-April, while those from the geolocators that will be retrieved in 2014 will be available in September 2014. Results will then be presented at provincial and international scientific meetings and to land managers in Alberta and across Canada.

The lab website is currently being updated. Results from this study will be posted as they will be available.

Characterizing feather mite communities took more time than expected, but it is completed. Results from genetic analyses completed mid-April 2014.

Evaluating the efficacy of setback distances as a tool for protecting critical habitat for ferruginous hawks in Alberta

University of Alberta (Dr E. Bayne)

Grant: $20,000

Project Code: 030-00-90-178

Project Status: Funded since 2011-12; Completed

Ferruginous hawks are provincially endangered and federally threatened. Widespread development by the energy sector and power transmission industry may alter and degrade ferruginous hawk habitat required for conservation and recovery. In response, regulators have prioritized the need to identify and protect critical habitat, understand how human development may affect critical habitat, and develop techniques to offset the effects of agriculture and industrial development. The research team is addressing priority threats to ferruginous hawks outlined in the Alberta Recovery Strategy by:

1) Validating and improving a multi-level habitat selection model used to identify environmental and anthropogenic factors associated with ferruginous hawk presence in Alberta.

2) Evaluating factors that influence reproductive performance of ferruginous hawks with a focus on energy sector and transmission line infrastructure and if/what potential setback distances can protect reproduction efforts.

3) Using satellite technology to track movements of hawks within breeding and wintering home ranges. Develop a third order habitat selection model to determine if hawks avoid or are attracted to specific landcover types or human features such as transmission lines and energy sector infrastructure. Evaluate carry-over effects from winter habitat on adult survival and reproductive performance.

4) Integrating results into a mitigation matrix that summarizes best management practices tailored for specific types of industrial infrastructure and different life history stages of ferruginous hawks.

Preliminary analyses suggest that ferruginous hawks (hereafter referred to as FEHA) are strongly associated to native grass. Proportion of native grassland on a landscape is an important predictor for home range habitat selection, increased likelihood of reoccupancy through years, increased nest abundance on a landscape, and can influence response behaviour to nearby human activity. By documenting this relationship between FEHA and native grass in multiple components of their breeding ecology, the researchers demonstrate that native grassland, and the associated mechanisms, may be important for FEHA conservation and recovery. Analyses to understand the influence of industrial infrastructure (the "footprint) and activity (the "foot") are on-going. Separate preliminary analyses suggest that gas well density is positively associated with home range selection and nest abundance at a landscape-scale. Movement data also shows that male adult hawks will use transmission towers and distribution poles as perches

within their home ranges. Current analyses examine habitat selection and reproduction relative to industrial development on a landscape. Results will be used to make scientifically-defensible recommendations on what is critical habitat for hawks, at multiple scales, determine the efficacy of nest platforms as a mitigation tool, inform aspects of current setback guidelines and timing restrictions for industrial development, and make recommendation on enhancing current habitat stewardship actions.

Deliverables:

Annual report outlining progress and preliminary findings.

Presentation of preliminary results at local, national, and international conferences (Ongoing; various dates).

Map product and report highlighting second-order selection that can be used in environmental impact assessment to minimize ecological risk to ferruginous hawks. - Completed

Ongoing evaluation of setback distances throughout length of project. – Expected date of completion Dec 2014.

Communicate findings to wildlife managers in groups and agencies with species or habitat management responsibilities and conservation interests involving FEHAs: a) agencies with jurisdictional responsibility including AESRD, Environment Canada, Agriculture Canada, Department of National Defense, b) national recovery teams, c) recovery implementation groups, d) energy sector companies, and e) environmental conservation groups, f) and First Nations groups, within Alberta (Ongoing; various dates).

Add to knowledge required to 'effectively protect' critical habitat (i.e., define what would constitute destruction of critical habitat) for ferruginous hawks (Critical habitat designation due by December 2014).

Publication of five or more scientific papers outlining results of work (September 2011 to December 2014).

Two newsletters sent to all energy sector companies in prairie region along with appropriate government and conservation organizations (March 2014 and March 2015).

Final report outlining the model and assumptions used to develop recommendations on new setback distances and total energy footprint deemed appropriate for ferruginous hawks based on these results (December 2014).

Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta

University of Alberta (Dr. M. Boyce)

Grant: $20,000

Project Code: 030-00-90-218

Project Status: New; Completed

There is a paucity of information available to land and wildlife managers in Alberta on how to manage wolverines in industrial landscapes. The objective of this research project is to evaluate wolverine ecology along a gradient of industrial disturbances represented in Rainbow Lake, Alberta. Specifically, the research team will investigate: 1) the influence of traffic, land use, and industrial infrastructure on wolverine habitat selection; 2) habitats associated with wolverine road crossings; 3) wolverine density; and 4) wolverine food habits and den-site selection. These data will facilitate management of wolverines in industrial landscapes and aid in determining sustainable yields of wolverines by trappers in northwestern Alberta. The research team will be using log-box traps to live-trap and radiocollar wolverines. Radiocollars will be programmed to collect GPS fixes at two-hour intervals. Motion-sensor cameras are also monitoring industrial traffic volume so that wolverine movement can be correlated with road traffic. During wolverine captures, hair samples (for DNA and cortisol levels) and scat (for food habits) are being collected. The researchers are also visiting GPS clusters to identity wolverine caches, den sites, and resting sites. Lastly, photos from motion-sensor cameras at traps are being used to estimate wolverine density (mark-recapture).

