Grant Program 2014–2015

Annual Report of Activities & Synopsis of Funding Recipient Projects

For the Period of April 1, 2014 to March 31, 2015

Alberta Conservation Association

Conserving Alberta's Wild Side

Alberta Conservation Association

Conserving Alberta's Wild Side

www.ab-conservation.com

Our Vision

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

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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Front Cover Photo: Smooth brome (invasive grass species)

Photo: Gisela Stotz

From the project: "Expansion into native grasslands and consequences for biodiversity of smooth brome (*Bromus inermis*) invasion across Alberta." (University of Alberta, Dr. J. Cahill, 015-00-90-200)

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Creekfest Water Festival 2014, Friends of Fish Creek Provincial Park Society

Executive Summary

Funded by the province's hunters and anglers, ACA's Grants Program 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, the ACA Grants (formerly known as the Grant Eligible Conservation Fund or GECF) as of the 2014-15 funding round has provided more than $12.9 million to 803 projects carried out in Alberta by the conservation community. Furthermore the funding provided by the Grants continues to leverage approximately six times its value in conservation dollars, estimated at approximately $80.5 million - money that has been directly used for conservation work in Alberta.

For the last few years, ACA has administered three grant programs: The Hunter, Trapper and Angler Retention, Recruitment and Conservation Education program; GECF Part A: Conservation Support and Enhancement and GECF Part B: Research. In 2014-15 the grants were restructured; the GECF Part A: Conservation Support and Enhancement was merged together with the Hunter, Trapper and Angler Retention, Recruitment and Conservation Education grant programs to make the ACA Conservation, Community and Education Grants. The name of GECF Part B: Research was changed to ACA Research Grants.

These popular grant programs received 146 applications (110 to Conservation, Community and Education Grants and 36 to the ACA Research Grants) requesting just under $2.5 million in 2014-2015. A total of $1,120,576 was allocated to 94 projects (75 Conservation, Community and Grants projects and 19 ACA Research Grants projects). The aim of this report is to document the procedures for 2014-2015 and to provide an overview of activities and results of projects financially supported through the ACA Grants (the Conservation, Community and Education Grants and the ACA Research Grants) in 2014-2016.

Key Program Highlights for the Grants 2014-15:

GECF Part A: Conservation Support and Enhancement and the Recruitment and Retention of Hunters, Anglers and Trappers was combined to make the ACA Conservation, Community and Education Grants.

GECF Part B: Research was renamed to the ACA Research Grants.

The ACA Conservation, Community and Education Grants received 110 funding applications requesting a total dollar value just over $1.5M. A total of $790,576 was allocated to 75 projects: 27 small grants and 48 large grants.

The ACA Research Grants received 36 funding applications requesting just over $930,000. A total of $330,000 was allocated to 19 projects.

Project budgets ranged from $400 to $75,000.

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 ACA's grants 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. As of the 2014-15 funding round the Grants program has granted $12.9 million dollars since 2002-03 to 803 conservation projects implemented in Alberta; these projects have leveraged an estimated $80.5 million in conservation work across the province. After the project selection process, a total of $790,576 was granted to 75 ACA Conservation, Community and Education Grants (CCEG) and $330,000 was granted to 19 ACA Research Grants projects. This document provides an overview of the activities of the CCEG and the ACA Research Grants for the 2014-15 funding cycle.

2. The Funding Cycle

The funding priorities, guidelines and application forms were made available to the public September 27, 2013 via the ACA website, by email to existing contacts and by environmental list servers. Details of the 2014-2015 funding cycle are in the table below:

2014-2015 FUNDING CYCLE DATES

Posting of the Guidelines and Application Forms on ACA's website	September 27, 2013
Window to receive completed ACA Research applications	November 1, 2013 - November 29, 2013
Window to receive completed CCEG applications	January 1-31, 2014
ACA Research Grants adjudication meeting	February 9, 2014
CCEG adjudication meeting	February 27, 2014
ACA Board approval and notification of applicants as to funding status	End of March 2014
Cooperative Project Agreements signed, initial payments made, and project work begins	From April 1, 2014
Interim reports due & second payments made (if required)	September 1, 2014
Final reports due	March 15, 2015
Projects end & final payments made (if required)	March 31, 2015

3. Funding Eligibility

The ACA Grants (CCEG and ACA Research) support a wide variety of applicants and project types. Anyone with a suitable project working in Alberta can apply for funding, with the exception of ACA staff and Alberta Environment and Sustainable Resource Development (AESRD) staff, and individuals without the proper insurance. Certain project types and budget items are not covered by the CCEG and the ACA Research Grants, for example land acquisition, emergency funding or over-head costs. Since fiscal year 2009–10, funding priorities have been used by the Grants to guide applicants in drafting their applications. The list of funding priorities changed in 2014-5; two Funding Priority lists were produced, one for CCEG and another for the ACA Research Grants (see Section 4: Major Funding Priorities Grants 2014-15). The lists were split so those Priorities that were more suited to Research were removed from the CCEG list. Three new priorities relating the recruitment and retention of hunters, anglers and trapper, as well as outdoor education were added to the CCEG Funding Priority list. These grants do accept applications that do not relate to the 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 2014-2015" (this document is available from the Grants Project Administrator).

The CCEG 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 CCEG and the ACA Research Grants are 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 Grants 2014 – 2015

This text is taken from Section C of the *Project Submission Guidelines for Funding 2014 – 2015*.

Funding Priorities for the CCEG

All applicants to the ACA Conservation, Community and Education Grants/ ACA Research Grants 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 ACA Conservation, Community and Education Grants 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. Projects related to the retention, recruitment and education of hunters, anglers or trappers (including attracting new mentors, training mentors and providing mentors for new hunters/anglers/trappers; sharing information in schools and with the general public about the link between conservation and hunters/anglers/trappers; this category also includes educating new hunters/anglers/trappers).
8. Generate awareness of the hunting/angling/trapping opportunities available to the public.
9. Projects related to nature /outdoor education.

Funding Priorities for ACA Research Grants

Please refer to the document "Research needs for fisheries and wildlife in Alberta" available on the ACA website.

1. Research activities specifically listed on provincial recovery plans for Alberta's endangered species (to be done in cooperation with recovery teams).
2. Impacts of non-native species on the persistence of native species.
3. 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.
4. 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.
5. Evaluate the effect of recreational access (mode, timing, duration) on wildlife & fish populations and habitat.
6. Investigation of methods for reducing the spread and/or impact of wildlife or fish related diseases.
7. 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.).
8. 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.
9. Evaluate the effect of biological solutions of carbon sequestration on grasslands and treed lands.
10. Effects of agricultural run-off on fisheries

5. Proposal Review Process

The ACA Board of Directors appointed Adjudication Committees for both the CCEG and ACA Research Grants.

CCEG Adjudication:

The CCEG 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 CCEG 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

This year due to the volume of applications as a result of combining the GECF Part A with the Recruitment and Retention Fund, the adjudicators were asked to submit their rankings ahead of the adjudication meeting. The scores were presented at the meeting; this left time to focus discussions on those projects with mixed rankings.

The CCEG adjudication meeting was held on February 27th, 2014 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 2014 Board Meeting.

ACA Research Grants Review Process

The application deadline for the ACA Research Grants was earlier than that of the CCEG 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. The academic review process was coordinated by the Administrator of the ACA Grants in Biodiversity, so as not to overlap reviewers. 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 a three-tiered ranking system. Funding recommendations were then made after the ranking process. The ACA Research Grants adjudication meeting was held on February 9th, 2014 at the University of Alberta.

6. Funding Allocations

For the 2014-2015 funding cycle a total of $1,300,000 was made available for project funding via the Grants: $970,000 for CCEG and $330,000 for ACA Research Grants. Of the 110 applications requesting just over $1.5 M to CCEG, 75 were funded (a 68% success rate for applications receiving full or partial funding). Of the 110 applications to CCEG, 34 were small grant applications (requests of $3,000 or under). 27 of the 34 small grant applications were awarded (a 79% success rate), whilst 48 of the 76 large grants (a 63% success rate). Of the 75 CCEG projects funded in 2014-15, 40 (53%) had been funded by ACA in previous years and 35 were new projects.

The ACA Research Grants received 36 applications requesting a total of just over $930,000 for the 2014-15 competition, of these 19 were funded (a success rate of 53% for applications receiving full or partial funding). 7 (37%) of the funded research projects had been funded in previous years and the other 12 were new projects.

Three funding applications requesting funding for three different weeks of the same camp were rolled into one project, with one code. One ACA Research Grant was not accepted: Thompson River University, Ecology of the plains hognose snake in the Canadian Forces Base Suffield National Wildlife Area, $9,000. This project did not find the partner funding and could not carry out the project with the partial funding allocated by ACA. Several projects were granted extensions due to unforeseen circumstances.

All projects approved for funding signed the Cooperative Project Agreement with the approved proposal and budget appended, with the exception of the one research project mentioned. The Cooperative Project Agreement outlines the reporting and payment schedules and other contractual obligations between ACA and the grant recipient. The majority of grant recipients provided project reports. At the time of writing this report, there are two projects that have not sent in any reports; efforts are being made to track down the contact persons for those projects. 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 2014 – 2015

A summary description of each of the 94 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 CCEG and ACA Research Grants.

ACA Conservation, Community and Education Grants

Small grants $3,000 and under

AHEIA; 4H Program Coordination; $3,000

AHEIA; Conservation Education for the Army Cadet league of Canada, AB; $3,000

AHEIA; Outdoor Youth Seminar; $3,000

Alberta Riparian Habitat Management Society (Cows and Fish); Grazing school for women: promoting habitat and improved grazing stewardship to livestock producers in south and central Alberta; $3,000

Brooks and District Fish and Game Association; Hunter Education Field Day; $400

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

Edmonton and Area Land Trust; Wind up the wire for wildlife habitat enhancement; $2,650

Edmonton Nature Club; 2014 Snow Goose Chase; $2,000

Ellis Bird Farm Ltd; Living with Beavers Part II; $3,000

Foremost Fish and Game Association; 2014 FFGA Youth Pheasant Hunt; $3,000

Friends of Fish Creek Provincial Park Society; Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness; $3,000

Hardisty Lake United Church Camp; Riparian assessment and education; $3,000

Helen Schuler Nature Centre; Extreme by Nature: Environmental Education for 11-15 Year Olds; $3,000

George Pegg Botanic Garden; Wetland environmental education field school; $2,122

Inside Education; Teacher Professional Development Programming; $1,500

Linden Citizen Advisory Group Society; Linden Fishing Derby; $3,000

Lone Pine Farming Inc.; Habitat enhancement project #1 (nest boxes); $1,560

Magrath Rod and Gun Club; Continuing club activities in Magrath and surrounding area; $2,000

Owl River Metis Local #1949; Owl River Metis Local #1949 - Canadian Firearm Safety Course; $1,500

Red Deer River Watershed Alliance Society; Establishing a vital connection: Communicating the integrated watershed management plan to the young adult demographic; $3,000

Rocky View Schools; Glenbow Ranch Provincial Park Inquiry Day (GRID); $3,000

Southern Alberta Bible Camp; Walleye - Pike fishing; $2,540

Southern Alberta Bible Camp; Archery curriculum; $3,000

Trout Unlimited Canada; Bill Griffiths Creek Enhancement Project; $2,500

Trout Unlimited Canada; Policeman Creek Habitat Enhancement; $3,000

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

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

Large Grants (over $3,000)

Alberta Fish and Game Association (AFGA); Pronghorn antelope migration corridor enhancement; $25,000

AFGA; Can ranching help achieve sustainability of Prairie wildlife? Addressing local & landscape scale requirements using monitoring, adaptive management and cumulative effects modelling; $39,500

Alberta Hunters Education Instructors' Association (AHEIA); 21st Annual Outdoor Women's Program; $20,000

AHEIA; Mobile Applications - "Essentials Series" Online Education Program; $40,000

AHEIA; Mobile Shotgun safety training trailer; $7,000

AHEIA; Outdoor Bound Mentorship Program; $7,500

AHEIA; 11th Annual OWL Day "Outdoor Wildlife Learning"; $5,000

AHEIA; Provincial Hunting Day Initiatives; $16,000

AHEIA; Urban Fishing Initiatives; $3,500

AHEIA; Youth Hunter Education Camp (Week 1, 2, 3); $15,000 *(three projects combined into one)*

AHEIA; Youth Fishing Initiatives; $7,850

Alberta Riparian Habitat Management Society (Cows and Fish); Developing Western cutthroat trout riparian habitat improvement action plans and implementing habitat management improvements; $21,600

Alberta Trappers Association - Peace River Local 1195; Trapper education and training; $4,460

Ann & Sandy Cross Conservation Area; Protect your watershed: Riparian area protection project; $17,199

Beaverhill Bird Observatory; Stewardship, habitat enhancement, and monitoring of wildlife at Beaverhill Lake; $19,450

Calgary Bird Banding Society; Cypress Hills landbird monitoring station; $25,400

Castle Crown Wilderness Coalition; Castle restoration, inventory mapping and outreach; $15,000

Cochrane High School Outdoor Education; Equipment proposal for Cochrane High School Outdoor Education Program; $5,000

County of Vermilion River; Stretton Creek Watershed Education Program; $12,000

H A Kostash School; H A Kostash Youth Fishing Mentorship Program; $5,250

Highway 2 Conservation; Riparian improvement; $10,000

Hunting for Tomorrow; HFT teacher's workshop; $5,000

Lacombe Fish and Game Association; Len Thompson Aeration Project; $5,550

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding birds at Lesser Slave Lake; $25,750

Lethbridge Fish and Game Association; Fishing fun, awareness & education day; $3,200

Lethbridge Fish and Game Association; LGFA - Conservation Community and Education Program; $10,000

MD of Taber; MD of Taber Oldman River boat launch; $15,000

Mountain View County; Riparian area management improvements fund; $20,000

Mountain View County; Hiller's Dam floating island project; $24,000

NAIT; Fisheries habitat improvements in the Sturgeon River Watershed; $26,070

Nature Alberta; Living By Water Project Program 2014; $27,288

Nature Alberta; Expanding the Young Naturalist Club Program in Alberta; $25,000

Nature Alberta; Assessing the State of Bird Conservation in Alberta; $8,000

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chapter; Conserving and restoring Arctic grayling in the Upper Pembina River watershed - habitat restoration planning; $11,500

Oldman Watershed Council; Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat; $14,240

Parkland School Division #70; ACA Parkland youth multimedia project; $13,000

Partners in Habitat Development c/o Eastern Irrigation District; Partners in Habitat Development; $15,000

Pincher Creek Stock Association; Castle River grazing allotment Riparian Health Inventory; $8,377.46

Pine Lake Restoration Society; Education/ Postings on aquatic invasive species (quagga/zebra); $4,500

Red Deer County; Conservation Partners 2014; $30,000

Red Deer Fish and Game Association; Alberta Youth Pheasant Program; $8,000

Rocky Mountain Wilderness Society; Trail and campground cleaning trip from Porky Pine Lick to Rocky Pass; $7,000

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

Taber Shooting Foundation; Taber Shooting Foundation - Shooting Facility; $37,000

The King's University College; Faith-based organizations and conservation: engaging volunteers in recovery plans of endangered pines; $7,670

Trout Unlimited Canada; Yellow Fish Road; $15,000

Trout Unlimited Canada; Understanding Fish, Water and Conservation; $12,000

West-Central Forage Association; Lobstick River (East of Chip Lake) assessment project - Phase 1; $15,250

ACA Research Grants

Foothills Research Institute; Using scat DNA and citizen science to determine grizzly bear distribution, abundance, and trend in the Yellowstone population unit ; $17,000

Laval University; Population dynamics, reproduction and stress in mountain goats of Alberta; $10,000

Thompson Rivers University; Ecology of the Plains hognose snake (*Heterodon nasicus nasicus*) in the Canadian Forces Base Suffield National Wildlife Area ; $9,000 (Did not proceed)

University of Alberta; Evaluating the current and future value of climate refugia for boreal wildlife; $20,000

University of Alberta; Experimental harvest for CWD control in wild cervids in Alberta; $40,000

University of Alberta; Developing environmental DNA as a tool for detecting cryptic freshwater species; $9,000

University of Alberta; Human access management in west-central Alberta: Influence of recreational use on the movement and behaviour of grizzly bears (*Ursus arctos*); $30,000

University of Alberta; Expansion into native grasslands and consequences for biodiversity of smooth brome (*Bromus inermis*) invasion across Alberta; $8,000

University of Alberta; Reconstruction of stocking histories of non-native salmonids and hybridization with native species in Albertan mountain lakes using a novel paleo-eDNA approach; $5,000

University of Alberta; Persistence of the Ya Ha Tinda elk population: the role of calf survival; $23,000

University of Alberta; Genetic analysis of bighorn sheep population structure from winter faecal samples; $9,000

University of Alberta; Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta; $75,000

University of Calgary; Small mammals as sentinels for metal pollution from the oil sands region: Metal residues in target tissues, oxidative stress biomarkers, and non-invasive methods to detect exposure and effects.; $13,000

University of Calgary; A first step towards wildlife monitoring with drones: quantifying sound disturbance for ungulates; $8,000

University of Saskatchewan; Infectious pathogens and migration in blue-winged teal (*Anas discors*): Transport routes and impacts on infection; $10,000

University of Saskatchewan; Bioenergetic consequences of climate change to native Albertan mammals; $9,000

University of Sherbrooke; Experimental management of bighorn sheep; $8,000

Wildlife Conservation Society Canada; Ecology of bats overwintering in the Canadian Prairies; $15,000

Y2Y (Clevenger); Understanding landscape and anthropogenic effects on wolverine distribution and regional connectivity in southwest Alberta; $12,000

8. Grant project's contribution to the Funding Priorities

In total, 94 projects were approved for funding in 2014-2015: 75 CCEG projects and 19 Research projects. 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. The funding priorities were set by ACA staff and approved by the ACA Board of Directors. The funding priority list changed in 2014-15; two lists of Funding Priorities were produced, one for the CCEG and another one for Research. New priorities relating to the recruitment and retention of hunters, anglers and trappers were added to the CCEG Funding Priority list. There was some overlap between the two lists. 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 2014-2015 contributed to ACA's funding priorities. All the CCEG projects related to at least one funding priority. Five research projects of the 19 projects selected did not address any of the funding priorities, however several of these did relate to the background document *'Research needs for fisheries and wildlife in Alberta'* written by Dr. Boyce and Dr. Poesch. For a complete overview of project contribution to the ACA Funding Priorities 2014-2015, see Appendix A.

As the Funding Priorities were restructured in 2014-15, it makes it difficult to compare year to year. In previous years, the most cited funding priorities were the funding priorities: *#2 Site specific enhancement of habitat...* and *#4 Stewardship initiatives*, with more than half the projects citing these priorities. Until this year, funding priorities #1, #2, #4, and #5 have been the top four priorities since funding priorities were introduced. This year with the addition of the three new CCEG funding priorities relating to recruitment and retention of hunters, anglers and trappers, there has been a shift to these new funding priorities with the most cited funding priority being *#9 Projects related to nature/outdoor education* (65%), followed by *#7 Retention and recruit and education of hunters, anglers and trappers* (43%), and #2 *Site specific enhancement of habitat* and *#8 Generate awareness of the hunting/ angling/ trapping opportunities available to the public* (both 37%). The most cited Research Funding Priority was the *#1 Research activities specifically listed provincial recovery plans for Alberta's endangered species* (28%), followed by *#5 Evaluate the effect of recreational access on wildlife & fish populations* (22%). Four of the Research funding priorities (#4, #8, #9 and #10) were not addressed by funded projects, and this has more or less been the case since the Funding Priorities began. CCEG priority *#6 Matching sportsmen with landowners* was not addressed by funded projects. It does not appear that applicants are targeting all funding priorities when drafting their applications, perhaps because of the specific nature of some of the funding priorities.

PART II: ACA Grants Program Project Summaries

ACA Conservation, Community and Education Fund

Pronghorn antelope migration corridor enhancement

Alberta Fish and Game Association

Grant: $25,000

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, in the case of barbed wire fencing, remedied 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 was encountered the entire fence was 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 80 km 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/Results:

16 km of smooth wire installed.

48 km of barbed wire manipulated to wildlife friendly standards.

19 km of barbed wire fence removed and a total of 164 kms of barbed wire removed.

For more details on the project sites see the ACA final report.

The project was mentioned at a conference in February, 2015.

Can ranching help achieve sustainability of Prairie wildlife? Addressing local & landscape scale requirements using monitoring, adaptive management and cumulative effects modelling

Alberta Fish and Game Association

Grant: $39,500

Project Code: 030-00-90-127

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

Project Website: grasslandcommunity.org

The goal of this project is 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. The first objective was to Enhance Wildlife Habitat through Sustainable Practices. This was done by addressing proximate causes of habitat loss with OGC members attending Land EKG Training Courses. Commenced important Sprague's pipit benefiting habitat enhancement project using movable electric fencing (enables precise range management for both forage and SPPI habitat quality). AFGA finalized habitat indicators and collection methodologies for Sprague's pipit (with assistance from Sprague's pipit recovery team). Developed and delivered information sheet for participating ranchers outlining needs of Sprague's pipit, and corresponding Land EKG measures. Mapped/ ground-tested point count locations in Land EKG pastures, and installed twelve "24/7" sound recorders to supplement results (through *new* partnership with the Alberta Biodiversity Monitoring Institute (ABMI) to install ARU's or "autonomous recording units). Market failure was also addressed by contracting environmental economist to determine data requirements, and to develop methodologies that identify cost differential between optimal forage production and optimal Sprague's pipit habitat production (data analysis template can be utilized with alternate species/ habitat goals). They developed landholder questionnaire to further enhance knowledge of alternative management strategy costs. Despite major funding shortfalls limiting the scope of OGC's cumulative effects modelling project, they moved forward with an ALCES demo-version that showcases temporal and spatial trends across Alberta's grasslands (including ranching, economic, and environmental/ecological indicators). Results were presented early April to key stakeholders in order to catalyze further interest. The second objective was to protect wildlife habitats, by seeking five-year voluntary stewardship agreements, and renewing expiring agreements. Three Species at Risk Conservation Plans (SARC plans) completed and delivered. The annual monitoring of burrowing owl and loggerhead shrike was completed. In addition many awareness raising activities were carried out to affect change through awareness.

Deliverables/Results:

Eight OGC members attended three-day Land EKG Training Courses. Assisted by OGC and Land EKG, seven of eight implemented 18 transects (September/October) and collaborated to develop economic/ wildlife management strategies (>15,000 acres impacted). The eighth member awaits favorable spring field conditions. OGC delivered interactive, 'hands-on' webinar with one-on-one follow-up to facilitate Land EKG data entry, and to ensure commitment to long-term monitoring/ adaptive management.

Wildlife habitat indicators for Sprague's pipit developed and incorporated into ranch management.

Estimated values of wildlife habitat: develop and implement methods that accurately quantify fiscal inputs required to shift management to a more wildlife benefitting approach (i.e., where costs of implementing the wildlife benefitting practice otherwise exceeds fiscal benefits for the ranch).

Used Alberta Landscapes Cumulative Effects Simulator (ALCES) to demonstrate potential opportunities for broad-scale sustainable prairie management. Results shared.

Seek Five-Year Voluntary Stewardship Agreements, and Renew Expiring Agreements: 12 new members joined and > 23,000 ha habitat protected, 23 members renewed (> 20,000 ha).

Partner with MULTISAR: Three in-house SARC plans completed. To date, there has been no interest from the OGC membership for referral to MULTISAR.

Monitor annual trend and distribution in burrowing owl and loggerhead shrike: 200 OGC members involved annual census of burrowing owl (23rd year), and loggerhead shrike (10th year). Results provided to recovery teams and published in OGC newsletter & other suitable media.

Additional Awareness Activities (various media – print, t.v., radio, web): > 20 local, national and international conferences, workshops, tradeshows, field days, and public events (e.g., Calgary stampede); five publicized screenings of Conservation Caravan; five blog posts; >100 tweets; six published articles; five new collaborative partnerships with provincial, national and international organizations (FarmOn Foundation, Alberta Tomorrow, Canadian Roundtable for Sustainable Beef, ABMI, and Rocky Mountain Bird Observatory (USA))

Alberta Emerald Awards nomination (2015)

4H Program Coordination

Alberta Hunters Education Instructors' Association (AHEIA)

Grant: $3,000

Project Code: 002-00-90-220

Project Status: New; Completed

AHEIA and the provincial 4H Clubs share much of the same philosophy. Both organizations are family oriented, both attempt to recruit young Albertans, both promote hands on learning as a way to change people's lives and both promote hanging out with friends to participate in fun activities. AHEIA and 4H also hold summer camps to provide an intensive week long program of fun, learning activities. It seems only natural then that AHEIA and 4H should coordinate program delivery in order to extend their programs to more Albertans and to share methods of recruitment and retention. 88 4H members participated in Conservation Education programs in 2014.

Deliverables/Results:

88 4H youth members (from Calgary Bobcats JFW, Didsbury Multi-talented 4H, and Red Deer JFW) were introduced to the Conservation Education program. Teaching students a bevy of outdoor information including but not limited to: Hunting Ethics; The Role of the Hunter; Wildlife Management; Wildlife Identification; Equipment; Firearms; Bow Hunting; Field Techniques; Survival; Hypothermia and First Aid; Vision and Physical Fitness; Legal Responsibilities.

Conservation Eduation for the Army Cadet league of Canada, AB

Alberta Hunters Education Instructors' Association

Grant: $3,000

Project Code: 002-00-90-213

Project Status: New; Completed

A Certificate Program in Conservation and Hunter Education and Certificate Program in Firearms Safety was provided to the Army Cadet League. The course offering included all practical/hands on activity related to these programs at AHEIA's Alford Lake Conservation Education Centre for Excellence. Inroads gained through the Army Cadet League expanded the reach of Conservation Education and enabled further recruitment into hunting and outdoor resource conservation. Students in the Army Cadet league are outside of AHEIA's traditional audience and AHEIA have experienced substantial success with this expansion. Recruitment and development of these cadets not only has expanded AHEIA's audience but opened new doors of experience for future Canadian military students.

Deliverables/Results:

The following were provided to 62 cadets (from PPCLI Cadets and the Highlanders Cadets):

1. Certificate program in Alberta Conservation and Hunter Education – possession of Hunting Licenses.

2. Certificate program in the Canadian Firearms Safety Course – possession of Firearms licenses.

3. Certificate program in Fishing Education Program – possession of fishing licenses.

4. Outdoor Camping Program with the following main elements: Wilderness Survival, Map & Compass, Practical Fishing Education (ice fishing and open water), Archery, Wildlife Identification, Practical use of Firearms.

Outdoor Youth Seminar

Alberta Hunters Education Instructors' Association

Grant: $3,000

Project Code: 002-00-90-215

Project Status: Previously funded via the Recruitment and retention of hunters, anglers and trappers fund (R&R Fund); Completed

The Outdoor Youth Seminar was conducted on August 22-23, 2014, with 100 participants in the program and 57 volunteer instructors and staff. This two-day seminar was designed to help young people develop basic skills that will help them use the outdoors with confidence. At the seminar, the youth practiced archery, shooting, map and compass, survival skills, wildlife identification and fishing. Numerous experts shared information and instruction in various outdoor pursuits. This seminar was the 12th annual Outdoor Youth Seminar and it grows every year. It was a fun-filled two days of learning for young outdoor enthusiasts and their parents or guardians. This project also mobilized a large workforce of volunteer coaches, mentors and instructors. It also acts as an important gateway of introduction into certificate conservation education programs. Large numbers of adults, parents and supervisors attended and received a positive first time introduction into the realm of conservation education. The project concluded with a giant pig-roast and a celebration around the two days of learning that took place. The celebratory conclusion instilled a tremendous connection to

the cause and sense of belonging to all who participated.

Deliverables/Results:

There were 100 participants in the program with 57 volunteer instructors and staff. It remains a very popular two day camp for youth with many seeking to return in order to participate in additional sessions. All the sessions listed were offered with excellent learning and interaction taking place. All around, the Outdoor Youth Seminar was once again a huge success.

Urban Fishing Initiatives

Alberta Hunters Education Instructors' Association

Grant: $3,500

Project Code: 020-00-90-219

Project Status: Previously funded via the R&R fund; Completed

Mentoring is an increasingly popular way of providing guidance and support to novices. Almost anyone benefits from the magic of mentoring and such positive experiences have a big impact on the recruitment and retention of future anglers and hunters. The "Urban Fishing Initiatives" program envisioned a community where every youth in attendance was given the opportunity for a wholesome, nurturing fishing experience, under the watchful care of a capable mentor. This experience in turn allowed each of them to continue in their development as responsible, capable and respectful resource users. There were formal events in city parks with lakes, ponds and rivers providing the perfect training area for novice fishermen throughout Alberta. Working in cooperation with Edmonton city staff, other non-profit organizations and corporate partners a one-day event was held to introduce the public to water based recreation such as canoeing and fishing. Each participant under the age of ten years was given a free rod, spin cast reel and hooks, fostering interest for continuing fishing in the future. A fishing simulator and a number of qualified mentors were also on site giving participants the experience of catching a fish. In addition, there were numerous other events held throughout the province and the distribution of much equipment to younger participants to encourage them in the pursuit of fishing.

Deliverables/Results:

Approximately 5,000 Albertans were reached through this program.

The Fishing Mentorship program allows mentors to book materials and take first time anglers on fishing adventures. This resource is widely uses, especially by cubs, scouts, girl guides, brownies, boys and girls clubs such as Big Brothers and Big Sisters. Approximately 1,200 students were hosted by a mentor under this program in the last year and it is ongoing throughout the year. Resources were loaned out through AHEIA for Fishing Education Programs in various centres, including the urban centres.

11th Annual OWL Day "Outdoor Wildlife Learning"

Alberta Hunters Education Instructors' Association

Grant: $5,000

Project Code: 002-00-90-223

Project Status: Previously funded via the R&R fund; Completed

AHEIA held a one full day workshop on Oct 25, 2014 complete with only hands-on experiences. This day was made available free of charge to the general public and focused on youth aged six to 12 years of age in group one, and students ages 13-20 in group two. There were just under 200 youth who attended the event. There were a range of activities provided including: game calling; pellet rifle trailer activities; archery; laser shotgun activities; 3-D archery events; and trap & skeet shooting. There were over 20 volunteers who assisted, as well as many staff from AHEIA.

Deliverables/Results:

There were just under 200 youth who attended the hands-on activities of OWL Day held at the Calgary Firearms Centre. Over 20 volunteers and AHEIA staff were present to run the various activities and provide lunch and snacks throughout the day.

