

Grants Fund Annual Report 2016/17



For the period of April 1, 2016 to March 31, 2017





TABLE OF CONTENTS

Grant Program 2016/17

Key Program Highlights	1
Executive Summary	1

Annual Report of Activities and Synopsis of Funding Recipient Projects 2 - 7

Introduction	2
The Funding Cycle	2
Funding Eligibility	3
Major Funding Priorities 2016/17	3
Proposal Review Process	4
Funding Allocations	4
Synopsis of Approved Projects	5
Grant Project's Contribution to the ACA Funding Priorities	7

ACA Grants Program Project Summaries 8 - 51

ACA Conservation, Community and Education Grants	8
ACA Research Grants	43

APPENDIX 52 - 55

ACA Conservation, Community and Education Funding Priorities	52
ACA Research Grants Funding Priorities	54

ACA's Mission

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

ACA's 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.

Alberta Conservation Association

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Front Cover Photo: Overgrown goldfish

Photo: Town of Okotoks

Relating to the project: Storm Pond Goldfish Control and Public Education
(Town of Okotoks, 020-00-90-236)

Grant Program 2016/17

KEY PROGRAM HIGHLIGHTS for the Grants 2016/17:

The ACA Conservation, Community, and Education Grants received 118 funding applications requesting a total dollar value just under \$1.7M. A total of \$969,644 was allocated to 75 projects: 21 small grants and 54 large grants.

The ACA Research Grants received 23 funding applications requesting \$564,378. A total of \$312,584 was allocated to 15 projects.

Project budgets ranged from \$800 to \$48,000.

Executive Summary

Funded by the province's hunters and anglers, ACA's Grants Program supports annually a variety of projects both small and large that 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 2016/17 funding round, has provided more than \$16.3 million to 979 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 \$92 million—money that has been directly used for conservation work and more recently to support the recruitment and retention of hunters, anglers, and trappers in Alberta.

These popular grant programs received 141 applications (118 to Conservation, Community, and Education Grants and 23 to ACA Research Grants) requesting just over \$2.23 million in 2016/17. A total of \$1,282,228 was allocated to 90 projects (75 Conservation, Community, and Education projects and 15 ACA Research Grants projects). The aim of this report is to document the procedures for 2016/17 and to provide an overview of activities and results of projects financially supported through the ACA Grants in 2016/17.

Annual Report of Activities and Synopsis of Funding Recipient Projects

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 2016/17 funding round, the Grants program has granted \$16.3 million dollars since 2002/03 to 979 projects implemented in Alberta; these projects have leveraged an estimated \$92 million in conservation work across the province. After the project selection process, a total of \$969,644 was granted to 75 ACA Conservation, Community, and Education Grants (CCEG) and \$312,584 was granted to 15 ACA Research Grants projects. This document provides an overview of the activities of the CCEG and the ACA Research Grants for the 2016/17 funding cycle.

We had some impressive results and outreach arising from the ACA Grants supported projects in 2016/17: over 5,000 youth and novices participated in fishing, archery, hunting, and trapping activities across Alberta, more than 18,000 youth were involved in outdoor conservation activities and outreach activities reached at least another 30,000 Albertans. Three hundred and thirteen teachers were trained in archery and/or conservation education, 6,957 birds were banded, and 673 saw-whet owls were banded at two important bird sites in Alberta. About 500 sites have been improved in collaboration with landowners and are now managed with more sustainable practices thereby improving riparian and ecologically sensitive areas. This year, 83 bat boxes and condos, 350 bird/bat boxes, and 50 pollinator hotels were built and installed. Several projects focused on removing invasive species (e.g., thousands of invasive goldfish were removed from storm ponds). The list goes on. All projects proudly acknowledge support of ACA in helping them reach their goals. In the Project Summaries section of this report, you can read about all the achievements of each of the projects that received funding in 2016/17.

The Funding Cycle

The funding priorities, guidelines, and application forms were made available to the public October 5, 2015 via the ACA website, by email to existing contacts, and by environmental list servers. Details of the 2016/17 funding cycle are in the table below:

2016/17 FUNDING CYCLE DATES

Posting of the Guidelines and Application Forms on ACA’s website	October 5, 2015
Window to receive completed ACA Research applications	November 1, 2015 – December 1, 2015
Window to receive completed CCEG applications	January 1-25, 2016
ACA Research Grants adjudication meeting	February 7, 2016
CCEG adjudication meeting	February 25, 2016
ACA Board approval and notification of applicants as to funding status	End of March 2016
Cooperative Project Agreements signed, initial payments made, and project work begins	From April 1, 2015
Interim reports due and second payments made (if required)	September 1, 2015
Final reports due	March 15, 2016
Projects end and final payments made (if required)	March 31, 2016

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, Alberta Environment and Parks (AEP), and individuals without the proper insurance. Certain project types and budget items are not covered by the CCEG and the ACA Research Grants (e.g., 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 funding priorities for both the CCEG and ACA Research Grants stayed practically the same this year. The CCEG had the same eight funding priorities and ACA Research Grants had the same 12 funding priorities as used in 2015/16 with a couple of small edits. See Major Funding Priorities Grants 2016/17 for the full 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 2016/17” (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.

Major Funding Priorities Grants 2016/17

This text is taken from Section C of the *Project Submission Guidelines for Funding 2016/17*.

Funding Priorities for the CCEG

All applicants to the ACA Conservation, Community, and Education 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, fishing docks, etc.).
3. Stewardship Initiatives (e.g., ongoing maintenance of conservation sites or fisheries access sites; adopt a fence; property inspections for invasive weeds; manual weed control; grass mowing).
4. 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 waterbodies).
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 depredated 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; “Kids Can Catch” and archery events for kids). Generate awareness of the hunting/angling/trapping opportunities available to the public.
8. Projects related to outdoor conservation education.

Funding Priorities for ACA Research Grants

All applicants to the 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 Research 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.

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/eDNA samples.

4. Evaluate the effect of pesticides or herbicides on wildlife species' food availability and/or quality in agricultural landscapes.
5. Evaluate the effect of recreational access (mode, timing, duration) on wildlife and 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 involved 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. Evaluate the effects of agricultural run-off on fisheries.
11. Evaluate approaches for improving the abundance of pollinators in agricultural landscapes.
12. Work towards clarifying status of current data deficient species.

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 five 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 CCEG applications, 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 25, 2016 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 2016 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 7, 2016 at the University of Alberta

Funding Allocations

For the 2016/17 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 118 applications requesting just under \$1.7 M to CCEG, 75 were funded (a 64 percent success rate for applications receiving full or partial funding). Of the 118 applications to CCEG, 37 were small grant applications (requests of \$3,000 or under). Small grants were awarded to 21 of the 37 small grant applications (a 57 percent success rate), and large grants were awarded to 54 of the 81 large grant applications (a 67 percent success rate). Of the 75 CCEG projects funded in 2016/17, 35 (47 percent) had been funded by ACA in previous years and 40 were new projects.

The ACA Research Grants received 23 applications requesting a total of \$564,378 for the 2016/17 competition. Of these, 15 were funded (a success rate of 65 percent for applications receiving full or partial funding). Four (33 percent) of the funded research projects had been funded in previous years and the rest were new projects.

Eight 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. The Cooperative Project Agreement outlines the reporting and payment schedules and other contractual obligations between ACA and the grant recipient. Grant recipients provide two project reports: an interim for September 1, 2016 and a final report for March 15, 2017. If the project was completed at the time of the interim report (September 1), then this one report was taken as the final project report. Two projects did not go ahead this year, one CCEG project (The Nature Conservancy of Canada Alberta Region, Wildlife-friendly fencing: implementing habitat management enhancements and improving wildlife movement in a key site in the Cypress Hills area), and one Research Project (Glenbow Ranch Park Foundation, Native grasslands ecosystem restoration).

Synopsis of Approved Projects for 2016/17

A summary description of each of the 90 approved projects containing the project's objectives, activities, and deliverables can be found on page 8 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

Alberta Hunter Education Instructors' Association; 13th Annual OWL Day – "Outdoor Wildlife Learning"; \$3,000

Alberta Hunter Education Instructors' Association; AHEIA's Teachers' Workshop; \$3,000

Alberta Hunter Education Instructors' Association; Alford Lake Camp Expansion; \$3,000

Alberta Hunter Education Instructors' Association; Conservation Education for the Army Cadet League of Canada AB; \$3,000

Alberta Hunter Education Instructors' Association; Outdoor Youth Seminar; \$3,000

Alberta Hunter Education Instructors' Association; Youth Fishing Initiatives; \$3,000

Big Country Rod and Gun Club; Annual First Time Upland Bird Hunt; \$1,000

Calgary Fish & Game Association; Boat and Sportsman Show Trout Pond Gifts; \$1,185

Edmonton Valley Zoo; Edmonton Valley Zoo Fascination Station; \$2,914.46

Helen Schuler Nature Centre; "Extreme by Nature" Environmental Education for 11 – 15 Year Olds; \$3,000

Lacombe Fish & Game Association; Len Thompson Fishing Pond Upgrades – Signage and Education Portion; \$2,707.92

Manning Jr & Sr Gun Club; Novice Pheasant Shoot; \$3,000

Northern Lights Fly Fishers/TUC Edmonton; Kids' Fly Tying; \$1,429

Onoway & District Fish & Game Association; Bluebird/ Bat House Project; \$800

Safari Club International Red Deer Chapter, Red Deer; Kids Can Fish Event; \$2,900

Safe Drinking Water Foundation; Operation Water Drop, Operation Water Pollution, and Operation Water Biology Kits to be Used by Students in Alberta as Part of Field Trips and Outdoor Education; \$1,275

Southern Alberta Bible Camp; Archery Program; \$2,500

Southern Alberta Bible Camp; Pelletry Program; \$1,500

Trout Unlimited Canada – Bow River Chapter; Legacy Island Annual Maintenance; \$3,000

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

Willingdon and District Fish & Game Association; Willingdon Fish Pond and Park; \$1,900

Large Grants (over \$3,000)

Alberta Fish & Game Association; Increasing Habitat for Species at Risk in Alberta's Grassland Region through Adaptive Management, Habitat Enhancement, and Outreach; \$35,800

Alberta Fish & Game Association; North Raven Riparian Conservation Project; \$25,000

Alberta Fish & Game Association; Pronghorn Antelope Migration Corridor Enhancement; \$42,525

Alberta Hunter Education Instructors' Association; 23rd Annual Outdoor Women's Program; \$25,000

Alberta Hunter Education Instructors' Association; AHEIA's National Archery in the Schools Program (NASP); \$40,000

Alberta Hunter Education Instructors' Association; Outdoor Bound Mentorship Program; \$12,000

Alberta Hunter Education Instructors' Association; Provincial Hunting Day Initiatives; \$20,000

Alberta Hunter Education Instructors' Association; Youth Hunter Education Camps (Weeks 1–4); \$48,000

Alberta Invasive Species Council; PlayCleanGo Engaging Recreationists; \$20,000

Alberta Trappers Association; Youth Trapper Camp; \$8,225

Beaverhill Bird Observatory; Public Engagement, Wildlife Conservation, and Monitoring at Beaverhill Lake; \$19,550

Canadian Parks and Wilderness Society (CPAWS) Southern Alberta Chapter; Kids for Conservation: Getting Youth Outside to Experience Alberta's Wilderness; \$9,250

Castle-Crown Wilderness Coalition; Education and Reclamation in the Castle; \$14,700

CW Perry School; Fisher Education Program; \$5,095

Ducks Unlimited Canada; Wetland Discovery Days; \$20,000

Friends of Elk Island Society; Beaver Hills Dark Sky Preserve Bat Nights; \$5,814

Glenbow Ranch Park Foundation; 2016 Vegetation Management at Glenbow Ranch Provincial Park; \$5,900

Glenbow Ranch Park Foundation; Environmental and Conservation Education at Glenbow Ranch Provincial Park; \$10,000

H.A. Kostash School; H.A. Kostash Youth Mentorship Programs; \$15,000

Highway 2 Conservation; Alberta Bat Education and Habitat Protection: Establishment of the Cache Park Bat Reserve and the "Save a Barn, Save a Bat Program"; \$8,300

Highway 2 Conservation; Riparian Education Program; \$8,550

Hillcrest Fish and Game Protective Association; Coleman Fish & Game Dam Access Upgrade; \$7,240

Inside Education; Wildlife Education Field Trips; \$10,250

Lakeland Catholic School District No. 150 (Notre Dame High School); Enhancing Outdoor Education and Wildlife Pathway; \$5,000

Lamont Fish & Game Association; Archery/Youth Development Programs; \$6,845.49

Lesser Slave Lake Bird Observatory; Avian Monitoring and Education Programs at Lesser Slave Lake; \$21,500

Lesser Slave Watershed Council; Living on the Edge Awareness Campaign; \$5,115

Lethbridge Fish & Game Association; 6th Annual LFGA/ACA Youth Fishing Recruitment Day; \$10,800

Lethbridge Fish & Game Association; LFGA – Conservation Community, and Education Program; \$18,000

MD of Bonnyville; Crane Lake Riparian Restoration and Preservation Program; \$5,791

Milk River Watershed Council Canada; Promoting Youth Engagement Program within the MRWCC; \$10,000

Mountain View County; Riparian and Ecological Enhancement Program; \$20,000

Nature Alberta; Implementing Action to Protect Priority Bird Species in Alberta's IBAs; \$11,500

Nature Alberta; Living by Water; \$20,125

Nature Alberta; Nature Kids in a Backpack; \$31,000

Northern Lights Fly Fishers/TUC Edmonton; Conserving and Restoring Arctic Grayling in the Upper Pembina River Watershed – Habitat Restoration Planning; \$10,450

Northern Lights Fly Fishers/TUC Edmonton; Raven Riparian Fencing Project; \$29,085

Oldman Watershed Council; Engaging Recreationists in the Dutch Creek Restoration and Education Project; \$25,750

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

Partners in Habitat Development; Partners in Habitat Development; \$15,000

Pheasants Forever Calgary; 15th Annual PF Calgary/AHEIA Youth/Novice Hunt; \$6,000

Red Deer County; Conservation Partners (a.k.a. ALUS) 2016; \$40,000

Red Deer FGA; Alberta Youth Pheasant Program; \$8,550

SARDA; SARDA Summer Field School: Retention of wetlands on croplands; \$4,200

Sustainability Resources Ltd; Watershed Resources: Riparian Restoration Program; \$4,940

The Nature Conservancy of Canada – Alberta Region; Wildlife-Friendly Fencing: Implementing habitat management enhancements and improving wildlife movement in a key site in the Cypress Hills area; \$16,200 (Did not proceed)

Town of Okotoks; Storm Pond Goldfish Control and Public Education; \$10,000

Trout Unlimited Canada; Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project; \$28,012

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

Trout Unlimited Canada; Yellow Fish Road in a Box; \$40,000

Trout Unlimited Canada – Bow River Chapter; Bow River – Legacy Island Spawning Enhancement and Access Study; \$24,000

Waterton Biosphere Reserve Association; Building Wetland Stewardship and Improving Wetland Habitat in Waterton Biosphere Reserve; \$10,000

Zone 3 Fish & Game Association; Abandoned Barbed Wire Hazard Elimination at Buffalo and Bigelow Pheasant Sites; \$4,450

Zone 4&5 Alberta Fish & Game Association; Narrow Lake Conservation Centre; \$25,380

ACA Research Grants

fRI Research (Dr. Larsen); Linkages Between Habitat, Ungulates, and the Habitat Use and Performance of Grizzly Bears in West-Central Alberta; \$16,500

fRI Research (Dr. MacNearney); Can Forestry and Silviculture Practices Help Increase Caribou Functional Habitat in West-Central Alberta?; \$25,000

Glenbow Ranch Park Foundation (Dr. Tannas); Native Grasslands Ecosystem Restoration; \$20,750 (not completed)

St. Mary's University (Dr. Lovell); Vocal, Morphological, Molecular, and Ecological Interactions Between White-Crowned Sparrow (*Zonotrichia leucophrys*) Subspecies in Secondary Contact; \$22,580

The Friends of Elk Island Society (Dr. Roy); Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

The King's University (Dr. Janzen); Enhanced Camera Trap Image Processing Program; \$9,700

Trout Unlimited Canada (Dr. Peterson); Using Citizen Science to Understand Didymo; \$10,577

University of Alberta (Dr. Boyce); Black Bear Abundance, Human–Wildlife Conflict, and Interactions with Grizzly Bears on a Multi-Use Landscape; \$11,300

University of Alberta (Dr. Macdonald); Tools to Guide Management of Invasive Species in Grassland Ecosystems; \$19,820

University of Alberta (Dr. Merrill); Persistence of the Ya Ha Tinda Elk Population: The role of calf survival; \$34,197

University of Alberta (Dr. Poesch); The Effects of Introduced Fishes on Potential Aquatic Insect Prey Subsidies to Alpine Birds; \$20,000

University of Alberta (Dr. Vinebrooke); Bioremediation of Eutrophic Lakes Through Fisheries Management in Alberta; \$38,500

University of Calgary (Dr. Galpern); Wild Pollinator Conservation and Restoration in Southern Alberta Croplands II: Wetlands and landscape heterogeneity; \$23,800

University of Saskatchewan (Dr. Soos); Relationship Between Health, Habitat Use, and Migration of Juvenile Whooping Cranes in Relation to the Oil Sands Region of Northern Alberta; \$32,300

University of Sherbrooke (Dr. Festa-Bianchet); Experimental Management of Bighorn Sheep; \$9,560

Grant Project's Contribution to the Funding Priorities

In total, 90 projects were approved for funding in 2016/17: 75 CCEG projects and 15 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. As was done last year, two lists of Funding Priorities were produced, one for the CCEG and another one for the Research Grants. A minor change was made to CCEG Funding Priority #7, "Kids Can Catch' and archery events for kids" was added to the funding priority. A couple of edits were made to the funding priority list for the ACA Research Grants: 'eDNA samples' was added to Research Funding Priority #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/eDNA samples* and #4 "upland game birds (sharp-tailed grouse, pheasant, gray partridge)" was replaced with "wildlife species' food availability and/or quality..." There was some overlap between the two lists. Applications 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 2016/17 contributed to ACA's funding priorities. All the CCEG projects indicated they related to at least one funding priority. One research project did not mention a link with any of the funding priorities; however, this project did have links 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 2016/17, see the Appendix on page 52.

Again, this year the recruitment and retention of hunters, anglers, and trappers and the outdoor conservation education funding priorities were by far the most cited funding priorities by approved CCEG projects. The most cited funding priorities

were: #8 *Projects related to outdoor conservation education* (64 percent), followed by #7 *Retention and recruit and education of hunters, anglers and trappers...* (55 percent), and #2 *Site specific enhancement of habitat & stewardship initiatives* (46 percent). Since the funding priorities began, the funding priority #6 relating to matching sportsmen with landowners has been very rarely cited by projects; this year a couple of projects mentioned a link with this funding priority.

The most cited Research funding priorities in 2016/17 are #2 *Impacts of non-native species on persistence of native species*, #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.)*, and #12 *Work towards clarifying status of current data deficient species* (all mentioned by four of the funded projects). Funding priorities #1 *Research activities specifically listed on provincial recovery plans for Alberta's endangered species* and #6 *Investigation of methods for reducing the spread and/or impact of wildlife or fish related diseases* (both mentioned by three of the funded projects). Four of the 12 funding priorities were not mentioned by any of the funded projects: #4 *Evaluate the effect of pesticides/herbicides on wildlife species' food availability...*; #8 *Evaluating the social demographics of hunting and angling...*; #9 *Evaluate the effects of biological solutions on carbon sequestration...*; and #10 *Evaluate the effects of agricultural run off on fisheries* and with a few exceptions this has been more or less been the case since the introduction of the funding priorities. Researchers do not appear to be tailoring their research application to the funding priorities, despite listing research funding priorities in our application guidelines for many years now.

ACA Grants Program Project Summaries

ACA Conservation, Community, and Education Grants

Increasing Habitat for Species at Risk in Alberta's Grassland Region Through Adaptive Management, Habitat Enhancement, and Outreach (Operation Grassland Community)

Alberta Fish & Game Association

Grant: \$35,800

Project Code: 030-00-90-127

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

Project Website: www.grasslandcommunity.org

Operation Grassland Community (OGC) collaborates with stakeholders across Alberta's prairie region to develop, implement, evaluate, and adapt management actions to protect and enhance wildlife habitats, and support diverse socio-economic interests. The OGC vision is a sustainable prairie landscape where communities thrive, diverse interests are balanced, and wildlife and their habitats are in abundance. The OGC's objectives are to enhance wildlife habitat through sustainable practices by: (1) ranch-wide monitoring and adaptive management practices using Land EKG; (2) quantifying economic incentives required for management compliance at a local scale. To protect wildlife habitats, the project seeks new and renews expiring give-year voluntary stewardship agreements, promotes Beneficial Management Practices (Species-at-Risk Conservation Plans – SARC plans), and monitors annual population trends in burrowing owl and loggerhead shrike. The project also affects change through awareness: partnerships with other groups and initiatives, multiple news-media, presentations, and open-houses for public and government, school-aged curriculum based programs, materials, field-trips, and summer camps; ongoing outreach through OGC website, blog, and videos.

Deliverables/Results:

- Enhance Wildlife Habitat through Sustainable Practices:
 - Addressing proximate causes of habitat loss and degradation using ranch-wide monitoring and adaptive management (Land EKG): two new OGC members implemented ranch-wide Land EKG (management area 1,500 – 2,500 acres); First-year and base-line wildlife surveys conducted and wildlife habitat indicators measured along transects. Supporting 11 existing Land EKG practitioners (2013 – 2016 installations) toward self-sustaining projects. Assisted monitoring and collection of range and habitat data (11 ranches);

when required to assist data entry and report interpretation, and one-on-one coaching wildlife surveys conducted and wildlife habitat indicators measured along Land EKG transects (11 ranches; minimum two transects/ranch); population and habitat data entered in Land EKG database; production of summary report on findings with methods evaluation and progress to date.

- Habitat Enhancements: two projects benefitting SAR and other wildlife (re-seeding, cross-fencing, off-site watering, shrub/tree complex protection).
- Addressing ultimate causes of habitat loss and degradation:
 - Estimating local values of wildlife habitat by applying economic survey methods developed in 2014/15 to estimate value of ecological goods and services (local cost/incentive requirement) of implementing habitat-benefitting management practices where otherwise fiscally infeasible (seven-ten ranches). Analyze and record data, produce summary report.
 - Seek five-year voluntary stewardship agreements, and renew expiring agreements: eight new members and 18 renewals have been made to date. New members are stewards to several thousand acres of native prairie habitats.
 - One SARC was completed.
 - Monitor annual trend and distribution in burrowing owl and loggerhead shrike: 200 OGC members provide the annual census of burrowing owl (25th year), and loggerhead shrike (12th year). Results to recovery teams and published in suitable media.
 - Awareness and outreach activities (various media: print, t.v., radio, web):
 - Five "Prairie Acres e-BULLETINS" (over 1,500 urban and rural readers).
 - Ongoing interactive promotions through website and regular blog.
 - Assist development and implementation of the Southern Alberta Grazing School for Women.
 - Attend and present at partner meetings and conferences: Recovery team meetings, Prairie Conservation Forum meetings, Canadian and Global Roundtables for Sustainable Beef (meetings and conferences), Native Restoration and Reclamation workshops, municipal grazing schools, targeted municipal councils and representatives, cattle industry groups and trade shows, and watershed council meetings.

North Raven Riparian Conservation Project

Alberta Fish & Game Association

Grant: \$25,000

Project Code: 015-00-90-244

Project Status: New; Completed

The ecological integrity and health of rivers, streams, and surrounding landscapes in Alberta are often negatively affected by ongoing human development. ACA's Riparian Conservation Program identifies priority watersheds where conservation efforts are focussed to give these areas the best chance of restoration. Every year, ACA contacts new landowners along its priority streams to offer them an opportunity to participate in the program. In 2016, the goal was to secure new agreements and construct ten km of streambank fences and install two new off-site watering systems to eliminate livestock from watering directly out of the Raven River. With AFGA's contribution, ACA staff successfully signed a new riparian agreement with one landowner along the Raven River. The funding helped support improvements to facilitate the new agreement. These improvements included removing an old dilapidated fence, installing a culvert to protect a natural tributary, constructing 1.29 km of fence to protect 7.21 ac of sensitive riparian habitat along 580 m of the Raven River. Livestock panels were also provided to improve the river crossing to facilitate cattle movement from one side of the Raven River to the other.

Deliverables/Results:

- Main results of the project include improved straight-line fencing along the Raven River to exclude livestock from sensitive riparian habitat. Straight-line fences are easier for the landowner to maintain throughout the term of the agreement. Two off-site watering systems provide livestock with fresh clean water and eliminate cattle from riparian areas and from damaging sensitive streambanks.
- Main deliverables of the project include: removal of old dilapidated streambank fence; construction of a new 1.29 km barbed wire fence; supply and install of livestock panels, gates, and posts for a river crossing; installation of a culvert to protect a tributary; installation of two off-site watering systems; and protection of 7.21 ac of riparian habitat along 580 m of the Raven River.

Pronghorn Antelope Migration Corridor Enhancement

Alberta Fish & Game Association

Grant: \$42,525

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, remedies this situation by replacing lower barbed wire strands with smooth wire and at the same time raising them to a height easily

navigable by the pronghorn. Where page wire fencing is encountered the entire fence will be replaced, again with a smooth wire lower strand at the appropriate height. The project objectives are: (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, and (4) enhance hunters' image as proactive conservationists. The project goal was to remove the bottom strand of wire in select locations along fence lines and add a fourth smooth wire to the bottom of barbed wire fence in prime pronghorn migration corridor as identified by ACA. Bottom wire to be set at 18-inch height to facilitate easier movement of pronghorn through fence. The main activities were to: identify antelope migratory corridor pinch points, identify landholders willing to participate, organize and orient work crews, and stage the event making sure that all necessary materials are onsite.

Deliverables/Results:

- This year's wildlife-friendly fencing work was carried out at the following locations: John Lawson/Findlay Ranching (July 13–17, 2016), Lost River Ranch/Laqua Farms/Russ Wegnerr (August 3–7, 2016), Mac McRae, Darwin Balog, and Greg Curry Ranches (September 21–25, 2016).
- Smooth wire installed: 48 km.
- Barbed wire manipulated to wildlife-friendly standards: 144 km.
- Barbed wire fence removed: 36 km.
- Total amount re-configured to enhance antelope migration: 230 km.

13th Annual OWL Day – "Outdoor Wildlife Learning"

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 002-00-90-223

Project Status: Funded since 2014/15, and by R&R fund; Completed

Project Website: www.aheia.com

AHEIA held a one-day workshop on October 1, 2016 complete with hands-on experiences. This day was made available free of charge to the general public and focused on two age groups: youth aged six – 12 years of age and students aged 13 – 20. OWL day had 19 youth participants; numbers were down due to rescheduling and inclement weather. There were a range of activities provided including: black powder shotgun demonstration, "making tracks," dog training demonstration, fishing education, firearms safety, and archery.

Deliverables/Results:

- The event was held October 1, 2016. This year, 19 students attended OWL Day. Five AHEIA instructors were present to run the various activities. All students had the opportunity to participate in the following education sessions: Black Powder Shotgun Demonstration (ages nine – 20); Wildlife Identification and Shot Placement; "Making Tracks" (ages six – eight) participants make plaster casts of various wildlife which they take home; Dog Training Demonstration; Fishing Education; Firearms Safety Lecture; Shotgun Shooting; Archery; Firearms Safety Walk.

23rd Annual Outdoor Women's Program

Alberta Hunter Education Instructors' Association

Grant: \$25,000

Project Code: 002-00-90-219

Project Status: Funded since 2014/15, and by R&R fund; Completed

Project Website: www.aheia.com/owp

The 23rd Annual Outdoor Women's Program (OWP) hosted 154 women for five days of learning, camaraderie, fun, and an opportunity to begin to master the outdoors. This year's OWP took place August 3–7, 2016 at the Alford Lake Conservation Education Center for Excellence. Women of all ages were encouraged to experience, explore, and develop an understanding of the natural world through over 30 different hands-on programs. 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, Humane Trapping, Edible plants, Outdoor cooking, Advanced Hunting Session (upland game birds and waterfowl), Advanced Hunting Session (big game animals), Crossbows, Longbow Building, Predator awareness (preventing conflicts with carnivores), Trailering, and Game calling. Patient and knowledgeable instructors encouraged each woman towards her own level of confidence and competence with each new skill. The purpose is to encourage women to enjoy the great outdoors and to become advocates of hunting and angling by providing opportunity to gain confidence, increase competence, acquire experience, and promote personal growth. This is done through information, inspiration, and involvement.

Deliverables/Results:

- OWP had 154 women graduate this year, leaving with expanded knowledge, skills, and confidence in Alberta's wilderness environment. Many of these women will become hunters and anglers as have their predecessors of the OWP program. Additionally, they will influence their families to join them in the enjoyment and appreciation of the outdoors. As expected, each of these participants learned many new skills. There is continuing interest and learning among the women who enjoy 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.

AHEIA's National Archery in the Schools Program (NASP)

Alberta Hunter Education Instructors' Association

Grant: \$40,000

Project Code: 002-00-90-239

Project Status: Funded in 2015/16, and by R&R fund; Completed

Project Website: www.aheia.com/NASP

AHEIA's National Archery in the Schools Program (NASP) continues to promote instruction in international style target archery as part of the in-school curriculum, the CTS Wildlife Strand, for Grades 4 – 12. This has been facilitated by training school teachers who are certified Conservation Education instructors to deliver the NASP program in their school. AHEIA also encourages participation in the Provincial and National NASP Tournaments sponsored and delivered by AHEIA staff and volunteers. The training sessions have thus opened a whole new audience to archery. The introduction of these training courses

is proving to be a gateway to additional recruitment opportunities in hunting and fishing certificate programs offered by AHEIA. AHEIA's NASP program has become the fastest growing element in Conservation Education in North America. AHEIA is very encouraged by the increase in interest and spin-off results of that enthusiasm has carried over to our other programs as a result. Archery is definitely a gateway to outdoor education, especially the pursuit of hunting.

Deliverables/Results:

- In 2016, 36 new schools were added to the roster of Alberta schools delivering the NASP program, bringing the total up to 362 Alberta schools delivering the NASP program by the end of the year. 35 schools received either equipment or grants to purchase NASP archery equipment.
- 268 new teachers were trained in delivering the NASP program, bringing the total up to 1,062 Alberta teachers trained in NASP delivery.
- 1,605 youth were registered, representing 70 schools for the NASP National Tournament held in Edmonton in 2016.
- 1,040 youth were registered for the NASP Provincial Tournament held in Drayton Valley in 2016.

AHEIA's Teachers' Workshop

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 002-00-90-248

Project Status: New; Completed

Project Website: www.aheia.com

The Teachers' Workshop promotes continual learning for teachers to gain certification as an Alberta Conservation and Hunter Education Instructor, Alberta Fishing Education Program Instructor, and the optional International Bowhunter Education Program. Through this series of workshops, teachers were also able to receive training in the following programs: Survival and Camping, Compass, Fishing, and Archery. The efforts of the AHEIA Teachers' 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. The efforts also help ensure the perpetuity of the Conservation and Hunter Education Program in the school curriculum for both urban and rural school systems.

Deliverables/Results:

- There were two Teachers' Workshops held to accommodate the increasing popularity of this workshop: the original one scheduled for July 22 – 25, 2016 with 24 participants and five staff/volunteers, and a second one June 29 – July 3, 2016 with 21 participants and five staff/volunteers.
- A component of the workshop offered the certification teachers required to deliver the "Natural Resources (NAT) Course – Wildlife" program. Certification from AHEIA was offered in the Alberta Conservation and Hunter Education Program, and the Alberta Fishing Education Program. An additional session of the workshop familiarized the teachers with the activities at AHEIA's outdoor camps as they relate to Outdoor Experience I and II. These sessions included hands-on participation in: Survival and Camping Program, Shooting Program, Compass/GPS Program, Fishing Program, and Archery Program.