14 log live-traps were built throughout the Rainbow Lake region during summer and fall 2013. Eight portable wolverine traps were also deployed in more remote regions. In these traps, 17 wolverines have been captured, nine females and eight males. 11 of these wolverines have been radiocollared and all of them recaptured for data GPS download at least once. Four of the females had mammary tissue. Female weights ranged from 9 - 14.5 kg and males were from 9-15.5 kg. At first glance, wolverines appear to use habitats that are highly developed by industry and have home ranges between 200 and 1,000km2. Through both trap photos and GPS data, a large amount of interaction between individual wolverines is being found, likely because of kinship (which will be determined through DNA analyses). The researchers have rotated a system of 20 motion-sensor cameras for traffic monitoring and have collected over 30 scats for food habits analysis. They have tissue samples from 25 wolverines (some samples are from trapper submitted carcasses) that can be used for kindship and other DNA analyses. Motion-sensor cameras at traps have collected thousands of marked and un-marked wolverine pictures and will be used for an estimate of wolverine density in the area.

Deliverables:

Recommendations for managing industrial activities in wolverine habitats: These recommendations will be developed once sufficient data has been collected. These recommendations will be developed after another one-two field seasons.

Aid in updating wolverine population status assessments by the government of Alberta: Information that will help update wolverine population status assessment in Alberta will be developed over the next few years. This summer, wolverine GPS data will be analyzed to understand basic habitat associations and the effects of roads, wells, and pipelines on movement. Photos from motion-sensor cameras at traps will be summarized so that wolverine density can be estimated. Wolverine scat will be analyzed this summer to get a better handle on wolverine food habits.

Publish a minimum of four peer-reviewed scientific research articles: Papers will be published once there is sufficient data available.

This project was presented at the Alberta Chapter of the Wildlife Society conference in spring 2013.

Understanding the spawning habitat and reproductive requirements of the endangered western silvery minnow (*Hybognathus argyritis*)

University of Alberta (Dr. M. Poesch)

Grant: $17,000

Project Code: 020-00-90-202

Project Status: New; Completed

This project investigated the habitat associations of the endangered western silvery minnow (*Hybognathus argyritis*). This project was the first to document broad habitat use of western silvery minnow. 182 sites on the Milk River were sampled from June 15, 2013 to November 7, 2013. Habitat data collected at each site including substrate size, stream velocity and other physiochemical parameters. Overall approximately 10,000 western silvery minnows were captured and ~ 2,727 individuals were measured. Preliminary habitat suitability models identified stream velocity as an important characteristic for western silvery minnow and for influencing capture efficiencies (probability of detection) of seine nets. Unfortunately, the researchers were unable to document spawning habitat, but due to unforeseen delays in receiving animal care approval, the spawning window was missed. In addition to the field program, the research team have conducted swim performance tests and physiological assessments on 40 adults and 40 young of the year at the Aquatics Facility at the University of Alberta. These tests are currently ongoing and will help inform managers as to the impacts of stream flow on both the habitat suitability and physiology of western silvery minnow. Blood plasma samples have been taken pre/post swim tests and blood cortisol, glucose and other physiological responses will be monitored.

Deliverables:

The results of this work are currently being drafted into peer reviewed publications (three expected) and a M.Sc. thesis by Kenton Neufeld at the University of Alberta. Currently one publication is drafted on the impact of stream velocity on capture efficiencies of western silvery minnow with hopeful submission in late spring.

A final report encompassing the results, conclusions and future direction of the project was provided to ACA by March 2014.

Using wetland-dependent wildlife to monitor landscape change

University of Alberta (Dr. C. Paszkowski)

Grant: $7,510

Project Code: 030-00-90-187

Project Status: New; Completed

The research team has been using automated acoustic recorders to evaluate the species diversity of songbirds and amphibians at urban wetlands. The project goal is to relate species diversity to habitat characteristics and anthropogenic noise of those sites. It is hoped that results can be used to help guide development and protection of urban natural spaces to improve species diversity and natural corridors in urban areas. This work is part of a larger initiative to monitor how species calling phenology and activity is affected by changes in vegetation and wetland characteristics associated with global climate change. For the past three years, the researchers have been exploring how amphibians and songbirds respond to differences between urban and natural wetlands to provide recommendations to managers on preserving natural soundscapes. To this end, this year sites were selected within Edmonton from constructed traditional turf-grass dominated storm water management facilities, to reconstructed native rough grass fescue prairie storm water management facilities and compared species diversity to preserved river valley native vegetation dominated wetlands. Recorders were placed at nine urban (three preserved, two reconstructed native, four constructed turf-grass) and one native prairie site at the end of April-early May and recorded for five minutes every hour until July or August. Over 1,000 unique recordings have been analyzed. From these recordings 55 species of songbird and waterfowl have been identified from recordings and two amphibian species. Species diversity was highest at protected native wetlands, then reconstructed native wetlands and was lowest at constructed turf-grass wetlands. Initial findings support the preservation of native urban systems and suggest that reconstructed native system may provide better habitat for songbird diversity than traditional urban turf-grass dominated systems.

Deliverables:

Final report outlining progress and preliminary findings.

A large database of recordings of frog and bird calls has been generated by the song meters: data has been recorded and has been transferred to external drives. Technicians and undergraduate students are devoted to listening to recordings and not on creating recognizers, as training the Songscope Software proved to be too time consuming. This data collection has been integrated with Dr. Erin Bayne's research group.

Update the Beaver Hills Initiative and partner groups on findings regarding species occurrence and abundance, and status of wetlands: In July, a species list of birds recorded at one urban site over a two day period was provided to Clark Ecoscience to inform development/ consultants of species present at the site. An additional report will be delivered to Clark Ecoscience prior to May to demonstrate the benefits of reconstructed native ecosystems. The Friends of Elk Island have received a report of these findings.

Publication on the timing of amphibian emergence related to vegetation and climatic characteristics: Data is still needed to relate climatic data to amphibian emergence dates. A small report/paper relating local climate to emergence patterns is not likely to be ready until the end of spring 2014 at earliest.

St. Albert Gazette reporter Kevin Ma, interviewed the researchers and ran a short story on wood frogs, May 1st. http://m.stalbertgazette.com/article/20130501/SAG0804/305019971/-1/sag0804/the-frog-that-quacks-like-a-duck They were informed that ACA was kindly funding this research, but it did not reach the final story.

