

Alberta Conservation Association 2016/17 Project Summary Report

Project Name: Riparian Conservation

Land Management Program Manager: Darren Dorge

Project Leader: Stefanie Fenson

Project Coordinators: Stefanie Fenson (Northeast Region: Owl River, Edson River), Marco Fontana (Central Region: North Raven River), Jeff Forsyth (Southern Region: South Riparian), and Lenore Seward (Northwest Region: Beaverlodge River)

Primary ACA staff on project:

Stefanie Fenson, Marco Fontana, Jeff Forsyth, Kevin Gardiner, John Hallett, Ed Kolodychuk, Garret Mcken, Diana Rung, Lenore Seward, Scott Seward, Dan Sturgess, Juanna Thompson, Mike Uchikura, Erin VanderMarel and Todd Zimmerling

Partnerships

Agroforestry & Woodlot Extension Society
Alberta Fish & Game Association
ConocoPhillips
County of Grande Prairie
Cows and Fish – Alberta Riparian Habitat Management Society
Enerplus
Fisheries and Oceans Canada
Government of Canada
Landowners
Milk River Watershed Council
Oldman Watershed Council
Syncrude Canada Ltd.
Treecycler
Trout Unlimited Canada
West County Watershed Society

Key Findings

- Delivered 14 riparian enhancement activities: 4 new riparian habitat lease agreements, 5 fencing projects, 2 off-site livestock watering initiatives and 3 tree-planting events.
- Conserved 163 acres (66 ha) through new and existing riparian habitat lease agreements, and installed 8.89 km of riparian fencing, most of which was constructed using wildlife-friendly fencing techniques.
- Conducted one riparian health assessment and collected water samples from 12 sites as part of baseline data collection or ongoing water quality monitoring.

- Applied bank stabilization and restoration methods by planting 1,350 trees and shrubs.
- Collaborated with 15 groups and organizations to enhance and facilitate the maintenance of healthy riparian habitat across the province.

Introduction

The ecological integrity and health of Alberta's rivers, streams and surrounding landscapes are often negatively affected by ongoing human development. Aquatic and terrestrial habitats have been degraded by activities such as agriculture, land conversion, forestry, oil and gas exploration, and urban and rural community development. Significant conservation efforts are needed to restore the ecological function of these impacted areas. Alberta Conservation Association's (ACA) Riparian Conservation Program (RCP) identifies priority watersheds for focused conservation efforts to enhance their potential for successful restoration. Within these focal areas, the primary goal is to improve overall health of riparian areas, which in turn improves the health of associated wildlife and fish communities through enhanced ecosystem processes. ACA collaborates with community-level watershed groups, landowners, government and industry to implement best management practices and deliver on-the-ground projects. Our objectives for 2016/17 were to 1) deliver on-the-ground restoration projects, 2) collect baseline information on new project sites and monitor existing ones, and 3) engage landowners, the public and other stakeholders through community outreach and education activities. In 2016/17, the RCP consisted of the following riparian conservation projects delivered throughout the province: Beaverlodge River (Northwest Region), Edson River (Northeast Region), Owl River (Northeast Region), Raven River (Central Region), and South Riparian (Southern Region).

Methods

The RCP encompasses activities that conserve, protect and enhance wildlife and fish habitat and increase consumptive and non-consumptive recreational opportunities, including angling and hunting. This provincial program is delivered at a regional level and is designed to ensure provincial standards are adhered to by Land Management Program (LMP) staff. The LMP team and program manager are responsible for the provincial coordination of this program, while each project's watershed-specific on-the-ground components are delivered regionally.

On-the-ground riparian projects are delivered as described in the *Guiding Document for ACA's Riparian Conservation Program* (draft). Depending on project-specific site requirements, we use various tools to improve riparian health and offset various environmental impacts, such as wildlife-friendly livestock exclusion fencing, off-site watering systems, spring developments, bioengineering, riparian pasture management, tree planting, landowner agreements, and outreach and educational activities. We maintain long-term relationships with landowners and other partners, and provide technical advice and support for riparian initiatives led by other agencies. In most project areas, we collaborate with several stewardship groups to promote riparian conservation, implement a variety of enhancements, and install signage on project sites. We use aerial videography acquired through helicopter or drone surveys, water sampling, photographic benchmarks, and riparian health inventories and assessments to gather baseline data where appropriate and monitor project progress and effectiveness.