Alford Lake Camp Expansion

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 002-00-90-249

Project Status: New; Extended until July 31, 2017; Completed

Project Website: www.aheia.com

The overall project was to purchase, relocate, and install, to a usable state, additional buildings to AHEIA's Alford Lake Conservation Education Centre for Excellence in Caroline, AB. This building is a used oilfield field camp that is no longer used for its original purpose and has been repurposed as a meeting space, shower, wash house, classroom, and sleeping area for conducting the Conservation Education Programs. The facilities at Alford Lake have been pushed to the limits with the increasing demand for the Conservation Program at the camp facility. There is much pent-up demand to expand the program which has been limited to the current facilities. Relocating and servicing a new building facility has many components to bringing it into a useable state. The buildings were purchased and transported. The site was prepared for receipt of the buildings and permits were approved for the utilities approval. The new facility is now operational.

Deliverables/Results:

- The buildings have been relocated to the Alford Lake Conservation Education Centre for Excellence and final installation of the facility has been accomplished with water and electrical hookups.

Conservation Education for the Army Cadet League of Canada AB

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 002-00-90-213

Project Status: New; Completed

Project Website: www.aheia.com

This program was coordinated by AHEIA through the Governor of the Army Cadet League of Canada and the Brigadier General responsible for Army Cadets. Over the course of 2016, 71 additional cadets successfully completed the program and attended the Alford Lake facility. Since the inception of the program, almost 2,900 army cadets in Alberta have been given courses and some \$306,000 in funding has been committed to enable their participation. Recruitment and development of these cadets expanded AHEIA's audience and opened new doors of experience for future Canadian military students. This was achieved by providing the following courses: Conservation and Hunter Education Course, Canadian Firearms Safety Course, Alberta Fishing Education Program, and Outdoor Camp Program.

Deliverables/Results:

- Military cadets were trained in all aspects of the Hunter Education Course, the Fishing Education Course, and the Firearms Safety Course, producing 71 young men and women who will have knowledge about Alberta's wildlife and their habitat, and who have had practical experience and enjoyment of the same at both the Alford Lake and the Edmonton Conservation Education Centres for Excellence.

Outdoor Bound Mentorship Program

Alberta Hunter Education Instructors' Association

Grant: \$12,000

Project Code: 002-00-90-222

Project Status: Funded since 2014/15 and by R&R fund; Completed

Project Website: www.aheia.com

The "Outdoor Bound!" program creates a series of opportunities for youth and adults to participate in a formalized wilderness mentorship program that provides a greater understanding and respect for wildlife and wild places. This mentorship program focused on interpersonal support and growth, guidance, material exchange, sharing of wisdom and experience, coaching, and role modeling. The Outdoor Bound Mentorship Program was very successful with 479 participants, 277 mentors, and 1,811 hunt days.

Deliverables/Results:

- This year the program had 479 participants, 277 mentors, and 1,811 hunt days.

Outdoor Youth Seminar

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 002-00-90-215

Project Status: Funded since 2014/15 and by R&R fund; Completed

Project Website: www.aheia.com/youthprograms

The Outdoor Youth Seminar took place August 19 – 21, 2016, with 90 participants in the program and 38 volunteer instructors and staff. This 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 14th 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 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 90 participants in the program with 38 volunteer instructors and staff. It remains a very popular two-day camp for youth with many returning to participate in additional sessions. Sessions were offered with excellent learning and interaction taking place. All around, the Outdoor Youth Seminar was once again a huge success. Students were afforded the opportunity to participate in five of the following sessions during the seminar (August 19 – 21, 2016):
 - Centre-fire Rifle Shooting: Using the .223 Remington, students were taught safety and numerous range techniques as well as shooting positions.

- Beginner Archery: Fundamentals of the bow and arrow. Equipment selection, recurve, long bow, and compound bows.
- Advanced Archery: Students shot 3-D targets with one-on-one instruction in actual field conditions. They learned shot placement, judging distance, tree stand safety, and more.
- Black Powder Shooting: History of muzzle loading firearms and their use. Hands-on experience in loading, shooting, and cleaning.
- Fly Fishing 101: Hands-on fly-fishing techniques.
- Fishing Basics: From the hook to the frying pan.
- Fish anatomy and catch and release methods.
- Trapping: Basics and importance of this tradition/heritage and culture including learning techniques for snaring and capturing small animals in survival situations.
- GPS and Geocaching: How to use a GPS.
- Beginner Shotgun: Firearms safety and basic shotgun techniques.
- Intermediate Shotgun: Games of trap, skeet, and sporting clays.
- .22 Rim fire Rifle Shooting: Basic skills that will help with future shooting and hunting endeavours, including prone, kneeling, sitting, and standing positions.
- Whitetail Techniques: Various field techniques used when hunting. Use of scents, calling, rattling, set-ups, and blood trailing.
- Survival Walk: Hands-on excursion where they learned about edible plants, shelters, and survival fires.
- Goose Hunting Basics: How to set decoys and blinds. Scouting, calling, identifying birds, and firearm safety in the blind.
- Outdoor Cooking: Culinary basics; preparing the harvest for consumption.
- Canoeing Basics: Safety basics and canoeing techniques.
- Special Evening Sessions: separate sessions: arrow crafting, survival kits, game calling, knife and axe sharpening, reloading, and rattling antlers.

Provincial Hunting Day Initiatives

Alberta Hunter Education Instructors' Association

Grant: \$20,000

Project Code: 030-00-90-245

Project Status: Funded by CCEG since 2014/15 and previously via the R&R fund; Completed

Project Website: www.aheia.com

The fourth Saturday of September has been designated as Provincial Hunting Day. September 24, 2016 marked the tenth anniversary and serves as an opportunity to remind and involve Albertans in our hunting heritage and the importance of securing a future for wildlife and wild places. On this day, Albertans are encouraged to introduce a new person to outdoor sports such as hunting, fishing, trapping, shooting, or archery. AHEIA hosted events at the Alford Lake Conservation Education Centre for Excellence and at the Calgary Firearms Centre for Excellence in DeWinton and numerous smaller scale experiences province-wide. Albertans of all ages were invited to try their hand at fishing, target archery, trap shooting, and shotgun shooting from blinds, viewed dog

demonstrations, and many more training events. These AHEIA events were completely free of charge and were open to Albertans of all ages. Approximately 300 students, mentors, coaches, volunteers, and staff participated in total between the two locations.

Deliverables/Results:

- Provincial Hunting Day was celebrated at various venues throughout the province, including AHEIA's Calgary Firearms Centre, with many activities related to hunting on September 24, 2016. 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, and upland bird identification.
- Numerous notifications were posted with various media as well as posted to AHEIA's social media feeds on Facebook, Twitter, and Instagram to publicize the event before, during, and after. Numerous media were invited to participate and these events received positive media coverage.

Youth Fishing Initiatives

Alberta Hunter Education Instructors' Association

Grant: \$3,000

Project Code: 020-00-90-220

Project Status: Funded by CCEG since 2014/15 and previously via the R&R fund; Completed

Project Website: www.aheia.com

AHEIA organized fishing events across Alberta. 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. This program envisioned a community where every youth is given the opportunity for a wholesome, nurturing fishing experience under the care of a capable mentor. This experience in turn is allowing the youth to continue in their development as responsible, capable, and respectful resource users. Necessary equipment and mentoring/coaching was provided to participants. There were numerous well-publicized events to entice members of the public to experience these Youth Fishing Initiatives.

Deliverables/Results:

- Events were held in Lethbridge and the Edmonton Area and were very successful in terms of youth enjoying fishing in a fun, safe learning environment. An ice-fishing event was held at Beauvais Lake in January with 20 participants and AHEIA staff members and volunteers.
- In addition to the events that were staged and the equipment and instruction provided, AHEIA also replaced damaged rods and reels, replaced consumables/damaged/lost lures in tackle boxes, provided a series of seminars and youth fishing events, and offered access to the fishing simulator.

Youth Hunter Education Camps (Weeks 1–4)

Alberta Hunter Education Instructors' Association

Grant: \$48,000

Project Code: 002-00-90-224

Project Status: Funded by CCEG since 2014/15 and previously via the R&R fund; Completed

Project Website:

www.aheia.com/serve_content.cfm?Page=Youth%20Seminars

The Outdoor Youth Camps were an amazing opportunity for young people to leave their urban lifestyles for a week to experience “roughing it in the bush,” conducted in a safe, supervised, educational, yet fun and challenging program. The popularity of the camps attests to how much youth enjoy this opportunity to be in the natural habitat of Alberta’s wildlife and waterfowl. The four Youth Hunter Education Camps were each six days in length, having evolved from a single-week camp years ago. These camps filled months before they started and continue to increase in popularity. Even the volunteers submitted their applications early so they wouldn’t miss out on the opportunity to assist at these well-received camps. Conservation education instructors and volunteers shared their knowledge and provided instruction in the Alberta Conservation and Hunter Education Program, the Canadian Firearms Safety Course, the Canadian Boating Safety Course, and a number of other outdoor pursuits and shooting, fishing, and water safety activities.

Deliverables/Results:

- Four Youth Hunter Education Camps had 193 campers and 85 volunteers and were held from July 3 – 29, 2016 at AHEIA’s Alford Lake Conservation Education Centre for Excellence near Caroline, Alberta. Many parents have reported the positive influence that AHEIA has had on their children and teenagers through the high degree of knowledge and skill that is transferred at the Youth Hunter Education Camps. Along with teaching the basic skills in hunting, fishing, archery, shooting activities, boating safety, and related programming, there was intentional teaching of courtesy, patience, and respect for one another. These interpersonal skills are built into the program. Through the promotion, education, and development of skills and the value system taught through AHEIA’s Youth Hunter Education Camps, participants learned to respect wildlife and their habitat, and how to conserve, protect, restore, and enhance habitat for the protection and enjoyment of the various wildlife and waterfowl species. Education in the outdoors at the Alford Lake Conservation Education Centre for Excellence ensure that young Albertans are not just introduced to wildlife through a textbook, but are able to actually encounter wildlife and waterfowl in their natural habitats at Alford Lake’s forest, lakefront, and field facility. This leads to a love for these areas and a greater future investment in the preservation of these natural environments for enjoyment by both people and the wildlife and waterfowl that live there.

PlayCleanGo Engaging Recreationists

Alberta Invasive Species Council

Grant: \$20,000

Project Code: 020-00-90-227

Project Status: Funded in 2015/16; Completed

Project Website: <https://www.abinvasives.ca/resources/playcleango>

Outdoor recreation is a key pathway for the introduction and spread of invasive species, in particular invasive plants. Invasive species degrade,

devalue, and destroy natural habitats and biodiversity. Albertans engage in many outdoor activities such as hunting, fishing, trapping, hiking, bird watching, camping, and trail riding. Invasive species threaten our natural habitats and all outdoor activities. Prevention is the most effective and most economical strategy to reduce the environmental, economic, and societal impacts of invasive species. PlayCleanGo is a call-to-action program targeted at outdoor recreationists with the goal that all their clothing, footwear, equipment, and animals need to be cleaned before and after all recreational activities. These simple actions will go a long way towards preventing the spread of invasive species throughout recreation areas including ACA-managed properties. Additionally, the PlayCleanGo program has just been embraced by the Canadian Council on Invasive Species (CCIS) as a national program to help stop the spread of invasive species. This grant funding allowed the AISC to engage stakeholders and volunteers to develop and implement plans to help target high-use recreation sites to reduce the spread of invasive species. The Alberta Invasive Species Council (AISC) hired a program coordinator to engage key stakeholders, produce PlayCleanGo materials, and continue to build awareness and gain commitment to PlayCleanGo. To begin to build awareness, printed materials, trail signs, displays, and website content were developed. A major achievement was gaining approval from two large recreational land owners (Government of Alberta and ACA) to allow PlayCleanGo signs to be posted on their lands. In total, 18 Alberta organizations have signed on as partners of PlayCleanGo to date and so far, nine recreation area sites have signs displaying PlayCleanGo messaging. PlayCleanGo delivered 40 outreach activities to over 4,000 Albertans. Individual Albertans have started committing to implement PlayCleanGo practices during their outdoor recreational activities and the PlayCleanGo AISC website leaderboard currently stands at 255 commitments.

In 2015, AISC collaborated with ACA staff to introduce and develop plans to best fit PlayCleanGo on ACA lands to help ACA control the spread of invasive species. The Eagle Terrace Site was selected as a key site to implement PlayCleanGo with the extensive redesign of recreation on this ACA site. Program planning started in 2015 and sign implementation occurred in 2016.

Deliverables/Results:

- In Alberta, in 2016, there were seven conferences/workshops and six field days attended where 1,979 recreationists were directly engaged in PlayCleanGo dialogue.
- Further nine site locations centers have been established in 2016 to directly engage recreationists at key trailheads or multi-use recreation trail head staging areas.
- Additionally, 255 signed commitments were received from recreationists, agreeing to participate in PlayCleanGo activities and behaviors when performing their individual and group recreational pursuits.
- Four additional PlayCleanGo partners have joined the Alberta PlayCleanGo program, including Parkland County, Strathcona County, and Weaselhead/Glenmore Park Preservation Society, bring the total Alberta PlayCleanGo partner organizations to 18.
- Cumulatively, between 2015 and 2016 to date with the ACA grants, there have been 40 events/sites participated at, and over 4,055 recreationists directly engaged in PlayCleanGo dialogue. These totals, including 18 meetings with presentations to 1,246 recreationists, six field days engaging 739 recreationists, seven tradeshow displays with booths present engaging 2,070 recreationists, and nine recreation area sites signed.

Youth Trapper Camp

Alberta Trappers Association

Grant: \$8,225

Project Code: 002-00-90-252

Project Status: New; Extended until August 31, 2017

Project Website: www.albertatrappers.com

The first ATA Youth Trapper Camp took place on August 14 – 16, 2016 in Debolt, Alberta. The event was held at Trapper Gords; the most prestigious trapper education training facility in Alberta. This “pilot camp” was the first in a series and included the following eight important elements: Modern Day Trappers and What They Do; Fire and Tinder; Paracord and What You Can Do With It; Survival Whistle; Trappers Lures; Knife Safety; A Walk in the Bush with a Trapper to Learn the following: tracking and reading sign, snaring squirrels and rabbits, some useful plants, learning what ground zero is, how to use ribbon in the bush, helping someone with First Aid; Around the fire (outdoor cooking by campfire). All meals took place outside near the campfire, with everyone helping with the cooking and clean-up duties. The kids were shown how to make a tin-can cooking pot, but there was not enough time for them to try cooking on their own. The kids got a chance to dress up like a trapper and take photos prior to the wrap-up and break camp.

Deliverables/Results:

- There were 21 registrants and eight volunteers in attendance at the first camp held August 14 – 16, 2016. This “pilot camp” was the first in a series and included eight training components. The response from this project was excellent. The camp filled up quickly and participants (and parents) were very enthusiastic about the opportunity to take part. Being the first camp that ATA hosted, some things were learned that will improve the delivery of the 2017 camps and ensure that ATA will continue to improve upon this endeavor.
- Dates for the 2017 camps have been scheduled as follows: August 5 & 6, 2017 – Trapper Gord Training Facility – Debolt; and August 19 & 20, 2017 – Alford Lake Conservation Centre for Excellence.
- The “How To” manual that details how to host and deliver an ATA Youth Trapper Camp has been completed. This document will be used as the template to deliver this program in the future. This template identifies the criteria and standards that must be met to offer this program under the ATA banner.

Public Engagement, Wildlife Conservation, and Monitoring at Beaverhill Lake

Beaverhill Bird Observatory

Grant: \$19,550

Project Code: 030-00-90-124

Project Status: Funded since 2006/07; Completed

Project Website: www.beaverhillbirds.com

The Beaverhill Bird Observatory (BBO) has been monitoring birds and other wildlife and conservation education in the Beaverhill Natural Area for more than 30 years. This project continued BBO's stewardship of the Beaverhill Natural Area by enhancing its value to wildlife and increasing the public's access and exposure to nature. BBO also continued its long-term monitoring of wildlife, and expanded outreach activities to inform the public about threats facing wildlife. In 2016/17, the BBO monitored songbird migration in spring and fall, monitored bird breeding in the

summer, monitored owls in the fall, monitored the mammals year round, maintained trails, held off-site presentations and on-site events to visitors and groups, maintained and replaced 500 nest boxes as needed and monitored nest development and success, operated bat detector and set up new bat boxes, walked perimeter fence and made repairs as needed, and organized work bees to remove internal fence and install wildlife fence flags.

Deliverables/Results:

- Spring migration monitoring was conducted from April 1 – June 20, 2016 and staff operated 13 mist nets recording 849 captures of 53 species, achieving an overall capture rate of 24.7 birds per 100 net hours.
- MAPS program: The BLAB nets recorded 93 captures of 11 species over the maximum effort of 360 net hours, for a capture rate of 25.8 birds per 100 net hours; The SOPO nets recorded 254 captures of 28 species over 275 hours, for a capture rate of 92.4 birds per 100 net hours; The LILA nets recorded 185 captures of 26 species over 300 hours, for a capture rate of 61.7 birds per 100 net hours.
- Fall migration monitoring was conducted from July 20 – October 20, 2016. BBO staff operated thirteen mist nets through these dates, recording 1,721 captures of 53 species, achieving an overall capture rate of 41.2 birds per 100 net hours.
- Owl monitoring: BBO records were set for total captures of northern saw-whet owls (566), boreal owls (eight), and long-eared owls (nine). Four mist nets and a saw-whet audio lure were utilized from September 2 – November 17, 2016 on every night that banding was possible. An additional two mist nets and a long-eared audio lure were used every second night between September 2 – 29, and two nets and a boreal owl audio lure were utilized every possible night from October 14 – November 17. The overall capture rate for owls was 27.6 birds per 100 net hours.
- With the help of ten volunteers, BBO removed approximately two km of internal fencing from the Natural Area. Staff installed fence flags on the north perimeter fence that meets Beaverhill Lake. Both of these projects have made it easier for wildlife to pass through the Natural Area.
- Staff walked the entire length of the perimeter fence on multiple occasions. Cattle were found to be entering through a damaged gate at the northeast corner of the Natural Area. The cattle owner was notified and the gate was replaced.
- All 30 bat boxes were installed in the Natural Area and the bat detector was operated by a researcher from the University of Alberta, who will complete a report summarizing what species were found.
- With the help of volunteers, trails were kept in good shape by mowing grass, trimming willows, and moving large fallen trees. This was done in the spring, summer, and fall, allowing hunters and visitors to access the Natural Area.
- Three trail cameras detected two brown-headed cowbirds, three coyotes, ten moose, 12 mule deer, one porcupine, two snowshoe hares, and 184 white-tailed deer. The brown-headed cowbirds were observed riding the backs of deer.
- 100 house wren boxes, 150 tree swallow boxes, ten saw-whet owl boxes, five duck boxes, purple martin colony, and over 150 bluebird boxes were repaired in the spring, and monitored during the breeding season. Five student interns were hired to help with 100 house wren boxes and 150 tree swallow boxes.

- A scientific article is being prepared by Dr. Norris about the migration of tree swallows from 12 study areas across Canada. Beaverhill's swallows migrate to the Gulf Coast from Florida to Veracruz to the Yucatan.
- Over 70 guests attended the Big Birding Breakfast on June 4, 2016 in the Natural Area. Approximately 100 guests attended the Steaks and Saw-whets event over two nights in the last weekend of September. BBO staff interpreted to over twenty groups (600 participants) in the Natural Area, a few of which included: wildlife students from Lakeland College, environmental students from NAIT, avian biology students from the University of Alberta's Augustana campus, the University of Alberta outdoors club, the Tofield Outdoors club, the Augustana Wildlife Society, and the Friends of Elk Island Society.
- Over 80 presentations (over 2,000 participants) were given in Edmonton and surrounding areas about threats facing birds and conservation in Alberta. Two banding demonstrations were conducted: the annual Snow Goose Festival in Tofield, Alberta, and at Love the Lake Day in Pigeon Lake Cottagers Association, Alberta.
- Data was shared with collaborators.
- The Annual Beaverhill Bird Observatory Report was compiled.

Annual First Time Upland Bird Hunt

Big Country Rod and Gun Club

Grant: \$1,000

Project Code: 030-00-90-265

Project Status: New; Completed

The purpose of the grant was to assist the Big Country Rod and Gun Club with the purchase of pheasant and chukar partridge for the annual first-time bird hunt. The first-time bird hunt was held on October 27 – 29. On October 27, working in conjunction with the club, AHEIA arranged for the transportation for five women and three men to the Oyen area. None of the participants had ever hunted upland birds before. In fact, some of them had not shot a shotgun before. The hunters arrived at the Club's camp in the late afternoon. After supper, the participants were given a safety briefing, advised about the itinerary, and were fitted with a shotgun. The next day, the hunters shot trap while the pheasants and chukar partridge were placed in the hunting area. After shooting trap, the hunters were split into groups of two and transported to two hunting areas. Each group was paired up with a dog handler. The groups then spent the rest of the day hunting upland game birds. After the day's hunt, the hunters returned to the camp and had supper. They did, as most hunters do, spent the evening talking about the day's hunt. On the final day, the groups set out and spent the day hunting upland game birds in the area. After the hunt, everyone returned to the camp, packed up, and travelled back home.

Deliverables/Results:

- The club hosted eight first-time upland bird hunters during this year's program. Many compliments were received by the hunters. They all showed an interest in hunting birds in the future. The mentors were asked about the purchase of a shotgun. To that end, the club believes that of the eight first-time hunters, most will continue to hunt in the future.

Boat and Sportsmen's Show Trout Pond Gifts

Calgary Fish & Game Association

Grant: \$1,185

Project Code: 020-00-90-233

Project Status: New; Completed

Project Website: www.calgaryfishandgame.com

The Calgary Fish & Game Association (CFGa) manages the trout pond on an annual basis at the Calgary Boat and Sportsmen's Show. The objective of the pond is to promote an understanding of aquatic conservation, as well as to introduce fishing to youth that attend the show. CFGa's objective for 2016/17 was to create co-branded fishing lures with ACA that would be awarded as prizes to the children. Fifteen children would fish simultaneously for 15 minutes, with their names put into a draw. The winners of each draw would then receive one of the co-branded prizes and each child received a baseball cap.

With the financial support of ACA, CFGa created wonderful prizes for the kids, which included their choice of a tackle box (that included the ACA co-branded fishing lure); a camping chair, or a fishing rod (donated by Cabela's). CFGa included a business card with each of the hats and prizes, ensuring that the children and their parents knew that the prizes were sponsored by ACA. This event is very heart-warming and you could see the excitement on the children's faces when they won a prize that they'll be able to use.

Deliverables/Results:

- CFGa achieved their main objectives of teaching children how to fish and about aquatic conservation efforts in Alberta. This program allowed us to provide excitement for the children and their parents, while also providing a valuable educational experience. Over 800 children fished at the trout pond from February 9 – February 12, 2017. Every one of the children received a baseball cap that mentioned ACA, CFGa, and Cabela's as sponsors. A few hundred lucky children received the co-branded ACA – CFGa lures and other prizes.
- One heart-warming experience from the show was when two foster children, new to Canada, were both able to fish the pond and win prizes! What a great introduction to fishing and to our country at the same time. It was amazing to see the light in their eyes when they received their very first fishing rods.

Kids for Conservation: Getting youth outside to experience Alberta's wilderness

Canadian Parks and Wilderness Society (CPAWS) Southern Alberta Chapter

Grant: \$9,250

Project Code: 002-00-90-253

Project Status: New; Completed

Project Website: www.cpaaws-southernalberta.org/campaigns/education

Youth are increasingly spending less time outside and are becoming more disconnected from the natural world. Kids for Conservation is a project designed by the Canadian Parks and Wilderness Society Southern Alberta Chapter (CPAWS SAB) that aimed to get kids outside, educate them about conservation, and promote stewardship. To achieve these goals, CPAWS SAB undertook the following project activities: providing high-quality conservation education programs to schools

in Alberta by hiring and training highly experienced interpretive guides with the latest science, conservation, and curriculum materials; maintaining and replenishing programming materials; and ensuring fun and engaging activities. CPAWS SAB operated with the highest safety standards following a robust organizational risk-management plan that was audited and updated during 2016. The hikes were marketed, as well as the benefits of this project to get kids outside and learn about Alberta's wilderness, via newsletters, articles, and teacher workshops. Through the interpretive hikes in Alberta's wilderness, CPAWS SAB inspired youth to engage in stewardship and conservation in Alberta. At the end of the project, participant feedback was used for project improvement. By completing these activities, the objectives were met and exceeded for the Kids for Conservation project. In 2016, this project delivered 115 interpretive hikes to school groups in Grades 3 – 12 reaching over 3,000 students who experienced conservation education in an outdoor setting in Alberta. The project evaluations showed that CPAWS hike participants enjoyed getting outside, have increased knowledge about conservation, and indicated that they will engage in some form of positive environmental conservation as a result of their experience. In fact, 97 percent of youth on the hikes indicated that their program was interesting, challenging, and fun and that they enjoyed participating in the activities. During these unique wilderness experiences, youth were educated about conservation and inspired stewardship: 95 percent of youth participants indicated that they learned something new about conservation and 90 percent stated that they were inspired to care for the environment. By connecting youth with nature and educating about the importance of conservation and healthy ecosystems, the project has increased conservation awareness and helped to build the next generation of conservationists in Alberta.

Deliverables/Results:

- The CPAWS SAB Kids for Conservation project engaged 3,037 Alberta youth in conservation during 115 hikes, greatly exceeding our targets of 2,500 students during 100 hikes. Through program and participant numbers, participant feedback, and action challenge projects completed, this project achieved the targets of getting kids outside, educating youth about conservation, and promoting stewardship.
- Feedback showed that 97 percent of participants indicated that they enjoyed the program and would do it again, that 95 percent of participants indicated that they increased their knowledge about conservation in Alberta, and that 81 percent of participants engaged in some kind of stewardship as a result of the program.

Education and Reclamation in the Castle

Castle-Crown Wilderness Coalition

Grant: \$14,700

Project Code: 015-00-90-189

Project Status: Funded since 2008/09 (not funded 2011/12 & 2015/16);

Completed

Project Website: www.cwc.ab.ca

The goal of Castle-Crown Wilderness Coalition's (CCWC's) 2016/17 project was to enhance the health of the Castle area. This goal was attained through three main activities: reclamation, education, and stewardship. The reclamation activities resulted in a decreased number and reduced spread of invasive weed species. Over 1,750 pounds of weeds were physically removed from the Castle area either by hiking with a backpack, bicycle, or packhorse. Another 650 pounds of garbage

from human activity— industrial and recreational—was removed from various areas within the Castle including approximately five km of shoreline of lakes, rivers, and streams and over 200 km of roadways. Educational outreach opportunities were created for public and special interest groups throughout the summer months. These activities included seven guided hikes with approximately 80 people attending and six group weed pulls (52 participants) at various locations in the Castle. The group weed pulls included the ninth annual West Castle Wetland Ecological Reserve weed pull and the Great Canadian Shoreline Clean Up at Beaver Mines Lake. A staff member attended and shared information at the International Weed Science workshop held in the Gladstone Valley. These were opportunities for staff and volunteer leaders to inform and promote responsible use and protection of the area. A display booth was set up and staff and volunteers shared information, answered questions, and distributed resource materials at community events. Through the support of this grant, CCWC actively participated in stewardship activities by working collaboratively and collectively with over 13 partner organizations and land managers. As a collective, illegal and destructive behaviors of some recreational OHV users and random campers were monitored and reported. As well as collecting, we recorded and shared the GPS data on the location of invasive weed species. A renewed partnership with the Nature Conservancy of Canada provided volunteers and support for a joint weed pull in an area that had been overrun with invasive weed species. The continued and constant attention to the health of the Castle is showing results; there is a noticeable decrease in the amount of invasive and noxious weed species in areas that CCWC have been focusing on for the past few years. This allows our staff and volunteers to move their work to other areas that require attention. CCWC staff have also reported seeing a number of rare plant species in the area and feel the vigilant work of reclamation, education, and stewardship has supported the growth of these plants.

Deliverables/Results:

- The quantity of weeds and garbage removed this year was larger than expected. This may have been due to an expanded number of staff as funding was available through a federal summer employment program and the length of time staff were able to work due to good-weather conditions. The years of experience provide staff with insight and understanding and they can predict which areas need constant attention.
- 440 bags of weeds removed (approximately 40 left to compost), 450 pounds of metal, and 88 kg of garbage removed. These were removed from 200 km of ditches bordering roadways and approximately five km of shoreline of rivers, streams, and lakes. The removal was done via hiking with a backpack, packhorse, or bicycle.
- Three volunteer events for the public were held. Achieved with a total of 52 volunteers attending these three events, removal of approximately 80 bags of weeds plus ten bags left to compost at one site.
- Seven hikes for the public.
- Led the reclamation site tour for Canadian Weed Council – International Weed Conference.
- Led the Big Sagebrush Natural Area Stewardship Hike for Alberta Native Plant Council; rare plants were found.
- Attended local events, set up display booth, and provided resource pamphlets and other printed material, and answered questions. An estimated 500 people were provided with information.

Fisher Education Program

CW Perry School

Grant: \$5,095

Project Code: 020-00-90-235

Project Status: New; Extended until June 30, 2017; Completed

CW Perry School's goal was to establish and run a Fisher Education program. The program has been established and continues to gain interest. All gear was purchased and a system for ease of use or loan has been established. In the fall of 2016, the fishing module was taught in the regular outdoor education class with 24 students going on a field trip to Rawson Lake for a day of alpine lake fishing. Pictures of this fishing trip were posted on the school's internal TV system, which generated some interest in enrollment in the spring Fishing Bootcamp class. This spring course was established and ran from March 20 – June 20 and included five field trips; Bow Habitat Station in Calgary; Sibbald Meadows Pond to release fish with biologist, clean the shoreline, and fly fish; Mount Lorette Ponds to clean the shoreline and fly fish; Willow planting along Nose Creek; and a final trip to Elbow Lake in Kananaskis to clean the shoreline and enjoy the day fly fishing in the mountains. The fall Outdoor Ed fishing module and the spring Fishing Bootcamp courses have become a part of the school's annual courses offered each year. Mr. Dow's connection with Clear Water Adventures Fly Fishing company has facilitated his readiness to teach and guide kids in fly fishing instruction. During the fishing course, pictures and information were added to the school webpage and Facebook page showcasing the program over the year and to encourage continued student enrollment in the terms to come. They were interviewed by the local paper for which an article outlined successes and spotlighted student development in the course. On a side note, the school also purchased fly tying gear for the kids to use and have started to instruct some in this skill, both as a part of this course and as a lunchtime club for those not in the class but have shown interest in fishing and tying flies. With the help of this grant funding, CW Perry School is well on their way to establishing annual programs for the school community focused on creating stewardships for kids and families with our natural spaces as responsible users and fishing partners in Alberta by having them participate in the fishing program.

Deliverables/Results:

- This plan included the creation of Outdoor Education and Fishing programs in both the spring and fall. 2016/17 had 24 Grade 7 students enrolled in the fall Outdoor Education with another 15 enrolled in the spring Fishing Bootcamp. Moving forward, the school plans to continue running these courses and if Mr. Dow is assigned to teach Grade 8, these modules and courses will be available to them as well.
- The following Field Trips took place: Bow Habitat Station/Sam Livingstone Fish Hatchery (April); Sibbald Meadows Pond trip for fish release, site cleanup, and fishing (April); Willow planting along Nose Creek in Airdrie (May); Mount Lorette Ponds for site cleanup and fishing (May); and Elbow Lake, Kananaskis for site cleanup and fishing (June).
- A completed curriculum and classroom deliverables for the Spring 2017 Fishing Bootcamp course.
- Local newspaper article recognized this project and ACA grant funding as well as an online magazine called "The Stream Tender."
- Completed link for website and school Facebook pages.

Wetland Discovery Days

Ducks Unlimited Canada

Grant: \$20,000

Project Code: 002-00-90-258

Project Status: New; Completed

Project Website: www.ducks.ca/our-work/education

Wetland Discovery Days in Alberta is a tailored program specific to urban students. The program draws on the success of DUC's award-winning Project Webfoot program for Grades 4 – 6 students. Wetland Discovery Days capitalizes on the most popular element of Project Webfoot—the field trip—and couples this with DUC's own urban wetland interpretive centre at the John E. Poole Wetland. Alberta's urban students need to be engaged in understanding the importance of water and wetlands for the future of our province. DUC's John E. Poole Wetland at Big Lake in St. Albert provides the ideal destination for delivery of a water and wetlands education program for urban students, complete with boardwalks, trails, and interpretive signs. Thanks to the ACA grant, Wetland Discovery Days delivered a 90-minute field trip to John E. Poole to 628 students in 24 classes during the week of June 13, 2016.