Sue Peters wrote a short article entitled 'Music to Our Ears' on this project for the ACA Conservation magazine (fall/winter 2013). See: magazine.ab-conservation.com/index.cfm/issue/fallwinter-2013-volume-21/music-to-our-ears/

ACA was acknowledged for their research funding support at the annual WISEST poster presentations held at the University of Alberta, August 12-14. Sara Kardash, the WISEST student, displayed a poster of her work on soundscapes in urban areas. Emily Chow, BIOL 299 project student, displayed a poster on her work on soundscapes on 26 September 2013 during the BioSci Expo on the U of A campus; ACA was acknowledged.

ACA was acknowledged for their financial support at the NovaNAIT Applied Research Symposium May 16th. Arthur Whiting gave a talk titled "An assessment of methods to detect amphibians (and birds): application to urban landscapes".

ACA was acknowledged for their support of the acoustic research during several lectures this past year. During an introduction to students of BIOL 367 Conservation Biology, September 10, 2013 and again during an introduction to students of BIOL 468 Problems in Conservation Biology, January 7, 2014; both at the University of Alberta. A guest talk was given on amphibians where the researcher discussed the acoustic recordings to the students of vertebrate biology (ZOGY 1225) at NAIT on February 28, 2014.

Experimental translocations of Ord's kangaroo rats

University of Calgary (Dr. D. Bender)

Grant: $14,631.20

Project Code: 030-00-90-214

Project Status: New; Completed

Ord's kangaroo rat is an *endangered* species found in the Middle Sand Hills region of Alberta. The species is experiencing habitat loss due to natural and human causes, particularly disturbance (e.g., fire) suppression and industrial development. The isolation and fragmentation of the species' habitat has increased, prompting concern that dispersal among sub-populations has been disrupted, endangering their future persistence in Alberta. The purpose of this research was to assess the feasibility of translocating kangaroo rats from productive habitats to unoccupied or under-populated sites. No previous research exists for this species, but if successful, translocations could become a powerful management tool for mitigating impacts of habitat fragmentation. Low population size made it difficult to locate animals suitable for translocation, and only seven kangaroo rats were captured and relocated to under-utilized habitat patches. Two release sites were chosen on active sand dunes near the town of Empress and within the CFB Suffield National Wildlife Area; these release sites represent some of the best (albeit under-populated) kangaroo rat habitat in Alberta, so the researchers had high expectations of successful establishment. All seven kangaroo rats were translocated and soft released into below-ground, artificial nests constructed to provide temporary shelter and food for the animals. The fate of the animals was monitored by direct observation, and three animals were also outfitted with radio telemetry collars from June to July. Overall, the results of the translocations were mixed. All animals appeared to immediately occupy the artificial nest provided at the release site. However, nearly half (3/7) had abandoned the release site within two weeks and were never located again, although it is possible that they escaped detection and established another home nearby. The activity of the remaining four individuals was monitored throughout the summer, particularly through the use of radio telemetry. Within one month of release, one animal disappeared (radio recovered nearby); another was observed to have relocated within about 100 m of its release site where it eventually established a permanent home and later became pregnant, which is a strong indicator of a successful translocation. The fate of the remaining two is unconfirmed, but it is suspected that they also established permanent burrows nearby based on telemetry data before collars were removed and tracks/sign in the local area. Spring 2014 surveys will attempt to relocate these individuals and determine over-winter survival. Additional trials in future years will be required to judge success of the project.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

One very positive outcome of the project was the success of using the radio transmitters to track the location of kangaroo rats. The researcher was able to refine a technique first developed by Gummer (2007) to attach radio transmitters that does not require the use of anesthetic to immobilize animals while fastening radios, which greatly minimizes the invasiveness of the procedure and risk to the animal. In 2014, this technique will be used to attach radios to a greater proportion of translocated animals, which should greatly reduce the percentage of "unknown fates" for animals used in the study.

Survey information was submitted to AESRD for provincial wildlife database on 12 March 2014.

No annual meeting of the Alberta Ord's kangaroo rat recovery team meeting was held in 2013/2014; however, both of the Interim Team Leads (Cindy Kemper and Joel Nicholson, AESRD) were briefed by the researcher regarding the activities funded by the ACA.

Journal publications will likely not be prepared until winter 2014 or winter 2015, depending on numbers of successful translocations that can be performed in the next summer (or two, if conditions remain poor and population size remains low). ACA will be provided with copies of any communications as they are published.

Characterizing the nature of Didymo blooms in Alberta streams with RNA sequencing

University of Calgary (Dr S. Rogers)

Grant: $16,000

Project Code: 020-00-90-201

Project Status: New; Completed

Didymosphenia geminata (Didymo) is a freshwater diatom that thrives in cold, turbulent streams. In Alberta, Didymo blooms have increased in frequency, with concern about limiting the spread of blooms resulting in recent calls to issue new guidelines for anglers, including a possible ban on the use of felt-soled waders. Yet, the cause of blooms remains unknown, with suggestions that phosphorus limitation may promote stalk formation, or that invasive strains now dominate Alberta streams and rivers. Using a novel gene expression technique, the researcher is characterizing candidate genes and quantifying differential gene expression between Didymo found in both blooming and non-blooming environments. A method has been successfully developed to isolate Didymo cells from other species captured during sampling. 12 pg of total RNA was obtained from one of these samples using ultra-low input RNA isolation protocols. This RNA library is currently being sequenced using Illumina HiSeq methods. Characterizing the candidate genes associated with Didymo blooms in these contrasting environments will be an important step to develop of tools for environmental monitoring, bio-control and an understanding of the nature of Didymo blooms. This work will provide important insights into the nature of Didymo blooms towards addressing two central questions: (1) are there mat forming genetic variants in the province of Alberta or (2) is the diatom responding to environmental change causing the blooms. The study design should allow us to elucidate either alternative, which will contribute to an understanding of the mechanisms of algal blooms, invasive species, and mitigation of these issues in Alberta.

