Grant Eligible Conservation Fund 2011–2012

Annual Report of Activities & Synopsis of Funding Recipient Projects

For the Period of April 1, 2011 to March 31, 2012

Alberta Conservation Association

Conserving Alberta's Wild Side

Alberta Conservation Association

Conserving Alberta's Wild Side

www.ab-conservation.com

Our Vision

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

Our Mission

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

Alberta Conservation Association
101 -9 Chippewa Road
Sherwood Park, AB, T8A 6J7
www.ab-conservation.com

Amy MacKinven, Grant Eligible Conservation Fund
Project Administrator
Email: amy.mackinven@ab-conservation.com

TABLE OF CONTENTS

Front Cover Photo: Ferruginous hawk on nest.
Photo: Janet Ng, University of Alberta
From the project "Identifying critical habitat for ferruginous hawks in Alberta" (University of Alberta, Dr. Bayne; 030-00-90-178)

Grant Eligible Conservation Fund 2011–2012

Annual Report of Activities & Synopsis of Funding Recipient Projects

For the period of April 1, 2011 to March 31, 2012

Executive Summary

Funded by the province's hunters and anglers, ACA's Grant Eligible Conservation Fund (GECF) supports annually a variety of projects both small and large which benefit Alberta's wildlife and fish populations, as well as the habitat they depend on. Operational since 2002, this Fund has provided more than $10.2 million to 591 projects carried out in Alberta by the conservation community. Furthermore the funding provided by the GECF continues to leverage approximately six times its value in conservation dollars, estimated at approximately $63.8 million - money that has been directly used for conservation work in Alberta.

This popular grants program received 98 applications (66 to GECF Part A and 32 to Part B) requesting over $2 million in 2011-2012. A total of $842,898 was granted to 52 projects (32 GECF Part A projects and 20 GECF Part B projects). The aim of this report is to document the procedures for 2011-2012 and to provide an overview of activities and results of projects financially supported through the GECF in 2011-2012.

KEY PROGRAM HIGHLIGHTS for the GECF 2011-2012:

GECF Part A: Conservation Support and Enhancement received 66 funding requests requesting a total dollar value of just over $1.3 million. A total of $492,762 was granted to 32 projects: 12 small grants and 20 large grants.

GECF Part B: Research received 32 funding requests requesting a total dollar value of just over $736,000. A total of $350,136 was granted to 20 projects.

Project budgets ranged from $1,200 to $40,000.

1. Introduction

Alberta Conservation Association (ACA) believes it is our responsibility to join and support the collective effort to conserve, protect and enhance Alberta's biological natural resources. One of the ways in which ACA does this is to make grants to other members of the conservation community. The projects supported by the Grant Eligible Conservation Fund (GECF) are intended to enhance and supplement ACA activities, and aid in the delivery

of ACA's Vision, Mission and Strategic Business Plan. ACA has been awarding conservation grants since 1997, with the GECF process starting in 2002-2003. The GECF has granted over $10.2 million dollars since 2002-2003 to 591 conservation projects implemented in Alberta; these projects have leveraged an estimated $58.6 million in conservation work across the province. For 2011-12 a total of $500,000 dollars were made available for the GECF Part A: Conservation Support and Enhancement and $350,000 for Part B: Research. After project selection, a total of $492,762 was granted to 32 Part A: Conservation Support and Enhancement projects and $350,136 was granted to 20 Part B: Research projects. This document provides an overview of GECF activities for the 2011-2012 funding cycle and a brief synopsis for each of the funded projects carried out between April 1, 2011 and March 31, 2012.

2. The Funding Cycle

The funding priorities, guidelines and application forms were made available to the public September 20, 2010 via the ACA website, by email to existing contacts and by environmental list servers. Details of the 2011-2012 funding cycle are in the table below:

2011-2012 FUNDING CYCLE DATES

Posting of the Guidelines and Application Forms on ACA's website	September 20, 2010
Window to receive completed GECF Part B applications	November 1, 2010 - December 1, 2010
Window to receive completed GECF Part A applications	January 1-31, 2011
GECF Part B adjudication meeting	February 13, 2011
GECF Part A adjudication meeting	March 10, 2011
ACA Board approval and notification of applicants as to funding status	End of March 2011
Cooperative Project Agreements signed, initial payments made, and project work begins	April 1, 2011
Interim reports due & second payments made (if required)	September 1, 2011
Final report due	March 15, 2012
Projects end & final payments made (if required)	March 31, 2012

3. Funding Eligibility

The GECF supports a wide variety of applicants and project types. Anyone with a suitable project working in Alberta can apply to the GECF for funding, with the exception of ACA staff and ASRD staff. Certain project types and budget items are not covered by the GECF, for example land acquisition, emergency funding or over-head costs. Since fiscal year 2009–10, funding priorities have been used by the GECF to guide applicants in drafting their applications. A new funding priority was added in 2011-12, taking the list of funding priorities to 13 (see Section 4: Major Funding Priorities GECF 2011-12). The GECF does accept applications that do not relate to these suggested areas, however, projects that address one or more of these priority areas have a better chance of being funded than those that do not. The eligibility criteria and funding priorities can be found in full in the document "Project Submission Guidelines for Funding 2011-2012" (this document is available from the GECF Project Administrator).

The GECF Part A: Conservation Support and Enhancement offers small grants for projects with budgets of $3,000 and under and large grants for projects with budgets over $3,000. The small grants have a simplified application form; although the eligibility criteria and funding guidelines are the same for both small and large grants.

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

4. Major Funding Priorities GECF 2011 – 2012

This text is taken directly from Section C of the *Project Submission Guidelines for Funding 2011 – 2012*.

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

1. Habitat enhancement activities specifically listed on provincial recovery plans for Alberta's endangered species (to be done in cooperation with recovery teams).
2. Site specific enhancements of habitat, structures and facilities aimed at increasing recreational angling or hunting opportunities, improving habitat or increasing wildlife/fish productivity on the site (i.e. planting/seeding vegetation, development of new fisheries access sites, nest box initiatives, food plot trials and cover plot trials, spawning bed enhancement, culvert removals, etc.).
3. Urban fisheries development, including : initial evaluation of water quality aspects of existing ponds to determine their suitability for fish stocking; purchase of equipment required to ensure suitable water quality for fish stocking (e.g. aeration equipment); fish stocking in public ponds; promotion of an urban fishery (including natural water bodies).

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

5. Proposal Review Process

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

GECF Part A: Conservation Support and Enhancement Review Process:

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

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

A: Top proposals; recommend funding in whole or in part.

B: Proposal contains merit, recommend funding in whole or in part if funds available.

C: Do not recommend funding.

The proposal adjudication meeting was held on March 10th, 2011 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 2011 Board Meeting.

GECF Part B: Research Review Process:

The application deadline for GECF Part B: Research was earlier than that for the GECF Part A to allow for a more rigorous academic review procedure; the same procedure tried and tested for many years by the ACA Grants in Biodiversity Program. All applications were sent out for review by experts in the subject of the research application. An attempt was made to get at least two reviews per application. The adjudication committee consisted of a representative from each of Alberta's three largest universities (University of Alberta, University of Calgary and University of Lethbridge), ACA's Wildlife Program Manager, ACA's Fisheries Program Manager and ACA's Board of Directors Academic Representative. Two adjudicators were assigned to review (using the application and academic reviews) and rank application using the three-tiered ranking system. Funding recommendations were then made after the ranking process. The GECF Part B: Research adjudication meeting was held on February 13th, 2011 at the University of Alberta.

6. Funding Allocations

For the 2011-2012 funding cycle a total of $850,000 was made available for project funding via the GECF; $500,000 for GECF Part A: Conservation support and enhancement and $350,000 for GECF Part B: Research. Of the 66 applications requesting a total of $1.35 million to GECF Part A: Conservation Support and Enhancement, 32 were funded (a 48% success rate for applications receiving full or partial funding). Of the 66 applications to GECF Part A, 15 were small grant applications (requests of $3,000 or under). 12 of the 15 small grant applications were awarded (a 80% success rate), whilst 20 of the 51 large grants (a 39% success rate). Of the 32 GECF Part A projects funded in 2011-12, 19 (59%) had been funded in previous years and 13 were new to the GECF.

GECF Part B: Research received 32 applications requesting a total of $736,281 for the 2011-12 competition, of these 20 were funded (a success rate of 63% for applications receiving full or partial funding). Six of the funded research projects had been funded in previous years and the other 14 were new to the GECF.

One of the approved GECF Part A projects did not use the grant money allocated (Red Deer Fish & Game Assoc.; Radomske's Pond, $3,000.00), as the GECF funding was no longer required to complete the project. Several projects were granted extensions due to unforeseen circumstances.

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

7. Synopsis of Approved Projects for 2011 – 2012

A summary description of each of the 52 approved projects containing the project's objectives, activities and deliverables can be found in Part II of this report. The list below is in alphabetical order by organization for GECF Part A: Conservation Support and Enhancement and Part B: Research.

GECF Part A: Conservation Support and Enhancement

Small grants $3,000 and under

Beaverhill Bird Observatory, Bat monitoring and appreciation in central Alberta, $3,000.00

Calgary Bird Banding Society, Cypress Hills migratory and breeding landbird monitoring, $3,000.00

Camrose Wildlife and Stewardship Society, Camrose purple martin festival, $3,000.00

Cows and Fish (Alberta Riparian Habitat Management Society), Southern Alberta Grazing School for Women - bringing habitat and fisheries stewardship to livestock producers, $3,000.00

Friends of Fish Creek Provincial Park, Watershed stewardship project: Amphibian monitoring and awareness program in Fish Creek Provincial Park, $1,500.00

Friends of Fish Creek Provincial Park, Watershed stewardship project: Invasive species strategy in Fish Creek Provincial Park, $1,500.00

Lac La Biche County, Lac La Biche wetland inventory and classification plan, $1,500.00

Lac La Biche County, Lac La Biche watershed project, $3,000.00

Nose Creek Watershed Partnership/ Trout Unlimited Canada, Nose Creek rehabilitation project, $3,000.00

Red Deer Fish and Game Association, Radomske's Pond, $3,000.00 (*grant not used*)

Stony Plain Fish and Game Association, Bird Nesting Box Program, $1,200.00

University of Alberta Student Chapter of The Wildlife Society, Urban deer project, $2,000.00

Weaselhead/Glenmore Park Preservation Society, Weaselhead Invasive Plant Program, $3,000.00

Large Grants (over $3,000)

Alberta Fish and Game Association, Pigeon Lake properties habitat protection, $10,940.00

Alberta Fish and Game Association, Pronghorn antelope migration corridor enhancement, $37,100.00

Alberta Fish and Game Association, Operation Grassland Community habitat enhancement projects, $40,000.00

Ann & Sandy Cross Conservation Area, Wildlife friendly fencing project, $10,000.00

Beaverhill Bird Observatory, Beaverhill Lake, stewardship and monitoring, $16,950.00

Cows and Fish (Alberta Riparian Habitat Management Society), Westslope cutthroat trout riparian habitat improvement action plans, $24,000.00

Crowsnest Conservation Society, Maintaining and restoring Crowsnest River riparian areas, $30,000.00

Delta Waterfowl Foundation, ALUS demonstration project in the County of Vermilion River, $32,500.00

Ghost Watershed Alliance Society, Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost watershed, $35,880.00

Lesser Slave Lake Bird Observatory, Avian monitoring and stewardship at Lesser Slave Lake, $23,500.00

Mountain View County, Riparian area management improvements, $20,000.00

Nature Alberta, Public and volunteer engagement with Alberta's Important Bird Areas, $25,000.00

Nature Alberta, Riparian water quality improvement project, $33,000.00

Northern Alberta Institute of Technology (NAIT), Sturgeon River watershed habitat enhancement study, $24,192.00

Partners in Habitat Development, Partners in Habitat Development, $15,000.00

Red Deer County, Off the Creek Program 2011, $30,000.00

Trout Unlimited Canada, East Slopes Creek Conservation Initiative, $20,000.00

West Central Forage Association, Paddle River enhancement project - Phase II, $13,000.00

Willmore Wilderness Foundation, Willmore Wilderness Park Stewardship & Youth Mentoring Initiative, $20,000.00

GECF Part B: Research

Alberta Innovates - Technology Futures, Northern leopard frog overwintering habitat - identifying suitable hibernation sites, $15,000.00

Calgary Zoo, Using metapopulation modeling to insure the effective conservation of northern leopard frogs, $21,000.00

Keyano College, Impacts of oil sands mining on amphibian health in the boreal forest: Are infectious disease dynamics and malformation rates correlated with oil sands mining activities? $19,000.00

Laval University, Population dynamics of mountain goats in Alberta, $9,000.00

University of Alberta, Ecological effects of sport fish stocking and aeration in Boreal Foothill lakes (the FIESTA project), $14,980.00

University of Alberta, Development of a cost-effective tool for monitoring grizzly bear population size and trend in support of their recovery and management, $35,000.00

University of Alberta, Effects of hunting pressure and recreational access on behaviour of elk in SW Alberta, $21,500.00

University of Alberta, Identifying critical habitat for ferruginous hawks in Alberta, $24,640.00

University of Alberta, Examining trumpeter swan productivity and population in Alberta; survey methods and swan response to disturbance, $20,700.00

University of Alberta, Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services, $23,000.00

University of Alberta, Eco-evolutionary dynamics of phenology in resident mammals, $10,000.00

University of Alberta, Beaver-created wetlands and biodiversity, $6,250.00

University of Alberta, Using wetland-dependent wildlife to monitor climate and landscape change, $6,250.00

University of Calgary, Assessing pre-historic distribution, abundance and genetic diversity of elk (*Cervus elaphus*) in Alberta through archaeological and ancient DNA analysis, $19,060.00

University of Calgary, Assessment of the distribution and hybridization of white-tailed and mule deer in relation to forest fragmentation using genetic markers, $14,296.00

University of Calgary, Novel methods to evaluate exposure to, and effects of oil and gas emissions on wild birds, $10,000.00

University of Lethbridge, Examining resiliency of bull trout populations to brook trout invasiveness, $20,000.00

University of Regina/ Canadian Wildlife Service, The effects of oil and gas development on the reproductive success and density of grassland songbirds, $23,000.00

University of Saskatchewan/ Environment Canada, Identifying risks, impacts, origins and movement patterns of infectious pathogens in blue-winged teal (*Anas discors*) in the Canadian Prairies, $27,960.00

University of Sherbrooke, Experimental management of bighorn sheep, $9,500.00

8. GECF project contribution to the funding priorities

In total, 52 projects were approved for funding in 2011-2012: 32 Part A: Conservation support and enhancement projects and 20 Part B: Research projects. Again this year funding priorities were set by ACA staff and approved by the ACA Board of Directors. All projects selected were to support ACA with meeting its mission of conserving, protecting and enhancing fish, wildlife and habitat for all Albertans to enjoy, value and use; and the funding priorities were used to further guide and direct applicants by providing priority areas of specific interest to ACA. Proposals did not have to relate to the funding priorities, but applications that address one or more of the funding priorities fare better in the project selection procedure. Whether or not a project relates to a funding priority is to some degree subjective. Some projects clearly addressed one or more of the funding priorities, whilst others only indirectly related to a funding priority. Applicants were asked to specify how their projects related to ACA's mission and funding priorities and this information was used to determine which of the selected projects for 2011-2012 contributed to ACA's funding priorities (see Table 1). Five (one GECF Part A projects and four GECF Part B projects) of the 52 projects did not address any of the funding priorities. For a complete overview of project contribution to the ACA Funding Priorities 2011-2012, see Appendix A.

TABLE 1: GECF PROJECTS IN RELATION TO ACA FUNDING PRIORITIES SINCE THE FUNDING PRIORITIES WERE INTRODUCED

Funding Priority	2011-2012 # of Projects/total	2010-2011 # of Projects/total	2009-2010 # of Projects/total
#1 Habitat enhancement provincial recovery plans for Alberta's endangered species	10 / 52	10 / 47	13 / 68
#2 Site specific enhancements of habitat	26 / 52	25 / 47	26 / 68
#3 Urban fisheries development	4 / 52	4 / 47	5 / 68
#4 Stewardship Initiatives	28 / 52	24 / 47	25 / 68
#5 Impacts of non-native species on persistence of native species	10 / 52	11 / 47	12 / 68
#6 Matching sportsmen with landowners	0 / 52	0 / 47	1 / 68
#7 Develop and validate inventory tools…ungulates	3 / 52	1 / 47	n/a
#8 Evaluate the effect of pesticides or herbicides on upland game birds	0 / 52	0 / 47	n/a
#9 Evaluate the effect of recreational access on wildlife & fish populations	5 / 52	3 / 47	n/a
#10 Investigation of methods for reducing the spread of wildlife or fish diseases	2 / 52	0 / 47	n/a
#11 Evaluate the impact of various harvest management regimes	5 / 52	1 / 47	n/a
#12 Evaluate the social demographics of hunting and angling	0 / 52	0 / 47	n/a
#13 Evaluate the effect of biological solutions of carbon sequestration on grasslands & treed lands	1 / 52	n/a	n/a
None	5 / 52	4 / 47	11 / 68

The most cited funding priorities are: #2 Site specific enhancement of habitat... and #4 Stewardship initiatives; these are both broad funding priorities under which many Part A and Part B projects fit. The next most cited funding priorities are: #1 Habitat enhancement provincial recovery plans for Alberta's endangered species and #5 Impacts of non-native species on persistence of native species. These two funding priorities are more specific than the first two. Three of the 13 funding priorities (#6, #8, and #12) were not addressed by funded projects, this also reflects the fact that no applications were sent in dealing with these funding priorities. Several funding priorities are better suited to research project, specifically funding priorities #7 - #13.

PART II: GECF Project Summaries

Grant Eligible Conservation Fund Part A: Conservation Support and Enhancement

Pigeon Lake properties habitat protection

Alberta Fish and Game Association (AFGA)

Grant: $10,940

Project Code: 015-00-90-147

Project Status: New; Completed

The conservation properties are located along Tide Creek on the northeast corner of Pigeon Lake. These properties have important spawning habitat for walleye, northern pike, and minnow species like spot-tailed shiners. AFGA worked closely with the ACA and ASRD to secure the lands for their habitat values and have enhanced spawning opportunities by building spawning beds within the creek and maintaining the waterway free of beaver dams and obstructions. Besides the fisheries' values, the properties also provide outstanding habitat for a variety of ungulates, including deer, moose and elk. There are mature stands of spruce and aspen and areas of black spruce bog to add to the overall diversity. The properties' boundaries were not well fenced enabling livestock to often invade them and thus disturbing the various habitats. During critical wintering and birthing/spawning periods during the year livestock has a negative impact on wildlife. In order to maximize the value of the habitats secured, a wildlife-friendly fence has been constructed to protect against this situation and old decrepit fencing has been removed. The fence also serves as a demonstration site for other landowners in the area.

Deliverables/Results:

The fencing has been completed, however due to weather conditions AFGA were unable to use volunteers as planned and ended up hiring a local farmer as a contractor to remove the old fence and install the new one. The fence is in place and cattle have been kept from disturbing wildlife.

Minimum of two articles in the Outdoor Edge and Alberta Outdoorsmen.

Pronghorn antelope migration corridor enhancement

Alberta Fish and Game Association (AFGA)

Grant: $37,100

Project Code: 030-00-90-160

Project Status: Funded since 2009-10; Completed

Pronghorn antelope reach their northern-most distribution in Alberta and are known to conduct annual migrations averaging hundreds of kilometers often passing through narrow passages en-route to key seasonal ranges. Migratory corridors are critically important in ensuring pronghorn remain at sustainable populations. Several documented accounts describe mass mortalities because of barriers to movement. Fences in particular are known to create great difficulties for pronghorn as they are unwilling to jump over them. As lower strands are generally 12"- 14" above ground, crawling under often results in serious scrapes that can significantly impact the antelope's health. The migration corridor enhancement will remedy this situation by replacing lower barbed wire strands with smooth wire and at the same time raising them to a height easily navigable by the pronghorn. The project was delayed somewhat due to inordinately wet spring conditions on the land, however all goals were met. A total of 33 miles of smooth wire was installed, 60.5 miles of barbed wire manipulated to be more wildlife friendly, and 8.5 miles of page wire was removed.

Deliverables/Results:

The project successfully recruited landowners to participate, and also recruited and trained volunteers to manipulate fences. Three news releases outlining the project and identifying all partners were produced.

The following pronghorn fencing projects were carried out:

Jarrod Roth, May 23-24, 2011

Property owner installed five miles of new fence with bottom wire double strand smooth set at 18". Twenty-two rolls of smooth wire supplied.

Pearson Ranching, July 21-24, 2011

AFGA added a fourth smooth wire to bottom of five miles of three-strand barbed wire fence in prime pronghorn migration corridor as identified by ACA. Bottom wire was set at 18" height to facilitate easier movement of pronghorn through fence. Three wires above were re-spaced at 24", 30" and 42" to facilitate easier crossing by deer and elk.15.5 miles of barbed wire was manipulated to wildlife friendly standards and .5 miles of barbed wire was removed.

Nyle Stromsmoe, June 24-30, 2011

Property owner installed three miles of new fence with bottom wire double strand smooth set at 18". Thirteen rolls of smooth wire supplied.

Onefour Research Station, August 11-14, 2011

Seven miles of page wire was removed and replaced with four strand wire fence. Smooth bottom wire was set at 18" height to facilitate easier movement of pronghorn through fence. Three wires above were re-spaced at 24", 30" and 42" to facilitate easier crossing by deer and elk. 21 miles of barbed wire was manipulated to wildlife friendly standards.

Bruce Cowie, October 3-13, 2011

Property owner installed five miles of new fence with bottom wire

Deer at wildlife-friendly fence by Ann & Sandy Cross Conservation Area

double strand smooth set at 18 inches. Twenty-two rolls of smooth wire supplied.

J-J Ranching, September 22-25, 2011

AFGA added fourth smooth wire to bottom of eight miles of three-strand barbed wire fence and removed (and rolled for recycling) 1.5 miles of page wire along old railway bed. Smooth bottom wire was set at 18" height to facilitate easier movement of pronghorn through fence. Three wires above were re-spaced at 24", 30" and 42" to facilitate easier crossing by deer and elk. 24 miles of barbed wire manipulated to wildlife friendly standards

Operation Grassland Community Habitat Enhancement Projects

Alberta Fish and Game Association (AFGA)

Grant: $40,000

Project Code: 030-00-90-127

Project Status: Funded since 1999; Completed

A grassroots habitat stewardship program, Operation Grassland Community (OGC) collaborates with stakeholders across Alberta's prairie region with the goal to develop, implement, evaluate, and adapt management actions to protect and enhance wildlife habitats, while supporting diverse socio-economic interests. Work carried out in 2011-2012 toward achieving this goal includes: landholder recruitment and relationship building, promotion of private land stewardship, development and implementation of habitat management plans (SARC plans), and on-the-ground habitat protection and enhancement initiatives. OGC endeavors to maximize effectiveness and efficiency of prairie conservation through partnership; OGC collaborates with the following groups: two provincial and two national recovery teams, management committee for the Sandstone Ranch, Prairie Conservation Forum, MULTISAR, Nature Conservancy of Canada, University of Alberta, Cows and Fish, Agricultural Research and Extension Council of Alberta, and its regional group in Hanna, Alberta - Chinook Applied Research Association, Watershed Planning and Advisory Councils (Milk, South Saskatchewan, Red Deer, Oldman, Bow, and Battle River Watersheds), Eastern Irrigation District, Land Stewardship Centre of Canada, Special Areas Board.