Each class received 90 minutes of interaction time on-site including: wetland insect dipping and identification, nature walk and bird viewing, a presentation from a DUC interpreter, and a take home item. These successful field trips went exactly according to plan and happened on schedule without incident.

Deliverables/Results:

- The main result of the project was 628 students in 24 classes along with 94 supervisors experienced hands-on wetland education that will stay with them for life. DUC received requests from 120 schools that wished to participate in this program. Since DUC could only deliver this program to the number of classes that we receive funding for, the classes were chosen on a first-come, first-served basis.

Edmonton Valley Zoo Fascination Station

Edmonton Valley Zoo

Grant: \$2,914.46

Project Code: 002-00-90-247

Project Status: New; Completed

The ACA Fascination Station is a one-of-a-kind, solar-powered, educational cart which can be wheeled all around the zoo for spontaneous interpretation and enjoyed by all ages—from toddlers to grandparents! Each topic speaks to ACA and the Edmonton Valley Zoo's messages about animals, nature, and conservation. Over the past year, the ACA Fascination Station has educated over 2,000 guests at the Edmonton Valley Zoo. Topics range from the colour of a beaver's teeth to what kind of fish you can find in the North Saskatchewan River. The solar-powered microscope was a huge success. Interpreters could take a sample of pond water and magnify it onto a screen so guests could see all the creatures that live in our local ponds. The daily themes included: Monday: Frogs and Friends; Tuesday: Hooves and Horns; Wednesday: Wetlands (biodiversity in your own backyard); Thursday: Birds and Bats (bats, and birds, and waterfowl identification); Friday: Many Fishes in the River! (angler awareness and sustainable fish); Saturday: Reptiles; Sunday: Otters, Beavers, and Muskrats (trappers). The Edmonton Valley Zoo sees over 200,000 visitors each year during the summer months of May through August. Even if an interpreter did not log that they talked to the visitor, they had a chance to see the educational cart in action and know that the Edmonton Valley Zoo has a great partnership with ACA.

Deliverables/Results:

- The main deliverable for this project was the creation of a mobile educational cart that can be used for many different topics, initiating curiosity and conversation amongst all the Edmonton Valley Zoo visitors and assisting in the facilitation of the zoo's four core values: education, conservation, stewardship, and engagement.
- The ACA Fascination Station promotes the partnership between ACA and the Edmonton Valley Zoo.
- The ACA Fascination Station was brought out daily from May – August 2016 for a total of 123 times and assisted in engaging 200,000 guests during high season. It was visited by 1,366 people in May – August 2016 and 201 people in September – December 2016.

Beaver Hills Dark Sky Preserve Bat Nights

Friends of Elk Island Society

Grant: \$5,814

Project Code: 030-00-90-268

Project Status: New; Completed

Project Website: www.elkisland.ca

Bats are a cryptic and misunderstood group of animals that play an irreplaceable role in our ecosystem. They are facing ever-growing threats with diseases such as white-nose syndrome and habitat disturbance with wind energy and forestry industries. To address these conservation concerns, public awareness needs to be raised and outreach events need to be offered where bat researchers and enthusiasts can start to change the public perception of this unique and vital species. With the funding received from ACA, the Friends of Elk Island Society (FEIS) offered public outreach events to all ages and offered opportunities for how the public can make a difference in bat conservation. The objectives of this project were to add a bat awareness component to the "Beaver Hills Dark Sky Preserve Annual Star Party" at Miquelon Lake Provincial Park (MLPP) and Elk Island National Park (EINP) on September 3 and 4, 2016. FEIS offered a bat-house building workshop where 24 single-chambered bat houses were given away to MLPP and another 24 houses to EINP, in addition to having three multi-chambered bat houses that families could help build. Each single-chambered house came with an information pamphlet about how to set up the bat house and ways that it can be monitored and the data contributed. There were also bat crafts and puzzles, as well as a bat information booth with bat specimens, detectors, books, posters, bookmarks, and interactive activities. Three guided bat walks were offered at each park and had seven different active bat detectors for people to use. Over 75 people participated in the bat walks over the course of the two-day event. It was a free event for the public that raised awareness about the conservation and importance of bats. In addition to the two-day event, weekly guided bat walks in EINP were offered from the last week of July to the first week of September to encourage people to become more interested in bats and get involved in the bat community. FEIS handed out information cards of where the public could direct their questions or how they can get involved in the different bat monitoring programs. The multi-chambered bat houses were set up at John Janzen Nature Centre (JJNC) in Edmonton and are being incorporated into bat programs that the facility is starting to offer for children and adults. They will be monitored for occupancy in spring 2017.

Deliverables/Results:

- The main result of the project was offering a bat house building workshop for families where they were able to build and take home bat houses. Participants were asked to report whether their bat

houses are being occupied. The Anabat Walkabout bat detector was used for weekly guided bat walks in EINP from the last week of July to the first week of September, as well as was shared with other individuals who were doing bat walks and with bat researchers during a bat blitz in the Rockies. Although it was not as planned, setting up the multi-chambered bat houses at JJNC will provide roosting opportunities for bats in an area where natural roosts are limited and at a facility that is keen to develop programs for school groups and adults that will incorporate the bat houses.

- The project organizers were extremely happy with how much enthusiasm was received from the public with the bat house initiatives and bat walks offered. Numerous people have contacted project staff with bat-related inquiries and ways to get involved in bat conservation, overall highlighting that the project accomplished the main objective of encouraging and engaging the public in bat conservation.
- Two one-day public engagement events: one bat house building workshop where 24 bat houses were given away was held on September 3, 2016 at MLPP and a second one was held on September 4, 2016 at EINP. All lumber was cut to size before the event, and instructions, hardware, tools, caulking, shingles, and stain were provided. There were also always at least eight volunteers or board members available at all times who could help the families build the bat houses. There were bat crafts and puzzles for the younger children to participate in as well. All 48 bat houses were built and taken home by people, ranging from single individuals to family groups. Between the bat house building, crafts, people that looked at the bat booth, and guided walk participants, there were over 100 participants each day.
- Each day there were at least 12 volunteers over the course of the day and at least eight available at one time. They helped with transporting the supplies, assisting families with building the bat houses or crafts, manning the information booth, helping with the guided bat walks, and helping to load and unload the truck. There was a tremendous amount of help before the event as well with cutting 48 single-chambered bat houses, three multi-chambered bat houses, and picking up all the materials needed for the bat houses, bat crafts, and information booth.
- Three multi-chambered bat houses were installed at JJNC during the week of September 6 – 9, 2016. This was a collaborative effort over the course of the week including the efforts of both volunteers as well as City of Edmonton staff.
- A brochure was designed and printed that contained information about bats and bat houses. They were handed out to the families building the bat houses along with members of the public that wanted more information about Alberta bats. Two posters, designed by the program coordinator of the Alberta Community Bat Program, were printed and available for the public to look at. The posters contained information about the species of bats in Alberta and general bat information.
- An article was submitted to Nature Alberta for the Spring 2017 issue. This will be appropriately timed as it will correspond with when bat outreach initiatives and bat house monitoring occurs again, and will reach many members of the public.
- Guided bat walks were held every Wednesday at EINP from the last week of July to the first week of September with anywhere between one and 30 participants. There had been a lot of interest and great enthusiasm from everyone who participated.

2016 Vegetation Management at Glenbow Ranch Provincial Park

Glenbow Ranch Park Foundation

Grant: \$5,900

Project Code: 015-00-90-233

Project Status: Funded in 2015/16; Completed

Project Website: www.grpf.ca

The project goal is to protect and re-establish ecosystem integrity and biodiversity of Glenbow Ranch Provincial Park (GRPP) and the Bow River watershed by controlling invasive weed species. The project also aimed to increase public awareness of the importance of controlling invasive species, and enhance public understanding of the importance of these activities. Vegetation management was carried out by: physically removing invasive plants by hand, spraying when and where appropriate, and by using hound's tongue root-feeding weevils as a bio-control agent. The bio-control for hound's tongue is serving its intended function by replacing chemical control (GRPF still assist the weevils with manual removal). The longest recorded distance that has been travelled by weevils from a release point is 1.2 km. The distance the weevils travel brings increased control of the hound's tongue plant, and decreased need for herbicide treatment. This season, herbicide treatment was not used on hound's tongue because all sprayable patches already housed weevils. GRPF have been successful in locating small infestations (Dalmatian toadflax, orange hawkweed, and spotted knapweed) and removing them before they become large problems. This is called early detection, rapid response. Toadflax has been sprayed everywhere it can be sprayed without environmental restrictions (like water, desirable vegetation). GRPF continues to meet their goal of reducing creeping thistle (aka Canada thistle) on an annual basis.

Deliverables/Results:

- There is a noticeable decrease in the abundance and distribution of weeds in treated areas of the park. Creeping thistle, hound's-tongue, perennial sow thistle, common toadflax, yellow clematis, and black henbane populations have all decreased as a combined result of chemical, bio-control and mechanical treatment. Many areas of previous infestations have been completely eradicated and replaced with healthy native plant communities. In other areas, plant communities have shifted from predominantly noxious weeds, to native and moderately invasive weeds. This is encouraging to see, as it shows that the treatment is mimicking the natural shift that plant communities make towards a healthy and productive state. There has been an increased public awareness of the importance of invasive species control thanks to the focus of this topic as part of the general park tours and programming. To date this year, 878 people have been reached through programs that address these important concerns (golf cart, family nature, and school and day camp programs). Of great encouragement was the fact that 19 people attended the May Park Talk on Invasive Species.
- A report was submitted with the final report outlining exactly what species of invasive plants were controlled, by what means, and when.
- Photo documentation of the progress of the invasive species control at the park is available.

Environmental and Conservation Education at Glenbow Ranch Provincial Park

Glenbow Ranch Park Foundation

Grant: \$10,000

Project Code: 002-00-90-241

Project Status: Funded in 2015/16; Completed

Project Website: www.grpf.ca

Opened in 2011, Glenbow Ranch Provincial Park (GRPP) protects 1,300 ha of foothills parklands along the Bow River between Calgary and Cochrane. The Glenbow Ranch Park Foundation (GRPF) supports the park's operations and development through a unique relationship with the provincial government. GRPF provides Education, Research, Recreation, Stewardship, and Fundraising for the park. The objectives are: to enhance public understanding and appreciation of the ecological resources protected at the park (primarily the resources contained within the native grasslands and Bow River), and instill in visitors a sense of stewardship for these resources— an understanding of how their actions affect the integrity of these valuable natural resources. The ultimate goal is for participants to become environmental stewards in their own communities and encourage them to become advocates for the conservation and enhancement of these resources, thereby securing the future of fish and wildlife habitat across the province. The main results of the project were the positive engagement of 3,116 program participants in outdoor conservation education programs that emphasized the importance of Alberta's natural resources, their protection, and their appropriate uses.

Deliverables/Results:

- 3,116 people took part in 141 programs focused on conservation, the environment, and stewardship. The breakdown of program participants is as follows: Golf Cart Interpretive Programs: 517 (allowed visitors with a variety of physical abilities to experience the park, and better understand how they can become active stewards in their own communities); Family Nature Programs: 218; school and day camp programs: 250; Natural Resources Park Talks: 459; Awareness Raising Park Events: 1,636; ACA Fly Fishing Programs: 18.
- Posters (40) were distributed throughout Cochrane and NW Calgary and on Twitter.
- Project photos of some of the programs are available.

H.A. Kostash Youth Mentorship Programs

H.A. Kostash School

Grant: \$15,000

Project Code: 020-00-90-209

Project Status: Funded in 2014/15 and previously by the R&R fund; Completed

With H.A. Kostash School's outdoor education programs being so popular and many students participating, their equipment is well used and worn out. With the assistance of this grant, H.A. Kostash School replaced the necessary equipment to keep the programs going. The students participated in a mentorship hunt, a regional ice fishing day, a fly-in fishing trip, and archery tournaments to name a few. This has helped students gain an appreciation for the outdoors, develop leadership skills, and build lifelong friendships. These programs have been able to reach out to many age groups, starting from Grade 3 (with archery) to Grade 12, a major accomplishment for a school population of 320 students.

Deliverables/Results:

- This program has provided an opportunity for students to participate in programs they may have never experienced. An appreciation for the various programs has carried on well after graduation, with many students returning to assist with programming and mentor younger students. Some students have gone off to post-secondary school for Fish and Wildlife Offices and Conservation programs.
- The archery teams completed in six tournaments, with over 150 participants per competition.
- Namur Lake fly-in fishing trip was postponed until May 2017 due to the Fort McMurray fire (15 participants).
- A school division-wide ice fishing day was attended in March 2017 with close to 250 students.

"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: Funded since 2014/15; Completed

Extreme by Nature is an interactive program for youth with the purpose of providing engaging opportunities that connects them to nature and brings them closer to their local natural heritage. The program goal is to encourage youth to find a deeper connection with nature through increased understanding of environmental issues and a commitment to lifelong stewardship and environmental responsibility. This goal was achieved through the provision of monthly programs on a variety of topics that provide outdoor survival skills, traditional knowledge of the land, and a better understanding of what conservation means. In 2016/17, there were ten Extreme by Nature programs delivered to 119 youth participants and 20 adult mentors and participants. There was a slight decrease in program attendance over last year. This decrease is likely attributable to two programs not proceeding as planned (Coulee Clean-Up and Bookmaking). Overall, repeat program participation held stable at an average of 1.77 programs in 2016/17 versus an average of only 1.85 in 2015/16. Repeat program participants benefit from a richer mentorship experience as they forge closer connections with Extreme by Nature program staff and volunteers.

Deliverables/Results:

- Since receiving funding from ACA, the Helen Schuler Nature Centre has offered twelve different programs (one per month) for 11 – 15 year olds. Topics for the ten programs successfully delivered to 119 participants in 2016/17 included:
 - Coulee Clean-Up: no teen registrants for the program; however, younger participants and their parents arrived and were interested in participating in the Clean-Up so a modified program proceeded.
 - Bumblebee Houses: focused on the importance of pollinator habitat, what can be done to restore habitat, and the alternative ways of providing habitat in urban areas. Participants built a bumblebee house to take home.
 - Bumblebeewatch: focused on citizen science and how individuals can participate using basic tools. Working with the Xerces Society, participants learned about the 22 species of bumblebees in Southern Alberta and some of the identifying characteristics.

Participants took photos of bumblebees and submitted to Bumblebeewatch.org.

- Orienteering: introduced to wayfinding, how to use a map, and tips to orientate yourself in natural environments using landmarks. Participants were challenged to complete an orienteering map quest. This program had to be modified due to torrential rainfall. Program was modified to include indoor group games. Given the large number of registrants, the program was delivered again later in the season.
- Treewhispers: working with the Textile Surface Design Guild, participants learned papermaking techniques. Participants made several paper discs that eventually formed part of an international travelling art exhibit.
- Urban Farming: participants toured urban farming sites with Synergy Permaculture & Urban Farming to learn about the types of local food production that is possible and what permaculture is. Participants took part in tending to a plot and enjoyed the fruits of their labour.
- Bookmaking: local textile artist taught participants how to make a variety of simple books. Focused on using nature as an inspiration for art and used natural found objects to draw and paint on the paper that was made into books. Participants made their books to take home.
- Ugly Christmas Sweaters: working with PEAK Vocational and Support Services participants learned about the importance of upcycling and reusing clothing. Using a variety of second-hand Christmas decorations and craft materials participants took old sweaters and created ugly Christmas sweaters to wear at school or at home.
- Engineering Challenge: program participants were challenged to see if they could build like a beaver. Participants discovered some of the many adaptations that beaver have for building and used the beaver as inspiration to build their own structures.
- Ksisskstaki: delivered at the Elizabeth Hall Wetlands with a Blackfoot naturalist; focus on the beaver living in the wetlands and the importance of beaver for ecosystem and our community.
- Main demographic of participants is 11 – 13 year olds; 14 and 15 year olds continue to be difficult to engage in Extreme by Nature programs due to part-time jobs, sports teams, and extracurricular activities.
- Five Community Partnerships were developed with: Aimmoniisiiksi Institute of Blackfoot Learning, PEAK Vocational Support Services, Synergy Permaculture Design & Urban Farming, Textile Surface Design Guild, and YMCA Leadership Camp.
- There was a noticeable increase in repeat program participation from teens who participate in class-based nature programming (Natural Leaders Project).
- YMCA leadership camp expressed interest in participating in a conservation project. The existing Extreme by Nature program was leveraged to work with City of Lethbridge Parks Integrated Pest Management Team to share best practices in managing invasive species.

Alberta Bat Education and Habitat Protection: Establishment of the Cache Park Bat Reserve and the "Save a Barn, Save a Bat Program"

Highway 2 Conservation

Grant: \$8,300

Project Code: 002-00-90-255

Project Status: New; Completed

Project Website: www.highway2conservation.com/projects

This project aimed to work with rural Albertans to promote the many benefits bats have ecologically and economically. Through extension and outreach workshops, as well as one-on-one consultation, Highway 2 Conservation (H2C) provided quality information on bats in Alberta to dispel falsehoods and myths and promoted the ecological goods and services they provide. The "Save a Barn, Save a Bat Program" was implemented to protect critical bat habitat by engaging rural landowners to agree to the retention of old farm outbuildings that are frequently unused and have been adapted as habitat by bats. By signing a surveying agreement these habitats will be available for future monitoring. Workshops on bat education that highlighted the "Save a Barn, Save a Bat Program" promoted the protection of critically important maternal roost sites and encouraged landowners to sign up for the program. While working with participating landowners, H2C has been able to get data on the colonies occupying the anthropogenic structures including bat species and numbers of individuals in the colony. Data was also gathered on habitat use and structure in the colonies range. The site visits have given landowners an opportunity to have a one-on-one consultation where any concerns or questions they might have had were answered. For the Cache Park Bat Reserve, this project has established a 20-ac reserve of prime bat foraging and roosting habitat. The land has been enhanced by erecting two large "bat condo style" buildings, capable of housing hundreds of bats, and designed to promote the establishment of maternal colonies. A third condo is built and is ready to be placed when the ground thaws this spring. This park is open for the public to enjoy and bat viewings have been frequent. This has given people a unique, positive interaction with these animals, something that has been promoting them as an animal worthy of our attention and protection.

Deliverables/Results:

- The main results of this project are the establishment of Cache Park and the "Save a Barn, Save a Bat Program." H2C was not expecting the immense public support and uptake of the program, nor was it expecting to generate so much interest in park. It was really encouraging to see groups from all ages and backgrounds, from senior farmers to young Junior Forest Wardens, wanting to learn about bats and then wanting to protect them. The bat house building workshops were a huge success as people wanted to provide a roost and attract bats to their property. All of this public interest shows a change in attitude towards bats which was one of the main goals of this project and made the hard work invested in it worthwhile.
- Identification and documentation of summer roosting site locations and surrounding habitat, reported back to the province bat specialist/Species at Risk Biologist: 20 sites visited. Roost reports and guano samples submitted in November 2016.
- Year-end report on the "Save a Barn, Save a Bat Program."
- Delivery of three workshops promoting the ecological and economical importance of bats and the challenges they face while also highlighting the "Save a Barn, Save a Bat Program": delivered nine speaking events (390 attendees) and nine bat house building workshops (250 attendees).
- Delivery of a bat-house building workshop followed by an interactive night walk with local Junior Forest Warden groups: Junior Forest Wardens participated in two bat house building workshops (June 4 and September 3). Unfortunately, a night walk could not take place with them at the June 4 event as the time in which the bats emerge was too late at night for the young Wardens.
- Establishment of the Cache Park Bat Reserve with signage promoting the park to the public. Enhancement of bat habitat by providing new roosting location through bat houses, big enough to house colonies with populations in the hundreds. Construction of a gate to prevent motorized vehicles from entering the park.
- Two bat condos were placed on June 4. Two gates were built throughout the summer and early fall that will effectively restrict vehicle access. Signage was placed on the highway directing people to the park, as well as signs in the hamlet. A large sign was placed at the entrance of the park.

Riparian Education Program

Highway 2 Conservation

Grant: \$8,550

Project Code: 015-00-90-209

Project Status: Funded since 2013/14; Completed

Project Website: www.highway2conservation.com/projects

Through education and conservation activities within the municipalities of Athabasca County, County of Barrhead, Sturgeon County, and Westlock County, Highway 2 Conservation (H2C) aimed to educate area youth as to the function and importance of riparian areas, how activities affect water quality, and interactions of wildlife, fish, and the land. H2C inspired the area youth to be stewards of the land, as well as created a link in the minds of area producers between their actions on the land and how it effects water, wildlife, fish, and ourselves. H2C also assisted producers in the creation and protection of riparian areas. This was accomplished by providing Riparian Education Days featuring speakers on water quality, aquatic invertebrates, aquatic and terrestrial invasive species, terrestrial vertebrates, riparian vegetation, and wilderness safety. Through the Riparian Improvement Program, H2C networked with producers to create and protect riparian areas within the four-member municipalities with identification of target areas through Environmental Farm Plan facilitation and GIS mapping. The goals for this project were met by approximately 500 students participating in the Riparian Education Program through five "Pond Days" events. Along with Pond Days, 15.4 ac of riparian area and adjacent upland wooded vegetation buffer zone was replanted and 25.14 ac of intact riparian habitat was protected through the Riparian Improvement Program.

Deliverables/Results:

- 500 students participated in the Riparian Education Program through five Pond Days events: Lac La Nonne (May 31), Baptiste Lake (June 8), Thunder Lake (June 14), Skeleton Lake (June 15), and Long Island Lake (June 16).
- 15.4 ac of riparian and adjacent buffers of upland vegetation were planted at six sites and 25.14 ac of healthy riparian areas were protected at six sites.
- H2C's newsletter was distributed in March 2017.
- A requested article was provided to the Alberta Water Council and was used in their *Annual Water for Life Partnerships Newsletter*.

Coleman Fish & Game Dam Access Upgrade

Hillcrest Fish & Game Protective Association

Grant: \$7,240

Project Code: 015-00-90-249

Project Status: New; Completed

The main objective of this project was to improve access to the Coleman Fish & Game Pond, northwest of Coleman, Alberta. The access road was poorly drained and had several large mud holes that made it difficult and perhaps dangerous to access the site. This project was proposed to improve access for not only anglers and recreationalists, but also the ACA fish stocking program. The Hillcrest Fish and Game Protective Association, along with several contributing partners made significant upgrades to the access road by installing culverts for drainage, excavating a proper ditchline for additional drainage, and filling in the large mud holes. In addition to the access upgrades, the Hillcrest Fish and Game Protective Association also installed access barriers near the pond to prevent motorized traffic from further degrading the small watercourse that supplies water to the pond. In an attempt to rehabilitate some of the damage that has been done to the small watercourse the Association also planted willow and balsam poplar shoots along the margins of the watercourse. The final phase of the operation was to install signage at the site to explain to visitors the work that was completed and acknowledge the contributing partners.

Deliverables/Results:

- The main result of the project was to upgrade the access to the site. The upgraded road improves access for a wide range of people including anglers, recreationalists, and ACA personnel. The road upgrade also makes it easier for elderly and handicapped citizens. Limited motorized access and rehabilitating an area of the site that is environmentally sensitive was also a major component of this project. Combining the approvals for the access upgrade as well as the access restriction into one application helped to streamline all the work that was required to improve the site.
- Approval from Alberta Parks and Environment TFA was acquired, as was a Commercial General Liability policy as a condition of the TFA.
- A “road-use agreement” with Devon Canada was also acquired.
- Two cross drain culverts were installed.
- Approximately 650 m of ditchline was excavated to drain runoff away from the road.
- Two significant mud holes were stabilized and filled. The road surface was graded to smooth ruts and compact the running surface.
- Access barriers, in the form of medium-sized rip rap and wooden hitching posts, were installed at the site along the margins of the small watercourse that supplies water to the dam to prevent further damage to its banks from motorized vehicles.
- Approximately 80 willows shoots and six balsam poplar cuttings were planted in an attempt to rehabilitate the margins of the small watercourse that has been severely impacted by motorized vehicles. The planting occurred during an organized volunteer event for the club. Four volunteers worked for four hours each and one volunteer for eight hours for a total of 24 volunteer hours to plant willow and balsam poplar shoots and install hitching post barriers.

- Two signs were installed at the site. One explained the road upgrades that occurred and the other explains the enhanced fish stocking and aeration that occurs at the site. Both signs also acknowledged the main contributing partners that includes: ACA, Hillcrest Fish and Game Preservation Association, Riversdale Resources, Ewen Drilling, and the Government of Alberta.

Wildlife Education Field Trips

Inside Education

Grant: \$10,250

Project Code: 002-00-90-211

Project Status: New; Completed

Project Website: www.insideeducation.ca

With the support of ACA, Inside Education solidified wildlife themes in the student field trip programs offered at field sites across Alberta—Grande Prairie, Whitecourt, Rocky Mountain House, County of Strathcona, and Kananaskis Country. In addition to infusing wildlife themes in each of student field trips at these sites, Inside Education developed a wildlife-specific field trip (entirely wildlife focused) at two of these major field sites. Additionally, Inside Education further incorporated wildlife-education (notably waterfowl habitat and hunting) themes in our student wetlands field sites a several locations across Alberta. Over the entirety of 2016, more than 5,000 Alberta school children, ranging from Grades 4 – 12 participated in field programming province-wide. An additional 2,000 students participated in wetlands education programming. In each case, students were introduced to the wildlife ecology, sustainability, and the responsible activities related to hunting and angling. These programs were offered as a full-day field trip, supported by Inside Education’s team of professional educators. Through hands-on, interactive programs all held in wilderness settings, students are introduced to their personal connection to the land base. Of note, the programs adopted a 21st Century approach to field learning— incorporating both place-based learning and technology. Inside Education secured a series of wildlife trail cameras. These cameras were used to introduce students to the field sites as “real” habitat, and to help students participate in “Citizen Science” activities. The support of ACA for Inside Education’s wildlife education programming has helped young people make an important connection to the natural world. As tomorrow’s hunters, anglers, environmental stewards, and decision-makers, these young people will be able to reference their learning and make responsible, meaningful decisions for the future.

Deliverables/Results:

- Inside Education created a wildlife-education program that gives students the opportunity to get outside and understand wildlife and their habitat. The program links with the junior high outdoor education curriculum. The strongest links are within the modules of the environmental core branch of the curriculum.
- Inside Education student field trips 2016:
 - Jumpingpound Demonstration Forest – 1,126 students, 200 adults, 45 classes
 - Des Crossley Demonstration Forest – 1,279 students, 285 adults, 57 classes
 - Huestis Demonstration Forest - 518 students, 115 adults, 23 classes

- Cooking Lake-Blackfoot Education Program – 1,120 students, 245 adults, 49 classes
- Evergreen Centre – 646 students, 125 adults, 30 classes
- Wetlands – 2,748 students, 565 adults, 113 classes
- Totals: 7,437 students, 1,535 adults, 317 classes
- Specific wildlife education program – 428 students, 94 adults, 19 classes

Len Thompson Fishing Pond Upgrades – Signage and Education Portion

Lacombe Fish & Game Association

Grant: \$2,707.92

Project Code: 020-00-90-232

Project Status: Funded in 2014/15 and in 2010/11 by R&R fund; Completed

Project Website: www.lfga.ca/projects

The Len Thompson Trout Pond offers a stocked pond trout fishing experience right in the city of Lacombe. This public access pond is geared especially for young anglers, who can get there on foot or by bicycle within the city (vehicle access and parking also provided). The pond is stocked annually with more than 2,000 fish, is aerated, and is open for year-round access. It's also the site of the annual Youth Fishing Day each June. The pond is sponsored by the Lacombe Fish & Game Association, Thompson-Pallister Bait Company (makers of Len Thompson Lures right here in Lacombe), and the City of Lacombe, with additional support from ACA. The Len Thompson Trout pond has recently been awarded a \$100,000 grant from Federated Co-op Stores to upgrade and improve the pond's physical location. The Federated Co-op Stores funds were used to improve parking, build more family friendly facilities such as a gazebo and natural playground, as well as installing various fishing platforms, trees, and benches around the location. To incorporate a conservation education component for the project, this ACA grant was used to install seven high-quality signs around the pond.

Deliverables/Results:

- The signage has been installed on site.
- Family Fishing Day was held and had an attendance of more than 400 children stocking fish and was a major hit. 20 club members volunteered time and money to the project. Local newspapers covered the fishing day and project.
- Annual usage is estimated at 4,000 angler hours and 1,600 at special events.

Enhancing Outdoor Education and Wildlife Pathway

Lakeland Catholic School District No. 150 (Notre Dame High School)

Grant: \$5,000

Project Code: 002-00-90-254

Project Status: New; Completed

The Enhancing Outdoor Education and Wildlife Pathway allowed students to experience firsthand wildlife and fishing in a natural outdoor setting. Students developed the attitudes, skills, and knowledge

required for responsible participation in a range of outdoor activities. Students had opportunities to demonstrate safe and sanitary food handling procedures, equipment care, comprehension of recipes, and an understanding of the importance of efficient work habits in outdoor cooking environments. This program provided students with the opportunity to apply their knowledge and skills of outdoor living and cooking in an authentic setting. Students had the chance to become licensed or certified in first aid, and one or more of the following: hunter education, bowhunting, fishing and boating, a junior high Outdoor Education course, or three to eight CTS (Career and Technology Studies) courses in the Natural Resources (NAT) cluster. Notre Dame High School planned and successfully carried out extended outdoor excursions for senior high (Grades 10 – 12) and junior high (Grade 9) school students. Feedback on this experience was very positive.

Deliverables/Results:

- The grant money allowed Notre Dame High School to support the start-up of the program. The school purchased a class set of high-quality backpacks for the extended hiking and camping excursions.
- Students completed the Junior High School Outdoor Education course.
- Students completed the Senior High School Outdoor Education course obtaining three to eight of the following courses:
 - HCS 2020: First Aid/CPR with AED
 - WLD 1070: Hunting and Game Management Theory
 - WLD 1075: Bowhunting Education
 - WLD 1080: Angling and Fish Management Theory
 - WLD 1100: Outdoor Cooking Theory
 - WLD 1130: Outdoor Survival Skills
 - WLD 2070: Hunting and Game Management Practice
 - WLD 2100: Outdoor Cooking Practice
 - WLD 2130: Outdoor Excursion
 - WLD 3130: Outdoor Leadership

Archery/Youth Development Programs

Lamont Fish & Game Association

Grant: \$6,845.49

Project Code: 002-00-90-250

Project Status: New; Completed

Lamont Fish & Game Association (Lamont FGA) used the ACA grant to develop their archery and youth programs. Archery safety nets, targets and other equipment, such as bows, are in place for fall archery. A trailer was purchased to hold the equipment. Trees were planted at the local trout pond.

Deliverables/Results:

- The archery group had a 3-D shoot-and-practice target range.
- The youth group has used the trailer for events such as treehouse building and tree planting.
- The response to the program has been great and Lamont FGA is often getting new members.