Deliverables:

The researcher expects this research to produce one or two peer-reviewed journal publications research; these are in progress and the work is indeed providing important training opportunities for students.

Invited Seminars:

Rogers, S. (2013) Genes Propose, Environments Dispose, Bamfield Marine Sciences Centre.

Rogers, S. (2013) Genetics of adaptation to environmental change, University of Regina

Rogers, S. (2014) Role of genomics in conservation and environmental monitoring, Canada Next Generation Sequencing Symposium, Alberta Children's' Hospital.

Infectious pathogens and migration in blue-winged teal (*Anas discors*): Transport routes and impacts of infection

University of Saskatchewan (Dr C. Soos)

Grant: $25,000

Project Code: 030-00-90-177

Project Status: Funded since 2011-12; Completed

The project aim is to improve understanding of the ecology of infectious pathogens in migratory waterfowl, by identifying demographic and environmental determinants of infection, and sources, impacts, and movement patterns of pathogens in the prairie provinces. The prairies are potentially a key area for mixing of pathogens of birds that have come from numerous locations, and for subsequent dispersal of pathogens throughout the western hemisphere. In prairie blue-winged teal (BWTE), risk of AIV infection increased with population density of BWTE, and was highest in hatch year (HY) birds and birds without evidence of previous exposure. The risk of West Nile virus (WNV) infection increased with increasing pond density (important for mosquito vectors), and adults were more likely to be seroconverted compared to HY birds. For Newcastle Disease virus (NDV), adults were more likely to have antibodies compared to HY birds, exposure varied among years and provinces, but there were no associations with population or pond density. Feather corticosterone was negatively associated with early July temperatures (during the period of moult), and potential carry-over effects on migration and subsequent survival are currently being analyzed. To examine spatiotemporal trends in AIV infection at the continental scale, results from >13,500 BWTE across Canada and the US were analyzed. During late summer staging (August) and fall migration (Sept-Oct), HY birds were more likely to be infected than AHY birds, however there was no difference between age categories for the remainder of the year (winter, spring migration, and incubation). Probability of infection increased non-linearly with latitude, and was highest in late summer, corresponding with staging prior to fall migration when densities of birds and the proportion of susceptible hatch year birds in the population are highest. Birds in the Pacific, Central and Mississippi flyways were significantly more likely to be infected compared to those in the Atlantic flyway. Geographic and temporal variation in AIV infection was driven primarily by HY birds. Ongoing studies will provide further information on sources and movement of infectious pathogens through migration, the role of stress on infection, and the role of stress and sub-lethal infection on host migration and survival. Their results provide new insight into determinants of disease in a long-distance migratory host at individual, population, and continental scales. This information will inform models predicting spread and movement of new emerging diseases of concern if they were to enter our migratory bird populations.

Deliverables:

Successful field seasons in 2012 and 2013; samples collected from >1,000 blue-winged teal in AB, MB, and SK. Satellite telemetry equipment fitted on 12 adult male blue-winged teal in AB and SK, currently being monitored by USGS collaborators.

Sample analyses for avian influenza viruses completed for 2012 and 2013 samples. Serological analyses of serum samples for AIV antibodies completed by NCFAD. Hemoparasite analysis completed for 2012 samples, and in progress for 2013 samples.

Graduate student thesis completed: Nallar, R. The ecology of infectious pathogens in a long distance migratory bird, the blue-winged teal (*Anas discors*): From individuals to populations. Master of Science, Dept of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan, May 2013. Available at ecommons.usask.ca/handle/10388/ETD-2013-05-1063

Manuscripts for this funding year (April 2013-March 2014):

Nallar, R., Papp, Z., Leighton, F.A., Epp, T., Pasick, J., Berhane, Y., Lindsay, R., and Soos, C., Ecological determinants of avian influenza virus, West Nile virus and avian paramyxovirus infection and exposure in blue-winged teal (*Anas discors*) in the Canadian prairies, Journal of Wildlife Diseases, in review.

Nallar, R., Papp, Z., Epp, T, Leighton, F.A., Swafford, S.R., DeLiberto, T.J., Dusek, R., Ip, H., Hall, J., Berhane, Y., Gibbs, S., and Soos, C. Demographic and spatiotemporal patterns of avian influenza infection at the continental scale, and in relation to annual life cycle of a migratory host, PLOS One, submitted.

Papp, Z., Soos, C., Clark, R.G., Waldner, C., Parmley E.J., and Leighton F.A. Ecological correlates of avian influenza infection in waterfowl across Canada (2005-2011). PLOS One. submitted in March 2014.

Soos, C., Papp, Z., Parmley E.J., Leighton F.A. et al. Effect of low pathogenic avian influenza virus infection on migration and survival in wild waterfowl. To be submitted in June 2014.

Fairhurst, G. et al. Relationships of stress, environmental factors, and disease in blue-winged teal (*Anas discors*) in the Prairie Provinces (to be submitted in 2014). This paper is being led by our post-doc fellow, Graham Fairhurst, and will likely be submitted in spring or summer 2014.

Presentations given in this funding year:

Papp, Z., Leighton, F.A., Clark, R.G., Waldner, C., Dufour, K., and Soos, C. Ecology of Avian Influenza Virus infection in Canadian Waterfowl: Determinants and Effects of Infection. Department of Veterinary Pathology, WCVM, University of Saskatchwan, November, 2013. (Invited)

Papp, Z., Leighton, F.A., Clark, R.G., Waldner, C., and Soos, C. Ecology of Avian Influenza Virus infection in Canadian Waterfowl: Determinants and Effects of Infection. The Wildlife Society Conference, Milwaukee, WI, Oct, 2013.