Mobile Shotgun safety training trailer

Alberta Hunters Education Instructors' Association

Grant: $7,000

Project Code: 002-00-90-221

Project Status: New; Not yet completed (awaiting revised final report)

A mobile trailer containing clay target shooting trap machines, releases, microphones, pull cords and targets provides fully equipped portable range equipment to provide shooting opportunity where one does not exist. The equipment facilitates the one on one instruction which is essential to create safe inaugural learning options for students and instructors that do not have access to such tools. With the supply of the tools, locations in rural communities are supplied for the practical experience.

Deliverables/Results:

Although it has been AHEIA's intention to purchase and equip the Mobile Shotgun Trailer prior to March 31, 2015, this has not been possible due to some unforeseen circumstances. However, it is still AHEIA's full intention to conclude this project successfully as originally outlined in the grant application in all respects, although with a time delay. The up-dated final report was not yet submitted at the time of writing this report.

Outdoor Bound Mentorship Program

Alberta Hunters Education Instructors' Association

Grant: $7,500

Project Code: 002-00-90-222

Project Status: Previously funded via the R&R fund; Completed

The Outdoor Bound Mentorship Program was conducted throughout 2014 reaching approximately 1,500 students. This gave opportunities for youth and adults to participate in wilderness mentorship programs which are crucial to providing a greater understanding and respect for wildlife and wild places. Students who learned from experienced and qualified mentors began their outdoor journeys on the right foot and it is expected they will attach themselves to the cause for their lifetimes.

Deliverables/Results:

Mentored hunt programs were conducted in the following formats:

(a) Formal designated locations, including the Edmonton International Airport, Genesee Power Plant, Villeneuve Airport, 4 Wing Cold Lake, Alford Lake Conservation Education Centre for Excellence and designated ACA properties specifically identified for mentorship initiatives.

(b) Coordinated youth and first time hunts with various organizations including: AHEIA, AFGA, APOS, SCI, Delta Waterfowl, Ducks Unlimited, Pheasants Forever and others.

(c) Partnership with retailers creating "Fall Tune-Up" dates, with retailers advertising the opportunity to visit that store to check their hunting equipment and shooting skills. The "Outdoor Bound!" program information was available at all retailers encouraging new involvement. Working with local retailers and national manufacturers, special discounts for "Outdoor Bound!" participants were available, thus making the concept one where "membership has its privileges."

Youth Fishing Initiatives

Alberta Hunters Education Instructors' Association

Grant: $7,850

Project Code: 020-00-90-220

Project Status: Previously funded via the R&R fund; Completed

This project undertook to organize fishing events across the province, similar to Provincial Hunting Day, on the Free Fishing Weekend in summer and winter. These events were followed up by the AHEIA Youth Club to provide additional opportunities for youth to continue to improve their sport fishing skills and to become more aware and appreciative of the great outdoors. There were many fishing education programs offered through 26 certification programs throughout Alberta with over 540 students participating. In addition, there were 55 non-certified programs with 1,100 students participating.

Deliverables/Results:

AHEIA offered Youth Fishing Initiatives in conjunction with other non-profit organisations and government agencies, offering many initiatives throughout the province. Many rods & reels were provided to participating children. Ice fishing was also added to the program this year.

Some example deliverables include:

26 Fishing Education certification programs were offered in Alberta Schools, with 540 students certified.

55 Fishing Education non-certified programs were offered in Alberta Schools, with 1100 students attending.

42 City of Edmonton Parks and Recreation Staff attended a one day workshop on Alberta's Fishing Education program.

17 teachers and volunteers were certified as Fishing Education instructors.

15 teachers were certified as Fishing Education Instructors at AHEIA's Alford Lake Teachers Workshop.

Youth Hunter Education Camp (Week 1, 2, 3)

Alberta Hunters Education Instructors' Association

Grant: $15,000

Project Code: 002-00-90-224
(three applications merged into one project)

Project Status: Previously funded via the R&R fund; Completed

The Youth Hunter Education Camps provide a safe, responsible and fun introductory opportunity to introduce young people to the outdoors that will nurture and develop their interest in outdoor pursuits. These camps took place at the Alford Lake Conservation Education Centre for Excellence and provided three full weeks of training with meals, accommodations and all necessary course equipment provided. These one-week camps provided immersion into outdoor training which provided a perfect opportunity to entice the youth to choose outdoor recreation, especially the pursuit of hunting and angling, with their time and energy. Evenings were filled with mentor time at the stocked trout lake as well as numerous other practical experiences, including rifle, shotgun, compass, GPS, archery, field techniques, wilderness first aid, spin-casting, fly fishing and more. 150 youth participated in the 2014 Youth Hunter Education Camps, which are designed to target and attract youth to activities which provide introductory opportunities to become hunters, anglers and responsible outdoorsmen and women.

Deliverables/Results:

Successfully ran three weeks of the Youth Hunter Education Camps running consecutively from June 29 through to July 18, 2014. 150 youth attended with approximately 120 volunteers instructing and assisting at the camps.

Participants developed increased confidence, knowledge and skills in the context of a safe, enjoyable, cooperative experience in the wilderness which significantly helps us to achieve the longer term goal of hunter recruitment and retention. Additionally the enthusiasm of the youth is a great encouragement to the mentors, giving them renewed energy and interest in these outdoor pursuits.

Provincial Hunting Day Initiatives

Alberta Hunters Education Instructors' Association

Grant: $16,000

Project Code: 030-00-90-245

Project Status: Previously funded via the R&R fund; Completed

The 4th Saturday of September has been designated as Provincial Hunting Day. September 27, 2014 was the 7th Annual Provincial Hunting Day declared by the Alberta government, serving as an opportunity to remind and involve Albertans in our hunting heritage and the importance of securing a future for wildlife and wild places, especially within our own province. Albertans of all ages were invited to try their hand at fishing, archery, bow hunting, crossbows, firearms basics with handguns, rifles and shotguns and many more training events.

Deliverables/Results:

Provincial Hunting Day was celebrated at various venues around the province, including AHEIA's Calgary Firearms Centre. Activities included were: fishing, archery, bow hunting, crossbows, firearms basics with handguns, rifles, shotguns, tools and equipment seminars, predator awareness, tree-stand safety, waterfowl identification, fur-bearing animal identification, field dressing/field techniques, wild game calling, upland bird identification and more. The celebration at the Calgary Firearms Center had 235 participants and 30 staff and volunteers. This was a multi-dimensional day of programming in hunting, fishing and many other outdoor pursuits. In addition, there were numerous other events throughout the province that were supported by AHEIA by way of volunteer instructors leading youth in lower key events.

21st Annual Outdoor Women's Program

Alberta Hunters Education Instructors' Association

Grant: $20,000

Project Code: 002-00-90-219

Project Status: Previously funded via the R&R fund; Completed

The 21st Annual Outdoor Women's Program was held at the Alford Lake Conservation Education Centre for Excellence August 6 – 10, 2014. The following sessions were provided: Archery; Canoeing-Basic and Advanced; Chainsaw Basics; Firearms Basics-Shotguns, rifles and handguns; Advanced Shotgun; Fly Fishing; Wilderness Survival; Introduction to ATVing; Let's go Bow hunting; Waterfowl Hunting; The Science of Fishing ; GPS and Geo-caching; Field Dressing; Edible plants; Outdoor cooking; Advanced Hunting Session – Upland Game Birds & Waterfowl; Advanced Hunting Session – Big Game Animals; Moccasin Making ; Psychology of Survival ; Survival Bracelets ; Predator awareness – preventing conflicts with carnivores; Trailering; and Game calling.

Deliverables/Results:

There were 176 participants and 54 volunteer instructors. Women came from all over the province, north and south, rural and urban settings and from a wide range of ages: 14 – 81 years of age. 49% of the women were new to the Outdoor Women's Program, indicating the broadening reach of the program. Over 30 different hands-on programs were provided during the five days from introductory to advanced levels (listed above).

As expected, each of these participants learned many new skills. There is continuing interest and learning among the women who come in the outdoors and the many activities in which they are able to participate that expose and develop hunting, angling, trapping, camping, and survival skills. This ensures training in a safe and enjoyable manner to the wilderness experience.

Mobile Applications - "Essentials Series" Online Education Program

Alberta Hunters Education Instructors' Association

Grant: $40,000

Project Code: 002-00-90-214

Project Status: New; Completed (Part 1 of 3 completed)

This project was to develop three electronic based conservation education programs in the "Essential Series" following the template used in the highly successful online Hunter Education and Bear Essentials, programs. These mobile applications for smart phone and mobile device users included: 1.) Field Techniques / Field Dressing big game animals; 2.) Fish Identification; 3.) Cloven-hoofed Animal Identification. While print media continues to have a large role in education, a substantial audience exists that wants to and expects to be able to access modern technology, such as what is proposed here, for their ongoing and repeated learning.

Deliverables/Results:

Part One of the Field Techniques App has been completed and launched. It is available for download from iTunes for $3.49. ACA's contribution has been acknowledged in the Mobile App. The other two topics were not completed (Fish Identification and Cloven-hoofed Animal Identification); production of the second topic is underway.

Grazing school for women: promoting habitat and improved grazing stewardship to livestock producers in south and central Alberta

Alberta Riparian Habitat Management Society (Cows and Fish)

Grant: $3,000

Project Code: 020-00-90-165

Project Status: Funded since 2011-12; Completed

In 2014, Cows and Fish successfully developed and delivered two, two-day long grazing schools for women. The Original Grazing School for Women (GSW) was held June 10-11, 2014 at the Ukrainian Cultural Village with field sites at Elk Island National Park. The Southern Alberta Grazing School for Women (SABGSW) was held July 23-24, 2014 near Pincher Creek. In addition to ten speakers and 18 organizing committee members, the grazing schools had 74 attendees take part in the events. While each school had a unique agenda, both had indoor presentations and outdoor, hands on learning opportunities. The schools provided both skills and management knowledge, and a chance to utilize some of the practical learning. The first objective was met in that Cows and Fish successfully provided valuable content that helped attendees understand grazing management to sustain healthier landscapes. One of the very positive results Cow and Fish found from returnees (when surveyed at the GSW) is that the past schools had influenced their practices and they had shared what they had learned with others. Follow up telephone feedback surveys after the southern school also showed that attendees not only say they will implement at the school, but they do implement and they also influence their friends and family to make changes as well. This clearly shows the impact of the school both on attendees, but also on the broader impact to their networks.

Deliverables/Results:

Summary articles promoting the event or reporting on the event carried by local papers and municipal district/county newsletters. The Prairie Post Newspaper carried a follow up article on August 8, 2014.

Both committees sent out invitations to past attendees, posted it on their individual organisations websites, discussed it on Facebook/Twitter, and both have online formats to register and get information: www.grazingschool4women.com and southernalbertagsw.blogspot.ca. Cows and Fish posts the posters announcing the events, as well as the brochures of the events on their website and via Facebook.

Grazing schools, each over two days, completed and delivered to 74 attendees, 18 committee members and over ten speakers (in addition to the committee members who presented). Evaluation summary from school, indicated preferred and highly ranked topics; list of new information and skills that have been learned; management practices learned and that attendees plan to go home and implement.

Cows and Fish successfully influenced skills and knowledge that attendees will use on their farm or ranch: 83% of attendees indicated that the school would influence their grazing management practices and 100% indicated they would incorporate practices they learned about at the school.

The list of things that were listed as learned about was broad, but clearly included items that have value to those attending, based on these comments: "The hand[s] on work was outstanding"; [learned] "How to evaluate pasture production/acre.""Check the health of our Riparian Areas""Water troughs instead of body of water access" "Grazing practices- rotational grazing, rest & Improving riparian areas".

When asked "What was one thing you learned?" attendees responded with many things that should they learned both information and skills: How important good pasture quality is; Have a plan!; That we don't need to buy a bale processor; Grass ID and heard health; That there is always a way to improve your operation, even with small steps.

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

Alberta Riparian Habitat Management Society (Cows and Fish)

Grant: $21,600

Project Code: 020-00-90-167

Project Status: Funded since 2011-12; Completed

This initiative to examine riparian health, recommended action and support management changes that benefit riparian habitat along streams with threatened westslope cutthroat trout (WSCT) (*Oncorhynchus clarkii lewisi*), focused on working with landowners, land managers and stakeholders to achieve their goals. Cows and Fish targeted areas for riparian health and action plans in areas with management and land use impacts, based on recommendations from their experts group, familiar with fisheries and riparian habitat. Current land uses are causing significant issues at both the local, site specific scale, as well as more broadly (stream crossings, trails, eroded bridges, intensive recreational use, livestock impacts, etc). Working collaboratively with experts (including Joint Recovery Team members), Cows and Fish identified and selected over a dozen sites, examining 14 sites for riparian health, then developing recommended action plans. Of the 14 sites examined, one site was rated as unhealthy, six as healthy but with problems, and the remainder were healthy. For each site, action plan identifies management and land use issues based on current condition, making recommendations for improvement. These include recommendations on invasive plant management, reducing human-caused bare ground, minimising physical impacts from off-highway vehicles (OHVs) and livestock use, and others. Cows and Fish have been working with land managers, users and resource staff to identify feasible and practical management improvements to these and other sites. To involve experts and stakeholders in the work, and increase commitment to management change, Cows and Fish held one field tour to discuss the issues and the relationship of management to fish habitat needs and held an experts meeting, sharing draft results; then, the group helped determine content for the Stakeholder Workshop. This workshop, attended by 44 people, included presentations on riparian health results and issues found, showcased examples of successful actions and relevant research, as well as asked participants to provide input on needs and locations for future work. Despite ecological need and interest expressed in 2013-14, implementing management changes continues to be a challenge, with so many of the impacts related to unmanaged OHV use. Despite those challenges, Cows and Fish have successfully impacted riparian management in a number of ways. Restoration work was completed at two sites, supported weed control at two sites, and saw the installation of two bridges and one off-site water installed that were committed to in 2013-14. As in past years, there are several interested landowners/ land managers who may be good candidates for 2015 work, if funding is available.

Deliverables/Results:

Expert discussion and summary of priority sites.

Stakeholder tour: one tour completed along Hidden Creek.

Stakeholder workshop: completed Feb 2015.

Riparian habitat stewardship action plans (8-12 anticipated): 14 riparian health reaches; 12 riparian health action plans completed, with two more complete by March 31, 2015.

Riparian health overall stewardship management plan report:

2014 Riparian Health Inventory Project (Year 4): Westslope Cutthroat Trout Priority Streams. A Summary of the Riparian Health Status and Habitat Improvement Needs for 14 Priority Westslope Cutthroat Trout Sites in the South Eastern Slopes of Alberta. Alberta Riparian Habitat Management Society (Cows and Fish) Report No. 044.

Riparian management changes and habitat improvements (estimated 4-6 sites implemented): Work was completed by working with partners, stakeholders and volunteers. Restoration activities completed at one new site and additional planting at one previous site; weed management supported at two sites; management changes and implementation committed to in 2013-14 were completed and installed: two OHV bridges and one off-site watering system (spring development).

Cows and Fish had anticipated putting up signage at the two bioengineering sites, but AESRD indicated they were putting up signage at one, and did not approve the application to put signage up at the other site. Cows and Fish are still working on getting potential modified signage approved to ensure users are encouraged to use the bridges and avoid driving through the streams; this would happen with other funding if approved.

Trapper education and training

Alberta Trappers Association - Peace River Local 1195

Grant: $4,460

Project Code: 002-00-90-218

Project Status: New; Completed

On October 3, 4, and 5th, 2014 the Peace River Local held a basic trapping course to educate 20 new trappers. There was a good mix of youth, men and women. During the course humane trapping, proper fur handling and trapline safety was discussed. Peace River Local also talked about ACA and the work carried out together, such as the wolverine project and the ACA grant.

Deliverables/Results:

A total of 20 people (four youth, three women and 13 men) were able to take the trapping course at a reduced rate.

Protect Your Watershed: Riparian Area Protection Project

Ann & Sandy Cross Conservation Area

Grant: $17,199

Project Code: 015-00-90-206

Project Status: Funded since 2012-13; Completed

The overarching goal with this on-going project is to replace all of the existing interior and exterior fencing on the Ann & Sandy Cross Conservation Area (ASCCA) with improved fencing that is built to wildlife-friendly regulations in Montana State. This was the third phase of the wildlife friendly fencing project and it had three main objectives. The first objective was to install 4,920 feet of wildlife friendly fencing in Section 4A to protect the riparian area along Pine Creek from the impact of cattle. The second objective was to protect Spring #19 by installing 1,000 feet of movable buck and rail style fence where a water quality monitoring station will be installed. And the third objective was to replace 250 feet of existing fencing with rail fencing as a safety measure for visiting students. All of the objectives were completed. However instead of installing 1,000 feet of buck and rail fencing around Spring #19 a combination of three-rail fencing and three-strand barbed wire fencing was used. This is because after further consideration, it was decided that movable fencing in this area would be more difficult to maintain and would not be as effective as permanent fencing in this area. Habitat Manager, Reg Rempel, led a group of volunteers and completed over 2,000 volunteer hours on this project. Previous research on wildlife-friendly fencing completed by the ASCCA provided guidance on all of the newly installed wildlife friendly fencing.

Deliverables/Results:

4,920 feet of three-strand wildlife friendly fencing in Section 4A to protect Pine Creek and the associated riparian area. Homestead Fencing was used to complete this deliverable in November 2014.

1,000 feet of buck and rail fence will be constructed to protect the water monitoring station at Spring #19.

Project showcased on the website, newsletter and all publications associated with the development of the water monitoring station.

250 feet of barbed wire fencing will be replaced by rail fencing by the teaching pond to protect students and wildlife from injury.

Stewardship, habitat enhancement, and monitoring of wildlife at Beaverhill Lake

Beaverhill Bird Observatory

Grant: $19,450

Project Code: 030-00-90-124

Project Status: Funded since 2006-07; Completed

The Beaverhill Bird Observatory (BBO) has been monitoring birds and other wildlife in the Beaverhill Natural Area for more than 25 years. In 2014-15, the BBO monitored: migrating and resident birds using standard protocols, monitored bats using a detector and bat boxes, monitored breeding cavity nesting birds (100 house wren, 150 tree swallow, 100+ mountain bluebird, and 10 saw-whet owl boxes), tree swallows for a geolocator project (recovering them and deploying 40 more), mammals using trail cameras and snow tracking. BBO continued to be stewards of the Natural Area, putting in signage, clearing trails, and ensuring compliance with no motorized traffic. BBO held two major on site events, BIG Birding Breakfast (55 people), and Steaks and Saw-whets (105 people), and an additional 11 minor events. BBO staff also gave talks at schools in Edmonton, Camrose, and Tofield. New directional signage to guide visitors from highway 14 and Tofield to the Natural Area has been ordered. The BBO published and shared results in Natural History journals, popular media (St. Albert Gazette and Tofield Mercury), and at the Alberta Chapter of the Wildlife Society Conference.

Deliverables/Results:

Spring migration monitoring was conducted from May 1 - June 9, 2014. A set of nets were placed in the willow areas to try and increase capture rates while running the old 12 nets simultaneously. 409 birds of 39 species were captured (1782.5 net hours, capture rate 22.95 birds/100 net hours) in the old nets. In the new nets 432 birds of 29 species were captured (832 net hours, capture rate 51.92 birds/100 net hours).

The summer MAPS program ran from June 10 - July 31, 2014. Overall, 116 birds were caught in the three MAPS stations. Of that total, 77.6% were least flycatchers (compared to 74.6% last year).

Fall songbird migration monitoring ran from August 1 - October 9, 2014. Fall migration captures at BBO in 2014 were higher than 2013, with 738 birds captured, and a capture rate of 28.8 birds/100 net hours. The top three species representing 55% of the captures were: myrtle warbler (31% of captures with 232 individuals), least flycatcher (17%, 122), and black-capped chickadee (7%, 54). Eight new nets were set up further into the willows and were run for 1153.5 hours. The capture rate was 63.5/100 net hours (732 birds).

Fall saw-whet owl monitoring ran September 10 until mid-November. A total of 56 nights were covered amounting to 1068.0 net hours. 234 saw-whet owls were caught (capture rate of 21.9 owls/100 net hours). They had 231 unbanded saw-whets, and three encounters of banded birds. Results from 12 years of saw-whet owl monitoring are being presented at ACTWS.

The bat detector was installed in June at the bird observatory, Eastern red bat, silver-haired bat, hoary bat, Northern myotis, little brown myotis, and big brown/silver-haired complex were detected. The bat boxes had little brown myotis. The BBO also found bats using house wren boxes later in the summer after house wrens had left. There is a paper being written on this for publication.

All nestboxes were monitored through the summer. 150 tree swallow boxes, over 150 bluebird boxes, and all 50 house wren boxes were monitored. None of the saw-whet owl nest boxes or long-eared owl baskets were occupied in 2014.

Annual Beaverhill Bird Observatory report

Data was submitred to AESRD on birds, bats, terrestrial mammals.

Four signs have been order and will be put up by Alberta Transport this spring along highways or secondary roads guiding the public to the Beaverhill Natural Area.

Results of annual bat monitoring shared with ABAT (Alberta Bat Action Team) at annual meeting. (February 2015)

Cleared trails and maintained road access to Natural Area.

Two major on site presentations, three minor on site presentations and at least eight off site talks or demos, e.g. Big Birding Breakfast, Tofield Library family songbird banding, Augustana talk.

Still image video of the results of the mammal tracking to be posted on BBO website.

Reports and Publications:

Newspaper article: Beaverhill Lake's tree swallows migrate over 8,000km.

The Tofield Mercury July 22, 2014.

Beaverhill Bird Observatory, Spring Report 2014, By Kevin Methuen July 2014

Beaverhill Bird Observatory, Summer Report 2014 By Jerry Gordy and Amélie Roberto-Charron August 31, 2014

Beaverhill Bird Observatory, Fall Report 2014 By Amélie Roberto-Charron and Lisa Priestley

Priestley L. and C. Priestley. Long-eared owl nesting phenology and habitat in Central Alberta. Blue Jay. September 2013 pp. 124 -131.

Hunter Education Field Day

Brooks and District Fish and Game Association

Grant: $400

Project Code: 030-00-90-238

Project Status: New; Completed

The Hunter Education Field Day concluded a one night per week, eight-week long Hunter Education course with approximately 30-40 students in attendance. The Field Day Event held on April 5, 2014 was a full day, hands on experience for students including archery, handgun shooting, .22 shooting and shooting clay targets with shotgun and other related course practical activities. Snacks and lunch were included for students, parents, and volunteers. All activities took place at a registered shooting range and conducted by volunteers, many of which are certified Hunter Education Instructors and/or Range Officers.

Deliverables/Results:

Event took place April 5, 2014 and provided safe shooting instruction for 34 students and 12 other family members participating, 10 family members attended but did not participate (watching their kids) and 18 volunteers. Total of 74 people for the Field Day.

Cypress Hills landbird monitoring station

Calgary Bird Banding Society

Grant: $25,400

Project Code: 030-00-90-188

Project Status: Funded since 2011-12; Completed

After a two-year pilot (2010-2011), the Calgary Bird Banding Society (CBBS) ran the first official year of standardized landbird migration monitoring in the unique Cypress Hills of Alberta in 2012. 2014 marked the fifth year of monitoring where a total of 2,789 individuals were banded during spring and fall migration, and Monitoring Avian Productivity and Survivorship (MAPS). 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 is 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. 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. Construction of a banding laboratory structure was initiated in the fall of 2014 and the interior will be completed in 2015 to better facilitate educational programming. Increasing the public's understanding and appreciation of wild birds and their habitats is essential to the conservation of our environment.

Deliverables/Results:

Spring Migration Monitoring in 2014 started on May 7 at the Elkwater Lake location and ran until June 10, 2014 for a total of 31 mornings of banding and 34 days of census. Up to 12 nets contributed to 1,234 new birds banded of 54 species and forms. The spring numbers area a new record high for the station.

Three MAPS stations operated for the fifth year in the Cypress Hills at Rodeo Grounds, Spruce Coulee and Old Baldy where 47, 50 and 118 new birds were banded respectively. Each site operated seven nets during the six recommended periods in the months of June, July and August. These numbers are exceptional for breeding site and confirm that the Cypress Hills contain critical breeding habitat for many landbird species.

The fall migration monitoring began on August 5 and ended on October 15, 2014. A total of 1,185 new birds were banded of 67 species. Census was performed every day during the programs monitoring species that are not captured using mist-nets.

The Northern saw-whet owl monitoring began on September 20 and completed on October 31, 2014.

Twelve banding demonstrations were performed for grade school and post-secondary students as well as many members of the public who stopped by the station in 2014. The Cypress Hills Visitor Center referred interested public to the banding station daily. The season with the highest visitation was fall migration with 506 (nearly double last year) visitors followed by spring migration with 234 visitors. Sixty-nine people visited during MAPS and 32 visitors observed Northern saw-wet owl banding in October. The station has witnessed an annual increase visitation since 2010 and interest is expected to increase as a result of the banding lab structure.

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 Purple Martin Festival (CPMF) committee held the 5th annual festival on June 22, 2014. The festival was a one-day public celebration of nature, birds, and greenspace, with a focus on Purple Martins. The CPMF involved a collaboration of city, nongovernmental, education, and wildlife conservation organizations. The festival's mission was to provide a high profile, community-based nature tourism event to showcase the vision and work of the Camrose Wildlife and Stewardship Society (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 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 demonstrations by purple martin landlords, a keynote address by Kim Blomme from the Alberta Wildlife Rehabilitators' Association, a bus tour and walking tour to active martin colonies, children's activities highlighting purple martin and wildlife natural history, information booths, an image-music show from the Camrose Camera Club, a summary of the purple martin migration study. The festival attracted 80 people who provided very positive feedback. The festival also resulted in recruiting additional landlords, more local publicity (at least three local newspaper articles), and one more nesting structure in the community.

Deliverables/Results:

The event attracted about 80 people to the festival on June 22, 2014.

A debrief session was held, received evaluations from participants, and wrote an evaluation of the event (eg. likes, dislikes, future interest, and local economic impacts) at the end of June 2014.

One new nest box was purchased and installed to support the Purple Martin Nest Box Program. The remaining nest boxes in the program were maintained.

Three articles were written about the Purple Martin Festival and conservation in our local newspapers (last in late June, 2014).

Participation in the volunteer Purple Martin Landlord Program increased by 3-5 people.

List of contacts was updated regarding future wildlife stewardship and educational activities.

The planning manual was updated for future Camrose Purple Martin Festivals.

Castle restoration, inventory mapping and outreach

Castle Crown Wilderness Coalition

Grant: $15,000

Project Code: 015-00-90-189

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

The Castle Crown Wilderness Coalition (CCWC) has been working to remove invasive plant species in the Castle for many years. Several years ago AESRD started a program to inventory and map areas where invasive species were occurring. Each year CCWC revisit areas that have known infestations and look further into the backcountry to try and find any new infestations before they have time to take hold. CCWC have seen a great deal of progress at the West Castle Wetland, the Carbondale Staging Area, the Syncline Group Camp and others. Although CCWC are seeing progress in the areas visited on a regular basis CCWC are still finding new infestations. Part of the overall program is to do outreach to and educate people using the area or any wild area on what an invasive plant is, why it is a problem, how they are spread and what each of us can do to help stop the problem. CCWC is also working with the Government of Alberta on stopping the spread of aquatic invasive species before they become a problem in Alberta. To help in the education process CCWC attend and host events to bring attention to the issue. CCWC also invite the general public to join us to their annual weed pull and shoreline clean up or they can join CCWC staff and come out to help at any time. This year CCWC attended two fairs, the nature Festival in Waterton and spent time speaking directly to those people using the Castle in how they can help out. More than 260 bags of weeds were removed from the Castle and many more weeds were pulled and left to compost. CCWC cleaned garbage and weeded at staging areas, trail heads and both Syncline Ski parking lots and cleaned garbage left behind by random campers and repaired fences that had been pushed down by cattle. CCWC hike leaders also report on what they see along the trails and at Alpine Lakes. CCWC work to share information on the importance of staying on designated trails, not just for ORVs but also hikers. CCWC provides and input and takes part in the Headwaters Action Plan the West Slope Cutthroat Trout Recovery Plan and on initiatives that protect fish and wildlife species. Information gathered from CCWC's work 2012 – 2014 has been compiled into a short report that will be available soon.

Deliverables/Results:

More than 260 bags of weeds removed from the Castle, with many more pulled and left to compost. Sites throughout the West and South Castle as well as Carbondale, Lynx Creek and Front Canyons visited to inventory, map and pull weeds. Information is now directly uploaded to AESRD. 98 surveys were sent to the office; 22 of these were shared with AB Parks. Progress is seen at many of the areas visited regularly.

Approximately 1,000 people reached though outreach about 250 directly in the Castle. Many more people phone the office for information on the Castle often on maps, etc., or who to contact with specific information.

Weeds were pulled and garbage cleaned up at staging areas and random campsites.

Interpretive signage was installed and the trail cleared at Beaver Mines Lake. Good number of volunteers at the annual weed-pull and an increase in the number of volunteers at the Shoreline Clean Up.

Opportunities to work with possible new partners such as the Kainai on their environmental initiatives and the AESRD Flood Rehabilitation Crew who we met with last season and plan to work with on non-motorized trails.

The ACA was thanked in a story written by CCWC summer student about her position with the CCWC. www.pinchercreekecho.com/2014/11/05/my-summer-with-the-ccwc

Funding from ACA will also be acknowledged in the State of the Castle Report.

Equipment proposal for Cochrane High School Outdoor Education Program

Cochrane High School Outdoor Education

Grant: $5,000

Project Code: 002-00-90-210

Project Status: New; Completed

Purchasing the equipment listed in the Cochrane High School Outdoor Education Equipment Project and having it accessible has had a huge impact on student learning about nature and the outdoors. The snowshoes, binoculars, and wildlife texts have been used on numerous occasions. So far both the Grade 9 Outdoor Education class and Grade 10, 11 and 12 Outdoor Education students have utilized this wonderful equipment. The Outdoor Education students have been outdoors enjoying the Fish Creek Provincial Park, Bragg Creek Provincial Park and Peter Lougheed Provincial Park. The students have engaged in project-based learning ("My Big Term" Project), nature walks, snowshoeing adventures (Lake Louise/Mosquito Creek), bird watching (Fish Creek

Park), and environmental action projects. These are memories, learning and teachable moments that the students and teacher will never forget.