Avian Monitoring and Education Programs at Lesser Slave Lake

Lesser Slave Lake Bird Observatory

Grant: \$21,500

Project Code: 030-00-90-128

Project Status: Funded since 1999; Completed

Project Website: www.lslbo.org

Dedicated to bird conservation through research and education, the Lesser Slave Lake Bird Observatory (LSLBO) has operated a migration monitoring station at Lesser Slave Lake since 1994. The LSLBO is a full member station of the Canadian Migration Monitoring Network. The first goal of this project was to assess the population status of migratory and breeding bird species at Lesser Slave Lake using three avian monitoring programs: (1) Spring and Fall Migration Monitoring Program used a combination of visual counts, passive mist netting, daily census, and incidental observations to determine daily estimated totals for each species during migration. Over 96,000 birds representing 150 species were recorded this season. 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. (2) Monitoring Avian Productivity and Survivorship (MAPS) Program determined the reproductive status of breeding birds at four MAPS stations at Lesser Slave Lake. A total of 252 birds from 28 species were banded, and the breeding status was determined for 69 species. All data was sent to the Institute of Bird Populations for analysis. (3) Northern Saw-whet Owl Fall Migration Monitoring Program operated during September and October. A new net array was piloted this year to also assess boreal owl migration at the site. Data was collected for 107 northern saw-whet owls and seven boreal owls captured this season. The LSLBO also participated in two collaborative projects this season: Canada warbler geolocator work being conducted by the University of Manitoba and a new project with Dr. Natalie Boelman from Columbia University studying American robin migration patterns for NASA's Arctic-Boreal Vulnerability Experiment (ABOVE). Two academic journal articles were also published with LSLBO contributions. Final reports were completed for all projects and provided to stakeholders and funders. The second goal of this project was to deliver innovative, hands-on, year-round education programs that promote a greater understanding of the importance of the boreal forest for Alberta's wildlife. Through the Boreal Centre for Bird Conservation (www.borealbirdcentre.ca) and project partners, their educators delivered over 330 hands-on interactive programs to over 10,000 participants including: LSLBO Banding Lab Tours, school fieldtrips, public outreach programs, citizen science projects, special community events, and online webinars.

Deliverables/Results:

- All research and monitoring programs were completed as planned.
- Spring Migration Monitoring began on April 15 and ended on June 10, 2016 for 57 days of coverage. The starting date was slightly earlier than previous years because spring conditions were extremely mild, which allowed access to the site and spring migrants were reported migrating through earlier than usual. Daily migration coverage included bird banding, visual migration counts, census, and recording incidental observations. These methods follow the LSLBO's standardized monitoring protocols. A total of 842 birds were banded from 45 species, which was slightly below the spring average of 930 birds.
- Fall Migration Monitoring follows identical monitoring protocols as the spring. Fall Migration Monitoring extended from July 12 – September 29, 2016 for 80 days of coverage. Visual Migration counts and census were conducted daily and mist nets were set on 74 of the days. Over 52,000 birds from 121 species were observed during the season. Banding was above the season average with 2,798 birds from 56 species banded: the third busiest fall season since LSLBO started.
- The LSLBO operates four MAPS stations and each site was visited six times between June 11 and August 3, 2016. A total of 252 birds representing 28 species were banded during MAPS banding which is slightly above the average of 215 birds banded.
- Northern Saw-whet Owl Monitoring Program was conducted over 44 nights from September 1 to October 29, 2016. A total of 100 northern saw-whet owls were banded, slightly above average. This year, LSLBO ran a pilot project to test the extent that boreal owls migrate through the Slave Lake area. A second net array targeting boreal owls (two new nets at a different location with boreal owl audio lure) was established for 28 nights from September 21 to October 29, 2016. Seven boreal owls and an additional seven northern saw-whet owls were banded from that net array. Very popular public and school education programs were also offered that showcase the owl monitoring program at the LSLBO including the Junior High Owl Program and Annual Family Owl Night. They are a great way to engage students and public in LSLBO's conservation work.
- LSLBO staff provided field support for the University of Manitoba Collaborative Canada Warbler Research Project. Of the 40 geolocators deployed last year by the LSLBO and U of M crews, banders recaptured ten study males and recovered eight geolocators (two geolocators had fallen off over the winter). These geolocators have been sent to the University of Manitoba's Dr. Kevin Fraser for data download and analysis.
- The outdoor education programs for schools and the community are year-round programs, so this part of the project is ongoing. The outdoor education programs continue to expand, so more programs were delivered during this project than originally anticipated.
- LSLBO 2016 Annual Report outlining the results of the avian monitoring programs and collaborative research partnerships.
- Copies of the two peer-reviewed papers co-authored by LSLBO staff. This Canada warbler paper was based on the Canada warbler project that received funding from ACA, and received acknowledgement:
 - Flockhart, D., G. W. Mitchell, R. G. Krikun, and E. M. Bayne. 2016. Factors driving territory size and breeding success in a threatened migratory songbird, the Canada Warbler. *Avian Conservation and Ecology* 11(2):4.
 - <http://dx.doi.org/10.5751/ACE-00876-110204>
 - Nordell CJ, Haché S, Bayne EM, Sólymos P, Foster KR, et al. (2017) Correction: Within-Site Variation in Feather Stable Hydrogen Isotope ($\delta^2\text{Hf}$) Values of Boreal Songbirds: Implications for Assignment to Molt Origin. *PLOS ONE* 12(2): e0172619. doi: 10.1371/journal.pone.0172619 journals.plos.org/plosone/article?id=10.1371/journal.pone.0163957

Living on the Edge Awareness Campaign

Lesser Slave Watershed Council

Grant: \$5,115

Project Code: 015-00-90-243

Project Status: New; Completed

Project Website: www.lswc.ca

The Lesser Slave Watershed Council (LSWC) and partners from Alberta Environment and Parks, Cows and Fish, Peace Country Beef and Forage Association, and Big Lakes County recognized a need to provide more information about health riparian areas and lakeshores in our watershed. The team worked to develop content and messaging for an attractive interpretive sign and with help from a graphic designer created "Living on the Edge" 4' x 8' aluminum and UV treated signs. The signs were made by a local business who gave LSWC a great price and eight signs were purchased instead of five as originally planned. Since the signs are so large and require 4" x 4" x 12' posts to be pounded into the ground, LSWC was not able to get them installed with volunteer labourers. This delayed the timeline but the public works department with Big Lakes County installed all the signs within their county in July. The MD of Lesser Slave River will help by installing the signs in Lesser Slave River. Sign locations have been selected and landowners, parks, or the municipality have agreed that the signs can be located at selected locations. LSWC and partners will be responsible for ongoing maintenance of the signs.

Deliverables/Results:

- The main result of this project is to make lake users aware that we do have an impact on the health of our shoreline, and provide them with information to encourage stewardship behavior.
- Messaging development and graphic design of sign have been completed.
 - The 4' x 8' aluminum full color UV-resistant signs have been created.
 - Sign installation – Scheduled for July 2017

6th Annual LFGA/ACA Youth Fishing Recruitment Day

Lethbridge Fish & Game Association

Grant: \$10,800

Project Code: 020-00-90-207

Project Status: Funded since 2014/15; Completed

The project objective is to increase the interest in conservation and ethical fishing as an outdoor activity. The target audience is two – ten-year-old youth; however, this event was open to youth up to 18 years of age. A one-day event was held at Payne Lake exposing over 500 youth to fishing accompanied by their families for the day or for a weekend camping experience. The total impact could be as high as 1,800 people including parents, siblings, and friends.

Deliverables/Results:

- This year, 564 youth participants (112 under the age of four) walked away with fishing gear, trophies, and other prizes making them feel special. Something that makes them feel like, regardless of their success, they did great. Every child in attendance was provided with an educational experience.

LFGA - Conservation Community and Education Program

Lethbridge Fish & Game Association

Grant: \$18,000

Project Code: 002-00-90-217

Project Status: New; Completed

The project objective is to provide an opportunity for youth and urban individuals to become more aware, more educated, and more engaged in firearm and archery use and, by extension, will yield more participants now and in the future. Lethbridge Fish & Game Association (LFGA) hopes to take the mystery out of becoming an outdoors person. The project activities include: trap, junior sporting clay, junior shotgun, intro shotgun, junior rifle, Summer Games, Open Range Day, Ladies International Empowerment Day, 20-day summer youth camp, group visits such as 4-H, scouts, and schools, as well as mentored deer and pheasant hunts. The approximate number of program and activity participants was 826 exceeding the goal of 500. These programs provided hands-on firearm, archery, and hunting experience and education related to wildlife hunting, ethics, and conservation. Learn while doing—first-time hunting events were the culmination of the program's efforts. The safe firearm activities and the education activities delivered at LFGA's Shooting Sports Facility are the prerequisite to participate in the hunting events.

Deliverables/Results:

- The approximate number of program participants was 826. The numbers for 2016/17 were 60 percent over projections primarily due to increase in the groups that are using the range for their activities. Through ACA funding, as well as LFGA funding, firearms, ammunition, bows, arrows, and targets at no cost to youth groups including 4-H, scouts, guides, and schools were provided.

Novice Pheasant Shoot

Manning Jr & Sr Gun Club

Grant: \$3,000

Project Code: 030-00-90-264

Project Status: New; Completed

The project goal was to introduce novice hunters to pheasant hunting while learning fundamental safe shooting and skills both on the range and in the field. The day started out with safety lessons at the range from a mentor and then learning the skills to bust some clay pigeons. After the range session, participants headed out to the field where Scott and Lenore Seward gave a presentation on pheasant habitat and the ACA pheasant program. Most shooters exceeded expectations and were successful at harvesting two birds with only two or three shots. A nice BBQ lunch followed and everyone enjoyed with many great comments and reviews.

Deliverables/Results:

- The event resulted in everyone becoming competent in safety and hunting their first pheasant. The shooters did outstandingly well at the range and in the field.
- This event had 22 participants and 14 spectators.
- Scott and Lenore Seward gave a short presentation on pheasant habitat and ACA's continuing efforts with the pheasant program, which was well received by all in attendance.

Crane Lake Riparian Restoration and Preservation Program

MD of Bonnyville

Grant: \$5,791

Project Code: 015-00-90-246

Project Status: New; Completed

Project Website: md.bonnyville.ab.ca/documentcenter/view/868

Located in the Municipal District of Bonnyville (MD Bonnyville), the Crane Lake Riparian Restoration and Preservation Program is a pilot program for the introduction of riparian land management along the shoreline of Crane (Moore) Lake, and a process to standardize shoreline development within the Municipal boundaries. Using educational packages and information sessions, lake-lot owners received a user-friendly guide on how to best manage their riparian areas, environmental, and municipal reserves. Education was provided on provincial and municipal legislation and bylaws (and how they apply to them), and on ways to manage their interactions with the lake and its surroundings. The primary objectives of this program are to educate residents on best management practices for living on the lake and to restore, maintain, and enhance riparian areas to improve water quality, ecological functions, flood and drought resiliency, and provide a sustainable habitat for fish and wildlife. To achieve these objectives, the MD of Bonnyville captured data through two sets of inventories: an aerial drone assessment and individual riparian health evaluations. The aerial drone assessment was a critical visual aid in the progress and understanding of the effects each resident has on the lake; a data viewing will occur at the 2017 spring Crane Lake Community AGM. Restoration activities for the six sites assessed in 2016 will be developed based on the report's indications, and the partnership with the adjacent landowner to design their riparian zone. More than 1,000 plants are on order for 2017 planting seasons with species such as white spruce, trembling aspen, red osier dogwood, and various willow species. Thirty sites prepare for health inventory assessments in summer 2017. Co-hosting two community engagement meetings in 2016 allowed for the program to become transparent and engaging with the permanent and seasonal residents of Crane Lake. Events such as the community design contest allowed the residents to create and vote on the new entrance sign. Family educational sessions such as bird and bat house construction, invasive species workshops, shoreline clean-up and revegetation efforts are scheduled for summer 2017. As MD of Bonnyville moves into the second program year, it can build on the data collected and get closer to the primary goal of a stewardship-friendly lake.

Deliverables/Results:

- The proposed 35 total riparian health assessments for 2016 was adjusted to 36. Thirty assessments will be completed during the summer 2017 season. Six of the 36 riparian health assessments reports have been completed. Of the six sites chosen for 2016, four sites were deemed "unhealthy" and two sites were deemed "healthy but with problems."
- The aerial drone flight took place in August, and was completed in a single day. All the required footage was captured with additional footage of the island and outlet channel encompassing the weir and the outlet waterbody. The aerial drone assessment data has been collected. In addition to the 18 km of shoreline, the island and weir to the small waterbody to the east were also captured.
- Two community engagement sessions held in May 2016 (35 residents attending) and September 2016 (42 attending including mail and email commenting) have been completed, along with a program update newsletter mailed out to residents September 2016, and an MD Council presentation February 2017. A spring 2017 Crane Lake community meeting was scheduled along with two additional community engagement and educational activities with the local watershed society.
- Four individual educational packages were completed.
- Two sites have been assessed for a drainage channel, and re-enforcement to mitigate erosion issues. Vegetation polygons have been identified for planting in 2017. Based on the reports completed, restoration plans have been drawn up to correct, mitigate, and improve the status of each lot, with the proposed completion to increase the overall score of the lake.
- Two sites have been selected for public restoration demonstrations as well as one of the MD Crane Lake campgrounds as rehabilitation sites. Two healthy sites will be selected once additional lots have been assessed.
- The MD Council, along with Ducks Unlimited, Beaver River Watershed Alliance, Moose Lake Watershed Society, Land Stewardship Centre, Crane Lake Advisory and Stewardship Society, and Cows and Fish have been working together to better develop relationships, and to plan for future and continuing restoration efforts.
- Community sign was designed and selected by the community, and is in the production— installation is proposed for fall 2017.
- A usable database for riparian health conditions and future development—to date no database has been established.

Promoting Youth Engagement Program within the MRWCC

Milk River Watershed Council Canada

Grant: \$10,000

Project Code: 002-00-90-257

Project Status: New; Completed

Project Website: www.mrwcc.ca

The primary objective of this project carried out by the Milk River Watershed Council Canada (MRWCC) is to get youth involved in watershed management activities and experience the unique watershed features, and have a better understanding of the importance of managing the complex watershed resources. The project fills a direct need within the Alberta curriculum, and courses aligned with learning outcomes that are grade specific. The plan is to get more youth, including lower grades, involved in watershed resource management and environmental education. This program also brings awareness of environmental education and watershed management to smaller rural schools that are having difficulty maintaining a variety of programming options for students where there is a loss of connection with the natural environment.

Deliverables/Results:

- The main results of the project were getting youth involved and interested in watershed management activities. Youth were given the opportunity to learn about the unique features of the Milk River watershed and gain a better understanding of the importance of

managing these complex watershed resources. This project also brought awareness of environmental education and watershed management to small rural schools within the watershed. Without this funding, the youths would not have had the chance of having these programs.

- Classroom presentations: Participated in the Caring for Our Watersheds contest (March 2) and gave two presentations to two classrooms outlining the purpose of the contest. One of the Grade 11 entries won fourth place (out of 177 entries) earning them a \$700 cash prize plus \$700 for their school. The students made a proposal to create hawk nesting sites using stacked round bales to help naturally control gopher populations that in turn would also help water quality by reducing the amount of bank erosion caused by gophers in riparian areas and helping to keep poison out of the ecosystem. With implementation funding available through Agrium, and the generous donation of hawk poles through Equus Energy, the MRWCC is excited to help this project come to life later in the fall this year.
- School field trips: Weather Watch program out at WOSPP for Grade 5 class from Lomond (June 3). There were 14 attendees, including the teacher and a few parents. Walking along the Hoodoo Trail and stopping at different viewpoints, students learned how the Rocky Mountains, chinook winds, and Sweetgrass Hills influence weather conditions in the Milk River watershed and what impacts weather conditions like wind and water erosion have on the surrounding landscape and vegetation.
- Youth Range Days (July 5 – 7) were an interactive event for youth, and families, interested in learning about a variety of rangeland, watershed, wildlife, and other topics related to natural resource management. Thirty youths were introduced to plant identification, rangeland and riparian health, and soils. They also learned about a few of southern Alberta's species at risk, including the short-horned lizard, yellow-bellied racer, prairie pollinators, and northern leopard frogs. A radio telemetry scavenger hunt gave the kids an enjoyable learning opportunity to try their hand at using a real-life wildlife research tracking technique. They also had the great opportunity to hear inspiring stories of local history and land stewardship from the Onefour Research Station.
- Presented educational activities to over 200 youths at the Milk River Centennial Days (July 31) that commemorated the Town of Milk River's 100 years. Activities included magnetic fishing and an interactive 3-D watershed model. Visitors to the Tourist Information Centre had an opportunity to learn about the different fish species found in the Milk River, including some that are designated as species at risk. The 3-D Watershed Model provided an interactive opportunity for people to learn about watersheds: What is a watershed? What activities within a watershed can have a negative impact on water quality and how they affect water quality? Why is it important to have clean water? What are some beneficial management practices that can be done to help prevent water pollution?
- Other interactive school programs: Annual School Poster Contest (May)—the MRWCC was pleased to promote the Seventh Annual Poster Contest. The contest was open to students in Grades 1 – 8 who were asked to make an original drawing to illustrate ways they could improve their watershed. MRWCC received a total of 74 entries from students at Milk River Elementary School and Erle

Rivers High School. Judging of the posters took place on May 3 and the First, Second, and Third place winners from each grade were awarded prizes at the MRWCC AGM on May 31.

- Working on X-Stream Science, an inquiry-based learning opportunity lead by local experts to connect students to their watershed through real world science – ongoing.
- Offer distance learning CTS online accredited courses – ongoing.
- Watershed stewardship programs: Involved youth in watershed stewardship programs (May 17 and 18):
 - Planted over 5,000 trees on 13 project sites for nine landowners on river banks and riparian areas to stabilize and restore areas prone to bank erosion.
 - Constructed over two km of exclusion fencing on six sites to keep livestock from polluting the river.
 - Four youths participated in the tree planting and fencing.

Riparian and Ecological Enhancement Program

Mountain View County

Grant: \$20,000

Project Code: 015-00-90-102

Project Status: Funded since 2005/06; Completed

Project Website: www.mountainviewcounty.com/agriculture-environment/agricultural-funding-education-0

Mountain View County (MVC) has been in partnership with ACA since 2000 and has received an ACA grant since 2005 to support MVC's Riparian Area Management Improvements Program funding over 200 projects. The program has been expanded in the last couple of years to include ecologically sensitive areas and is now known as the Riparian & Ecological Enhancement Program (REEP). Funding is offered to producers who want to protect, restore, and maintain the health of their riparian and sensitive areas, encouraging biodiversity and maintaining fish and wildlife habitat using the following means: permanent riparian and sensitive area, wildlife-friendly fencing; native grass, tree, and shrub protection and establishment; off-site watering system installation; and approved creek crossings. The funds received from ACA are used to pay up to 100 percent of the material costs for building a fence, a creek crossing, or the purchase of native seed or seedlings. Off-site watering systems are funded at 25 percent of the material costs. A riparian or rangeland health assessment is done on each project in the year of completion and again in five years, once contract commitments are completed; 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 a road-side sign describing the project to be posted. This program encourages Beneficial Management Practices including controlled and rotational grazing, an accessible off-site water supply, nutrient management, noxious and prohibited noxious weed control, and chemical application setbacks. The health of the watersheds within the County are improved through this program and there is an increased awareness regarding the importance of riparian and sensitive areas for biodiversity, water quality, native plant life, wildlife habitat, fish distribution, and productivity. This past year there were 21 projects that were funded by REEP. Funded projects included seven fencing projects, twelve off-site watering systems, one creek crossing and one native shrub planting. The total area surrounding water bodies that has been fenced off this year is 46.6 ha with the total

length of newly installed riparian fence being 8.4 km. This results in twelve more producers who are aware of the importance of beneficial management practices and sustainable agriculture. Additionally, seven producers signed conservation agreements with Alternative Land Use Services (ALUS) for projects focused on wetland enhancement encompassing an additional 151.6 ha with 5.4 km of riparian fencing.

Deliverables/Results:

- The landowner's projects were all completed prior to March 31, 2017. Project profile sheets are complete for each project and are available upon request.
- Riparian health assessments on 2016/17 projects are complete and available. Five-year follow-up riparian health assessments were completed at 18 sites in 2016 with the majority showing improvements.
- Each applicant signed a contract with the County stating that their projects will be available for tours and road signs may be posted, MVC's Agricultural Service Board is co-hosting the Agricultural Service Board Provincial Tour in July 2017 and any sites along the tour route will be highlighted. In fall 2016, the Agricultural Service Board spent a day touring project sites and was very impressed with the innovation of the local producers and the quality and value of the projects implemented.
- An estimated 75 one-on-one conversations with landowners around beneficial management practices took place, an additional 3,500 ac of land is managed with increased sustainability, and 13.8 km of wildlife-friendly fencing has been installed.
- In 2016, an ALUS presentation was delivered at a Red Deer River Municipal Users Group meeting in Drumheller in January and a presentation on REEP was delivered at Olds College in March to the Land & Water Resource Students and also at an Alberta Watershed Outreach Coordinators Workshop in Red Deer. An Environmental Farm Plan Workshop was hosted in February with the Environmental Farm Management Class and a Riparian Health Assessment class was facilitated with Olds College in October. These were excellent opportunities to promote REEP and ACA. Soil Salinity and Shelterbelt Revitalization workshops were hosted in April, a Soil Health workshop was hosted in June, and MVC provided in-kind support for a Living in the Natural Environment event in February and a Beaver workshop in May.
- Examples of completed projects are highlighted at approximately one workshop or presentation each month to encourage more participation.

Implementing Action to Protect Priority Bird Species in Alberta's IBAs

Nature Alberta

Grant: \$11,500

Project Code: 030-00-90-257

Project Status: Similar projects funded in 2003/04, 2006/07, and since 2009/10 (except 2012/13); Completed

Project Website: www.naturealberta.ca/programs/birds-biodiversity

Nature Alberta's Bird Conservation program for 2016/17 focused on two main areas; the Important Bird Areas (IBA) of Alberta program and developing an Urban Bird Habitat Enhancement program. The core focus of the IBA project was to enhance awareness of IBAs in Alberta,

including the linkages to national and international IBA networks. A key element for IBA awareness in Alberta is to support existing IBA Caretakers and to recruit new IBA Caretakers in areas currently under-represented. The goal of an established IBA Caretaker network is to help support local stewardship activities that benefit target shoreline birds, waterfowl, upland gamebirds, and aerial insectivores. An initial key approach in support of the IBA Caretaker Network was to engage existing Nature Alberta clubs and members about the IBA program with the goal to raise local and regional awareness leading to a more engaged public. Several approaches were used including: nature club presentations, site visits with local caretakers, online discussions, celebrations of International Migratory Bird Day events in association with a local IBA, and the development of an automated presentation for use by IBA Caretakers at local events and for municipal government relations. The development of an Urban Bird Habitat Enhancement Plan builds upon previous work completed in 2014 and funded (in part) by ACA; The State of Bird Conservation in Alberta: A look at who's doing what and the role of Nature Alberta. Two recommendations were highlighted in the development of this Plan: (1) Recommendation #7 – Encourage birding by providing tools and resources, connecting new birders to natural history clubs and other sources of expertise, and by promoting the many annual birding events that occur throughout the province, and (2) Recommendation #17 – Promote the maintenance and/or enhancement of bird habitat in backyard, urban green spaces, acreages, and other private lands. Staff completed the "Nature Alberta | Birds and Biodiversity: An Urban Nature Initiative" program plan highlighting three core objectives: (1) Increase understanding and awareness of the importance of biodiversity in urban areas. (2) Reduce direct human-related negative impacts of biodiversity in urban areas. (3) Assist urban residents to help develop more biodiversity-friendly habitats. The Plan outlines several key activities that need to be addressed over the upcoming year: (1) Collate pre-existing relevant materials and programs. (2) Grow established and build new partnerships. (3) Communications and outreach. (4) Motivating urban residents to take action. Nature Alberta is currently seeking funding opportunities to action this plan.

Deliverables/Results:

- The main results of this project were:
 - Developing an up-to-date inventory and commitment for IBA Caretakers across Alberta, including establishing formal agreements (voluntary memorandum) with each and identification of key areas for recruitment.
 - Supporting IBA Caretakers with information packages, presentations, and supporting products (maps, signage, etc.) to raise awareness/build on past successes of IBAs locally and regionally.
 - Supporting and/or co-hosting four International Migratory Bird Day Events across Alberta to raise awareness of the local nature club and IBAs.
 - Completion of the "Nature Alberta | Birds and Biodiversity: An Urban Nature Initiative" plan which sets out a strategic approach for habitat protection and enhancement in an urban environment.
- A core unexpected result was the surprising low awareness of the IBA program, its current status, and the need to follow-up on previously developed management plans from the late 1990s. There appears to be an opportunity to better integrate IBAs into local and regional planning and to utilize the information collected within a Citizen Science or Community Science framework.

- The following deliverables were completed:
 - International Migratory Bird Day (IMBD) – May 2016 events held in various locations across Alberta:
 - Participated and/or co-hosted the following events; Beaverhill Lake IMBD, Lesser Slave Lake Song Bird Festival, Saskatoon Island Swan Festival, and Inglewood Bird Sanctuary IMBD.
 - Support provided for additional events including; Snow Goose Chase, Telus World of Science, and several local Nature Club events.
 - Building on the outcomes from the February 2016 workshop, a coordinated approach is developed to increase information and site inventories of birds present at specific IBAs using tools such as Naturelynx (ABMI) and eBird. (April – October 2016).
 - Nature Alberta (as part of their ongoing outreach and support to local Nature Clubs) continues to promote integration of data into tools like eBird and Plant Watch. and by supporting new Citizen Science initiatives such as the Nightjar Surveys launched in 2016.
 - Working with local caretakers and staff, initiate IBA site visits and distribution of educational materials to landowners, local municipal staff, conservation organizations, and provincial agency staff to assist in the conservation and enhancement of habitat associated with IBAs in Alberta (May – September 2016).
 - Nature Alberta (as part of their ongoing outreach and support to local Nature Clubs) continues to provide IBA materials and support for local site visits and outreach to local organizations.
 - Distribution of materials to Nature Alberta Network of 40 – member clubs to distribute through their networks across Alberta (April 2016 – March 2017)
 - Nature Alberta (as part of their ongoing outreach and support to local Nature Clubs) continues to provide IBA materials and support for local site visits and outreach to local organizations.
 - The “Nature Alberta | Birds and Biodiversity: An Urban Nature Initiative” plan was completed and is ready for implementation.

Living by Water

Nature Alberta

Grant: \$20,125

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

Nature Alberta's Living by Water (LBW) program had a successful 2016 season providing information to Alberta's lake residents about healthy shoreline living. Staff attended 20 different events, engaging participants in both rural and urban settings on the importance of managing healthy lakes—whether natural or man-made. Event participation ranged from presentations on recommendations about beneficial property practices and program information, to engaging adults and children with a watershed model so that they can understand cumulative effects and watershed management. Staff completed 24 property consultations at nine different recreational lakes throughout Central Alberta including; Islet, Jackfish, Lac Ste. Anne, Isle, Pigeon, Pine, Sylvan, Wabamun, and Wizard lakes. Property consultations allow staff to work one-on-one with residents to provide suggestions in the home, yard, and on the shoreline. Each consultation takes about an hour, and is centered on having a discussion with the participant, then providing

a personalized summary report afterwards. In addition, staff worked with volunteers to assess 488 different properties at Wabamun Lake in Parkland County using the Love Your Lake shoreline assessment model. Staff record observations of the shoreline including development, percentage of natural vegetation, and other indicators of property health. Staff assessed not only private properties, but also provincial, municipal, and road allowances to get a clear picture of the state of the shoreline along the entire lake. However, the primary focus is still connecting property owners with information based on the assessment so that they can manage their property with considerations for lake and shoreline health. LBW staff followed up with 25 past participants from 2014 and 2015, and determined that all participants implemented at least one suggested beneficial management practice for their property, with the vast majority implementing more than one recommendation. All participants felt that others should engage with this program and receive information on healthy lakeside living. To increase adoption of shoreline naturalization at Lake Wabamun, Nature Alberta partnered with Parkland County to begin initiating projects that will be implemented around the lake in 2017.

Deliverables/Results:

- The project staff completed 488 assessments around Lake Wabamun within the boundaries of Parkland County which is more substantial than the original 60 property consultations planned. The 488 assessments include individual properties, municipal properties, road allowances, municipal reserves, and provincial parks. These assessments will give a more complete idea of the current state of management practices occurring around the lake and will reach more residents. A letter with a unique access code has been mailed to each property owner outlining the program and to engage with new participants who have not previously participated in the program.
- In addition to the 488 assessments completed, staff worked with 24 property owners at nine different lakes; Islet, Jackfish, Lac Ste. Anne, Isle, Pigeon, Pine, Sylvan, Wabamun, and Wizard. All property owners received a personalized report summarizing the consultation, along with any additional resources that were needed to help them make more beneficial management choices for their lake. Common recommendations included: not using fertilizers and pesticides; Clean, Drain, Dry boats when moving between waterbodies; inspecting docks for the presence of invasive species for early detection; naturalizing shorelines and allowing native vegetation to establish in areas not used for recreating; and using environmentally friendly cleaning and home care products.
- Initiate 25 shoreline naturalization projects: the LBW Coordinator and staff took training for the shoreline naturalization project implementation in September, though funding for these projects still has not been confirmed. Staff worked with Parkland County to initiate 15 projects that will occur on municipal land and have had interest from five landowners who would like to participate when the program becomes available. In addition, LBW scheduled a workshop with Parkland County in March 2017 to generate additional interest by property owners.
- LBW staff have attended 20 events since May, including the Central Alberta Recreational Lakes forum, multiple CommuniTEA Pond Parties, CPAWS Love your Headwaters Festival, Association of Summer Villages of Alberta Conference, North Saskatchewan Watershed Alliance Water Forums, Battle River Watershed Alliance Watershed Festival, and community stewardship group workshops and education sessions. Events allowed LBW staff to share information on the program, reach new target audience members, and engage in new training.

- Follow-up surveys to previous LBW participants: LBW staff followed up with 25 previous participants of the program from 2014 and 2015. Overall results indicate that participants are implementing at least one suggestion after engaging with program staff, with most implementing multiple suggestions. All the past participants indicated that they felt the program was worthwhile and would recommend other lake property residents to participate in the program. All but one past participant, who indicated they were not often at the lake and hadn't seen neighbors recently, had talked with neighbors, family members, or friends about the program to encourage others to engage with Nature Alberta.
- Since Love Your Lake is a two-year pilot, a final report will not be available with complete data until March 2018. LBW has been communicating the results of the first-year pilot in a PowerPoint format to partners outlining current and planned activities over the term of the pilot.

Nature Kids in a Backpack

Nature Alberta

Grant: \$31,000

Project Code: 002-00-90-225

Project Status: Nature Kids funded since 2014/15 and previously by R&R; Completed

Project Website: www.naturealberta.ca/nature-kids

Nature Alberta's Nature Kids program has been active in Alberta since 2011. The Nature Kids program is for youth and families who like to learn about nature and have fun at the same time. Nature Kids is a nature-focused program that aims to teach children (aged four – 12) and their families about nature. Educational materials are provided and field experiences are organized that promote being outdoors, observing nature, scientific investigation, environmental stewardship, and healthy living. In 2016/17, Nature Kids staff focused on efforts on several key areas to enhance the program by: providing ongoing support for Chapter Leaders in Red Deer, Edmonton, Morinville, and Lakeland (St. Paul and Bonnyville); establishing new Chapters in Grande Prairie, Cold Lake, and Calgary; giving additional presentations and workshops in Medicine Hat, Lethbridge, and Slave Lake; developing an Editorial Calendar, content and production of quarterly Nature Kids *NatureWild e-magazine*; contributing to quarterly *Nature Alberta* magazine; completing the re-design, re-branding, and production of the "Bronze Level" Nature Kids' Home Activities entitled Nature Heroes; developing 20 Explore Day in a Box Resource Kits for Chapter Leaders; re-design of content on the Nature Kids pages of the Nature Alberta website; developing 20 Explorer Day Activity Guides as resources for Chapter Leaders; and completion of eight Family Nature Nights in the Edmonton area.