Deliverables/Results:

Five-year voluntary stewardship agreements (new: 12, securing more than 19,000 acres of grassland; renewed: 40).

Habitat enhancement projects (ten projects) including native re-seeding of cultivated lands (265 acres).

Five nesting and foraging habitat enhancement projects for the burrowing owl (other species benefitting: waterfowl, sharp-tailed grouse, and long-billed curlew, grassland ungulates).

Three nesting habitat enhancement projects for ferruginous hawk.

One wildlife-friendly riparian fencing project benefitting upland birds and ungulates.

On-going re-assessment and adaptation of habitat enhancement projects & management plans (30 assessments).

Completion of censuses: burrowing owl (21st year) and loggerhead shrike (eighth year): 182 burrowing owl census cards (65% participation) and 221 loggerhead shrike census cards (57% participation) were mailed early June 2011, also included was a new OGC Species-At-Risk Identification Guide to assist OGC members to reliably identify both census species. 63 pairs of burrowing owls were estimated for 2011, up from an estimated 45 pairs in 2010. 76 pairs of loggerhead shrikes were estimated in 2011, up from an estimated 62 pairs in 2010.

Public awareness and information exchange, including one-on-

one discussions with landholder members, production of annual newsletter, ten articles in rural newspapers and magazines, four presentations to targeted rural community groups, conservation groups, and industry representatives, attendance at two trade-shows, and distribution of print materials including fact sheets from OGC's Conservation Toolkit series (18 topics), bird books, and a new species-at-risk identification guide. OGC participated in community grazing schools and municipal shelterbelt workshops, continued their partnership with the Science Alberta Foundation through the 'Grassland Gatherings Science-in-a-Crate' educational program, and continued their involvement on Sandstone Ranch management committee.

Wildlife friendly fencing project

Ann & Sandy Cross Conservation Area (ASCCA)

Grant: $10,000

Project Code: 015-00-90-146

Project Status: New; Extended until July 31, 2012

The wildlife friendly fencing project enhances Pine Creek on the ASCCA, bringing the creek back to a healthy state and supplying an improved water source for wildlife. This project will also reduce wildlife fatalities and serious injuries and minimize the impact on the movement of wildlife, improving the habitat for wildlife. The ASCCA reintroduced winter grazing to protect Pine Creek and address the fire hazard around Belvedere House, which requires fencing to enclose structures currently on the land. These fences are being built according to wildlife-friendly fencing practice. Four miles of undesirable internal fencing at the ASCCA have been removed and the fencing materials for the wildlife friendly fences have been purchased. The fencing will be installed by the end of July 2012. The initial season of winter grazing resulted in 2,315 acres being grazed by 339 head of cattle, leading to 35% of the accumulated brush being harvested through grazing, thus significantly reducing the fire risk. After its installation, the impact of the wildlife friendly fencing will be monitored.

Deliverables/Results:

Four miles of undesirable internal fencing have been removed. Buildings, outhouses, shelters, benches, springs, and radio tower will be enclosed with wildlife friendly fences, and four miles of wildlife friendly fencing will be erected in the interior of the ASCCA by July 31st. 2012.

The impact of the wildlife-friendly fencing will be monitored and a report compiled by September 2012.

A partnership with the television show "Michael Short's Let's Go Outdoors" is being explored, in which a segment on wildlife friendly fencing would be covered.

Bat monitoring and appreciation in Central Alberta

Beaverhill Bird Observatory (BBO)

Grant: $3,000

Project Code: 030-00-90-190

Project Status: New; Completed

Reliable information on the population status and migratory behaviour of bats is absent across most of North America. COSEWIC listed the little brown bat and the northern long-eared bat as Endangered in 2012. The project goal was to set up a long-term monitoring station for bats at Beaverhill Lake. A monitoring station was set up in the fall which included using a bat detector and mist netting for bats. Five myotis bat detections were counted with a recorder. In addition, bats were observed using the area throughout the summer. One small brown bat was caught in the mist nets; however it escaped before it was captured. Habitat enhancement activity included building and putting up bat boxes in the Natural Area. The BBO did two public presentations on bats. The BBO will continue to monitor the bats during the breeding and migration season in 2012.

Deliverables/Results:

The BBO bat monitoring station was established and is ready to collect long term data on bat populations in the area.

Five bats were recorded using a bat detector but none were captured. Data about diversity and relative abundance and data file to ASRD (March 2012).

Ten bat boxes have been established and ready for monitoring in 2012.

A two-minute video will be posted on the BBO website www.beaverhillbirds.com (BBO is holding off posting until more footage acquired).

One article introducing the project appeared in the May 2011 Willet (Volume 24, Number 2) (http://www.beaverhillbirds.com/docs/willetv24n2.pdf).

Beaverhill Lake, stewardship and monitoring

Beaverhill Bird Observatory (BBO)

Grant: $16,950

Project Code: 030-00-90-124

Project Status: Funded since 2006-07; Completed

The goal of this project is to continue working as stewards of Beaverhill Lake Natural Area. The project objectives are to: 1) monitor the migrating and resident birds in the Beaverhill Lake Natural Area and the recovery of the wetland after fencing, 2) gravel the access road for visitors, 3) replace the kitchen facilities that are used by staff and for public events, 4) have two major on-site public events and three minor events, 5) give presentations about the Beaverhill Lake Natural Area, its important and the importance of birds, and 6) analyze 25 years of tree swallow nestbox data. Wetlands were surveyed throughout the spring and summer; they have recovered! Lister Lake is full and water flowed over the weir for the summer, waterbirds bred successfully (bittern, sora, waterfowl, and harriers). Spring migration monitoring completed, which included census, mist netting, daily observations. The summer Monitoring Avian Productivity and Survivorship (MAPS) program was completed at three monitoring sites, and 148 tree swallow boxes and 15 bluebird boxes were monitoring in cooperation with *Golondrinas de las Americas*. Fall migration and saw-whet owl monitoring was conducted (229 saw-whets and five long-eared owls captured). Many talks were given and several public events were held such as the Big Birding Breakfast and Steaks and Saw-whets. Gravel was purchased to complete the access road, which has just been graded. The public trails were cleared and two new map signs were printed and erected. With additional funding, the BBO secured all cupboards and counters, sink, wood were purchased and the kitchen has been renovated as planned.

Deliverables/Results:

Monitoring: Songbird migration monitoring began on May 2, 2011 and ran until June 9, 2011. Over the course of the spring banding period, a total of 412 birds of 40 different species were captured in 1884 net hours, yielding a total of 21.87 birds/100 net hours. The top five species captured during spring migration monitoring included: least flycatcher (117), yellow warbler (57), clay-coloured sparrow (49), house wren (26), and Swainson's thrush (22).

Summer MAPS program completed 100% of the 900 hours for all stations this year. Point counts were also conducted at nine locations within each of the MAPS stations.

Fall migration initiated August 1, 2011 and completed October 10, 2011; 2011 was the lowest ever fall migration, with only 701 birds captured, a capture rate of 19.1 birds/100 net hours.

Northern saw-whet owl fall migration monitoring began on September 10, 2011 and was completed November 7, 2011. A total of 53 nights were covered amounting to 1,114 net hours. 229 saw-whet owls were caught (capture rate of 20.6 owls/100 net hours).

Science Horizons funding was received to have BBO's head bander work through the winter on 25 year tree swallow dataset, data was compiled into one database and analysis and report completed.

Banding data file to Alberta SRD and nest cards to Prairie Nest record scheme.

Public outreach:

The BIG Birding Breakfast was held on June 4, 2011, 38 people attended.

Large numbers of visitors came out to Beaverhill throughout the fall to observe the banding, including homeschoolers, University of Alberta students, and other groups that came to see saw-whet banding.

Steaks and Saw-whets event was very successful, 54 people attended September 30 and 38 attended October 1, 2011.

The BBO also had a banding demonstration at the John Janzen Nature Center in September (free admission day) with almost 2,000 visitors.

Talks were given to: Olds Elementary school, Lethbridge Naturalists, CW Sears school (Tofield), Ministik school grade 3, Snow Goose chase event display (Tofield), JFW central Alberta event, and Weinlos school (Edmonton), and Birds of Christmas for Edmonton Nature Club (saw-whet owls).

Site Maintenance: Gravel was purchased for the access road and parking area has now been completed. All public trails cleared. The lab kitchen was improved.

Publications/Reports:

Priestley L., Beaverhill Bird Observatory 2011 Annual Report. January 2012

Bouchard, M. G.L. Holroyd and L., Priestley. Changes in tree swallow breeding biology at Beaverhill Lake, Alberta, 1984-2011. Draft report.

Cypress Hills migratory and breeding landbird monitoring

Calgary Bird Banding Society (CBBS)

Grant: $3,000

Project Code: 030-00-90-188

Project Status: New; Completed

In 2010 and 2011 the Calgary Bird Banding Society (CBBS) initiated a pilot project to test the viability of a migratory and breeding landbird monitoring station in the unique Cypress Hills of Alberta. During spring, fall and breeding studies, a total of 2,556 and 3,048 birds were banded in 2010 and 2011 respectively. Daily observations were performed concurrently throughout the migration seasons and close to 200 species of birds were detected. These numbers and exceptional diversity confirm that the area is ecologically significant for migrant stop-over, and that habitats in the Cypress Hills provide productive habitat for a large diversity of breeding bird species. The main objective is to facilitate the continuation of two main projects which are effective tools for documenting population status and trends, and habitat effectiveness. Following the guidelines set by the Canadian Migration Monitoring Network (CMMN), results will contribute to Canada's national framework for the Conservation of Species at Risk through reporting on the status of landbird species. Increases and declines of certain populations can be a reliable indicator of the health of not just particular species but also of their ecosystems. Monitoring Avian Productivity and Survivorship (MAPS) is a coordinated long-term program whose goal is to provide data on breeding landbird populations. The banding station will also provide environmental education opportunities for school groups and the public. Increasing the public's understanding and appreciation of wild birds and their habitats is essential to the conservation of our resources. Funds acquired in 2011 were used to purchase new mist-nets; an essential piece of equipment in monitoring landbird population efforts. Mist-nets are used to capture wild migratory birds which are safely removed from nets, banded, measured and released.

Deliverables/Results:

Spring migration monitoring at Cypress Hills Interprovincial Park (CHIP) started on May 1st, 2011 at the Elkwater Lake location and ran until June 12th, 2011 for a total of 36 mornings of coverage. Up to 12 nets contributed to 948 new birds banded of 58 species and forms. This is up from the spring of 2010 where 839 birds were banded of 49 species and forms.

Fall migration monitoring at CHIP was conducted from August 4th, 2011 to October 13th, 2011. Mist-netting occurred on 62 of a possible 67 days (93% coverage) for a total of 3745 net-hours. A total of 1544 new bands were placed on birds of 70 species.

Results so far are consistent with the presumption that the Cypress Hills are an important stopover location for migratory landbird species. Census was performed everyday during the programs, monitoring species that are not usually captured during mist-netting.

The three MAPS stations operated last year in the Cypress Hills ran again this year: the Rodeo Grounds, Old Baldy, and Spruce Coulee banded 105, 160, and 131 individuals respectively. Each site operated seven nets and was sampled during six sessions in the months of June, July and August. These numbers are exceptional for a breeding site and confirm that the Cypress Hills contain critical breeding habitat for many landbird species.

In cooperation with the CHIP, an instructional program on bird banding and on local birds in general has been created which caters to grade school children. Two elementary school, one University level and over sixty public demonstrations were conducted in 2011.

Report:

Attia, Y. and D. Collister, 2011. Cypress Hills Interprovincial Park Pilot Landbird Monitoring Project. 2011 Preliminary Progress Report. February 2012. This report will eventually be posted on the CBBS website: www.calgarybirdbandingsociety.org

Camrose Purple Martin Festival

Camrose Wildlife and Stewardship Society

Grant: $3,000

Project Code: 030-00-90-191

Project Status: New; Completed

Building on the success of its inaugural year in 2010, organizers executed the 2011 Camrose Purple Martin Festival (CPMF). The festival was a one-day public celebration of nature, birds, and greenspace, with a focus on purple martins. The CPMF involved a collaboration of city, non-governmental, education, and wildlife conservation organizations. The festival's mission was to provide a high profile, community-based nature tourism event to showcase the vision and work of the Camrose Wildlife and Stewardship Society, a greenspace network that enhances community values and quality of life for City of Camrose and area residents. The objectives were to: 1) encourage participation in nature-based activities, particularly community members, schoolchildren, and nature enthusiasts; 2) raise awareness and develop interest in wildlife conservation, particularly purple martins; and 3) enhance the purple martin nest box program and volunteer participation. The festival included a morning bird hike, bus tours, purple martin nest box demonstrations, children's activities, information booths, guest speakers, and a key note speaker. Project deliverables included 90 satisfied and educated festival participants, three additional nest boxes for the purple martin program, increased participation in the Purple Martin Landlord Program, positive public press, a list of potential participants in nature-based programming, and a revised planning manual for future Camrose Purple Martin Festivals.

Deliverables/Results:

The main results of the project were enhanced understanding and appreciation of nature, purple martins, and greenspace in the Camrose area by Camrose residents and visitors. The Society also learned key information about how the festival was viewed by visitors and how to plan for future festivals. A planning manual for future versions of the CPMF was produced and a list of people to contact regarding future stewardship and educational activities was completed.

The event attracted 90 people to the CPMF on June 5, 2011. Participants ranged from schoolchildren to senior citizens, and novices to expert naturalists. The uncertain weather affected attendance, as 130-150 were anticipated.

Camrose Wildlife and Stewardship Society hike leaders, field trip leaders, guest speakers, keynote speaker, children's activity leader, and booth hosts provide valuable information about natural history, purple martins, and greenspace in the Camrose area and beyond. Participation in future stewardship activities was encouraged.

Three new purple martin nesting structures were purchased and new purple martin landlord volunteers were recruited to manage each structure.

Three articles about purple martin conservation were published in local newspapers.

Southern Alberta Grazing School for Women - bringing habitat and fisheries stewardship to livestock producers

Cows and Fish (Alberta Riparian Habitat Management Society)

Grant: $3,000

Project Code: 020-00-90-165

Project Status: New; Completed

The eighth annual Southern Alberta Grazing School for Women was held at Chain Lakes Provincial Park and surrounding field sites July 27-28, 2011. The two day grazing school included presentations and outdoor field activities relating to native plant identification, range and riparian health, grazing strategies, how to set appropriate stocking rates and how to manage rangelands impacted by industrial developments. One of the outdoor hands-on opportunities was to better understand the link between fish and their habitat, using electrofishing, with support from ACA staff. Cows and Fish achieved their goal of providing valuable information and encouraging livestock producers to learn more about sustainable grazing management, since 98% of participants indicated their attendance was valuable and 90% responded that they would attend again. 100% of attendees with livestock and land said the school would influence their management practices—a very positive result, which indicates the grazing school met its objectives.

Deliverables/Results:

47 people participated at the school, including paid registrants (26 registrants plus five women producers), invited speakers and committee members.

A total of 22 evaluations were returned from the 26 registrants, four female agricultural speakers and one other female producer (three other speakers and 12 committee members/logistical helpers also attended but were not generally asked to fill out evaluations). 100% of all of those where it applied felt the school would influence their grazing practices, and likewise all 100% were going to incorporate practices they learned at the school.

Some of the most valuable topics, rated the most valuable by the most people, were: Grazing principles and practices (indoor); Ranching women personal perspectives (indoor); Rangeland health (indoor); Riparian health (outdoor); and Plant identification and range health (outdoor).

Summary articles promoting the event or reporting on the event – Starland County, MD Ranchland, and County of Warner provided newsletters/updates to their rate payers. Other articles may also have been done.

Westslope cutthroat trout riparian habitat improvement action plans

Cows and Fish (Alberta Riparian Habitat Management Society)

Grant: $24,000

Project Code: 020-00-90-167

Project Status: New; Completed

Westslope cutthroat trout are listed as threatened in Alberta, and currently, the joint Federal - Provincial Recovery Team for westslope cutthroat trout (WSCT) has completed a draft recovery plan. A combination of impacts has led to habitat degradation and loss and cumulative impacts have negatively impacted these fish and their habitat. Using their expertise in understanding riparian ecosystems health and experience working with a diversity of stakeholders and groups to address riparian issues, Cows and Fish completed 15 riparian health inventories to develop riparian stewardship recommended action plans and engage stakeholders to improve WSCT habitat. Overall, the riparian sites examined are quite healthy (10 of 15 scored over 80%), and most of the existing management (commonly, grazing) is resulting in healthy sites. Collaborating with an experts group, Cows and Fish developed and delivered a Stakeholder Workshop to share ideas, educate participants and encourage action. A diversity of land users are engaged in one-on-one meetings. Cows and Fish have received an overwhelmingly positive, proactive response and a keen interest by land users and conservation organisations to continue to work on this threatened fish and its habitat.

Deliverables/Results:

Priority areas for WSCT habitat were identified, discussed and agreed upon, by a collaboration of experts: Cows and Fish met with individuals from Fisheries and Oceans Canada and Fish and Wildlife Division, as well as gathered input from individuals that could not attend in person. This led to a selection of priority streams being identified. Fish and Wildlife then provided location information on WSCT sampling points which enabled Cows and Fish to select sites that were upstream of these locations. Considerable logistical and site use information was been provided by SRD's Rangeland Management staff.

A meeting and workshop was held January 17, 2012, with a small group to share results and plan. A Stakeholder Workshop was held February 29, 2012 (60 people attended). Cows and Fish have had numerous discussions, emails and follow up from a diversity of participants. The collaborative support from the experts group, particularly ASRD, Fisheries and Oceans, and Trout Unlimited Canada, has been very extensive and critical to the success of this work.

Develop site specific and overarching stewardship action plans based on riparian habitat issues and threats on priority reaches: Data collection and analysis are complete. All of 15 riparian health inventories to identify specific habitat issues and threats on the priority reaches have been completed. The reporting (plans) prepared for individual sites are complete using Habitat Stewardship Program funds. The overall riparian health report was completed by March 31, 2012.

The riparian health of 15 sites that comprise WSCT habitat has been examined, and the good news is that of the sites examined, riparian health is generally very good, with most sites rated as healthy. This was somewhat unexpected, but in retrospect, some of the obvious habitat and land use issues in these areas are not located in the riparian area. It also makes sense that the remaining populations would often have high quality riparian habitat, because that is an important factor enabling them to continue to exist in those areas.

A very positive aspect of the riparian health action stewardship plans and reports is that, because of the high level of riparian health, many of the sites do not need any notable changes in riparian management. With a few exceptions, the grazing management (the most common and formal land use approved through allotments) is generally resulting in healthy riparian areas. Other land uses (mostly recreation or roads) were present, but not as widespread within the riparian areas, although they are impacting health in some areas.

Cows and Fish were extremely pleased and somewhat surprised with the very positive responses received over the course of the year whenever this work is mentioned - people are extremely interested and supportive of this work. Similarly, the response to the Stakeholder Workshop in February was outstanding, and very positive.

At least three local articles about the workshop were written, including before and after the event, for local Nanton and Claresholm newspapers.

Maintaining and restoring Crowsnest River riparian areas

Crowsnest Conservation Society (CCS)

Grant: $30,000

Project Code: 020-00-90-168

Project Status: New; Completed

Native riparian habitat along Crowsnest River and its tributaries has become seriously compromised by increased weed infestation. The goal of this project is to develop a systematic, long-term program to restore and maintain riparian areas, which will improve water quality, trout habitat and adjacent riverine habitat for mammals and birds, and ensure the integrity of the Oldman River watershed. Effective weed control will be achieved through the identification of weed species, removal of prohibited noxious and noxious weeds and planting of native shrubs and grasses. Working with the Municipality of Crowsnest Pass, Crowsnest Conservation Society (CCS) has successfully completed the initial objectives of this project. A plant-monitoring database was developed to identify weed species and quantify prevalence. The Crowsnest River Riparian Restoration Action Plan was developed to guide weed extraction and replanting activities. Volunteer weed pulls were completed and educational workshops delivered. In addition, a comprehensive Crowsnest River Riparian Report 2011 has been written to provide baseline data and direction for future activities of the program. Funds received from ACA have been fundamental to the implementation of this project, including the purchase of equipment and native grass seed and shrubs. The funds also supported the hiring of three Riparian Restoration Technicians (Field Assistants) to work during the period from May to October 2011 (1424 man-hours). The Municipality of Crowsnest Pass Agricultural Fieldman, Kim Lutz, coordinated, trained and worked in the field with the Riparian Restoration Technicians during this period. This project has had a significant and important impact on the community by increasing awareness and providing weed identification education. Residents are now taking action to control their weeds and maintain healthy riparian areas. Due to this interest in water related issues, CCS is working towards the establishment of a Crowsnest Pass Watershed Group.

Deliverables/Results:

The first year of this project was completed successfully with significant positive results in the community. Much of the effort was spent on weed control, as the infestation was more widespread than previously identified. The following was completed:

Established, and permanently staked 32 random transect lines along Crowsnest River;

Spring and fall surveys completed along the transects to collect data for the plant-monitoring database;

Establish a plant-monitoring database completed June 2011;

Native trees and shrubs were planted in August, September and October and native grass seeded in September along Crowsnest River at 11 restoration sites. 146 native shrubs were planted in Blairmore along the Crowsnest River and Lyons Creek. Live staking was also completed along Crowsnest River and Lyons Creek with a total of 28 willow stakes transplanted. As well, 12.5 kg of native grass seed were seeded along Lyons Creek and the Crowsnest River;

A workshop was hosted on invasive species May 2011;

Four successful weed pulls held (101 volunteers, >150 bags of weeds, millions of seeds), noxious weeds extracted along Crowsnest River and the following tributaries: Drum Creek, Gold Creek and Lyons Creek (distance of 5.5 km);

Weed identification workshops completed prior to the weed pulls (Workshops at Drum Creek July 22 and 23, 2011, Workshop at Gold Creek July 26, 2011; Workshop at Crowsnest River - Blairmore Aug 19, 2011);

The Crowsnest River Riparian Report 2011 has been completed and will be presented to the Crowsnest Pass Agricultural Service Board in Spring 2012. Report will be made available to Crowsnest Conservation Society members, partners and the community.