Deliverables/Results:

There have been many excursions in and around Cochrane using the equipment (snowshoes/binoculars) and print resources. As well, additional funds were used to finance a trip to and from Lake Louise and Mosquito Creek for the purpose of enjoying and valuing our beautiful Alberta habitats.

The project resulted in over 95 students using equipment and resources. The students were engaged, active participants and avid learners about their wildlife, natural areas and conservation. Experiences and activities in our natural areas sparked many inspiring conversations and debates about environmental stewardship, wildlife and wild habitat destruction. They had guest speakers in the classroom from the community, including an avid bird watcher that gave an in service on how to use the binoculars properly. There were some unexpected results also such as the pygmy owl sighting at Fish Creek Park, and a student that volunteers at the Cochrane Ecological Institute has volunteered to do a Powerpoint Presentation on the CEI, the Smeetons and their initiatives. This ACA Grant has initiated some great community collaboration for conservation and environmental intitiatives.

Stretton Creek Watershed Education Program

County of Vermilion River

Grant: $12,000

Project Code: 015-00-90-221

Project Status: New; Completed?

This project will focus on evaluating and communicating our initial suite of environmental enhancement projects on private farmland along the Stretton Creek watershed to attract additional prospective project participants (and the general public) along an important watershed within the County of Vermilion River. The initial phase of this long-term project is being led by the County of Vermilion River (CVR) ALUS (Alternative Land Use Services with support from the CVR Agricultural Service Board Environmental Stream and Cows and Fish). All efforts are in support of the Vermilion River Watershed Management Project Steering Committee in conjunction with the Growing Forward 2 – Agricultural Watershed Enhancement Program (AWEP) projects. In 2013, the GF AWEP program enhancement area was chosen along a portion of Stretton Creek. The aim of the Growing Forward AWEP program is to provide funding (70% government, 30% producer) directly to producer delivered projects that will enhance water quality in agriculturally intense areas. Three landowner projects began in 2013 with funding from partners listed above. The goal with this ACA grant is to leverage the initial 2013 projects using both environmental evaluations and associated communication efforts to generate more interest from other landowners within the watershed, thereby expanding the overall impact within the watershed over time. Included in these efforts will be a tour in the summer of 2014 of these initial demonstration farms along the Stretton Creek.

Deliverables/Results:

At the time of writing this report, the final report had not yet been received.

Wind up the wire for wildlife habitat enhancement

Edmonton and Area Land Trust

Grant: $2,650

Project Code: 030-00-90-241

Project Status: New; Completed

The Edmonton and Area Land Trust's (EALT) Wind up the Wire for Wildlife Habitat Enhancement project enhanced wildlife habitat by removing wire that posed a barrier to wildlife movement on conserved lands. Throughout the project, existing fences on three EALT properties were modified or removed entirely. Perimeter fences were modified to meet wildlife friendly standards: top wire no higher than 40 inches from the ground and bottom wire no lower than 18 inches from the ground. Wildlife habitat was also enhanced by completely removing wire from sections of interior fences to increase the capacity for wildlife movement. The project was successful in engaging local volunteers to assist in wire removal efforts and educating them about wildlife friendly fences. During Wind up the Wire volunteer days, 24 volunteers dedicated nearly 200 hours to removing 9.5 km of barbed wire to make the areas wildlife friendly.

Deliverables/Results:

The top and bottom wires were removed from 580 m of fence at Glory Hills; wildlife safety was also improved by clearing dead fall from areas of downed fence, fixing broken or tangled wire, and tacking it back onto posts. Another 125 m section of barbed wire fence that was scheduled to be modified has been removed completely.

Approximately 895 m of interior fence was removed at Golden Ranches during two *Wind up the Wire* volunteer days.

One Wind up the Wire volunteer day was held at Ministik and approximately 250 m of dilapidated fence was removed. The wire was significantly tangled in new tree growth, therefore wire removal was much more time consuming than originally approximated, resulting in half the expected wire removal.

A story was posted on EALT's website as a news release, circulated on social media, and featured in EALT's Fall Newsletter.

2014 Snow Goose Chase

Edmonton Nature Club

Grant: $2,000

Project Code: 015-00-90-184

Project Status: New; Completed

Project Website: www.snowgoosechase.ca

The 15th Annual Snow Goose Chase was successfully held on the last weekend in April, 2014. Three buses for the paying public, plus eight buses of inner city youth, low-income families, recent immigrants and refugees, as well as young naturalists from Nature Alberta and two local schools participated in this year's Snow Goose Chase. Morning activities were centred at Tofield Community Hall and included: displays and exhibits by the Valley Zoo, Beaverhill Bird Observatory, Mike Jenkins (City of Edmonton), bird slideshow by Don Delaney, and well-known Alberta personalities John Acorn the Nature Nut, and Pete Heule from the Royal Alberta Museum—hawks, owls, snakes, spiders, pond life, fossils, and more. Nearby visits for a beaver talk at Ministik Bird Sanctuary, owl banding talk at Francis Viewpoint with Ray Cromie, a wetland experience by the Tofield Nature Centre, and mounting bluebird nesting boxes. Bag lunches and snacks were provided. Afternoon: bus trips to view geese, swans, ducks and other birds in the field.

Deliverables/Results:

Eight buses of inner city youth, low-income families, recent immigrants and refugees participated in the 15th Annual Snow Goose Chase. A team of 90 volunteers assisted in this annual event.

Many of the participating organizations remarked on the successful event. Many on the buses had never been outside the city limits before.

Living with Beavers Part II

Ellis Bird Farm Ltd

Grant: $3,000

Project Code: 030-00-90-237

Project Status: Funded in 2012-13; Completed

The resident beaver family has become the focus of education programs at Ellis Bird Farm (EBF). A documentary was produced in 2013 (Living with Beavers), just before the first family of kits arrived. Since that time, EBF has collected a significant amount of additional footage. The goal of this project was to increase public awareness and appreciation of the important role that beavers play in the landscape by creating an educational resource based on the impressive collection of video footage collected on the resident beaver family at the Ellis Bird Farm site. The objectives were to review, edit, catalogue and organize beaver video and webcam footage, with emphasis on footage collected since the arrival of the first family of kits in 2013. From this edited material, a series of vignettes were produced, as well as a documentary video entitled Living with Beavers Part 2. All of these objectives have been accomplished.

Deliverables/Results:

A catalogue of over 700 video segments

A series of short vignettes

An 11 minute documentary: Living with Beavers Part 2

2014 FFGA Youth Pheasant Hunt

Foremost Fish and Game Association

Grant: $3,000

Project Code: 030-00-90-244

Project Status: Previously funded via the R&R fund; Completed

On October 19, 2014 the Foremost Fish & Game Association (FFGA) held their annual Youth Pheasant Hunt. The day started at 9 am at the FFGA range, where 13 youth between the ages of 12 and 17 and their guardians met volunteers from the club. Orientation began shortly thereafter with the youth were broken into small groups and taken by mentor volunteers who taught youths basic firearm safety and operation. Once the mentors felt that the youth firmly grasped the concepts of safety and operation, they began by shooting clay pigeons one at a time under the careful supervision of a mentor. After each youth had a chance to practice shooting, it was lunchtime where everyone was served pizza, pop and snacks. Once lunch was done, volunteers led parents and guardians to the pheasant release site. The pheasants were placed two at a time and each youth were led through the site by a mentor. Youths had a chance to shoot flying pheasants, only when mentors gave the ok that it was safe to shoot at particular birds. When youths were successful, they were then taught proper ways in which to treat and clean their harvest by knowledgeable mentor FFGA volunteers. The day was considered a great success by all youths, parents/guardians and FFGA volunteers once again.

Deliverables/Results:

The main result of the project is getting area youth involved in hunting in a safe, ethical and responsible way. Many of the youth who take part in the day have little to no previous experience in hunting/fishing/conservation because of parents not being involved in that particular lifestyle. FFGA feel that these youth have benefited the most from the project, because it allows them to take the 'first step' towards taking advantage of all our great outdoors have to offer.

Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness

Friends of Fish Creek Provincial Park Society

Grant: $3,000

Project Code: 015-00-90-216

Project Status: Funded since 2011-12; Completed

Project Website: www.friendsoffishcreek.org

The Friends of Fish Creek (the Friends) 2014 Community Watershed Stewardship project has, at its core, the organizational mission of "engaging the community through education and awareness to conserve a truly unique naturalized urban park". Each of the three components of this project have helped us engage the public in pursuing this goal, with objectives specific to each of them: 1.) The creation of a technical document analyzing the surface water quality data that has been collected by the Friends from 2007 to 2013. The main objective was to collate and analyze seven years of scientific data in order to gain a better understanding of the state of Fish Creek. The technical report exists as the main activity for this project component. 2.) The execution of a riparian restoration project in the lowest reach of Fish Creek. Based on the 2013 Riparian Health Inventory commissioned by Cows and Fish, this restoration project was spearheaded as a way to work with like-minded organizations, provide opportunities for education and hands-on stewardship work related to the watershed and to help mitigate the negative impact of human use and flooding in this area of the creek. 3.) Public outreach and education in a variety of formats, including lectures, community events and Friends' programs. Engaging the public in a variety of ways allows the Friends to disseminate information and knowledge to a wide audience specific to many areas of public interest. The main outreach/education activities included minibus tours and guided walks, Speaker Series lectures, the annual Creekfest water festival and a variety of other opportunities to engage with the public through community events throughout the year. To support and thank the hard-working team of over 200 volunteers, the Friends also supplied them with snacks and drinks during longer events and/or outdoor physical tasks, and honored their contribution to the Friends with the annual volunteer appreciation dinner and winter open house. The Friends team worked hard with supportive volunteers throughout 2014 to meet each of the goals set out; not only were each of the three components of this project completed, but two were exceeded. The Friends are also excited to say that the level of community interest and commitment to the riparian restoration project was so high, that it has created the momentum for the Friends to investigate doing similar projects in the future, building on what we learned this year.

Deliverables/Results:

Report: Fish Creek Water Quality Analysis Project Prepared by Jeffrey Wisby April, 2015. 24 pp. (A technical report that highlights 2007 to 2013

water quality trends in Fish Creek to serve as a baseline against which future studies may be compared.)

Volunteer-based restoration outings and at weed pulls: 11 weed pull outings in various areas across the park (including the 2 restoration site weed pulls): 128 volunteers (282 volunteer hours), 800 kg of harvested invasive plant material removed.

Restoration Outing 1: Installation of six sign posts; 12 volunteers (30 volunteer hours)

Restoration Outing 2: Harvesting of 400 willow/poplar/dogwood stakes; 12 volunteers (40 volunteer hours)

Restoration Outing 3: Transplanting of 400 willow/poplar/dogwood stakes and 31 native poplar seedlings, transport of woody debris and mulch; installation of signage to discourage off-trail us; 29 volunteers (240 volunteer hours)

17 minibus tours – topics including nature, history, wetlands, photography, archaeology and geology: 120 program participants, 11 volunteer occurrences (169 volunteer hours)

Two guided walking tours – Jane's Walk and Fish Creek Ghost Walk; 100 participants, two volunteers (four volunteer hours)

One Creekfest water festival - engaged 2,300 event visitors, 43 volunteers (243 volunteer hours)

11 public talks – topics including "Human Relationships with the Natural World", "Fish Creek Provincial Park: Its History and Changes", and "Gardening with Native Plants in Calgary": 868 participants, 41 volunteer occurrences (234 volunteer hours)

22 community outreach events – including several Stampede BBQs, Alberta Parks Star Night, Calgary Horticultural Show, Reels and Reigns (Bow Habitat Station), Fish Creek CommUnity Fair and the Bow River Basin Council Forum (November): engaged 2,486 community members, 14 volunteer occurrences (54 volunteer hours)

Press Releases & Public Service Announcements, such as "Garden PSA" and "Creekfest July3 PSA"

2014 Friends of Fish Creek Annual Report

Volunteer Appreciation Events – Annual Volunteer Appreciation BBQ – October 24; 85 participants and- Winter Open House – 24 participants.

Wetland environmental education field school

George Pegg Botanic Garden

Grant: $2,122

Project Code: 015-00-90-217

Project Status: New; Extended until end June 2015

The Wetland Field Days at the George Pegg Botanic Garden offer students opportunities to apply what they have learned in the classroom in an outdoor setting. This project complements the Grade 5 Wetland Ecosystems Science Curriculum. In May and June four classes from three schools in Lac Ste. Anne County attended the three hour sessions. During the field day students investigated four aspects of wetland ecosystems by visiting four different stations. The stations were based around a marsh and adjacent riparian area on a working farm connected with this provincial historic site. The areas of investigation and specific activities included water quality testing, discovering aquatic creatures using dip nets and magnifying lenses, examining ecosystems and built landscapes surrounding riparian areas, and discussing agricultural land management in association with wetlands. Students explored how plants and animals adapt to a riparian environment, looked at how water quality can be monitored using the Alberta Water Quality Awareness test kits, and talked about how human activities can affect the function of an ecosystem. Teachers from each class plus accompanying parents participated with 85 students. Program leaders included the County Conservation Coordinator, summer staff from NAIT and Pegg Garden, and local volunteers. With the ACA funding each student received a riparian activity book (published by the Stewardship Alliance for Conservation Agriculture), an insect observation box, and a snack. In rural areas the cost of transportation is sometimes a barrier to participating in field trips. The grant also covered the fee for the buses.

Deliverables/Results:

Three sessions, with four classes from three schools. (85 students). Students attended the programs and enjoyed the opportunity to see the principles of wetland ecosystems in a real life setting. They will be able to apply their observations in other locations and share their knowledge with others.

Teachers are aware of the program and are interested in returning for the next season.

One of the classes (Onoway Elementary School) set up a geocache site at the Garden as a thank you for hosting the wetland program.

H A Kostash Youth Fishing Mentorship Program

H A Kostash School

Grant: $5,250

Project Code: 020-00-90-209

Project Status: Previously funded via the R&R fund; Completed

The project goal was to have students from Grades 8-12 participating in fishing programs. A fly in fishing trip was booked for May 29, 2015. The students also went on a Regional Ice Fishing trip day which included over a 150 students from their division. With the funding H A Kostash School has been able to take all students who would otherwise miss out because they could not afford the trips. Equipment was updated and worn out equipment replaced. They were able to branch into advanced fishing and mapping by teaching students how to use GPS and fish finders.

Deliverables/Results:

Over 100 students have participated and older students have planned and led trips and outdoor excursions. South African archery students visited the school and experienced an ice fishing trip, and sightseeing with elk and big horn sheep. No students were turned down.

Riparian assessment and education

Hardisty Lake United Church Camp

Grant: $3,000

Project Code: 015-00-90-213

Project Status: New; Completed

Hardisty Lake United Church Camp is located on the edge of Hardisty Lake in Hardisty, AB. They are the stewards of a significant piece of largely undisturbed riparian area on the edge of the lake. The two goals of this project were to educate staff and campers about their natural setting and to conduct a plant assessment. 15 staff members were taught how to conduct these sessions and 110 campers attended 12 nature sessions while at camp. The campers were supplied with equipment like binoculars and magnifying glasses to further explore

their natural setting. Alberta Riparian Habitat Management Society spent eight hours at camp conducting a plant survey as well as three hours training staff. The nature programming portion of the camp was well received and enjoyed by the staff as well as the campers. The ability to learn from professionals in the industry was a great benefit to the Hardisty Lake United Church Camp camp. At the end of the project the campers and staff had a greater understanding of their natural world around them and they now have a record of what plants grow at their camp and what can be done to further protect the riparian area near the lake.

Deliverables/Results:

The staff training took place on July 3, 2014.

The Riparian Plant Assessment took place on July 3, 2014.

Camp ran July 6-24, 2014 with a total of 110 campers in attendance.

Extreme by Nature: Environmental Education for 11-15 Year Olds

Helen Schuler Nature Centre

Grant: $3,000

Project Code: 030-00-90-240

Project Status: New; Completed

Extreme by Nature is an interactive program for youth ages 11-15. The purpose of the program is to provide youth with opportunities to get involved in current environmental issues, engage in debate, and form educated opinions about the environment. This is achieved by creating monthly opportunities for youth to participate in activities that directly connect them to a variety of environmental issues. These programs focus on developing deeper meaning as to what conservation entails, in relation to such topics as sustainable hunting, fishing, the impacts of invasive species, outdoor survival skills, and traditional knowledge of the land. The Helen Schuler Nature Centre strives to create a balance using locally-based opportunities that utilize aspects of technology, various art media, physical activity, community engagement, and exposure to various careers to provide skills and knowledge that will have a lasting impact on youth throughout their lives.

Deliverables/Results:

79 program participants, which represents a 15% increase from 2013-14. Main demographic of participants is 11-13 year olds; 14 and 15 year olds attend less frequently due to part-time jobs, sports teams, and extra-curricular activities.

Four Community Partnerships: Lethbridge College; Oldman Watershed Council; Chinook Waters Fly Fishing Club; Lethbridge Research Centre (Agriculture Agri-Food Canada. Partnerships and contact with Nature Centre volunteers, staff, and partners have allowed teen participants to meet mentors in many different fields of interest in the community.

There was a noticeable increase in attendance from social service organizations like Big Brothers Big Sisters.

Monthly promotion in print media and on social media: Recreation & Culture Guide included ¼ page ads in 11 issues promoting the Extreme By Nature program featuring the ACA logo and recognizing financial support.

All Extreme By Nature programs were advertised through social media with specific mention/tagging and back-linking to ACA.

Communication with local media photographers: Lethbridge Herald photographers were made aware of all Extreme By Nature programs and were invited to take photos – some of these photographs were featured in the paper throughout the year. Global TV did an onsite interview showcasing the Extreme By Nature programs.

Photos compiled into slideshow on display in Helen Schuler Nature Centre lobby.

Photos used to promote program at local trade show events and special presentations.

Riparian improvement

Highway Two Conservation

Grant: $10,000

Project Code: 015-00-90-209

Project Status: Funded since 2013-14; Completed

2014 marked the second year of the Riparian Improvement Program for Highway Two Conservation (H2C) and was a season filled with successes. The overarching goal of this program is to encourage landowners to realize the benefits and function of riparian buffers in cropping practice and adopting use in agronomic landscapes. The implementation of a buffer reduces the source of diffuse pollution and this contributes to improved fish habitat as a result of reduced nutrient loading, increased bank stabilization, and improved wildlife habitat. "Pond Days" was received well by area schools with 346 students taking part this season. Working with teachers, H2C hopes to increase the number of schools taking part in this worthwhile program and expand its reach. This season also saw the creation of the Riparian Improvement Policy within the County of Barrhead. With this policy, the County of Barrhead formalized their commitment to riparian areas and recognized their importance in the agricultural landscape. The policy provides an incentive to County producers to incorporate these areas and was a victory for those concerned about water quality province wide. It is hoped that more municipalities will follow the County of Barrhead's lead in the years ahead. H2C was fortunate to host Lorne Fitch and the "Beavers in the Landscape" workshop series in three locations. In total, 108 individuals took part in the presentations and the four municipalities are now considering different ways of managing beaver within their borders. In the planting arm of this program, H2C had some challenges. While five sites were targeted for planting, only one led to fruition. This site saw 4.1 acres planted with native grass seed and 750 sprigs of willow and poplar. An additional site was slated for planting but an early killing frost forced H2C to postpone the scheduled riparian health inventory and planting for next season. The future of this program looks bright with the winter season adding three more locations for projects in 2015 and requests for expansion on the education portion of this program.

Deliverables/Results:

Performed aerial survey with GPS, completed with video addition.

Incentive for ratepayers was completed in one Municipality. Passed into policy in the County of Barrhead.

100 lbs of native seed planted on 4.1 ac.

750 poplar and willow cutting planted on 4.1 ac

Youth riparian education days were held in four municipalities and 347 students participated.

Extension workshops were held (In-kind presentations from Counties of Athabasca, Barrhead, Sturgeon, Westlock, Cows & Fish, Ag. Canada (STB), AWES). The workshop in Barrhead was done in partnership with

Westlock to reduce costs. Three completed for the year "Beavers in the Landscape"- associated pond levelers and other mitigations tactics to be utilized in 2015/16.

One Riparian Health Inventory completed.

Water Testing Dropped from the program because of inconsistent nature of testing.

HFT Teacher's Workshop

Hunting for Tomorrow

Grant: $5,000

Project Code: 002-00-90-226

Project Status: New; Complete?

The Teacher's Workshop promotes continual learning in regards to achieving new certification as an Alberta Conservation and Hunter Education Instructor, the Alberta Fishing Education Program Instructor and the optional International Bowhunter Education Program. Through a series of workshops, teachers will also be able to receive training in regards to Survival and Camping Program, Shooting Program, Compass Program, Fishing Program and Archery Program. The efforts of the HFT Workshop is to encourage those currently involved in Alberta hunting activities to increase their depth of knowledge in the previously described areas of interest. By offering an all-in-one weekend package, individuals have the ability to receive their certifications while networking with other teachers.

This effort also helps to ensure the perpetuity of the Conservation and Hunter Education Program in the school curriculum for both urban and rural school systems.

Deliverables/Results:

At the time of writing this report, the final report had not yet been received

Teacher Professional Development Programming

Inside Education

Grant: $1,500

Project Code: 002-00-90-211

Project Status: New; Completed

This project saw support for two of Inside Education's teacher professional development programs in 2014 – the Woodland Caribou Education Program and Living on the Landscape Education program. The ACA grant was directed towards the significant transportation involved in bringing in the 41 teachers from across Alberta to both programs, and for program transportation through the northeastern region of the province. Both programs afforded Alberta school teachers the opportunity to meet with experts from across the spectrum of perspectives when it comes to the status of woodland caribou and insight into traditional lifestyles in Alberta's boreal forest – including hunting, fishing and trapping. Upon completion of the program, teachers are challenged to return to their classrooms, armed with new-found knowledge and strategies for incorporating this knowledge into their curriculum. They are further challenged to share access to the information with their colleagues within their school and school district, meaning hundreds of Alberta school children will ultimately benefit from the participation of their teachers, and the support from the program partners.

Deliverables/Results:

Two teacher professional development programs were held:

Living on the Landscape Education Program – May 29-31, 2014

Woodland Caribou Education Program – September 25-27, 2014.

Len Thompson Aeration Project

Lacombe Fish and Game Association

Grant: $5,550

Project Code: 020-00-90-212

Project Status: Previously funded via the R&R fund in 2010; Extended until September 20, 2015

The project is to improve the aeration on the Len Thompson Trout Pond which is annually stocked by both the ACA and the Lacombe Fish and Game Association (Lacombe FGA). Recreational use (fishing, dog walking, bird watching) has already been established on the pond. The area receives over 1,000 visits per year based on conservative estimates. Current aeration has improved fish survival immensely, but some kill in spring is evident especially in high snow/long ice conditions. Water quality entering Wolf Creek from the holding pond is not as good as it should be. Wolf Creek is a flowing tributary of the Battle River and aquatic life, including fish, are present upstream of the Thompson pond outlet. The project is to install powered aeration to the Len Thompson Trout Pond. To accomplish this power service is required from Fortis Alberta. After the project is completed, fish will be able to overwinter even in the toughest of years. The aeration equipment is on-site. The Lacombe FGA were unable to install the aeration equipment due to freeze up and delays with obtaining the power required.

Deliverables/Results:

The Lacombe FGA are planning to obtain power supply and install additional 24/7 aeration in the holding pond. They are planning to install the new aeration equipment by September 1, 2015.

The Lacombe FGA also hosts a family fishing day on that site in early June (the 1st Saturday) attended by 300 - 400 people.

Monitoring migratory and breeding birds at Lesser Slave Lake

Lesser Slave Lake Bird Observatory

Grant: $25,750

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: Spring and Fall Migration Monitoring, Monitoring Avian Productivity and Survivorship (MAPS) Program and the Northern Saw-whet Owl Fall Migration Monitoring program. During the three programs, over 2,800 migratory and breeding birds were captured in mist nets where biometric and population demographic information was collected during the banding process. 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 critical changes in their habitats. In addition, LSLBO provided field and

technical support for two collaborative academic research projects on the Canada Warbler to identify key breeding habitat requirements and migratory patterns 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 develop and deliver outdoor education programs that highlight the social, environmental and economic values of Alberta wildlife and to foster environmental stewardship within our students. Through the Boreal Centre for Bird Conservation and our education partners, educators delivered hands-on interactive programs to over 8,000 participants including: LSLBO Banding Lab Tours, school fieldtrips, public outreach programs, special community events and on-line webinars. The goal of the 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 this year on the importance of the boreal forest.

Deliverables/Results:

Successful completion of 2014 Spring and Fall Migration Monitoring Program – 21st consecutive season:

Spring Migration Monitoring began on April 23 and ended on June 10, 2014 for 49 days of migration coverage. During that time we banded 670 birds from 43 species. The weather for the first few weeks was poor with lots of cold weather and excessive amounts of wind. They were unable to set our mistnets for a full days' worth of banding until mid-May. The late spring weather seemed to have affected the migration timing for many species. Several species were noticeably late to arrive while the peak migration for other species was delayed by a week to ten days.

Fall Migration Monitoring began on July 12 and ended on September 30, 2014, for a total of 79 days. Two days were missed during that time due to a staff training workshop at Beaverhill Bird Observatory. Visual counts were conducted each day observers were active and mist-nets were set for 84% of the possible net-hours. Over 65,000 birds representing 127 species were recorded during monitoring activities. Banding totals were slightly above the fall average with 1,873 birds banded representing 55 species.

Successful completion of 2014 MAPS (Monitoring Avian Productivity and Survivorship) Program – 21st consecutive season: MAPS Program was conducted from June 11 to August 2, 2014. The LSLBO operates four MAPS stations which were each visited six times during that time period. It was a great banding season with 327 birds banded and 101 recaptures for a total of 428 breeding birds captured.

Successful completion of 2014 Northern saw-whet owl fall migration monitoring program – 11th consecutive season: Northern saw-whet owl fall migration monitoring was conducted on 45 nights from September 1 to October 22, 2014. A total of 86 northern saw-whet owls were banded; a below average banding season. Two boreal owls were also captured during northern saw-whet owl banding. These were the LSLBO's first boreal owls and represent the 105th species to be banded at the station.

Field support and technical expertise provided to two collaborative research projects on the Canada Warbler: U of A habitat study and the U of Manitoba geolocator project. Technical reports to be completed soon.

The LSLBO was also invited to attend and present their research project at the Canada Warbler Breeding Ground Summit this March in Ottawa.

All migration and MAPS data submitted for analysis and population trend analysis.

Over 270 outdoor education programs delivered to over 8,200 people on Boreal Forest Ecology and the conservation work of the LSBLO, including hands-on curriculum based programs to over 3,500 students, teachers and youth groups; four free public webinars; Summer public banding lab programs twice a week during Fall Migration Monitoring; the 19th Annual Songbird Festival and 10th Annual Bird/Run events (over 225 participants in the weekend events); Enviro-quest Camp, the second year for this highly successful teen science day camp program. Please see the Final ACA Grant report for a full listing.

Over 4,500 visitors came to the Boreal Centre for Bird Conservation to learn about importance of the boreal forest.

2014 LSLBO Annual Report

2014 Summer Warbler Newsletter

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

LSLBO Website: With ACA support, the LSLBO launched a new website that will be more interactive, promote their programs, enable easy postings from the BCBC Facebook page, host their education resources, with online memberships and donations. LSLBO have also been actively using the Boreal Centre for Bird Conservation Facebook page and e-newsletter to promote their programs.

Fishing fun, awareness & education day

Lethbridge Fish and Game Association

Grant: $3,200

Project Code: 020-00-90-207

Project Status: New; Completed

On June 14th, 2014 at Payne Lake 156 youth came together to celebrate an amazing event. The weather was very cold and rainy, but the show went on. Lethbridge Fish and Game Association (LFGA) had many boats in the lake, kids off the shore and on the dock with lines in the water. A total of 28 fish came in, and all were released back into the lake alive after measuring. The catch and release added to the event this year was an amazing touch to the conservation aspect of the event. All of the youth and parents involved were compliant and very helpful. Catch and Release pails with the ACA logo on them were provided to each and every participant, as well as tape measures to every youth to ensure they were bringing in a fish that was of appropriate size to sit in the standings. Every youth in attendance left with a fishing rod, tackle box, tackle or a fish education book. As well as every youth in attendance receiving equipment, a bucket and a tape measure they were all given an "expert fisherman/ woman" test, trout hand out, and a fishing education hand out. 140 tests were handed back in, and then random draw from the tests was held for the prize. The prize was a jumbo tackle box, and a fishing education book. Overall this event was an amazing success. If the weather had been better, more than 300 children were expected, as 212 had pre-registered and only 80 of the preregistered youth showed up.

Deliverables/Results:

156 youth attended the fishing day.

LGFA - Conservation Community and Education Program

Lethbridge Fish and Game Association

Grant: $10,000

Project Code: 002-00-90-217

Project Status: Previously funded by the Recruitment and Retention Fund; Completed

Lethbridge Fish and Game Association (LFGA) shotgun and rifle programs are designed to encourage youth and adults to get to enjoy the outdoors, to respect rules and to value nature. Parents or guardians are required to accompany the youth so the impact of the program affects whole families. The majority of the participants are urban individuals of all age groups. These programs provide educational support and practice for first time hunters. The financial support and volunteer time means that we can provide an outdoor experience, firearms, ammunition and targets so that all local families can enjoy an introduction to a sport without any cost. Low-income families are further subsidized to encourage participation. All of the LFGA programs are managed and operated by volunteers. In addition, the Shooting Sports Facility is completely supported through the efforts of over 1,100 volunteer Range Officers, 20 volunteers who look after range and hut maintenance, a volunteer Range Operator and his volunteer assistant.

Deliverables/Results:

Junior and First Time Trap: program ran for eight weeks starting on April 18. Participants were coached shooting trap after being familiarized with the various guns, safety and rules of the game of trap. Six participants were involved in this activity.

Junior Shotgun (Ages 12 to 17): This program lasted for five weeks and started on April 28. Participants were provided with an introduction including range rules, safety, eye dominance, gun mount, leads on birds and foot positioning. This program focused on skeet, trap and five stand with 12 participants participating. Four volunteers coached and managed this program.

Intermediate Shotgun: This program lasted for five weeks and started on May 2. Participants were provided with intermediate level coaching. This program focused on skeet, trap and five stand with 12 participants participating. Four volunteers coached and managed this program.

Ladies Introduction to Shotgun: This program was five weeks in duration and ran on Wednesdays starting April 29. Participants were coached shooting trap after being familiarized with the various guns, safety and rules of the game of trap with ten participants. Four volunteers coached and managed this program.