Deliverables/Results:

- Weed pulls removed around 500 invasive species at Family Nature Nights: staff and volunteers did not accurately document exact numbers removed; however, invasive species were removed during several Family Nature Night events including: Forest Fables, Pollinators, Parks Day, and CreekFest in Calgary.
- Planted around 800 native species at the following events: Forest and Fables Family Nature Night, TreeFest Edmonton, Parks Day Calgary, and CreekFest Calgary.
- Erected around 60 animal habitat structures: 50 bee hotels at Pollinators Family Nature Nights, 10 bird and bat house at Songbird Festival Slave Lake, Backyard Birding Family Nature Night Edmonton, and Winter Tracking Family Nature Night Edmonton.
- Owing to inclement weather, it is estimated that approximately 800 participants attended the Family Nature Night events during the summer, fall, and winter seasons, lower than the 1,200 participants anticipated.
- As of December 31, 2016, there were 56 registered Nature Kids Family memberships. Additionally, each Chapter is averaging 15 participants per monthly event. Participants are not counted as having a Family Membership.
- Three new Nature Kids Chapters have been established including: Grande Prairie, Cold Lake, and Calgary. The program was pilot-tested by 14 groups over this past year including: Songbird Festival – Lesser Slave Lake, TreeFest – Edmonton, Parks Day – Calgary, CreekFest – Calgary, CommuniTEA Pond party – Sherwood Park, Strathcona Farmers' Market, Downtown Farmers' Market, South West Edmonton Farmers' Market, Explorer Day at Police Point Park – Medicine Hat, Explorer Day at Helen Schuler Nature Centre – Lethbridge, Explorer Day at Crystal Lake – Grande Prairie, Picnic in the Park – St. Albert, Snow Goose Chase – Tofield, and Backyarding – Telus World of Science.
- Completed 20 topics for Expand Explorer Day in a box database: content developed for 20 topics with an additional 16 topics in draft.
- Revised Action Awards Program re-design, layout, content including the completion of "Bronze" level action awards booklet; Bronze Level Action Awards program has been re-designed and re-branded as Action Heroes.
- Creation of five ID kits as resources: ID Guides have been completed as component of the Nature Heroes – Bronze Level Activity Guide.
- Delivery of four editions of *NatureWild e-Magazine*: Content developed and quarterly editions were produced. Editorial calendar produced with associated content requirements for future editions.
- Expand outreach and public education: participation in 20 events and through support of local Chapter events.
- Development and distribution of 20 Nature Kids in a Backpack kits to all Nature Kids Chapters.

Conserving and Restoring Arctic Grayling in the Upper Pembina River Watershed – Habitat Restoration Planning

Northern Lights Fly Fishers/TUC Edmonton

Grant: \$10,450

Project Code: 020-00-90-197

Project Status: Funded since 2012/13; Completed

Project Website: www.nlft.org/graying/grayling-history

In 2016, Northern Lights Fly Fishers/Trout Unlimited Canada Edmonton (NLFF/TUC) continued to collect data in support of a multi-year initiative (2011 – 2016) to study Arctic grayling populations and habitat conditions in the Upper Pembina River watershed. The data collected will be used to identify habitat concerns and conservation opportunities to help re-establish Arctic grayling populations and angling

opportunities for future generations. Specific activities in 2016 included: (1) Installation of stationary PIT tag arrays to document movements of fish tagged in previous years; (2) Installation of temperature data loggers to record water temperatures at 23 locations in the Upper Pembina Watershed; and (3) Inventory of habitat conditions at key locations using a camera-equipped drone. A stated project objective was to deliver recommendations on strategies to aid in the recovery of Arctic grayling populations in the Upper Pembina River watershed. The project findings supported AEP in the implementation of a “Recovery Rest Period” in the watershed. A major element of the program will be total closure to angling throughout the project study area, effective April 1, 2016 (as specified in the 2016 Alberta angling regulations), possibly extending for five years. NLFF/TUC’s findings confirm that Arctic grayling numbers in the watershed have declined drastically. Many stream populations appear to be extirpated, but there are remnant populations in Dismal Creek, Rat Creek, and Nelson Creek. Many streams, that formerly supported grayling, are no longer suitable due to high water temperatures; however, Dismal Creek still provides suitable water temperatures and habitat for Arctic grayling. NLFF/TUC are supportive of the Recovery Rest Period implemented by AEP and hope to work with AEP in a stewardship role regarding opportunities for habitat restoration or other activities to help conserve and restore Arctic grayling populations in the Upper Pembina watershed.

Deliverables/Results:

- Despite technical challenges with maintaining the integrity of PIT tag arrays, the team was successful in detecting fish passage through both antennas. Several fish were detected at both sites providing evidence of an upstream spawning migration in Dismal Creek during the spring. The sites are approximately 25 km apart, and there is an extensive logjam mid-way between the sites which was thought to provide a migration barrier. In addition to documenting an upstream spawning migration from the Pembina River into Dismal Creek, the project staff established that much of the spawning activity was occurring in the upper reaches of Dismal Creek. This is relevant when considering habitat protection in future years. The technical challenges were related to power supply (battery maintenance) and changing physical conditions, such as water level fluctuations, floating debris, and disturbance by wildlife. These challenges required frequent monitoring and more site visits than anticipated.
- Video inventory was collected at 13 sites. In some areas, evidence of damage from ATV use was apparent in the aerial imagery. Video quality was very good and provided a visual perspective that would not have been possible otherwise. Imagery from the logjam provided a great deal of additional insight.
- Temperature data were collected at 23 sites. Peak water temperatures in 2016 were lower than in 2015 at all locations due to differences in weather patterns. The continued collection of water temperature data will be valuable in assessing year-to-year variability and ongoing climate change issues.
- PIT arrays detected 20 individual Arctic grayling, with 76 total observations.
- Trail cameras were set up to curb vandalism or theft of the equipment. A variety of wildlife was photographed, including deer, moose, cougar, Canada geese, and black bear. The only physical damage to the array antennae was caused by moose wading in the channel, as documented by trail camera video.
- A PowerPoint summary was presented to the NLFF/TUC club on April 12, in conjunction with a presentation by AEP/Edson.

Raven Riparian Fencing Project

Northern Lights Fly Fishers/TUC Edmonton

Grant: \$29,085

Project Code: 015-00-90-247

Project Status: New; Extended until October 2017

The goal of this project is to contribute towards the protection and conservation of riparian zones along the Raven river and its tributaries in keeping with the primary objectives of Northern Lights Fly Fishers/ Trout Unlimited Edmonton (NLFF/TUC). The specific objective is to contract the installation of exclusion fencing, with access for anglers and cattle watering as needed, along riparian sections of the Raven River, the North Raven River (Stauffer Creek), or Clear Creek identified by ACA staff and in cooperation with the landowners. Riparian fencing on one quarter section on the Raven River, the McArthur property, was approved and scheduled following negotiation with the landowner and subsequent signing of an agreement with ACA in early fall of 2016. Approximately one-third of the fencing and bush clearance was completed. The remainder of the work was postponed to the spring of 2017 due to inclement weather that did not permit the crop harvesting necessary for the rest of the fencing to be installed.

Deliverables/Results:

- Unexpected cost savings and initial agreements with other landowners provided opportunity for the installation of exclusion fencing along additional sections of riparian land in the area, but winter weather conditions would not allow this work to be started until the spring of 2017.

Kids' Fly Tying

Northern Lights Fly Fishers/TUC Edmonton

Grant: \$1,429

Project Code: 020-00-90-231

Project Status: New; Completed

The goal of this project was to promote interest and involvement in recreational angling by kids and their families by introducing school-aged children to the art of fly tying. The objective was to obtain a booth at the 2017 Edmonton Boat and Sportsmen’s Show where club volunteers would offer children an opportunity to tie a fishing fly while at the same time talking to them and their parents about recreational angling and the art of fly fishing. In addition, a brochure on introducing kids to fly tying was planned for distribution at the Show and other events and for use by ACA and other fishing-related organizations for their use as needed. Nineteen club members provided a total of 190 hours of volunteer time at the Show helping 320 pre-school and school-aged kids and a few adults tie a fishing fly and providing information about fly fishing. A brochure, “Kids Can Tie,” was written by club members with advice from an educational consultant, formatted with graphics assistance from ACA, and distributed at the Show and elsewhere. A free digital copy has also been made available to other chapters of Trout Unlimited Canada across Canada and will be offered to other organizations. Information was also provided on upcoming ACA Kids Can Catch events.

Deliverables/Results:

- The process of tying a fishing fly that they could take home with them was presented to 320 pre-school and school-aged children,

as well as a few of their parents. At the same time club members passed onto both children and parents some of their interest in and enthusiasm for fly fishing, catch and release, the angling ethic, and the conservation of freshwater fisheries.

- “Kids Can Tie” brochure, complete with ACA logo and identification of ACA as the provider of funding, containing the benefits, key elements, and processes for introducing kids to fly tying was developed for use by a wide variety of fishing and conservation groups across Canada and hopefully elsewhere. It has been provided in a digital, ready to print format to ACA and to Trout Unlimited Canada and will be provided to other related organizations over the next few months. Copies will be made available to all organizations represented at the provincial Fisheries Roundtable Meeting in spring 2017.
- 19 members of NLFF/TUC volunteered a total of 190 hours at the Show, teaching fly tying to kids and sharing their knowledge and interest in the art of fly fishing and the conservation of freshwater fisheries.
- The unexpected results were the frequency of thanks from parents and grandparents for the volunteer efforts, the number of requests for the club to provide similar events for local groups, and the realization based on feedback that the “Kids Can Tie” brochure may be of use not only locally but across Canada and in other English-speaking countries.
- A report on the project will be provided to TUC’s “News Stream” and to the club website and to other venues to be determined.

Engaging Recreationists in the Dutch Creek Restoration and Education Project

Oldman Watershed Council

Grant: \$25,750

Project Code: 015-00-90-240

Project Status: New; Completed

Project Website: www.oldmanwatershed.ca/recreation-overview

The Engaging Recreationists project is a boots-on-the-ground education and restoration initiative aimed at reducing the threats to the headwaters of the Oldman watershed due to random camping and motorized recreation. Through community-based social marketing, in-person surveys and conversations, education, and hands-on stewardship activities, the Oldman Watershed Council (OWC) is encouraging motorized recreationists to keep wheels out of water and thereby protect our headwaters, fish and wildlife habitat, and water quality. The ultimate goal of this project is to engage Off-Highway Vehicle (OHV) users in restoring places where they recreate, changing behaviour to reduce their impacts, and becoming environmental stewards. In this pilot, OWC has been testing and developing effective educational and stewardship strategies, which might be applied on a broader (provincial) scale. To this end, OWC has been engaging a number of OHV organizations and retailers as part of the Recreation Advisory Committee to help OWC understand their audience and design effective programs. OWC hired four seasonal Outreach Assistants to talk to OHV users in the backcountry, conduct surveys, and provide public education about watershed health. The Outreach Assistants also tested the effectiveness of signs at encouraging OHV riders to use bridges, and recorded observations throughout the headwaters using a customized app called *Epicollect*. OWC supported

local stewardship initiatives such as weed pulls and garbage cleanups. Together with partner organizations and volunteers, OWC restored illegal fords (next to bridges) in the Dutch Creek watershed and provided signage to educate backcountry users about the importance of restoration and native fish. The social media and communications strategies support Government of Alberta messaging (e.g., Know B4 U Go, PlayCleanGo, etc.) and ensure that all stakeholders have a voice. The results of this project have proven very positive; people enjoy seeing OWC staff on the ground and have come to regard the OWC as a credible source of information. Through these efforts, OWC has noticed a shift in the conversations with more of a focus on the need for responsible recreation and stewardship to ensure sustainable use.

Deliverables/Results:

- The fact that the OWC Outreach Assistants spent every single weekend in the backcountry, talking to people onsite and engaging in stewardship activities, went a long way in building relationships and credibility with backcountry users. Once the Outreach Assistants identified themselves as being from OWC, most people were very welcoming and happy to participate in the survey.
- Engaged over 300 OHV users in the headwaters and completed 83 surveys. The 2016 in-person surveys allowed OWC to identify gaps in knowledge about the links between land-use and water quality, cumulative effects, and backcountry-specific actions to protect watershed health. Most people understood what a watershed was and the importance of headwaters, and were familiar with the local hydrology and native fish. Their biggest concerns related to water were water quantity and quality, but when asked about the biggest threats to the backcountry, responses varied. People do not understand cumulative effects, and how one person’s actions contribute to large impacts. People were unsure how to respond when asked to describe how land use plays a role in healthy water. When asked what actions they could personally take to benefit watershed health, most people responded with actions at home, highlighting the need for better education about backcountry practices. This information will allow further education programs to be tailored to better fill in these gaps.
- OWC also found the presence of a “Thank you for using the bridge” sign to be extremely effective at encouraging OHV users to use a bridge rather than fording a stream (94 percent used the bridge when a sign was present vs. less than 50 percent with no sign). However, this preliminary finding was based on limited sampling; OWC will continue to gather information to be able to draw stronger conclusions.
- OWC successfully worked to restore 1,900 m² alongside Dutch Creek, and have been involved in numerous other stewardship initiatives (e.g., weed pulls, garbage cleanups). Through public outreach, OWC has educated over 1,000 people about the value of watersheds and the need for responsible recreation. OWC is also seeing the conversations on social media start to change. Their demographic on Facebook has shifted towards more young males interested in off-road recreation, indicating that the messaging is being heard and attracting the appropriate audience. Conversations on social media in off-roading groups now include watershed and environment in the vocabulary, and members of the Recreation Advisory Committee are more deliberate in promoting positive behaviours and removing pictures glorifying unacceptable activities (e.g., wheels in water). Whether this will translate into

actual changed behaviour on the ground remains to be seen, but the groundwork has been laid to increase awareness and support responsible recreation, and so OWC is optimistic that this approach is slowly bringing about the desired behaviour change.

- One particular success OWC has noticed is that, especially following the announcement of the Castle Parks Draft Management Plan, more and more people in the off-roading community are having public conversations that include watersheds, headwaters, and responsible recreation— something OWC has been striving for over the past year or two. OWC thinks that the Plan served as a bit of a wake-up call that unless the backcountry behaviour and discourse improves, OHV users risk losing access to places they might have previously taken for granted.
- Coordinated the following public, family engagement, and educational events:
 - PlayCleanGo event with Alberta Invasive Species Council, Crowsnest Pass Quad Squad, and Alberta Government (audience: more than 25) (July 16).
 - BBQ awareness event with TransCanada & Crowsnest Pass Quad Squad (July 22).
 - Public presentation at Beauvais Lake Provincial Park (audience: 23) (August 13).
 - Recreationist garbage cleanup at Atlas staging area (audience: 11) (August 27).
 - Point Duties at Provincial Recreation Areas with Alberta Parks (audience: over 200) (July-August).
- A Riparian Restoration Event along bridges on Dutch and Dome Creeks included volunteers from Cows and Fish, Lethbridge College, University of Lethbridge, Alberta Government, Crowsnest Pass Quad Squad, Spray Lake Sawmills, a local Scout group, educators, and the public.
- OHV retailers are attending Recreation Advisory Committee meetings, and supported the Atlas Nature Cleanup. OWC is still working on getting them more engaged in more events.
- OWC has developed a working relationship with a couple of OHV retailers in Lethbridge and is in discussion about how they can better support OWC work in 2017.
- OWC expanded its weekly social media reach to over 15,000. Outreach Assistants published 15 blogs.
- Long Weekend social media campaign supporting Alberta Government messaging, and blog post: www.oldmanwatershed.ca/blog-posts/2016/5/20/know-before-you-go-tips-for-the-long-weekend.
- Host key local events to thank volunteers, collaborators, and stakeholders as well as to review the success of the project and discuss future work:
 - BBQ & campfire after restoration event (43 participants) on October 22nd.
 - Headwaters tour of restoration sites to thank donors and partners for their support on November 1.

Bluebird/Bat House Project

Onoway & District Fish & Game Association

Grant: \$800

Project Code: 030-00-90-102

Project Status: Funded bluebird boxes 2006/07 - 2009/10 and 2013/14; Completed

Project Website: www.ofga.ca

The goal with this project each year is to provide safe housing for bats and birds, as well as educating and providing awareness to Onoway & District Fish & Game Association (OFGA) members and the public. As OFGA work with youth to build these houses, the youth also learn some valuable woodworking skills along the way. OFGA have nearly doubled the number of houses completed in the previous year (over 350 vs 170), as there is a constant and growing demand. This has been a very successful project to date and the plan is to continue this project into the future on an annual basis.

Deliverables/Results:

- Number of bird/bat houses: approximately 350 completed to date, not including the most recent workshop of cutting plywood for more birdhouses on March 12, 2017.
- Number of volunteer hours: approximately 220 hours.
- Three workshops, two which were for the youth to build the birdhouses. Volunteers were also cutting the plywood for the houses.

County Lands Shoreline Naturalization Project

Parkland County

Grant: \$12,500

Project Code: 015-00-90-241

Project Status: New; Project extended until July 31

Project Website: www.parklandcounty.com/en/live-and-play/jackfish-lake-naturalization.aspx

The purpose of this pilot project within Parkland County is to work with community residents and stakeholders to demonstrate the benefits of naturalizing public spaces by restoring the Jackfish Lake public park to a naturalized condition. This project is considered a pilot as this is the first time Parkland County will undertake a community-led restoration effort in this context. If successful, the pilot will serve as a template for future restoration efforts on County lands, which will complement two existing private-land stewardship programs for agricultural and acreage landowners that the County has implemented. Parkland County is in the process of completing a phased Park Improvement Plan with the goal of providing enhanced park spaces for residents. As part of this initiative, Jackfish Lake was selected for various park improvements based on stakeholder input and ongoing work. These improvements have included upgrading the physical infrastructure, tree planting, and naturalization of some small low-use grassed areas. The County Lands Naturalization Project will expand upon these initiatives and increase both the scale and quality of these areas by enhancing the naturalization efforts within the lakefront park on Jackfish Lake. Project works include naturalizing a drainage path that feeds directly into Jackfish Lake to reduce erosion and sedimentation, supplemental tree, shrub, forb, and grass planting in an area up to 6,500 m², including a pollinator habitat area, as well as signage that describes the purpose and process of the naturalization efforts. Prior to commencing on-the-ground restoration

work, a community engagement process was implemented including direct mailouts and an online survey to residents, recreational users, and not-for-profit groups such as the Jackfish Lake Management Association. Preliminary concept plan designs were developed including options for a trail, increased density of plantings or planting of larger-sized trees and shrubs. Through online engagement, residents and community association members were invited to comment on the plan development and participate in project implementation. The purpose of this engagement was to determine resident opinion on how this public space should be utilized given the three naturalization options they were provided with. A total of 94 responses were obtained and through the ranking process the final option selected was Option 3: plant more mature species, no interpretive trail. The final planting plan and design of the interpretive signage was completed in June 2017, with planting at the site completed in early July 2017.

Deliverables/Results:

- Direct mailouts of a letter to 970 residents near Jackfish Lake were sent February 27, 2017 and online engagement started February 27, 2017 and closed March 10, 2017. A total of 94 responses were obtained.
- Ongoing consultation with the Jackfish Lake Management Association since initiating the project in January 2017.
- Preliminary concept designs for the naturalization project were developed for the engagement process by an environmental consultant with assistance from Parkland County staff.
- Final design concept and planting plan were completed based on the results of the engagement, which identified Option 3: plant more mature species, no interpretive trail, as the preferred option.
- Project signage, including four interpretive signs and one road sign, was developed by Parkland County staff, with assistance from a consultant, to outline the naturalization process and associated benefits, and was installed on site July 2017.
- One volunteer pollinator habitat (e.g., bee box building) event hosted by Parkland County to engage and educate local residents was held June 28, 2017. A total of 16 residents attended.
- Final planting and naturalization at the Jackfish Lake occurred in early July 2017.

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 the loss of wildlife habitat in the agricultural areas of southern Alberta due to irrigation infrastructure improvements, agricultural intensification, and industrial activities. The PHD program works with landowners to create and, when possible, preserve wildlife habitat. The program's focus is on the creation of shelterbelts and block plantings to provide critical winter habitat to upland game birds. In 2016, 12,761 trees and shrubs were planted in the Eastern Irrigation District on eight new habitat sites and 11 existing habitat sites. The PHD program also assists with fencing livestock out from existing and newly created habitat sites. In 2016, 3,000 m of fence material was distributed to fence out three new habitat sites.

Deliverables/Results:

- 6,854 trees and shrubs were planted and fabric mulched applied on eight new tree/shrub planting projects. 4,707 replacement trees and shrubs were planted on eight project sites from 2015 where they failed to survive. 1,500 trees and shrubs were planted into three established shelterbelts (old PHD projects) to fill in gaps and to improve the quality of the habitat.
- 3 km of fencing on three new tree/shrub planting projects was supplied by the PHD and installed by the landowner(s).
- Pheasant Crowing Counts were completed in April – May and late summer. Upland bird brood surveys were completed in August. Winter sex ratios surveys were not completed in 2016/17 due to a lack of sufficient snow cover.
- To locate late-summer upland bird broods, 13 of 14 transects were surveyed.
- Preliminary data from the drive-by inspections of 39 existing PHD sites indicates that approximately 67 percent of the PHD sites have successfully established and approximately 33 percent of the sites have failed to establish or have been cultivated. Inspections will continue for 2017 and possibly 2018 to collect more data.
- PHD staff met with landowners interested in new, or additional, PHD projects and inspected the potential sites.
- Unfortunately, staff time did not permit the creation of up-to-date promotional materials for the PHD program this winter. It is hoped the 2018 winter will have more time to work on the creation of these materials as well as for additional fundraising activities.

15th Annual PF Calgary/AHEIA Youth/Novice Hunt

Pheasants Forever Calgary

Grant: \$6,000

Project Code: 030-00-90-266

Project Status: Funded in 2015/16 and previously by the R&R fund; Completed

Project Website: www.pfcalgary.ca

The event held Saturday, September 17, 2016 was attended by over 180 people including youth and adult novices, shooting instructors, and volunteers. Instruction was carried out by certified AHEIA instructors in the safe and proper use of firearms, specifically shotguns, field etiquette, and shooting techniques in the field. A half-hour lecture describing the Pheasants Forever (PF) philosophy and the role habitat plays in successful upland bird hunting as well as a discussion on ACA and how it fits in the outdoor wildlife story in Alberta was given by ACA Biologist, Kyle Prince, and PF Calgary's Managing Direct, Bob Haysom.

Deliverables/Results:

- The main result was to send the participants home happy and with the knowledge that was passed on to them by the certified instructors on gun safety, field etiquette, and the role of PF, ACA, and AHEIA play in the shooting sports.
- Youth, adult novices, and volunteers (more than 180) participated in the shoot and a field lunch was supplied by PF Calgary at the conclusion of the morning.

Conservation Partners (a.k.a. ALUS) 2016

Red Deer County

Grant: \$40,000

Project Code: 015-00-90-128

Project Status: New; Completed

Project Website: www.rdcountry.ca/207/conservation

The goal of the Conservation Partners (a.k.a. ALUS) 2016 project 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 ALUS Conservation Agreement, which describes what they wanted to do on their land. The ALUS Conservation Agreement included a budget, a description of the project, and its impact on range and riparian health. Draft agreements were reviewed by the ALUS Partnership Advisory Committee, and then landowners entered into formal, finalized agreements with RDC. The program was intended to be a cost-shared program. Landowners were expected to cover a significant portion of the costs for the projects they wished to do. The objectives of the project were: (1) to support RDC landowners in enhancing and stewarding riparian and native range habitat on their land, by providing financial and technical resources for their on-the-ground projects; (2) to enhance riparian and native range habitat in Red Deer County. 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) to assist landowners in developing an informal "Management Plan" for each of the completed projects. The main results of the project were: 467 ALUS projects were initiated by 26 landowners, throughout RDC. Impacts of these 467 projects: 1,100 ac of riparian and native range habitat, 26 km of river and stream, and 367 ac of waterbody will be conserved or enhanced through sustainable management. Approximately 1,845 animal units will be impacted in the new livestock management regimes provided by the 467 projects.

Deliverables/Results:

- RDC initiated 467 new riparian or native range habitat enhancement projects.
- The RDC ALUS Program was mentioned in 13 articles in the *County News*. (The project was not advertised in the *County News* this year, because RDC can't keep up with demand, even without advertisements).
- Information about the project was communicated "live" at nine workshops, tours, and field days (total attendance about 360).
- An independent filmmaker produced a video about ALUS in RDC, which was publicized in April 2016. The video is available at: youtu.be/ypg0xUXVnkw
- Three videos involving highlights from ALUS in RDC were produced by the three original ALUS Communities in Alberta. Links to these videos are:
 - youtu.be/ly50QV5hUCE
 - youtu.be/YEK4Khh8DVQ
 - youtu.be/Tars5cBV_8
- Two ALUS projects were toured as part of RDC's annual "Entrepreneurial Ag Tour" (total attendance 100). Four ALUS Projects were toured as part of the ALUS Canada "Western Canada Field Conference" (total attendance 25).

Alberta Youth Pheasant Program

Red Deer Fish & Game Association

Grant: \$8,550

Project Code: 030-00-90-246

Project Status: New; Completed

Project Website: www.reddeerfishandgame.com

The goal of this project is to introduce young people to the outdoors, sporting arms and hunting along with lessons on habitat needs of Alberta's wildlife. This year Red Deer Fish & Game Association (Red Deer FGA) had almost 100 kids with many parents and grandparents in tow. Some birds are still in the area as of January 16, 2016.

Deliverables/Results:

- The birds were acquired from two sources and all pheasants were released on site.
- The Alberta Youth Pheasant Program had 87 kids participating, with groups of four – six out every Saturday and Sunday from September until December 15, 2016. There was a safety firearms instructor for each youth, as well as dog handlers and volunteers.
- Some repairs on the pen were carried out.
- Brochures were handed out at sportsmen shows and the provincial conference of the AFGA.

Red Deer, Kids Can Fish Event

Safari Club International Red Deer Chapter

Grant: \$2,900

Project Code: 020-00-90-234

Project Status: New; Completed

Project Website: www.scireddeer.com/index.html

The Red Deer Kids Can Catch event was held on June 18th at the Barry Mitchell Pond located at Heritage Ranch in Red Deer. The main objective for the event was to introduce and promote active outdoor recreation and conservation to local youth that would that otherwise may not have the opportunity. A total of 65 youth and 150 adults participated in the day. The event was free of charge and encouraged the young anglers to engage in hands-on participation in a fun and accessible atmosphere. Each youth was partnered up and offered one-on-one instruction and guidance from SCI volunteers, this included everything from discussions on fish conservation and responsible angling to the basic setup and operation of the fishing equipment. As this Kids Can Catch event was an introduction into the sport for many, all fishing rods, tackle, and bait was supplied on a loan basis. Each individual participant was also given a small take-home tackle box with the fishing basics. Complimentary beverages and a BBQ were also included and viewed by all in attendance a huge success. Representatives from local organizations such as Big Brothers and Sisters, Junior Forest Wardens, and Women's Outreach Center were in attendance. Local media was also on-hand snapping pictures of the action. As this was Safari Club International Red Deer's (SCI Red Deer) first Kids Can Catch event as an organization, they were encouraged to see the enthusiasm associated with everyone involved and view the event as a huge success and look forward to making this an annual event.

Deliverables/Results:

- Overall the event was viewed by all participants as a huge success. SCI Red Deer was, however, a little surprised by the age demographic that was in attendance. SCI Red Deer was expecting youth in the ten – 12 age category, but there were more in the four – six age group than expected. Moving forward in the coming years SCI Red Deer will look to add more activities and equipment to accommodate this age group.
- 65 youth participated in the day with associated adults— the total number was 150 people.
- The event had some coverage in the local *Red Deer Express News*.
- Pictures of the event were shared on Facebook.
- An article will be going out to all SCI membership in the September newsletter.
- Event recognition was on display at the SCI Red Deer annual fundraising event in March (400 attendees).

Operation Water Drop, Operation Water Pollution, and Operation Water Biology Kits to be Used by Students in Alberta as Part of Field Trips/Outdoor Education

Safe Drinking Water Foundation

Grant: \$1,275

Project Code: 002-00-90-235

Project Status: Funded in 2015-16; Completed

Project Website: www.safewater.org

In total, five Elementary Operation Water Drop (OWD) kits, three High School OWD kits, one Operation Water Biology (OWB) kit, and one Operation Water Pollution (OWP) kit were sent to schools in Alberta to be used on field trips. These kits enable students to conduct hands-on tests of both raw water samples and treated water samples and determine the level of components like arsenic, nitrate, pH, and total dissolved solids in the water. Elementary OWD kits are each good for a one-time use with a group of approximately 30 students in Grades 4 – 8, High School OWD kits are each good for a one-time use with a group of approximately 30 students in Grades 9 – 12, OWB kits are also each good for a one-time use with a group of approximately 30 students in Grades 9 – 12, and OWP kits are guaranteed to be reusable for at least two years and are intended to be used by students in Grades 5 – 12. Four Elementary OWD kits were sent to Clarence Sansom School in Calgary, Alberta on April 4, 2016; one Elementary OWD kit, one High School OWD kit, and one OWB kit were sent to Byemoor School in Byemoor, Alberta on April 18, 2016; and two High School OWD kits and one OWP kit were sent to Forestburg School in Forestburg, Alberta on October 7, 2016.

Deliverables/Results:

- Safe Drinking Water Foundation sent one Elementary OWD kit, one High School OWD kit, and one OWB kit to Byemoor School. They sent four Elementary OWD kits to David J. at Clarence Sansom School in Calgary, and sent two High School OWD kits and one OWP kit to Forestburg School.
- Clarence Sansom School, Calgary: On May 18th, 26 Grades 8 and 9 outdoor education students went on a hike near Station Flats (tested Elbow river) and on May 25th, 40 outdoor education students in Grades 7 – 9 went kayaking in the Glenmore Reservoir near Heritage Park.

In both places, the water tests all came within the range for acceptable water quality. The students learned how the different tests can be used together to provide an overall picture of the health of the river system.

SARDA Summer Field School: Retention of Wetlands on Croplands

SARDA

Grant: \$4,200

Project Code: 002-00-90-256

Project Status: New; Completed

Project Website: www.sarda.ca/events/sarda/summer-field-school

SARDA is a non-profit organization, based out of Falher, Alberta, which has been involved in environmental, agricultural, and demonstration projects for 30 years. SARDA organized a summer school this year and one of the sessions was addressing the well-known issue of converting wetlands to croplands in prairies. The economic and social impacts of retaining wetlands on agricultural croplands were presented by Jay White.

Deliverables/Results:

- SARDA's summer school provided a platform to inform the producers on benefits of retaining wetlands within croplands. Information on the economic and social benefits of wetlands was clearly communicated by the speaker in his presentation. Current literature about wetlands was provided to producers and industry representatives. Each participant received a proceedings booklet that included presentation slides, web-links, contact information, and the latest fact sheets on agriculture and environment. An exclusive agenda of the event was provided through a variety means to potential participants
- The summer school had a variety of 52 participants from AAF, AAFC, producers, and industry professionals from MDs of Smoky River and Greenview, Northern Sunrise County, Big Lakes County, and the County of Grande Prairie.
- Prairie-wide press release in newspapers, mail chimp, and notifications.
- Advertisement on three local radio stations and the event was advertised on webpages and social media.
- A billboard setup at the event.
- Written information distributed via the Proceedings Booklet.
- Participant evaluation form was filled out by the participants.

Archery Program

Southern Alberta Bible Camp

Grant: \$2,500

Project Code: 002-00-90-216

Project Status: Funded by CCEG since 2014/15 and previously by the R&R fund; Completed

The Archery Program at Southern Alberta Bible Camp (SABC) has been the most popular activity at camp again this year. This summer, the Archery Program served 440 campers. The campers developed archery skills through a progressive lesson plan each week through the

mentorship by NASP-trained instructor. This lesson plan was delivered with hands-on instruction, demonstration, correction, repetition, and encouragement. Each camper left camp with report card documenting their skill achievement in the Archery Program. SABC have also had the privilege of instructing one-hour introduction sessions to school groups and children who have attended day camps as well as winter youth retreats again this year.

Deliverables/Results:

- SABC introduced kids to archery. Many of the campers and participants in the one-hour introduction program have never used a bow and arrow before. Campers and participants find success in a short time with their archery skill because of the good working equipment and trained skill instructors in this program.
- Many kids return to archery year after year to develop their skills. They want to continue to enjoy this outdoor activity as well as work towards the targets outlined on their report cards. The Archery Program educates a largely urban-based camper demographic with a better understanding of the value and significance of the outdoors and wildlife in general.
- Participant numbers: Summer camp (440) and one-hour participants (250).
- Events: SABC used their outdoor range for summer and an indoor range for school groups and winter youth retreats. They also used their equipment for off-site day camps.
- Curriculum: SABC keep on developing their wildlife curriculum to be interesting and challenging to all participants.