Many watersheds potentially require conservation initiatives; however, we focus our conservation efforts in areas where riparian cover may be degraded by agricultural practices and where fisheries may have declined over the past decades. The RCP identified the following priority watersheds for focused conservation efforts in 2016/17: Beaverlodge, Edson, Owl, Raven, North Raven and Oldman rivers; and Clear, Todd, Beaver, Drywood, Yarrow, Lyndon, Pincher and Indianfarm creeks and their associated tributaries. Our riparian program is delivered under an adaptive management (or conservation) framework. This framework allows for continual improvement in conservation practices through learning from the outcomes of existing projects in support of program objectives.

Results

In 2016/17, we completed 14 new riparian habitat enhancement projects throughout the province (Table 1). On-the-ground restoration projects were delivered using a variety of management tools, including riparian and upland tree planting, landowner habitat lease agreements, and livestock exclusion fencing and alternate watering sources to reduce or eliminate grazing pressure on riparian habitat. Monitoring initiatives included water sampling at permanent sample sites to monitor water quality and riparian health assessments using methods by Fitch et al. (2001). We did not initiate new projects on the Owl River as ACA and Alberta Environment and Parks continue to identify priority sections of the river and review current land-use designations.

We completed four landowner habitat agreements with terms up to 15 years, expanded on two existing agreements, and installed 8.89 km of fencing, effectively conserving 163 acres (66 ha) of riparian and upland habitat. In addition, we incorporated one solar-powered off-site water system with a fencing project to further reduce the intensity of grazing impacts by attracting cattle away from streams. With the help of partners, 1,350 white spruce, balsam poplar and willows were planted at three sites.

In total, we conducted water sampling to assess water quality at 12 sites across two projects. Water quality was assessed from water samples collected at five sampling sites along the Edson River in spring and fall. Variables fell within guidelines, where established, by the Canadian Council of Ministers of the Environment (CCME 1999a) for the protection of aquatic life. E-coli levels (assessed using the most probable number [mpn] of coliforms per 100 millilitres [mL]) reached a maximum of 65 mpn/100 mL, but remained below Alberta surface water guidelines of 410 mpn/100 mL for recreation and aesthetics (ESRD 2014). Total coliform levels at three of the five spring sampling sites exceeded the threshold of 1,000 mpn/100 mL recommended for the protection of agriculture (CCME 1999b); however, levels dropped below thresholds at all but one site for fall samples. From 2012 to 2015, water quality variables met guidelines established for the protection of aquatic life, and only exceeded total coliform guideline limits in 2012 and 2015 at one site. Although, higher instances of total coliform counts were observed in 2016, rates of E-coli and fecal coliforms have remained relatively stable over the same time period. Water quality in the Beaverlodge drainage continued to be assessed at seven sample sites. Dissolved iron (measured in micrograms/litre [$\mu\text{g/L}$]) exceeded long-term (chronic) water quality guidelines of 300 $\mu\text{g/L}$ for aquatic life at three of seven locations in both spring and fall samples. Dissolved iron and aluminum long-term (chronic) water quality guidelines were also exceeded in the fall sampling event at one site (ESRD 2014; CCME 2010).

Table 1. Riparian enhancement and monitoring initiatives throughout the province by project in 2016/17.

Project Name (ACA Region)	Number of New Enhancement Projects and Activities	Monitoring Activities	Outreach Activities
Owl River (Northeast)	–	–	–
Raven River (Central)	7	<ul style="list-style-type: none"> • 3 new landowner agreements • 2 wildlife-friendly livestock exclusion fencing projects (1.79 km installed) • 2 solar-powered off-site watering systems installed • 67.8 acres riparian and associated upland area conserved through landowner agreements • 3.73 km of riparian habitat conserved 	<ul style="list-style-type: none"> • 18 existing landowner agreements • 1 brochure developed to promote riparian activities and encourage future stewardship • 5 landowner participation signs developed and installed
Beaverlodge River (Northwest)	5	<ul style="list-style-type: none"> • 3 tree planting projects • 1,080 white spruce seedlings, 200 willow stakes and 70 balsam poplar planted • 2 wildlife-friendly livestock exclusion fencing projects (3 km installed) • 16.4 acres riparian area conserved through 2 existing landowner agreements that were expanded 	<ul style="list-style-type: none"> • 1 riparian health assessment • 7 water sampling sites • 5 existing landowner agreements • Delivered 2 presentations • Maintained membership on Redwillow Watershed Restoration Team • Provided resources to landowners • Developed and installed 1 landowner participation sign
Edson River (Northeast)	–	–	<ul style="list-style-type: none"> • 5 water sampling sites • 1 existing landowner agreement
South Riparian (Southern)	2	<ul style="list-style-type: none"> • 1 new landowner agreement • 1 wildlife-friendly livestock exclusion fencing project (4.1 km installed) • 78.8 acres riparian and associated upland area conserved through landowner agreement 	<ul style="list-style-type: none"> • Maintained active membership on Milk River Watershed Council and Oldman Watershed Council Rural Team
TOTAL	14		