The members of Pheasants Forever and LFGA organize the Junior and First time Pheasant Mentored Hunt: Organized by 17 volunteers from the LFGA and the Lethbridge Pheasants Forever Board along with Darren Mazuntinic and his family. The event was held on October 17 in conjunction with the Taber Pheasant Festival on family land controlled by Darren Mazuntinic. Participants ranged from individuals with experience from the LFGA shotgun programs mentioned above to other individuals who were referred by the organizers of the other Taber Pheasant Festival mentored hunts and the Lethbridge College environmental programs. There were 20 participants and 17 volunteers. The participants went on least three mentored hunts with 100 birds provided and released birds by Darren and his family.

Linden Fishing Derby

Linden Citizen Advisory Group Society

Grant: $3,000

Project Code: 020-00-90-206

Project Status: New; Completed

A one-day event with the goal of instilling the love and respect of fishing and the great outdoors was held! The Linden Coulee Pond was stocked with 350 rainbow trout, the fish were given a good part of the season to grow and flourish in the pond. This one day event consisted of 14 participants fishing; prizes were awarded for the largest fish and the smallest fish in each age category. One larger prize (A BBQ) was given across all age categories for the most fish caught. Bait was not permitted and all hooks had to be barbless. Catch and release practices were enforced. The importance of respecting the fish was the primary focus of the day. Participants were taught the method of fishing that is the most respectful – fish weren't weighed with scales that hang them by the mouth, fish weren't left out of the water for long periods of time and as stated above bait and barbed hooks were not permitted. It was planned that in addition to the fishing; the love and knowledge of fly fishing would be fostered. Free fly fishing lessons was supposed to be offered and free fly tying demonstrations was planned, unfortunately at the last minute the volunteer was not able to make it so this part of the plan was not executed. The volunteer did spend a great amount of time preparing for the days teaching prior to the event, which made it even more unfortunate he was not able to make it. As a substitute there were volunteers on hand to teach those that desired to learn how to use a spinning rod (casting, knot tying etc.). Finally a free lunch was provided for each participant. General community members were also invited to partake in the free lunch, this increased the exposure of the fishing derby. There was no charge to enter this event and borrowing of fishing equipment was made available – all barriers to participation that existed were removed.

Deliverables/Results:

The one day event consisted of 14 participants fishing at the Linden Coulee Pond.

Change the mindset of individuals and to showcase the beautiful resource in Linden (Linden Coulee Park) - A formal survey was not conducted, but volunteers did informally discuss the day with participants. 100% of those that attended were satisfied with the event and commented how beautiful the park was and how much they'd learned about respectful fishing. Village staff and event volunteer organizers have been and will continue to keenly observe the amount the coulee park is used now that the fishing derby is complete. It is impossible to keep hard stats on this because of the nature of the park (individuals can use this resource whenever they would like for no charge); however keen observation can give a good idea if the rate of use increases after this event.

Habitat enhancement project #1 (nest boxes)

Lone Pine Farming Inc.

Grant: $1,560

Project Code: 030-00-90-239

Project Status: Funded in 2012-13; Completed

Lone Pine Farming with assistance from ACA has successfully completed over 60 cedar birdhouses and placed them on native grassland habitat in the County of Stettler. Nesting shelves or platforms have also been provided where habitat was not suitable for roosting or nesting.

Deliverables/Results:

Between June and July 2014, Lone Pine Farming installed 60 cedar birdhouses, despite the late placement of the birdhouses, many showed signs of usage by house wrens, tree swallows and blue birds right after the boxes had been placed. Nesting structures for hawks etc. have been installed where trees have been removed due to agricultural activities or where trees are not abundant.

Continuing club activities in Magrath and surrounding area

Magrath Rod and Gun Club

Grant: $2,000

Project Code: 002-00-90-228

Project Status: Previously funded by R&R Fund; Completed?

Magrath Rod and Gun Club owns 42 acres of creek bottom land immediately adjacent to the town of Magrath. In the last year we have been involved in the construction of a nature trail through the property in an effort to educate our community in conservation issues and give people an opportunity to experience an untouched prairie ecosystem. The club also maintains and operates an approved gun range, focusing on teaching the safe use and handling of firearms and also education in small bore firearms. The club organizes a Fun Fish Day every year in which over 100 children and their families come and play, meet with local conservation officers and learn about fishing. The club is involved in shot gun training, and has recently purchased archery gear in an effort to educate novice archers.

Deliverables/Results:

At the time of writing this report, the final report had not yet been received.

MD of Taber Oldman River Boat Launch

MD of Taber

Grant: $15,000

Project Code: 020-00-90-208

Project Status: New; Completed

The Municipal District of Taber (MD of Taber) proposed to develop a public boat launch approximately one mile north of the Town of Taber on the Oldman River. The boat launch now approved by AESRD will enhance access to the river for fishing, hunting, recreational boating, the RCMP, and the MD of Taber Fire and Rescue first responders. The boat launch will provide a convenient and safe means to launch watercraft for area residents. As well, having a dedicated boat launch at this location will discourage random launching at multiple locations within the MD of Taber, a potential source of damage to the riparian zone of the river valley. The preferred launch site was chosen for several reasons, firstly because of its proximity to the Town of Taber. As well, the launch site will be located on an MD of Taber undeveloped road allowance (SW 18-10-16-W4) and is supported by an Alberta Transportation owned access trail and parking area. Construction would occur at low flow water conditions in the fall of 2014. Once constructed, the MD of Taber will assume responsibility for maintenance of the access road, parking area, and boat launch. The MD of Taber requested the ACA grant to purchase pre-cast concrete boat launch pads. These have been purchased and were delivered to the boat launch site. The MD of Taber will be using their own construction forces to construct the boat launch. To this point the launch has not been completed. Alberta Transportation is proposing to undertake some erosion control work on the bridge immediately upstream of the boat launch site. This will likely involve large volumes of rip rap rock installed to stabilize the bridge abutment on the north side of the river. The MD is waiting to complete the construction of the boat launch until the erosion control work is completed on the bridge as it is uncertain how this work will influence the flow of the river. Once the Alberta Transportation work on the bridge is completed, MD of Taber will construct the boat launch.

Deliverables/Results:

All regulatory requirements fulfilled.

Boat launch pads as funded by ACA grant purchased and located on site awaiting installation.

Construction to take place late summer/ fall 2015 at low river flow conditions.

Riparian area management improvements fund

Mountain View County

Grant: $20,000

Project Code: 015-00-90-102

Project Status: Funded since 2005-06; Completed

Mountain View County (MVC) has been in partnership with ACA since 2000 and has received an ACA grant for the last ten years in support of MVC's Riparian Area Management Improvements Program with over 150 projects being funded. Funding is offered to producers who want to protect or restore 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 up to 100% of the material costs for fence building, a creek crossing, native plant seeds and trees and up to 25% of an off-site watering system. The County puts out a call for applications in the Mountain View Gazette, and on the County website. All projects are rated 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. 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 in five years, once their contract commitments are completed and improvements are consistently documented speaking to the program's success. The contract with the County also allows the site to be used for demonstration purposes and signage to be posted. 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, water quality, native plant life, wildlife habitat, fish distribution and population. This past year there were sixteen projects that were funded by MVC's Riparian Area Management Improvements program. Funded projects included nine fencing projects and seven off-site watering systems. The total area surrounding water bodies that has been fenced off this year is 49 hectares with the total length of newly installed riparian fence being 6.16 kms. This results in twelve more producers who are aware of the importance of beneficial management practices and sustainable agriculture.

Deliverables/Results:

This past year there were sixteen projects that were funded by the Riparian Area Management Improvements program. Funded projects included nine fencing projects and seven off-site watering systems. The total area surrounding water bodies that has been fenced off this year is 49 hectares with the total length of newly installed riparian fence being 6.16 kms. This results in twelve more producers (four producers completed two projects) who are aware of the importance of beneficial management practices and sustainable agriculture. With the mild winter, projects were able to be drawn out longer than in previous years which assisted in more projects being completed. Focusing on specific watersheds has become an important aspect of the program and MVC will continue to build on this momentum in the coming year.

Profile sheets have been completed for each project and available upon request.

Riparian Health Assessments on 2014/15 projects are completed and available.

Two presentations have been completed at Olds College this year highlighting MVC's Riparian Management Improvements Program and a presentation was also made in Acme at an Alberta Phosphorus Project landowner meeting.

Five five-year follow-up RHI's were completed by Cows & Fish along Eagle Creek and a landowner meeting is being hosted this April to showcase overall results and encourage continued participation.

Each applicant has signed a contract with the County stating their project area is available for tours and signs may be posted.

Hiller's Dam floating island project

Mountain View County

Grant: $24,000

Project Code: 020-00-90-216

Project Status: New; Completed

Hiller's Dam is a public day use area owned by Mountain View County (MVC); donated by a community member in 1969. The Hiller's Reservoir habitat is 54 acres, 23 acres of which are water and 31 acres of short prairie grassland. Every year the dam is stocked with approximately 10,000 rainbow trout. Residents from all over Alberta come to Hiller's Dam to fish. Hiller's Dam is listed on Alberta's Fish Stocking Program and in the Alberta Guide to Sport Fishing Regulations. The dam is fairly shallow (9ft), and during hot summers is prone to algae blooms resulting in high fish mortality rates on the dam due to reduced oxygen levels, MVC are hoping to decrease these issues by the installation of floating islands. The Hiller's Dam Enhancement Project includes the installation of six floating islands (two clusters of three islands) and an aerator, as well as the upgrade of an existing aerator. The islands are made from 100% recycled plastic, which is bonded together with foam. The floating islands have been planted with a mixture of native grasses, and wetland plants like sedges, rushes and willows sourced locally. These plants, along with the microbes present, will help to absorb sediments and take up nutrients like phosphates, nitrates, ammonia, heavy metals and other pollutants in the dam with their exposed roots. The size of the islands all together totals about 436 ft^2. The floating islands are being installed to improve the fish habitat, create more riparian habitat, increase biodiversity and improve the water quality of the dam; imitating a natural wetland but with significantly more surface area. The floating islands were delivered, planted, launched and anchored the second week of June, followed by monitoring throughout the summer. Aeration is also now in place under each cluster of islands and baseline water testing has been completed to enable water quality monitoring in the coming years. The islands have already become a favourite resting spot for the local waterfowl and are offering shade to fish in the dam. Blue herons, pelicans, geese and numerous ducks have been spotted regularly enjoying the area and anglers are enjoying the fishing opportunities. Over the years MVC have worked with landowners upstream of Hiller's Dam on protecting and improving their riparian areas, this is a continuation of those efforts; ultimately this is creating an opportunity for education and community collaboration to make a difference in the local watershed.

Deliverables/Results:

The floating islands were delivered, planted, launched and anchored the second week of June, followed by monitoring throughout the summer. Bacteria have begun to form a biofilm on the submerged surface area of the islands and among the roots and rhizomes of the plants. The existing aerator has been upgraded and one three island cluster is placed above it in a central location. An additional new solar aerator was purchased and is installed under the other three island cluster near the inlet of the dam.

The islands have already enhanced the fish and wildlife habitat at Hiller's Dam and MVC look forward to their impact increasing over the coming years; directly on the water quality and also indirectly as the community is inspired to make this project their own.

Olds College, Alberta Agriculture & Rural Development and Agriculture and Agri-Food Canada have been supportive in this project and it has been an excellent opportunity to learn, collaborate and build relationships for future opportunities.

Upstream landowner visits were completed at the end of June providing information on the islands and the initiative to improve the water quality and wildlife habitat of Hiller's Dam. Educational material from Cows & Fish was given out specific to the management of riparian areas in and around cropland. In speaking with local landowners they have expressed their appreciation for the efforts being taken to improve the water quality at the dam and are eager to look at their own management practices to see what they are able to contribute to the success of this initiative; ultimately this is creating an opportunity for education and community collaboration to make a difference in the local watershed. Education and Community Engagement were not initially listed as primary objectives for the project but both have become important components of this project.

The funding MVC have available through their Riparian Area Management Improvements Fund, also funded by ACA, was offered to landowners interested in completing projects on their own land to protect the watershed of Hiller's Dam.

An article was in the local paper in June describing the floating islands and their purpose. Another article will go out in the local paper this

coming year, encouraging people to view the islands at Hiller's Dam and describing the progress over the past year. MVC will also update their website to provide information on the project. An interpretive project sign will be posted at Hiller's Dam this spring providing information on the area, wildlife, waterfowl and fish present at the dam and details on the islands and their water quality benefits.

Fisheries habitat improvements in the Sturgeon River Watershed

NAIT

Grant: $26,070

Project Code: 020-00-90-204

Project Status: Funded since 2010-11; Completed

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

In 2013, the Sturgeon River Research Project (SRRP) initiated a project to support restoration initiatives in the Sturgeon River Watershed during 2013-2015. The primary goal was to implement and test restoration strategies to support the development of restoration guidelines for river buffer restoration projects specific to our bioregion. The key objectives of this portion of the project were to: 1) develop, implement, and assess guidelines for restoring river buffers and adjacent riparian habitats; 2) engage stakeholders in restoration (planting and bank stabilization) of rural and urban riparian habitat with native plant species, especially at sites identified in 2010-2013 field seasons; 3) provide off-stream watering demonstrations and technical assistance for livestock producers to adopt this technology, to help protect/restore riparian areas; 4) 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 5) involve NAIT students, research staff, and the community in assessing water quality, aquatic biodiversity, and riparian health at 23 permanent sampling sites throughout the watershed, and at the restoration sites. Over the past two years, the project has planted over 6,000 stems, restored approx. 2.6 ha of river buffer, and involved 632 volunteers (2,687 volunteer hrs.) at 31 restoration events. Assessment of plant establishment and survival this spring will help to determine survival rates of native species, and to assess effectiveness of different planting methodologies. Preliminary results suggest that planting high density smaller islands of trees and shrubs makes invasive species management more achievable. More disperse planting makes weed management a challenge. NAIT also assessed whether the use of municipal compost at some sites resulted in better plant survival. Approximately 500 m of regular fencing and 500 m of electric fencing were installed at two properties to protect restored river buffers from livestock, and off-stream watering technology was shared and demonstrated. Thirty-six RHA's were conducted in conjunction with landowners to support future assessment of improved best management practices. Water quality sampling continues to show high nutrient levels throughout the watershed.

Deliverables/Results:

Summary report of water quality and biodiversity data collected 2010-2014, to be included in the future development of a Watershed Management Plan and used for assessment of trends in the watershed; Data collected in 2014 are being analyzed and incorporated with the 2010-2013 data. Summary report completed June 2015.

Riparian health assessments to monitor progress and effectiveness of restoration activities, including off stream watering and bank revegetation and reclamation, and to help facilitate planning to support best management practices by communities and land owners: 36 riparian health assessments are completed (including 23 long term sites, restoration sites, and along Carrot Creek). Data has been summarized and will be included in the final report, June 2015.

31 planting events throughout the watershed (12 school groups, 19 community/youth groups), which also included an education component focusing on watershed health issues and solutions;

Evaluation of establishment success of native vegetation mixes at the planting sites, at end of growing season: Survival rates to be further assessed spring 2015 and to be included in final report, June 2015.

Implementation of two off-stream livestock watering and habitat restoration demonstration sites by landowners to showcase and foster interest in implementing these best management practices; completed summer 2014.

Assessing the State of Bird Conservation in Alberta

Nature Alberta

Grant: $8,000

Project Code: 030-00-90-243

Project Status: Nature Alberta bird projects have been funded 2003-04; 2006-07 and since 2009-10 (except 2012-13); Completed

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

The goal of this project was to gain a better understanding of what bird conservation work is being conducted in Alberta; who is conducting it, what priority species and areas are they working in; and who are they collaborating with. This information in turn would help Nature Alberta (NA) better define its own niche in its bird conservation programming, as well as how it can better support other initiatives that contribute to effective bird conservation in Alberta. To do this, NA conducted an internet search to identify a number of bird conservation organizations working in Alberta. NA then contacted those agencies and asked them to complete an online survey about their work. A number of these agencies were then invited to a spring 2014 workshop. At this workshop, information was shared about some of the various agencies and their work. NA also discussed as a group what the priority species and issues are, and how we can collaborate more effectively in the future. Results from all of the above activities were compiled into a report: *The State of Bird Conservation in Alberta.* A finding from the report is that, while there are a good number of bird conservation agencies working in Alberta, there is not necessarily good communication between such efforts. Hence, the report contains a number of recommendations directed at NA to increase its communications / education and outreach role to build a stronger network between agencies; as well as to build a stronger bridge between amateur/citizen scientists and researchers/ conservation agencies. Report recommendations will form the basis of NA's future bird conservation programming. As well, NA hope other agencies will find it of value.

Deliverables/Results:

A list of bird conservation agencies and initiatives in Alberta – completed.

An online survey – completed.

A report that includes the results of the survey and of the one-day workshop: "The State of Bird Conservation in Alberta: A look at who is doing what and the role of Nature Alberta" Nature Alberta Bird Conservation Program. 41 pp.

A report on the state of Alberta's IBA sites – completed.

A list of prioritized recommendations for future bird conservation work in Alberta – completed and included in the Recommendations/ Conclusion section of The State of Bird Conservation in Alberta report.

NA is now using the recommendations in the reports to inform their 2015-16 bird conservation program planning. The number of agencies identified was a bit of a surprise (there is a lot going on!). However, the lack of communication and organization between agencies such that there is a cohesive adaptive management framework for bird conservation in Alberta was a bit disappointing! Fortunately, NA can play a role in trying to build these bridges and a stronger bird conservation network in the future.

Expanding the Young Naturalist Club Program in Alberta

Nature Alberta

Grant: $25,000

Project Code: 002-00-90-225

Project Status: Previously Funded by the R&R fund; Completed

Project website: naturealberta.ca/nature-kids/young-naturalists-club

The goal of Nature Alberta's Young Naturalist Club (YNC) program is to develop knowledgeable families with a passion for natural history such that the next generation of naturalists are willing and prepared to take action on behalf of the environment. In the past, the YNC has been successful in engaging families in the Greater Edmonton area in outdoor learning activities through a variety of means including observations, scientific investigation, environmental stewardship, and healthy living. Going forward, the specific goal of the 2014-15 project was to expand the reach of the YNC to more families and more communities in Alberta. Nature Alberta aimed to achieve this goal by (1) continuing to support existing chapters with programming and in expanding their own membership (2) facilitating the creation of new chapters in areas of the province not yet served by an existing YNC, and (3) attending public outreach events province-wide to promote the program and conservation in general. In 2014- 15, to support existing clubs and members, Nature Alberta provided resources and ideas to existing club leaders to enrich the established YNC programming; organized monthly Explorer Days and six Family Nature Nights in Edmonton; developed the "Explorer Day in a Box" and other materials for YNC leaders; continued to promote a "badge and workbook" program and produced and distributed the e-Magazine NatureWILD. Nature Alberta also worked to create new chapters in the province by meeting with potential local leaders and discussing administrative details and providing encouragement. Lastly, Nature Alberta participated with other partners in outreach events like Tree Fest, World Snow Day, and the Snow Goose Chase to promote the YNC program and conservation awareness in general. Overall, Nature Alberta have increased the membership in the program and are reaching more Alberta families, and encouraging a new love of nature in children and parents alike.

Deliverables/Results:

Explorer Days are two hour events that occur on a monthly basis for YNC members. In 2014-15 YNC members attended Explorer Days around the province such as: World Snow Day with the Strathcona Wilderness Center, Animal Tracking Day with the ABMI, Community Gardening with the University of Alberta Sustain SU, an insect and spider exhibit at the Royal Alberta Museum, a tour of City of Edmonton's Waste Management Centre of Excellence, a day of ice-fishing in the Morinville area, a fieldtrip to the Discovery Wildlife Park, several shoreline clean-ups, at talk on beavers at Police Point Park, several Christmas bird surveys and more. Attendance to these events ranged from two to ten families (~ 6-30 participants).

Family Nature Nights are a summer series of events that occur at different venues around the Edmonton Area in collaboration with the City of Edmonton and the Alberta Science Network. This year Nature Alberta were able to reach over 300 participants, with an average of 15 families (~45 participants) attending each of six events. Nature Alberta were assisted by over 50 volunteers. In response to surveys that were distributed, 96% of respondents were either satisfied or extremely satisfied with the topics (wetlands, birds, insects, naturalization, tree-planting, mammals), quality of station activities, and the overall programming.

Bird and bat houses were constructed by Nature Alberta Staff and volunteers and are currently being distributed to a number of individual families and organizations including the Beaverhill Bird Observatory, Ellis Bird Farm, and the Alberta Biodiversity Monitoring Institute to be set up for use in the spring. The upcoming Snow Goose Chase has seen YNC families engaged in putting up next boxes for the past several years, providing a great opportunity to discuss habitat needs and bird conservation.

YNC staff and local leaders have attended/manned booths at numerous community events to promote the YNC program including City of Edmonton Root for Trees Tree Fest, St. Albert Botanic Garden Picnic in the Park, Edmonton International Migratory Bird Day, Calgary Dalhousie Farmers Market, Grande Prairie Farmers Market, Grande Prairie Swan Festival, Tofield Snow Goose Chase, World Water Day at Medicine Hat Library, etc.

YNC staff attended two farmers' markets, one each in Grande Prairie and Calgary, where they promoted the program, handing out letters to community members interested in leading a local chapter. YNC summer staff also contacted by phone 28 naturalist organizations in 17 Alberta communities to solicit local chapter leaders. Staff also travelled to meet with interested parties (Nature Calgary, Alberta Wilderness Association, Grassland Naturalists, etc.) to discuss program details further. Grasslands Naturalists in Medicine Hat were keen but concerned about liability issues. In the end, they partnered with the local college and have successfully held a number of events. In Calgary, the Calgary Naturalists were approached but again, have been cautious about adding a children's element to their programming. Fortunately, they too, may partner with the Alberta Wilderness Association, who have also shown an interest in the YNC. After initial enquiry and several phone calls/emails, staff and the Nature Alberta president travelled to the Buffalo Lake Metis Settlement to help this group discuss a YNC program for their community. Organizations in Slave Lake, Grande Prairie and Lloydminster have also responded with interest. The current status for each of these pending new chapters is deciding on the more administrative aspects of starting each club including leadership roles, and potential collaborations with other nature related organizations. Talks are ongoing, and Nature Alberta are hopeful that they will be successful in establishing these chapters in the future.

Nature Alberta have continued supporting YNC chapters by supplying supplies, information, and resources like the "Explorer Day in a Box" initiative which allows for leaders to request an entire Explorer Days' worth of planned activities from a database of compiled activity topics. Morinville, Lakeland, Red Deer, Camrose and Edmonton YNC chapters have been active in the presentation and evaluation of Explorer Days. Staff also compiled a list of 2014 potential events for leaders based on their location in Alberta (North, South, Edmonton, Calgary). Active clubs share news and resources online via the Nature Alberta website

(Youth page and blog) and local club Facebook pages. Nature Alberta continues to encourage kids to undertake nature-related activities via the magazine and the workbook and badge program.

Living By Water Project Program 2014

Nature Alberta

Grant: $27,288

Project Code: 015-00-90-129

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

Project website: www.naturealberta.ca/programs/living-by-water

The goal of the Living by Water program is to promote healthy shoreline communities that maintain and enhance the recreational and environmental integrity of Alberta's shorelines. The main objective of the project is to educate and provide support to shoreline residents to increase the number of shoreline best management practices they are adopting. This is done primarily through one-on-one homesite consultations where a trained shoreline advisor makes a free visit to a resident's property. During this visit, the shoreline advisor collects information about the property and points out best management practices that could be adopted. After the visit, a report and timeline based on the findings at the property is created and delivered to the property owner. Two years after their initial consultation, homeowners are encouraged to participate in a follow up consultation which helps the program monitor any changes that have occurred on the property and provides an opportunity for the property owners to ask further questions. The program also performs education and outreach events to shoreline communities. This allows us to present to a larger number of people with less in depth information concerning shoreline health. This method also allows us to inspire residents to participate in the homesite consultation program. This year the project performed 87 initial consultations and reports, with an additional 25 follow up consultations. Living by water staff also performed 15 presentations at community events, three community workshops and three urban workshops. The 112 follow ups that have been performed by the program over the last seven years have provided us with the following insights about the success of the program. The program has witnessed a 39% decrease in the number of properties that were using fertilizer, a 47% decrease in the number of properties using pesticides, a 25% increase in the number of households using phosphate-free soaps and cleaners, a 17% decrease in the amount of grassed areas, a 13% increase in sparsely vegetated areas, a 24% increase in shorelines with clumped shrubs and trees and a 21% increase in the number of densely vegetated shorelines.

Deliverables/Results:

87 Initial homesite consultations were completed at 12 lakes throughout Alberta. Participating lakes included: Pigeon Lake, Sylvan Lake, Wizard Lake, Crimson Lake, Lake Isle, Island Lake, Gull Lake, Lac St. Anne, Lesser Slave Lake, Island Lake, Jackfish Lake, Hubbles Lake, and Buffalo Lake.

25 Follow up consultations were completed.

The project was extended to the following lakes: Jackfish Lake (six Consultations and reports have been completed); Hubbles Lake (seven Consultations have been completed); and Buffalo Lake (one Consultation has been completed at Buffalo Lake).

15 presentations done at shoreline community events. Three community workshops for stewardship groups and community members completed at: Migratory Bird Day; Pigeon Lake Homesite Consultation Training Day; and Pigeon Lake Love the Lake Day.

Winner 2015 Emerald Award:
www.youtube.com/watch?v=YnJInwDq4ck&feature=youtu.be

Urban workshops focusing on urban stormwater lakes were completed at: Woodbridge StormWater Pond (Communitea); Secord Wetland (FNN); and Beaumaris Lake Shoreline Day. Nature Alberta joined a Committee with focus on urban stormwater: Pigeon Lake Watershed Management Plan Steering Committee.

The feedback received from homeowners, communities and lake stewardship groups was positive. The results from the follow up consultations continued to show that shoreline best management practices are being adopted. One unexpected result that could be indirectly related with the amount of education and outreach provided at Pigeon Lake was the implementation of a bylaw that bans the use of lawn fertilizers and pesticides at the summer village of Grandview.

Conserving and restoring Arctic graying in the Upper Pembina River watershed - habitat restoration planning

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chapter

Grant: $11,500

Project Code: 020-00-90-197

Project Status: Funded since 2012-13; Completed

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

The 2014 volunteer initiative was year four of a five year project. Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton (NLFT/TUEdmonton) built upon previous work on streams identified in 2011 - 2013 as having particular conservation value for local Arctic grayling populations (i.e., currently support remnant populations, and/or suitable habitat). This includes Dismal Creek and Rat Creek, which historically provided high-quality sport fishing for Central Alberta residents. As part of the five-year plan, NLFT/TUEdmonton will assess the feasibility, and value to the fishery of habitat and fish population restoration opportunities, and conservation strategies and will continue to expand current baseline data on Arctic grayling distribution, abundance, and habitat quality (programs initiated in 2011). Efforts included angling, snorkeling, and water temperature monitoring (data loggers). NLFT/TUEdmonton continued, and expanded, the Arctic grayling conservation signage program to several backcountry stream crossings/access points. An information pamphlet was developed outlining the need for conservation efforts and awareness for distribution to oil/gas and forest industry operators. As a new initiative (deferred from 2013) trained volunteers assessed fish passage and erosion/sedimentation conditions at stream crossings on Dismal Creek using the Alberta Stream Crossing Assessment Protocol. NLFT/TUEdmonton employed the turbidity meter purchased through the 2013 ACA grant to characterize the sediment regimes in study area streams. All data is being forwarded to AESRD as a contribution to a future conservation and management strategy for the watershed. Recognition of the previous phases of this initiative helped the club win the National Recreational Fisheries Award from the Department of Fisheries and Oceans in 2013.

Deliverables/Results:

Volunteer angling effort in 2014 was substantial and achieved similar CPUE values allowing the project team to confirm previous-year's conclusions regarding the diminished status of Arctic grayling in the upper Pembina River watershed. Volunteer anglers contributed 66 angler-days totaling 792 hours of effort (angling and travel time).

Volunteer angling data, including Arctic grayling length and weight, was entered into the provincial FWMIS data base.

Water temperature data from 2011 – 2014 was provided to NAIT students (Biological Sciences program), for correlation with air temperature data as part of a modelling exercise with possible applicability to predicting the effects of Climate Change on ARGR populations in the upper Pembina River watershed, and beyond. NAIT students also participated in the removal of temperature data loggers and volunteer angling.

Representative turbidity readings in the study area over the open water season indicated that Dismal Creek is unique (i.e., maintained significantly higher water clarity than other tributaries). In contrast, a series of elevated turbidity readings were recorded in Bigoray River during the summer. This stream supported Arctic grayling in the 1960's, but is currently an extirpated population. In addition to the high turbidity levels, low stream flows and elevated water temperatures were evident.

As part of project crossing assessment, a project volunteer noted erosion-sedimentation issues at two bridges on Dismal Creek. These crossings were being used by DeeThree Exploration Ltd, as well as other oil & gas drilling firms. NLFT/TUC contacted their HSE Manager in hopes of getting the sites stabilized. The company explained that DeeThree leases the bridges from a forestry company and followed up with them to no avail. Unable to get them involved DeeThree arranged to install new bridge decks (above the old ones) and carry out road grading and effective sediment control methods.

During the 2014 field season AESRD/Edson made a major commitment to the Pembina River Arctic grayling project by allocating field staff to a comprehensive sampling program in the area. NLFT/TUEdmonton worked closely with the government staff to ensure to optimize sampling coverage. Based on a preliminary review of the AESRD data it appears that their results confirm that Arctic grayling populations in the upper Pembina River are in a collapsed state.

Signage that was deployed was is effective in increasing awareness of the conservation issues. Several people commented on the signage and were engaged in conversation.

Confirmation that grayling no longer inhabit many formerly occupied streams/reaches in the Upper Pembina River watershed. Confirmation of the presence of localized, remnant populations in Dismal Creek and Rat Creek. NLFT/TUEdmonton volunteers confirmed in 2014 that Arctic grayling still inhabit Nelson Creek although population status remains uncertain.

Water temperatures during the summer months appeared to be unsuitable for grayling in many streams/reaches, particularly low-gradient, low elevation settings. Water temperatures in Dismal Creek were consistently lower than other tributaries and remained within the preferred temperature range for Arctic grayling throughout the season. This was also the case in 2011, 2012, and 2013. Temperatures in the upper reaches of main Pembina River were also suitable over the summer period.