ALUS demonstration project in the County of Vermilion River

Delta Waterfowl Foundation (DWF)

Grant: $32,500

Project Code: 015-00-90-141

Project Status: Funded in 2010-11; Completed

(extension until July 31, 2012)

The goal of this multi-year project is to demonstrate how a community-led and farmer-delivered Alternative Land Use Services (ALUS) model can be used to deliver an ecological goods and services program. Aside from demonstration farms, Delta Waterfowl Foundation (DWF) is advancing ALUS through communication and outreach, monitoring and developing community capacity. DWF continue to advance ALUS in the County of Vermilion River (CVR) on several fronts: a number of new projects have been signed up, totaling roughly 700 acres of habitat that will be improved and protected over a five-year period. These projects include a variety of services, including wetland, riparian and wetland improvements on privately owned farmland. In addition DWS will see the expansion of hen houses, wildlife friendly fences and bluebird boxes on ALUS farms in CVR. Embracing producers' land stewardship ethic to establish new environmental services on top of their traditional farm products is a new and effective way to attain our collective environmental goals. Baseline inventories for new projects are established through the partnership with Cows and Fish as well as monitoring the establishment of native prairie. These monitoring efforts will help guide future efforts learning how habitats are affected through these efforts to enhance the environmental services on private land. DWF have ongoing communications and outreach efforts on several fronts, including a workshop and tours, meetings, presentations, newsletters, media and the launch of a national ALUS website to bring awareness of the unique approach ALUS uses to deliver ecological goods and services. This community-led, producer-delivered approach is revolutionary, changing the way environmental outcomes can be achieved. Indeed DWF are seeing the CVR itself continuing to expand its efforts to use ALUS to achieve desired environmental outcomes. DWF using the lessons learned in CVR to help expand ALUS to new communities in Alberta and elsewhere in Canada (e.g. Saskatchewan and Ontario). Learning from the Partnership Advisory Committee that guides the process from a community perspective is proving extremely valuable in establishing a template to be used to franchise ALUS elsewhere.

Deliverables/Results:

13 projects were identified that will be established in the 2012 growing season. This will encompass a total of 700 acres of habitats by providing incentives to private landowners (producers) to establish additional wildlife habitat.

A workshop and tour were held in June 2011 with 70 participants. Another tour was held in early November, largely made up of Cows and Fish employees.

A national ALUS website was launched, had several media articles and outreach to a number of audiences across Alberta, resulting in the initiating of a new ALUS project in Parkland County set to launch in 2012.

Working with Cows and Fish baseline inventories are set up that will be used to monitor environmental improvements. In addition a Partnership Advisory Committee member provided an evaluation of native prairie establishment projects.

Watershed stewardship project: Amphibian monitoring and awareness program in Fish Creek Provincial Park

Friends of Fish Creek Provincial Park (FFCPP)

Grant: $1,500

Project Code: 020-00-90-169

Project Status: New; Completed

The Friends' Amphibian Monitoring Program is an ongoing, volunteer-driven survey of amphibian species in Fish Creek Provincial Park (FCPP). This project is an integral component of FCPP's wildlife monitoring strategy, which falls under the umbrella of the Friends' Watershed Stewardship Project. This year, this initiative was expanded successfully to include an extensive Watershed Public Awareness Campaign which involved 367 volunteers who devoted a combined total of 2004 hours and engaged 4,583 members of the public in watershed conservation and "what you can do" messaging. The three main objectives of the Amphibian Monitoring Program and Watershed Public Awareness Campaign are to track location and species diversity of amphibian observations in FCPP, to educate and engage citizens to take action to reduce their impact on the

watershed (including its amphibians), and to support regional and provincial conservation initiatives by sharing program data and report with interested organizations and agencies. These objectives were achieved through a successful amphibian monitoring season (March 26-Sept 4), CREEKFEST water festival (June 4) and months packed with public engagement activities such as presentations, tours, demonstrations, talks, displays, and the development and distribution of watershed awareness promotional materials.

Deliverables/Results:

Volunteer training sessions for Amphibian Monitoring Program (Apr. 26 & 27-indoors, May 9-outdoors). Volunteers observed nine live wood frog and boreal chorus frog specimens with limb malformations, all originating in the Rotary Park wetland complex on the east shore of the Bow River. These observations have raised some new questions, which FFCPP hope to explore in conjunction with associated organizations in 2012.

In addition to routine monitoring by volunteers, this year two special "after hours" outings were organised to determine if tiger salamanders were still present in FCPP (observed in 2009, but not observed in 2010). Although the first outing was unfruitful, the second outing revealed approximately 40-60 actively feeding tiger salamander larvae.

This year, 4,583 members of the public were engaged in watershed stewardship through a wide range of interactive and multi-disciplinary talks, tours, festivals, and conservation opportunities.

Display board, brochures, and posters for use at Watershed Campaign events.

Volunteer recognition events, such as Volunteer BBQ (Aug. 25) and Volunteer Appreciation & Awards Banquet (Nov. 18)

2011 monitoring program data and reports shared with interested agencies, such as the BRBC, City of Calgary, Alberta Environment, Alberta Parks, etc.

Publications/Reports

2011 Amphibian Monitoring Program Report

2011 Friends of Fish Creek Annual Programs Report

Article in "Voice of the Friends", the Friends of Fish Creek newsletter in September 2011 newsletter featuring salamander article and in February 2012 newsletter featuring amphibian article

Press releases & Public Service Announcements promoting Watershed Campaign messages and events.

Watershed stewardship project: Invasive species strategy in Fish Creek Provincial Park

Friends of Fish Creek Provincial Park (FFCPP)

Grant: $1,500

Project Code: 020-00-90-170

Project Status: New; Completed

The goal of the Friends of Fish Creek's 2011 Invasive Species Strategy was to manage the spread of invasive species in Fish Creek Provincial Park (FCPP) through civic education and engagement. New this year, the program featured targeted outreach to specific demographics that can be effective in reducing the spread of terrestrial and aquatic invasives, such as gardeners and anglers. Also new in 2011, was the launch of a social media campaign complementing the more traditional outreach efforts. The Invasive Species Strategy is a critical component of FFCPP's Watershed Stewardship Project. The 2011 invasive species project has wrapped up. Six watershed stewardship presentations were successfully facilitated, hosted 15 watershed stewardship displays, 14 tours/talks on topics relating to invasives and watersheds, and a water festival engaging the public in the concept of watershed stewardship through speakers, musicians, children's activities, artists, demonstrations, walks, and more.

Deliverables/Results:

A total of 157 volunteers of all ages and abilities took part in invasive weed pulls during which they learned about the threat these species pose to the natural environment. Together, these volunteers collected 51 bags of invasive plant material that was sent for deep landfill burial.

Early detection, rapid response (EDRR) was the fundamental principle used to guide weed pulling activities. Employing this system, newly established patches of invasives were identified and volunteers were quickly deployed to remove the plants before the species could become well-established. For example, two weed pulls were held to address the issue of oxeye daisy and wild caraway that are making their way into the park from nearby backyard gardens.

Regular FCPP Invasive Species Updates to Park Staff, updates were submitted immediately after each weed pull.

Article in "Voice of the Friends" newsletter – January 2012 newsletter featuring article about the threat posed by invasives.

Brochure, flyer, display board, posters for use and distribution at Watershed Awareness Campaign and various other public education events.

Press releases, public service announcements, and social media outreach promoting Watershed Awareness Campaign messages and events.

Publications/Reports:

2011 Friends of Fish Creek Annual Programs Report.

Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost Watershed

Ghost Watershed Alliance Society (GWAS)

Grant: $35,880

Project Code: 015-00-90-143

Project Status: Funded in 2010-11; Completed

The second phase of this project was to assess riparian health of the remainder of the Ghost River watershed. The inventory work focussed on areas within the Alberta Forest Reserve, provincial lease land and private land. The goal of the project was to: create awareness, help land managers and communities take voluntary action; build a common understanding; enable us to monitor changes in health over time; assist in identifying environmental risks; integrate riparian health into planning; and provide baseline information. Riparian Health Inventory involves more than just collecting data, it is part of a process or pathway to addressing the successes and challenges of living and working in natural landscapes. It is an important step for community-based action, future planning, and monitoring. 29

riparian health assessments were completed by Cows & Fish staff in July 2011, which was less than expected. The proposal had been based on maps, but on the ground Cows & Fish decided that fewer inventories were necessary on the main stems of South and North Ghost. A successful field day was held in September 2011, with 15 participants learning how to assess riparian health themselves under the guidance of Cows and Fish staff. On March 10th, 2011 the results of the inventory were presented at an open house. 35 people attended the session. They had many good questions as well as providing input based on local knowledge. On March 13th, 2011 Cows & Fish submitted the full reports on the inventories to GWAS and also has submitted reports on sites that are privately owned or leased to the respective landowners and lessees. The report contains several recommendations on how land managers can improve conditions in the Ghost. Overall GWAS felt that Phase II was even more successful than Phase I particularly due to the crew becoming more familiar with the intensive land-uses affecting the Ghost as opposed to the rather extensive land-use of cattle grazing. Recommendations by Cows and Fish were very valuable and a significant number of people in the community learned about and appreciated the work done by Cows and Fish.

Deliverables/Results:

The main results are that the riparian areas of the Ghost Watershed are generally healthy, some are healthy with problems and one site came back as unhealthy due to invasive plants and human caused disturbance. Areas with problems are mainly related to recreation, particularly motorized, and cattle grazing. GWAS now has a thorough overview of riparian health in the Ghost Watershed thanks to Cows & Fish and the generous funding provided by ACA and Alberta Stewardship Network. Since the Ghost was evaluated as rather healthy overall, these findings point more clearly towards that sedimentation issues are most likely caused by point sources, such as recreational trail crossings and roads, to the largest extent.

GWAS has contacted ACA staff in Cochrane and initiated a proposal for ACA biologists to update a crossings inventory study in 2013-14. The crossings study was first undertaken in 2002-03. The objective of updating the study is to find out whether these disturbed sites in riparian areas, streams and rivers have changed in any way, improved or worsened over the past ten years.

Education and Awareness:

Start-up meeting with GWAS and Open House for Community and stakeholders in April 2011.

A workshop to teach the community how to assess riparian health was held on September 18th 2011.

Also an open house presenting the results of the inventories was held on March 10th 2012.

Riparian Health Inventories:

Landowner and land manager meetings were carried out in June and July 2011 to gain background information on current grazing, recreational activities and other relevant management.

Air photos were reviewed and other maps acquired for fieldwork purposes.

Project area stratification and project area ground scoping (i.e., access considerations etc.) were completed in July 2011.

29 riparian health inventories and range health assessments.

Riparian health inventory report by Cows and Fish submitted to GWAS, private landowners and lessees, see the website: http://www.ghostwatershed.ca/GWAS/Research_%26_Data.html

Lac La Biche wetland inventory and classification plan

Lac La Biche County

Grant: $1,500

Project Code: 015-00-90-145

Project Status: New; Completed

Wetlands are amongst the most fertile and productive ecosystems which provide habitat to a diverse range of fish and wildlife. Since these areas sustain more life than any other ecosystem, wetlands are unique storehouses of diversity that need to be given special attention. This project will strive to recognize and conserve the wetlands throughout Lac La Biche County, ensuring that their function and values are preserved. This will be achieved through mapping and isolating all wetland areas in Lac La Biche County that should be protected and/or need to be restored. Information pertaining to the wetlands in the County will be documented and provided for various individuals/groups that have requested work to be completed in or near these sensitive areas. Any activity within wetland boundaries may either be granted or denied based on the potential impact on the area. The refusal of disruptive work will provide an opportunity to maintain healthy wetland ecosystems. Project activities include: Aerial photograph interpretation; Mapping of wetlands (through scanning and digitization of aerial photographs); Classification of wetlands and subsequent selection of priority areas; Rank wetland areas according to sensitivity and importance; Plan implementation; Plan advertising; and Future project planning. To date, the consultant has completed the interpretation and mapping of the majority of the wetlands throughout Lac La Biche County. Analysis has enabled the classification of wetlands and subsequent selection of priority areas. Based on results, wetland areas have been ranked according to sensitivity and importance.

Deliverables/Results:

The initiation of work for this project began in 2009, and is currently still in progress. Slight delays to the completion of the plan can be attributed to the large amount of water bodies in the County and the resulting work required by the consultants to complete the mapping and categorization of wetlands in Lac La Biche County. Completion of the plan also relies on the work conducted by partnering groups such as Alberta Environment and ASRD. Delays also included the approval of the project by County Council, which has experienced a turn-over of staff since the initiation of the project.

Hundreds of wetlands have been mapped, classified, and prioritized throughout Lac La Biche County. Additional mapping may still be required as needed. Prioritization and ranking has been completed for the wetlands already mapped and categorized, and will continue with the addition of new wetlands as the project progresses. These will be updated into their data system and made available to departments requiring the information and any residents that have an impact on the specific wetland areas.

As the Lac La Biche Wetland Inventory and Classification Plan has not yet been completed, it has not yet been advertised in the local media. Following implementation of the plan, it will be publicized to the public and incorporated into County policies and procedures.

Lac La Biche watershed project

Lac La Biche County

Grant: $3,000

Project Code: 020-00-90-160

Project Status: Funded since 2008-09; Completed

The main objective of the Lac La Biche watershed project is to maintain a healthy watershed and ensure a safe, secure source of drinking water. The main project goal consists of the improvement of lakes and aquatic ecosystems throughout the County. By improving lake and ecosystem health, fish populations will also have a chance to increase from their recently declining populations. This is achieved through analyzing and monitoring water samples collected throughout the sampling season. During 2011-12, the summer testing of seven lakes, 20 inflows, and bacteriological testing at several beaches throughout the County was conducted. Winter sampling for 2011-12 has been conducted on one of these lakes, and the remaining sampling was completed end March 2012. Upon the completion of the winter sampling, the 2011-2012 lake reports will be produced and published immediately. These reports enable us to compare to previous years and monitor the progress of this project. All reports are made available to the public and community residents are encouraged to express any comments or concerns they have with the results. Public involvement has been encouraged through public consultation meetings, open houses, workshops, sampling events, field days, and other community events organized by project members. Locally distributed newsletters containing surveys, sampling updates, and contests also provide residents with watershed information and encourage participation and feedback. Youth programs, such as the summer Mad About Science Program hosted at Fun in the Sun and community day camps help encourage involvement and provide education for our future generations.

Deliverables/Results:

21 sampling events were conducted on seven different lakes (Lac La Biche (East basin) - sampled four times; Lac La Biche (West basin)- sampled four times; Beaver Lake - sampled five times; Pinehurst Lake- sampled once; Elinor Lake- sampled once; Claude Lake - sampled three times and Fork Lake - sampled three times). Pinehurst Lake and Elinor Lake were removed from the sampling list in June, 2011 due to lake rotation schedules. Winter sampling has been completed on Claude Lake and continued on the remaining six lakes starting on March 20, 2012. Following the completion of the winter lake sampling, results will be compiled into reports and published for public information. These will be available electronically and in hard copy.

Water quality has remained relatively stable over the past years of study, with no significant changes. Bacteriological beach sampling was conducted weekly on 11 different recreational areas. *E.coli* and fecal coliform counts did exceed threshold values once in the summer of 2011; therefore one beach was shut down until counts were back to below the recommended limits. Inflow sampling was conducted a minimum of once a month at 20 different inflow sites. To date, 53 samples have been collected for the sampling year of 2011-2012. Completion of monitoring reports will commence upon receiving winter sampling results.

Beach Sampling –public beaches within the County have been sampled numerous times throughout 2011. Each beach was sampled once a week, beginning in May, 2011 and continued until freeze-up. Beaches sampled from May, 2011 to June, 2011 included: Fork Lake North, Fork Lake Campground, Golden Sands, Beaver Lake, Plamondon White Sands, Bayview, McGrane, Red Deer Brook, and McArthur. After revision of the beach sampling locations in June, 2011, Fork Lake Bennett Beach and Young's Beach were added to the sampling list. At this same time, Owl River and the Lac La Biche Mission beach sampling locations were removed due to an absence of recreational use in these areas.

Inflow Sampling – From May, 2011 to June, 2011, 20 inflows within the Lac La Biche Watershed were sampled. After revision of sampling locations in June, 2011, this was later reduced to two inflows and one outflow. Throughout 2011-2012, 53 inflow samples were collected.

The outcome will be the publication of lake reports for public information that will be available electronically and in hard copy.

Approximately 300 registrants participated in the youth Mad About Science Program; which consisted of six day camps for the summer of 2011.

Avian monitoring and stewardship at Lesser Slave Lake

Lesser Slave Lake Bird Observatory (LSLBO)

Grant: $23,500

Project Code: 030-00-90-128

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

The first goal of this project was to collect accurate avian data to provide accurate long term population data and trends on migratory and breeding birds in the boreal forest. The LSLBO completed four core avian monitoring programs including: Spring Migration Monitoring, Fall Migration Monitoring, Monitoring Avian Productivity and Survivorship Program (MAPS, breeding bird program), and Northern Saw-whet Owl Program. All data was forwarded to Bird Studies Canada for analysis and will be used to detect changes in species populations, help to focus future research on potential causes or habitat changes, and to initiate conservation efforts. Based on data collected over 18 consecutive years of monitoring populations at Lesser Slave Lake, Bird Studies Canada developed updated population trend curves for all species monitored by the LSLBO and this work will be available for public review. With ACA support, the research program at the LSLBO is rapidly expanding. Several academic research projects were initiated in collaboration with the University of Alberta and Alberta Parks that will further strengthen the LSLBO monitoring and research program. A technical report was completed in Fall 2011 that examines the impacts of net lane habitat succession on mist net capture rates over time. Three reports were completed as part of preliminary work on the ongoing feather isotope analysis project which focuses on the migration timing of five key species at the LSLBO. A two-year Canada warbler research proposal was also completed this winter that will provide critical information on the breeding habitat requirements for this threatened species in the Boreal Forest. Field operations on this Canada warbler project will commence in the summer 2012. The second goal of this project was to increase public awareness about the importance of the boreal forest and its importance to wildlife. Special emphasis is placed on programs that connect visitors to the exciting and important work of LSLBO research. Over 4,000 children and adults gained a greater appreciation for the boreal forest through exciting hands-on environmental education programs, family focused interpretive

programs, and new webinar programs. New education programs and special events were developed to support the year round programs at the Boreal Centre for Bird Conservation.

Deliverables/Results:

The LSLBO Bander in Charge has completed the 2011 Annual report on the avian monitoring programs for distribution to funding partners and local stakeholders. All data and the 2011 Annual Report have been submitted to Bird Studies Canada/Canadian Wildlife Service and AB Fish and Wildlife Division for analysis.

Education program plans had to be amended slightly for spring due to wildfires in Slave Lake, but staff and volunteers successfully delivered a wide range of environmental education programs for regional students as well as special events and family programs for the local community. Key to that successful delivery was the support of LSLBO's education partner: the Lesser Slave Forest Education Society.

The Spring Migration Monitoring program took place from April 22 to May 15. Typically the LSLBO monitors daily migration until June 10, but wildfire evacuations only allowed for half the spring season to be monitored. 360 birds were banded representing 27 species. On average, 977 birds from 45 species are usually banded in the spring. It was likely that LSLBO would have reached the average if not for the early closure. The top species banded were the dark-eyed junco (75), myrtle warbler (65), chipping sparrow (43), American tree sparrow (38), and white-throated sparrow (27). Species that have migratory windows occurring later in the spring were poorly represented. Daily estimated totals of all migratory birds were completed using visual and auditory counts. The highlight of the spring was the very first hoary redpoll to be banded at the LSLBO, species #102! Aerial nets (11X and 12X) were piloted in fall 2010, proved their effectiveness last year and became fully operational this year.

In fall migration of 2011, 1166 birds were banded (from 55 species) from July 12 to September 30. Migration was monitored for 81 days during that time and nets were set on 75 of those days. Conditions allowed for mistnets to be set 79.5% of the total time. The top five species were: myrtle warbler (275), Swainson's thrush (128), ovenbird (125) American redstart (85), and yellow warbler (72). Fall migration highlights included a fox sparrow in full juvenile plumage banded on July 18, indicating local breeders. Normally fox sparrows migrate through the area in mid-September. A veery was recaptured on July 22; this bird was originally banded at the LSLBO on June 2, 2009. There have only been seven banding records for this species, and very few are encountered.

A total of 149 species were detected during migration monitoring activities. There were no unusual species detected during the 2011 field season, leaving the all-time sightings list at 250 species. Upon completion of the program, all spring and fall migration monitoring data was forwarded to the Canadian Wildlife Service and ASRD

MAPS program occurred from June 11 to Aug 2, 2011. All sites were successfully completed as scheduled for this breeding bird monitoring program, meaning that all four MAPS stations operated by the LSLBO were visited six times each during this project. A total of 141 birds representing 22 species were banded, with an additional 66 recaptures. MAPS banding was slow this year, well below the average of 224 birds from 24 species. The breeding status was determined for 62 species. These statuses are determined through the type of encounters for each species during visits to each MAPS stations. All data was forwarded to the Institute of Bird Population for analysis.

Northern saw-whet owl monitoring began on August 24 and ended on October 20. Banding was attempted on 42 nights during that period and 74 northern saw-whet owls were banded, with one foreign recapture. A barred owl was also captured and banded on October 18.

Work of the Canada warbler project continues with a renewed emphasis due to the species status. The Canada warbler has been nationally listed as threatened, and this project will provide important breeding requirement data to recovery plan initiatives. The LSLBO Director of Field Research and Bander in Charge have just completed the Canada Warbler Project Proposal which will guide the next two years of this research project: *Home Range Size and Habitat Selection of Canada Warblers in the Western Boreal Forest*. LSLBO is in process of securing required permits and resources for this study. Field operations are scheduled to commence summer 2012 including radio telemetry tracking of territory, prey abundance surveys and vegetation surveys.

Joint research project – LSLBO continues to work with Dr. Bayne from the U of A and AB Parks on special research projects developed to better understand monitoring data at the LSLBO.

Despite fires and AB Parks staffing vacancies at the BCBC, the education program delivered exciting hands on interactive programs to 4,039 students and public this past year with your support. The Slave Lake fires caused a drop of over 50% in visitation at the Boreal Centre for Bird Conservation this year. Tourism was down across the region, and the campgrounds were quieter overall. Despite these challenges, over 1,100 visitors came to the BCBC during the summer months to learn about the importance of the boreal forest through staff and the interactive exhibits at the centre.

Deliverables:

2011 Annual Report – summarizes monitoring and research results completed under this project.

Technical Report: *Determining the Effects of Local Habitat Succession on Abundance and Species Diversity of Birds Captured at the Lesser Slave Lake Bird Observatory over 18 years of Standardized Mist-netting*.

Five year report for the Boreal Centre for Bird Conservation (2006-2011)

Copies of draft LSLBO population trends generated by Bird Studies Canada in 2011.