Pelletry Program

Southern Alberta Bible Camp

Grant: \$1,500

Project Code: 002-00-90-236

Project Status: Funded in 2015/16; Completed

This summer, the SABC pelletry program served 227 campers. The campers developed skills through four one-hour sessions using their progressive curriculum. They learned basic firearm safety as well as shooting techniques in this fun and educational program. This program is delivered with hands-on instruction, demonstration, correction, repetition, and encouragement. Each camper left the program this summer with a report card documenting their skill achievements throughout the week.

Deliverables/Results:

- SABC introduced to campers the safe use of firearms. Many SABC campers have never used a firearm before entering the program. Having good working equipment and trained skill instructors, the campers and participants find success in a short time.
- Many campers return to pelletry year after year to enjoy the outdoor activity and to develop their skills. They enjoy having the opportunity to further experience this outdoor program and continue to work towards their targets outlined on their report cards.
- A largely urban-based camper demographic is educated with a better understanding of the value and significance of the outdoors and wildlife in general.
- Participant numbers: Summer camp (227 campers).
- Curriculum: SABC keep on developing their wildlife curriculum to be interesting and challenging to all participants.

Watershed Resources: Riparian Restoration Program

Sustainability Resources Ltd

Grant: \$4,940

Project Code: 015-00-90-239

Project Status: New; Completed

Project Website: www.sustainabilityresources.ca/resources/community-learning-events/riparian-restoration-conservation

The Riparian Restoration Program is a non-profit riparian restoration and community education initiative that provides capacity building for planners, farmers, councillors, and other people making land-use decisions. Riparian Specialists lead workshops with hands-on riparian enhancement projects. Two two-day Habitat Assessment Training Seminars were delivered on September 17 – 18 and 24 – 25, 2016. Habitat specialists with 20 years experience lead a habitat assessment using the Cows and Fish Riparian Health Checklist as a template, and lead discussions on planning riparian projects, regulations associated with riparian work, and other enhancement methods. This workshop impacted a total area of 8,000 m² using clustered planting approach with 1,190 plants, which were mostly plugs purchased from Wright Nursery. A total of twenty volunteers participated in the workshops.

Deliverables/Results:

- Two two-day workshops took place at the Foothills Centennial Campground on September 17 – 18, and 24 – 25, 2016 (four days total). 20 people registered and participated in the workshops, which is considerably lower than estimated. Despite lower registrations, volunteers contributed 151 hours to planting.
- The estimated total area of impact was 8,000 m² restored with 1,190 plants, which is considerably greater than estimated.
- A follow up assessment will be made as soon as weather and plant development permit.
- Demographics of Riparian Restoration Workshops between 2014 – 2016 can be found in the *WRRP Interim Report 2016-10-18*.

Wildlife-Friendly Fencing: Implementing habitat management enhancements and improving wildlife movement in a key site in the Cypress Hills area

The Nature Conservancy of Canada Alberta Region

Grant: \$16,200

Project Code: 030-00-90-267

Project Status: New; Did not proceed, funds returned to ACA

The Brost Property, located in the Cypress Uplands Natural Area, consists of native fescue grasslands that provide critical habitat for elk, moose, mule deer, and other wildlife. The property was acquired in 2005, through a partnership between Nature Conservancy of Canada (NCC) and Ducks Unlimited (DUC). The previous landowner built a 4.8 km fence to keep elk off the land. The fence, a six – seven strand barbed wire, currently has loose and fallen wires, which can be tripping and tangling hazards and impede the movement of wildlife. This project's objectives are: (1) to improve the movement of wildlife through the area; (2) to assess the range health of the property before and after the project; (3) to set appropriate grazing rates for the property based on the range health assessments; and (4) improve the value of the land for the general public, including hunting opportunities on the property and

in the surrounding area. Project activities were to include: modifying or replacing sections of the fence that act as a barrier to wildlife with a more wildlife-friendly fence, installing gate stiles to improve human access to the property, and assessing the range health of the property and setting grazing rates according to that assessment.

Deliverables/Results:

- NCC hit a barrier impeding their ability to complete the project and this delayed the work from progressing. NCC was in discussions with the adjacent landowner to agree on the fencing modifications, but were unable to agree on terms that will meet the outcomes of this project. As a result, the proposed project could not be completed in the time frame available. Funds were returned to ACA.

Storm Pond Goldfish Control and Public Education

Town of Okotoks

Grant: \$10,000

Project Code: 020-00-90-236

Project Status: New; Completed

The project objectives were to determine and implement an action plan to control the goldfish that have been discovered in the Crystalridge and Drake Landing storm ponds while simultaneously launching a public awareness campaign regarding the negative impacts of these invasive species on the regional ecology. The main activities included collaborating with Alberta Environment and Parks (AEP) to determine the best goldfish control method to be two applications per pond of a fish toxicant, rotenone. The only other method would be completed and prolonged dewatering of the ponds which is not possible in a municipal storm pond system. AEP trained the applicators and assistants and led the first of four treatments in Okotoks. The Town secured the services of a Senior Fish Biologist and core pesticide applicator from Advisian, a division of WorleyParsons Group to lead the remaining three treatments. Fisheries research licences were completed together with permits for the release of deleterious substances to the ponds. Okotoks and AEP together developed the communications content. The Town delivered communications to residents via a door-to-door letter drop and installed temporary site signage to notify the public of the upcoming treatments. A total of six town employees assisted the contracted biologist in the actual treatments. Post treatment, a sub-sample of fish was harvested and inventoried to be compliant with the Fisheries Research Licence. An estimate of 10,000 fish per pond were removed. Permanent steel signage has been fabricated and is ready for install in the spring of 2017 with the "Don't Let it Loose" messaging combined with "What is a Storm Pond?" to facilitate public education on the issues of invasive species and how storm ponds eventually release the river. The general public and local school groups were actively interested in the treatments and provided positive feedback on Okotoks initiatives to control invasive species.

Deliverables/Results:

- The main results of the project were to eradicate the invasive fish from both ponds and educate the public as to the issues of invasive species. The unexpected results were the sheer size of fish pulled from the ponds, the largest being over 900 g. It was also surprising how supportive the general public were of the project. Citizens and local students really were interested in learning and understanding the issues of invasive species.

- A provincial permit was received for the deposit of deleterious substances and a Fisheries Research License (FRL) was obtained. A total of 3,500 linear feet of steel construction was installed prior to application and temporary notification signs were posted. A total of five Environmental and Parks representatives together with six Town of Okotoks staff participated in the first treatment at Drake Landing storm pond on August 18. Several thousand fish were removed from the ponds. Permanent signage was designed, fabricated, and delivered to Okotoks for installation at all ponds within the municipality to educate citizens on invasive species and how storm ponds function. This signage specifically recognizes the contribution from ACA for the contribution.

Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project

Trout Unlimited Canada

Grant: \$28,012

Project Code: 015-00-90-248

Project Status: New; Completed

Project Website: www.tucanada.org/reconnecting-prairie-creek

Prairie Creek is popular among anglers and acts as a staging area for various recreational activities. This tributary of the Clearwater River is home to a variety of fish species including bull trout, brook trout, brown trout, mountain whitefish, and burbot. In Fall 2015, Trout Unlimited Canada (TUC) and Husky Energy completed a project to address fish passage concerns at a culvert crossing along Prairie Creek southwest of Rocky Mountain House. A new pool-riffle sequence was built at the culvert outlet, improvements were made to the culvert inlet, a new piece of culvert was added at the outlet, and baffles were installed inside the culvert, all to aid fish passage through the culvert in improve stream functionality. The "Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project" included the following main activities: PIT tagging fish to determine if the 2015 Fish Passage Improvement Project met the design objective of improving fish passage to all fish species at all life stages; conducting additional important riparian enhancements within the project site; and engaging anglers and the public through volunteer workdays (fish capture and tagging and riparian enhancement workdays) and an information session. During the project, TUC engaged over 90 people including nine volunteers who assisted with live willow staking (a form of bioengineering) to improve riparian health at the project site, 58 people who attended "Celebrating our Successes" which included a presentation about the project, and 24 volunteers who assisted with the fish capture and tagging efforts. Approximately 850 live willow stakes were planted both upstream and downstream of the crossing and survival over the summer was excellent. These plants will continue to grow and stabilize the banks while providing shade for the fish of Prairie Creek. During fish capture and tagging, nearly 300 fish were captured by angling and electrofishing and 78 implanted with PIT (Passive Integrated Transponder) tags. Arrays were installed at strategic locations upstream and downstream of the culvert to assess fish movement and initial results suggest the work completed in 2015 is functioning as designed. Funding from ACA and support from Husky Energy along with committed and dedicated volunteers made it possible to conduct this work and share the story with the broader public. The evaluation of fish passage will help to inform others looking for innovative and creative solutions to fish passage issues.

Deliverables/Results:

- TUC are pleased with how the project turned out. This funding from ACA and partnership with Husky allowed TUC to evaluate the previous year's project. TUC had hoped to catch a wider variety of species to evaluate fish passage; of the 294 fish captured, 97 percent were brook trout. TUC were also grateful for the volunteers that participated and while it was expected most would be local to the Rocky Mountain House area, many travelled from Calgary to help out.
- A report was produced to summarize the results of the fish passage monitoring.
- An open house and public information session will be held in Rocky Mountain House. TUC supported and participated in Clearwater County's "Celebrating our Successes" event in October 2016 and delivered a presentation on the project. A total of 58 people participated in the event.
- Upstream of the culvert, 72 km² of new habitat and watershed area will be opened. Preliminary results from the fish passage study suggest the culvert remediation project was successful in meeting this objective.
- 850 live willow stakes were installed in April 2017; no additional planting was required in the fall as the survival of spring planted willows was excellent, as was the survival of willows planted in Fall 2015.
- Nine volunteers helped with riparian enhancement in April and 24 helped with fish capture and tagging in September.
- A story of the project was featured in TUC's newsletter, "News Stream" second issue (May 2, 2016), and shared via e-mail and social media to TUC members and supporters as well as on the TUC website. Another article will be shared via "News Stream" summarizing results in the consultant's report in Spring 2017.

Southern Alberta Riparian Improvement and Awareness Project

Trout Unlimited Canada

Grant: \$23,140

Project Code: 015-00-90-245

Project Status: New; Completed

Project Website: www.tucanada.org

In 2006, TUC had become increasingly concerned with the amount of bank armoring (both authorized and unauthorized) along the Elbow, Sheep, and Highwood Rivers, so TUC hired a consultant to conduct an inventory of bank armoring along these rivers. Following the flood of 2013, TUC noticed several reaches in which bank armour was undermined or washed out and many areas where more bank armour had been added. Although much of the bank armoring following the 2013 flood was authorized, there was no comprehensive inventory of the extent of bank armoring and riparian disturbance along these rivers. In 2016, another inventory was conducted by East Slopes Aquatic Consulting to document the current location and extent of bank armoring and riparian disturbances along these rivers. In addition to completing the bank armoring inventory, the Southern Alberta Riparian Improvement and Awareness Project also focused on the implementation of riparian rehabilitation projects at several sites, working together with a number of other stakeholders, and presentations to the community to share project activities and lessons learned. These activities included: willow harvesting and planting volunteer workdays in Calgary; willows harvested from Weaselhead

Park (live staking and wattle fencing installed at two sites along the creek, invasive cotoneaster shrubs removed); willow harvesting and planting volunteer workdays in Red Deer (willow harvesting workdays at Oxbow off-leash dog park and Rotary Picnic Park and live staking, brush layering, wattle fencing, and rooted plantings installed along Piper Creek); assist with partner project along Fish Creek in Fish Creek Provincial Park, live staking and distributing woody debris. A presentation on lessons learned and insights on riparian restoration delivered at the "Riparian Restoration & Management: Strategies & Success Stories" workshop hosted by Cows and Fish on February 17, 2017. A presentation on project activities, lessons learned, and future insights relating to the Piper Creek project delivered at the RDRWA Spring Forum "Re-imagining municipal water in the 21st century" on February 24, 2017. Additionally, possible future restoration sites were identified during the riparian disturbance inventory component of the project. Now that these sites have been identified, future programs can focus on the rehabilitation of riparian health at these sites, by TUC or other stakeholders and partnerships. In addition, the information gathered during the bank armoring inventory, including opportunities for future restoration opportunities will be disseminated during the WRRP Spring Showcase in Lethbridge on April 7, 2017.

Deliverables/Results:

- Five willow harvesting and planting volunteer events carried out in Calgary and seven in Red Deer: two willow harvest and two willow staking workdays were held in Spring 2016, two additional workdays were held in summer 2016 to conduct maintenance on an existing bioengineering project, and an additional three harvesting and three planting workdays were held in late September and October 2016. In addition to these events, the contract biologist also assisted the Friends of Fish Creek with a planting workday on October 13, 2016.
- Two presentations on lessons learned and insights on riparian restoration delivered at stakeholder workshops.
- Riparian disturbance inventory completed: final report submitted to TUC on January 19, 2017.
- Results of inventory summarized in final report, information to be disseminated via TUC website and stakeholder workshop.
- A report is available for the riparian restoration portion of the project.
- A presentation was delivered by the contract biologist during a workshop organized by Cows and Fish on February 15, 2017. This presentation focused on the findings and lessons learned through riparian restoration during the Hidden Creek and Piper Creek projects to date. An additional presentation was given on the Piper Creek project at the Red Deer River Watershed Alliance Spring Forum on February 24, 2017, focusing on riparian restoration and lessons learned. A presentation on the findings of the bank armoring inventory was delivered at the WRRP Program Spring Showcase on April 7 in Lethbridge.

Yellow Fish Road in a Box

Trout Unlimited Canada

Grant: \$40,000

Project Code: 020-00-90-211

Project Status: Funded since 2014/15; Completed

Project Website: www.tucanada.org/yellow-fish-road

Yellow Fish Road (YFR) is Trout Unlimited Canada's (TUC's) signature education program. This award-winning program teaches youth about the protection of their waters through the reduction of storm water

pollution. Learning is linked to action through fun and interactive presentations and community-based storm drain painting projects. The program's bright "Yellow Fish" are featured by storm drains in most major communities across Alberta, serving as a reminder that "Rain Only" should go from the road to our rivers. Contributing storm water pollutants can include: garden chemicals, soap, car fluids, sediment, litter, and dog feces that wash across our yards and driveways and are carried into our local waters through the storm drain system. Understanding the problems that pollutants can cause to insects, fish, animals, and plants leads to solutions and motivate youth towards action to protect our waters. The program's specific impact is: protection of rivers and lakes (our water resources), fostering youth community action, and informing citizens to be a voice for water. In celebration of YFR successes, for its 25th anniversary year, YFR is taking a new direction. YFR will be transitioning away from presentations and will instead provide tools and instructions for a self-delivery model. The new program model will increase the depth and breadth of the program and will target over 10,000 youth and 40 action projects for 2017/18. Everyone can get involved as well, three different kits will be developed: a partner, class/community group, and individual box. All the supplies and resources will be available for self-delivery and will include an infographics video, a how-to video, a Program Guide, an in-class or group activity, and storm drain painting kit(s).

Deliverables/Results:

- There was an increase in schools and groups participating and more participants were reached at events. Higher rates of participation, with 5,711 participants in 2016 up from 2,896 in 2015. 38 school groups in 2016, up from 28 school groups in 2015. Larger numbers of painting groups doing the storm-drain painting or stewardship action (98 in 2016, 96 in 2015). 190 presentations were given to 84 groups. 18 program cities.
- Increased interest and understanding of fish, water, watersheds, and conservation.
- A new partnership was developed with the City of Grand Prairie, increasing the program breadth.
- Testimonials illustrate how youth, teachers, and leaders respond positively to the program messages.
- Four reports were produced.

Bow River – Legacy Island Spawning Enhancement and Access Study

Trout Unlimited Canada – Bow River Chapter

Grant: \$24,000

Project Code: 020-00-90-237

Project Status: New; Completed

The objective of the study was to assess whether there were opportunities in the lower Bow River to conduct side channel restoration or enhancement similar to the recently completed Mallard Point reactivation. The initial inquiry was to assess the feasibility of restoring flow to the Legacy Island side channel which is contiguous with the conservation lease managed by the Bow River Chapter (BRC). Phase One was an onsite inspection with Matrix and BRC staff for a preliminary assessment to permit a more focused secondary evaluation. A brown trout redd count was also conducted in the area by the BRC to gather baseline data on spawning density in the eastern Bow River. This data was collected over four days in November 2016. The assessment protocol involved research of historical data to determine side channel

stability and migration trends: identification of active or abandoned side channels that had suitable character for artificial stabilization. The area investigated started two meander cycles above Legacy Island and terminated at the Carseland weir. Equipment access to the potential sites was also an added constraint. Preliminary investigation identified six reaches of river for physical examination, which involved surveys, gradient determination, and substrate examination. Two of these were identified as stable habitat, which were used to serve as reference baseline sites, and the four channels (including Legacy) were evaluated in detail. A set of assessment criteria was established by categorizing ten site parameters, so that a quantitative ranking could be obtained. The highest ranking (most favourable) channel was located upstream of Legacy Island, near North Bow Lodge. Legacy and several other sites were ranked lower primarily due to geomorphic instability of the channel inlets.

Deliverables/Results:

- Initial review of the data revealed that the Legacy side channel was not likely to be a suitable candidate for reactivation. The location of the inlet mouth would be continuously filling with sediment as the main channel migrated further to the south. The costs involved with fording or bridging this side channel so that current use could continue, would also be prohibitive. Several good quality suitable candidates were observed within the expanded study area. Matrix was instructed to evaluate these, in addition to the primary objective, and rank these opportunities according to the agreed criteria: activation difficulty, side channel stability through time and flood events, channel substrate, and access for equipment. The ranking system was numerical, and no weighting was assigned to any specific criteria. In some cases, however, there might be a set of circumstances that would completely disqualify a site (e.g., landowner consent or no construction access). These factors would be considered in the next phase of assessment. The report shows the North Bow Lodge channel was found to be most suitable candidate, based on the criteria set out in the project plan. The Legacy side channel ranked third, although the channel inlet geomorphic instability would probably render disqualify this site for the proposed enhancements.
- The primary deliverable of the project is the Matrix geo-engineering report.
- Secondly, a redd survey was conducted in the Lower Bow. To BRC's knowledge, this was the first time that this had been done in the lower river. Fifteen volunteer participants were engaged. Final reporting is not yet complete, but fewer redds were identified than expected (approximately 100 in total), and much of the habitat identified from aerial reconnaissance turned out to be only marginally suitable. Numerous redds were observed in the main stem, which was somewhat unexpected.

Legacy Island Annual Maintenance

Trout Unlimited Canada – Bow River Chapter

Grant: \$3,000

Project Code: 015-00-90-238

Project Status: New; Completed

This project was to carry out annual maintenance and operation of Legacy Island river access and conservation area. Activities included weed removal, general debris cleanup, surface grading, and boat ramp repair (if necessary from high water). The project also began restoration of riparian areas with a tree-planting program replacing cottonwoods lost to flood, beaver, and human activity. The goal was

to plant 250 cottonwood saplings in 2016. A secondary goal was to prevent vehicle access into the natural areas on the island, to avoid OHV abuse and habitat degradation.

Deliverables/Results:

- Noxious weed control: As per MD regulations, two separate weed control applications were performed (July 27 and August 17). This activity was performed by Chapter volunteers with purchased supplies.
- Barrier to off-road vehicles: placement of temporary barriers to prevent off-road access was done twice and was removed by persons unknown. Design and installation of a permanent gate, in conjunction with placement of natural barriers (logs, large rocks) was conducted in October 2016.
- Tree Planting: 200 cottonwood seedlings were transplanted into grassy areas around the parking area, which when established, will impede OHV access and further restore the natural riparian habitat. 100 willow stakes were planted on the upstream (west) end of the island to stabilize the island against future flood events. All the planting activity occurred on October 22, 2016. Future planting activity is anticipated in other areas of the island.
- Unauthorized access to east end of island significantly reduced.
- Volunteer participation was high: approximately 35 volunteers and Chapter directors participated on the planting event date. Several new relationships established for environmental community involvement (e.g., Nature Conservancy of Canada).
- Recognition that there are still significant areas on the island where further tree planting activity will be beneficial. Enhancement of beaver protection also required. Weed control enhancement is also required to increase survivability of seedlings.

Building Wetland Stewardship and Improving Wetland Habitat in Waterton Biosphere Reserve

Waterton Biosphere Reserve Association

Grant: \$10,000

Project Code: 015-00-90-250

Project Status: New; Extended until Feb 2018

This project focused on improving stewardship of water and wetland habitat in Waterton Biosphere Reserve (WBR) via two main avenues: supporting landowner education and promotion of best practices for wetland stewardship centred around amphibians, in particular the northern leopard frog (NLF), improving habitat for NLF, and inspiring students to connect with the land by providing an opportunity for them to experience a local wetland first hand. In 2016, this project saw the successful completion of WBR's fifth annual Wetland Field Day at Police Lake Outpost Provincial Park on September 13, 2016. More than 100 Grade 5 students from Cardston and Spring Glen Elementary Schools spent a full day exploring wetlands and associated grassland habitat at the park. Groups of students rotated through four activity stations including (1) a pond study and learning about stewardship of wetland resources, (2) a close-up look at aquatic invertebrates, (3) learning about wetland animal and plant adaptations thru activities and exploration of biofacts, and (4) learning about unique animals of Writing On Stone Provincial Park, listening to traditional Blackfoot stories and playing traditional games. The field day was supplemented with a pre-trip videoconference with all four classes and related classroom instruction before and after the event. In addition to successfully providing an opportunity for interaction of children directly with nature, the Wetland Field Day also provided an opportunity to enhance student learning and understanding about the vital role of water and wetlands in their lives. As an added benefit, the need for parent chaperones resulted in

several adults also being exposed to new wetland-related knowledge and experiences. The second component of this project which is centred around amphibians, in particular the northern leopard frog, is still in progress. Display materials to raise awareness about northern leopard frog and gather interest in the project were developed and used at six local events over the summer, fall, and winter. A communication plan has been completed and resources for the WBR website and social media are being finalized. This communication plan will be implemented beginning in April 2017. Alberta Fish & Wildlife and Waterton Lakes National Park databases have been reviewed and occurrences of northern leopard frog, trumpeter swans, sandhill cranes, and great blue heron in WBR have been mapped, and WBR have used the northern leopard frog habitat suitability index maps and Google Earth to identify likely areas to investigate with respect to habitat connectivity (primary focus) and reintroduction sites (secondary focus) for northern leopard frog. Local landowners who have knowledge of historical northern leopard frog populations have been identified; one-on-one landowner interviews and site visits will occur in 2017.

Deliverables/Results:

- Successful completion of Wetland Field Day 2016: 103 students participated in the Wetland Field Day on September 13, 2016, four teachers, two support staff, two bus drivers, 16 parent volunteers, four Alberta Park staff, two WBRA Staff, and five WBRA volunteers were involved in delivery of the Wetland Field Day.
- An increased level of awareness about wetland stewardship for amphibians (e.g., northern leopard frogs in the WBR). Display materials to raise awareness and gather interest from the local community were presented at four events over the summer, fall, and winter attended by 440 people (June 28: 113 people, September 22: 73 people, October 26: 83 people, October 27: 107 people, February 16, 2017: 34 people, March 8, 2017: 30 people).
- Consolidation of historical sighting information for northern leopard frog, trumpeter swans, sandhill cranes, and great blue heron, and mapping of occurrences.
- Identification of local landowners who have knowledge of historical northern leopard frog populations and likely areas to investigate with respect to habitat connectivity (primary focus) and reintroduction sites (secondary focus).

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: www.theweaselhead.com/invasive-plant-program

The goals of the Weaselhead Invasive Plant Program are to protect the biodiversity of the Weaselhead Natural Environment Park and to maintain the ecosystem services it provides— especially those which contribute to maintaining water quantity and quality in the adjacent Glenmore Reservoir. The objective of the Program is to reduce the abundance of invasive species that interfere with the above goals. To achieve this objective the Society organises and leads weeding workshops to reduce the abundance of targeted non-native plants, organizes “Early Detection Rapid Response” (EDRR) activities that prevent the establishment of new species in the Park or new colonies of existing species, carries out Citizen Science projects to monitor the recovery of native vegetation after weeding, to measure the changes in abundance of problem species, and to improve the effectiveness of control methods, and raises awareness among the general public of the impact invasive species have on natural areas and how one can help prevent their spread. Since its inception in 2009 the Program has:

- Informed some 30,000 adults and children about invasive species through its outdoor education programs, indoor presentations, stewardship activities, and publicity events.
- Directly engaged over 1,500 people and 500 school students in volunteer stewardship.
- Trained 110 members of the public in monitoring and data collection techniques.
- Prevented new invasive plant species establishing in the Park.
- Reduced the area of the Park heavily infested with targeted non-native shrubs from 52 ha to 19 ha. (total area of the Park is 243 ha, “heavily infested” = approximately 185 plants/ha).
- Maintained weed-free status of weeded areas by re-visiting and re-weeding.
- Worked with the City of Calgary to control common buckthorn and eradicate European barberry using herbicide, and control leafy spurge using bio-control.
- Collected data to check native vegetation is recovering after removal of invasive plants.
- Completed research into effectiveness of different manual control methods and different timing of control activities.

Deliverables/Results:

- The project had 280 volunteers, donating 1,300 hours of their time and seeing first-hand the impact of invasive species.
- Seven new occurrences of noxious weeds were found in the Park and removed; four new occurrences of regulated non-native shrubs were reported to the City for herbicide treatment; an effort to eradicate spotted knapweed (a new outbreak) was initiated.
- Invasive plants were removed from the Park: approximately 2,200 Peking cotoneaster and bush honeysuckles, approximately 150 European mountain-ash saplings, 43.4 kg of spotted knapweed, and 4.4 kg of flowers and seedheads from other invasive species.
- The Society developed and hosted three projects for St Mary’s University students. These expanded understanding of native vegetation recovery in the Park.
- The educational field trips, with around 5,500 participants introduced to the issue of invasive species.
- Permission applied for and granted to install two boot-brush stations using the “PlayCleanGo” messaging; graphics for signage produced by Minnesota Dept. of Natural Resources and approved by partners.

Willingdon Fish Pond and Park

Willingdon and District Fish & Game Association

Grant: \$1,900

Project Code: 020-00-90-221

Project Status: Funded in 2015/16; Completed

The project goal was to keep the pond stocked with rainbow trout for the people to enjoy the outdoors and to get more visitors to the park. It is nice to see everyone come out. This year was a cool year so there were not as many people out.

Deliverables/Results:

- The pond was stocked with 450 rainbow trout this year. Over 200 people came out to the park this year.

Abandoned Barbed Wire Hazard Elimination at Buffalo and Bigelow Pheasant Sites

Zone 3 Fish & Game Association

Grant: \$4,450

Project Code: 015-00-90-242

Project Status: New; Completed

The project consisted of locating and removing hazardous abandoned barbed wire fencing from the Buffalo and Bigelow pheasant release sites. Several work sessions were held but the main one was held at the Bigelow site on September 10, 2016 with 19 volunteers. Three of the volunteers included Gerald Bennett and Charles Lychak from Alberta Environment and Parks and Mandy Couve from ACA. The Buffalo site was mostly cleared by Richard and Elisabeth Twa and a few days by a few Red Deer Fish & Game members. They removed 580 kg of wire on the Bigelow site and 270 kg at Buffalo, which was disposed of in the metal recycling bins at Finning Canada Red Deer. The goal was to make the sites safer for hunters and their dogs and was achieved. Doug Wood had a video made of the volunteers which will be shown on the Red Deer Fish & Game webpage and at the 2017 Red Deer Sportsman’s Show. Signage was put up at the sites in the spring.

Deliverables/Results:

- 850 kg of wire removed from the sites. The project had great volunteer turn out with a total of 24 participants. The sites are now much safer. One unexpected result was the gratitude shown to the volunteers by the Western Canada Spaniel Sporting Dog Club for cleaning the hazard.

Narrow Lake Conservation Centre

Zone 4&5 Alberta Fish & Game

Grant: \$25,380

Project Code: 002-00-90-251

Project Status: New; Completed

Project Website: www.narrowlake.wixsite.com/nlcc

Zone 4 & 5 Fish & Game Association had 194 AFGA members go through the camp last year that benefitted from this grant. The students completed their Hunter Ed course, P.A.L., Federal Boating Course, and Wilderness Survival classes. The archery range was completed in August, and the bear-proof garbage cans have been paid for, and placed on site. A total of 1,825 campers went through this camp in 2016. In January, they applied for a “request for special designation” for the Long and Narrow Lakes Watershed Natural Area, as well as requesting a “dark skies preserve designation” for the surrounding area. This will ensure the training centre and surrounding area is conserved into the future. This training center has become one of the finest Outward Bound training facilities in Alberta. Ensuring well-trained hunters, anglers, and trappers, as well as other like-minded groups, a suitable training area.

Deliverables/Results:

- All the improvements to the archery range were completed including purchasing the 3-D targets, and delivery to site. Purchasing the Hunters Education, Federal P.A.L., Boater Safety, and Survival Manuals making them available to the students at their conservation camps at Narrow Lake.
- The training equipment was used at the camps over five weeks in July and August.
- The Hide-A-Bag bear proof garbage receptacles were purchased in Lethbridge and delivered to site reducing unwanted human impact at the Narrow Lake site.
- A total of 1,825 campers went through this camp last year, of which 194 were AFGA members. The students completed their Hunter Ed course, P.A.L., Federal Boating Course, and Wilderness Survival Classes.

ACA Research Grants

Linkages Between Habitat, Ungulates, and the Habitat Use and Performance of Grizzly Bears in West-Central Alberta

fRI Research (Dr. Larsen)

Grant: \$16,500

Project Code: 030-00-90-263

Project Status: New; Completed

Project Website: www.friresearch.ca/program/grizzly-bear-program

The purpose of this project was to identify potential linkages between ungulate populations and the performance (body condition and reproduction) of individual grizzly bears to help inform management and recovery of the Alberta bear population. Historic (pre-2016) and newly collected (2016/17) data including Global Positioning System (GPS) locations of captured grizzly bears, bear health and reproductive information, field investigations of bear GPS clusters, and aerial and ground based surveys of ungulates and ungulate pellets will be used to meet the following research objectives: (1) refine and validate existing ungulate distribution and abundance models; (2) identify probable predation and scavenging events at bear location clusters; (3) develop models to identify GPS locations associated with predation and scavenging and identify potential linkages to development from the energy and forestry sectors; (4) develop models to determine the relationship between grizzly bear habitat use, ungulate availability (distribution and abundance), and bear performance measures (body condition and reproduction); and (5) develop models to investigate linkages between the number of grizzly bear predation and scavenging events, ungulate availability, and bear performance. Funds obtained through ACA contributed towards meeting objectives 1 and 2. Preliminary results showed that moose distribution and abundance was influenced by environmental conditions and anthropogenic habitat change. More specifically, moose were positively associated with increased forest harvesting but negatively affected by other human factors such as oil and gas activity and roads. In addition, moose were more abundant in the northern portion of the study area and suggested potential regional habitat differences that may influence ecosystem productivity. Field visits of grizzly bear location clusters revealed patterns associated with the remains of ungulate species. Ungulate remains were more common at clusters where bears spent more time. The majority of ungulate remains were associated with adult male bears, however, at the individual level both male and female bears showed variation relative to the frequency of ungulate remains found at GPS locations. Data collection will continue in 2017 and the project will be completed in 2018.

Deliverables/Results:

- Predictive maps of ungulate species distribution and abundance (completed).
- Models describing linkages between anthropogenic habitat change and the distribution and abundance of ungulate species (2018).
- Models describing grizzly bear habitat use patterns, the probability of predation/scavenging events, and animal performance measures in relation to ungulates (2018).

- Final report (2018)
- Presentations to program partners, stakeholder groups, and the public (ongoing).
- Poster and oral presentations at relevant conferences (11th North American Forest Ecology Workshop and 25th International Conference on Bear Research and Management; abstracts in review for oral presentations).
- The goal is to publish a minimum of two peer-reviewed journal publications from this work.