We conducted one riparian health assessment on the Beaverlodge River for a potential participating landowner.

We continued to be active in community outreach and educational activities by delivering presentations to Beaverlodge and area high school students and the West County Watershed Society. We also provided technical support as members of three watershed groups: the Redwillow Watershed Restoration Team, the Oldman Watershed Council Rural Team and the Milk River Watershed Council. We advertised Raven River project activities locally through a mail-out brochure and installed six project signs highlighting riparian projects with participating landowners on the Beaverlodge and North Raven rivers.

Conclusions

We led riparian conservation projects in southern Alberta and in the Raven/North Raven, Beaverlodge and Edson river systems through a variety of initiatives. We provided technical advice and support to several landowners and watershed groups in the Milk, Oldman and Beaverlodge river basins. We delivered 14 new enhancement projects throughout the province and led or participated in several community outreach and educational events. Monitoring data collected during 2016/17 for new and existing projects will be used for future evaluation of our riparian program. Our efforts have contributed to enhanced awareness and improvements in riparian habitat health and have positively influenced the stewardship approach of many landowners and leaseholders.

We will continue to monitor water quality and riparian health to help us assess the effectiveness of our conservation efforts. We recognize the importance of collaborating with landowners on riparian enhancement activities and will continue to communicate our riparian initiatives to the community.

Communications

- Delivered presentations to Beaverlodge and area high school students and the West County Watershed Society.
- Promoted the North Raven/Raven River Riparian Conservation project through a brochure mail-out to local landowners.
- Collaborated on updating the *On the Living Edge* resource materials (Kipp 2002).

Literature Cited

Alberta Environment and Sustainable Resource Development (ESRD). 2014. Environmental quality guidelines for Alberta surface waters. Water Policy Branch, Policy Division, Edmonton, Alberta, Canada. 48 pp.

Canadian Council of Ministers of the Environment. 1999a. Canadian water quality guidelines for the protection of aquatic life. *In: Canadian environmental quality guidelines, 1999*, Canadian Council of Ministers of the Environment, Winnipeg, Manitoba, Canada.

Canadian Council of Ministers of the Environment. 1999b. Canadian water quality guidelines for the protection of agricultural water uses. *In*: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg, Manitoba, Canada.

Canadian Council of Ministers of the Environment. 2010. Canadian water quality guidelines for the protection of aquatic life: ammonia. *In*: Canadian water quality guidelines, 1999. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba, Canada.

Fitch, L, B.W. Adams, and G. Hale (eds.). 2001. Riparian health assessment for streams and small rivers – field workbook. Cows and Fish Program, Alberta Riparian Habitat Management Program, Lethbridge, Alberta, Canada.

Kipp, S. 2002. On the living edge: your guide for waterfront living. Federation of Alberta Naturalists. Edmonton, Alberta, Canada. 148 pp.

Photos



Sign installed at participating landowner project on Beaverlodge River. Photo: Lenore Seward



Riparian habitat restored over ten years along the Beaverlodge River after riparian fencing was installed and grazing ended. Note the increase in vegetation along the riverbank and growth of woody shrubs. Photo: Alberta Conservation Association



Riparian habitat conserved along the Raven River as part of a landowner agreement. Photo: Joe Hopkins



A solar-powered off-site watering system installed to prevent cattle access to the Raven River.
Photo: Joe Hopkins



Headwater springs of Little Crooked Creek on the Marsh property in southern Alberta. Photo:
Jeff Forsyth