As in previous years, water abstraction for road maintenance and oil & gas purposes (e.g., fracking) was common in the study area.

Completed angler catch forms, habitat descriptions, site coordinates (UTM's) and water temperature data was forwarded (remaining documents to be forwarded by April 15, 2014) to AESRD for detailed analyses and reporting.

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

Tables/spread sheets were created indicating location of conservation signage, and stream crossing data.

PowerPoint presentation of key project findings was presented at the NLFT/TUEdmonton meeting in April, 2015.

A lead article was published in *Currents Newsletter* published by Trout Unlimited Canada in and nationally distributed in *FlyFusion* Magazine.

Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat

Oldman Watershed Council

Grant: $14,240

Project Code: 015-00-90-222

Project Status: New; Completed

The Oldman Watershed Council's (OWC) 'Linear Features Classification in the Oldman Headwaters project' is an essential prerequisite step that will assist the OWC, in alignment with South Saskatchewan Regional Plan (SSRP) sub-regional planning initiatives, to develop a method of prioritization of linear features for reclamation/roll-back in the Oldman headwaters in order to maintain and protect headwaters and source waters values, including key species at risk. The key goal of the Linear Features Classification Project is to work towards reducing linear features density in 4th order sub-watersheds in the Oldman headwaters region. The project was deemed a priority project of the Headwaters Action Plan 2013-14, a multi-stakeholder endorsed plan to address headwaters issues, including cumulative effects on grizzly bear, westslope cutthroat trout and bull trout habitat and population persistence. The main activities of the project included the development of a linear feature field assessment protocol; a field assessment of linear features in the Dutch Creek sub-watershed in the upper Oldman River system; data collection and organization; final report on linear feature classification outcomes; and recommendations for improvement of the linear feature assessment protocol. The project was developed with input from SSRP Linear Footprint Management Plan sub-regional initiative and the data and final report shared to provide assistance to that initiative.

Deliverables/Results:

A detailed linear feature inventory and assessment in the Dutch Creek sub-watershed, upper Oldman watershed. The field work to classify and analyze linear features, and determine reclamation priorities was completed, and the report and data provided in December 2014.

A reproducible field-based linear feature classification assessment protocol, developed with the input of partners and the SSRP Linear Footprint Management Plan.

640 GPS waypoints were collected; 232 water courses and 164 kilometres of linear features were mapped and classified according to the field assessment card.

Intensity and type of use was documented: 75% were actively used; 65% of total linear features mapped were used by off-road vehicles.

Linear feature density in the Dutch Creek sub-watershed was calculated to be 1.09/km/km2. This is a high pressure rating as bull trout populations are shown to decline at 0.87 km/km2 (Fiera; 2014). The linear feature density calculation is an underestimation as some linear features were not mapped due to safety and access concerns.

Almost 80% of stream crossings were unregulated fords.

There is a high density of ford crossings on active features at the west end of the catchment, which overlaps with 70% of key bull trout spawning surveyed by AESRD in 2012.

Most segments were classified as stable (compact), and the density of eroded features is 0.18 km/km2. However, changes to road surfaces will inherently change the drainage patterns in the watershed, and for this reason, the overall high feature density makes Dutch Creek an area of management concern.

Many eroded segments have a high density of unregulated ford crossings. About 37% of ford crossings in Dutch Creek have fine substrate, which is easily mobilized when disturbed. This is problematic as unregulated ford crossings can cause further erosion around banks, and the sedimentation will degrade bull trout spawning habitats downstream.

The 4th order sub-watershed was selected through a Criteria review process with the multi-stakeholder Headwaters Action Team – and Dutch Creek was the priority site for initial work of the Headwaters Action Plan priority actions.

The Headwaters Action Team and the project team were engaged in the development of the linear features assessment protocol (August 2014). Review of the final assessment card was given approval for the field work (early September 2014).

Data was mapped and presented in a user-friendly format for communication to the public and stakeholders. Next steps on working with the outcomes will be agreed upon by the Headwaters Action Team in alignment with the SSRP Linear Footprint Management Plan and the Recreation Management Plan.

The outcomes of the project have been shared – with the public through presentations, OWC Blog, workshops, and the OWC website. The report and data have also been shared with SSRP planners.

Owl River Metis Local #1949 - Canadian Firearm Safety Course

Owl River Metis Local #1949

Grant: $1,500

Project Code: 002-00-90-227

Project Status: Trappers course funded by R&R in 2013-14; Completed

Owl River Métis Local #1949 (ORML1949) is a non-profit organization based out of Lac La Biche, Alberta, operating under the Métis Nation of Alberta Association, Region 1. ORML1949 objective is to facilitate a Canadian Firearm Safety Course (CFSC) in Lac La Biche open to members of the community at an affordable rate. The focus, as with the previously run Trappers Course, is to encourage emerging youth and women traditional resource users, but the course will be open to all in order to fill the course entirely. The tangible deliverables consists of individuals within the community gaining the knowledge and skill (as well as the legal requirements) related to guns safety and ownership for the purpose of hunting and trapping. The Course encouraged traditional practices and lawful safe use of firearms for recreational purposes in hunting and trapping and will be open to both Métis and non- Métis members of the community. The goal was to have at least ten Métis members of the community enroll into the course and whatever seats are left (up to 20) open to general enrollment for other members of the community. In total 17 individuals successfully passed.

Deliverables/Results:

ORML 1949 facilitated a Canadian Firearms Safety Course within Lac La Biche on May 4, 2014 using local CFSC instructors at the Lac La Biche Elk Hall. 17 individuals successfully passed and qualified for their Possession and Acquisition License (PAL). 100% of student attendees were of Métis heritage.

ACA Parkland youth multimedia project

Parkland School Division #70

Grant: $13,000

Project Code: 002-00-90-212

Project Status: New; Completed

The ACA Parkland youth multimedia project was launched in 2014-2015 through the Recreation Environmental Wellness Course at three school communities in Parkland County: Duffield, High Park, and Stony Plain Central School. This project worked to develop relationships between Grade 7-9 students and environmental partners within the local area and province in hopes of inspiring students to understand the complexity surrounding conservation and environmental education and to take action on this learning. Through a series of three formation outdoor education experiences and in-school classroom instruction, students participated in activities, workshops, and lectures related to wetlands, wildlife, municipal planning, and the environment's role in human health. These concepts were then transferred into a wide-variety of projects, chosen by the student leaders, and shared with multiple stakeholders in the school and local communities including the Board of Trustees, Shaping the Future Wellness Conference, the Town of Stony Plain Council, and Parkland County Council. Many of the teachings shared by members of AESRD, ACA, and other environmental experts were moved directly into the Environmental Stewardship projects undertaken by the students in their own school site. For example, at High Park School, the students determined that they would tackle the recycling and composting issues throughout their school. The content and projects created by students, including work to promote the Franklins Wetlands Area, work will continue to be shared with community stakeholders.

Deliverables/Results:

The project supported stronger relationships between environmental stakeholders including ACA and Parkland School Division (PSD) schools in the tri-municipal area. Within each school, the students started their own forms of environmental stewardship programs ranging from gardening towers to recycling programs. In addition, plans have been put in place for YoWoChAs to work with these students to create new wildlife and conservation signs to replace to current information checkpoints on the property. Leaders of the project were surprised to learn how many students expressed an interest in learning more about careers in the areas of outdoor education, the environment, and wildlife. Many students also stated that they wanted more time to learn outside with hands-on learning experiences. For students who worked to create multimedia presentations, this provided them an opportunity to move their own learning to other groups within our community. These groups have all been working on related activities since the student presentations. This project not only reached its primary objectives, but they have also built capacity in the area of environmental education throughout their area.

Three three-day Outdoor Education Experiential Learning Sessions at Franklins Wetlands Area with 90 Parkland School Division Students and Staff Members

PSD Youth Resiliency Coordinator provided direction, evaluation tools, sustainability, and media tools for project capacity building.

School websites provided information on ACA to all parents of students involved in the project. ACA was acknowledged at the Shaping the Future Conference in Kananaskis, Alberta through the concurrent session on this project (January 2014).

A presentation was made by ACA (Ken Kranrod) during the winter camp to YoWoChAs and school stakeholders.

The local Spruce Grove and Stony Plain media covered the project and its outcomes.

Partners in Habitat Development

Partners in Habitat Development c/o Eastern Irrigation District

Grant: $15,000

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 20,062 trees and shrubs were planted by the PHD program in the spring of 2014. 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 2.5 km of fencing distributed and installed to protect existing habitat and newly planted habitat from livestock access. The PHD program continued its monitoring program by completing a number of wildlife surveys throughout 2014. A number of landowners interested in initiating future habitat projects have been met by a PHD Technician.

Deliverables/Results:

20,062 trees and shrubs have been planted and fabric mulch has been applied on 16 PHD habitat project sites. (Seven newly planted sites and nine existing PHD sites). Maintenance was conducted by the PHD staff on the newly planted sites and previously planted sites during the summer and replacement shrubs were planted on nine existing PHD sites.

2.5 kms of fence has been delivered and installed on 2014 habitat sitesand these projects will protect trees and shrubs from livestock access and promote habitat growth.

Planning for 2015 habitat projects has been initiated.

Castle River grazing allotment Riparian Health Inventory

Pincher Creek Stock Association

Grant: $8,377.46

Project Code: 015-00-90-220

Project Status: New; Completed

The West Castle Wetlands Ecological Reserve is considered to be a sensitive landscape which requires special regard to its management. An inventory of riparian health in the West Castle Wetlands Ecological Reserve will give a better understanding of current and past impacts and provide a benchmark of health for future management planning. Three riparian health assessments were conducted to provide a representation of health for the wetland complex. In addition to the wetland health assessment, three riparian health assessments were conducted on select reaches of the Carbondale River and Castle River to provide baseline information for potential improvement projects. The assessment sites are paired with grazing and non-grazing affected areas to help monitor the recovery following restoration activities. Previous riparian health inventories completed by Cows and Fish on Carbondale River (2012) provide a comparison of health for this system. Any planned restoration activities will take place as a part of an Integration Project, whereby the Pincher Creek Stock Association (PCSA), AESRD, Cows and Fish, the M.D. of Crowsnest Pass and the Castle-Crown Wilderness Coalition collaborate on the project. A workshop was held to determine what types of restoration activities will be suitable, to engage with stakeholders and user groups in the area and to participate in weed pulls on the proposed project areas.

Deliverables/Results:

Riparian health assessment completed September 2014: The three West Castle Ecological Wetland sites all scored in the *healthy* category (90%, 82% and 83%). The other two West Castle River sites scored *healthy* (85%) for the livestock and recreation use area, and *healthy but with problems* (73%) for the Syncline Recreational Area (no livestock grazing). The Carbondale River site scored in the *healthy* category (82%). More detail can be found in the summary riparian health report mentioned below.

A summary riparian health report, summary of riparian vegetative and physical site characteristics, management strategy recommendations and benchmark information for the wetland sites, was provided to the Pincher Creek Stock Association, the local AESRD Agrologist and the local AESRD Conservation Officer. Information on weed species and locations has also been provided to the Castle Crown Wilderness Coalition.

A workshop was held January 28th, 2015 in conjunction with the PCSA Annual General Meeting. Members of the stock association attended, Candace Piccin (ESRD Agrologist) and Amanda Halawell (Range/Riparian Specialist, Cows and Fish). The results of the riparian health assessments were presented and discussion on strategies to maintain and improve riparian health followed.

Education/ Postings on aquatic invasive species (quagga/zebra)

Pine Lake Restoration Society

Grant: $4,500

Project Code: 020-00-90-210

Project Status: New; Completed

The goal of this project was to bring the community together and share knowledge about aquatic invasive species (AIS) and the threat they may have at Pine Lake. The main objective was to increase awareness of AIS at Pine Lake through various activities. There was a great turnout at the education event and many great presentations. At the booth, Pine Lake Restoration Society (PLRS) were approached by people who had a lot of questions about the lake and were curious about the impacts that invasives could have on Pine Lake. They were able to hand out a lot of supplementary information and everyone left with an AIS factsheet. The hydrofalooza air chair event was a moderate success. Although there was no place to have a booth, or have any kind of formal engagement or forum, PLRS still managed to hand out a few factsheets to the participants. While there was a barbecue for the participants, every table was approached and handed five-ten factsheets so that they could take one and hopefully be exposed, to some degree, to the information. The last activity was a success as PLRS were able to put up signs at all the boat launches around the lake, and were able to make them large enough so that people would look whenever they were at the boat launches. PLRS were also able to put up supplementary information signs at all these posts so that people would have even more information on the different kinds of AIS species, as well as what they could do to prevent the spread.

Deliverables/Results:

PLRS reached 100 people at their education evening, and around 25 people left with various educational materials from numerous booths. Everyone left with an AIS factsheet. AIS Materials were handed out at the hydrofalooza event at Leisure Campground.

Documents were supplied on what the Pine Lake Restoration Society was doing about the AIS issue at Pine Lake, as well as other reports that were done on Pine Lake (Lakewatch – ALMS, Hypolimnetic Withdrawal study) to describe to people how the water quality and lake dynamics may change if the lake were to be infested with AIS.

Red Deer County, AESRD, ALMS, AHS, Red Deer River Watershed Alliance, and Cows and Fish were invited to provide material, whether it be the form of a presentation, booth, or handouts. Zebra and Quagga mussel fact-pamphlets were available for participants during the hydrofalooza event.

PLRS were able to put up seven signs around Pine Lake which featured information from the Province's AIS program as well as information on safe boating practices for AIS from Red Deer County.

Signs were collected from the Government of Alberta and put up around Pine Lake. Supplementary information signs were created and put up at the location of the GoA signs.

Conservation Partners 2014

Red Deer County

Grant: $30,000

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, 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 is intended to be a cost-shared program. Landowners are expected to cover a significant portion of the costs for the projects they wished to do. The objectives of Conservation Partners 2014 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; 2) Enhance riparian and native range 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) Assist landowners in developing an informal "Management Plan" for each of the completed projects.

Deliverables/Results:

16 projects were initiated by 12 landowners, throughout RDC. 132 acres of riparian area, 103 acres of native range area, 24 acres of wetlands/ sloughs/lakes and 8 miles of river and creek are now being protected or restored by these 16 projects. 537 Animal Units are now "under new, sustainable management approaches", when it comes to their access or use of these riparian acres. For every Conservation Partners program dollar ($63,753 from ACA CCEG, RDC, and other donors) that went to voluntary, on-the-ground action by landowners, landowners and other partners contributed over $1.21 (in cash, time, and equipment).

Between April 1, 2014 and March 6, 2015, Conservation Partners advertisements appeared in the County News eight times, and nine articles in the County News have discussed Conservation Partners (Red Deer County News circulation ca. 10,000).

There are three videos about Conservation Partners online (rdcounty.ca/207/Conservation)

Between April 1, 2014 and March 3, 2015, the Conservation Partners Initiative has been displayed/featured with staff, at the following public events: Clearwater County's Cows Creeks and Communities Workshop – Display (Apr), Pine Lake Restoration Society meeting – Display (Jun), The Medicine River Watershed Society Annual General Meeting – Display (Jun), Red Deer River Watershed Alliance's Ambassador Breakfast – presentation (Sep), Clearwater County's Celebrating our Success workshop – presentation (Oct), Agri-Trade – display (Nov), Alberta Agriculture Phosphorus Watershed Project Producer Breakfast – presentation (Nov), Red Deer Rotary Club Meeting – presentation (Nov), Red Deer River Municipal Users Group Meeting – presentation (Dec), Clearwater/Lacombe/Red Deer Counties' Alternative Energy Workshop – display (Feb), Red Deer County's Conservation Programs Info Workshop – display and presentation (Feb), Clearwater / Red Deer Counties' Meeting with Real Estate Agents – display and presentation (Feb).

RDC have developed and begun distributing a Conservation Partners

"Donor Package" which is provided to potential donors.

Through RDC's ALUS Program, a video of one of the Conservation Partners projects in RDC was developed and put on the ALUS website and the RDC conservation page, further drawing attention to Conservation Partners.

RDC co-hosted a tour of ALUS Coordinators from across Canada in August 2014. Two of the sites visited were Conservation Partners projects.

Alberta Youth Pheasant Program

Red Deer Fish and Game Association

Grant: $8,000

Project Code: 030-00-90-246

Project Status: Funded previously via the R&R Fund; Completed

Red Deer Fish and Game Association (Red Deer FGA) purchased and raised pheasants for release on their registered site. It has been going on for at least ten years. Four kids ages 12 to 20 are taken out every weekend day. They learn gun safety from instructors, and clay pigeon shooting from trap professionals. While they are having their lunch, volunteers release real pheasants into a mile long row of tall grass, bush, trees and alfalfa. Dog handlers send dogs out ahead of the shooters. There are only two shotguns. If a kid shoots, hit or miss, the gun is passed back to the next kid on the two-kid team. Each gunner is supervised by a firearms safety guy who keeps the barrel pointed safely, and gives instruction to the kid whether to take the safety off and shoot the flushed pheasant. The process takes all day.

Deliverables/Results:

Birds released for each group of kids, Red Deer FGA don't shoot the hens.

Establishing a vital connection: Communicating the integrated watershed management plan to the young adult demographic

Red Deer River Watershed Alliance Society

Grant: $3,000

Project Code: 015-00-90-212

Project Status: New; Completed

This project was to develop educational materials and tools targeting the young adult demographic as well as the citizens of the Red Deer River Watershed Alliance Society (RDRWS). Through the successful engagement of first and second year students at Olds College with guest lecture appearances, RDRWS piloted the script and presentation that will now be used to engage others. This will now lead to return visit to the school along with availability of the presentation for other institutions and groups. RDRWS developed an interactive display to be used at public events incorporating the use of a large monitor and the tablet and banners acquired through this project.

Deliverables/Results:

Power-point has been presented to first year students in the Water Fundamentals' course at Olds College.

Power-point has been presented to 60 second year students in the Watershed Management Planning course at Olds College.

Program has been piloted and feedback given.

Banners still in the design stage as of June, 2015.

Trail and campground cleaning trip from Porky Pine Lick to Rocky Pass

Rocky Mountain Wilderness Society

Grant: $7,000

Project Code: 015-00-90-218

Project Status: New; Completed

This past summer Rocky Mountain Wilderness Society (RMWS) members traveled two days by horseback and set up a camp at Porcupine Licks on the Muskeg River. The goal of this crew was to re-open the old historic pack trail from the campground to Rocky Pass, and clean up the campground at Porcupine Licks. With four power saws and two brush saws and a couple axes working the objective of the crew was met on the eighth day of trail clearing the top of Rocky Pass was reached. The trail was barely passable in places with heavy willow growth, small spruce and large blow down trees over the old trail. The trail was cleared to the RMWS standard of eight feet wide, opening up the line of site thus making the trail safer to travel in bear country and allowing users to have an enjoyable trip. The distance covered on this project was a little over eight kilometers and the trail was in very bad condition prior to any work being done. After RMWS had finished the project the travel time on this trail had been shortened by close to an hour over the total distance. With this trail now open again and easy to follow, travelers will stay out of the river bed.

Deliverables/Results:

The main result of this project is a trail that was near impossible to get through with a pack outfit and very dangerous for hikers because of the condition it was in, is now open to a high standard and will be a lot safer to travel and more enjoyable. This trail was in worse shape than expected. One section of the trail had to be re-routed because of high water damage from the previous year. On the eighth day of trail clearing RMWS reached the summit of Rocky Pass; the crew put in some long days and the trail cleaned to a high standard. The day before the crew left the campground they cleared all the willow growth out of the site and bagged up all the tin cans that were left from previous users and packed them out.

Glenbow Ranch Provincial Park Inquiry Day (GRID)

Rocky View Schools

Grant: $3,000

Project Code: 015-00-90-211

Project Status: New; Completed

This project, Glenbow Ranch Inquiry Day (GRID), is an annual day of inquiry with experts for mixed grade level Rocky View School students to explore many aspects of Alberta's environment and natural resources. The project goal was to provide students an opportunity to work with experts in the Alberta sustainable environment community doing hands on learning. The objectives of developing ongoing relationships between Rocky View schools and Alberta's Provincial Parks, developing ongoing relationships with experts to continually enhance student and teacher learning, providing opportunities for students to have experiential learning under the tutelage of experts with real life applications and for deeper understanding of concepts learned in the classroom, developing, creating, and building student relationships to Alberta Nature and to enhance their awareness of the sustainability of natural systems, and developing an awareness of careers in sustainable development, Alberta Parks, Alberta Conservation, were all realized.

The day was so successful, another school is joining the Third Annual GRID May 2015, and even more experts are joining to provide learning experiences for their students.

Deliverables/Results:

May 2014 GRID continued their relationship with the three Provincial Parks, and each Park expanded the inquiry work that they did with the students this year (i.e. Fish Creek Park added an ornithology inquiry).

11 Glenbow Ranch Provincial Park volunteers also were involved this year helping with groups, manning the visitor centre for any emergencies, driving carts to help students with less mobility, and any emergencies. One more school and three more grades were included into the inquiry day this year.

This year Rocky Mountain Schools were able to increase to 24 experts to guide the students in environmental inquiry. All of these experts are excited to participate again in 2015, and teachers have been involving them this year in classroom teaching.

Students' testimonies to the learning specialists indicated that increased student awareness of the diversity in science and outdoor careers, increased awareness of student connection between curricular concepts and careers, and an increase in positive student experiences in nature building on the work of Richard Louv and his theory on nature deficit disorder all occurred.

Riparian area protection and enhancement project

Smoky Applied Research and Demonstration Association (SARDA)

Grant: $7,000

Project Code: 015-00-90-205

Project Status: Similar project funded in 2013-14; Completed

In the spring of 2014 Smoky Applied Research and Demonstration Association (SARDA) performed an aerial survey flight to photographically document runoff on watercourses from livestock operations, and locate potential riparian area project sites within the municipalities of Greenview and Smoky River. The flight timing corresponded with the spring snow-melt on the landscape for these areas. The passengers were persons associated with municipality or private environmental companies. Upon completion of the flight the photographed land-use activities, with emphasis on livestock wintering sites, were analysed to determine where there were pronounced environmental deficiency locations affecting water courses. To determine the possible specific remedial measures required, a few multi-agency action plan meetings were held with SARDA, watershed organizations and conservation agencies. Once potential remedial sites in need of action are identified, some of these landowners were contacted, of which one was recruited as a co-operator. The subsequent site co-operator saw riparian enhancement activities commence during the summer, to which included protective livestock exclusion fencing along a riparian area, and an alternative livestock watering system. Over the course of the 2014 calendar year a few seminars/meetings were held that pertained to Environmental Farm Plans (EFP), riparian area management and farm watering systems, to educate and encourage better management practices. The meeting speakers included ones from Cows and Fish, Alberta Agriculture, private industry farm equipment and services providers and SARDA representatives.

Deliverables/Results:

The flight mission was completed April 22, 2014. The findings indicated widespread uncontained livestock waste being washed from winter holding pens into adjacent watercourses. An information report on the reconnaissance flight was provided at a lesser Slave Watershed Council meeting. News articles referring to the flight findings were published in the SARDA 'Back Forty' newsletter on riparian area and watershed protection topics.

A Farm Water Management Seminar presentation was given in High Prairie on April 29, 2014 (seven attended).

Environmental Farm Plans initiated for six producers in 2014.

The riparian project was initiated on a cow-calf producer's hay-pasture quarter of land. The riparian fencing and the underground well and waterlines are installed. The dugout construction and the hook-up of the underground lines have still yet to be completed and operational. The livestock watering system is scheduled to be completed and operational in the spring of 2015. Once the dugout is filled next spring, the solar powered water pumping system will be operational for between 100-200 head of cattle. The site has a sign along the Hwy (747) recognizing ACA and the other contributing agencies.

Walleye - Pike fishing

Southern Alberta Bible Camp

Grant: $2,540

Project Code: 020-00-90-217

Project Status: Funded previously by R&R fund; Completed

This summer the Southern Alberta Bible Camp (SABC) ran a fishing program that gave 167 campers the opportunity to spend four hours a week developing their skills as fisherman. The SABC fishing program was full every skill block throughout the summer. The fishing skill happened almost exclusively off the pontoon boat this year. SABC taught basic skills like baiting, casting, jigging and reeling. In the process of the week SABC took opportunities to educate campers on habitat including the structure needed, the role of irrigation, knot tying, landing a catch, fish identification, and safe release techniques. A letter also went home with every fishing rod to parents recognizing ACA as the source of the funding. In November a newsletter and annual report went out to supporters and members and will acknowledge ACA and the generous grant received to make this program possible.

Deliverables/Results:

A fishing program, delivered through the mentorship of AHEIA trained skill leaders, which gave 167 campers the opportunity to spend four hours a week developing their skills as fisherman. The feedback received from campers and parents was overwhelmingly positive. The campers enjoyed being out on the water learning techniques and being equipped to take their knowledge home and use their fishing rods.

Archery curriculum

Southern Alberta Bible Camp

Grant: $3,000

Project Code: 002-00-90-216

Project Status: Funded previously by R&R fund; Completed

This summer the SABC ran an Archery Program that gave 475 campers the opportunity to spend four hours a week developing their skills as archers and assisting in the making of their own arrow to take home. Archery again was the most popular skill. Each of the campers that went through the archery program took part in four one-hour sessions that

incorporated AHEIA mentorship and hunting philosophies, National Archery in the School (NASP) training and wildlife education. Campers were able to learn skills in aiming and shooting as well as safety aspects of hunting. The 3D targets provided opportunities to learn about wildlife. When the campers were not shooting they were able to assist in the construction of an arrow. They were able to learn about the different parts of the arrow and name them.

Deliverables/Results:

An Archery Program that gave 475 campers the opportunity to spend four hours a week developing their skills as archers and assisting in the making of their own arrow to take home.

The feedback received from campers and parents was overwhelmingly positive. Campers enjoyed the physical challenges of the program along with the valuable knowledge they gained from the training.

Taber Shooting Foundation - Shooting Facility

Taber Shooting Foundation

Grant: $37,000

Project Code: 030-00-90-242

Project Status: New; Completed

The Taber Shooting Foundation, with in-kind support from the MD of Taber, has proposed and is currently undertaking the earthwork for a regionally significant shooting facility three miles north of Taber. The Taber Shooting Foundation had been established as a registered society dedicated to promoting safe recreational sport shooting within a professionally designed and constructed recreational complex tailored to the shooting sports including archery, pistol and revolver, small caliber rifle, large caliber rifle and shotgun. It is anticipated that membership to the range will grow to over 1,000 due to the varied shooting experiences the range will offer. The range will be utilized to host several shooting events annually, and could be incorporated into community events such as the Taber Pheasant Festival and youth shooting programs. The earthwork portion of the project will be completed by late spring early summer 2015. Construction of the range buildings and benches, shooting butts, washroom facilities, and other necessary outbuildings will follow. Fundraising activities have been ongoing in order to make this project possible. All members of the shooting facility will be required to undergo training to become registered range officers, allowing shooters to use the facility at will. To accomplish this, the facility wishes to implement a security gate system where members can use a swipe card to enter and exit the range, also allowing the facility operator to monitor usage. Two companies were solicited for estimates to supply and install the gate and associated fencing. Two competitive quotes were received which averaged $37,000. The fence and automated gate with key FOB technology is fully operational. The software program for the automated gate stores users' entry and exit data that can be downloaded in the field with using a laptop computer. A clubhouse building was moved on site and placed on a concrete basement this winter. This was undertaken with funding provided by a federal government's Canadian Facilities Enhancement Grant (CFEP). The MD of Taber will be spending the month of May completing the remaining earthwork for the berms and completing the final reclamation seeding. Benches and targets are currently being quoted for pricing and will be in place for an anticipated opening in June.

Deliverables/Results:

The chain link fencing on the south side of the property and automated gate is fully completed with funds provided by the ACA grant.

The Taber shooting facility is anticipated to open in June, 2015.

Faith-based organizations and conservation: engaging volunteers in recovery plans of endangered pines

The King's University College

Grant: $7,670

Project Code: 030-00-90-225

Project Status: Funded since 2013-14; 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 providing a volunteer-based, limber pine recovery initiative for students and church youth groups that want to practically express their stewardship values. This project is in the second year of a five-year initiative that annually plans to enhance one population of limber pine in the Crowsnest Pass. The project's 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 2014 included: 1) site visits with landowners, 2) monitoring of seedlings from a 2013 planting, and 3) three educational field tours and restoration planting events. An in-kind donation of 540, three-year-old seedlings by Waterton Lakes National Park, enabled the project team to restore three ha of low elevation limber pine habitat a site near Cowley, AB. Additionally, 1,800 limber seeds that were collected in 2014 were planted directly at the Cowley site. This planting was completed by 37 university students, and 45 grade 10 students. 0.5 ha of key streamside habitat were also restored along Mill Creek, a key bull trout spawning tributary (Beaver Mines, AB) by planting 86, three-year-old seedlings. Monitoring work on the 2013 planting showed that seedling survivorship had declined to 45 %, with greater survivorship on gentler, less exposed sites. In 2014, a grazing trial was established with 40 cattle exclosures on the 2013 planting site; monitoring of growth and survivorship will occur in subsequent years. In fall 2015, limber pine seed germination trials were also established in King's greenhouse, testing the suitability of substrates selected for direct seeding in 2014. A key development this year for their community outreach initiative was the receipt of financial support from the recovery plan for limber pine (AESRD). King's University College also collaborates with the Alberta Tree Improvement and Seed Centre, which supplied limber pine seedlings, when available. This project continues to partner with government agencies to plant and monitor survivorship of seedlings in future years, and are using this project as a case study in church and conference workshops, and King's promotional literature, to highlight the value of partnerships with faith-based organizations to achieve conservation goals.

Deliverables/Results:

A written report on the project was provided to Recovery Team members for limber pine, in support of a Nutcracker Notes publication (Nov 2014) by Robin Gutsell and Brad Jones (Recovery plan leads) on provincial initiatives for limber pine recovery. The number of seedlings planted, volunteer planters, individuals attending educational field

tours, and monitoring results were reported annually 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. Peters (project lead) attended and presented a conference poster on natural regeneration rates of limber pine at the 99th Annual meeting of the Ecological Society of America, Sacremento California. At the same conference, he participated in a round table discussion on partnerships between faith communities and ecological organizations. On February 25, 2014, a conference abstract was submitted to the 100th ESA meeting in Baltimore, entitled, "Faith-based organizations and conservation: engaging communities in recovery plans of endangered pines".