Can Forestry and Silviculture Practices Help Increase Caribou Functional Habitat in West-Central Alberta?

fRI Research (Dr. MacNearney)

Grant: \$25,000

Project Code: 030-00-90-258

Project Status: New; Completed

Project Website: www.friresearch.ca/program/caribou-program

The primary goal of this project is to identify high-quality habitat and functional movement paths for four caribou herds in west-central Alberta (Redrock – Prairie Creek, A La Pêche, Naraway, and Little Smoky) and to provide a decision support tool to help evaluate and mitigate the impacts of planned industrial activities on high-quality caribou habitat and landscape connectivity. The objectives include: (1) identify high-quality habitat patches and movement paths using GPS telemetry data, (2) collect field data at high-quality habitat patches to summarize local forest attributes, (3) construct habitat selection models specific to high-quality habitat and movement paths, (4) map the distribution of high-quality habitat and movement corridors in west-central Alberta, (5) evaluate the potential for commercial thinning to promote lichen regrowth. At the completion of the first year of this two-year project, the research team has found that the majority (90 percent) of female caribou displayed two movement states, one with slower and convoluted movements indicative of foraging or resting, and a second with faster and more directed movements typical of travelling. The foraging or resting movements were used to construct seasonal Resource Selection Function (RSF) habitat selection models which will be used to predict high-quality habitat patches for caribou in west-central Alberta. Field data was also collected at 90 permanent sampling plots established in 1997, and determined that commercial thinning had no effect on lichen species diversity but increased lichen abundance relative to control forest stands. In the final year of the project the researchers are on track to complete all remaining objectives including: field data collection at high-quality habitat patches, the habitat selection model for travelling movements, and the decision-support GIS tool.

Deliverables/Results:

- Significant progress towards the project deliverables was made after initial delays. The high-quality habitat patches and movement corridors have been identified for 121 female caribou. Field data collection has commenced in high-quality habitat patches. The RSFs have also been completed for high-quality habitat patches with the RSFs specific to movement corridors planned for April and May

2017. Overall the project is on schedule for completion on March 31, 2018 as planned.

- A Year One Summary Report was produced. The Year One Report details the high-quality habitat and the associated RSFs for caribou. As this project consists of two years of research, the bulk of the deliverables will be completed at the end of Year Two.
- A description of this project's objectives, schedule, and the funding partners (of which ACA is an important contributor) is included on the FRI Research website at the following links:
 - <https://friresearch.ca/project/identifying-high-residency-habitat-and-functional-movement-paths-caribou-west-central>
 - <https://friresearch.ca/project/can-forestry-and-silviculture-practices-help-increase-caribou-functional-habitat-west>

Native Grasslands Ecosystem Restoration

Glenbow Ranch Park Foundation (Dr. Tannas)

Grant: \$20,750

Project Code: 015-00-90-237

Project Status: New; Did not proceed

Rough fescue grasslands are among the most threatened ecosystems in North America, yet there is a poor understanding of how to restore these native habitats. The objective of this research is to identify effective methods and procedures by which native fescue habitat can be restored, and to use the research program to raise awareness of the importance of grassland conservation and restoration. Because Glenbow Ranch is located within the transition between the foothills and plains-rough fescue community complexes, this research will be applicable to a wide geographic area. Research was to occur in a previously disturbed area of Glenbow Ranch Provincial Park and was initiated in 2014/15. Due to the severe drought conditions and seed predation, the research plots must be re-established. The research plots will be used to examine different planting treatments to identify preferred seed mixes, planting rates, and best management practices for restoring native grassland habitat. The location of the project within a provincial park is ideal for allowing long-term monitoring of restoration, which is key for these long-lived plant communities. Unfortunately, this project couldn't proceed as planned and was ended by the research team at the time of the interim report.

Deliverables/Results:

- The project did not proceed as planned, due to the fact that Alberta Parks will no longer let the researchers control an unanticipated large ground squirrel population. It has been decided to postpone moving forward until a new research space can be found. Discussions are in progress with the City of Calgary Parks Department to see if a new site is possible. To date, City of Calgary Parks Department has been eager to host the research project at Haskayne Legacy Park in NW Calgary. They appreciate the benefit the research provides to parks, private landowners, and industry, as well as the educational and interpretive draw of such a program. Glenbow Ranch Park Foundation decided to terminate the project.

Vocal, Morphological, Molecular, and Ecological Interactions Between White-Crowned Sparrow (*Zonotrichia leucophrys*) Subspecies in Secondary Contact

St. Mary's University (Dr. Lovell)

Grant: \$22,580

Project Code: 030-00-90-262

Project Status: New; Completed

The summer of 2016 was the first of an estimated three field seasons examining: song, plumage, and genetic variation in a contact zone between two subspecies of white-crowned sparrows (*Z. l. oriantha* and *Z. l. gambeli*) along the front range of the Rocky Mountains in Alberta. The project goals and objectives were to summarize variation in these characters, to examine whether the contact zone was still shifting north as it was suggested in 1995, and propose a mechanism for the northward shift. In 2016, song data was obtained on 149 male white-crowned sparrows, plumage data on 117 individuals, and blood samples from 60 birds. Thirteen locations were sampled along the research transect. Preliminary analysis of the song data suggests the centre of the transition from *oriantha* song to *gambeli* song is located just north of Waiparous Creek, and occurs over an area of approximately 90 km. Since the original study of this contact zone was conducted in 1983, the centre of contact zone for song has shifted 130 km north in 30 years, while remaining a very abrupt transition. Preliminary analysis of the plumage data (lore colour) suggests the centre of the transition from *oriantha* (black lores) to *gambeli* (grey lores) is located just north of Waiparous Creek, and occurs over an area of approximately 150 km. As with the song data, the centre of contact zone for song has shifted 130 km north in 30 years, while changing from black to grey gradually. DNA is being extracted from samples and toe pads (for DNA analysis) were gathered from birds collected in 1983. Preliminary DNA data should be available in early May. Dr. Lovell is also investigating if ecological factors are responsible for the movement and shift of the contact zone. Preliminary analysis using ecological niche modelling predicts that the zone will continue to shift north, based on climatic models for 2050. This suggests that it is not competition between the two taxa, or preferential mating causing this northward shift, but likely climatic changes. Dr. Lovell hopes to have an idea which climatic factors: temperature, precipitation, or a combination of factors in the late spring. Overall this first field season was successful as enough data was collected to at least start to draw conclusions about the dynamic of the white-crowned sparrow contact zone, and what processes might be driving the movement of the contact zone.

Deliverables/Results:

- The PI is investigating if ecological factors are responsible for the movement and shift of the contact zone. Preliminary analysis using ecological niche modelling predicts that the zone will continue to shift north, based on climatic models for 2050. This suggests that it is not competition between the two taxa, or preferential mating causing this northward shift, but likely climatic changes. As the second field season with the project is starting in May 2017, deliverables are not available at this time. However, some preliminary results will be presented in several talks and conferences next year (2018).

Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park

The Friends of Elk Island Society (Dr. Roy)

Grant: \$18,000

Project Code: 030-00-90-261

Project Status: New; Extended until November 2017

Project Website: www.elkisland.ca/conservation-research

The objectives of the study were to: (1) evaluate the accuracy of density estimation using trail cameras as a technique to replace aerial surveys for ungulate population estimates, (2) evaluate the effect of different camera densities on the accuracy of density estimation using trail cameras, and (3) to obtain additional information on ungulate productivity in Elk Island National Park (EINP) and document the relative prevalence of other medium to large predators in EINP. Planned activities were to deploy trail cameras in a two-km grid throughout EINP, collect and analyze photos to get a density estimate using all and part of the camera sites, compare the density estimate to the annual aerial ungulate survey and list ungulate production of young, and document other species captured by the trail cameras. Due to health problems, the start of the project was delayed. Cameras were deployed in January and initial data collection is scheduled for June. Aerial ungulate surveys were conducted by Park Canada on January 13, 2017.

Deliverables/Results:

- Project start was delayed due to back injury of the principle investigator. No objectives have been completed as yet. However, all (a total of 43) trail cameras were deployed in January and data collection will begin in June – July. Four FEIS board members and 42 volunteers participated in the camera deployment activity. The aerial ungulate survey was completed on January 13, 2017. After the data collection in June and July, initial modelling can begin to compare aerial and trail camera population estimates. Additional data collection in October will provide data to complete the remaining two objectives.

Enhanced Camera Trap Image Processing Program

The King's University (Dr. Janzen)

Grant: \$9,700

Project Code: 030-00-90-260

Project Status: New; Completed

The research team designed a program to process images from camera traps. The program divides the images into unique events, removes image sequences containing noise, and identifies an important image from each remaining sequence for manual processing. From tests, they found their program removes 87 percent of the input images while retaining 99 percent of the animals of interest, meaning a human only need process the remaining 13 percent of the camera trap images to identify 99 percent of the animals captured by the camera trap. Furthermore, with an accuracy of 70 percent this program automatically determines if there is one or more than one animal present for each image sequence. The program can be downloaded from their website, benefitting researchers and other camera trap users in Alberta and beyond. This program displays an acknowledgement of financial support from ACA on the download page and each time the program starts. This work has been presented at The King's University as part of Summer Research Day (September 2016) and will be presented as part of

the 49X Senior Research project day. For further dissemination, the researchers plan on submitting to the ACTWS Conference in 2018, as well as submitting for publication to a Journal. Financial support from ACA will be acknowledged at both talks and the journal publication.

Deliverables/Results:

- The main result of this project is a program that can remove 87 percent of camera trap input images while retaining images of 99 percent of the animals. It is expected this will help reduce the “bottleneck” in camera trap projects. Additionally, the program provides an estimate for the number of animals in the image sequences and the general direction (left or right).
- The program was written in Java making it executable on Windows, Mac, or Linux computers and is publicly available from the researcher's website for general use at the following url: turing.kingsu.ca/~mjanzen/CameraTrapSoftware.html
- A conference presentation and journal publication are still to occur, but the project manager can present using University-assigned conference funds. Submission for publication will be to a journal that does not charge for technical solutions (i.e., computer programs) to issues in ecology. Consequently, no additional funding should be needed and ACA will be thanked in each conference or publication resulting from this project.

Using Citizen Science to Understand Didymo

Trout Unlimited Canada (Dr. Peterson)

Grant: \$10,577

Project Code: 020-00-90-229

Project Status: New; Completed

Project Website: www.tucanada.org/discovering-didymo/

“Using Citizen Science to Understand Didymo” (or “Discovering Didymo Distribution”) is a pilot project led by Trout Unlimited Canada in partnership with the University of Calgary. The goal of the project is to improve understanding of the distribution of *Didymosphenia geminata* (“Didymo” or “rock snot”) in Alberta to help understand how widespread it is. Volunteer anglers were equipped with sampling kits and provided basic training on sample collection and recording data and asked to collect samples from creeks and rivers while out fishing or hiking. Five training sessions were held in Calgary, Lethbridge, Red Deer, and Edmonton and 30 volunteers were trained and provided kits. Forty-two samples were collected from creeks along the eastern slopes between the US border to north of Whitecourt. Previously, many of these creeks have not been sampled for Didymo. After collecting samples, volunteers dropped their samples at one of seven drop off locations which included fly shops, county offices, and WPAC offices. Samples were then transferred to the University of Calgary for analysis under microscope to determine presence or absence of the diatom. Besides collecting the physical samples, volunteers used a smartphone app called *iNaturalist* to record site observations and location information, and took photographs of the sampling site. Having volunteers assist with sample collection allowed for coverage of a much broader area that could be done otherwise and reach locations that have not been sampled for Didymo in the past. The project also worked with Trout Unlimited in the USA who ran a similar project in partnership with North Carolina State University. Volunteers on both sides of the border used the same sampling methodologies and used the *iNaturalist* app. Samples are also being analyzed using the same methods allowing the

data collected in Alberta to be part of a larger, North American project to help Didymo researchers understand the distribution of this species. Blooms of Didymo have appeared in several otherwise pristine streams over recent years leading many to believe it to be an invasive species. However, research now suggests that it has been present in North America for thousands of years but recent blooms may be indicative of environmental changes. Building a baseline of Didymo distribution in Alberta (including understanding where it is present and not forming nuisance blooms) will help us understand the forces driving changes over time. The project was successful in its first year in terms of engaging anglers and volunteers, raising awareness of Didymo, collecting samples from a wide variety of streams over a broad geographic area, testing the *iNaturalist* app, building relationships with other Didymo researchers and Trout Unlimited chapters in the US, and developing a simple sample collection and data recording method for use by volunteers.

Deliverables/Results:

- A lot was learned about the volunteer engagement component of the project. Some lessons learned include: volunteers were willing to collect samples from a wide geographic area (e.g., volunteers from Edmonton reached more northern watersheds that had not been sampled before). In future, anglers and volunteers visiting watersheds from Red Deer north may be targeted. *iNaturalist* worked well for most people, but it was valuable to have a paper data form as a back-up; better troubleshooting strategies in the future will help users experiencing technical issues. Training sessions worked well to meet the volunteers and provide face-to-face training, but a video or infographic may be a good alternative that would allow the project to reach more people that could not participate in a training session.
- In terms of observations: positive observations were confirmed in all the major watersheds sampled including Peace, Athabasca, North Saskatchewan, Bow, and Oldman River basins. Some rivers and streams had both positive and negative results.
- In total, 132 kits were assembled and distributed to 30 volunteer anglers. Training sessions were held in Calgary (two), Lethbridge, Red Deer, and Edmonton
- A summary report was produced summarizing the results of the project including: number of volunteers engaged, number of training sessions held, number of kits distributed, and number of kits returned; summary of Didymo observations, photographs, and maps of sampling sites, and positive and negative Didymo observations; and recommendations for future efforts.

Black Bear Abundance, Human – Wildlife Conflict, and Interactions with Grizzly Bears on a Multi-Use Landscape

University of Alberta (Dr. Boyce)

Grant: \$11,300

Project Code: 030-00-90-252

Project Status: Funded in 2015/16; Completed

Project Website: wp.biology.ualberta.ca/blackbear

Southwestern Alberta is an important area for maintaining connectivity with wildlife populations in British Columbia, Canada and Montana, USA; it is also a biologically diverse and multi-use landscape with agriculture as the primary industry. The area supports populations of both grizzly bears (*Ursus arctos*) and black bears (*U. americanus*), where population-

level effects of competition may result in habitat partitioning. While both species use similar food resources, black bears typically have lower nutritional requirements and a higher tolerance for human-disturbed landscapes relative to grizzlies. In southwestern Alberta, the resident grizzly bear population is growing, while anecdotally black bears appear to be shifting their spatial patterns of habitat use. The researchers hypothesized that relative to grizzly bears, black bears would be more likely to select habitats closer to roads and human settlements. Reliable population metrics such as abundance and trend estimates are useful for successful management of wildlife, particularly for wide-ranging, low-density species like black bears. Across North America, however, black bear population estimates are often based on “a subjective process of extrapolation and expert opinion” (Hristienko and McDonald, 2007). Alberta is no exception: aside from harvest and conflict records, few data exist for black bears and provincial population estimates are over 20 years old. Licensed hunters are not required to report harvest data and private landowners can harvest black bears year-round without a tag. Despite high harvest pressure, black bear-related complaints to Fish & Wildlife have been increasing; human – black bear conflicts nearly quadrupled in 2014 compared to the previous year. In partnership with a non-invasive genetic sampling project to monitor grizzly bears, 899 sampling stations were established to facilitate hair collection from black bears. Rub objects were visited eight times from May to November in 2013 and 2014. Genetic analysis of the hair samples identified species, unique individuals, and sex. The project objectives were to: (1) evaluate black bear density and distribution; (2) investigate how black and grizzly bears share habitat; (3) understand the spatial variation of human – black bear conflicts using Government of Alberta conflict records. Results from spatially explicit capture recapture models indicate spatial variation in densities were driven by road density and land tenure, with female densities highest on private land. Preliminary results from grizzly and black bear habitat selection indicate niche separation, with black bears found closer to roads and houses relative to grizzly bears. Last, southwestern Alberta remains a hot-spot for human – wildlife conflict within the province.

Deliverables/Results:

- Genetic analysis of hair samples has been completed.
- Public outreach with Crowsnest Conservation Society occurred in May 2016. Elizabeth Anderson, representative of Crowsnest Conservation Society, and Anne Loosen gave seven presentations to 347 students at Horace Allen School (K – Grade 3) and Isabelle Sellon School (Grades 4 – 6). The goal was to move beyond the individual silos of academic research and on-the-ground stewardship activities by connecting the local community with research and providing practical solutions to mitigate conflicts through the purchase of two bear-proof garbage containers for both schools.
- Anne presented “Hair Snares for Black Bears, Too: Black bear abundance and shared habitat use with grizzlies” to the communities of Cowley (59 attendees) and Cardston (39 attendees) in March 2016. This was part of Waterton Biosphere Reserve’s annual Carnivore Working Group public meetings.
- Field education day with WBR will occur in fall 2016.
- Presentation at Beauvais Speaker Series occurred in August 2016 (53 attendees).
- Abundance and density estimates, as well as grizzly and black bear habitat modelling, are currently underway. An October meeting is planned with stakeholders to discuss preliminary results in Pincher Creek.

Tools to Guide Management of Invasive Species in Grassland Ecosystems

University of Alberta (Dr. Macdonald)

Grant: \$19,820

Project Code: 015-00-90-236

Project Status: New; Completed

Invasive species have been identified as one of the most serious threats to ecosystem health and to the conservation of biodiversity and endangered species. As such, the presence and abundance of invasive species is often used as a metric or indicator of ecosystem health and of critical habitat as defined under Endangered Species legislation. The rate of invasion of non-native species into ecosystems, however, often exceeds our ability to document their presence and, thus, protect vulnerable ecosystems. With less than 50 percent of Alberta's native grasslands remaining intact, their persistence, along with that of the high proportion of endangered species they contain, is of particular concern. Given the above, Wet Areas Mapping (WAM: a LiDAR based, digital elevation model of relative wetness; depth-to-water [DTW]) has been proposed as a landscape-level tool for predicting patterns of invasion of non-native vascular plant species in grassland ecosystems of Alberta. WAM produces a 2 m² grid of DTW values; the research team aims to examine the suitability of DTW to predict patterns of invasion of non-native vascular plant species in grasslands. To test WAM's ability to predict invasives, 18 transects (average=873 m long) were established on the Mattheis Research Ranch in the dry mixedgrass prairie of southeastern Alberta in summer 2015. Transects were designed to: (1) be distributed as widely as possible across all uncultivated areas of the ranch, (2) cover the greatest variation in depth to water values, (3) cover the greatest variety of ecosites, (4) cover a range of disturbance classes as determined by distance from known disturbance sources (pipelines, roads, etc.), and (5) occur in different paddocks with unique grazing histories. Plant community and invasive species information was collected from 467 plots at 35 m intervals along these transects. In 2016, an additional nine transects comprised of 270 plots in total were established in the dry mixedgrass prairie of Dinosaur Provincial Park (40 km east of the Mattheis Ranch) to collect comparative data in a relatively undisturbed DMG system to better gauge the impact of grazing and disturbance on occurrence of invasive species and the efficacy of WAM as a predictive tool. Preliminary results based on the data collected at Mattheis alone indicate that areas predicted by WAM to be moister have a greater abundance of invasive species. Plant communities also reflect the moisture gradient predicted by WAM. Further analysis with the data from Dinosaur Park will occur in spring and summer 2017.

Deliverables/Results:

- Due to delays in acquiring the WAM data, the analysis which will inform the peer-reviewed paper for publication has not been completed.
- In February 2016, a presentation entitled, "Can Wet Areas Mapping be used to predict invasive species in Dry Mixed Grass Prairie?" was presented at the Prairie Conservation & Endangered Species Conference in Saskatoon that focused on preliminary analysis of data collected at the Mattheis Ranch in summer 2015 and the abstract was published in the Proceedings of the 11th Prairie Conservation and Endangered Species Conference.

- A formal presentation to Alberta Park's staff has been delayed until after analysis is completed, but attempts were made to inform Park Rangers about the project in the field whenever the opportunity arose. The researcher intends to return to deliver a presentation in summer 2017.
- On July 23, 2016, a presentation about the project was made as part of the Mattheis Research Ranch Field Tour (under the auspices of the University of Alberta Rangeland Research Institute). The audience included local ranchers, the Society for Range Management International Mountain Section, alumni of the University of Alberta Range Team, and Dr. Stan Blade, Dean, Faculty of Agricultural, Life, and Environmental Sciences (approximately 150 people).

Persistence of the Ya Ha Tinda Elk Population: The role of calf survival

University of Alberta (Dr. Merrill)

Grant: \$34,197

Project Code: 030-00-90-204

Project Status: Funded in 2003/04, 2008/09, 2009/10, 2012-13 – 2015/16; Completed

Project Website: yahatinda.biology.ualberta.ca

The Ya Ha Tinda (YHT) elk herd has been declining since the early 2000s. This 15-year study continues to monitor shifts in distribution and population demography, but the research team initiated an in-depth calf mortality study because low and spatially-variable summer calf survival may be a major factor in the observed shifts and herd decline. Support from ACA has been critical to this project over the last four years. During this study period, there were three objectives: (1) continue monitoring elk population trends; (2) continue monitoring pregnancy rates, mortality, and migratory movements of cow elk; and (3) determine differential survival and cause-specific mortality of elk calves between migratory herd segments. Elk winter population surveys conducted by Parks Canada on January 12, 2017 recorded 391 elk on the YHT ranch. Bulls were not detected during this flight indicating the herd size would have been higher than counted had the bulls been observed. Although surveys were not flown in winter 2016, the 2017 counts indicate that the elk decline may be levelling off. Further demographic analyses are ongoing. A total of 46 cow elk with GPS collars were monitored during the past year. An analysis of the migratory movements of these elk and other elk with GPS and VHF-collars since 2002 has been completed. Elk wintering on the YHT use five major migration corridors, with a declining number of elk using the major corridors into Banff National Park and an increasing number of elk migrating onto industrial forest land east of the YHT. In spring, the majority of movement occurred in May and June with 75 percent of elk migrating by June 16, and 75 percent of elk having migrated in the fall by October 16. Elk appear to have high fidelity to their migration routes. In May and June 2016, 29 elk calves (20 residents and 9 eastern migrants) were captured (including two calves observed being eaten by bears at the birth site) via monitoring the vaginal implant transmitters of 43 cow elk (28 residents, 12 eastern migrants, four western migrants). Only four of the 29 calves captured were alive as of March 15, 2017. Of the known mortality causes in 2016, most were attributed to bears (44 percent), followed by wolves (11 percent), and cougars (seven percent). Analyses of factors influencing calf mortalities are ongoing. In February and March 2017, 20 cow elk were free-range danted with 18 adult cows being collared.

Deliverables/Results:

- Counts of elk based on an aerial survey in 2017 compared to past years indicate elk at YHT may be levelling off in their decline.
- An analysis of migration patterns from 2002 – 2016 indicated that there have been shifts in the use of the major migratory routes over this period with an increase in elk moving to summer on industrial forest lands and a decline in elk moving into Banff National Park and north into the Clearwater. As of summer 2016, 11 percent of the radio-collared adult female elk migrated west into Banff National Park, 24 percent migrated to the east onto industrial forest lands, and 64 percent remained resident on YHT.
- Adult elk pregnancy rates are high (2014/15: 94 percent and 2015/16: 96 percent, 2016/17: pending) indicating summer nutrition of elk has been adequate in this area.
- Based on Vaginal Implant Transmitters (VITs) and location of neonatal elk calves, 13 percent of cows gave birth in Banff National Park, 11 percent of cows gave birth to the north of the ranch mostly in the Bighorn Creek cut blocks and along Scalp Creek, 24 percent of cows gave birth to the east of YHT, 43 percent of cows gave birth near the ranch, and nine percent gave birth to the south of the ranch.
- Overall calf recruitment is low with only four of the 29 calves tagged in 2016 being alive in March 2017; most known mortalities of calves during early summer have been attributed to bear predation. Cumulative known mortality causes in 2013 – 2016, were attributed to bears (35 percent), wolves (nine percent), and cougars (15 percent).
- The researchers continue to successfully collar elk in winter (n=18 in 2017) to maintain an adequate sample of elk to monitor distribution, movements, habitat use, adult survival, and reproduction of the Ya Ha Tinda herd. As of March 15, 2017, a total of 75 elk were collared (49 GPS, 26 VHF) or around 26 – 28 percent of total adult female population.
- Data analyses for mapping predation risk, forage dynamics, human activity is now ongoing to determine factors influencing elk calf survival over the past four years as part of a PhD program.
- The YHT study website was updated and information from this summer's research will be posted in the coming months.
- One journal article (Eggeman et al. 2016) and one popular article (*Alberta Outdoorsman* – November 2016) was published in 2016.
- One journal article is in review: Hebblewhite et al. submitted to *Oikos*
- Submission of four journal manuscripts and one popular articles is anticipated this year for publication: (1) a journal article on elk birth site selection; (2) a review on partial migration in ungulates; (3) a journal article on density-dependent elk habitat selection in winter; (4) a journal article on shifts in migratory patterns in a partially migratory elk herd; (5) a popular article on the value of scat dogs in wildlife work.
- Alberta Chapter of the Wildlife Society March 2017: two oral presentations, two posters; Parks Canada Conference March 2017: poster; The Wildlife Society October 2016: poster.

The Effects of Introduced Fishes on Potential Aquatic Insect Prey Subsidies to Alpine Birds

University of Alberta (Dr. Poesch)

Grant: \$20,000

Project Code: 020-00-90-230

Project Status: New; Completed

Project Website: www.poeschlab.ualberta.ca

The goal of this study was to assess the impact of introduced fishes on the aquatic insect community and evaluate whether there is a concordant pattern in bird abundance in alpine and sub-alpine lakes in Banff National Park. This study has the following research objectives: (1) Is there a significant difference in littoral invertebrate density and diversity between fishless lakes and lakes stocked with fishes? (2) Is there a significant difference in the relative abundance and diversity of songbirds between fishless lakes and lakes stocked with fishes? (3) Are these differences correlated? The goal of the field sampling component of this project was to sample benthic invertebrates and alpine songbirds from 40 alpine and sub-alpine lakes. The project started in the summer of 2015 and these data were collected from 20 lakes. ACA funding was used for the second field season (2016) and a second set of data was also successfully collected. The complete set of 40 samples of benthic invertebrate data has been enumerated by a professional taxonomist. And, a complete set of song bird recordings from 40 lakes has been enumerated by a professional taxonomist. In other words, the research team has accomplished the goal of collecting the exact data needed to address the project objectives. The remaining task is the data analyses and write up. Unfortunately, the student working on this incurred a concussion May 2016 and has been on a medical leave. Parks Canada performed all her data collection in 2016 on behalf of the student. The student is hoping to return to her studies during the spring of 2017.

Deliverables/Results:

- Data has been collected and enumerated. Analysis and reporting is on hold while the student recovers from a medical issue. The student was expected to return in May 2017.
- The success of this project is that the research team has a complete dataset of benthic invertebrates and alpine song birds from 40 alpine and sub-alpine lakes. The bug samples and bird recorders have been enumerated by professional taxonomists. This dataset includes an equal proportion of fishless, native fish, and non-native fish bearing lakes. This is a one-of-a-kind dataset that likely doesn't exist anywhere else.
- A poster was produced for a conference held at the University of Alberta in the spring of 2016.

Bioremediation of Eutrophic Lakes through Fisheries Management in Alberta

University of Alberta (Dr. Vinebrooke)

Grant: \$38,500

Project Code: 020-00-90-228

Project Status: New; Completed

Project Website: www.biology.ualberta.ca/vinebrooke_lab

The main goal of this project was to explore how manipulation of fish communities affects blooms of blue-green algae in lakes of central Alberta. The primary objective was to demonstrate whether experimental culling of planktivorous minnows would release herbivorous zooplankton from predation, thereby better enabling

them to graze down and suppress the proliferation of blue-greens. The main activities involved conducting a large-scale mesocosm experiment (twenty 1500-L capacity tanks) along the shoreline of Pigeon Lake where blue-green blooms have become more common over the past decade. In May 2016, each tank was filled with surface water and sediments collected offshore from Pigeon Lake Provincial Park. Half of the tanks were then each stocked with three minnows also collected from the lake while the other tanks remained fishless. Ten of the tanks were also stocked with larger herbivorous zooplankton from other lakes in the region to determine if this would amplify the minnow effect on grazing pressure, but this treatment proved non-significant. Instead, the research team discovered that the simulated culling of minnows had a significant positive effect on water clarity as their removal reduced the growth of blue-green algae, preventing the eventual bloom of toxic cyanobacterial (*Gloeotrichia sp.*) colonies, which was otherwise detected in the tanks containing the minnows in July and August. However, the positive effect of minnow removal on water quality was not attributable to the hypothesized trophic-cascade effect, because the treatment did not significantly enhance the community of herbivorous zooplankton. Instead, phosphorus concentrations remained significantly lower through the entire experiment in the fishless tanks where cyanobacterial blooms did not occur. Therefore, it was concluded that the blue-green blooms in the minnow-stocked tanks were attributable to enhanced phosphorus availability, which likely resulted from the minnows contributing to increased nutrient recycling. In other words, these findings highlighted that direct culling of minnows could impair the development of cyanobacterial blooms in prairie lakes by reducing the bioavailability of phosphorus. The research team had also intended to investigate the applicability of these findings to other lakes in central Alberta through the examination of fisheries records; however, this inquiry proved to not be possible because of the lack of reliable minnow data. Nevertheless, these novel findings of the indirect effect of minnows on cyanobacterial blooms via nutrient recycling have enabled us to achieve a well-attended presentation for the North American Lakes Management Society and a manuscript being submitted for peer review by the journal *Freshwater Biology*.

Deliverables/Results:

- Experimental direct culling of minnows improves lake water quality by reducing phosphorus concentrations, thereby suppressing their fertilization of cyanobacterial blooms.
- High abundances of minnows in small or shallow prairie lakes are concluded to be potential contributors to outbreaks of cyanobacteria.
- The potential for trophic cascades to suppress cyanobacterial blooms in lakes of central Alberta appears low because of the relative absence of large herbivorous zooplankton that can benefit fisheries management practices aimed reducing planktivorous minnow populations.
- Structure built: The mesocosm experimental setup was completed in May 2016 and decommissioned in September 2016. The mesocosms are currently stored within the security-monitored maintenance compound centrally located in Pigeon Lake Provincial Park.
- Outreach activities: invited tours of the experiment were conducting while it was running during summer 2016. Approximately 20 officials from the Alliance of Pigeon Lake Municipalities were in attendance.
- Summary reports to Pigeon Lake Municipality Alliance: two summary oral presentations have already been provided to the steering committee.
- Preliminary findings were also presented to the Alberta Summer Villages Association at their annual meeting in October 2016 and the North American Lake Management Society in November 2016.
- Manuscript submitted to *Freshwater Biology* in April 2017.

Wild Pollinator Conservation and Restoration in Southern Alberta Croplands II: Wetlands and landscape heterogeneity

University of Calgary (Dr. Galpern)

Grant: \$23,800

Project Code: 015-00-90-225

Project Status: Funded in 2015/16; Completed

Project Website: <http://ecologics.ucalgary.ca/lab/science/pollinator-conservation>

The research team continued a longitudinal landscape-scale bee conservation study in southern Alberta for a second year with the help of ACA funding, expanding the focus to understand the influence of proximity to wetlands and landscape heterogeneity for bumble bee abundance and community composition. They were also successful in acquiring additional funding from other sources. These monies enabled the researchers to broaden their mandate to include all bee taxa, rather than just bumble bees, and to sample northeast of Lethbridge as well as the work proposed near Calgary. In 2016, nearly 40,000 bees were sampled of which 16 percent were bumble bees. In total, over 60,000 specimens of 245 bee species from both project years combined were pinned, identified, and databased, all of which are now preserved in the University of Calgary museum collection. The sampling of bees occurred at 143 locations in 2016 (428 blue vane or bowl traps deployed; average 50 continuous trap-days each). Of the locations visited, 54 sites were sampled in both project years, enabling the researchers to capture inter-seasonal variation in bee communities. Abundance of flowers was also measured at 100 sites using walking transects at six times over the summer. The first paper from this project was recently published in the international peer-reviewed journal *Ecology and Evolution*. This study used only a portion of the large dataset, and examined the conservation implications for bumble bees of canola, a mass-flowering prairie crop that is known from European studies to have both positive and negative implications for pollinator populations. A complete two-year pollinator dataset was ready for analysis in mid-February, and five team members are now each engaged in analyses of these data. One colleague is examining the effect of distance from wetlands on bee abundance and diversity, and a postdoctoral fellow is analyzing the effect of landscape heterogeneity on abundance and diversity. A second postdoctoral fellow and two graduate students are working on three additional manuscripts that examine: (1) how bumble bee morphology is influenced by the types and availability of flowers; (2) how the match between mass-flowering crop and wild bee phenology influences bee abundance; and (3) how the availability of pollination services varies across Southern Alberta croplands.