Riparian area management improvements

Mountain View County (MVC)

Grant: $20,000

Project Code: 015-00-90-102

Project Status: Funded since 2005-06; Completed (extended until June 30, 2012)

The goal of the Riparian Area Management Improvements Program in MVC is to help improve and preserve the health of our riparian areas. This program has helped improve water quality and wildlife habitat throughout the County. Producers are becoming aware of the importance of sustainable agriculture and beneficial management practices. The ACA has helped fund 12 exclusion and riparian pasture fencing projects this past year. As well MVC has helped fund five watering systems and five creek crossings. All of these projects will improve the riparian health of the project area. Livestock producers are keeping their cattle out of riparian areas by using off-site watering

systems and fencing; this will reduce the potential amount of manure entering water bodies, increase biodiversity and improve the water quality for future fish habitat. 12 out of the 13 projects are completely finished and the producers have been paid for a portion of their material costs. One of the producers was not able to complete the fencing. The funding that was allocated for the project will be taken out of the final funding request.

Deliverables/Results:

There were 12 riparian area management projects completed this year in seven different watersheds. This results in 12 more producers who are aware of the importance of beneficial management practices and sustainable agriculture. These projects totaled 8,207m of finished riparian fence and 343 acres of riparian area being protected. Five of the producers who installed riparian fence also purchased an off-site watering system and five producers also installed proper creek crossings. These watering systems and creek crossings were partially funded by MVC.

Project Profile sheets have been completed for each project that funded which will be available to be printed for distribution.

Riparian health assessments are complete for the 12 projects, results are available upon request. Project areas will be available for tours.

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

Public and volunteer engagement with Alberta's Important Bird Areas

Nature Alberta

Grant: $25,000

Project Code: 030-00-90-158

Project Status: Funded since 2009-10 and similar project funded form 2003-04- 2006-07; Completed

Important Bird Areas (IBAs) are priority areas where threatened, restricted-range, biome-restricted and congregatory birds occur. The IBA program has been developed to recognize, monitor and conserve these critical areas. When IBA's are maintained, there are additional values: IBAs provide vital environmental services, protecting freshwater and forest ecosystems, and reducing the impact of extreme weather events including floods and droughts. Many of the IBAs in Alberta are internationally recognized wetlands, deltas and lakes. Visiting IBAs can also be a great way for people to de-stress, relax or engage in physical and social activities. The IBA program is a cooperative initiative among individuals and local, provincial, national and international organizations that recognize the importance of birds and bird habitat. Nature Alberta coordinates the Alberta IBA program and in 2011-12 was actively involved with maintaining a relationship with other Canadian IBA affiliates. Funding was used to bring together IBA national and provincial stakeholders including volunteer caretakers and partner agency representatives. This meeting occurred in October, 2011. Volunteer caretakers are a cost-effective way to steward IBAs and to gather broad-scale information on these sites. In 2011-12, Nature Alberta continued its work to establish and support a network of caretakers that live near or spend time at IBA sites. During the course of this project, Nature Alberta visited several volunteer caretakers to demonstrate how the new tools (such as the website; caretaker guide) can be used, to discuss how their needs are being met, and to share ideas about the program. Increased public knowledge and support of IBAs is also critical. During 2011-12, Nature Alberta continued to engage the public about the critical role that IBAs play for wildlife and people in Alberta by attending and participating in several organized events. Work continued on enhancing the IBA interactive website (not yet on-line) which takes people to Alberta's IBAs virtually. Volunteers are able to participate in the building of this tool by contributing materials such as photos, video and/or stories. And finally, through an article in the winter Nature Alberta and through resurrection of the Bird Committee, Nature Alberta has initiated a renewed discussion about how it can better support the IBA program in Alberta.

Deliverables/Results:

A series of meetings took place with IBA caretakers and who organized a meeting with caretakers and several provincial and national agency representatives. 16 people attended the IBA stakeholder's workshop (October 17, 2011)

Funding from other partners was used to continue work on several PR tools including: IBA website (funded by GECF in 2010-11, the test site can be viewed at www.djmdesign.ca/iba/index.php user name chuck password IBA2011, various IBA site videos are available on YouTube: http://www.youtube.com/user/IBACanadaShare?feature=watch. This site is expected to be live in 2012.

IBA articles in Nature Alberta:

Eyes on IBAs: Beaverhill Lake; Cooking Lake. Nature Alberta Vol. 40, No. 4, Winter 2011

Eyes on IBAs: Update: Where we are at and where to next. Nature Alberta Vol. 41, No. 4, Winter 2012

Nature Wild Spring 2012 – an IBA article targeted at youth

Riparian water quality improvement project

Nature Alberta

Grant: $33,000

Project Code: 015-00-90-129

Project Status: Funded since 2003-04 (except 2008-09); Completed

Across Alberta, lakeshore residents move to the lake from urban centers and are often unaware of the impacts their yard and home maintenance can have on their backyard lake. The result of hundreds of households making similar decisions is a severe deterioration of the lake ecosystem. The alteration of shorelines and the removal of shoreline vegetation destroys wildlife habitat. Erosion becomes a dramatic problem for both property owners and public land use. Water quality deteriorates with increased run-off from properties which is polluted with household chemicals. Increased nutrient loading of phosphorous from fertilizer and soap results in toxic algae blooms; these blooms close beaches, prevent people from swimming and discourages many activities on the lake and near the shore such as fishing and hiking. Recreational properties are not the sole reason for the increased deterioration of Alberta lakes, but the cumulative effects of lakeshore residents' property and water-based activities have a significant impact on aquatic ecosystems. Nature Alberta's riparian water quality improvement project aims to educate property owners about their ecological footprint on the lake and surrounding watershed, and provide recommendations and actions that each person can take to improve the lake ecosystem and the fish and wildlife habitat within and surrounding the lake. The project objectives are to develop community stewardship and

increase knowledge of the values and benefits of Alberta lakes, encourage naturalization of riparian and back-lot areas, and increase residents' education and ability to reduce sources of water pollution. Each year Nature Alberta works closely with stewardship groups in communities across the province. The target communities in 2011 were Sylvan Lake, Pigeon Lake, Wizard Lake, Clear Lake, Pine Lake and Jackfish Lake. Of these communities Pine Lake and Jackfish Lake were new additions to the program while the other four all represented renewed interest in the program. Each particpated extensively in the Shoreline Resident Consultation Program, as well as working with Nature Alberta to hold education and awareness events in the local community and for the stewardship councils. The project is growing in popularity, community residents are responding positvely to the education provided and are eager to participate in the project. In addition to renewing partnership with all of the communities above, there is overwhelming interest from new lake communities (Dillberry Lake, Crimson Lake, Ghost Lake, Sandy Lake, Vincent Lake, Island Lake and Lake Isle) and will be bringing the program to these lakes in the summer of 2012.

Deliverables/Results:

Trained six community volunteers within the communities of Wizard, Clear, Pigeon, Sylvan, Pine and Jackfish lakes to act as lake contacts.

Information booths were present at ten community events (Environment Week activities, farmers markets, and annual lake days) and presentations were delivered at four annual general meetings/ council meetings of watershed groups and summer villages. From September – March, presentations were given at three council meetings and one large conference. An outreach event was attended during Canada Water Week hosted by the North Saskatchewan Watershed Alliance.

Outreach tools such as books, brochures, pamphlets were provided to shoreline communiteis at the lakes, as well as at outreach events in Edmonton and in lakeshore communities. Nature Alberta are currently collaborating with Alberta Invasive Plant Committee and City of Edmonton to create a Riparian Weed Brochure, and have collaborated with the Pigeon Lake Watershed Association to create a waterfowl brochure.

The workshop-in-a-box did not proceed as planned, due to limited interest perhaps due to the amount of work that would be required for a community member to implement it.

45 new households in the homesite consultation program in summer 2011. Homesite consultations were done at Pigeon, Sylvan, Clear, Wizard, Pine and Jackfish Lakes, with the latter two lakes being new to the program. The program will be returning to all previously mentioned lakes in the summer of 2012, while also working with seven new lake communities across the province.

17 follow-up consultations were performed from home owners who were initially consulted in 2009 at Wizard Lake and Pigeon Lake, which is a 38% follow-up success rate because 45 initial consultations were held at these lakes in 2009. Based on the evaluations of property owners at each lake, their behaviors were statistically analyzed. For each community, the proportion of residents subscribed to a particular behavior was assessed which aided the stewardship groups in targeting awareness to areas in need. The statistical analysis from summer 2011 can then be compared to analysis from 2009 and 2010 (in multi-year communities) to determine how attitude changes are developing in the communities; these analyses are on-going.

Produced 50 "Steward of the Lake" wood-burned plaques, and presented one to each of the lake contacts who work with the program to get residents interested (six people total), and 15 to people who had two-year follow up consultations and showed significant change to their property and general stewardship of their lake.

Sylvan Lake, Alberta. Photo: Jesse Hitchcock, Nature Alberta

Sturgeon River watershed habitat enhancement study

Northern Alberta Institute of Technology (NAIT)

Grant: $24,192

Project Code: 015-00-90-144

Project Status: Funded in 2010-11; Completed

In 2010, NAIT initiated a long-term study of the Sturgeon River watershed, including tributaries, from the headwaters to the mouth of the river. The main goals of this study are to assess riparian health and to bring together multiple stakeholders to develop and modify best management practices to improve the health and ecological function of the watershed. To date, the project has: assessed water quality and biodiversity at 21 permanent sampling sites over two years; evaluated over 100 stream crossings (bridges or culverts) throughout the watershed; assessed impacts of road salt and sand on water quality beneath bridge decks during winter in the City of St. Albert; designed a on-line historical survey and three participatory workshops to be implemented spring 2012; engaged local school groups in hands-on watershed activities; and, promoted the importance of healthy watersheds within the community. Specifically, this year's project objectives and activities were to: 1) continue to provide research and field opportunities for NAIT students and the community to assess water quality and aquatic biodiversity using sampling plots established in 2010; 2) assess water quality and aquatic biodiversity at river crossings with high levels of sedimentation; 3) interview generational farmers/land owners to establish a local knowledge base and build a historical picture of the natural history and biodiversity of the Sturgeon River Watershed; 4) continue to develop proactive partnerships with multiple stakeholders (including industry, land owners, and the community), to monitor and improve fish habitat. Since its inception in 2010, this project continues to provide opportunities for NAIT students and graduates to be involved in applied research through project management courses (+15 students), and paid student research positions (25 students). In 2011, elementary and secondary students (300+) and community members within the watershed participated in presentations by NAIT staff. Baseline data on aquatic invertebrates and aquatic macrophytes was collected to be compared with water quality data for the 21 sample sites throughout the watershed. Fish sampled in the Sturgeon River and its tributaries indicated healthy sex ratios in northern pike and brook stickleback, with no evidence of fish population feminization. ACA funds were leveraged to secure additional funding from the Alberta Rural Development Network (ARDN), which enabled us to develop a more sophisticated survey tool for collecting historical data from the public, and to develop three participatory workshops which will be held this spring to help to further assess research needs and to develop action plans for the watershed.

Deliverables/Results:

In 2011, dissolved oxygen levels were better throughout much of the watershed, due to high spring snow melt and unusually high water flow rates. However, there were still some sites where dissolved oxygen concentrations were below the acute (one day) level set as by the Alberta Guidelines for the Protection of Freshwater Aquatic Life. Dissolved oxygen concentrations tended to be higher in the headwater reaches of the Sturgeon River, and declined toward the mouth, especially in the reaches downstream of Big Lake and through the City of St. Albert. Phosphorous, conductivity, and solids were high in the spring, especially at a site downstream of Onoway sewage lagoons. Chlorophyll a also peaked at several sites in early summer, including the site previously mentioned. At many of the sites, water levels were too high to safely measure flow rates. Thirteen species of aquatic macrophytes were identified throughout the Sturgeon River and its tributaries. Equal sex ratios of northern pike and brook stickleback, indicating apparent absence of endocrine disruptors in the water. Seven fish species identified from the Sturgeon River and its tributaries: white sucker, lake chub, brook stickleback, nine-spine stickleback, northern pike, burbot, spot-tail shiner. A total of 16 Orders and 40 Families of aquatic invertebrates were identified in the Sturgeon River and its tributaries.

Summary of water quality data collected 2011-2012 with recommendations for future monitoring (Technical Report, March 30, 2012);

Baseline inventory of aquatic macrophytes & fish in the Sturgeon River Watershed, to be included in the future development of a Watershed Management Plan (Technical Report, March 30, 2012);

Participatory workshops with stakeholders to facilitate communication and understanding of issues affecting the health of the Sturgeon River: three participatory workshops to be facilitated June 2012, and two public presentations to communicate workshop and survey results to the community September 2012. This work was initiated using ACA funds, and has evolved and expanded using ARDN funding, with delivery date of final report, fall 2012;

Database of historical local knowledge of the natural history of the Sturgeon River watershed: surveys, stakeholder participatory workshops, and follow-up presentations (completion fall 2012);

Community riparian habitat improvement activity, in conjunction with the City of St. Albert and River Edge Enhancement Project (REEP). Vegetation and bird surveys were completed summer 2011. Final report to be presented to City of St. Albert Environmental Advisory Committee, April 23, 2012.

Nose Creek rehabilitation project

Nose Creek Watershed Partnership (NCWP) / Trout Unlimited Canada

Grant: $3,000

Project Code: 015-00-90-137

Project Status: Funded in 2010-11; Completed

The goal of the Nose Creek Watershed Partnership (NCWP) is to protect riparian areas and improve water quality in the Nose Creek watershed. This will be accomplished by implementing the recommendations of the Nose Creek Watershed Water Management Plan (NCWWMP) completed in 2007. In 2011, the NCWP focused on developing an erosion monitoring strategy, developing a policy related to stormwater management during development in non-contributing areas of the watershed (areas where surface runoff collects in wetlands and does not flow to Nose Creek), completing year two of three of the Water Monitoring Strategy, completing strategic fisheries sampling, community stewardship events and public engagement activities. Consultants were contracted to complete the water monitoring project and policy development for non-contributing areas. The NCWP completed several stewardship activities and participated in community fairs and open houses throughout 2011.

Deliverables/Results:

Fisheries and Water Monitoring Programs were completed. There has been very high interest in the results of the Fisheries and Water Monitoring Programs by municipal staff and councils, which has led to many discussions regarding water quality improvements at the municipal level. Bow River Basin Council has requested the data from the Water Monitoring project to be included in the BRBC Web-based State of the Watershed. Bow Phosphorus Management Plan team has requested the reports from the 2010 Water Monitoring project.

Clean up events delivered throughout the spring summer and fall.

500 of 1000 trees were planted in the fall of 2011; an additional 500 trees planted at a spring event.

Reports

Water Monitoring Report (completed Spring 2012)

Nose Creek Fisheries investigations, 2011. Trout Unlimited Canada Technical Report No. AB-030. March 2012.

Stewardship summary completed by NCWP Coordinator (April 30, 2012).

Partners in Habitat Development

Partners in Habitat Development (PHD) / Eastern Irrigation District

Grant: $15,000

Project Code: 015-00-90-103

Project Status: Supported by ACA from 1998-2001, GECF funding since 2005-06; Completed

The Partners in Habitat Development (PHD) program is an initiative developed to mitigate for the loss of wildlife habitat in southern Alberta agricultural regions due to upgrading the irrigation infrastructure, more intensive agricultural practices and increases in industrial activities. The PHD program works with private landowners to create, preserve and restore critical wildlife habitat areas. A total of 31,579 trees and shrubs were planted by the PHD program on 20 project sites in the spring and fall of 2011. These trees and shrubs were planted in multi-row shelterbelts, in riparian areas, in block planting formations or along drainage ditches. The PHD program assists in fencing existing habitat areas and newly created habitat from livestock access. There was just over 11 kms of fencing distributed and installed to protect existing habitat, newly planted habitat or future planting project sites in nine locations from livestock access. There was construction work on one project to preserve 800 meters of abandoned canal for wildlife habitat. A number of landowners interested in initiating future habitat projects have been met by PHD Technicians.

Deliverables/Results:

There were a total of 20 planting projects completed in 2011 in southern Alberta, in which 31,579 trees and shrubs were planted.

Over 11 kilometers of fencing was installed to protect habitat sites from livestock access.

There was construction work on one project to preserve 800 meters of abandoned canal for wildlife habitat.

A number of landowners interested in initiating future habitat projects have been met by PHD Technicians.

Off the Creek Program 2011

Red Deer County (RDC)

Grant: $30,000

Project Code: 015-00-90-128

Project Status: Funded since 2006-07; Completed

The goal of the Off the Creek Program 2011 was to work with interested landowners who wanted to implement actions on their land, which conserve or improve riparian and native range habitat in RDC. The objectives of the Off the Creek Program 2011 were to: a) support RDC landowners in enhancing and stewarding riparian and/or native range habitat on their land, by providing financial and technical resources for their on-the-ground projects; b) enhance riparian habitat in RDC. This enhancement will come about through fencing, off-stream watering, establishing buffer zones, and other riparian and native range management projects, completed by participating landowners; and c) assist landowners in developing an informal "Stewardship Plan" for each of the completed projects. Activities of the Off the Creek Program 2011 include: program promotion to recruit landowners to develop project plans / applications; project review and project implementation (the County reviews landowner applications, decides on funding, landowners implement projects); and monitoring and evaluation of projects, the County conducted Riparian or Range Health Assessments in 2011 for baseline conditions, and again in 2015/2016 to assess changes. The County also works with landowners to develop, implement, and monitor "Stewardship Plans" for each completed project.

Deliverables/Results:

22 projects were initiated by 19 landowners, throughout RDC. Two of these projects were done in the Raven/North Raven watershed in support of the ACA Streambank Fencing Renegotiation Strategy, while three more projects were completed in the Raven North Raven watershed as part of the "normal" Off the Creek Program.

243 acres of riparian area, 360 acres of native range area, 8.7 acres of wetlands/sloughs/lakes and 6.7 miles of river and creek are now being protected or restored by these 22 projects.

2,249 Animal Units are now "under new, sustainable management approaches", when it comes to their access or use of these riparian acres.

In addition, four of these projects are helping protect shallow groundwater that is connected to surface water.

Six of these projects involved planting new young spruce trees in protected riparian areas

For every Off the Creek program dollar that went to voluntary, on-the-ground action by landowners, landowners and other partners contributed over $1.90 (in cash, time, and equipment).

Off the Creek Program advertisements appeared in the County News 12 times, and three articles in the County News have discussed the Off the Creek Program (County News is monthly with a circulation ca. 10,000).

The landowners participating in the Off the Creek Program in recent years were nominated for and received a 2011 Emerald Award. Information about the nomination and the Off the Creek Program is on the Emerald Award website.

Five landowners participating in the Off the Creek Program in 2011 were nominated for and received a Red Deer River Watershed Alliance

"Watershed Ambassadorship". Information about the nomination and the Off the Creek Program is now on the Red Deer River Watershed Alliance website

Articles about the Off the Creek Program appeared in the Red Deer Advocate twice in 2011: in May 2011 regarding the Tree Planting projects discussed above, and in July 2011 regarding the Emerald Awards. A similar story (about the Emerald Award) ran in the Mountain View Gazette in August 2011, while a shorter article appeared in the Alberta Venture magazine.

The Off the Creek Program has been displayed/featured/presented at numerous public events.

Filming for an upcoming episode of the Dimestore Fishermen was filmed in RDC in Aug. 2011. At the same time, a "commercial" to air on Shaw TV (possibly in 2012), specifically about the Off the Creek Program, was filmed by the Dimestore Fishermen.

The Off the Creek Blog (offthecreek.blogspot.ca) continues to publicize information about the Off the Creek Program to its target audience. A video that highlights one of the Off the Creek projects completed in 2011 has been produced by RDC, and is now available on the County website and the Off the Creek Blog (offthecreek.blogspot.ca/p/off-creek-tv.html).

Radomske's Pond

Red Deer Fish and Game Association

Grant: $3,000

Project Code: 020-00-90-166

Project Status: New; Grant money not required, funds not disbursed

This trout pond was stocked with rainbow trout under a Lease to Innisfail Fish and Game from 1965 until 2006. The pond is no longer stocked. Landowner Dan Radomske is willing to sign a lease to the Red Deer Fish and Game for access to the pond of a recently upgraded road to a 2008 Gas Plant 600 metres away. The Gas Plant has agreed to supply all the power needed to aerate the pond year round. The Red Deer Club paid for the power line to the pond; ACA was requested to supply a compressor, a shed and two supply lines to the pond. AFGA supplied some tree seedlings to replace all the trees cut down by beavers three years ago. The plans for the project changed, requiring a trench for the airline, which was then funded by Quicksilver. The new lease agreement became an MOU with Quicksilver, with access only to Fish and Game members.

Deliverables/Results:

Most of the work required for this project was covered by other donors. The site is accessible by ticket available to Fish and Game members.

Bird Nesting Box Program

Stony Plain Fish and Game Association

Grant: $1,200

Project Code: 030-00-90-189

Project Status: New; Completed

The objective of the Stony Plain Fish and Game Association's bird box program is to provide nesting habitat for any birds using the cavity method. The country has been deforested by industry and agriculture and the result is no cavity nesting is available for birds. The project activities were: constructing bird nesting boxes for the Fish and Game bird trails, preparing these boxes for projects at schools, Scouts, seniors, and other groups interested in birding. These boxes have also been made available to the public, free of charge, to create interest in bird habitat. Stony Plain Fish and Game Association are stewards of Wildlife Trust Fund properties: Wabamun Whitewood reclamation and East Pit Lake. These are great areas to provide bird box habitat for tree swallows, blue birds, wrens, chickadees and nut hatches. The grant provided funding to purchase materials for approximately 500 nesting boxes. These boxes were delivered unassembled to six different groups to be assembled. This program is highly sought after by schools, Jr. Forest Wardens, Scouts, Cubs, Brownies and disabled and senior groups.

Deliverables/Results:

The funding was spent on materials to make approx. 500 bird nestboxes. Kits have been delivered to various groups for assembly.

Article in the "Outdoor Edge" Mar/Apr 2012

East Slopes Creek Conservation Initiative

Trout Unlimited Canada (TUC)

Grant: $20,000

Project Code: 020-00-90-155

Project Status: Funded since 2008-09; Completed

The objective of the East Slopes Creek Conservation Initiative was to conduct efforts that would enhance and restore specific habitats to benefit local fisheries. Many years of different land uses have resulted in damage on the landscape; this initiative was designed to reverse some of these impacts. In the case of the Policeman Creek effort, this system suffers from lack of flow during specific times of the year resulting in fish losses and stranding as a result of urban development. Since the community is not going anywhere, it was decided that a unique project could be implemented that would provide more over wintering habitat during times of low flow to allow fish a residence to survive the winter months. This is also being coordinated with an education project on site. The Drywood Creek watershed initiative is a result of changes being observed throughout the local fishery and in the local watershed by landowners over the last several decades. TUC was invited into the community to help identify these changes, and discuss solutions with the residents. TUC is working closely with these landowners to develop innovative strategies moving forward to ensure water quality is maintained for future generations of landowners and fish populations. A major part of this project is to work with landowners and other likeminded organizations to provide education and resources to the landowners and other community members to make informed land use decisions, and help to preserve this valuable fishery.

Deliverables/Results:

Policeman Creek:

Multiple clean-up efforts were completed on the creek in the spring of 2011 with school groups and special needs individuals.

Separate redd surveys took place this fall (there are only fall spawning species in this system) with volunteers from the local chapter.