One B.Sc. thesis was completed characterizing the growth of planted limber seedlings on restored rangelands in the Montane Ecoregion of Alberta. Two undergraduate thesis studies are nearing completion (April 2015) on the effects of cold stratification treatment length and substrate type on: 1) germination rate, and 2) root growth of planted limber seeds in a greenhouse setting.

June 2014, Dr. Peters presented their community-based approach to limber pine restoration in a conservation biology course that he taught for the Au Sable Institute (MI, USA), a faith-based field institute serving students from Christian Colleges and Universities.

Stewardship License Pilot Project

Trout Unlimited Canada

Grant: $2,200

Project Code: 020-00-90-196

Project Status: Funded since 2012-13; Completed

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

The 2014 Stewardship License Pilot Project (SLPP) was a partnership between Trout Unlimited Canada (TUC) and AESRD. The objectives of the SLPP were to engage and educate the public on the identification of native and non-native fish species, and the issues which have, and continue, to contribute to declining populations of native cutthroat and bull trout, with a focus on the introduction of non-native fish species such as brook trout and rainbow trout. A total of 156 volunteers took a 16 photo fish identification exam; participants were allowed two attempts to complete their exam with a mark of 100%. Once they had passed the exam participants were either issued a Stewardship License if they had participated in a supervised outing in a prior year or attended a supervised outing with a TUC biologist. During their supervised outing, anglers' fish identification skills were reinforced and verified using photographs and live specimens captured while electrofishing. Once anglers had shown their proficiency identifying between brook, bull, cutthroat, and rainbow trout, they were asked to fish in pairs for the remainder of the day, practicing fish identification and recording creel data on the cards they received. Anglers that met the qualification requirements received a Fish Research License ("Stewardship License"), background information sheets, and creel cards, and were free to fish on their own in the streams covered by the SLPP until the end of the 2014 fishing season (Oct.31). At the end of the season, participants returned all creel data to the Cochrane Fish and Wildlife Office via mail in postage paid envelopes provided when they received their license. The 2014 SLPP resulted in the engagement of 156 volunteers and a total of 119 stewardship licenses were issued. TUC saw an increase in the number of participants who passed their test on the first try (65.8%) from the previous year (56.4%). A total of 2,252 brook trout and 270 rainbow trout were harvested by SLPP anglers in 2014.

Deliverables/Results:

2,252 non-native brook trout and 270 rainbow trout were removed from selected streams of the eastern slopes, to facilitate the recovery of native cutthroat and bull trout populations in these systems.

156 anglers were administered the Stewardship License Pilot Project fish identification exam, and showed a 14.3% increase from 2013 in the number of anglers who passed the exam on their first attempt.

During seven supervised outings, anglers were educated on the differences between native and non-native fish and reinforced on how to identify them. Anglers were educated on the issues currently affecting native fish species and those which led to their declines, including the introduction of non-native fish.

Volunteer anglers were given background information sheets to pass out to other anglers and conservation officers with whom they encounter while fishing under the Stewardship License Pilot Project;

During supervised outings, zero misidentified fish were sacrificed, showing that anglers can become proficient at identifying native and non-native fish species and can reliably remove non-native trout, helping facilitate the recovery of native fish populations.

Creel data for each outing at each waterbody was collected, contributing valuable data on catch-per-unit-effort, species composition, and length data to the body of knowledge for each stream.

The success of the project and interest by the public may be a factor in the Alberta Government inquiring as to the public's interest in seeing a stewardship license as part of the Provincial Fishing License regime. In a public survey conducted by the provincial government in December 2014 regarding changes to the Provincial General Sportfishing Regulations in 2014, AESRD asked the public their thoughts on a broader application of this program.

Project report: Stelfox J.D. and L. J. Peterson. 2015. Stewardship Licence Pilot Project: 2014 Progress Report. Trout Unlimited Canada Calgary, Alberta, May 2015. (Report can be downloaded here: www.tucanada.org/files/1/Stewardship%20Licence%20Project-2014%20Progress%20Report,%20May%2015.pdf)

Bill Griffiths Creek Enhancement Project

Trout Unlimited Canada

Grant: $2,500

Project Code: 015-00-90-214

Project Status: Funded as part of TUC's East Slopes Habitat Enhancement Project in 2008-09; Extended until August 31, 2015

The goals of the 2014 Bill Griffiths Creek Habitat Enhancement Project included: monitor water temperature in Bill Griffiths Creek and adjacent channels; conduct fall redd surveys; and conduct habitat surveys within Bill Griffiths Creek to identify restoration sites and install large woody debris features in these sites. Four temperature loggers were installed; two in Bill Griffiths creek, one in the side channel of the Bow River, and one in the Bow River upstream of the confluence with Bill Griffiths Creek. Loggers were retrieved in February, 2015 and temperature data was analyzed and compared between the monitoring sites and to the air temperature during the monitoring period. Two temperature loggers installed in Bill Griffiths Creek were unable to be recovered. A snorkel survey, conducted by TUC staff and volunteers, and a pool study, carried out by the Bow Headwaters Chapter of TUC in April 2014, identified pools which would benefit from the addition of large woody debris. Due to the loss of a key staff person and the resulting reduced staff capacity,

TUC was unable to apply for, and receive the required permits for adding large woody debris to these sites within the limited timing window outside of the Restricted Activity Period for Bill Griffiths Creek. This work will be completed in the summer of 2015.

Deliverables/Results:

Redd surveys conducted in October 2014 identified 31 redds during two surveys of Bill Griffiths Creek. This number is slightly higher than redd surveys conducted in 2011 (n=12), 2012 (n=14), and 2013 (n=26), but significantly lower than the average number redds observed (n=651) during surveys conducted in Bill Griffiths Creek from 1988-1991, and in 1994-1995 (n=380) (Brewin, 1996).

A report detailing the location of the structures, the findings of the spawning/snorkel surveys and temperature data has been completed. Project report will be shared on the TUC website and made available to the public.

TUC took video (including underwater footage) that can be used to demonstrate fish use of submerged woody debris and provide educational value.

All aspects of the 2014-2015 work have been completed with the exception of the actual addition of large woody debris to the sites that were assessed.

Brewin, M. K. (1996). Assessment of Brown Trout (Salmo trutta) Spawning Activity in the Upper Bow River System, 1994-1995. Cochrane, Alberta.: Trutta Environments and Management.

Policeman Creek Habitat Enhancement

Trout Unlimited Canada

Grant: $3,000

Project Code: 015-00-90-215

Project Status: Funded in 2011-12; Completed

To monitor the water temperature in Policeman Creek during the fall spawning season, temperature loggers were installed in August 2014, and logged until February 2015. Data gathered during the monitoring period showed that Policeman Creek has a strong buffering capacity to changing air temperatures, due to its numerous groundwater inputs. Logger PC1, located at the furthest upstream location was determined to be in close proximity from a groundwater input and remained at, or close to, 5.8 degrees Celsius for the majority of the monitoring period. Daily variability in water temperature was shown to increase in a downstream direction. During the 2014 project TUC assessed the success of previous native grass and shrub planting efforts on the five islands adjacent to the overwintering pools, excavated in 2012. Plant establishment was determined to range from fair to excellent, and additional riparian planting was conducted in September 2014, with 100 rooted plugs of yellow willow, pussy willow, sandbar willow, and wild rose, and a native grass seed mix. TUC conducted a fall spawning survey and compared data to previous fall spawning surveys, to determine if spawning activity had changed following the excavation of the overwintering pools. A redd survey was conducted by TUC staff on October 30th, 2014. During the 2014 redd survey, six brook trout redds were observed in the study area. The results of the 2014 redd survey will be compared to previous redd surveys in the project report. Using underwater video footage recorded on September 29th, 2014, TUC assessed fish use of the excavated pools. Additional footage was recorded during the creek clean-up late March 2015 when water levels are lower. Although video footage taken in September 2014 showed no fish to be present in the excavated pools at the time of filming, previous sampling events and observations when flows are much lower have shown that the pools are utilized as an overwintering refuge. TUC conducted a volunteer creek clean-up and educational walk along Policeman Creek late March 2015 to coincide with the overwintering pool assessment.

Deliverables/Results:

Conducted spawning surveys within Policeman Creek in the vicinity of the constructed pools; redd survey was conducted on October 30th, 2014.

Temperature loggers retrieved on February 12th, 2014, and video footage taken on October 30th, 2014 and during low water in late March 2015 to assess winter fish use of constructed pools using underwater video.

Riparian vegetation is becoming established on the loafing islands, and additional willow and rose plugs were planted during a riparian restoration outing in September 2014. A spring clean-up was held late March, and provided the community with the opportunity to be involved in the maintenance of the natural landscape around the creek.

Conducted a creek clean-up, engaging a local school group in an educational walk and electrofishing demonstration (March 2015); assessed vegetation growth on islands (completed August 26, 2014) and planted native grasses/shrubs where necessary (completed September 29, 2014); deployed temperature data loggers (completed August 26, 2014)

Completed a report detailing results of sampling, vegetation success, summarizing educational outings, and making recommendations for future enhancements within Policeman Creek; this report can be found here: www.tucanada.org/files/1/Policeman%20Report%202014.pdf.

ACA is acknowledged in the report, which is available to the general public via the TUC website.

Understanding Fish, Water and Conservation

Trout Unlimited Canada

Grant: $12,000

Project Code: 020-00-90-218

Project Status: Funded Previously under R&R; Completed

In its second successful year, Trout Unlimited Canada's (TUC) 'Understanding Fish, Water and Conservation' has surpassed its anticipated target numbers and received wonderful feedback. The program's two components; an informative, fun, hands-on presentation, and a 'learn-to-fish' field trip, increase interest and knowledge about fish, fish habitat, fish communities, water quality, watersheds and conservation while promoting stewardship of our valuable fisheries and aquatic resources. TUC developed the program further and doubled the output to reach over 2,000 participants in 2014-15. The program was offered to 11 different schools (~1,000 students/teachers), five community groups, (~100 youth/leaders); conducted ten field trips (~400 participants) and took part in five events (950 participants). The program components included: Identification of selected Alberta Fish Species, (native, introduced, invasive) numbers and distribution; Fish life cycle, anatomy, special features, adaptations, habitat needs and invertebrate food species ID; Fish communities in Alberta, stocking programs, threatened/endangered species and conservation; Where and when to fish, safe handling, proper equipment and techniques and "How to Fish" guidelines. The program's main objective was to instill youth in Alberta with a passion for the outdoors and a commitment to

protecting the special places that are home to wild fish species. As our population expands and pressures increase on these special fish habitats and ecosystems, trout and other native fish need more advocates to pass on this legacy and protect the waters we all need and love. By working with sponsors like Alberta Conservation Association and interested partners our common goal can be achieved to protect our local waters for fish, wildlife and humans.

Deliverables/Results:

TUC have developed a new 'Build a Fish' activity for presentations for youth aged 5-10 years, giving students the opportunity to create their own fish, encouraging youth to think about the adaptations their fish would have, and how they would look to survive in its environment.

The fish conservation game for youth 10-16 years was developed and is based on a game of jeopardy, called 'Fish Conservation Jeopardy'. The game consists of 30 questions in five categories: fish identification, anatomy, conservation, angling and stewardship.

TUC's new "Gone Fishing! A guide to fishing in Alberta" brochure looks at where to fish, things you need before you go fishing, what you can catch and some basics on how to fish such as the differences between fly fishing and spin fishing, hooks and bait-attached.

TUC gave 32 school presentations to 964 participants; five group presentations to 100 participants; ten fishing field trips to 382 participants and held five fishing education events for 950 people. That makes a total of 52 educational events given to 2,396 people.

TUC have more than doubled the rate of participation in the program from a year ago at this time. TUC have also received phenomenal interest in the fish education program and are constantly impressed by the response and comments from students and teachers/leaders alike. They say the program is excellent, amazing and super amazing and super fun! TUC are continually updating and changing the program as feedback is received from evaluations in order to improve the program for the future.

Yellow Fish Road

Trout Unlimited Canada

Grant: $15,000

Project Code: 020-00-90-211

Project Status: New; Completed

The Yellow Fish Road (YFR) program is Trout Unlimited Canada's (TUC's) premiere environmental education program. This Alberta grown phenomenon teaches youth about stormwater pollution prevention and the importance of water conservation. The program is delivered to youth in schools, community groups and day camps across the province. Presentations leave people with an understanding and appreciation for our rivers, streams and creeks and the importance of clean, healthy water. If you walk through the streets of any major city in Alberta you will see bright 'yellow fish' painted on the storm drains, serving as a reminder that 'only rain should be going down the drain.' The painting offers active learning by involving youth in public service that educates the rest of the community. YFR builds on a culture of caring for our most important natural resource, water. Through this program, Albertans become motivated to be part of a positive change for the environment. In the spring of 2014, the YFR program was nominated as one of four Emerald Award finalists in the category of Education and Outreach. This past year TUC developed new components to the program within four distinct presentations for Kindergarten -Grade 9. TUC program delivery is carried out by highly professional YFR staff and their partners. TUC are continually expanding the program throughout the province reaching new participants and communities. TUC's programs ensure youth feel a sense of community within the classroom and group and take on a leadership role in their community with the action project. The features of this programs success include; Ease of implementation, Community-based action, High visibility of 'Yellow Fish', Ripple effect to families & friends. This year's results were especially exciting as TUC were able to expand their reach across the province while still providing interested groups free stencils and door hangers. The YFR program success is seen in continually high number of program bookings, repeat bookings and consistently positive feedback.

Deliverables/Results:

A main result of the YFR program in 2014 was an overall increase in participation program. TUC observed incredible increases in the number of cities visited, participants involved and presentations delivered. These yearly increases in program uptake provide exponential environmental benefits for all communities throughout Alberta. This program educates more people and reaches more municipalities every year, demonstrating its creativity and leadership in education and outreach. In 2014, TUC observed a milestone in reaching 50 communities throughout Alberta since the program's inception in 1991.

Ten Yellow Fish partners across Alberta including: WPACs, cities, environmental organizations and the Girl Guides.

17 cities in the province were actively engaged in the program and taking action in their communities.

22 province-wide events, expos and parks days reached people with stormwater pollution prevention education.

301 presentations to 8,434 youth and 1,446 adults how to protect our waters and prevent storm water pollution.

2,301 storm drains were painted and 12,677 informative door hangers were distributed with 94 painting groups

This is an ever evolving program that has grown with Alberta communities through the passion of teachers and community leaders. The wide breath of support through varied industries, organizations and government speaks to the universality of the message. Program statistics and feedback show increased participation & better understanding of pollution prevention.

Produced a Yellow Fish Road story for TUC's newsletter "Currents" which will be published in spring 2015.

Winner Emerald Award: www.youtube.com/watch?v=Fyf8YEMzNKk&feature=youtu.be

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 goal of the project is to maintain native vegetation in the Weaselhead by removing and preventing the spread of targeted non-native plants that impact the ecology of the area. The project was started in 2010 and has resulted in the removal of 4,530 non-native shrubs by volunteers, 2,030 of which were removed in 2014 – the busiest year to date for weeding workshops. These figures represent an estimated 66% of the Peking cotoneaster and 50% of the tartarian honeysuckle in the Park – the two most abundant non-native woody

species. Although not regulated weeds in Alberta these species have been implicated in degrading native habitat and altering wildlife use of natural areas in other jurisdictions. Monitoring of seedlings coming up in weeded areas has been carried out since 2011 and shows native vegetation is recovering without further intervention, and that the re-establishment of unwanted species can be prevented with reasonable effort. Invasive plants for which manual removal is not effective were prevented from spreading by removal of the flowers and/or seedheads (e.g. yellow clematis. creeping bellflower, common tansy). In addition the Society continued to assist with herbicide control of common buckthorn (very abundant) and European barberry (rare) by City staff, and of leafy spurge using bio-control methods. This year all known occurrences of European barberry have been treated and it is hoped this species can be eradicated. Non-native species as yet not established were removed: this year occurrences of seven such species were found and removed, including scentless chamomile, black henbane, various ornamental shrubs (planted in error along the pathways), and longleaf speedwell. 2014 saw the start of a project to prevent the disappearance of native rough fescue from a small area of grassland within the Park. Advice was give by a City staff member expert in rangeland conservation on an appropriate treatment and the treatment (removal of accumulated dead leaf-litter) was carried out. Three study plots (including a control) were set up to monitor its effectiveness. 400 volunteers from nine different organizations participated in weeding workshops; 16 individuals were involved with monitoring, surveillance and research activities; 1,400 hours of volunteer time was donated to the project; 4,500 adults and children were introduced to the issue of invasive species through the Society's outdoor education programs, and a additional unknown number through four publicity events that showcased the invasive plant program:.

Deliverables/Results:

4500 children and adults know about invasive species and how they are spread (target was 3700).

Visitors to four public events/presentations learned about invasive species.

No new species of invasive plant established in the Park.

No new colonies of existing invasive plant species established.

Early Detection Rapid Response (EDRR) online 'citizen science' activity is available on Society website.

51 weeding workshops held (target was 28).

2020 invasive shrubs removed (target was 750).

13 binbags of invasive plant seeds removed (target was 30).

Herbicide treatment of common buckthorn took place.

Eradication of European barberry from the Park.

Vegetation recovery: data collection completed, publication of results by end of March 2015.

Cotoneaster removal trial: Data collection and preliminary analysis completed. Publication of report by end of March, 2015.

Alternative method of shrub removal trial: data collection completed, publication not yet done.

Native grassland restoration completed and treatment started.

Review of successes and failures completed.

Information about the Program is available on Society website and video about the Program is available online.

Lobstick River (East of Chip Lake) Assessment Project - Phase 1

West-Central Forage Association

Grant: $15,250

Project Code: 015-00-90-219

Project Status: New; Extended until August 31, 2015

There are 58 quarter-sections adjacent to the river, which flows out of Chip Lake and into the Pembina River. The river winds its way through a variety of landscapes, including agricultural land and muskeg (organic, poor draining soils), eventually draining into the Pembina River. The rationale behind this project is to determine the overall health of the river and to identify primary issues where agricultural practices have had impacts on the ecosystem such as channel incisement, the presence of invasive and disturbance-caused plant species, and human or livestock altered stream banks. All of the planned activities will lead to mitigation strategies that will enhance water quality, fish and wildlife habitat and improve the overall health of the river and adjacent riparian areas, which will benefit landowners and others who use and value the Lobstick River for livelihood or recreational use.

Deliverables/Results:

An introductory community meeting was held in the spring with attendance by landowners to learn more about the initiative and identify participants.

Representative riparian areas of river and landowners were selected.

There was an unexpected delay for the project because the contractor engaged to complete the Riparian Health Inventories was not able to complete the work in the fall. Thus, West Central Forage Association was not able to finish the final deliverables of data collection, delivery of the results to landowners, data analysis and reporting and field day. This work will be completed over the summer of 2015.

ACA Research Grants

Using scat DNA and citizen science to determine grizzly bear distribution, abundance, and trend in the Yellowstone population unit

Foothills Research Institute (Dr. T. Larsen)

Grant: $17,000

Project Code: 030-00-90-234

Project Status: New; Completed

Project Website: www.grizzlyscatapp.ca

The project goal was to test the applicability of a scat-based DNA method using a citizen science data collection approach to estimate grizzly bear population distribution and abundance, and trend within BMA 3. The project had three objectives: 1) engage local citizens, particularly hunters and trappers, to collect scat samples during the 2014 hunting season; 2) compare population distribution and abundance estimates using hair and scat datasets alone and in combination; and 3) evaluate the cost/benefit associated with each approach. To engage citizens, several communication tools were used (e.g., social media, websites, and presentations) to connect with and recruit local citizens for this project, particularly hunters and trappers. Scat sampling kits along with GPS data loggers were made available to the public at six distribution/collection depots in four major communities (Hinton, Edson, Drayton Valley, and Rocky Mountain House). In addition, a Grizzly Bear Scat Application for smartphone users was developed, which acted as a GPS logger to record each citizen's path and the location of scats. Because participation was not guaranteed, field staff walked predetermined transects selected at random within watersheds, and across a range of habitat quality values defined by a Resource Selection model. Transects followed linear features (seismic lines, pipelines, and trails) and forestry cutblock edges since these habitats are known to be used by bears for travel and/or foraging. One finding of this project was a clear lack of citizen participation despite extensive communication efforts. Only 22 kits and six GPS loggers were signed out, whereas the app was downloaded by 38 users. Of the six GPS loggers, only one user provided about 833 km of path information, but primarily from driving on roads. Of the three individuals that used the app, less than one km of location information was generated. In total, nine scat samples were submitted by citizens none of which were accompanied by path data, so search effort was unknown. The research team suspect that it may take many years, simplifying the onboarding process, and/or providing incentives to improve data collection by these groups. At this time, the researchers are unable to generate grizzly bear population distribution and abundance information from the citizen science data alone. However, because scat samples were collected along transects (130) and opportunistically (62) during other field activities in 2014, they will be able to compare hair snag and scat DNA based methods to address objectives 2) and 3) once the genetic libraries are available for analysis.

Deliverables/Results:

The project had an unexpected delay by the two laboratories that are analyzing the hair and scat samples. Although both hair and scat samples were provided to laboratories shortly after data collection was completed, samples have yet to be processed. The laboratory results identifying individual bears from hair and scat were received end of March, 2015 and a final report is available as of June 1, 2015.

Peer reviewed publication (April, 2015)

Genetic library of grizzly bears within the Yellowhead management unit.

Population dynamics, reproduction and stress in mountain goats of Alberta

Laval University (Dr. S. Côté)

Grant: $10,000

Project Code: 030-00-90-117

Project Status: Funded since 2004-05; Completed

Project Website: mouflons.pvp.ca/CawRidge.htm

Research on the ecology, population dynamics, and management of mountain goats (*Oreamnos americanus*) on Caw Ridge was initiated following a decline in mountain 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 we observed 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 is combined with field observations to determine the factors influencing population size and recruitment, with a recent focus on the impact of stress on female reproduction. Some of the main findings of the study so far are summarized below. Kid production increases with female age from three to six years, peaking at eight-12 years-old 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 ten years of age and for males from eight years of age onwards. Survival of adult females is similar to that of other female ungulates of similar body size but survival of adult males is 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 stress from predation risk affecting female reproduction negatively. 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/Results:

Recently, four papers were published on mountain goats in high-profile international scientific journals (see list below). Two manuscripts have also been submitted, including one in second revision. Five presentations were given on the mountain goat project this year. All scientific communications are listed below.

Scientific publications from the mountain goat research published or submitted in 2014-2015:

Théorêt-Gosselin, R., S. Hamel and S. D. Côté. 2015. The role of maternal

behavior and offspring development in the survival of mountain goat kids. *Oecologia*, in press.

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.

Richard, J. H., K. S. White and S. D. Côté. 2014. Mating effort and space use of an alpine ungulate during the rut. Behavioral Ecology and Sociobiology 68: 1639-1648.

Richard, J. H., J. F. Wilmshurst and S. D. Côté. 2014. The effect of snow on space use of an alpine ungulate: recently fallen snow tells more than cumulative snow depth. Canadian Journal of Zoology 92: 1067-1074.

Godde, S., D. Réale and S. D. Côté. Female mountain goats (*Oreamnos americanus*) associate according to kinship and reproductive status. Animal Behaviour, under second round of review.

Hamel, S., N. G. Yoccoz and J.-M. Gaillard. Assessing variation in life-history tactics within a population using mixture regression models: a practical guide for evolutionary ecologists. Biological Reviews, under review.

Scientific communications of the mountain goat study presented in 2014-2015:

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, Stockholm University, Stockholm, Sweden.

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. International Statistical Ecology Conference, Montpellier , France.

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. Department of Arctic and Marine Biology, University of Tromsø, Norway.

Hénault-Richard, J. H., S. D. Côté and J.F. Wilmshurst. 2014. Space use variations of an alpine ungulate during winter: the relative influence of snow cover and fresh snow. Annual Conference of the Canadian Section of the Wildlife Society, Université Laval, Québec, QC, Canada.

Hénault-Richard, J., S. D. Côté and J. Wilmshurst. 2014. La neige fraîche plus pertinente que la profondeur totale pour expliquer l'utilisation de l'espace d'un ongulé alpin. 5th Annual meeting. Department of Biology, Université Laval, Québec, QC, Canada.

Ecology of the Plains hognose snake (*Heterodon nasicus nasicus*) in the Canadian Forces Base Suffield National Wildlife Area

Thompson Rivers University

Grant: $9,000

Project Code: 030-00-90-233

Project Status: New; Grant money was not accepted.

The plains hognose snake is currently listed as 'May Be at Risk' by AESRD, with fewer than 100 site or specimen records. Unlike other prairie snake species, plains hognose snake are believed to be a more sedentary species and are not known to overwinter in communal hibernacula located along the South Saskatchewan River. However, details on the ecology of this species are scant, and we do not have even a rudimentary understanding of how these animals utilize the prairie landscape to fulfill their life-cycle requirements. To date, a study investigating the basic ecology of the plains hognose snake has not been conducted in the Canadian prairies. The proposed research will focus on capturing and tracking plains hognose snake with radio transmitters to determine seasonal movement patterns and habitat use within the CFB Suffield NWA. In doing so, this study will provide identification of important habitat for the species including hibernacula and egg-laying sites and characterization of home ranges using GIS. This research will form the basis for a Master of Science thesis for a graduate student at Thompson Rivers University (Kamloops, BC) and information will be disseminated through government contacts, peer-reviewed publications and public presentations. Given that the plains hognose snake is slated for assessment by COSEWIC in 2014, this research is extremely timely and will furnish data invaluable to the assessment process.

Deliverables/Results:

This grant was not accepted. The researcher didn't get the required co-funding to carry out the project.

Experimental management of bighorn sheep

Université de Sherbrooke(Dr.M. Festa-Bianchet)

Grant: $8,000

Project Code: 030-00-90-174

Project Status: New; Completed

This report outlines progress over the fourth 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. Monitoring of reproduction, survival, body and horn growth of bighorn sheep in 2014 was successful. All resident sheep except for three rams were captured at least once, and most were caught at least three times. The population decreased from 63 sheep in 2013 to 47 in 2014, apparently because of cougar predation. The suspected sheep-killing cougar was shot by a hunter in December 2013. Survival in 2013-2014 winter returned to normal for ewes, but many rams disappeared between 2013 and 2014. Within the population in late May 2014, three sheep were introduced from Cadomin and 11 had at least one ancestor from the Cadomin supplementation. A quarter of the population therefore carries 'Cadomin' genes. The increase in 'Cadomin genes' that was apparent until 2012 was stopped by the many sheep that were apparently killed by a cougar in 2012-2013. Three more sheep from Cadomin were introduced in February 2015 and another introduction is planned for March. Lamb survival was only 45% in 2013-14 (5/11), and one young ewe disappeared during summer 2014. The number of adult ewes increased from 22 in June 2013 to 23 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 begun in 2011 has allowed a greater spread of introduced 'Cadomin' genes than if the imported rams had been at risk of hunting mortality. That moratorium has now been continued because of the very small population size.

Deliverables/Results:

Preliminary results can be found in the Final Report submitted to ACA.

Papers from the Ram Mountain research published or in press since 2014:

Hedrik, P.W., D.W. Coltman, M. Festa-Bianchet and F. Pelletier. 2014. Not

surprisingly, no inheritance of a trait results in no evolution. Proceedings of the National Academy of Sciences, 111: E4810.

Martin, A.M., M. Festa-Bianchet, D. Coltman, and F. Pelletier. 2015. Comparing measures of mating inequality and opportunity for selection with sexual selection on a quantitative character for bighorn sheep. Journal of Evolutionary Biology, 28: 223-230.

Vander Wal, E., M. Festa-Bianchet, D. Réale, D. Coltman and F. Pelletier. 2015. Sex-based differences in the adaptive value of social behavior contrasted against morphology and environment. Ecology, in press.

Pelletier, F., M. Festa-Bianchet, J.T. Jorgenson, C. Feder and A. Hubbs. 2014. Can phenotypic rescue from harvest refuges buffer wild sheep from selective hunting? Ecology and Evolution, 4: 3375-3382.

Martin, A.M., M. Festa-Bianchet, D. Coltman, and F. Pelletier. 2014. Sexually antagonistic association between paternal phenotype and offspring viability reinforces total selection on a sexually seleted trait. Biology Letters, 10: 20140043.

Miller, J.M., R.M. Malenfant, C.S. Davis, J. Poissant, J.T. Hogg, M. Festa-Bianchet and D.W. Coltman. 2014. Estimating genome-wide heterozygosity: effects of demographic history and marker type. Heredity, 112: 240-247.

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.

In addition to collaborating with Alberta Fish & Wildlife on several publications (Festa-Bianchet et al. 2014; Pelletier et al. 2014 above), the research team have been actively involved in providing information about the possible consequences of changes in bighorn sheep hunting regulations. One modelling paper showing that record book do not track changes in horn size in hunted population is under revision following positive comments from the Wildlife Society Bulletin. Another, showing that high harvest rates of legal rams reduce horn size and age at harvest while not increasing the harvest, is about to be submitted. Following the publication of a paper claiming to be based on Ram Mountain data (Traill et al. 2014. Demography, not inheritance, drives phenotypic change in hunted bighorn sheep. Proceedings of the National Academy of the US 111: 13223-13228), there has been renewed interest in their research and on the potential for artificial selection through phenotype-based definition of 'legal' ram. Festa-Bianchet's research team have rebutted the PNAS paper (Hedrick et al. 2014), and a paper submitted to Methods in Ecology and Evolution shows that the Traill et al. paper used an unreliable and misleading measure of inheritance. The researchers are about to submit a new, bayesian analysis of the Ram Mountain data that not only confirms that breeding values for ram horn length declined in 1985-1996, but also that the decline stopped when the definition of 'legal' ram was changed to full curl.