Wilson, A., Nallar, R., Ramey, A., Leighton, F.A. and Soos, C. Prevalence and Genetic Diversity of Hematozoan Parasites in Blue-winged Teal in the Canadian Prairies. WCVM Summer Research Student Poster Day, Saskatoon, SK, September 2013. (poster)

Nallar, R., Papp, Z., Epp, T, Leighton, F.A., Swafford, S.R., DeLiberto, T.J., Dusek, R., Ip, H., Hall, J., Berhane, Y., Gibbs, S., and Soos, C. Demographic and spatiotemporal patterns of avian influenza infection at the continental scale, and in relation to annual life cycle of a migratory host. 62nd International Conference of the Wildlife Disease Association, Knoxville, TN, July 2013.

Olson, S.H., Gilbert, M., Parmley, J., Soos, C., Latorre-Margalef, N., Hall, J.S., Leighton, F., Munster, V., and Joly, D. Surveillance gaps and biodiversity of influenza A subtypes in wild birds. 62nd International Conference of the Wildlife Disease Association, Knoxville, TN, July 27-Aug 2, 2013.

Nallar, R. The ecology of infectious pathogens in a long distance migratory bird, the blue-winged teal (*Anas discors*): From individuals to populations., Master of Science Thesis Defense Seminar, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, May 2013.

Soos, C. Infectious Disease and Migration. Avian Management and Conservation, graduate level course, Department of Biology, University of Saskatchewan, Saskatoon, SK, February 2013 (invited)

Soos, C. Wildlife Health Research Program. Wildlife Research Division staff meeting. Saskatoon, SK, March 2013. (invited)

Experimental management of bighorn sheep

University of Sherbrooke (Dr. M. Festa-Bianchet)

Grant: $9,560

Project Code: 030-00-90-174

Project Status: Funded since 2011-12; Completed

This summary outlines progress over the third of a proposed five-year program within the long-term study of bighorn sheep ecology, evolution and management on Ram Mountain. It includes data from previous years where necessary to illustrate progress being made. Monitoring of reproduction, survival, body and horn growth of bighorn sheep in 2013 was successful. All resident sheep except for six rams were captured at least once, and most were caught at least three times. The population decreased from 74 sheep in 2012 to 63 in 2013, apparently because of an increase in cougar predation. Within the population in late May 2013, five sheep were introduced from Cadomin (one disappeared in June) and 18 have at least one ancestor from the Cadomin supplementation. A third of the population therefore carries 'Cadomin' genes. Lamb survival was only 33% in 2012-13, and an additional eight marked sheep disappeared over summer 2013. This mortality appears mostly due to cougar predation, but at least one marked ewe was harvested by a native hunter. The number of adult ewes decreased from 28 in June 2012 to 21 in June 2013. Although growth in both mass and horn size increased over the last few years, renewed cougar predation has halted population recovery. The four-year moratorium of trophy ram hunting began in 2011 and has allowed a greater spread of introduced 'Cadomin' genes than if the imported rams had been at risk of hunting mortality.

Deliverables:

Preliminary results can be found in the ACA GECF final report.

Papers from the Ram Mountain research published or in press since 2013:

Martin, A.M., M. Festa-Bianchet, D. Coltman, and F. Pelletier. Sexually antagonistic association between paternal phenotype and offspring viability reinforces total selection on a sexually selected trait. Biology Letters, in press.

Miller, J.M., R.M. Malenfant, C.S. Davis, J. Poissant, J.T. Hogg, M. Festa-Bianchet and D.W. Coltman. Estimating genome-wide heterozygosity: effects of demographic history and marker type. Heredity, in press

Festa-Bianchet, M., F. Pelletier, J.T. Jorgenson, C. Feder and A. Hubbs. 2014. Decrease in horn size and increase in age of trophy sheep in Alberta over 37 years. Journal of Wildlife Management, 78: 133-141.

Sæther, B.-E. T. Coulson, V. Grøtan, S. Engen, R. Altwegg, K.B. Armitage, C. Barbraud, P.H. Becker, D.T. Blumstein, F.S. Dobson, M. Festa-Bianchet, J.-M. Gaillard, A. Jenkins, C. Jones, M.A.C. Nicoll, K. Norris, M.K. Oli, A. Ozgul, and H. Weimerskirch. How life history influences population dynamics in fluctuating environments. American Naturalist, 182: 743-759.

Marcil-Ferland, D., M. Festa-Bianchet, A.M. Martin and F. Pelletier. 2013. Despite catch-up in mass, prolonged growth has detrimental fitness consequences in a long-lived vertebrate. American Naturalist, 182: 775-785.

Martin, A.M., H. Presseault-Gauvin, M. Festa-Bianchet and F. Pelletier. 2013. Male mating competitiveness and age-dependent relationship between testosterone and social rank in bighorn sheep. Behavioral Ecology and Sociobiology, 67: 919-928.

Martin, J.G.A., M. Festa-Bianchet, S.D. Côté and D.T. Blumstein. 2013. Detecting individual differences in hind foot length of wild mammals. Canadian Journal of Zoology, 91: 118-123.

Engen, S., B.-E. Sæther, K.B. Armitage, D.T. Blumstein, T.H. Clutton-Brock, F.S. Dobson, M. Festa-Bianchet, M.K. Oli and A. Ozgul. 2013. Estimating the effect of temporally autocorrelated environments on the demography of density-independent age-structured populations. Methods in Ecology and Evolution, 4: 573-584.

Poissant, J., D. Réale, J.G.A. Martin, M. Festa-Bianchet and D.W. Coltman. 2013. A quantitative trait locus analysis of personality in wild bighorn sheep. Ecology and Evolution, 3: 474-481.