Deliverables/Results:

- This longitudinal landscape-scale bee biodiversity data set with over 60,000 bees of 245 species will have significant value for conservation in prairie agroecosystems. Its broad temporal and spatial coverage and its robust sample size has already helped us develop an evidence base for strategies that improve pollination ecosystem services in Alberta croplands. E.g., the first publication from this project (Galpern et al., 2017. *Ecology and Evolution*. doi: 10.1002/ece3.2856) demonstrated that intensive canola cultivation has demographic consequences for bumble bee colonies, and recommends that canola fields should not be planted on adjacent

quarter sections if possible. And where this is not feasible, the researchers recommended that road allowances be supplemented with flowers to provide later season forage for the higher densities of colonies that these fields attract.

- The sampling for this database has been informed by several research objectives and was intentionally structured to enable both applied and fundamental ecological inquiry. As noted, five manuscripts are now in progress addressing the main objectives of the project. The following research is currently being conducted by the research team: (1) mapping of pollination ecosystem services; (2) the distance decay in bee abundance from semi-natural wetland features; (3) influence of the match between mass-flowering crop phenology and flight season on bee abundance; (4) landscape composition and configuration effects on bee community structure; and (5) multiscale landscape influences on functional morphology, such as bumble bee tongue length. Sufficient data has been collected to complete statistically-robust analyses in each of these research areas, as well as in several others. The project post-doctoral fellow will provide longer-term assistance in this regard.
- In addition to the above-noted paper now in print, three oral presentations based on this project have been given at Canadian ecological and entomological conferences (e.g., “Bumble bee community structure: Functional traits in a prairie agroecosystem”, Canadian Society of Ecology and Evolution 2016, St. John’s, Newfoundland), and a fourth will be given at the Canadian Society of Ecology and Evolution 2017 in Victoria, BC.
- As additional products emerge, and receive peer review, the researchers also anticipate being able to publish materials on their dedicated website intended for a grower audience. These include maps, reports, and open-access academic publications. This research team has also led the establishment of a Prairie Beneficial Insects Working Group (PBWIG) which held its first meeting in October 2016. This meeting had 20 attendees who are involved in pollinator and agricultural insect research with universities, industry, NGOs, and provincial or federal government agencies. A mandate of the group is knowledge translation of beneficial insect research from across the Canadian Prairies for growers and decision-makers. The researchers intend to submit their findings to this group for their advice and assistance on dissemination.
- A website has been established for the project. As published content becomes available, these and other information features will be added to the site.
 - A report summarizing factors influencing the abundance of pollinators. This product depends on statistical modelling work currently in progress by a project postdoc.
 - Hotspot, risk, and opportunity maps for Southern Alberta. These also depend on statistical modelling work in progress. They will be created as figures for a manuscript and will be included in a report.
 - Manuscripts submitted to peer-reviewed journals: in addition to one in print, five additional manuscripts are in progress, with submission dates anticipated in the summer and fall of 2017.
- Laminated waterproof signs intended to describe the project and inform about pollinators in agricultural landscapes were attached to stakes and placed beside insect traps at all 123 roadside sampling sites. The signs prominently acknowledged funders, including ACA. Sites were in the road allowance margins beside gravel roads throughout the agricultural landscape, and signs were typically visible from the road.

Relationship Between Health, Habitat Use, and Migration of Juvenile Whooping Cranes in Relation to the Oil Sands Region of Northern Alberta

University of Saskatchewan (Dr. Soos)

Grant: \$32,300

Project Code: 030-00-90-259

Project Status: New; Completed

Juvenile whooping cranes (*Grus americana*) in the sole remaining migratory population must migrate through Alberta’s Oil Sands Region (OSR) which presents potential hazards. Migration is energetically demanding, so the health (disease, stress, body condition) of individuals when they depart for migration can play an important role in determining their subsequent movements, habitat use, and stopover decisions. This project aimed to determine how disease and stress interact with habitat use to determine health of juvenile whooping cranes while on their natal grounds in Wood Buffalo National Park (WBNP) in Alberta, and how this carries-over to shape their subsequent migratory movements and habitat use, with a specific focus on the OSR. Using the hormone corticosterone (CORT) from juvenile feathers as a measure of stress during early life, the researchers found that males tended to have higher levels of feather CORT than females, but levels did not vary for either sex across years. This data show that the juveniles that were sampled exhibited, as a group, low levels of variation in key markers of health, particularly measures of disease endpoints. Of particular note, exposure to West Nile virus was found in only three birds, and avian influenza virus was not detected in any bird. Moreover, no health variables were related to feather CORT or to heterophil-to-lymphocyte (H/L) ratios, which were unrelated to each other. When the researchers considered how measures of energy management and stress during early life related to subsequent habitat use in WBNP, they found that feather CORT was unrelated to home range size and habitat composition. By contrast, H/L ratio was positively correlated with the proportion of water in the home range and weakly negatively correlated with the percentage of wetland. These findings suggest that health on the natal grounds was not significant enough to carry-over to significantly influence migration or use of the Alberta OSR, though more research is needed to determine if use of the OSR is tied to health during the post-fledging period. In conclusion, these findings suggest that cranes that survive early life to make their first fall migration are overall healthy, making direct relationships between measures of health and subsequent migratory behaviours unlikely. Nevertheless, this study is the first to address how multiple health endpoints relate to habitat use and migration behaviour in this highly-endangered species. Moreover, the project’s data provide valuable baseline information on which future monitoring of this population can be based.

Deliverables/Results:

- The research findings suggest that cranes that survive early life to make their first fall migration are overall healthy, making direct relationships between measures of health (and particularly disease) and subsequent migratory behaviours unlikely. Measures of feather CORT and H/L ratios were collected early during the post-natal period, which may have been too temporally removed from migration to adequately reflect pre-migratory condition. These physiological measures may be better suited to understanding condition during early life. Nevertheless, this data is the first to connect multiple health endpoints to subsequent habitat use and migration behaviour in this highly-endangered species. Moreover, the data provide valuable baseline information on which continuing monitoring of this population will be based. The research teams ongoing studies of the Aransas-Wood Buffalo population are aimed at better understanding what ecological factors drive variation in

whooping crane health (specifically feather CORT and H/L ratios), and additional work has been planned to study how the ecophysiology of whooping cranes on wintering grounds in Texas may affect their return to breeding grounds in Alberta.

- Results of this project were presented at the 14th North American Crane Workshop in Chattanooga, Tennessee (January 11 – 13, 2017), and the oral presentation was well-received by the community of scientists and conservation biologists working on cranes. The lack of variation in health variables and overall negative (i.e., statistically non-significant) results make it challenging to publish this work as several stand-alone scientific papers, so a single paper combining all findings is currently being drafted, and should be published within 2017.

Experimental Management of Bighorn Sheep

University of Sherbrooke (Dr. Festa-Bianchet)

Grant: \$9,560

Project Code: 030-00-90-174

Project Status: Funded since 2014/15; Completed

Project Website: marco.recherche.usherbrooke.ca/marco.htm

The 44th year of research at Ram Mountain was very successful. The PI continued to monitor the attempt to effect a genetic and demographic rescue of the population, which had declined to low numbers and lost genetic variability. The nine sheep translocated from Cadomin in 2015 remained on Ram but none reproduced. The eight ewes were aged two – four years. In the past, none of the translocated ewes produced lambs before their third year on Ram Mountain. Survival, growth, and reproduction of the entire population (69 sheep in September) was monitored as well as the spread of genes from previous translocations from Cadomin. Except for one adult ram, all sheep were captured and measured. With nine yearlings and 16 lambs alive in September, the population appears poised for recovery, although genetic analyses suggest that inbreeding levels remain high. Reproduction by the translocated sheep next year should reduce inbreeding. Thirteen papers were published in the refereed literature, another one is submitted. The research team also increased their level of interaction with wildlife managers and stakeholders in Alberta, by meeting with the executive of the Alberta Chapter of the Wild Sheep Society and contributing to the ongoing discussion about bighorn sheep management through popular articles, a blogpost, media interviews, and presentations at scientific meetings.

Deliverables/Results:

- This is a long-term program, so there are few "main" results in any particular year, but the research team was pleased to see the apparent success of the most recent transplant. All sheep stayed on the mountain and hopefully next year some will produce lambs. The population will be on its way to recovery if adult survival remains at "normal" levels for a couple of years. Survival over the last winter was normal, with nine of 14 lambs surviving. Surprisingly, two lambs in 2017 were born extremely late, one in mid-July and the other in late-August. There were six female and ten male lambs in September 2016; therefore, the number of rams in the population may now begin to recover, depending on overwinter survival.
- In addition to the scientific publications listed below, a popular article was published in *Alberta Outdoorsman* ("Managing bighorn sheep using data versus opinions," April issue, by M. Festa-Bianchet). The research team has been very engaged in the ongoing discussions about sheep management in Alberta. Although their suggestions for changes in regulations were widely supported by provincial biologists responsible for bighorn sheep, no changes were made to bighorn sheep hunting regulations in 2017. This research clearly indicates that the current hunting regulations select for small-horned rams. The research team will continue to present their scientific case for an evolutionarily sustainable bighorn sheep management in Alberta. Marco Festa-Bianchet met with the executive of the Alberta chapter of the Wild Sheep Society in June 2016. This research is a major contributor of scientific data for the new Management Plan for bighorn sheep in Alberta, which cites 37 publications from the Ram Mountain study and another 15 from their other research programs in Alberta, at Sheep River and Caw Ridge.
- Here is a list of publications using data from the Ram Mountain study since 2016. Names underlined are graduate students and postdocs:
 - Pigeon, G., M. Festa-Bianchet and F. Pelletier. Long-term fitness consequences of early-life environment in a long-lived ungulate. *Proceedings of the Royal Society B*, in press.
 - Schindler, S., M. Festa-Bianchet, J. T. Hogg and F. Pelletier. Hunting, age structure, and horn size distribution in bighorn sheep. *Journal of Wildlife Management*, in press.
 - Douhard, M., M. Festa-Bianchet, S. Guillemette, F. Pelletier. Effects of weather and climate on horn growth in male bighorn sheep. *Oikos*, in press.
 - Janeiro, M.J., M. Festa-Bianchet, F. Pelletier, D.W. Coltman and M.B. Morissey. 2017. Towards robust evolutionary inferences with Integral Projection Models. *Journal of Evolutionary Biology*, 30: 270-288.
 - Festa-Bianchet, M., M. Douhard, J.M. Gaillard and F. Pelletier. Successes and challenges of long-term field studies of marked ungulates. *Journal of Mammalogy*, in press.
 - Kuparinen, A. and M. Festa-Bianchet. 2017. Harvest-induced evolution: insights from aquatic and terrestrial systems. *Philosophical Transactions of the Royal Society B*, 372: 20160036.
 - Festa-Bianchet, M. 2017. When does selective hunting select, how can we tell and what should we do about it? *Mammal Review*, 47: 76-81.
 - Hamel, S., J.-M. Gaillard, N.G. Yoccoz, S. Albon, S.D. Côté, J. M. Craine, M. Festa-Bianchet, M. Garel, P. Lee, C. Moss, D.H. Nussey, F. Pelletier, A. Stien, T. Tveraa. 2016. Cohort variation in individual body mass dissipates with age in large herbivores. *Ecological Monographs*, 86: 517-543.
 - Douhard, M., M. Festa-Bianchet and F. Pelletier. 2016. Maternal condition and previous reproduction interact to affect offspring sex in a wild mammal. *Biology Letters*, 12: 20160510.
 - Martin, A.M., M. Festa-Bianchet, D. Coltman, and F. Pelletier. 2016. Demographic drivers of age-dependent fluctuating sexual selection. *Journal of Evolutionary Biology*, 29: 1437-1446.
 - Pigeon, G., M. Festa-Bianchet, D.W. Coltman and F. Pelletier. 2016. Intense selective hunting leads to artificial evolution in horn size. *Evolutionary Applications*, 9: 521-530.
 - Douhard, M., M. Festa-Bianchet, D.W. Coltman and F. Pelletier. 2016. Paternal reproductive success drives sex allocation in a wild mammal. *Evolution*, 70: 358-368.
 - Vander Wal, E., A. Gagné-Delorme, M. Festa-Bianchet and F. Pelletier. 2016. Dyadic associations and individual sociality in bighorn ewes. *Behavioral Ecology*, 27: 560-566.
- This paper is submitted and undergoing revisions:
 - Pigeon, G., T.H.G. Ezard, M. Festa-Bianchet, D.W. Coltman and F. Pelletier. Fluctuating importance of evolutionary change in body mass on bighorn sheep population dynamics. *To Ecology*, August 2016.

APPENDIX

Projects in Relation to Grants Funding Priorities 2016/17

CCEG Funding Priorities

FUNDING PRIORITY #1: 8 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 & Game Association; Increasing Habitat for Species at Risk in Alberta's Grassland Region through Adaptive Management, Habitat Enhancement, and Outreach (Operation Grassland Community); \$35,800

Lesser Slave Lake Bird Observatory; Avian Monitoring and Education Programs at Lesser Slave Lake; \$21,500

MD of Bonnyville; Crane Lake Riparian Restoration and Preservation Program; \$5,791

Northern Lights Fly Fishers/TUC Edmonton; Conserving and Restoring Arctic Grayling in the Upper Pembina River Watershed – Habitat Restoration Planning; \$10,450

Oldman Watershed Council; Engaging Recreationists in the Dutch Creek Restoration and Education Project; \$25,750

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

Waterton Biosphere Reserve Association; Building Wetland Stewardship and Improving Wetland Habitat in Waterton Biosphere Reserve; \$10,000

FUNDING PRIORITY #2: 35 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.).

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

Alberta Fish & Game Association; Increasing Habitat for Species at Risk in Alberta's Grassland Region through Adaptive Management, Habitat Enhancement, and Outreach (Operation Grassland Community); \$35,800

Alberta Fish & Game Association; North Raven Riparian Conservation Project; \$25,000

Alberta Fish & Game Association; Pronghorn Antelope Migration Corridor Enhancement; \$42,525

Beaverhill Bird Observatory; Public Engagement, Wildlife Conservation and Monitoring at Beaverhill Lake; \$19,550

Castle-Crown Wilderness Coalition; Education and Reclamation in the Castle; \$14,700

Friends of Elk Island Society; Beaver Hills Dark Sky Preserve Bat Nights; \$5,814

Glenbow Ranch Park Foundation; 2016 Vegetation Management at Glenbow Ranch Provincial Park; \$5,900

Glenbow Ranch Park Foundation; Environmental and Conservation Education at Glenbow Ranch Provincial Park; \$10,000

Highway Two Conservation; Alberta Bat Education and Habitat Protection: Establishment of the Cache Park Bat Reserve and the "Save a Barn, Save a Bat Program"; \$8,300

Hillcrest Fish and Game Protective Association; Coleman Fish & Game dam access upgrade; \$7,240

Lacombe Fish & Game Association; Len Thompson Fishing Pond Upgrades – Signage and Education Portion; \$2,707.92

Lesser Slave Watershed Council; Living on the Edge Awareness Campaign; \$5,115

MD of Bonnyville; Crane Lake Riparian Restoration and Preservation Program; \$5,791

Mountain View County; Riparian and Ecological Enhancement Program; \$20,000

Nature Alberta; Implementing Action to Protect Priority Bird Species in Alberta's IBAs; \$11,500

Nature Alberta; Living by Water; \$20,125

Nature Alberta; Nature Kids in a Backpack; \$31,000

Northern Lights Fly Fishers/TUC Edmonton; Conserving and Restoring Arctic Grayling in the Upper Pembina River Watershed – Habitat Restoration Planning; \$10,450

Northern Lights Fly Fishers/TUC Edmonton; Raven Riparian Fencing Project; \$29,085

Oldman Watershed Council; Engaging Recreationists in the Dutch Creek Restoration and Education Project; \$25,750

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

Partners in Habitat Development; Partners in Habitat Development; \$15,000

Pheasants Forever Calgary; 15th Annual PF Calgary/AHEIA Youth/Novice Hunt; \$6,000

Red Deer County; Conservation Partners (a.k.a. ALUS) 2016; \$40,000

Sustainability Resources Ltd; Watershed Resources: Riparian Restoration Program; \$4,940

Trout Unlimited Canada; Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project; \$28,012

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

Trout Unlimited Canada; Yellow Fish Road in a Box; \$40,000

Trout Unlimited Canada – Bow River Chapter; Bow River – Legacy Island Spawning Enhancement and Access Study; \$24,000

Trout Unlimited Canada – Bow River Chapter; Legacy Island Annual Maintenance; \$3,000

Waterton Biosphere Reserve Association; Building Wetland Stewardship and Improving Wetland Habitat in Waterton Biosphere Reserve; \$10,000

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

Willingdon and District Fish & Game Association; Willingdon Fish Pond and Park; \$1,900

Zone 3 Fish & Game, Abandoned Barbed Wire Hazard Elimination at Buffalo and Bigelow Pheasant Sites; \$4,450

Zone 4&5 Alberta Fish & Game; Narrow Lake Conservation Centre; \$25,380

FUNDING PRIORITY #3: 3 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 waterbodies).

Lacombe Fish & Game Association; Len Thompson Fishing Pond Upgrades – Signage and Education Portion; \$2,707.92

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

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

FUNDING PRIORITY #4: 9 CCEG PROJECTS

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

Glenbow Ranch Park Foundation; 2016 Vegetation Management at Glenbow Ranch Provincial Park; \$5,900

Lesser Slave Lake Bird Observatory; Avian Monitoring and Education Programs at Lesser Slave Lake; \$21,500

Nature Alberta; Living by Water; \$20,125

Nature Alberta; Nature Kids in a Backpack; \$31,000

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

Town of Okotoks; Storm Pond Goldfish Control and Public Education; \$10,000

Trout Unlimited Canada; Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project; \$28,012

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

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

FUNDING PRIORITY #5: 2 CCEG PROJECTS

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

Big Country Rod and Gun Club; Annual First Time Upland Bird Hunt; \$1,000

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

FUNDING PRIORITY #6: 41 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). Generate awareness of the hunting/angling/trapping opportunities available to the public.

Alberta Hunter Education Instructors' Association; 13th Annual OWL Day - "Outdoor Wildlife Learning"; \$3,000

Alberta Hunter Education Instructors' Association; 23rd Annual Outdoor Women's Program; \$25,000

Alberta Hunter Education Instructors' Association; AHEIA's National Archery in the Schools Program (NASP); \$40,000

Alberta Hunter Education Instructors' Association; AHEIA's Teachers' Workshop; \$3,000

Alberta Hunter Education Instructors' Association; Alford Lake Camp Expansion; \$3,000

Alberta Hunter Education Instructors' Association; Conservation Education for the Army Cadet League of Canada AB; \$3,000

Alberta Hunter Education Instructors' Association; Outdoor Bound Mentorship Program; \$12,000

Alberta Hunter Education Instructors' Association; Outdoor Youth Seminar; \$3,000

Alberta Hunter Education Instructors' Association; Provincial Hunting Day Initiatives; \$20,000

Alberta Hunter Education Instructors' Association; Youth Fishing Initiatives; \$3,000

Alberta Hunter Education Instructors' Association; Youth Hunter Education Camps (Weeks 1 – 4); \$48,000

Alberta Trappers Association; Youth Trapper Camp; \$8,225

Big Country Rod and Gun Club; Annual First Time Upland Bird Hunt; \$1,000

Calgary Fish & Game Association; Boat and Sportsmen's Show Trout Pond Gifts; \$1,185

CW Perry School; Fisher Education Program; \$5,095

Edmonton Valley Zoo; Edmonton Valley Zoo Fascination Station; \$2,914.46

Glenbow Ranch Park Foundation; Environmental and Conservation Education at Glenbow Ranch Provincial Park; \$10,000

H.A. Kostash School; H.A. Kostash Youth Mentorship Programs; \$15,000

Highway Two Conservation; Riparian Education Program; \$8,550

Inside Education; Wildlife Education Field Trips; \$10,250

Lacombe Fish & Game Association; Len Thompson Fishing Pond Upgrades – Signage and Education Portion; \$2,707.92

Lakeland Catholic School District No. 150 (Notre Dame High School); Enhancing Outdoor Education and Wildlife Pathway; \$5,000

Lamont Fish & Game Association; Archery/Youth Development Programs; \$6,845.49

Lesser Slave Lake Bird Observatory; Avian Monitoring and Education Programs at Lesser Slave Lake; \$21,500

Lesser Slave Watershed Council; Living on the Edge Awareness Campaign; \$5,115

Lethbridge Fish & Game; 6th Annual LFCA/ACA Youth Fishing Recruitment Day; \$10,800

Lethbridge Fish & Game; LFCA – Conservation Community and Education Program; \$18,000

Manning Jr & Sr Gun Club; Novice Pheasant Shoot; \$3,000

Milk River Watershed Council Canada; Promoting Youth Engagement Program within the MRWCC; \$10,000

Nature Alberta; Nature Kids in a Backpack; \$31,000

Northern Lights Fly Fishers/TUC Edmonton; Kids' Fly Tying; \$1,429

Pheasants Forever Calgary; 15th Annual PF Calgary/AHEIA Youth/Novice Hunt; \$6,000

Red Deer FGA; Alberta Youth Pheasant Program; \$8,550

Safari Club International Red Deer Chapter; Red Deer Kids Can Fish Event; \$2,900

Southern Alberta Bible Camp; Archery Program; \$2,500

Southern Alberta Bible Camp; Pelletry Program; \$1,500

Sustainability Resources Ltd; Watershed Resources: Riparian Restoration Program; \$4,940

Trout Unlimited Canada; Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project; \$28,012

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

Trout Unlimited Canada; Yellow Fish Road in a Box; \$40,000

Zone 4&5 Alberta Fish & Game; Narrow Lake Conservation Centre; \$25,380

FUNDING PRIORITY #7: 48 CCEG PROJECT

Projects related to outdoor conservation education.

Alberta Fish & Game Association; Increasing Habitat for Species at Risk in Alberta's Grassland Region through Adaptive Management, Habitat Enhancement, and Outreach (Operation Grassland Community); \$35,800

Alberta Hunter Education Instructors' Association; 13th Annual OWL Day – "Outdoor Wildlife Learning"; \$3,000

Alberta Hunter Education Instructors' Association; 23rd Annual Outdoor Women's Program; \$25,000

Alberta Hunter Education Instructors' Association; AHEIA's National Archery in the Schools Program (NASP); \$40,000

Alberta Hunter Education Instructors' Association; AHEIA's Teachers' Workshop; \$3,000

Alberta Hunter Education Instructors' Association; Alford Lake Camp Expansion; \$3,000

Alberta Hunter Education Instructors' Association; Conservation Education for the Army Cadet League of Canada AB; \$3,000

Alberta Hunter Education Instructors' Association; Outdoor Bound Mentorship Program; \$12,000

Alberta Hunter Education Instructors' Association; Outdoor Youth Seminar; \$3,000

Alberta Hunter Education Instructors' Association; Provincial Hunting Day Initiatives; \$20,000

Alberta Hunter Education Instructors' Association; Youth Fishing Initiatives; \$3,000

Alberta Hunter Education Instructors' Association; Youth Hunter Education Camps (Weeks 1 – 4); \$48,000

Alberta Invasive Species Council; PlayCleanGo Engaging Recreationists; \$20,000

Beaverhill Bird Observatory; Public Engagement, Wildlife Conservation, and Monitoring at Beaverhill Lake; \$19,550

Big Country Rod and Gun Club; Annual First Time Upland Bird Hunt; \$1,000

Calgary Fish & Game Association; Boat and Sportsmen's Show Trout Pond Gifts; \$1,185

Canadian Parks and Wilderness Society (CPAWS) Southern Alberta Chapter; Kids for Conservation: Getting youth outside to experience Alberta's wilderness; \$9,250

Castle-Crown Wilderness Coalition; Education and Reclamation in the Castle; \$14,700

Ducks Unlimited Canada; Wetland Discovery Days; \$20,000

Edmonton Valley Zoo; Edmonton Valley Zoo Fascination Station; \$2,914.46

Friends of Elk Island Society; Beaver Hills Dark Sky Preserve Bat Nights; \$5,814

Glenbow Ranch Park Foundation; Environmental and Conservation Education at Glenbow Ranch Provincial Park; \$10,000

H.A. Kostash School; H.A. Kostash Youth Mentorship Programs; \$15,000

Helen Schuler Nature Centre; "Extreme by Nature" Environmental Education for 11 – 15 Year Olds; \$3,000

Highway Two Conservation; Alberta Bat Education and Habitat Protection: Establishment of the Cache Park Bat Reserve and the "Save a Barn, Save a Bat Program"; \$8,300

Highway Two Conservation; Riparian Education Program; \$8,550

Inside Education; Wildlife Education Field Trips; \$10,250

Lacombe Fish & Game Association; Len Thompson Fishing Pond Upgrades – Signage and Education Portion; \$2,707.92

Lamont Fish & Game Association; Archery/Youth Development Programs; \$6,845.49

Lesser Slave Lake Bird Observatory; Avian Monitoring and Education Programs at Lesser Slave Lake; \$21,500

Milk River Watershed Council Canada; Promoting Youth Engagement Program within the MRWCC; \$10,000

Nature Alberta; Implementing Action to Protect Priority Bird Species in Alberta's IBAs; \$11,500

Nature Alberta; Living by Water; \$20,125

Nature Alberta; Nature Kids in a Backpack; \$31,000

Northern Lights Fly Fishers/TUC Edmonton; Conserving and Restoring Arctic Grayling in the Upper Pembina River Watershed – Habitat Restoration Planning; \$10,450

Northern Lights Fly Fishers/TUC Edmonton Chapter; Kids' Fly Tying; \$1,429

Onoway & District Fish & Game Association; Bluebird/Bat House Project; \$800

Parkland County; County Lands Shoreline Naturalization Project; \$12,500

Red Deer FGA; Alberta Youth Pheasant Program; \$8,550

Safe Drinking Water Foundation; Operation Water Drop, Operation Water Pollution, and Operation Water Biology Kits to be Used by Students in Alberta as Part of Field Trips/Outdoor Education; \$1,275

SARDA; SARDA Summer Field School: Retention of wetlands on croplands; \$4,200

Sustainability Resources Ltd; Watershed Resources: Riparian Restoration Program; \$4,940

Town of Okotoks; Storm Pond Goldfish Control and Public Education; \$10,000

Trout Unlimited Canada; Evaluation of Prairie Creek Culvert Retrofit and Riparian Enhancement and Education Project; \$28,012

Trout Unlimited Canada; Southern Alberta Riparian Improvement and Awareness Project; \$23,140

Trout Unlimited Canada; Yellow Fish Road in a Box; \$40,000

Waterton Biosphere Reserve Association; Building Wetland Stewardship and Improving Wetland Habitat in Waterton Biosphere Reserve; \$10,000

Zone 4&5 Alberta Fish & Game; Narrow Lake Conservation Centre; \$25,380

ACA Research Grants Funding Priorities**FUNDING PRIORITY #1: 3 RESEARCH PROJECTS**

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

fRI Research, Larsen; Linkages Between Habitat, Ungulates, and the Habitat Use and Performance of Grizzly Bears in West-Central Alberta; \$16,500

fRI Research, MacNearney; Can Forestry and Silviculture Practices Help Increase Caribou Functional Habitat in West-Central Alberta?; \$25,000

University of Saskatchewan, Soos; Relationship Between Health, Habitat Use, and Migration of Juvenile Whooping Cranes in Relation to the Oil Sands Region of Northern Alberta; \$32,300

FUNDING PRIORITY #2: 4 RESEARCH PROJECTS

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

The Friends of Elk Island Society, Roy; Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

Trout Unlimited Canada, Peterson; Using Citizen Science to Understand Didymo; \$10,577

University of Alberta, Macdonald; Tools to Guide Management of Invasive Species in Grassland Ecosystems; \$19,820

University of Alberta, Poesch; The Effects of Introduced Fishes on Potential Aquatic Insect Prey Subsidies to Alpine Birds; \$20,000

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/eDNA samples.

The Friends of Elk Island Society, Roy; Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

The King's University, Janzen; Enhanced Camera Trap Image Processing Program; \$9,700

FUNDING PRIORITY #4: 0 RESEARCH PROJECTS

Evaluate the effect of pesticides or herbicides on wildlife species' food availability and/or quality in agricultural landscapes.

FUNDING PRIORITY #5: 2 RESEARCH PROJECTS

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

The Friends of Elk Island Society, Roy; Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

University of Alberta, Merrill; Persistence of the Ya Ha Tinda Elk Population: The role of calf survival; \$34,197

FUNDING PRIORITY #6: 3 RESEARCH PROJECTS

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

Trout Unlimited Canada, Peterson; Using Citizen Science to Understand Didymo; \$10,577

University of Alberta, Vinebrooke; Bioremediation of Eutrophic Lakes through Fisheries Management in Alberta; \$38,500

University of Saskatchewan, Soos; Relationship Between Health, Habitat Use, and Migration of Juvenile Whooping Cranes in Relation to the Oil Sands Region of Northern Alberta; \$32,300

FUNDING PRIORITY #7: 4 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.).

The Friends of Elk Island Society, Roy; Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

University of Alberta, Boyce; Black Bear Abundance, Human – Wildlife Conflict, and Interactions with Grizzly Bears on a Multi-Use Landscape; \$11,300

University of Alberta, Vinebrooke; Bioremediation of Eutrophic Lakes through Fisheries Management in Alberta; \$38,500

University of Sherbrooke, Festa-Bianchet; Experimental Management of Bighorn Sheep; \$9,560

FUNDING PRIORITY #8: 0 RESEARCH PROJECTS

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

FUNDING PRIORITY #9: 0 RESEARCH PROJECTS

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.

FUNDING PRIORITY # 11: 1 RESEARCH PROJECT

Evaluate approaches for improving the abundance of pollinators in agricultural landscapes.

University of Calgary; Wild Pollinator Conservation and Restoration in Southern Alberta Croplands II: Wetlands and landscape heterogeneity; \$23,800

FUNDING PRIORITY #12: 4 RESEARCH PROJECTS

Work towards clarifying status of current data deficient species.

The Friends of Elk Island Society, Roy; Estimating Known Ungulate Populations Using Trail Cameras in Elk Island National Park; \$18,000

Trout Unlimited Canada, Peterson; Using Citizen Science to Understand Didymo; \$10,577

University of Alberta, Boyce; Black Bear Abundance, Human – Wildlife Conflict, and Interactions with Grizzly Bears on a Multi-Use Landscape; \$11,300

University of Alberta, Poesch; The Effects of Introduced Fishes on Potential Aquatic Insect Prey Subsidies to Alpine Birds; \$20,000

**BACKGROUND DOCUMENT
BY DRS BOYCE AND POESCH: 4 RESEARCH PROJECTS**

Boyce, M and M. Poesch, Research needs for fisheries and wildlife in Alberta. University of Alberta. 35pp.

fRI Research, Larsen; Linkages Between Habitat, Ungulates, and the Habitat Use and Performance of Grizzly Bears in West-Central Alberta; \$16,500

fRI Research, MacNearney; Can Forestry and Silviculture Practices Help Increase Caribou Functional Habitat in West-Central Alberta?; \$25,000

St. Mary's University, Lovell; Vocal, Morphological, Molecular, and Ecological Interactions Between White-Crowned Sparrow (*Zonotrichia leucophrys*) Subspecies in Secondary Contact; \$22,580

University of Alberta, Macdonald; Tools to Guide Management of Invasive Species in Grassland Ecosystems; \$19,820

**NONE OF THE FUNDING PRIORITIES:
1 PROJECT (0 CCEG; 1 RESEARCH)**

St. Mary's University, Lovell; Vocal, Morphological, Molecular, and Ecological Interactions Between White-Crowned Sparrow (*Zonotrichia leucophrys*) Subspecies in Secondary Contact; \$22,580

Note: Projects can relate to multiple funding priorities.



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