Evaluating the current and future value of climate refugia for boreal wildlife

University of Alberta (Dr. E. Bayne)

Grant: $20,000

Project Code: 030-00-90-227

Project Status: New; Completed

Recent research suggests that Alberta's boreal forests are among the ecosystems most likely to be altered by climate change. Temperature increases will stress the boreal region by increasing evapotranspiration, creating a moisture deficit condition, in contrast to the current state of excess moisture. This project was designed to identify the mechanisms for climate-change impacts on boreal birds and plants, and to identify probable climate-change refugia at multiple scales. To assess the importance of topoclimate for biodiversity, the researchers conducted bird and plant surveys, in conjunction with detailed topoclimate and fire history measurements, across terrain-driven climate gradients in three Alberta hill systems spanning a latitudinal gradient. The researchers are currently using these data to identify climate-change conservation priorities, by integrating revised topoclimate-biodiversity relationships into various land-use planning models. In brief, the researchers quantified the range of variation in local temperature, vegetation, and avifauna along macro-scale gradients of mean annual temperature (MAT) and residual elevation (controlling for latitude), and with respect to meso-scale topographic position, as represented by a combination of aspect (via solar radiation) and landform (via cold air drainage and exposure) factors. MAT, a primary driver of species richness and composition, is projected to experience a large directional change in the future due to climate warming. Current differences in MAT in Alberta are approximated by changes in latitude (inverse relationship) along the boreal-parkland-grassland gradient. By sampling birds and plants along this gradient the researchers are attempting to determine how these communities will change in the future with future warming. Clear patterns of higher diversity of species at lower elevations and lower latitudes consistent with the species diversity-energy hypothesis. Importantly, however, the number of individuals per species detected is not predicted by residual elevation but is influenced by latitude. This suggests that at lower latitudes there may be more resources available to support more species of birds and potentially more individuals per species. The researchers used these data to evaluate how variation in habitat affinities by various birds will interact with climate change to influence the future value of protected areas. For some boreal songbirds, limits to forest growth and succession may result in dramatic reductions in suitable habitat over the next century. Their habitat-adjusted approach provides conservative and efficient boreal conservation priorities anchored around climatic macrorefugia that are robust to century-long climate change and complement the current protected areas network.

Deliverables/Results:

The main result was to demonstrate that latitude and altitude are strong predictors of avian and vegetation biodiversity. Bird communities in the same forest type at different latitudes were extremely different. The Cypress Hills (warmest site) was quite different than the more northerly sites. The greater the geographic separation, which is closely related to climatic separation, the more different communities were, despite similar forest types having the same dominant tree species. This indicates that factors other than dominant tree species do influence bird communities. Clearly, spatial variation among aspen-spruce bird communities in Alberta's forested hill systems is driven by climate, somewhat independent of dominant tree species.

Latitude, however, is not the only factor affecting differences in bird and plant communities in Alberta's boreal hill systems. From the bottom to the top of all hill systems there is a change in the species composition and relative abundance of birds. Besides having a different composition, lower elevations supported more species per unit area than at the top of the hill systems. This was a strong relationship with 50% fewer species detected at the top than at the bottom of boreal hills. This elevation-diversity pattern was consistent across all hill systems as there was no interaction between latitude and residual elevation or site and residual elevation. The Cypress Hills had the highest species richness and decreased richness with increasing elevation. Importantly, species

richness also decreases with latitude.

These data were then used to explore the mismatch between climate and birds caused by limitations to forest growth and succession affecting habitat suitability in relation to latitude and elevation. The objective was to inform continental-scale conservation for boreal songbirds under disequilibria between climate, vegetation, and birds. End-of-century projected changes in songbird distribution were reduced by up to 169% when vegetation lags were considered. Zonation land rankings based on unconstrained climate projections were concentrated at high latitudes, whereas those based on strict and modified refugia scenarios were concentrated in coastal and high elevation areas, as well as biome transition zones, which were fairly consistent over time and species weights. The existing protected areas network covering 14% of the study area was estimated to conserve 12-14% of baseline avian biodiversity across time periods and scenarios, compared to 16-25% for the top 40 ranked zonation areas that we came up with.

The field data used were invaluable in validating the importance of hill systems in Alberta as potential refugia from climate change as the data fit the predicted patterns of richness that were expected based on current climate gradients.

Report on the point counts done in Alberta Hill systems.

Submitted paper to Diversity and Distributions.

Maps of models showing bird data and predicted changes caused by climate.

Currently in process of adding to new websites that will be launched soon: databasin.org/galleries/143b56bbc7584bd7a44ba86119061b15 ; biodiversityandclimate.abmi.ca/

Human access management in west-central Alberta: Influence of recreational use on the movement and behaviour of grizzly bears (*Ursus arctos*)

University of Alberta (Dr. M. Boyce)

Grant: $30,000

Project Code: 030-00-90-211

Project Status: Funded in 2012013; 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. After three years of data collection, this project has collected over 700,000 images, consisting of 42,846 independent events from 241 different trail camera locations. This project has access to grizzly bear relocation data from 2008-2014 on 23 different bears, totaling 150,000 relocations. Preliminary results using 2013 data 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. Future analyses will aim to incorporate, using the trail camera data, temporal and spatial variation in different types of recreational activity, to see whether bears show avoidance of trails when activity is high. Additionally, grizzly bear trail camera data will be analysed using novel abundance estimation statistical techniques and then compared to a concurrent DNA-based mark-recapture estimate of grizzly bears for the Yellowhead region. Results will be used to help inform future land management practices relating to access management restrictions aimed at recovering Alberta grizzly bear populations.

Deliverables/Results:

All data on human activity has now been collected, with a total of 20,446 independent events of motorized and non-motorised activity documented. These data are in the process of being modeled within a network-based analysis to understand what variables influence both temporal and spatial variation in the occurrence and magnitude of recreational activity within the foothills and mountains of west-central Alberta. This analysis will be completed in the coming months, with results to follow.

To date, analyses have shown that grizzly bears do select to use trails, and they seem to use trails for movement purposes rather than for specific foraging activities. Further analyses will implement the trail camera recreational activity to help us understand how different levels of recreational activity influence grizzly bear behavior on and surrounding trails. These analyses will help us understand if recreational activity displaces grizzly bears from areas with high activity, potentially causing negative consequences for grizzly bear habitat use.

Over the three years of study, the trail cameras detected 610 independent grizzly bear events. These data will be analysed using a number of current abundance estimation methods over the coming months. Last year, a DNA-based mark-recapture census took place in the same region, and the researchers are waiting for density estimates using these data, which can then be directly compared to estimates obtained using trail camera data.

Now that this project has completed its three-year field effort, final data entry is currently taking place and completion is scheduled for April 2015. Once completed, analyses will begin and manuscripts will be prepared for publication. The aim is to have three manuscripts completed for publication by April 1st 2016, in line with the PhD candidate's, Andrew Ladle, thesis completion.

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

University of Alberta (Dr. M. Boyce)

Grant: $75,000

Project Code: 030-00-90-218

Project Status: Funded in 2013-14; Completed

Project Website: northernalbertawolverine.com

Wolverine ranges and populations in North America have declined as a result of displacement from agriculture, urbanization, and industrial development. In Canada, wolverines are considered a species of Special Concern while in Alberta wolverines May be at Risk. Both national and provincial assessments relate the paucity of data available to make accurate population assessments (wolverines are considered by the Alberta government to be Data Deficient) and the concern for how industrial activities (forestry, oil and gas, mining) might be impacting

populations. The project goals are to better understand wolverine movement, foraging, density, and den site selection within industrial habitats of northern Alberta. The researchers are especially interested in the impact of industrial traffic on wolverine movement. The research is conducted throughout Rainbow Lake and the Birch Mountains of northern Alberta. Rainbow Lake is heavily developed by resource extraction industries whereas the Birch Mountains has minimal human impact. In both study areas, crews live-trap wolverines with log box-traps and attach GPS radio collars to captured animals. Radio collars take GPS locations at two-hour intervals in both summer and winter. Once GPS radio collars report data, crews visit these locations days later on foot and snowmobile to better understand wolverine foraging and den site selection. Run pole camera stations, in combination with live-traps, provide data for density estimates in both study areas. During the winter 2013/2014, 24 wolverines were live-trapped. So far during the winter of 2015/2016, 20 wolverines (eight female and 12 male) have been live-trapped and radio collared, with five being new captures this year. The Birch Mountain field site has captured one female wolverine. At run poles in Rainbow Lake five unmarked wolverines have been documented. At traps, the researchers believe there are four unmarked wolverines that have not yet been caught. In the Birch Mountains, four different wolverines have been observed on run poles and at live-traps. 135 GPS clusters have been visited from wolverines and found wolverines predating on snow shoe hare, grouse, and beaver. Wolverines also scavenge moose carcasses killed by wolves and hunters. The research team believes there is a strong reliance on hunting and caching beaver at their field sites. Four wolverine dens have been found, with two being found in the root wads of fallen trees, one in a log pile created through timber harvest, and one in a beaver lodge. One of the collared wolverines was killed by wolves and another was killed by a trapper.

Deliverables/Results:

This project is not yet completed, but is on track to produce peer reviewed literature from field collected data. Papers will be part of a PhD dissertation completed by Matthew Scrafford at the end of this project.

Matthew Scrafford wrote articles for Alberta Outdoorsmen, WCS Canada blog, and Alberta Trappers Association magazine. Compass Media has been filming project activities over the last two winters and intends to produce a documentary for CBC Nature of Things based on the project.

The Wolverine Foundation website is featuring this project report which acknowledges ACA involvement. The researcher produced a CTV Alberta Primetime feature focused on the relationship between this project, ACA, and the Alberta Trappers Association. Matthew gave three presentations this spring/summer at the Alberta Chapter of the Wildlife Society, Alaska Chapter of the Wildlife Society, CSEE, and Northern Research Day (UofA) and ACA will be fully acknowledged in these presentations. Matthew Scrafford has also acknowledged ACA on the project website (northernalbertawolverine.com) and his UofA profile www.biology.ualberta.ca/courses/zool224/?Page=8925.

http://www.canadiangeographic.ca/article/tracking-wolverines-alberta

Expansion into native grasslands and consequences for biodiversity of smooth brome (*Bromus inermis*) invasion across Alberta

University of Alberta (Dr. J. Cahill)

Grant: $8,000

Project Code: 015-00-90-200

Project Status: Funded in 2013-14; Completed

Smooth brome is one of the most invasive plants in Canada, occurring in nearly every Province, with surprisingly little known about the causes and consequences of spread. The goal of this project was to determine the rate of expansion of smooth brome across Alberta's grassland area and its consequences for native plant diversity. A broad research goal is to identify the biotic and abiotic factors that facilitate or constrain its expansion and impact across the province, allowing the researchers to develop an invasion risk-model. In 2013, 150 transects in nine grassland sites were established across Alberta. Along each transect, diverse biotic and abiotic conditions were measured. By revisiting and monitoring those transects this project will determine smooth brome's expansion and impact, and the conditions that determine it, both within and between sites. Overall, the researchers found substantial variation in smooth brome' expansion rates and biodiversity impacts across the province. Surprisingly, at the local (=transect) level, the researchers found that areas where smooth brome has the greatest impact on diversity are not necessarily the ones were it most rapidly expands into native grassland areas. This indicates that invasiveness and impact are biologically different processes, and they will require different management strategies depending on the objective. However, at the site level, more consistent patterns emerged. In general, smooth brome was more likely to invade quickly in more productive locations, and had a more detrimental impact on native biodiversity. That combination of effects highlights concern for smooth brome invasion in the biologically productive parts of the Province. Further analyses of the data collected through this project will reveal more details on the factors that facilitate or constraint smooth brome' success across the province; information that is fundamental for the development of new management and control strategies for this species.

Deliverables/Results:

Impact of smooth brome across the Province: Smooth brome reduces species richness by an average of 24%. However, there is great variation smooth brome's impact across the Province, ranging from 71% to 0. The sites' overall productivity is correlated with smooth brome's impact on species richness (t-value = -2.408, p-value = 0.04). This indicates that management/control strategies should concentrate in more productive areas of the Province. However, productivity does not explain the variation in smooth brome impact observed within each site.

Within sites, the reduction in species richness seems to be at least partly explained by litter biomass (t-value = -4.233, p-value = 0.003) and the % reduction in light transmission (t-value = 2.422, p-value = 0.04) in the invaded areas. Further, smooth brome was found to have a stronger impact on grasses' than on forbs' cover and biomass (Cover: F-value = 5.613, p-value = 0.01; biomass: F-value = 5-233, p-value = 0.02).

Expansion of smooth brome: Results are still preliminary, as a third year of data is needed to better predict smooth brome's expansion across all sites. Overall, smooth brome had an average expansion of 28.3 cm from 2013 to 2014, ranging from -64 cm (invaded areas shrank over time) up to 127 cm. This variation in smooth brome's expansion was partly explained by productivity, with greater expansion recorded in

more productive areas (F-value = 4.00, p-value = 0.04). Further, invaded areas with higher brome's cover (F-value = 4.26, p-value = 0.04) and biomass (F-value = 14.845, p-value = 0.0004) showed greater expansion. Interestingly, brome's impact and expansion were not found correlated (F-value = 1.141, p-value = 0.28), which means that invaded areas where brome has the highest impact on diversity, are not necessarily expanding faster. This indicates that depending on whether we want to control smooth brome's expansion in native grasslands or mitigate its impact on diversity, different areas will need to be managed. However, overall their results indicate that smooth brome is a greater concern in more productive areas of the Province, in contrast to southern less productive areas.

Due to the amount of data collected in 2013 and 2014, some delays were experienced in the processing of samples. This has resulted in delays in the analysis and publication of the results. Additional staff were hired (using other research funds) to accelerate the rate of sample processing. Currently, 2013-2014 data is being analyzed and a manuscript is being prepared for publication. One manuscript is expected to be published this year and a second one early next year. Further, due to expected annual variation in plant growth, which can greatly affect smooth brome's expansion, a third year of data is necessary (again, using alternative research funds). This will allow the researchers to create a better model to predict the high-risk areas across the province.

The project framework and preliminary results were presented at the Kinsella Field day in August 2014 and an article was published in the Beef and Range Report (see below). Additional manuscripts are being prepared.

Article: Stotz GC & JF Cahill Jr. 2014. A complicated story: Understanding the ecological impacts of smooth brome invasion into Alberta's native grasslands. Beef & Range Report. University of Alberta.

Genetic analysis of bighorn sheep population structure from winter faecal samples

University of Alberta (Dr. D. Coltman)

Grant: $9,000

Project Code: 030-00-90-235

Project Status: New; Completed

Wildlife management units are ideally delineated using biological data. It is often challenging to collect suitable field data because individuals migrate between populations and animal movements are costly and difficult to track. Molecular methods provide a cost-effective and powerful means to delineate population units and detect migration and connectivity between populations. The project aim was to characterize the population structure of bighorn sheep across Alberta through genetic analysis of an extensive collection of winter faecal pellets systemically sampled from ranges in National Parks and on provincial land across the Northern Rockies. The researchers successfully fine-tuned a faecal DNA extraction method and optimized microsatellite, mitochondrial and sex-typing methods in Dr. Coltman's lab. As of this moment, DNA has been extracted from 350 faecal samples and have completed genotypes for 100 of these. Delays and budget restraints hampered initial efforts to optimize lab reactions putting the project behind schedule, but the project is now moving forward and it is hoped results will be available by the end of 2015. When data collection is complete the researchers will be able to determine population genetic structure as well as sex specific movement patterns to produce the most comprehensive genetic inventory of bighorn sheep yet accomplished in Alberta. Furthermore, this data will be used to shed new light on a growing management concern over a predicted population sink near the reclaimed Cadomin mine area. The degree of genetic admixture will be determined in the mine population, as well as ascertain the population of origin of cross-assigned, migrant individuals sampled on the mine, and thereby reveal the extent to which the mine draws individuals of both sexes from their entire northern range. This proposal supports a larger initiative to examine Ecological Resilience in the Northern Rockies, as this genetic data will be used to identify biologically meaningful groupings of bighorn sheep and thereby support and inform future management actions and decisions. The funds received from ACA in this report were used to support this project during the specific protocol fine-tuning and optimization period.

Deliverables/Results:

Final results of this study are not yet available but it is anticipated the project will be completed by the end of 2015. However, the researchers have made great strides optimizing DNA extraction and multiplexing PCR reactions to amplify microsatellites and sex markers. As a result of these optimizations, the lab is now screening samples in the lab at full capacity and anticipates completing all genotyping by June, 2015.

Experimental harvest for CWD control in wild cervids in Alberta

University of Alberta (Dr. E. Merrill)

Grant: $40,000

Project Code: 030-00-90-228

Project Status: New; Extended until March 2016

Extensive GIS work was done to locate experimental units for proposed CWD harvest and presented to several stakeholders groups. However, Alberta Fish and Wildlife did not move forward on the experimental harvests. As a result the research team were able to complete only a portion of subproject three related to testing new technology associated with contact collars. Two types of trials were conducted to assess the functionality and error rates of proximity collars prior to putting them on deer in the wild. The first trials (mechanical trials) simulated deer contact by placing the collars at systematic distances and recording whether the contacts were recorded by the collar. In the second type of trials (in vivo trials) we put them on captive deer within one-ha pens at the University of Saskatchewan farm. 504 observation trials were conducted where the distance between two collared animals was recorded as well as factors like orientation and habitat at the same time the proximity collars were recording contacts. The researchers are now in the process of analyzing these data to be able to model error rates for correcting contact rates when the collars are placed on free-ranging deer and expect to produce a publishable paper by fall 2015. No ACA funds were used in these efforts.

Deliverables/Results:

Genetic samples have been collected as part of the CWD monitoring program but genetic samples have not been analyzed because the specific units in which the controlled experiments will be conducted have not been fully designated by Alberta Fish and Wildlife. Aerial surveys and group size analyzes have not been completed because the specific units in which the controlled experiments will be conducted have not been fully designated by Alberta Fish and Wildlife. Trials were conducted to assess the functionality and error rates of proximity collars prior to putting them on deer in the wild. Collars were not received soon enough to conduct the trials and put them on the wild deer in winter 2015 as anticipated. Data analysis is on-going for quantifying collar error

rates and results are not yet available. However, initial observations are favorable in terms of the collars adequately quantifying deer contacts and improving their ability to quantify disease transmission better than using GPS collars.

Dr. Merrill provided an invited talk at the Annual Albert Prion Research Institute Conference on 26 January 2015.

A publication on error rates in GPS is anticipated to be ready fall 2015.

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

University of Alberta

Grant: $23,000

Project Code: 030-00-90-204

Project Status: Funded in 2003-04; 2008-09, 2009-10; 2012-13 & 2013-14; Completed

Project Website: yahatinda.biology.ualberta.ca/

To address the persistence of the Ya Ha Tinda elk herd, this study has three key objectives: (1) continued monitoring of elk population trends in collaboration with Parks Canada and Alberta Fish & Wildlife; (2) continued monitoring of pregnancy rates, mortality, and migratory movements of collared cow elk, including an emerging eastward summer migration; and (3) determine the survival and cause-specific mortality of elk calves and factors associated with the different migratory herd segments. In summer 2014, 31% of the radio-collared adult female elk migrated to the east of YHT, in comparison to 15% of the radio-collared adult female elk that migrated west into Banff NP, and 54% that remained on YHT. Thirty-three calves were captured via ground monitoring the vaginal implant transmitters in May and June 2014. Twelve of the 33 calves are still alive as of March 2015. The majority of mortality causes are attributed to bears, with several mortalities attributed to wolves and cougars. Sixty-four adult cow elk were free range darted in February and March 2015. Elk were rectally palpated to determine pregnancy and fit with GPS (n = 26) or VHF collars (n = 38). Sixty pregnant, collared elk were fit with vaginal implant transmitters (VITs). As a result of winter capture efforts, the YHT elk herd is entering spring 2015 with a total of 76 collars (approximately 27-29% of the total adult female population) in the herd.

Deliverables/Results:

In summer 2014, 31% of the radio-collared adult female elk migrated to the east, on or near lands operated on by Sundre Forest Products – West Fraser and Shell Energy Canada. Fifteen percent of the radio-collared adult female elk migrated west into Banff National Park and 54% remained resident on YHT.

Based on VITs and/or location of neonatal elk calves (n = 50), 11 cows gave birth in Banff National Park (22%), seven cows gave birth to the north of the ranch, mostly in the Bighorn Creek cut blocks and along Scalp Creek (14%), 13 cows gave birth to the east of YHT (26%), and 19 cows gave birth in the vicinity of the ranch (38%). Thirty-three calves (21 residents, 11 eastern migrants, and one unknown) were captured via ground monitoring vaginal implant transmitters in May and June 2014. The median birth date for calves born in 2013 – 2014 was 27 May and the mean mass at birth was 17.6 ± 2.1 kg. Twelve of the 33 calves were alive as of March 2015. Of the known mortality causes in 2014, most were attributed to bears (48%), followed by wolves (14%), and cougars (10%).

The research team continues to update the YHT study website, and information from this summer's research will be posted in the coming months.

Two scientific presentations and one poster given at the conference for Alberta Chapter of TWS, for which an award for the poster was given, and the North American Congress for Conservation Biology.

Several manuscripts are anticipated this year: (1) an article on vaginal implant transmitters is expected to be completed and a manuscript submitted Animal Biotelemetry by 31 December 2015; (2) the researchers are collaborating with a group of elk biologists to examine the effect of calf birth weights across a range of elk studies in North America; and (3) the researchers are working to validate and publish the calf survival analyses using movement modelling.

Developing environmental DNA as a tool for detecting cryptic freshwater species

University of Alberta (Dr. C. Paszkowski)

Grant: $9,000

Project Code: 030-00-90-229

Project Status: New; Completed

The research team investigated the usefulness of environmental DNA (eDNA) as a tool for detecting cryptic freshwater vertebrates using western tiger salamander (WTS) in the Beaver Hills, Alberta. Presence/absence and relative abundance of WTS were compared based on trapping to patterns of detection based on WTS DNA in water samples. In summer 2013 the researchers trapped and collected ten 15 ml water samples from 42 sites. All samples were preserved and DNA was extracted using standard techniques from 20 sites where salamanders were observed and ten sites where they were not. All samples are being analyzed via quantitative PCR (qPCR) using a species specific primer/probe set that was developed for WTS. Additionally, the researchers are examining the relationship between relative abundance and density estimates for WTS and success of detection of WTS eDNA in water samples for three ponds intensively sampled in summer 2014. Based on results of qPCR analyses for ten water samples per pond, WTS DNA was detected in none of ten samples for the highest density pond, four samples for the lowest density, and six of ten samples for the pond with intermediate salamander densities. The researchers propose that naturally occurring substances in pond water may inhibit the detection of eDNA from amphibians in Alberta ponds. They conclude that eDNA shows promise as a tool for surveying for aquatic species, but one requiring further refinement.

Deliverables/Results:

The researchers have shown that eDNA does show promise as a technique for detecting and monitoring the presence of cryptic vertebrates in Alberta wetlands. However, eDNA is not a "magic bullet" as sometimes portrayed in the earlier literature on the technique. Like other researchers, Dr. Paszkowski's lab discovered that false negatives and inhibitors can interfere with accurate documentation of a target species' distribution and that using eDNA to assess a species' abundance will prove even more challenging.

Expected deliverables: Two journal publications and conference presentations by Welsh, Booker and Paszkowski. They have been in contact with ACA regarding a popular article for more immediate distribution, but are waiting until they have more concrete results to share.

Results are being communicated, as they unfold, to ACA's amphibian expert in Edmonton, Kris Kendell. ACA will be provided with a protocol for detecting WTS using eDNA if they seek to conduct a monitoring program using this method. This technique should be applicable across a wide variety of aquatic organisms such as fish, vascular plants, algae, invertebrates, and aquatic pathogens.

Reconstruction of stocking histories of non-native salmonids and hybridization with native species in Albertan mountain lakes using a novel paleo-eDNA approach

University of Alberta (Dr. M. Poesch)

Grant: $5,000

Project Code: 020-00-90-205

Project Status: New; Completed

A century of introduction of non-native sportfish into mountain parks has biologically impoverished hundreds of lakes. A mission of the UNESCO World Heritage Site program is see these damaged ecosystems restored in our national mountain parks, which involves assessment of the net impacts of invasive salmonids and ultimately their complete removal. However, lack of reliable long-term fish-stocking data for many of these lakes has confounded the efforts of resource managers. In the absence of baseline data, paleolimological techniques can provide valuable data concerning the origins and histories of exotic fish in these lakes. A novel and sensitive metric for quantifying the histories of non-native and native sportfish in a lake is environmental DNA preserved in sediments (paleo-eDNA) because physical evidence (e.g., scales, otoliths) of past fish abundance is scarce. The main objective of the proposed research is to use variation in paleo-eDNA to reconstruct how invasive brook trout, yellowstone cutthroat trout, and rainbow trout have suppressed native westslope cutthroat trout populations in Banff National Park, Alberta. Research activities will involve retrieval of sediment cores from lakes containing cutthroat trout that Parks Canada considers to be of questionable origin and genetic purity. Stratigraphic pattern in fish eDNA will be measured using quantitative PCR to identify stocking events, hybridization periods, and variations in cutthroat populations. Deliverables from this project will be the first ever publication of this potentially powerful method for reconstructing the unknown history of fish within lakes, and essential information to park managers attempting to return mountain lakes back to their natural state.

Deliverables/Results:

Six diagnostic Single Nucleotide Polymorphisms (SNPs) per species were taken from Campbell et al. (2012) and were confirmed by Sanger sequencing archived adipose fin clips of westslope cutthroat trout, yellowstone cutthroat trout, and rainbow trout. Six additional diagnostic SNP sites for both bull and brook charr were discovered at loci used by Campbell et al. (2012) to differentiate cutthroat and rainbow trout. These results indicate that eDNA from westslope cutthroat trout, yellowstone cutthroat trout, rainbow trout, brook charr, and bull charr can be reliably extracted from sediment cores in alpine lakes using Ion Torrent sequencing technology. Previously published sediment deposition data in the Canadian mountain national parks have suggested that one cm of sediment is approximately ten years old (Lamontagne and Schindler 1994). As stocking in Banff National Park did not take place until the early twentieth century, Ion Torrent analysis of sediments is being conducted on the top 15 cm of each core (~150 years before present) until dating information is complete. Initial results confirm that Elk Lake (suspected native westslope cutthroat trout population) has extractable westslope cutthroat trout eDNA throughout the 15 cm core. These results confirm that a population of westslope cutthroat trout has existed in Elk Lake for at least 150 years, which is well before stocking practices began in Banff National Park. Luellen Lake, which was stocked with yellowstone cutthroat trout, has extractable yellowstone cutthroat trout eDNA from the top 9 cm of sediment (~90 years before present), which roughly correlates to the recorded stocking date of 1934. No salmonid eDNA was extracted from the fishless Opabin Lake core. Deeper sections from each core may be added if the Pb210 analysis reveals that 15 cm of sediment is less than 150 years old.

Winter and summer sampling has been completed throughout the winter and summer, 2014. The majority of lead dating and genetic analyses are ongoing. Without definitive results, the researchers have not completed a manuscript or presentations, although a manuscript on winter zooplankton ecology is in preparation.

A first step towards wildlife monitoring with drones: quantifying sound disturbance for ungulates

University of Calgary (Dr. C. Hugenholtz)

Grant: $8,000

Project Code: 030-00-90-232

Project Status: New; Completed

This research was motivated by the growing interest in the use of small unmanned aerial vehicles (UAVs) for monitoring wildlife. The main research objective was to quantify the sound level of UAVs and determine what altitudes they must be flown to avoid being audibly detected by wildlife. Research activities consisted of measuring the sound power levels produced by two commercial UAVs that are commonly-used for mapping and wildlife surveys, and then modeling the sound propagation and attenuation in the context of three focal species: White-tailed deer, bobwhite quail, and mallards. The commercial UAVs consisted of a vertical take-off and landing platform (SkyRanger) and a fixed-wing platform (eBee). Results from the measurements indicate that the sound power levels of the UAVs differ in the lower frequency ranges, but are otherwise similar above 1.25 kHz. Modeling based on the lower hearing thresholds of the focal species reveals that the UAVs must be flown at different elevations above ground level in order to avoid detection. Bobwhite quail have the best hearing and are able to hear both UAVs from the furthest distance (e.g., 0.61 km @ 1.25 kHz, SkyRanger), whereas mallards have the lowest hearing threshold and are able to hear both UAVs at relatively short distances (e.g., 0.19 km @ 1.25 kHz, eBee). This research did not examine whether the sound from the UAVs was sufficient to disturb the focal species, and as such, it is unknown whether wildlife behaviour can be adversely affected by the sound from UAVs operating overhead. However, in order to minimize adverse effects on wildlife, the results show that the minimum flying height of UAVs may vary considerably depending on the hearing thresholds of the focal species. Since flying height is related to the ground sample distance of imagery or video used as part of wildlife surveys, results from this research indicate that the ability to detect some wildlife species may be impacted by the need to minimize sound disturbance. Future research should examine how UAV noise affects wildlife behaviour so as to determine if lower flying heights are possible.

Deliverables/Results:

The following deliverables are provided in the report, Hugenholtz, C. H. A first step towards wildlife monitoring with UAVs: Quantifying sound disturbance. Final report prepared for ACA. November 2014:

a) Sound power levels for two commercial drone models (one fixed wing and one rotary wing) for each one third octave band from 1.25 to 20 kHz.

b) Minimum heights each of the five models of drone can fly without auditory detection for reindeer and white-tailed deer in a range of environmental conditions.

c) A manuscript from this project for submission to a peer-reviewed journal (a modified version of report).

Small mammals as sentinels for metal pollution from the oil sands region: Metal residues in target tissues, oxidative stress biomarkers, and non-invasive methods to detect exposure and effects.

University of Calgary (Dr. J Smits)

Grant: $13,000

Project Code: 030-00-90-231

Project Status: New; Completed

Bitumen extraction in northeastern Alberta releases complex mixtures of metals, metalloids, and polycyclic aromatic compounds (PACs) among other compounds. The deer mouse, *Peromyscus maniculatus*, and meadow vole Microtus *pennsylvanicus* are two small rodent species that naturally inhabit northern meadow and shrub habitat. To study the success of the reclamation strategy on reclaimed terrestrial sites, the research team investigated the usefulness of these two native mammalian species as biosentinels of oil sands related contaminants by examining biomarkers of exposure and indicators of biological costs, on two different mine leases. The project objectives were to determine: 1) the exposure of small mammals (sentinel species) to metals through measuring these xenobiotics in kidney and muscle; 2) the potential transfer of these pollutants through the food web; 3) morphological indicators (body condition, organosomatic indices (relative organ sizes) and oxidative stress biomarkers (glutathione, vitamins A and E homeostasis) as subclinical signs of overall health and toxic effects due to exposure. Both experimental and field trials were developed in order to accomplish these objectives. A fourth objective, using feces and hair as non-invasive samples to determine exposure, was rejected because it was impractical for the species being studied under field conditions.