Electroshocking took place on the creek with two different local school groups and a special needs group from Calgary. The pools were completed in spring.

Monitoring and re-vegetation will continue through 2012 to monitor usage of these structures.

Signs to be posted on-site after construction.

Drywood Creek:

Two population estimates were completed for the remaining head water tributaries (South Drywood and Spionkop Creeks).

An additional presence/absence survey was completed on Yarrow Creek

A fall spawning survey was conducted on reaches but no redds were found.

TUC helped organize and participated in two educational days with youth from the local communities.

Partnerships were identified and developed for additional off-site watering and fencing projects on properties along Drywood Creek and Yarrow Creek.

Tracking collared deer with telemetry. Photo: UACTWS

UACTWS Urban deer project

University of Alberta Student Chapter of The Wildlife Society (UACTWS)

Grant: $2,000

Project Code: 030-00-90-149

Project Status: Funded in 2009-2010; Completed

The urban deer project's overarching objective is to study deer living in an urban environment, and seek ways to mitigate negative human-wildlife encounters. In particular, UACTWS are studying deer movements within an urban landscape with the aim of reducing deer-vehicle collisions. The main activity is a radio-telemetry program, in which deer are captured, collared, and radio-tracked within Edmonton city limits. These activities not only further our knowledge of deer, but provide the students that run the project with valuable research experience and training. The urban deer project also has secondary projects such as a 2007 study of deer population density in Edmonton's river valley, and an on-going experiment to gauge the effectiveness of deer-crossing signs in reducing deer-vehicle collisions. It can be difficult for students attending University in an urban environment to gain practical field skills. This project helps to make field experience accessible to interested individuals, especially, but not limited to, students studying biological or environmental sciences.

Deliverables/Results:

The 2012 winter trapping season was delayed severely due to many factors; the warm weather was not conducive to trap deployment and there was difficulty finding biologists available who had appropriate deer handling experience to collar the deer. Two UACTWS members went to Bozeman, Montana for a Wildlife Chemical Immobilization and Handling course in February, 2012 so that there were people associated with the project who could collar the deer. The project had no success with trapping deer; however there are still two collared white-tail deer which were collared in previous years by the project. There will be an early and extended trapping season in the next fall and winter.

Found, R. and M. Boyce. 2011. Predicting deer - vehicle collisions in an urban area. Journal of Environmental Management 92 (2011) 2486-2493. This paper was highlighted in many newspapers, including the Edmonton Journal and Edmonton Sun.

Forty students were trained in 2011 as well as five more in 2012. Three new students took over the leadership positions of coordinator and co-directors.

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

The goal of the Society's Invasive Plant Program is the maintainance and restoration of natural ecosystems and biodiversity within the Weaselhead Natural Environment Park in Calgary. Its Weed Management Plan (developed in Jan. 2010) identified preventing new invasive plants establishing in the Park, and controlling/eradicating those already present as necessary to achieve this goal. The objectives of the Program in 2011 were to continue to increase awareness among the public of the damage invasive plants can do and how we can act to prevent their spread, and to involve volunteers from the community in weeding, monitoring the effectiveness of weeding, mapping the extent of infestations, and reporting any new invasive species found. Funding from the ACA was allocated to the last of the above objectives, namely towards recruiting and managing an 'Early Detection Rapid Reponse' (EDRR) team to prevent new invasive plants establishing in the Park, towards organising volunteer weeding workshops to control those plants already established, and towards keeping track of the results of these activities on a GIS.

Deliverables/Results:

41 people attended EDRR training workshops. These focused on easily identified plants that invade wetlands – with the intention that participants would able to recognise these plants and report them if found. Four occurrences of invasive plants (though not wetland species) new to the Park were subsequently reported by volunteers and appropriate control carried out. In addition volunteers found three occurrences of species on the City of Calgary's EDRR own watch list in other parks (including one wetland species) – the locations were forwarded to the appropriate City department for action.

No new weed species establish in the Park, and those already established are reduced in abundance: several small patches of

invasive herbaceous species that are uncommon in the Park were found by EDRR volunteers and were removed before they could go to seed and spread; species where pulling up is ineffective had flowers removed to prevent seeding; Peking cotoneaster abundance in the floodplain (the priority area for invasive plant control) was reduced by 10 – 12%; treatment of ten large specimens of tartarian honeysuckle and Peking cotoneaster was initiated; yellow clematis vigor (measured by bags of top-growth removed) reduced by some 30%.

140 different volunteers participated in 2011, contributing 130 hours to check the Park for new invasive plants (EDRR) and 680 hours to weeding.

The results of the above activities were entered onto an existing GIS to provide an accurate and accessible record upon which to base future plans.

Paddle River enhancement project - Phase II

West Central Forage Association

Grant: $13,000

Project Code: 020-00-90-162

Project Status: Phase I funded in 2010-11; Completed

In 2010 a number of the Paddle River Stewardship Group (PRSG) landowners participated in Phase I of the Paddle River enhancement project. Phase II of the Paddle River enhancement project entailed addressing some of the issues identified in Phase I, such as fencing off riparian areas to reduce the access of livestock to the river banks thereby reducing animal impacts and allowing damaged areas time to heal; planting woody shrubs with deep roots that will stabilize river banks that have been damaged from livestock, recreation and natural causes; site assessments on the river; reduction of invasive weeds with biological control methods along the river in the areas that cannot be sprayed. All of the information and project activities have been shared through two meetings, newsletters and newspaper write-ups, which created more awareness among people along the Paddle River and in local communities. The meetings and joint projects brought the landowners and their neighbours together to network, learn and discuss problems and solutions to issues that they have in their operations. All of these activities enhance water quality, fish and wildlife habitat and improve the productivity of the river which will benefit landowners and others who use and value the Paddle River for livelihood or recreational use.

Deliverables/Results:

Due to the high moisture levels in the 2011 growing season, everything was completed later than was expected, but it was completed as planned. Producer engagement was good and those that are currently involved are interested in doing more work. Some that chose not to be involved this year are working on plans to begin next year

Buy in from the producers that are farming along the river has been good. Active participants are very positive about the outcomes and the work that they are doing at this stage, and see the long-term benefits that this project will have. They feel that they are being proactive in creating a better environment along the riparian areas instead of waiting until government imposes regulations.

A planning meeting was held in May 2011 and attended by PRSG members and new participants to learn about new projects planned for this funding.

High tensile exclusion fencing was constructed by the producers along ~4.5 miles of the river where livestock are being grazed between May and November 2011. This was generally done as one or two strand electric fence so as to not interfere with wildlife travelling.

350 trees of various (mostly native) native varieties were planted along the river at three locations in May 2011 to enhance the riparian health. These included red osier dogwood, poplar, birch, spruce, pine, and Manitoba maple.

In depth assessments of the river on ten sites were carried out in September 2011 including water quality, fish counts, turbidity, cross sectional measurements and temperature monitoring. A report was written up with the results in consultation with ASRD water specialists.

Biological weed control was implemented on primary invasive weed, Canada thistle. 20 dishes (2100 bugs) of stem mining thistle weevil (*Ceutorhynchus litura*) were released at various sites along the river in September 2011.

Compiled information (data and photos) and appended to information gathered in 2010.

Write ups in newsletters and local papers, presentation at the Association Annual General Meeting

Numerous phone calls and one-on-one consultation with producers in regards to the ACA project and discussions of next steps.

Willmore Wilderness Park Stewardship & Youth Mentoring Initiative

Willmore Wilderness Foundation

Grant: $20,000

Project Code: 015-00-90-138

Project Status: Funded since 2010-11; Completed

The Willmore Wilderness Foundation manages 4,600 sq km of rocky terrain in the Rocky Mountain wilderness. The Foundation assesses and monitors this wilderness area, as well as clears trails, maintains campsites, cleans up garbage, corduroys boggy areas and provides information to the general public. This land base is managed as high-quality wildlife habitat and provides recreational and educational opportunities for Albertans. This grant was used to support one ten-day trip and one 18-day trip. Three separate grazing-research sites were cleared up at Kvass Flats on the ten-day trip. Barbwire, page wire and metal posts were taken down and stacked for further removal by either helicopter or snowmobile. This ended up being much more work than anticipated. There was significant evidence that wildlife had been caught in the barbwire and the metal fence poles were bent as a result. The Foundation also cleared the Smoky River trail through the 2002 burn during this ten-day period. There was a lot of downed timber and it was tough cutting. one aboriginal youth was mentored on the ten-day trip. The crew continued to clean up the endless yards of florescent red plastic ribbon in the Sheep Creek, Continental Divide and Jackpine River areas during the 18-day trip. Four aboriginal youth and one non-aboriginal youth were mentored on the 18-day trip. The main Sheep Creek Trail through the burn to Casket Lake was cleared during the 18-day trip. However, more work needs to be done on re-routing the muskeg areas between Casket Lake and Morkill Pass. Also there is one and a half miles of bad muskeg from Donald McDonald Meadows down Bazil Creek that needs significant work. The youth and their mentors continued to clean up garbage

and trash throughout the 18-day trip. The trash was packed out to Grande Cache by packhorse. Obstructed trails were cleared and made passable. Youth were taught packing, trail skills and more. Extensive video and pictures were taken of the youth and their mentors. A movie is in production on the 2010 and 2011 trail clearing initiatives by People & Peaks Productions.

Deliverables/Results:

Main results include: cleared trails (GPS coordinates available); removal of old grazing research fencing; clearing of florescent ribbon from pine beetle work; cleaning up of campsites; stocking campsites with wood; some re-route trail work (more work needs to be done); five youth mentored; filming, journaling and photographs taken of entire work.

Project information is posted to the Foundation's website at: www.willmorewilderness.com/page%20folder/trail_clearing.html.

The film development is moving into the post-production phase. The film will be edited into a television quality documentary, featuring the youth being mentored in traditional skills. A trailer is posted on the Foundations website and used for education and outreach at: www.peopleandpeaks.com/Page%20Folders/Movies/Diamond_Hitch.html.

A project summary article was included in the January 2012 issue of the Willmore Wilderness Newsletter, which is distributed internationally.

Grant Eligible Conservation Fund Part B: Research

Northern leopard frog overwintering habitat - identifying suitable hibernation sites

Alberta Innovates - Technology Futures (Dr. B. Eaton)

Grant: $15,000

Project Code: 030-00-90-180

Project Status: New; Extended until June 30, 2012

The northern leopard frog (*Lithobates pipiens*) has experienced severe declines in Alberta in the recent past. One of the current research priorities for this protected species is developing an understanding of overwintering habitat needs in Alberta to increase the success of reintroduction efforts in the province. Therefore, the overall goal of this project is to examine overwintering habitat use by leopard frogs in Alberta. The objectives of the project are to use radio-tracking to determine where leopard frogs overwinter at coarse and fine scales and determine movement patterns associated with overwintering. 16 adult leopard frogs were radio-tagged in October 2011 with specially built radios having reduced pulse rates to increase battery life. Predation of radio-tagged frogs was high based on the evidence left behind; it is thought that nine of the tagged frogs were predated. Potential predators included birds, mammals (coyotes, muskrats, mink), and snakes. Signals from five radios were also lost over time, possibly due to predation or transmitter failure. Two frogs were found dead in the water under the ice of unknown causes. The tracking that was obtained suggested that frogs dispersed mainly to one end of the pond where a number of springs flow into the water body, that they seem to favour shallow water just under the ice near the pond's edge, and that they can move relatively far distances under the ice. Conditions at locations where frogs were found were shallower and colder than random sites in the pond. Frog locations did not differ from random sites in dissolved oxygen concentrations or pH levels. Although the number of animals that were killed by predators or simply disappeared was disappointing, the results provide insight into the ecology of these frogs. Overwintering survival rates are poorly known for this species, and this project provides a first glimpse of the challenges leopard frogs face during the period when they are becoming torpid because of falling temperatures, and are still vulnerable to predators. The location of the frogs under the ice in shallow water was a surprise, as it was expected that they would retreat to deeper water to overwinter. Additional research is required to determine if this is a general pattern, or a response to the conditions at the study site itself.

Deliverables/Results:

The main results of the project, thus far, are perfection of the radio belting system, collection of information on within-pond movement of frogs, and generation of data on predation rates at the Bow City site. The high predation rates were not expected to be so high at the site, but this provides important information related to potential population growth rates and predation patterns, and suggests that a larger number of animals needs to be radiotagged to increase the likelihood of having at least some individuals survive the winter. It was also not expected to find the frogs in such shallow water, or that they would be so mobile under the ice. The project continues to determine

if these patterns are general across sites and over time.

Reports/Publications:

Year-end reports detailing methodology and progress to date.

Final report detailing the project, and management recommendations made on the basis of the project results, anticipated completion date: August 30, 2013.

At least one detailed journal publication on northern leopard frog overwintering ecology (habitat use, dispersal, etc.). This will be submitted to a general ecology journal (e.g. Oecologia). Anticipated completion date: September 30, 2014.

Using metapopulation modelling to insure the effective conservation of northern leopard frogs

Calgary Zoo (Dr. D. Smith & Dr. B. Jones)

Grant: $21,000

Project Code: 030-00-90-170

Project Status: Funded since 2010-11; Completed

Since 2009, the Calgary Zoo has undertaken a five-year intensive survey of northern leopard frogs (NLF) across 90,000 km2 of southern Alberta. The goal is to establish the best management tools to conserve this at risk species; you can't protect them if you can't detect them. The objectives are as follows: 1) to use a site occupancy model that considers several covariates on probability of detection to develop rigorous monitoring protocols for NLF; 2) to determine whether, or to what extent, the NLF population is still declining in Alberta by examining if there is equilibrium in metapopulation dynamics; 3) to determine the amount of management effort necessary to ensure the long term survival of NLF in Alberta; 4) to identify key habitat associations and correlates of NLF occupancy on the western great plains. This research consists of surveying 68 sites four times in the spring and four times in the summer. During each survey data is collected on all amphibian species found, environmental conditions (i.e. percent humidity), habitat composition, water body type, and water quality variables (i.e. ammonium levels). Through mathematical modelling it is determined which covariates have the greatest effect on the ability of the observer to detect northern leopard frogs. Over the last three years they found the ability of the observer to detect the frogs is more variable in the spring with wind speed having the greatest influence on detectability; whereas in the summer the ability of the observer to find the frogs is somewhat constant. The last three years of data do not suggest recovery of NLFs in the study area however a minimum of two additional years is required to address Alberta's population status with confidence. Water body type and vegetation composition are incorporated into the models, the data suggests no strong association of NLF presence with either. The project's results along with acknowledgement of ACA and other donors has been presented to government officials and will influence changes to the next government provincial survey for NLFs.

Deliverables/Results:

This is a multi-year study; the collection of this year's data concludes the project's third year of what is hoped to be a five year study. This year data analysis to address the objectives of this study will commence.

By the summer 2012 the researchers will have submitted three years of results to a peer reviewed scientific journal. Smith et al., (In Press) Difference in detection and occupancy between two anurans: the need for species-specific monitoring strategies.

An article on this project was published in Calgary Zoo's magazine 'What's New at the Zoo?' circulated to over 80,000 households.

Impacts of oil sands mining on amphibian health in the boreal forest: Are infectious disease dynamics and malformation rates correlated with oil sands mining activities?

Keyano College (Dr. D. Schock)

Grant: $19,000

Project Code: 030-00-90-185

Project Status: New; Project extended until July 31, 2012

The boreal forest ecosystem in northern Alberta plays host to several major industrial development projects including oil sands mining and upgrading. Although the province of Alberta, as well as the rest of Canada, derives substantial economic benefits from this natural resource, the poorly understood ecological costs of these operations have drawn scrutiny. In addition to the clearing and stripping of hundreds of square kilometres of boreal forest, oil sands mining and associated upgrading processes release chemicals with the potential to negatively impact aquatic and terrestrial ecosystems. Substances of particular interest include heavy metals and organic compounds such as polycyclic aromatic hydrocarbons (PAHs) and naphthenic acids (NAs) because they are found in high levels in oil sands process-affected materials and are toxic at relatively low levels. The effects of oil sands operations may be widespread in the boreal forest as a result of air current patterns and river drainages that can move particulate and suspended materials large distances. This project is evaluating the health of wild amphibian populations at varying distances from oil sands mining operations as way to evaluate overall ecosystem health. Amphibians are integral components of the boreal forest ecosystem, linking terrestrial and aquatic food webs as a result of their complex lifecycles. Loss of amphibians from an ecosystem can alter nutrient and energy pathways, and change the diversity and composition of aquatic invertebrate communities. Amphibians in the boreal forest use ephemeral and semi-permanent ponds and wetlands for breeding, with snow-melt accounting for the majority of the water in the early spring. Developing eggs and young tadpoles may be exposed to particularly high levels of organics and heavy metals from oil sands operations because of deposition on snow that accumulates over the winter and then washes into the ponds in a pulse in the spring. One aspect of amphibian health that the project is examining is the disease dynamics of two infectious pathogens, ranaviruses and chytrid fungus. These pathogens are responsible for some of the most catastrophic losses of amphibian biodiversity known to science and their emergence as major threats to amphibian populations may be linked to environmental degradation. Ranavirus-related die-offs were identified at two sites in the Fort McMurray area, and detected sublethally infected individuals at sites near Fort Chipewyan and Fort McMurray. The ranaviruses detected in this study have been included in a North America-wide phylogenetic study that is exploring the evolutionary origins of amphibian ranaviruses.

Amphibians may also serve as entry points into the food web for substances that bio-accumulate. To examine this possibility, ecotoxicological assays have been conducted for heavy metals, NA and PAH in breeding ponds and amphibian tissues. This study design allows us to test for differences among life stages and ponds, and

examine intra- and inter-annual variation.

Deliverables/Results:

The overall sampling design for field work in 2011 was compromised by the very dry spring and forest fires in the area. Road closures hindered the researcher's ability to locate more new sites and the dry conditions meant that some sites previously identified in 2010 didn't contain water in 2011. As well, the logistical complications stemming from the dry conditions and the fires made it impossible to collect water and frog samples for metals and organics as early in the year as initially planned. Despite these challenges, nine ponds were ultimately identified for inclusion in the project. The multi-year design of this project will provide insight into inter-annual variability in this region of the boreal forest. For example, annual fluctuations in winter precipitation and major events like the forest fires in 2011 likely have important effects on the quality and quantity of substances (PAH, NA, heavy metals) that make their way into breeding ponds.

The project is awaiting the data from several assays, and other assays have been completed so recently that the results have not yet been interpreted. At this point it is confirmed that large ranavirus-related die-offs occur in the Fort McMurray region, and that ranavirus infections occur up into Wood Buffalo National Park – Fort Chipewyan area. It is also confirmed that physical abnormalities are not readily explained by failed predation attempts occur in the Fort McMurray and Fort Chipewyan areas. Correlations between proximity to oils sands mining activities and physical abnormalities in amphibians are being tested for. Abnormalities found in the Fort McMurray and Fort Chipewyan areas thus far involve hind limb abnormalities and asymmetrical eye placement, which are abnormalities that are consistent with those caused by chemical contaminants.

Conference presentations:

Amphibian Ranaviruses in Canada – Historical, Current, and Future Research Directions, Danna Schock (Keyano College, Canada). 2011 Joint Meeting of Ichthyologists and Herpetologists in Minneapolis, an international symposium on amphibian ranaviruses. The talk is uploaded on the symposium website: fwf.ag.utk.edu/mgray/ranavirus/2011Ranavirus.htm

This research project has been discussed at a number of smaller scope college-specific and community-specific events and ACA is featured prominently in those presentations as well.

Reports/ Publications

Reports to funding and permitting agencies: four reports are required to funding partners associated with this project (ACA, Keyano College, Parks Canada, Environment Canada). A final report is being prepared for the Canadian Wildlife Foundation and a report is also due to ASRD.

Two peer-reviewed publications: anticipated completion is April 2013.

Population dynamics of mountain goats in Alberta

Laval University (Dr. S. Côté)

Grant: $9,000

Project Code: 030-00-90-117

Project Status: Funded since 2004-05; Completed

Research on the ecology, population dynamics, and management of mountain goats (*Oreamnos americanus*) on Caw Ridge was initiated following a decline in goat populations in west-central Alberta during the 1980's. The project objectives are 1) to measure variation in individual survival and reproductive success in both sexes using marked animals, 2) to identify the causes of this variation, 3) to quantify variation in mortality and population sex-age structure among years, and identify factors (including hunting) that affect population size, and 4) to monitor emigration / immigration of juveniles. The continued monitoring of life-history traits of marked individuals is combined with field observations of behavior to determine the factors influencing population size and recruitment. Summarized below are some of the main findings of the study so far. Kid production increases with female age from three to six years, peaking at 80% at eight-12 years and decreasing afterwards. Because of the late age of primiparity and increasing kid production with age, much of the recruitment of yearlings in the population is contributed by females aged eight to 12 years. Kid survival is negatively influenced by harsh conditions during winter, but is strongly positively influenced by kid mass. Both kids' development and maternal care have a direct and strong positive impact on offspring survival. Adult survival is greater for females than for males. Some males dispersed, especially those with higher genetic diversity. For both sexes, survival is lower for two-year-olds than for older goats. Survival shows clear evidence of senescence, for females beginning at ten years of age and for males from eight years of age. Survival of adult females is similar to that of other female ungulates of similar body size but survival of adult males appears lower. Predation seems to play a limited role on population dynamics. Predation on small, isolated populations of mountain ungulates could vary with the behavior of individual predators in a density-independent fashion, and therefore may be highly unpredictable. Native mountain goat populations are sensitive to overharvest if adult females are shot. They have a low natural recruitment rate and show little evidence of density-dependence or of compensatory responses to hunting. Hunting mortality thus appears additive.

Deliverables/Results:

The summer field season was very productive; all data necessary to meet the objectives outlined in the grant proposal was collected. In 2011, the researchers caught, marked and released two previously unmarked goats (two yearlings) and recaptured 13 marked goats, for a total of 15 captures. In total, 437 mountain goats have been marked since 1988. In September 2011, there were 90 goats in the population of which 81 (90%) were marked. If kids are excluded because they only mark them when they are at least one-year old, the proportion of marked goats was 98%.

Recently six papers on the mountain goat study have been published in high-profile International scientific journals, including two papers currently in press. Three papers have been submitted that are currently under review. Two students have also completed their theses this year (Sophie Godde and Aaron Shafer). Seven presentations were given on the mountain goat project this year, including two invited seminars.

Scientific publications published or submitted in 2011-2012:

Shafer, A. B. A., J. M. Northrup, K. S. White, M. S. Boyce, S. D. Côté and D. W. Coltman. Habitat selection predicts genetic relatedness in an alpine ungulate. *Ecology, in press*.

Shafer, A. B. A., C. W. Fan, S. D. Côté and D. W. Coltman. (Lack of) Genetic diversity in immune genes predates glacial isolation in the North American mountain goat (*Oreamnos americanus*). Journal of Heredity, in press.