ACA was mentioned in the Acknowledgment sections of most of these papers. The logo of ACA, with a link to their website, has been added to the web pages of Marco Festa-Bianchet and Fanie Pelletier. ACA was acknowledged in presentations at the meeting of the Canadian Society for Ecology and Evolution in Kelowna, the annual meeting of the Quebec Center for biodiversity science and the Société Québécoise pour l'Étude Biologique du Comportement, both held in Montréal, and invited seminars at Guelph, Laval University and universities in Norway and Germany.

Ecology of bats overwintering in the Canadian prairies

Wildlife Conservation Society Canada (Dr. C. Lausen)

Grant: $30,000

Project Code: 030-00-90-210

Project Status: Funded since 2012-13; Completed

White-nose syndrome (WNS), caused by the fungus *Pseudogymnoascus destructans* (Pd), is an invasive disease responsible for the death of over 5.5 million bats in eastern North America. WNS-related mortality is associated with increased arousals and dehydration during hibernation. In Alberta, the majority of available bat hibernation habitat is non-cavernous. The project goal was to capture and track bats during winter in the Alberta prairies to identify and describe crevice roosts, document over-wintering behaviour, and test hypotheses for winter bat-activity, in order to evaluate the risk posed by WNS to prairie-roosting bats. Big brown bats were captured and tracked to three crevice hibernacula in Dinosaur Provincial Park (DPP). Hibernacula temperatures were higher and more stable than ambient and temperatures in random crevices, and warmer and less stable than temperatures in three known cave hibernacula in Alberta and Northwest Territories. Relative humidity (RH) within DPP hibernacula was lower than ambient and RH in random crevices, and lower and

more variable than in cave hibernacula. Evidence from eastern North America demonstrates that warmer temperatures increase growth of Pd, while drier conditions are less favourable for fungal growth. These data will be further explored in WNS survivorship models to determine how prairie microclimates will impact bats in the likely event that WNS spreads westward. The researchers monitored radiotagged and PIT-tagged bats. Bats roosted in small groups and did not change hibernacula mid-winter, suggesting roost-mates may be necessary for successful hibernation and/or that winter roosts are limiting on the landscape. Bat-to-bat contact is the primary mode of Pd spread and bats that hibernate in clusters are at higher risk of WNS than those that roost solitarily. Small groups and lack of roost switching mid-winter may suggest that bats will be slow to spread the fungus across the area despite winter flights. Bats were tested for signs of dehydration and conducted a tracing experiment using stable isotopes to determine if bats are using an experimental heated water source for drinking. Bats showed increasing levels of dehydration throughout winter, suggesting prairie bats may experience greater dehydration pressures than bats in moist cave hibernacula, and thus may be more prone to mortality from WNS-related dehydration. Early analyses of serum deuterium levels did not indicate use of the water tank by bats during winter. This research will directly inform WNS risk assessment in western prairie bats and enable implementation of prevention and mitigation strategies and policy development in Alberta.

Deliverables/Results:

Preliminary results can be found in the ACA GECF final report.

Multiple papers will be published from this research, including those focused on:

1. habitat and roost selection of bats in non-mountainous areas, contrasting with what is known about cave hibernacula, the typical hibernaculum of bats in eastern North America;
2. describing for the first time details of winter bat ecology of western bats, specifically describing activity and arousal patterns and reasons for winter flight;
3. use of stable isotopes to examine use of water by overwintering bats in Dinosaur Provincial Park; and
4. comparison of the maintenance of muscle tone in experimentally overwintered bats.

Public presentations were given at naturalist and science-related programs in southern Alberta and Regina, including: University of Regina, Graduate Research Seminars (8 February 2013, 7 February 2014); Dinosaur Provincial Park, Summer Speakers series (7 October 2012, 13 October 2013); Friends of Wascana (Regina), Wings Over Wascana festival (12 May 2013); University of Regina Science Rendezvous (12 May 2013); Medicine Hat Police Point Interpretive Centre, Bat Program invited speaker (25 August 2014).

The ACA was acknowledged in all presentations as a major funding partner. Due to the conflict of many conference dates following within the fall/winter field seasons, most conference presentations on this project will take place following the field work component, when a more robust presentation will be possible; ACA will continue to be acknowledged as final findings are presented.

ACA continues to be listed as a funding partner on the information sign at the water tank, which is located in a publically accessible area of the campground, and on the Alberta Parks DPP website under the section about current research projects.

This project was highlighted 1 Nov 2013 in a radio interview on News 770, and ACA was acknowledged at this time.

APPENDIX A

Projects in relation to GECF Funding Priorities 2013-2014

FUNDING PRIORITY #1 — 12 Projects

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

Part A: 6 Projects

Alberta Fish and Game Association, Collaborating with Stakeholders in Alberta's Grassland Region to apply sustainable land-use and to link urban, rural and ecological communities (Operation Grassland Community, $39,500

Cows & Fish (Alberta Riparian Habitat Management Society), Developing westslope cutthroat trout riparian habitat improvement action plans..., $10,000

Friends of Fish Creek Provincial Park Society, Amphibian Monitoring Program and habitat restoration project, $3,000

King's University College, Faith-based organizations and conservation: engaging volunteers in recovery plans of the endangered limber pine, $2,995

Lesser Slave Lake Bird Observatory Society, Monitoring of migratory and breeding birds in Lesser Slave Lake area, $25,250

Northern Alberta Institute for Technology (NAIT), Fisheries habitat improvements in the Sturgeon River Watershed, $26,197

Part B: 6 Projects

Ducks Unlimited Canada, Evaluating the sustainability of landscape change for waterfowl in the western boreal forest, $5,000

University of Alberta, Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta, $20,000

University of Alberta, Evaluating the efficacy of setback distances as a tool for understanding critical habitat for ferruginous hawks in Alberta, $20,000

University of Alberta, Human access management in central-western Alberta: implications for movement and behaviour of grizzly bears (*Ursus arctos)*, $25,000

University of Alberta, Understanding the spawning habitat and reproductive requirements of the endangered western silvery minnow (*Hybognathus argyritis*), $17,000

University of Calgary, Experimental translocations of Ord's kangaroo rats, $14,631.20

FUNDING PRIORITY #2 — 29 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.).