In the experimental trial, laboratory mice exposed to environmentally relevant mixtures of metals (Pb, Cd, Hg), and PAHs, showed toxicological effects evident through disrupted homeostasis of vitamins A and E in liver, and the glutathione antioxidant system in the testes. In the field study, the deer mouse proved to be a more sensitive species to oil sands related pollutants than meadow vole, highlighting the importance of dietary habits and life history contributing to species-related differences for chemicals exposure. Deer mice inhabiting impacted sites accumulated higher levels of Se, Co, Tl in kidney and muscle, than those from a reference site, presumably from increased input of these metals from nearby mining development. Co-exposure to higher levels of these metals was accompanied by reduced body condition, reduced testicular mass, and increased oxidative stress both in liver and testes. Other alterations in the homeostasis of dietary antioxidants (vitamins A and E), suggest that other local factors (food quality) may also contribute to the poorer body condition of mice from reclaimed sites. The researchers examine for the first time, metal accumulation in tissues of local herbivores including muscle which is the main tissue consumed in hunted, herbivorous game animals. Increased levels of Se, Co, and Tl in mice from reclaimed areas may transfer to higher level predators, and possibly to humans eating country foods from game animals inhabiting reclaimed lands at the oil sands region.

Deliverables/Results:

Three manuscripts were anticipated to result from this project, the data from which will help inform or guide the development of detailed, science-based environmental risk assessments for oil and gas projects. Two have been accepted in the journal Environmental Toxicology and Chemistry and Environmental Research, while the third is currently in review in a highly respected, peer reviewed journal.

Bioenergetic consequences of climate change to native Albertan mammals

University of Saskatchewan (Dr. J. Lane)

Grant: $9,000

Project Code: 030-00-90-236

Project Status: Similar New (similar project funded in 2011-12; 12-13 Boutin/Lane); Completed

The most commonly reported ecological consequences of climate change are shifts in phenologies (i.e., the seasonal timing of life cycle events). Whether these shifts will be sufficient to prevent population declines, however, is currently unknown. Of concern, is that the component species in ecosystems often respond differently to climate change, resulting in trophic-level asynchrony (i.e., populations temporally mismatched with their primary food resources). Asynchrony can potentially lead to population declines as periods of high-energy expenditure (i.e., reproduction) no longer coincide with peaks in energy abundance. Such bioenergetic consequences of sub-optimal phenologies have been proposed as a general mechanism underlying climate change induced population declines. However, this hypothesis was developed for (and has only been tested in) income breeding insectivorous birds. Dr. Lane is testing it as a potential mechanism underlying a previously reported decline in population viability (over a 20 year time span) in Columbian ground squirrels (a sedentary mammal that relies on a mixture of income and capital resources to fuel reproduction). For this test, 25 estimates of daily energy expenditure (using the doubly-labeled water technique) are being analyzed during lactation and measures of post-reproductive mass gain to evaluate two predictions for declining viabilities: sub-optimal phenologies have led to increased energy expenditure during lactation and/or females no longer have sufficient time post-reproduction to accumulate sufficient fat resources to survive the subsequent hibernation period. Under the first prediction, it is expected that females breeding at sub-optimal times (e.g., asynchronous to the peak in vegetation) would exhibit elevated energetic costs of lactation, and diminished annual reproductive success. Under the second prediction, it is expected that later breeding females (and their offspring) would both enter hibernation at relatively lower masses and suffer reduced over-winter survival. Body mass data were collected during the summer of 2014. Blood samples (to quantify daily energy expenditure) will be sent to Aberdeen, UK for analysis as soon as international import licenses are received. Annual reproductive success data will be collected in 2015. In total, these datasets will allow for a detailed test of the two predictions and a better understanding of the potential role of bioenergetics in observed population declines due to climate change-induced shifts in phenologies.

Deliverables/Results:

A partial award necessitated some changes to project plans. Specifically, Dr. Lane did not employ the doubly-labeled water technique or

implement the food supplementation experiment in 2014. Rather, most objectives were addressed using a combination of field data (on phenologies, post-lactation mass-gain and reproductive success) collected during 2014, as well as compiled data and estimates of daily energy expenditure from archived blood samples (collected during 2011, with data already available from 2009 and 2010).

The mean emergence date of adult females in 2014 was 11 May, 2014 (earliest: 14 Apr, 2014; latest: 6, June, 2014). These data will provide the raw variation over which to compare the relationship between emergence dates and both daily energy expenditure during lactation (data expected late 2015), pre-hibernation body mass (data collected autumn 2014 and currently being compiled and analyzed) and overwinter survival of females and juveniles (data to be collected spring 2015).

The direct deliverables from this project will be high-impact journal publications. Specifically, two peer-reviewed manuscripts are planned: 1.) The relationship between the phenology and energetic costs of reproduction in a wild mammal. 2.) Distinguishing the separate and combined effects of income and capital resources on reproduction in a wild mammal. For both manuscripts, field data collection (on phenology, reproductive success and mass gain post-lactation) was completed on August 31, 2014. Archived blood samples (to quantify daily energy expenditure during lactation) will be shipped to Aberdeen for analysis. Blood analysis is anticipated to take 8-12 months. Data analysis and manuscript preparation will commence following receipt of daily energy expenditure data (late 2015). This project represents the first attempt to apply the bioenergetics framework to the study of variation in emergence dates from hibernation in the wild and will do so within an exceptionally powerful study system. The importance of phenology to the life history of wild organisms, especially in the context of on-going climate change, makes this advance timely and it should be of interest to researchers engaged across multiple disciplines.

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

University of Saskatchewan (Dr. C. Soos)

Grant: $10,000

Project Code: 030-00-90-177

Project Status: Funded since 2011-12; Completed

The project aim was 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 Avian Influenza Viruses 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. Our 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/Results:

Successful field season in 2014; samples collected from >400 blue-winged teal in AB and SK. Sample analyses for avian influenza viruses completed for 2012-2014 samples. Serological analyses of all serum samples for AIV antibodies completed by NCFAD. Hemoparasite analysis completed for 2012 samples, and in progress for 2013-14 samples by collaborators at the USGS.

One publication accepted: 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, accepted with revisions.

Two manuscripts submitted or 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, currently in review.

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

Two manuscripts in preparation:

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 October 2015.

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 October 2015.

Soos taught grad student seminar on avian migration in Feb 2015, using this work as case scenarios.

Presentation on Soos research program at the Ecotoxicology and Wildlife Health Division meeting at Environment Canada office in Ottawa, in January 2015.

Thesis by USGS collaborator Andrew Ramey (plus associated manuscripts) to be completed by 2016.

Ecology of bats overwintering in the Canadian Prairies

Wildlife Conservation Society Canada (Dr C. Lausen)

Grant: $15,000

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 six 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 arid and 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 temperatures and temperatures in random crevices, and warmer and less stable than temperatures in three 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 monitored 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. Radiotagged and PIT-tagged bats were monitored. Bats roosted in small groups and rarely changed 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 final report submitted to ACA.

Multiple papers are anticipated from this research, including those focused on: 1.) Habitat and roost selection of bats in non-mountainous areas in contrast 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 activity and arousal patterns; and 3.) possible reasons for winter flight (e.g., hydration) and the use of stable isotopes to examine use of water by overwintering bats in Dinosaur Provincial Park.

The research team have begun analysis for the paper on habitat and roost selection, but are waiting for additional microclimate data from sites outside of DPP. They have also begun writing and analyzing data for the paper on arousal patterns and reasons for winter flight, which is being done in collaboration with an intern from Cardiff University. Work on the other papers has not yet started as stable isotope analysis is currently being completed and the flight experiments have not yet been conducted.

The researchers continue to give presentations on the topic of WNS to the general public and have also prepared yearly reports that update findings for Dinosaur Provincial Park, AESRD, ACA, and WCS Canada.

Understanding landscape and anthropogenic effects on wolverine distribution and regional connectivity in southwest Alberta

Yellowstone to Yukon Conservation Initiative (Dr. A. Clevenger)

Grant: $12,000

Project Code: 030-00-90-230

Project Status: New; Completed

The goal of this multi-year research project is to obtain spatially-explicit information on the wolverine population, connectivity, and habitat relationships in the southern Canadian Rockies and largely unstudied and vitally important international transboundary linkage region. This report summarizes 2015 field research carried out in southwest Alberta and southeast BC. From January to April 2015, 64 sites were deployed over an area of >9,200 km^2 that were surveyed systematically: 47 sites were set in BC, while 17 were set in Alberta. Of the 64 sites set, 12 (19%) were located inside or less than 1.5 km of a protected area (National Park, Provincial Park) and all were in BC. The remaining 52 sites were situated in non-protected lands. In Alberta, of the 17 sampling sites, only three sites (17%) had confirmed wolverine detections and a total of four visits. The three sites are all situated along the spine of the Continental Divide. The detection probability during the first session was 43.5% (SE=12.8), the second session 68.3% (SE=12.8) and the final session 62.1% (SE=13.1). The estimate of wolverine occupancy in the study area was 25.4% (SE=0.05). Previous estimates of occupancy in the Canadian Rockies have ranged from 88% (SE=0.05) in the Banff-Yoho-Kootenay park complex to 36% (SE=0.11) in Kananaskis Country. Last year's survey in the Waterton-Crowsnest Pass area had the lowest estimate of occupancy to date of 17% (SE=0.09). A total of 447 hair samples from 31 sites were obtained from sites/sessions where wolverines were detected by camera. The hair samples in addition to seven scat samples collected at five sites are currently being analyzed at the US Forest Service Conservation Genetics lab in Missoula, Montana. The research expects the genetics analysis to be completed by the end of summer 2015. Preliminary research findings are being communicated to federal (US), state and provincial natural resource and land management agencies responsible for wolverine conservation and management. Multi-year wolverine occupancy models (camera data) and landscape resistance models (genetic data) from the >51,000 km^2 area (encompassing the core protected areas of the central Canadian Rocky Mountains to the north and Glacier-Waterton Lakes National Park complex in the south) will be developed at the end of Year 6 (2016). These analyses will provide spatially-explicit information on wolverine population, genetic connectivity, and habitat relationships in the Canadian Crown of the Continent ecosystem.

Deliverables/Results:

Between December 2014 and April 2015, implement wolverine survey in southwest Alberta in coordination with survey in southeast BC.

Compile occupancy data from wolverine surveys conducted in Year 1 and Year 2 and create occupancy models and analyse hair samples from survey and opportunistic scat samples at Conservation Genetics Lab in Missoula. This will be completed in late summer 2015.

Habitat relationships to identify critical habitats and movement corridors throughout southwest Alberta and cross-highway linkage locations along Highway 3. Planned for 2016.

Analyse fine-scale genetic structure across Highway 3, and other potential barriers, and conduct regional-scale connectivity and gene flow analysis in southern Canadian Rockies. Planned for 2016.

Share results with Alberta Tourism, Parks and Recreation (Parks & Protected Areas) and AESRD (Wildlife Division) to help inform the South Saskatchewan Regional Plan and its subsequent finer-scale planning. Planned for 2016

Prepare and Addendum to the Highway 3 Mitigation Report (Clevenger et al. 2010) and technical support to the multi-partner Highway 3 mitigation project. Planned for 2016.

Prepare manuscripts for submission for publication in peer-reviewed scientific journals. Planned for 2016.

Make project information available (via partner web sites and direct communication).

APPENDIX A:
Projects in relation to Grants Funding Priorities 2014-2015

CCEG Funding Priorities

FUNDING PRIORITY #1: 6 CCEG PROJECTS

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

Alberta Fish and Game Association, Can ranching help achieve sustainability of Prairie wildlife?... (Operation Grassland Community, $39,500

Cows & Fish (Alberta Riparian Habitat Management Society), Developing westslope cutthroat trout riparian habitat improvement action plans..., $21,600

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding birds at Lesser Slave Lake; $25,750

NAIT; Fisheries habitat improvements in the Sturgeon River Watershed; $26,070

Oldman Watershed Council; Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat; $14,240

The King's University College; Faith-based organizations and conservation: engaging volunteers in recovery plans of endangered pines; $7,670

FUNDING PRIORITY #2: 28 CCEG PROJECTS

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

Alberta Fish and Game Association, Can ranching help achieve sustainability of Prairie wildlife?... (Operation Grassland Community), $39,500

Alberta Fish and Game Association, Pronghorn antelope migration corridor project, $25,000

Alberta Riparian Habitat Management Society (Cows and Fish); Grazing school for women: promoting habitat and improved grazing stewardship to livestock producers in south and central Alberta; $3,000

Alberta Riparian Habitat Management Society (Cows & Fish), Developing westslope cutthroat trout riparian habitat improvement action plans..., $21,600

Ann & Sandy Cross Conservation Area, Protect your watershed: Riparian area protection project, $17,199

Beaverhill Bird Observatory, Stewardship, habitat enhancement, and monitoring of wildlife at Beaverhill Lake, $19,450

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

Edmonton and Area Land Trust; Wind up the wire for wildlife habitat enhancement; $2,650

Ellis Bird Farm Ltd; Living with Beavers Part II; $3,000

Friends of Fish Creek Provincial Park Society; Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness; $3,000

Highway 2 Conservation; Riparian improvement; $10,000

Lacombe Fish and Game Association; Len Thompson Aeration Project; $5,550

Lone Pine Farming Inc.; Habitat enhancement project #1 (nest boxes); $1,560

MD of Taber; MD of Taber Oldman River Boat Launch; $15,000

Mountain View County; Riparian area management improvements fund; $20,000

Mountain View County; Hiller's Dam floating island project; $24,000

NAIT; Fisheries habitat improvements in the Sturgeon River Watershed; $26,070

Nature Alberta; Living By Water Project Program 2014; $27,288

Northern Lights Fly Tyers/Trout Unlimited Canada Edmonton Chapter; Conserving and restoring Arctic Graying in the Upper Pembina River watershed - habitat restoration planning; $11,500

Oldman Watershed Council; Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat; $14,240

Partners in Habitat Development c/o Eastern Irrigation District; Partners in Habitat Development; $15,000

Red Deer County; Conservation Partners 2014; $30,000

Rocky Mountain Wilderness Society; Trail and campground cleaning trip from Porky Pine Lick to Rocky Pass; $7,000

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

Trout Unlimited Canada; Bill Griffiths Creek Enhancement Project; $2,500

Trout Unlimited Canada; Policeman Creek Habitat Enhancement; $3,000

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

West-Central Forage Association; Lobstick River (East of Chip Lake) Assessment Project - Phase 1; $15,250

FUNDING PRIORITY #3: 5 CCEG 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).

Lacombe Fish and Game Association; Len Thompson Aeration Project; $5,550

MD of Taber; MD of Taber Oldman River Boat Launch; $15,000

Mountain View County; Hiller's Dam floating island project; $24,000

NAIT; Fisheries habitat improvements in the Sturgeon River Watershed; $26,070

Trout Unlimited Canada; Policeman Creek Habitat Enhancement; $3,000

FUNDING PRIORITY #4: 23 CCEG PROJECTS

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

Alberta Fish and Game Association, Can ranching help achieve sustainability of Prairie wildlife?... (Operation Grassland Community), $39,500

Alberta Fish and Game Association, Pronghorn antelope migration corridor project, $25,000

Alberta Riparian Habitat Management Society (Cows and Fish); Grazing school for women: promoting habitat and improved grazing stewardship to livestock producers in south and central Alberta; $3,000

Alberta Riparian Habitat Management Society (Cows & Fish), Developing westslope cutthroat trout riparian habitat improvement action plans..., $21,600

Ann & Sandy Cross Conservation Area, Protect your watershed: Riparian area protection project, $17,199

Beaverhill Bird Observatory, Stewardship, habitat enhancement, and monitoring of wildlife at Beaverhill Lake, $19,450

Calgary Bird Banding Society, Cypress Hill landbird monitoring station, $25,400

Castle Crown Wilderness Coalition; Castle restoration, inventory mapping and outreach; $15,000

Friends of Fish Creek Provincial Park Society; Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness; $3,000

Highway 2 Conservation; Riparian improvement; $10,000

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding birds at Lesser Slave Lake; $25,750

Mountain View County; Riparian area management improvements fund; $20,000

NAIT; Fisheries habitat improvements in the Sturgeon River Watershed; $26,070

Nature Alberta; Assessing the State of Bird Conservation in Alberta; $8,000

Nature Alberta; Living By Water Project Program 2014; $27,288

Oldman Watershed Council; Classifying linear features in the Oldman

Watershed headwaters to protect water quality and wildlife habitat; $14,240

Partners in Habitat Development c/o Eastern Irrigation District; Partners in Habitat Development; $15,000

Pincher Creek Stock Association; Castle River grazing allotment Riparian Health Inventory; $8,377.46

Red Deer County; Conservation Partners 2014; $30,000

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

Trout Unlimited Canada; Yellow Fish Road; $15,000

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

West-Central Forage Association; Lobstick River (East of Chip Lake) Assessment Project - Phase 1; $15,250

FUNDING PRIORITY #5: 7 CCEG PROJECTS

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

Castle Crown Wilderness Coalition; Castle restoration, inventory mapping and outreach; $15,000

Friends of Fish Creek Provincial Park Society; Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness; $3,000

Nature Alberta; Living By Water Project Program 2014; $27,288

Pine Lake Restoration Society; Education/ Postings on aquatic invasive species (quagga/zebra); $4,500

The King's University College; Faith-based organizations and conservation: engaging volunteers in recovery plans of endangered pines; $7,670

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

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

FUNDING PRIORITY #6: 0 CCEG PROJECTS

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

FUNDING PRIORITY #7: 32 CCEG PROJECTS

Projects related to the retention, recruitment and education of hunters, anglers or trappers (including attracting new mentors, training mentors and providing mentors for new hunters/anglers/trappers; sharing information in schools and with the general public about the link between conservation and hunters/anglers/trappers; this category also includes educating new hunters/anglers/trappers).

AHEIA, 4H Program Coordination, $3,000

AHEIA; Conservation Education for the Army Cadet league of Canada, AB; $3,000

AHEIA; Outdoor Youth Seminar; $3,000

AHEIA; Urban Fishing Initiatives; $3,500

AHEIA; 11th Annual OWL Day "Outdoor Wildlife Learning"; $5,000

AHEIA; Mobile Shotgun safety training trailer; $7,000

AHEIA; Outdoor Bound Mentorship Program; $7,500

AHEIA; Youth Fishing Initiatives; $7,850

AHEIA; Youth Hunter Education Camp (Week 1, 2, 3); $15,000 (*three projects combined into one)*

AHEIA; Provincial Hunting Day Initiatives; $16,000

AHEIA; 21st Annual Outdoor Women's Program; $20,000

AHEIA; Mobile Applications - "Essentials Series" Online Education Program; $40,000

Alberta Trappers Association - Peace River Local 1195; Trapper education and training; $4,460

Brooks and District Fish and Game Association; Hunter Education Field Day; $400

Foremost Fish and Game Association; 2014 FFGA Youth Pheasant Hunt; $3,000

H A Kostash School; H A Kostash Youth Fishing Mentorship Program; $5,250

Hunting for Tomorrow; HFT teacher's workshop; $5,000

Lacombe Fish and Game Association; Len Thompson Aeration Project; $5,550

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding birds at Lesser Slave Lake; $25,750

Lethbridge Fish and Game Association; Fishing fun, awareness & education day; $3,200

Lethbridge Fish and Game Association; LGFA - Conservation Community and Education Program; $10,000

Linden Citizen Advisory Group Society; Linden Fishing Derby; $3,000

Magrath Rod and Gun Club; Continuing club activities in Magrath and surrounding area; $2,000

Oldman Watershed Council; Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat; $14,240

Owl River Metis Local #1949; Owl River Metis Local #1949 - Canadian Firearm Safety Course; $1,500

Red Deer Fish and Game Association; Alberta Youth Pheasant Program; $8,000

Southern Alberta Bible Camp; Walleye - Pike fishing; $2,540

Southern Alberta Bible Camp; Archery curriculum; $3,000

Taber Shooting Foundation; Taber Shooting Foundation - Shooting Facility; $37,000

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

Trout Unlimited Canada; Understanding Fish, Water and Conservation; $12,000

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

FUNDING PRIORITY #8: 28 CCEG PROJECT

Generate awareness of the hunting/angling/trapping opportunities available to the public.

AHEIA, 4H Program Coordination, $3,000

AHEIA; Conservation Education for the Army Cadet league of Canada, AB; $3,000

AHEIA; Outdoor Youth Seminar; $3,000

AHEIA; Urban Fishing Initiatives; $3,500

AHEIA; 11th Annual OWL Day "Outdoor Wildlife Learning"; $5,000

AHEIA; Mobile Shotgun safety training trailer; $7,000

AHEIA; Outdoor Bound Mentorship Program; $7,500

AHEIA; Youth Fishing Initiatives; $7,850

AHEIA; Youth Hunter Education Camp (Week 1, 2, 3); $15,000 (*three projects combined into one)*

AHEIA; Provincial Hunting Day Initiatives; $16,000

AHEIA; 21st Annual Outdoor Women's Program; $20,000

AHEIA; Mobile Applications - "Essentials Series" Online Education Program; $40,000

Foremost Fish and Game Association; 2014 FFGA Youth Pheasant Hunt; $3,000

Hunting for Tomorrow; HFT teacher's workshop; $5,000

Inside Education; Teacher Professional Development Programming; $1,500

Lacombe Fish and Game Association; Len Thompson Aeration Project; $5,550

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding birds at Lesser Slave Lake; $25,750

Lethbridge Fish and Game Association; Fishing fun, awareness & education day; $3,200

Lethbridge Fish and Game Association; LGFA - Conservation Community and Education Program; $10,000

MD of Taber; MD of Taber Oldman River Boat Launch; $15,000

Owl River Metis Local #1949; Owl River Metis Local #1949 - Canadian Firearm Safety Course; $1,500

Red Deer Fish and Game Association; Alberta Youth Pheasant Program; $8,000

Southern Alberta Bible Camp; Walleye - Pike fishing; $2,540

Southern Alberta Bible Camp; Archery curriculum; $3,000

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

Trout Unlimited Canada; Understanding Fish, Water and Conservation; $12,000

Trout Unlimited Canada; Yellow Fish Road; $15,000

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

FUNDING PRIORITY #9: 49 CCEG PROJECT

Projects related to nature/outdoor education.

AHEIA, 4H Program Coordination, $3,000

AHEIA; Conservation Education for the Army Cadet league of Canada, AB; $3,000

AHEIA; Outdoor Youth Seminar; $3,000

AHEIA; Urban Fishing Initiatives; $3,500

AHEIA; 11th Annual OWL Day "Outdoor Wildlife Learning"; $5,000

AHEIA; Mobile Shotgun safety training trailer; $7,000

AHEIA; Outdoor Bound Mentorship Program; $7,500

AHEIA; Youth Fishing Initiatives; $7,850

AHEIA; Youth Hunter Education Camp (Week 1, 2, 3); $15,000 (*three projects combined into one)*

AHEIA; Provincial Hunting Day Initiatives; $16,000

AHEIA; 21st Annual Outdoor Women's Program; $20,000

AHEIA; Mobile Applications - "Essentials Series" Online Education Program; $40,000

Alberta Riparian Habitat Management Society (Cows and Fish); Grazing school for women: promoting habitat and improved grazing stewardship to livestock producers in south and central Alberta; $3,000

Beaverhill Bird Observatory, Stewardship, habitat enhancement, and monitoring of wildlife at Beaverhill Lake, $19,450

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

Castle Crown Wilderness Coalition; Castle restoration, inventory mapping and outreach; $15,000

Cochrane High School Outdoor Education; Equipment proposal for Cochrane High School Outdoor Education Program; $5,000

County of Vermilion River; Stretton Creek Watershed Education Program; $12,000

Edmonton Nature Club, 2014 Snow Goose Chase, $2,000

Foremost Fish and Game Association; 2014 FFGA Youth Pheasant Hunt; $3,000

Friends of Fish Creek Provincial Park Society; Community Watershed Stewardship 2014: Water Quality Baseline, habitat restoration and public awareness; $3,000

George Pegg Botanic Garden; Wetland environmental education field school; $2,122

H A Kostash School; H A Kostash Youth Fishing Mentorship Program; $5,250

Hardisty Lake United Church Camp; Riparian assessment and education; $3,000

Helen Schuler Nature Centre; Extreme by Nature: Environmental Education for 11-15 Year Olds; $3,000

Hunting for Tomorrow; HFT teacher's workshop; $5,000

Inside Education; Teacher Professional Development Programming; $1,500

Lesser Slave Lake Bird Observatory; Monitoring migratory and breeding

birds at Lesser Slave Lake; $25,750

Lethbridge Fish and Game Association; Fishing fun, awareness & education day; $3,200

Lethbridge Fish and Game Association; LGFA - Conservation Community and Education Program; $10,000

Linden Citizen Advisory Group Society; Linden Fishing Derby; $3,000

Nature Alberta; Assessing the State of Bird Conservation in Alberta; $8,000

Nature Alberta; Expanding the Young Naturalist Club Program in Alberta; $25,000

Nature Alberta; Living By Water Project Program 2014; $27,288

Oldman Watershed Council; Classifying linear features in the Oldman Watershed headwaters to protect water quality and wildlife habitat; $14,240

Parkland School Division #70; ACA Parkland youth multimedia project; $13,000

Pincher Creek Stock Association; Castle River grazing allotment Riparian Health Inventory; $8,377.46

Pine Lake Restoration Society; Education/ Postings on aquatic invasive species (quagga/zebra); $4,500

Red Deer Fish and Game Association; Alberta Youth Pheasant Program; $8,000

Red Deer River Watershed Alliance Society; Establishing a vital connection: Communicating the integrated watershed management plan to the young adult demographic; $3,000

Rocky View Schools; Glenbow Ranch Provincial Park Inquiry Day (GRID); $3,000

Southern Alberta Bible Camp; Walleye - Pike fishing; $2,540

Southern Alberta Bible Camp; Archery curriculum; $3,000

Trout Unlimited Canada; Stewardship License Pilot Project; $2,200

Trout Unlimited Canada; Bill Griffiths Creek Enhancement Project; $2,500

Trout Unlimited Canada; Policeman Creek Habitat Enhancement; $3,000

Trout Unlimited Canada; Understanding Fish, Water and Conservation; $12,000

Trout Unlimited Canada; Yellow Fish Road; $15,000

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

Research Grants Funding Priorities

FUNDING PRIORITY #1: 5 RESEARCH PROJECTS

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

Foothills Research Institute; Using scat DNA and citizen science to determine grizzly bear distribution, abundance, and trend in the Yellowstone population unit ; $17,000

University of Alberta; Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta; $75,000

University of Alberta; Human access management in west-central Alberta: Influence of recreational use on the movement and behaviour of grizzly bears (*Ursus arctos*); $30,000

University of Alberta; Reconstruction of stocking histories of non-native salmonids and hybridization with native species in Albertan mountain lakes using a novel paleo-eDNA approach; $5,000

Wildlife Conservation Society Canada; Ecology of bats overwintering in the Canadian Prairies; $15,000

FUNDING PRIORITY #2: 2 RESEARCH PROJECTS

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

University of Alberta; Expansion into native grasslands and consequences for biodiversity of smooth brome (*Bromus inermis*) invasion across Alberta; $8,000

Wildlife Conservation Society Canada; Ecology of bats overwintering in the Canadian Prairies; $15,000

FUNDING PRIORITY #3: 2 RESEARCH 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.

University of Alberta; Human access management in west-central Alberta: Influence of recreational use on the movement and behaviour of grizzly bears (*Ursus arctos*); $30,000

University of Alberta; Genetic analysis of bighorn sheep population structure from winter faecal samples; $9,000

FUNDING PRIORITY #4: 0 RESEARCH PROJECTS

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

FUNDING PRIORITY #5: 4 RESEARCH PROJECTS

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

Laval University; Population dynamics, reproduction and stress in mountain goats of Alberta; $10,000

University of Alberta; Effects of industry on wolverine (*Gulo gulo*) ecology in the boreal forest of northern Alberta; $75,000

University of Alberta; Human access management in west-central Alberta: Influence of recreational use on the movement and behaviour of grizzly bears (*Ursus arctos*); $30,000

University of Alberta; Experimental harvest for CWD control in wild cervids in Alberta; $40,000

FUNDING PRIORITY #6: 2 RESEARCH PROJECTS

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

University of Saskatchewan; Infectious pathogens and migration in blue-winged teal (*Anas discors*): Transport routes and impacts on infection; $10,000

Wildlife Conservation Society Canada; Ecology of bats overwintering in the Canadian Prairies; $15,000

FUNDING PRIORITY #7: 3 RESEARCH 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.).

Laval University; Population dynamics, reproduction and stress in mountain goats of Alberta; $10,000

University of Alberta; Experimental harvest for CWD control in wild cervids in Alberta; $40,000

University of Sherbrooke; Experimental management of bighorn sheep; $8,000

FUNDING PRIORITY #8: 0 RESEARCH 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 #9: 0 RESEARCH PROJECT

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

FUNDING PRIORITY #10: 0 RESEARCH PROJECTS

Effects of agricultural run-off on fisheries.

BACKGROUND DOCUMENT BY DRS BOYCE AND POESCH: 5 RESEARCH PROJECTS

Boyce , M and M. Poesch, Research needs for fisheries and wildlife in Alberta. University of Alberta. 35pp.

University of Alberta; Evaluating the current and future value of climate refugia for boreal wildlife; $20,000

University of Alberta; Genetic analysis of bighorn sheep population structure from winter faecal samples; $9,000

University of Calgary; A first step towards wildlife monitoring with drones: quantifying sound disturbance for ungulates; $8,000

University of Saskatchewan; Bioenergetic consequences of climate change to native Albertan mammals; $9,000

Y2Y (Clevenger); Understanding landscape and anthropogenic effects on wolverine distribution and regional connectivity in southwest Alberta; $12,000

NONE OF THE FUNDING PRIORITIES: 4 PROJECTS (0 CCEG; 5 RESEARCH)

University of Alberta; Developing environmental DNA as a tool for detecting cryptic freshwater species; $9,000

University of Alberta; Evaluating the current and future value of climate refugia for boreal wildlife; $20,000

University of Calgary; A first step towards wildlife monitoring with drones: quantifying sound disturbance for ungulates; $8,000

University of Calgary; Small mammals as sentinels for metal pollution from the oil sands region: Metal residues in target tissues, oxidative stress biomarkers, and non-invasive methods to detect exposure and effects; $13,000

Y2Y (Clevenger); Understanding landscape and anthropogenic effects on wolverine distribution and regional connectivity in southwest Alberta; $12,000

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 project not carried out: Thompson Rivers University; Ecology of the Plains hognose snake (*Heterodon nasicus nasicus*) in the Canadian Forces Base Suffield National Wildlife Area; $9,000.

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