Hamel, S., S. D. Côté and M. Festa-Bianchet. 2011. Tradeoff between offspring mass and subsequent reproduction in a highly iteroparous mammal. *Oikos* 120: 690-695.

Ortego, J., G. Yannic, A. B. A. Shafer, J. Mainguy, M. Festa-Bianchet, D. W. Coltman and S. D. Côté. 2011. Temporal dynamics of genetic variability in a mountain goat (*Oreamnos americanus*) population. *Molecular Ecology* 20: 1601-1611.

Shafer, A. B. A., J. Poissant, S. D. Côté and D. W. Coltman. 2011. Does reduced heterozygosity influence dispersal? A test using spatially structured populations in an alpine ungulate. *Biology Letters* 7: 433-435.

Shafer, A. B. A., S. D. Côté and D. W. Coltman. 2011. Hot spots of genetic diversity descended from multiple Pleistocene refugia in an alpine ungulate. *Evolution* 65: 125-138.

Shafer, A. B. A., D. W. Coltman and S. D. Côté. Movements across mountaintops: a novel mammalian system for studying dispersal. *Journal of Evolutionary Biology*, submitted December 2011.

St-Louis, A., S. Hamel, J. Mainguy et S. D. Côté. Factors influencing the reaction of mountain goats towards all-terrain vehicles. *Journal of Wildlife Management*, invited revision submitted February 2012.

Hamel, S., N. G. Yoccoz, and J.-M. Gaillard. On the importance of detection and statistical estimation of life-history trade-offs in evolutionary ecology. *American Naturalist*, revision submitted February 2012.

Conference presentations:

Shafer A. B. A and S. D. Côté. 2012. The Caw Ridge long-term study. Juneau, AK, USA. (invited presentation)

Théorêt-Gosselin, R., S. Hamel and S. D. Côté. 2012. Why care? The role of maternal behavior and environmental conditions in the survival of mountain goat kids. 31th Annual meeting of the Centre d'études nordiques, Université du Québec à Rimouski, QC, Canada. (poster)

Côté, S. D. 2011. The king of the mountain or is it the queen? Life-history strategies and conservation of mountain goats. Bow Valley Naturalists, Canmore, AB, Canada. (invited presentation)

Théorêt-Gosselin, R., S. Hamel and S. D. Côté. 2011. Why care? The role of maternal behavior and environmental conditions in the survival of mountain goat kids. 18th Annual conference of The Wildlife Society, Waikoloa, HI, USA. (poster)

Godde, S., L. Humbert, S. D. Côté and D. Réale. 2011. Les mesures d'association entre individus sont-elles affectées par le niveau de grégarisme des individus? Comparaison entre indices d'association. 36th Annual meeting of the Société Québécoise pour l'Étude Biologique du Comportement, Université de Sherbrooke, QC, Canada.

Shafer, A. B. A., J. M. Northrup, K. S. White, M. S. Boyce, S. D. Côté and D. W. Coltman. 2011. Habitat selection predicts genetic relatedness in an alpine ungulate. 13th Congress of the European Society for Evolutionary Biology, Tuebingen, Germany. (poster)

Théoret-Gosselin, R., S. D. Côté. 2011. À quel point les facteurs environnementaux affectent-ils directement la survie des jeunes? 2nd Annual biology meeting, Département de Biologie, Université Laval, QC, Canada.

Copies of all reports, popular and scientific articles are available.

Identifying critical habitat for ferruginous hawks in Alberta

University of Alberta (Dr. E. Bayne)

Grant: $24,640

Project Code: 030-00-90-178

Project Status: New; Completed

Ferruginous hawks are a provincially endangered and federally threatened species. Efforts are required to identify and protect the remaining critical habitat for this species, as well as to identify methods for mitigating effects of future land-use change caused by petroleum and power transmission companies. The objective of this project is to understand how threatened ferruginous hawks are responding to agricultural development, energy sector footprint, and transmission line development in order to inform designations of critical habitat. Specifically, models are being developed that predict how nest site selection, nesting success, foraging success, and adult movement are influenced by these various impacts. The goal is to evaluate whether the current approaches to managing risk to these species (set-back distances) are effective or if other strategies related to development thresholds need to be implemented at larger spatial scales. The research is also looking at the relative importance of change in habitat versus the physical disturbance caused by human activities like traffic and maintenance activities. This year the project found little evidence that nest site selection and nest success were negatively affected by industrial activity. Adults spent considerable time near roads which may increase their risk of traffic mortality. Wind was a dominant factor influencing nest success as many natural nests were blown out of trees.

Deliverables/Results:

Nest success: Nest success was high (201 nests) and the most common reasons for failure were predation (29 nests) and nest damage from weather (11 nests). In spring, 14 ferruginous hawk nests were found that failed and were replaced by a competing species such as great horned owls or Swainson's hawks within a week. Actual reasons for failure could not be determined because evidence was generally destroyed by the new nesting raptors, however previous studies have documented aggressive takeovers by these two competing species. It is possible that competition for limited nest sites results in failed ferruginous hawk nests. Nests fledged an average of 2.15 young. Among successful nests, the average number of young fledged is 2.85 young per nest.

Adult movement: a Generalized Linear Mixed model was used with individual as a random effect to compare used locations to an equal number of random locations within a radius equal to the maximum distance moved by each individual from their nest. At each used and available point the distance to nearest well or road (m) and the habitat type where the point occurred (grassland, cropland, over water) was determined. Seven models were compared using AICc (Null, Habitat type, Distance to Road, Distance to Well, Habitat type + Distance to Well, Habitat Type + Distance to Road, and Habitat type + Distance to Road + Distance to Well) and selected the most parsimonious model to explain relative probability of habitat use by ferruginous hawks.

Nesting behaviour: In addition to monitoring nests on a weekly basis, digital video cameras were mounted onto 37 nests to record nest activity 24 hours a day for several weeks. The video footage is currently being reviewed to extract nesting and behavioural

data. Traffic counters were also installed on nearby roads to record traffic volume, vehicle speed, and time of traffic, which will help to determine the flushing distance or changes in behavior caused by vehicles. In the future, a new camera system they developed will be used to track other disturbances such as farm machinery, other animals flying near nest, etc..

The habitat model is currently under construction, with modifications planned using data from the 2012 field season.

As this is the second year of a three year project, preliminary versions of the deliverables are in development, but may be modified in future project years with more data and honed analyses. Construction of final statistical models and distribution of output maps will occur once data from all years have been collected.

Eco-evolutionary dynamics of phenology in resident mammals

University of Alberta (Dr. S. Boutin)

Grant: $10,000

Project Code: 030-00-90-183

Project Status: New; Completed

The emerging study of eco-evolutionary dynamics aims to understand the interplay between ecological and evolutionary processes operating within populations. By examining both categories of process on a common timescale, insight can be gained into how selection induced changes in heritable traits (i.e., microevolution) affect ecological dynamics and, in turn, how these dynamics feed back to influence the genetic makeup of populations. The researchers have been examining the eco-evolutionary dynamics of a key life history trait, hibernation phenology, in two long-term studies of free-ranging mammals (Richardson's [studied for 20 years] and Columbian [18 years] ground squirrels). Funding from the ACA has been instrumental in allowing this project to establish the key linkages in the eco-evolutionary framework for this trait and these species. The project researchers have previously shown that emergence date from hibernation is a heritable trait in Columbian ground squirrels and, hence, can evolve in response to selection. In addition, fitness (a composite of female survival and reproductive success) decreases with delayed emergence date, suggesting that animals should be emerging from hibernation earlier. However, climate change has resulted in increased winter precipitation and delayed snowmelt. This has delayed individuals' emergence from hibernation and resulted in negative consequences for both individual fitness and population viability. Consensus projections from current climate models are for increased winter precipitation throughout much of much of northwestern North America, suggesting that these findings could be more general than previously appreciated. Analyses have begun on a congeneric species to Columbian ground squirrels (Richardson's ground squirrels) to investigate this generality and have also begun to investigate intraspecific variation in emergence phenology by studying populations of Columbian ground squirrels naturally varying in mean emergence date.

Deliverables/Results:

The primary result of the project, to date, is a better understanding of the influence of climate change on a wild hibernator. Although phenological shifts are the most often reported response to climate change, among vertebrates, these results have primarily been obtained from migratory birds. Their analyses revealed that, unlike the vast majority of accounts of phenological advances in response to climate change, the emergence dates of Columbian ground squirrels have been delayed by ~0.5 d/year over the past 20 years. This result is due to an increasing prevalence of late-season snowstorms and corresponding delay in snowmelt. Importantly, delayed emergence leads to reduced fitness and the fitness of individuals and viability of the population has thus been declining for the past 20 years. The researchers are currently beginning to examine their generality through ongoing analyses of a congeneric hibernator (Richardson's ground squirrels).

Reports/ Scientific publications

Lane, J.E. 2012. Evolutionary ecology of mammalian hibernation phenology. In: Ruf T, Bieber C, Arnold W, Millesi E (eds). Living in a seasonal world: thermoregulatory and metabolic adaptations. Springer, Heidelberg (in press).

Submitted:

Lane, J.E., Kruuk, L.E.B., Charmantier, A., Murie, J.O., Dobson, F.S. Delayed phenology and reduced fitness associated with climate change in a wild hibernator. Nature (ms# 2011-12-15820).

Effects of hunting pressure and recreational access on behaviour of elk in SW Alberta

University of Alberta (Dr. M. Boyce)

Grant: $21,500

Project Code: 030-00-90-176

Project Status: New; Completed

Understanding the effects of human disturbance is critical for effective conservation of wildlife in an increasingly human-dominated world. A novel approach was used to disentangle the effects of recreational activities on the vigilance behaviour of elk in a human-dominated landscape of Alberta, Canada. Previous studies have been performed during short seasons, within single-use areas (e.g., protected areas), or with incomplete estimates of human impact. Original elk behavioural data was collected across different land-use types and seasons in the same population subjected to different degrees of disturbance including hunting. Actual human use on roads was measured and for the first time the effect of fine-scale traffic patterns was documented on the behaviour of a large herbivore across an entire road network. They found that effects of humans on shaping behaviour of wildlife exceed those of environment and natural predators. Taking into account herd size, land use and distance from roads, the researchers were able to predict more than 80% of variability of vigilance. Data collected across different land-use types (private land, public land, National Park) and seasons allowed the researchers to show that it was not just the number of people but also the type of activity that shaped patterns of elk behaviour. The lowest level of group vigilance was recorded in the National Park in summer, when the area was crowded with hikers, while vigilance increased there in the fall, when hikers were almost absent but hunting was allowed immediately outside its borders. More people can have less of an effect if the type of human activity is relatively benign (e.g. hikers vs hunters). The highest level of vigilance was recorded on public lands during hunting season and summer where industrial and recreational activities were cumulative. Traffic volumes of at least 12 vehicles per day (one vehicle every two hours) triggered increased vigilance in elk and decreased feeding time. Vigilance bouts in focal elk increased by 50% in magnitude as the distance from the nearest road decreased

from 1,000 m to less than 250 m. In this landscape of fear, where each human being is perceived by elk to be a potential predator, extremely low traffic volumes were able to trigger a behavioural response by elk. Empirical studies showed that behavioural responses of elk to the risk of natural predation are correlated with reduced feed intake and decreased calf recruitment. Human impact could have the same effect, although quantifying the actual fitness consequence of time and energy lost to vigilance remains a challenge. Indeed, a reduced female reproductive success in areas where hunting and other recreational activities were cumulative was recorded. Some species are much more likely to be disturbed by humans than by non-human predators: for these species, quantifying human disturbance should be the highest priority for conservation.

Deliverables/Results:

This research found the highest levels of vigilance on the public land during hunting season and summer. Public land was the most disturbed area with hunting, industrial and recreational activities – including ATVs – with few restrictions on the number of people having access to the area. Interestingly, they found levels of vigilance on private land during summer and the hunting season that were intermediate to those recorded in the public land and the National Park, suggesting that restrictions imposed by landowners could lead to a lower disturbance rate on elk compared with uncontrolled human disturbances occurring in the public land. Lowest values of vigilance were recorded in the National Park during summer and on private lands during winter-spring (after hunting season). Although the National Park was crowded by people during summer, as in the many parks in North America, elk vigilance levels were lower than the other treatment areas. The absence of ATVs in this area confirmed indirectly that ATVs and intrusive recreational activities (such as recorded in the public land) can influence elk behaviour. Vigilance levels in the National Park during the hunting season and winter-spring, when hunting was allowed along its borders during both periods, were not different than recorded on private lands, where hunting was permitted, in the same period. The National Park is not large enough to guarantee the reserve effect to the elk living there.

Road traffic volumes of at least one vehicle every two hours (12 vehicles per day) were able to evoke a behavioural response in elk. Variables such as natural predators, terrain ruggedness, distance from conspecifics or position in the group, as well as age classes were excluded from the top ranked models predicting group vigilance and individual vigilance. In this landscape of fear, i.e. in areas where hunting, industrial activities or recreational use of ATV were permitted, the distance from roads (and thus humans) had a stronger role in affecting elk vigilance when compared to other factors previously thought crucial, i.e. in areas where hunting, industrial activities or recreational use of ATVs were not permitted. This study indicates behavioural effects of humans on elk that exceed those of the environment and of predators.

Reports/ Publications

Ciuti, S., Muhly, T.B., Paton, D., McDevitt, A.D., Musiani, M., & M.S. Boyce. Human selection of elk anti-predator strategies in a landscape of fear. submitted to *Proceedings of the Royal Society of London B series*.

Ciuti, S., Northrup, J.M., Muhly, T.B., Simi, S., Musiani, M., Pitt, J.A., and & M.S. Boyce. Effects of humans on behaviour of wildlife exceed those of environment and of natural predators in a multi-use landscape of fear. submitted to *PLosOne*.

Four technical reports: Progress date report (1), Investigator annual report (2), and Final report (1) – Waterton Lakes National Park of


Elk at forest edge. Photo: Simone Ciuti

Canada. [Effect of Access Management on habitat use, movement, vigilance and survival of elk in SW Alberta]

Popular article: Simone Ciuti and Mark S. Boyce. 2012. How bull elk elude hunters. Alberta Outdoorsmen 13(9):12-14.

Presentations:

Two presentations at quarterly progress meetings for stakeholders (Parks Canada, ASRD, University of Calgary) in Pincher Creek.

Ciuti, S. "Effects of human pressure on elk behaviour in a landscape of fear", Dept. of Biological Sciences, University of Alberta, November 2011

Ciuti, S. "Effects of vehicle traffic on Behaviour of wildlife in a landscape of fear – Elk as a case of study", Dept. of Biological Sciences, University of Calgary, January 2012

Websites:

Institutional websites: www.biology.ualberta.ca/faculty/mark_boyce/?Page=8073 and www.biology.ualberta.ca/faculty/mark_boyce/?Page=719

Research project website: www.montaneelk.com

Examining trumpeter swan productivity and population in Alberta; survey methods and swan response to disturbance

University of Alberta (Dr. L. Foote)

Grant: $20,700

Project Code: 030-00-90-169

Project Status: Funded in 2010-11; Extended until June 30, 2012

In September 2001 the trumpeter swan (*Cygnus buccinator*) was listed as a threatened species in Alberta by the Minister of Sustainable Resources. The main reasons for listing this species was its small breeding population (<1,000 birds), dependence of the breeding population on habitats vulnerable to human disturbance, and concern for limited wintering habitat. In response to this listing, several recovery plans have been developed by the Alberta Swan Recovery Team, with the most recent being published in 2006. The recovery plan assesses limiting factors on trumpeter swan populations and gives recommendations for conserving and managing this species as well as acknowledging information gaps. One of the main factors limiting trumpeter swan numbers outlined by the 2006 Alberta Recovery Plan is human disturbance on breeding lakes. Trumpeter swans have been shown to be highly sensitive to human disturbance while on their breeding lakes. The objectives of this project are: 1) to design field experiments, GIS and historical surveys to examine the effects of human disturbance on trumpeter swan breeding productivity; 2) to assess the effectiveness of population estimation through the use of stratified random sampling (first used on the 2010 Trumpeter Swan Survey in Alberta) and explore possible modifications to increase its effectiveness; and 3) to develop a predictive model to describe and forecast the rate and pattern of the ongoing expansion of swan breeding range into new areas. ArcGIS was used to calculate human disturbance on a landscape scale on swan nesting lakes to examine possible relationships between human disturbance and swan productivity. Field observations were also used to track nesting success throughout the breeding season. Stratified random sampling methods were modified to be used for the five-year breeding survey to accurately predict swan populations. This method was created and tested using past five-year breeding survey data. Predictive models were created for swan expansion based on previous swan expansion and population trends. The researchers were unable to carry out the second and third activities. The proper data needed for conducting these activities was unable to be procured. Instead of creating spatial swan expansion models they are in the process of creating a predictive model on a lake by lake basis with variables looking at characteristics of the lake. The first activity described above was completed. Swans were found to have an average escape distance of 805m from human pedestrians. The only significant relationship found between trumpeter swan productivity and human disturbance was with well sites in 2010 and there was a small positive relationship. Also there was a significant relationship found between swan productivity and Green/White Zone in all years with cygnet counts being higher in white zones in 2010 and 2000 and higher in the Green Zone in 2005. Permits were not obtained in time to start field observations while incubation was in process, and field observations of cygnets over the summer found 77% survival.

Deliverables/Results:

Currently one peer reviewed journal article is in the process of being written with intent for submission in the Journal of Wildlife Management. The plan was to submit the article by the end of April.

The refining of the stratified random sampling was not completed so no advice can be given on ways to make the next five-year survey more efficient.

Recommendations for future swan guidelines by ASRD will be written up following thesis completion in late April, 2012.

Beaver-created wetlands and biodiversity

University of Alberta, Augustana Campus (Dr. G. Hood)

Grant: $6,250

Project Code: 030-00-90-186

Project Status: New; Completed

The goal of this project was to assess the effectiveness of current management approaches to human-beaver conflicts to develop more cost-effective and ecologically sustainable means to reduce this conflict. The detailed objectives were to: 1) quantify conflict occurrences (# of management hours, current management techniques, # of complaints) in areas with current human-beaver conflicts, 2) assess the cost-effectiveness of current and alternative management approaches, 3) compare the effectiveness of current and alternative management approaches, and 4) quantify the loss of biodiversity and wetland area as a result of wetland draining. In the summer and early fall of 2011, 25 conflict areas were mapped in the Cooking Lake/Blackfoot Provincial Recreation Area in east-central Alberta by using GPS and GIS technology. Once identified, two pond levelers, four different culvert fences, and one commercially developed culvert protector were installed. The researcher plans to install more devices in the 2012 field season. The installed devices have been assessed over the fall and winter and are pleased with all but the commercially available device. Monitoring of the performance of these devices will continue regarding environmental challenges (e.g., beaver activity, winter freeze-thaw cycles) over this next year. Alberta Tourism Parks and Recreation is very pleased with the results so far and has requested that this project continue. Other organizations such as the Beaver Hills Initiative and various rural counties have also shown some interest in the project.

Deliverables/Results:

The ACA has been acknowledged in several public presentations on this project and has been presented as a poster at the Urban Wildlife Challenges and Management Conference in April 2012. Data is currently being compiled for objectives one and two. Beginning September 2012, Dr Hood will be co-supervising a PhD student who will incorporate these sites into her PhD work on biodiversity and landscape linkages in beaver-modified habitats (objectives three and four). Last summer's work served as a pilot project to develop and refine various techniques and establish sites for long-term monitoring and research.

The water control devices will also remain in place for the benefit of Alberta Tourism Parks and Recreation. Finally, the installation of these devices has allowed for training of parks staff and volunteers to install these devices. Once the study is complete, the research results will be prepared for publication; however, given the multi-year nature of the project, a final manuscript is unlikely for at least another year.

Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services

University of Alberta (Dr. D. Mackenzie)

Grant: $23,000

Project Code: 015-00-90-182

Project Status: New; Completed, extended until May 31, 2012

The Larch Park storm water management facility is the first complete urban rebuilding of native terrestrial aspen parkland – rough fescue prairie ecosystems in Alberta. In 2010 an experiment was started on the site to determine how the different reproductive strategies of native plants used in native ecosystem rebuilding (a type of reclamation) affects success. Success is being measured by comparing the rebuilt grassland ecosystem functions with those found in rough fescue prairie and the typical turf grass communities surrounding storm water ponds. Basic ecology and soil science have been conducted to examine how rhizomatous and non-rhizomatous species affect the soils and introduced / invasive plant species establishment after construction. Both the soils and the plant communities of Larch Park are being compared to rough fescue prairie at the University of Alberta Research Ranch, near Kinsella Alberta. To date the researchers have found that differences do exist between the rhizomatous and non-rhizomatous species survival, biomass, and exclusion of non-native species. Briefly, the rhizomatous communities had better survival, biomass production, but allowed more non-native species to establish. Soil nitrogen availability was shown to be much higher on the rebuilt sites and dominated by nitrate availability. This is a common finding on heavily disturbed sites and indicates a disconnect between plant nutrient availability and uptake. Nitrate is also highly mobile in soils and will eventually be received by the storm water pond resulting in poor water quality. This leads the researchers to begin to investigate ways to decrease the mobility of nitrogen in the soil with some biochar test plots. Following the completion of the science objectives, the goal is to convert the basic ecology and soil sciences into best management practices thoroughly based in the appropriate ecological services (e.g., weed control costs through the different community types and carbon storage values) to provide firms and government groups with economic reasons to use the best ecosystem rebuilding strategies available.

Deliverables/Results:

Larch Pond restoration and research presentation at the ALIDP "Low Impact Development – vegetative source control practices" workshop (March 8, 2011)

Reference turf and native grassland transects set up, including resin capsule deployment. (May 2011)

Mid-summer sample collection, summer plant community composition data collected (July 2011)

Completion of Larch Pond native ecosystem (July 2011)

Summer Larch Park tour, coordinated in partnership with ALIDP (August 2011)

Completion of 2011 ecosystem monitoring. Fall samples and fall plant community composition data collected. (September 2011)

Field sample processing finished, sample processing took longer than anticipated. (January 2012)

Interim report for partners (including ACA) complete. 'Mini-report' sent out across the ALIDP and other networks. Presentations at partner events (e.g., ALIDP). Presentation made to partners.

Long term, these data will be included in journal publications in ecology, conservation or environmental fields.