Part A: 25 Projects

70th Gold Bar Scouts, 70th Gold Bar Scouts black-capped chick-a-dee birdhouse project, $1,800

Alberta Fish and Game Association, Pronghorn antelope migration corridor project, $35,975

Ann & Sandy Cross Conservation Area, Wildlife friendly fencing project, $9,000

Battle River Watershed Alliance, Ferry Point Reach riparian restoration project, $12,000

Beaverhill Bird Observatory, Stewardship and monitoring of wildlife at Beaverhill Lake, $18,100

Camrose Wildlife Stewardship Society, Camrose purple martin festival, $2,500

Cold Lake High School, Migratory/upland game bird habitat enhancement, $10,000

Cows & Fish (Alberta Riparian Habitat Management Society), Southern Alberta Grazing School for Women - promoting habitat and improved grazing stewardship to livestock producers, $2,000

Cows & Fish (Alberta Riparian Habitat Management Society), Developing westslope cutthroat trout riparian habitat improvement action plans..., $10,000

Crowsnest Conservation Society, Maintaining and restoring Crowsnest River riparian areas, $15,000

Crowsnest Pass Quad Squad Association, McGillivray bridges repairs, $3,000

Edmonton and Area Land Trust, Bird and mammal monitoring and habitat restoration, $9,000

Friends of Fish Creek Provincial Park Society, Amphibian Monitoring Program and habitat restoration project, $3,000

Highway 2 Conservation, Riparian improvement project, $12,000

Mountain View County, Riparian area management improvement fund, $12,000

Nature Alberta, Living by Water project – Homesite Consultation Program 2013, $26,000

Nature Alberta, Engaging Albertans in bird habitat conservation, $15,000

Northern Alberta Institute for Technology (NAIT), Fisheries habitat

improvements in the Sturgeon River Watershed, $26,197

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chapter, Conserving and restoring Arctic grayling in the Upper Pembina River watershed – database development (Year 3), $14,900

Onoway & District Fish and Game Association, Bluebird/bathouse project, $700

Partners in Habitat Development/Eastern Irrigation District, Partners in Habitat Development, $10,000

Red Deer County, Conservation Partners 2013, $25,000

Smoky Applied Research and Demonstration Association (SARDA), Riparian area protection and enhancement project, $7,000

Trout Unlimited Canada, Mallard Point habitat enhancement project, $30,000

Weaselhead/Glenmore Park Preservation Society, Weaselhead Invasive Plant Program, $3,000

Part B: 4 Projects

Alberta Innovates Technology Futures, Mesocarnivore diversity in mixed-use landscapes: the Cooking Lake Moraine project, $5,000

University of Alberta, Evaluating the efficacy of setback distances as a tool for understanding critical habitat for ferruginous hawks in Alberta, $20,000

University of Alberta, Persistence of the Ya Ha Tinda elk population: the role of calf survival, $20,000

University of Alberta, Using wetland-dependent wildlife to monitor landscape change, $7,510

FUNDING PRIORITY #3 — 4 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).

Part A: 4 Projects

Friends of Fish Creek Provincial Park Society, Amphibian Monitoring Program and habitat restoration project, $3,000

Municipal District of Greenview, Swan Lake infrastructure upgrades, $35,000

Red Deer Fish and Game Association, Kneehill Valley pond, $7,800

Trout Unlimited Canada, Mallard Point habitat enhancement project, $30,000

FUNDING PRIORITY #4 — 27 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).

Part A: 25 Projects

70th Gold Bar Scouts, 70th Gold Bar Scouts black-capped chick-a-dee birdhouse project, $1,800

Alberta Fish and Game Association, Pronghorn antelope migration corridor project, $35,975

Ann & Sandy Cross Conservation Area, Wildlife friendly fencing project, $9,000

Battle River Watershed Alliance, Ferry Point Reach riparian restoration project, $12,000

Beaverhill Bird Observatory, Stewardship and monitoring of wildlife at Beaverhill Lake, $18,100

Calgary Bird Banding Society, Cypress Hill migratory and breeding landbird monitoring, $17,400

Castle-Crown Wilderness Coalition, Inventory mapping and restoration in the Castle, $20,000

Cold Lake High School, Migratory/upland game bird habitat enhancement, $10,000

Cows & Fish (Alberta Riparian Habitat Management Society), Southern Alberta Grazing School for Women - promoting habitat and improved grazing stewardship to livestock producers, $2,000

Cows & Fish (Alberta Riparian Habitat Management Society), Developing westslope cutthroat trout riparian habitat improvement action plans..., $10,000

Crowsnest Conservation Society, Maintaining and restoring Crowsnest River riparian areas, $15,000

Edmonton and Area Land Trust, Bird and mammal monitoring and habitat restoration, $9,000

Friends of Fish Creek Provincial Park Society, Amphibian Monitoring Program and habitat restoration project, $3,000

Highway 2 Conservation, Riparian improvement project, $12,000

Lesser Slave Lake Bird Observatory Society, Monitoring of migratory and breeding birds in Lesser Slave Lake area, $25,250

Mountain View County, Riparian area management improvement fund, $12,000

Nature Alberta, Living by Water project – Homesite Consultation Program 2013, $26,000

Nature Alberta, Engaging Albertans in bird habitat conservation, $15,000

Northern Alberta Institute for Technology (NAIT), Fisheries habitat improvements in the Sturgeon River Watershed, $26,197

Onoway & District Fish and Game Association, Bluebird/bathouse project, $700

Partners in Habitat Development/Eastern Irrigation District, Partners in Habitat Development, $10,000

Red Deer County, Conservation Partners 2013, $25,000

Smoky Applied Research and Demonstration Association (SARDA), Riparian area protection and enhancement project, $7,000