Development of a cost-effective tools for monitoring grizzly bear population size and trend in support of their recovery and management

University of Alberta (Dr. S. Nielsen)

Grant: $35,000

Project Code: 030-00-90-175

Project Status: New; Completed

Documenting population recovery of grizzly bears and setting harvest quotas once recovered will require knowledge of population size and trend of bears. Hair-snag (DNA) mark-recapture of grizzly bears is a well-accepted method for estimating populations, but it is expensive. The goal of this project was to test a modified method for estimating grizzly bear populations based on a network of permanent sample plots and the collection of DNA from other sources including feces and rub trees. In the summer of 2011 hair was collected across six sessions at 60 hair-snag sites (360 hair-snag visits) near Hinton, Alberta. Feces was also sampled (seven sessions) and hair at 32 rub trees (five sessions = 160 visits). In total, 664 hair samples were collected at hair-snag sites, 29 hair samples at rub trees, and 115 fecal samples. Genetic analysis of hair (hair-snag and rub tree) identified 21 unique grizzly bears (12 females and nine males); three individuals were recaptures from the 2004 survey, six were recaptures from other studies, 12 were new individuals, and two bears (both male) were detected using rub trees. Current limitations in the laboratory prevented the genetic analysis of fecal samples (samples are archived). A multiple data source mark-recapture analysis (Pradel model) was used to estimate super-population size of grizzly bears. Super-population size was estimated at 25.1 bears (SE = 5.0) (11.7 ± 2.8 per 1,000-km2) and compared with a 16.1 bears (SE = 4.1) (7.0 ± 1.3 per 1,000-km2) in the 2004 survey for the same area. This suggested an annual population growth of 5.8% (λannual = 1.058, SE = 0.065). It should be noted, however, that confidence intervals of λ overlap 1.0 (0.930 – 1.185) and represent one small area of the

Yellowhead population. No seasonal variation in capture probabilities (average capture probability= 0.15) were observed, nor was there support in competing models for a negative behavioural response in re-capture rates. This suggests that hair sampling at a single site can be done in any season and without recapture bias. The researcher currently does not suggest using rub tree hair sampling or fecal DNA for monitoring bears in the Hinton area. Further work is needed to map locations of rub trees and enhancing laboratory techniques for genotyping fecal samples.

Deliverables/Results:

Map illustrating detections/non-detections and counts of unique grizzly bears by survey site in the eastern part of the Yellowhead population unit (e.g., Cadomin, Robb, and Edson areas).

Presentations:

Presentation to the 2nd Annual Grizzly Bear Trend Monitoring Workshop in Waterton, Alberta. February 29, 2012.

Reports/ Scientific publications

Recommendations on the optimal sampling intensity (number of sites per 'cell' and the number of sessions at those sites per year) for detecting individual bears and estimating population size (counts). Report 1 on population modeling completed (available upon request); Report 2 completion: August 31, 2012.

Analysis of occupancy (detected/undetected) relationships by road density and food resource availability along the Cadomin to Edson gradient. Scheduled completion: August 31, 2012.

Final report at the end of the project (Scheduled completion: August 31, 2012).

Journal publications are expected 2012-2013.

Using wetland-dependent wildlife to monitor climate and landscape change

University of Alberta (Dr. C. Paszkowski)

Grant: $6,250

Project Code: 030-00-90-187

Project Status: New; Completed

The goal of this project was to establish a research node within a continental partnership, the Terrestrial Wetland Global Change Research Network (TWGCRN). The TWGCN is aimed at addressing: 1) How climate/global change affects critical ecosystem services provided by interconnected wetlands and uplands across a large part of North America; and 2) What can resource managers and other stakeholders do to mitigate negative impacts on these services? Through funds from ACA and other sources, the project was able to purchase ten automated digital recorders ("song meters" from Wildlife Acoustics Inc.). These song meters were used to monitor amphibian and avian calling at 21 selected wetlands and establish the Beaver Hills node within the TWGCRN. In addition to TWGCRN questions, relationships between landscape conditions such as snow melt and leaf-out to emergence and calling behaviours of amphibians and bird species within the Beaver Hills are being investigated. Through long-term monitoring factors that affect timing of first calling and duration of breeding periods to changes in climate or habitat are hoped to be addressed. Song meters were placed at 21 separate wetland sites within the Beaver Hills region (17 sites), Devonian Botanical Garden (two), Hermitage Park in Edmonton (two), and the Strathcona Wilderness Centre. Sites varied in amount of forested upland vegetation and distance to roadways, to address influences of anthropogenic noises and vegetation structure on the calling behaviour of amphibians and song birds. Song meters are compared to traditional field surveys to evaluate the effectiveness of song meters at assessing species diversity. Song meters may prove more effective at assessing species diversity than traditional field methods and may be integrated into biodiversity monitoring strategies. Preliminary results of acoustic recordings reveal that song meters are effective at capturing diversity and relative abundance of amphibians and common riparian bird species. Wood frogs, boreal chorus frogs and boreal toads were all detected by song meters even though toad calls were missed during site visits. Analyses have also identified a two-three hour period where frog calling of ceases, coinciding with sunrise and early morning bird activity. Riparian bird species (such as yellow warbler and song sparrow) are common amongst the recordings, but uncommon species, like pileated woodpecker, have also been detected. Future work is aimed at addressing whether there are environmental conditions associated with calling behaviours of amphibians and song birds, and how changes affect timing of calling and duration.

Deliverables/Results:

Recordings: there are nearly 400 GB of song recordings including amphibians, birds, and mammals. Additional recordings may include bats (as part of partnership with B. Eaton, Alberta Innovates and Technology Futures, who was able to purchase songmeters equipped with ultrasonic technology.)

New techniques at processing digital files are being explored to help identifying animal calls. This method examines species specific digital fingerprints based upon peak decibels at specific frequencies.

Elk Island National Park has been informed of preliminary work and of occurrences of sora rails.

A publication on the timing of amphibian emergence related to vegetation and climactic characteristics will be written. However several years of data is required.

TWGCRN is processing digital maps and geographic information for the project from a number of sources that will be used to analyze ice-off and green up which will be related to species phenologies.

Ecological effects of sportfish stocking and aeration in Boreal Foothill lakes (the FIESTA project)

University of Alberta (Dr. W. Tonn)

Grant: $14,980

Project Code: 020-00-90-140

Project Status: Funded since 2006-07; Completed

The central goal of this study is to apply principles of impact assessment to the basic questions: What are the consequences of trout stocking and aeration in small boreal foothills lakes, which taxa are most sensitive, and what factors influence these impacts? Integrating "control-impact" and "Before-After-Control-Impact" (BACI) study designs with exclosure experiments, the consequences of stocking and aeration on native invertebrate, fish, and amphibian communities are being examined. The resulting information will assist in the proper management of currently stocked lakes and improve the province-wide stocking and aeration programs so as to conserve biodiversity and ecological integrity of Alberta's freshwater

ecosystems. Fieldwork to address the above objective finished in 2010. For 2011-12 the objective was to complete sample processing and analyses from earlier field studies. The specific objectives included: 1.) Sort, enumerate, identify and measure invertebrates from the 216 benthic and midwater invertebrate sweep samples generated by the 2010 exclosure experiment. 2.) Identify and analyze the 170 zooplankton samples associated with effects of aeration and littoral habitat. 3.) Prepare, submit, and analyze the remaining 330 stable isotope samples to complete the food web portion of the project. Preliminary analysis of food webs from two stocked and two unstocked lakes (data collected in 2006) suggested that lakes with trout may have food webs derived of more littoral-based carbon than unstocked lakes. 4.) Enumerate, identify and measure contents of 214 trout stomach content samples collected in 2010 from Fiesta Lake and other stocked lakes. With this grant, assistants were hired to help achieve these four objectives. All remaining samples were processed and data analysis is nearly complete. Three manuscripts were published in a leading aquatic research journal, initial drafts of three more have been completed, and several more are 'in preparation'. In initial comparisons of stocked vs. unstocked lakes, only minor effects on populations and communities of forage fish, amphibians, and littoral invertebrates were documented, although data on wood frogs from one fishless lake suggested that there was a general fish, not trout, effects on this taxon. Literature reviews suggested that strong effects of stocked trout are not often seen where native fish populations occurs, habitat structure is complex, e.g., due to littoral vegetation, system productivity is high, and the life history of the native taxa contributes to the vulnerability of native taxa.

Deliverables/Results:

Annual Presentations to ACA/ASRD staff: Last year, Drs. Paszkowski and Tonn, and graduate students J. Hanisch and T. Holmes met on March 17, 2011 with ACA and ASRD personnel. This year the annual meeting took place in April 26, 2012 at the ACA headquarters in Sherwood Park.

Conference presentations:

A contributed oral presentation about different aspects of the FIESTA project was given this year at the annual meeting of the American Fisheries Society (Seattle), and two presentations were contributed to the Canadian Conference for Fisheries Research (Moncton).

Scientific publications

Schank, C.M.M., C.A. Paszkowski, W.M. Tonn, and G.J. Scrimgeour. 2011. Stocked trout do not significantly affect wood frog populations in boreal foothills lakes. *Can. J. Fish. Aquat. Sci.* 68:1790–1801.

Nasmith, L.E., W.M. Tonn, C.A. Paszkowski, and G.J. Scrimgeour. 2012. Limited effects of stocked trout on littoral invertebrates in boreal foothills lakes. *Can. J. Fish. Aquat. Sci.* 69: 178–190.

Hanisch, J.R., W.M. Tonn, C.A. Paszkowski, and G.J. Scrimgeour. 2012. Complex littoral habitat influences the response of native minnows to stocked trout: evidence from whole-lake comparisons and experimental predator enclosures. *Can. J. Fish. Aquat. Sci.* 69: 273–281.

Several additional manuscripts are currently being preparing for research journals.

Articles in popular outdoors/fishing magazines:

The project was fortunate to have Fred Noddin as a field assistant for two years. Fred is a columnist for Alberta Outdoorsman and contributing writer for other popular magazines. Fred (sometimes co-authored with PhD student J. Hanisch) has written several articles highlighting the findings of this research and its relevance to the angling community.

Alberta Outdoorsmen (May 2011): "The effects of stocked trout in boreal lakes"

Bob Izumi's Real Fishing (summer 2011), "Science and mid-summer trout"

Assessing pre-historic distribution, abundance and genetic diversity of elk (*Cervus elaphus*) in Alberta through archaeological and ancient DNA analysis

University of Calgary (Dr. Kooyman)

Grant: $19,060

Project Code: 030-00-90-179

Project Status: New; Extended until July 31, 2012

North American elk (*Cervus elaphus*) are an important component of Alberta's natural ecosystems. Despite severe population declines in the 19th century, sizable populations of elk have been restored within Provincial and National Parks. There has been ongoing controversy, however, regarding the ideal populations sizes and densities required to maintain ecological integrity. The goal of this project was to use archaeological data and ancient DNA analysis of archaeological elk bones to assess the former distribution, abundance and genetic diversity of elk prior to the population declines of the 19th century. The objectives of the project were: 1) To determine the past distribution and abundance of elk populations in Alberta using archaeological and ancient DNA data; 2) To assess the genetic diversity of Alberta elk prior to population declines and translocations; and; 3) To estimate changes in genetic diversity of elk through space and time. Based on information collected through Parks Canada and the Archaeological Survey of Alberta, a database was compiled outlining the distribution of archaeological elk remains in the province. The preliminary results of the survey indicated that elk bones were present in over 100 sites, dating back to at least 9,000 BP. The sites were distributed predominantly within the Rocky Mountains and west-central Alberta, with few sites occurring in the boreal forest or grassland portions of Alberta. In general, elk remains were usually present in small numbers in archaeological sites, often represented by less than five bones. Sites with more than 20 elk bones usually dated to historic time periods, and included such sites as Fort White Earth, Fort George and the Hudson's Bay Company Fort at Rocky Mountain House. Ancient DNA analysis was conducted on 24 archaeological elk bones and antlers. Mitochondrial DNA was obtained from 16 of the samples, with generally poor DNA preservation noted in antlers compared to bones. Ten different mitochondrial haplotypes were identified in the remains, three which have been identified in modern Rocky Mountain and Manitoban elk populations. The other seven mitochondrial DNA haplotypes are unique and have not yet been identified in modern day elk populations. The successful amplification of elk DNA from ancient remains demonstrates the potential for reconstructing the genetic diversity of former elk populations in Alberta. Ancient DNA analyses for an additional 25 samples were completed for samples obtained from the Royal Alberta Museum, with final analyses of genetic diversity and former populations estimates completed using results from the complete dataset.

Deliverables/Results:

Database of archaeological elk remains (Completed): Information concerning elk remains in Alberta has been compiled.

Six archaeological elk sequences from 24 elk samples have been obtained. Sequences from an additional 25 elk samples were obtained end April 2012. Ancient mtDNA sequences uploaded to the public genetic database GenBank by May 30th, 2012.

Archaeological and genetic results will be compiled and submitted to peer-reviewed journals for publications, at least two journal articles within both archaeological and biological/ecological publications.

A poster was presented at the Society for American Archaeology Conference in Memphis, TN on April 20, 2012.

An additional conference presentation will be scheduled once the final results have been compiled. Public presentations will be held at the University of Calgary, an Archaeological Society of Alberta monthly meeting, and at Banff National Park in the summer of 2012.

Assessment of the distribution and hybridization of white-tailed and mule deer in relation to forest fragmentation using genetic markers

University of Calgary (Dr. M. Reid)

Grant: $14,296

Project Code: 030-00-90-181

Project Status: New; Completed

The distributions of the two deer species in Alberta, white-tailed and mule deer, appear to be dynamic over the past century. In particular, white-tailed deer were rare and locally distributed in the early part of the last century, but now they are more abundant than mule deer in the province as a whole. One proposed explanation is that forest has become more fragmented in recent years, with a possible consequence of increased hybridization. However, the distributions of deer are not well understood despite the large size and abundance of deer. The project goals were to develop a protocol for determining the species of deer from fecal pellets, to test whether forest loss (in particular) explains the distribution of white-tailed deer, and to determine the frequency of hybridization. Field and lab sampling time requirements were quantified and sample preservation methods and extraction protocols were tested to develop a protocol with the greatest success. DNA extraction protocols require more development to be a practical tool, as success in obtaining deer DNA from fecal pellets tended to be < 20%, yielding 59 identified samples. In central Kananaskis, 66.1% of identified pellets were mule deer, while white-tailed deer comprised 22%, with the remaining 12% identified as hybrids. The two deer species were not spatially segregated in the study area in central Kananaskis, and thus the hypothesis that forest clearing increases the abundance of white-tailed deer was not supported. Additional research will be needed to better understand habitat use by the two species of deer, and its implications for changing distributions and hybridization.

Deliverables/Results:

The extraction and identification of DNA proved a more arduous process than expected, coupled with pauses associated with the upgrading of the DNA facility at University of Calgary. Consequently the original plan of developing a model based on previously-collected samples that would then be tested by sampling new sites was modified to increase sampling of the same set of sites (mostly) for both old and new sampling. However, it appears from the data that the two deer species are not segregated spatially within the study area, which makes the original plan less appropriate in any event. This is an important result, just not the expected one. The project objective of establishing a protocol for sampling deer distributions using fecal pellets was successful primarily in determining what methods do not yield a good return on investment.

Work has been completed on this project. Despite using several different collection and extraction protocols, success in obtaining deer DNA from fecal pellets was low. This limited the scope of inference, but interesting conclusions were obtained nonetheless.

Three publications are anticipated to arise from this study.

Novel methods to evaluate exposure to, and effects of oil and gas emissions on wild birds

University of Calgary (Dr. J. Smits)

Grant: $10,000

Project Code: 030-00-90-184

Project Status: New; Completed

The oil and gas industries are central economies in western Canada. An important area is the Athabasca oil sands, which represents the second largest reserve of crude oil (bitumen) in the world. From the extraction, processing and production of bitumen a number of compounds of concerns are released into the environment in the form of liquid tailings and emissions. The overall objective of this project is to study the potential impacts of oil and gas emissions on captive birds in part by developing a new technique to confirm contaminant exposure and by examining the linkage of inhaled contaminant exposure with the birds' health responses (health status). For this, captive birds were experimentally exposed, Japanese quail (*Coturnix japonica*) and American kestrels (*Falco sparverius*), to environmentally relevant mixtures and concentrations of contaminants of toxicological concern (benzene, toluene, nitrogen dioxide and sulphur dioxide). Samples and measurements were collected from the birds prior to, during and after the exposure to assess the birds' physiological, immunological, detoxifying and stress responses. Preliminary results show effects on birds in the high dose exposure groups. For example, increases in liver somatic index, body weight and immune response (PHA skin test of T cell immunity), and lower resistance to miscellaneous infections were observed. These endpoints were identified as sensitive bioindicators/biomarkers of exposure and will be used in the upcoming field studies on wild birds and natural exposures. The development of the method for detecting detoxifying enzymes is a work in progress. Its completion during the funding period was delayed because of unexpected events. All the relevant samples were collected and preserved to accomplish this pending deliverable. A pilot project was completed using wild birds attracted to nest boxes equipped with passive air monitors to correlate contaminant concentration with the birds' health responses. Preliminary results indicate that these small chemical detection devices provide accurate information regarding contaminant exposure at the level of the nest. Together, the experimental exposures, the results from the health assessment of the experimental birds exposed to inhaled contaminants and the preliminary results of the passive air monitors, have provided important information that will be relevant to, and provide background data for, upcoming field studies in which effects of contaminants on naturally exposed wild birds will be evaluated.

Deliverables/Results:

The researchers have been working on developing a practical

method for detecting detoxifying enzymes that represents exposure contaminants. After conducting two experimental exposures on captive birds a good number of samples were collected which are being processed and analyzed. Due to the unexpected delay resulting from a mix up with the gas mixtures, the completion of this deliverable was delayed. In addition, the second experimental exposure using captive American kestrels from a colony that was being shut down, was not planned in the original proposal. However it was a valuable and unique opportunity that will strengthen the overall study, in spite of being a major factor in the delay in the detoxification enzyme deliverable.

The deliverable regarding the linkage between health effects and the inhaled contaminants have been completed for most of the planned endpoints, for more information refer to the GECF final report.

Finally, as planned, sensitive biological responses were identified (i.e., body weight, liver somatic index and immunotoxicity test) that will be applied in the field studies using wild birds.

Poster presented at the 60th International Conference of the Wildlife Disease Association, August 14-19, 2011, Quebec City, QC.

Oral presentation at 5th UCVM Research Days, Faculty of Veterinary Medicine, University of Calgary, March 1, 2012, Calgary, AB.

Examining resiliency of bull trout populations to brook trout invasiveness

University of Lethbridge (Dr. J. Rasmussen)

Grant: $20,000

Project Code: 020-00-90-156

Project Status: Funded since 2009-10; Completed

Brook trout invasiveness has been identified as a major threat to native fish assemblages in Alberta mountain streams. Habitat features of streams are variable, and certain habitats may facilitate successful establishment of brook trout populations, with resulting displacement of native trout species. By examining these root causes of invasiveness, and how native fishes may naturally resist such invasion, it will be possible to better predict or manage the spread of this exotic species; as well as strategically restore areas already invaded. This is an ongoing project that specifically examines the underlying factors of brook trout invasiveness into native bull trout streams of the Alberta Rockies, using both field observations and laboratory experiments. So far, three years of field data have been collected on streams that are, or once were important bull trout habitat, but have been invaded by brook trout. Initial analysis suggest that water temperature, physical habitat structure and fish community composition influence the success of brook trout invasion into these important bull trout habitats. Brook trout seem to preferentially invade warm bull trout streams with simple fish communities. In addition, bull trout seem to resist invasion in streams with a large amount of stream-bottom cover (cobbles and boulders). Laboratory experiments suggest that this may be due to bull trout competitive superiority in this type of habitat. When juvenile bull trout and brook trout were placed in direct competition with one another, bull trout were able to out-compete brook trout for food in habitats with a large amount of cover, but not in simple habitats devoid of cover. Climate change and landscape practices (logging, stream-side grazing, agriculture etc.) may increase stream temperatures, or alter stream habitat. This may indirectly facilitate the spread of brook trout in some areas. The results of this project outline what areas may be sensitive to brook trout invasion, as well as how the stream environment for native bull trout can be strategically restored or conserved.

Deliverables/Results:

The project is largely past the data collection phase and data are currently being analyzed and written into papers for submission to publish in peer-reviewed scientific journals. There are plans for limited field data collection in summer 2012, in order to determine whether additional environmental variables are associated with brook trout invasiveness.

Field observations have revealed that physical habitat structure, water temperature and fish community are all associated with brook trout invasiveness into bull trout streams. Laboratory experiments of competition between the two species reveal that bull trout compete more successfully against brook trout when habitats are complex.

Scientific publications:

Warnock, W.G. and J.B. Rasmussen. Comparing competitive ability and associated metabolic traits between two populations of bull trout, one migratory and one resident, with an invasive species. *In review.*

Warnock, W.G. and J.B. Rasmussen. Assessing the interacting effects of fish density and habitat on interference competition between bull trout and brook trout in an artificial stream. *In preparation*.

Warnock, W.G. and J.B. Rasmussen. Local-scale association of biotic and abiotic variables with brook trout invasiveness in bull trout streams of the Canadian Rockies. *In preparation*.

Presentations:

Warnock, W.G. and J.B. Rasmussen. 2011. Understanding patterns of brook trout invasion into bull trout streams of the Canadian Rockies. Presented at: the Waterton-Glacier Science and History Day, West Glacier, MT.

Warnock, W.G. and J.B. Rasmussen. 2011. Assessing competition between brook and bull trout in an artificial stream. Presented at: the American Fisheries Society annual meeting, Seattle, WA.

Warnock, W.G. and J.B. Rasmussen. 2011. Competition between bull and brook trout: effects of migratory life history, fish density and physical habitat in an artificial stream. Presented at: the *Salvelinus confluentus* Curiosity Society annual meeting, Heron, MT.

Warnock, W.G. and J.B. Rasmussen. 2012. Testing abiotic and biotic factors that affect competition between bull and brook trout in an artificial stream. Presented at: the Canadian Conference For Fisheries Research, Moncton, NB.

The effects of oil and gas development on the reproductive success and density of grassland songbirds

University of Regina/Canadian Wildlife Service (Dr. S. Davis)

Grant: $23,000

Project Code: 030-00-90-167

Project Status: Funded in 2010-11; Completed

Native grasslands provide important breeding habitat for many grassland birds, including species at risk. However, the quantity and quality of remaining native grassland may be threatened by the increased amount of oil and gas development. The project goal was to determine the degree to which oil and gas development

influences the density and reproductive success of grassland songbirds. Aside from direct loss of habitat attributed to well pads, a major consequence of oil and gas development is the introduction and expansion of non-native plant species from well pads, pipelines, roads, and trails. The researchers assessed how reproductive success and density of grassland songbirds varies with 1) the amount of crested wheatgrass (*Agropyron cristatum*), 2) distance to wells, roads and trails, and 3) the overall amount of disturbance by oil and gas development activities. Nests were located and monitored and reproductive success assessed by quantifying daily nest survival rates and the number of young fledged from nests. Spot-mapping surveys were conducted and delineated territories to quantify density. Vegetation structure and crested wheatgrass cover were also measured on each study plot. Preliminary analyses suggest the effects of oil and gas development on grassland songbird density and reproductive success varied by species and with type of disturbance. Nest survival of savannah and vesper sparrows were not affected by proximity to wells, roads, trails, or patches of crested wheatgrass. However, proximity to trails had a positive effect on the nest survival of Baird's sparrow and western meadowlarks and a negative effect on Sprague's pipit. Western meadowlark nest survival was negatively affected by proximity to gravel roads. Distance to patches of crested wheatgrass negatively affected Baird's sparrow nest survival and positively affected western meadowlark nest survival. The variation in responses observed among species is likely due in part to differences in habitat requirements and life history traits (i.e., generalists vs. specialists), as well as variable responses to disturbance among the predator community.

Deliverables/Results:

The project was completed as planned and they are in the process of analyzing data and writing up the results.

Preliminary and final results will be used by the Sprague's pipit recovery team to assist in establishing criteria for selecting critical habitat and factors that cause destruction.

Information from the study will be shared with the province of Alberta and federal government branches to refine set-back distance policies.

Progress reports (annual) and a final report (winter 2012) will be drafted for funding partners.

Results will be submitted to peer-review journals (spring 2013) and presented at scientific conferences.

All species-at-risk sightings provided to the FWMIS.

Identifying risks, impacts, origins and movement patterns of infectious pathogens in blue-winged teal (*Anas discors*) in the Canadian Prairies

University of Saskatchewan (Dr. C. Soos)

Grant: $27,960

Project Code: 030-00-90-177

Project Status: New; Completed

The aim of this ongoing study is to improve our understanding of the ecology of infectious pathogens in migratory waterfowl, by helping identify risk factors, sources, impacts, and movement patterns of pathogens of concern in the prairie provinces. The prairies are potentially a key area for mixing of pathogens of birds that have come from numerous geographic locations, and for subsequent dispersal of pathogens throughout the western hemisphere. Risk of disease status or exposure to avian influenza virus (AIV), West Nile virus (WNV), and Newcastle disease virus (NDV) has been evaluated in relation to individual factors (sex, age, mass, size) and environmental factors (season, year, geographic location, pond density, population density) in blue-winged teal (*Anas discors*, BWTE), sampled throughout prairie Canada, as well as throughout Canada and the US (for AIV only). The risk of AIV infection in BWTE increased with population density of breeding BWTE, and was highest in the central flyway, during late summer and fall, at higher latitudes. Hatch year birds were more likely to be infected with AIV, and seroconverted birds were significantly less likely to be infected. The risk of WNV infection increased with increasing pond density (important for mosquito vectors), and adults were more likely to be seroconverted compared to hatch year birds. Hot spots for infection were identified in the southern prairie provinces and Dakotas, correlating with important BWTE breeding habitat. Annual and provincial trends for WNV exposure in BWTE reflected those observed in humans in the three prairie provinces. For NDV, adults were more likely to have antibodies for NDV compared to hatch year birds, exposure varied among years and provinces, but there were no associations with population or pond density. Ongoing studies will provide further information on sources and movement of infectious pathogens through migration, the role of stress on infection, and the role of stress and sub-lethal infection or exposure on host survival. The results provide new insight into the ecological determinants of disease in a long-distance migratory host at individual, population, and continental scales. This information is important because it will help inform models that will predict the spread and movement of new emerging diseases of concern if they were to enter our migratory bird populations.

Deliverables/Results:

Field season for 2011 completed; samples collected from 484 blue-winged teal in AB, MB, and SK in August- Sept 2011.

Conference Presentations:

Nallar, R., Soos, C., Leighton F.A., Epp, T, Canada's Interagency Wild Bird Influenza Survey, United States of America Early Detection System for Highly Pathogenic H5N1 Avian Influenza in Wild Migratory Birds, USFWS-Branch of Migratory Bird Surveys and the Avian Influenza Surveillance Program, and Ecuador's Wild Bird Influenza Surveillance Program. Ecology of low pathogenic avian influenza viruses in a long distance migratory bird, the blue-winged teal (*Anas discors*): from individuals to populations. Wildlife Disease Association Annual Conference, Quebec City, QC, August 2011.

Nallar, R., Soos, C., Leighton F.A., Epp, T, et al. The ecology of infectious pathogens in a long distance migratory bird, the blue-winged teal (*Anas discors*): from individuals to populations. Research Seminar lecture series, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, April 2011.

Deliverables anticipated for 2012-13:

Master of Science thesis by Rodolfo Nallar (estimated completion date in September 2012), entitled: The ecology of infectious pathogens in a long distance migratory bird, the blue-winged teal (*Anas discors*): from individuals to populations.

At least five peer-reviewed scientific publications are anticipated to be submitted in 2012 and 2013.

Multiple presentations (oral and poster) at international scientific conferences, by principle applicant and graduate students.

Experimental management of bighorn sheep

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

Grant: $9,500

Project Code: 030-00-90-174

Project Status: New; Completed

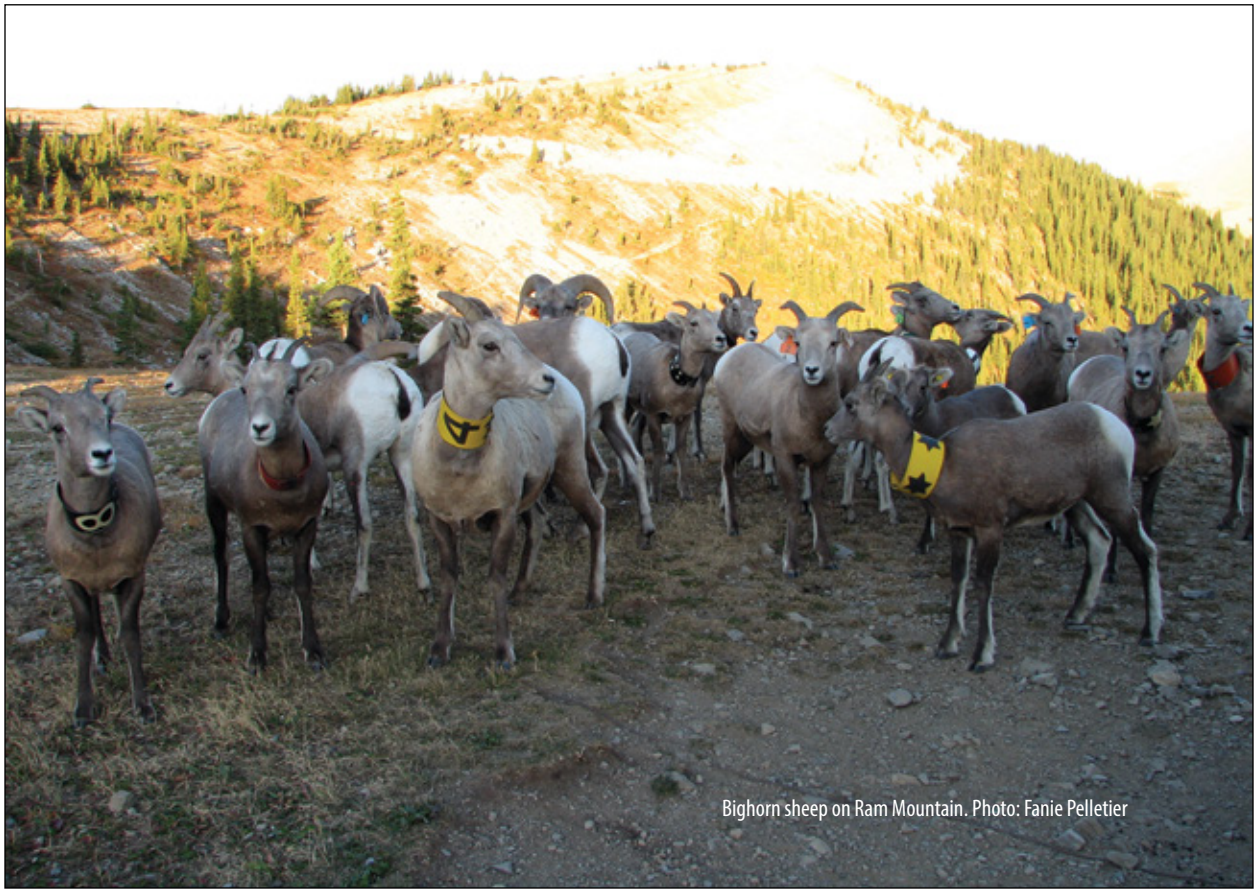
In Alberta, unlimited harvest of bighorn rams, based on minimum horn curl, protects subadult rams and maximizes recreational opportunities. That regulation, however, leads to the harvest of rams with rapidly-growing horns when aged four – six years, before they obtain the high reproductive success associated with large horns at ages seven - 12. At Ram Mountain, decades of unlimited trophy hunting artificially selected for small rams with slow-growing horns. Over the past decade, the population has failed to recover despite being at very low density. The poor demographic performance may be partly linked to lower genetic variability, including the loss of alleles removed through selective hunting. To test that hypothesis, the researchers are monitoring the genetic and demographic effects of introduced sheep from Cadomin, concomitant with a four-year moratorium on trophy sheep hunting. This is the first year of a proposed five-year program that is part of a long-term study of bighorn sheep ecology, evolution and management on Ram Mountain. Monitoring of reproduction, survival, body and horn growth of bighorn sheep at Ram Mountain in 2011 was successful. All but one resident sheep were captured at least once, and most were caught at least three times. The population increased from 68 sheep in 2010 to 70 in 2011. Of these 70 sheep, seven are introduced from Cadomin and 12 have at least one ancestor from the Cadomin supplementation. Just over a quarter of the population therefore carries 'Cadomin' genes. The population is increasing very slowly despite improved lamb survival (60% over the last five years, compared to 19% over the previous ten years), mostly because of mortality of two - three ewes each year. This mortality appears random and is the classic stochasticity problem of small populations. The number of adult ewes has only increased by nine percent over the last four years, from 22 to 24. Improved growth in both mass and horn size over the last few years also suggests that the population is recovering, but it remains at a low level where unexpected events such as renewed cougar predation may cause a rapid decline. The four-year moratorium of trophy ram hunting began in 2011 and should allow a greater spread of introduced 'Cadomin' genes than if the imported rams had been at risk of hunting mortality.

Deliverables/Results:

Scientific publications:

Martin, J.G.A. and M. Festa-Bianchet. 2012. Determinants and consequences of age of primiparity in bighorn sheep, *Ovis canadensis*. Oikos, *in press*.

Nussey, D., T. Coulson, D. Delorme, T. Clutton-Brock, J. Pemberton, M. Festa-Bianchet and J.-M. Gaillard. 2011. Patterns of body mass senescence and selective disappearance differ across three species of free-living ungulates. *Ecology*, 92: 1936-1947.



Bighorn sheep on Ram Mountain. Photo: Fanie Pelletier

Martin, J.G.A. and F. Pelletier. 2011. Measuring growth patterns in the field: effects of sampling regime and methods on standardized estimates. *Canadian Journal of Zoology* 89: 529-537.

Martin, J.G.A. and M. Festa-Bianchet. 2011. Sex ratio bias and reproductive strategies: what sex to produce when? *Ecology*, 92:441–449.

Martin, J.G.A. and M. Festa-Bianchet. 2011. Age-independent and age-dependent decreases in reproduction of females. *Ecology Letters*, 14: 576-581.

Rioux-Paquette, E., M. Festa-Bianchet and D.W. Coltman. 2011. Sex-differential effects of inbreeding on overwinter survival, birth date and mass of bighorn lambs. *Journal of Evolutionary Biology*, 24: 121-131.

Poissant, J., C.S. Davis, R.M. Malenfant, J.T. Hogg, and D.W. Coltman. In press. QTL mapping for sexually dimorphic fitness-related traits in wild bighorn sheep. *Heredity doi*: 10.1038/hdy.2011.69.

Miller, J.M., J. Poissant, J.W. Kijas, the International Sheep Genomics Consortium, and D.W. Coltman. 2011. A genome wide set of SNPs detects population substructure and long range linkage disequilibrium in wild sheep. *Molecular Ecology Resources* 11: 314-322.

Conference presentations:

Northern Wild Sheep and Goat Council (March 2012).

The Plant and Animal Genome XX, San Diego, California (Jan 2012).

6th Annual Canadian Society for Ecology and Evolution Meeting, Banff, Alberta (May 2012).

Invited seminars at the Universities of Melbourne and Deakin (Australia).

APPENDIX A

Projects in relation to GECF Funding Priorities 2011-2012

Alberta Conservation Association
Conserving Alberta's Wild Side

FUNDING PRIORITY #1 — 10 Projects

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

Part A: 6 Projects

Alberta Fish and Game Association, *Operation Grassland Community*, $40,000

Cows & Fish, *Westslope cutthroat trout riparian habitat improvement action plans*. $24,000

Lesser Slave Lake Bird Observatory, *Avian monitoring and stewardship at Lesser Slave Lake,* $23,500

Nature Alberta, *Public and volunteer engagement with Alberta's Important Bird Areas,* $25,000

Northern Alberta Institute of Technology (NAIT), *Sturgeon River watershed habitat enhancement study,* $24,192

Trout Unlimited Canada, *East Slopes creek conservation initiative*, $20,000

Part B: 4 Projects

Alberta Innovates Technology Futures, *Northern leopard frog overwintering habitat – identifying suitable hibernation sites,* $15,000

Calgary Zoo, *Using meta-population modeling to insure the effective conservation of northern leopard frogs*, $21,000

University of Alberta, *Identifying critical habitat for ferruginous hawks in Alberta,* $24,640

University of Alberta, *Examining trumpeter swan productivity and population in Alberta; survey methods and swan response to disturbance*, $20,700

FUNDING PRIORITY #2 — 26 Projects

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

Part A: 20 Projects

Alberta Fish and Game Association, *Operation Grassland Community,* $40,000

Alberta Fish and Game Association, *Pigeon Lake properties habitat protection,* $10,940

Alberta Fish and Game Association, *Pronghorn antelope migration corridor enhancement,* $37,100

Ann & Sandy Cross Conservation Area, *Wildlife friendly fencing project,* $10,000

Beaverhill Bird Observatory, *Bat monitoring and appreciation in Central Alberta,* $3,000

Camrose Wildlife and Stewardship Society. *Camrose purple martin festival,* $3,000

Cows & Fish, *Southern Alberta grazing school for women,* $3,000

Cows & Fish, *Westslope cutthroat trout riparian habitat improvement action plans,* $24,000

Crowsnest Conservation Society, *Maintaining and restoring Crowsnest River riparian areas,* $30,000

Delta Waterfowl Foundation, *ALUS demonstration project in the County of Vermilion River*, $32,500

Ghost Watershed Alliance Society, *Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost Watershed*, $35,880

Mountain View County, *Riparian area management improvements,* $20,000

Nature Alberta, *Riparian water quality improvement project,* $33,000

Nose Creek Watershed Partnership/Trout Unlimited Canada, *Nose Creek rehabilitation project,* $3,000

Partners in Habitat Development (Eastern Irrigation District), *Partners in Habitat Development,* $15,000

Red Deer County, *Off the Creek Program 2011,* $30,000

Stony Plain Fish & Game Assoc, *Bird Nesting Box Program,* $1,200

Trout Unlimited Canada, *East Slopes creek conservation initiative*, $20,000

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

West Central Forage Association, *Paddle River enhancement project - Phase II,* $13,000

Part B: 6 Projects

Calgary Zoo, *Using meta-population modeling to insure the effective conservation of northern leopard frogs,* $21,000

University of Alberta – Augustana, *Beaver-created wetlands and biodiversity,* $6,250

University of Alberta, *Ecological effects of sport fish stocking and aeration in Boreal Foothills lakes (the FIESTA project),* $14,980

University of Alberta, *Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services,* $23,000

University of Alberta, *Identifying critical habitat for ferruginous hawks in Alberta,* $24,640

University of Alberta, *Using wetland-dependent wildlife to monitor climate and landscape change,* $6,250

FUNDING PRIORITY #3 — 4 Projects

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

Part A: 4 Projects

Friends of Fish Creek Provincial Park, *Watershed stewardship project: Amphibian monitoring and awareness program in Fish Creek Provincial Park,* $1,500

Lac La Biche County, *Lac La Biche watershed project*, $3,000

Red Deer Fish & Game Assoc, *Radomske's Pond,* $3,000 (grant not required)

Trout Unlimited Canada, *East Slopes creek conservation initiative*, $20,000

FUNDING PRIORITY #4 — 28 Projects

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

Part A: 24 Projects

Alberta Fish and Game Association, *Operation Grassland Community*, $40,000

Ann & Sandy Cross Conservation Area, *Wildlife friendly fencing project,* $10,000

Beaverhill Bird Observatory, *Bat monitoring and appreciation in Central Alberta,* $3,000

Beaverhill Bird Observatory, *Beaverhill Lake stewardship and monitoring*, $16,950

Calgary Bird Banding Society, *Cypress Hill migratory and breeding landbird monitoring,* $3,000

Camrose Wildlife and Stewardship Society. *Camrose purple martin festival,* $3,000

Cows & Fish, *Southern Alberta grazing school for women,* $3,000

Cows & Fish, *Westslope cutthroat trout riparian habitat improvement action plans*. $24,000

Crowsnest Conservation Society, *Maintaining and restoring Crowsnest River riparian areas,* $30,000

Delta Waterfowl Foundation, *ALUS demonstration project in the County of Vermilion River*, $32,500

Ghost Watershed Alliance Society, *Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost Watershed*, $35,880

Lac La Biche County, *Lac La Biche watershed project*, $3,000

Lac La Biche County, *Lac La Biche wetland inventory and classification plan*, $1,500

Lesser Slave Lake Bird Observatory, *Avian monitoring and stewardship at Lesser Slave Lake*, $23,500

Mountain View County, *Riparian area management improvements,* $20,000

Nature Alberta, *Public and volunteer engagement with Alberta's Important Bird Areas*, $25,000

Nature Alberta, *Riparian water quality improvement project*, $33,000

Northern Alberta Institute of Technology (NAIT), *Sturgeon River watershed habitat enhancement study,* $24,192

Nose Creek Watershed Partnership/Trout Unlimited Canada, *Nose Creek rehabilitation project*, $3,000

Partners in Habitat Development (Eastern Irrigation District), *Partners in Habitat Development,* $15,000

Red Deer County, *Off the Creek Program 2011*, $30,000

Trout Unlimited Canada, *East Slopes creek conservation initiative*, $20,000

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

Willmore Wilderness Foundation, *Willmore Wilderness Park stewardship and youth mentoring initiative*, $20,000

Part B: 4 Projects

Calgary Zoo, *Using meta-population modeling to insure the effective conservation of northern leopard frogs*, $21,000

University of Alberta, *Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services,* $23,000

University of Alberta, *Identifying critical habitat for ferruginous hawks in Alberta,* $24,640

University of Alberta, *Using wetland-dependent wildlife to monitor climate and landscape change,* $6,250

FUNDING PRIORITY #5 — 10 Projects

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

Part A: 6 Projects

Alberta Fish and Game Association, *Operation Grassland Community*, $40,000

Crowsnest Conservation Society, *Maintaining and restoring Crowsnest River riparian areas,* $30,000

Friends of Fish Creek Provincial Park, *Watershed stewardship project: Invasive species strategy in Fish Creek Provincial Park,* $1,500

Ghost Watershed Alliance Society, *Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost Watershed*, $35,880

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

West Central Forage Association, *Paddle River enhancement project - Phase II,* $13,000

Part B: 4 Projects

University of Alberta, *Ecological effects of sport fish stocking and aeration in Boreal Foothills lakes (the FIESTA project)*, $14,980

University of Alberta, *Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services,* $23,000

University of Calgary, *Assessment of the distribution and hybridization of white-tailed and mule deer in relation to forest fragmentation using genetic markers,* $14,296

University of Lethbridge, *Examining resiliency of bull trout populations to brook trout invasiveness*, $20,000

FUNDING PRIORITY #6 — 0 Projects

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

FUNDING PRIORITY #7 — 3 Projects

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

Part B: 3 Projects

Laval University, *Population dynamics of mountain goats in Alberta*, $9,000

University of Calgary, A*ssessing pre-historic distribution, abundance and genetic diversity of elk in Alberta through archaeological and ancient DNA analysis,* $19,060

University of Calgary, *Assessment of the distribution and hybridization of white-tailed and mule deer in relation to forest fragmentation using genetic markers,* $14,296

FUNDING PRIORITY #8 — 0 Projects

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

FUNDING PRIORITY #9 — 5 Projects

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

Part A: 2 Projects

Cows & Fish, *Westslope cutthroat trout riparian habitat improvement action plans*. $24,000

Ghost Watershed Alliance Society, *Riparian and wetlands health assessment and inventory by Cows and Fish of critical areas in the Ghost Watershed*, $35,880

Part B: 3 Projects

Laval University, *Population dynamics of mountain goats in Alberta*, $9,000

University of Alberta, *Effects of hunting pressure and recreational access on behaviour of elk in SW Alberta,* $21,500

University of Alberta, *Examining trumpeter swan productivity and population in Alberta; survey methods and swan response to disturbance*, $20,700

FUNDING PRIORITY #10 — 2 Projects

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

Part B: 2 Projects

Keyano College, *Impacts of oil sands mining on amphibian health in the boreal forest: Are infectious disease dynamics and malformation rates correlated with oil sands mining activities,* $19,000

University of Saskatchewan, *Identifying risks, impacts, origins and movement patterns of infectious pathogens in blue-winged teal in the Canadian Prairies,* $27,960

FUNDING PRIORITY #11 — 5 Projects

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

Part B: 5 Projects

Laval University, *Population dynamics of mountain goats in Alberta*, $9,000

University of Alberta, *Effects of hunting pressure and recreational access on behaviour of elk in SW Alberta,* $21,500

University of Calgary, *Assessing pre-historic distribution, abundance and genetic diversity of elk in Alberta through archaeological and ancient DNA analysis,* $19,060

University of Calgary, *Assessment of the distribution and hybridization of white-tailed and mule deer in relation to forest fragmentation using genetic markers,* $14,296

University of Sherbrook, *Experimental management of bighorn sheep,* $9,500

FUNDING PRIORITY #12 — 0 Projects

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

FUNDING PRIORITY #13 — 1 Project

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

Part B: 1 Project

University of Alberta, *Effects of native plant reproductive strategies on reclamation success, as measured by ecosystem function and services,* $23,000

NONE OF THE FUNDING PRIORITIES — 5 Projects

Part A: 1 Project

University of Alberta Student Chapter of The Wildlife Society. *UACTWS Urban deer project,* $2,000

Part B: 4 Projects

University of Alberta, *Development of a cost-effective tool for monitoring grizzly bear population size and trend in support of their recovery and management*, $35,000

University of Alberta, *Eco-evolutionary dynamics of phenology in resident mammal,* $10,000

University of Calgary, *Novel methods to evaluate exposure to, and effects of oil and gas emissions on wild birds,* $10,000

University of Regina/Canadian Wildlife Service, *Effects of oil and gas development on the reproductive success and density of grassland songbirds*, $23,000

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

Alberta Conservation Association

Conserving Alberta's Wild Side

REPORT A POACHER

www.reportapoacher.com

1-800-642-3800

CORPORATE PARTNER IN CONSERVATION

Alberta Conservation Association

USE RESPECT

ASK FIRST

101 – 9 Chippewa Road, Sherwood Park, AB T8A 6J7

Tel: 780-410-1999 • Fax: 780-464-0990

Toll Free: 1-877-969-9091

www.ab-conservation.com