Trout Unlimited Canada, Stewardship license project, $1,800

Weaselhead/Glenmore Park Preservation Society, Weaselhead Invasive Plant Program, $3,000

Part B: 2 Projects

Alberta Innovates Technology Futures, Mesocarnivore diversity in mixed-use landscapes: the Cooking Lake Moraine project, $5,000

University of Alberta, Using wetland-dependent wildlife to monitor landscape change, $7,510

FUNDING PRIORITY #5 — 10 Projects

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

Part A: 8 Projects

Castle-Crown Wilderness Coalition, Inventory mapping and restoration in the Castle, $20,000

Crowsnest Conservation Society, Maintaining and restoring Crowsnest River riparian areas, $15,000

Highway 2 Conservation, Riparian improvement project, $12,000

King's University College, Faith-based organizations and conservation: engaging volunteers in recovery plans of the endangered limber pine, $2,995

Nature Alberta, Living by Water project – Homesite Consultation Program 2013, $26,000

Nature Alberta, Engaging Albertans in bird habitat conservation, $15,000

Trout Unlimited Canada, Stewardship license project, $1,800

Weaselhead/Glenmore Park Preservation Society, Weaselhead Invasive Plant Program, $3,000

Part B: 2 Projects

University of Alberta, Smooth brome invasion into native grasslands: plant-soil feedbacks and invasional meltdown, $33,599.80

Wildlife Conservation Society Canada, Ecology of bats overwintering in the Canadian prairies, $30,000

FUNDING PRIORITY #6 — 0 Projects

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

FUNDING PRIORITY #7 — 2 Projects

Develop and validate inventory tools to determine the relative density and range of ungulate species using innovative techniques such as trail cameras or passive DNA samples.

Part A: 1 Project

Beaverhill Bird Observatory, Stewardship and monitoring of wildlife at Beaverhill Lake, $18,100

Part B: 1 Project

Alberta Innovates Technology Futures, The Alberta Boreal deer project: White-tailed deer habitat selection and density in Alberta's Boreal Forest,$15,000

FUNDING PRIORITY #8 — 0 Projects

Evaluate the effect of pesticides or herbicides on upland game birds (sharp-tailed grouse, pheasant, gray partridge) in agricultural landscapes.

FUNDING PRIORITY #9 — 8 Projects

Evaluate the effect of recreational access (mode, timing, duration) on wildlife & fish populations and habitat.

Part A: 2 Projects

Cows & Fish (Alberta Riparian Habitat Management Society), Developing westslope cutthroat trout riparian habitat improvement action plans..., $10,000

Nature Alberta, Engaging Albertans in bird habitat conservation, $15,000

Part B: 6 Projects

Laval University, Populations demography and life-history variation in mountain goats of Alberta, $7,500

University of Alberta, Effects of industry on wolverine (Gulo gulo) ecology in the boreal forest of northern Alberta, $20,000

University of Alberta, Human access management in central-western Alberta: implications for movement and behaviour of grizzly bears (Ursus arctos), $25,000

University of Alberta, Persistence of the Ya Ha Tinda elk population: the role of calf survival, $20,000

University of Alberta, Using wetland-dependent wildlife to monitor landscape change, $7,510

Wildlife Conservation Society Canada, Ecology of bats overwintering in the Canadian prairies, $30,000

FUNDING PRIORITY #10 — 2 Projects

Investigation of methods for reducing the spread and/or impact of wildlife or fish related diseases.

Part B: 2 Projects

University of Saskatchewan, Infectious pathogens and migration in blue-winged teal (Anas discors): transport routes and impacts of infection, $25,000

Wildlife Conservation Society Canada, Ecology of bats overwintering in the Canadian prairies, $30,000

FUNDING PRIORITY #11 — 3 Projects

Evaluate the impact of various harvest management regimes on fish or wildlife populations (e.g. fish size limits, three-point or larger elk requirements, etc.).

Part B: 3 Projects

Laval University, Populations demography and life-history variation in mountain goats of Alberta, $7,500

University of Alberta, Persistence of the Ya Ha Tinda elk population: the role of calf survival, $20,000

University of Sherbrooke, Experimental management of bighorn sheep, $9,560

FUNDING PRIORITY #12 — 0 Projects

Evaluate the social demographics of hunting and angling to determine the factors influencing the decision to become involve in hunting or angling and the reasons why people opt out in a particular year.

FUNDING PRIORITY #13 — 1 Project

Evaluate the effect of biological solutions of carbon sequestration on grasslands and treed lands.

Part B: 1 Project

Ducks Unlimited Canada, Institute for Wetland and Waterfowl Research, Incorporating wetland carbon values into spatially explicit tools to inform land use, $7,500

FUNDING PRIORITY #14 — 2 Projects

Effects of agricultural run-off on fisheries.

Part A: 2 Projects

Battle River Watershed Alliance, Ferry Point Reach riparian restoration project, $12,000

Red Deer County, Conservation Partners 2013, $25,000

NONE OF THE FUNDING PRIORITIES — 4 Projects

Part A: 1 Project

Edmonton Nature Club, 2013 Snow Goose Chase, $1,000

Part B: 3 Projects

University of Alberta, Phylogeography of a neotropical migratory forest songbird: identifying conservation units, $20,000

University of Calgary, Characterizing the nature of Didymo blooms in Alberta streams with RNA sequencing, $16,000

University of Montana, Montana Cooperative Wildlife Research Unit, Developing a grey wolf population monitoring framework for southwest Alberta, $5,000.

Notes: The link between the project and the funding priority is taken from the application form. Projects can relate to multiple funding priorities.

Excluded as projects not carried out: Clearwater County, "Caring for my Land" Riparian fencing, $6,000; AITF, Analysis of hunter participation in Alberta 2000-2012, $6,700; Foothills Research Institute, Grizzly bear habitat use and movement in the grasslands of the south-west Alberta, $20,000.

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