

**Alberta Conservation Association
2008/09 Project Summary Report**

Project name: *Riparian Conservation*

Fisheries and Aquatic Program Manager: Peter Aku

Project leader(s):

Cam Stevens (Riparian Team Lead), Mike Uchikura (Beaver and Todd creeks), John Hallett (Beaverlodge River), Marco Fontana (Bearberry Creek), Diana Rung (Battle and Red Deer rivers), Ed Kolodychuk (South Heart River-Lesser Slave Lake).

Primary ACA staff on this project:

Mike Uchikura, Brad Taylor, John Hallett, Ed Kolodychuk, Marco Fontana, Kelly Hooey, Diana Rung

Partnerships:

Agriculture and Agri-Food Canada
Alberta Agriculture and Food and Rural Development (AAFRD)
Alberta Environment (AE)
Alberta Environmentally Sustainable Agriculture (AESAs)
Alberta Riparian Habitat Management Society (Cows and Fish)
Alberta Stewardship Network (ASN)
Alberta Sustainable Resource Development (ASRD)
Beaver Creek Watershed Group
Canfor
ConocoPhillips
County of Grande Prairie No. 1
Department of Fisheries and Oceans (DFO)
Grey Wooded Forage Association
High Prairie Riparian Action Team (HPRAT)
Lacombe County
Mountain View County
Olds College
Pacific Regeneration Technologies Inc. (PRT)
Ponoka County
Prairie Farm Rehabilitation Administration (PFRA)
Red Deer County
Red Deer River Watershed Alliance (RDRWA)
Southwestern Alberta Conservation Partnership
Stantec

Todd Creek Watershed Group
Trout Unlimited Canada (TUC)
Woodmere Nurseries

Key findings:

- We delivered six new riparian restoration projects with landowner agreements (e.g., livestock exclusion fencing, off-site watering structures, bank stabilization); three at Beaverlodge River, two at Bearberry Creek and one at the Battle River. In addition, we planted over 23,708 seedlings at project locations along the Beaverlodge River.
- We partnered with over 27 agencies to deliver conservation programming across the province.
- We have remained very active in community outreach and educational activities, particularly in central and southern Alberta. Riparian landowners and nearby residents have, in general, responded in a positive manner to our conservation messages. Examples of our most recent successes have been highlighted in local newspapers.
- We posted several advertisements in local newspapers soliciting landowners for riparian projects (i.e., Ponoka News, Rimbey Review, Beaverlodge and District News), but failed to receive responses and new landowner partnerships from this initiative.
- Results from aerial low-level videography (LLV) of Pigeon Lake indicated that approximately 65% of the shoreline was highly impaired; this work was funded.
- We completed a scoping-level assessment of fish assemblages in Beaver Creek ($n = 11$ sites), and found westslope cutthroat trout at only two upstream locations. Downstream assemblages were dominated by, on average, long-nose dace (36% of catch), white sucker (25%) and fathead minnow (20%).

Abstract

The primary goal of ACA's riparian program is to restore (or improve) degraded riparian habitat and protect a network of functioning riparian habitats in problem drainage basins through collaboration with landowners, watershed groups, government and industry. During 2008-2009, we continued with leading riparian conservation activities in Bearberry Creek, Battle River, and Beaverlodge River. We provided only technical advice and support for conservation work being led by other agencies in Beaver Creek and Lesser Slave Lake drainage basin. We delivered six new riparian restoration projects with landowner agreements (e.g., livestock exclusion fencing, off-site watering structures, bank stabilization); three at Beaverlodge River, two at Bearberry Creek and one at the Battle River. In addition, we planted over 23,708 seedlings at project locations along the Beaverlodge River. In total, we partnered with 27 agencies during 2008-2009. We have remained very active in community outreach and educational activities, particularly in central and southern Alberta. Because of such work completed by the ACA and its partners, we anticipate growing interests in riparian conservation projects for 2009-2010. Examples of our most recent conservation successes have been highlighted in local newspapers, the Peace Country Sun and Mountain View Gazette. As part of an adaptive conservation approach, we

monitored riparian areas and aquatic conditions at a subset of project sites. Monitoring efforts included (Cows and Fish) riparian assessments and inventories, low-level aerial videography of shorelines, and back-pack electrofishing assessments of fish communities. Monitoring data has been archived for future evaluation of the riparian program. In addition, a standardized approach to monitoring riparian conservation projects across the province is currently in development.

Introduction

Intensive agricultural practices may threaten downstream water resources in drainage basins of Alberta (Stevens et al. 2006; Marshall et al. 2008). Agricultural activities, such as cattle grazing, often result in changes to riparian vegetation, affecting stream temperatures, hydrology, channel stability, stream bank erosion, and sediment transport (Marshall et al. 2008). High phosphorous concentrations are often present in runoff and contribute to cultural eutrophication, greater algal production (Carpenter et al. 1998) and changes to the structure and function of fish communities (Stevens et al. 2006; Marshall et al. 2008). Importantly, intact riparian areas can remove the majority of sediment and phosphorous from farm runoff (Lee et al. 2003).

The primary goal of ACA's riparian program is to restore (or improve) degraded riparian habitat and protect a network of functioning riparian habitats in problem drainage basins through collaboration with landowners, watershed groups, government and industry. There are potentially many regions that require conservation programming; however, the ACA, in consultation with ASRD, focus conservation efforts where both significant areas of riparian cover may have been converted to agriculture and where fisheries may have declined over the past decades. For example, the Beaverlodge River is a focal system because we documented severe riparian habitat degradation for the mainstem and two of its tributaries and a once thriving Arctic grayling fishery is at-risk of collapsing (Lucko 1995). Since 1999, focal drainage basins of ACA's riparian program have been: Beaver Creek, Todd Creek, Red Deer River, Bearberry Creek, Battle River, Beaverlodge River, and South Heart River-Lesser Slave Lake system.

Since 1997, the ACA has completed approximately 43 riparian 'on-the-ground' projects on almost 100 quarter sections in Alberta. For our province-wide program, the long-term goal is to be either the lead agency or a supporter of a watershed group (or similar agency) in conservation programming that result in the restoration and protection of up to 80% of the shoreline length within focal drainage basins. Systems that have less than 80% intact riparian areas may be impaired (Fitzpatrick et al. 2001). Objectives for 2008-2009 included to:

1. Conduct community and educational outreach events for landowners and interested members of the public;
2. Initiate and maintain partnerships with landowners, industry, government, and local watershed groups;
3. Complete on-the-ground riparian conservation projects (i.e., enhancement or restoration projects) through collaboration with landowners and other stakeholders;

4. Implement monitoring of riparian conditions at project sites and also of aquatic conditions at downstream locations, as part of a long-term monitoring program.

Methods

The following description is a general summary of our approach to riparian conservation in the above-mentioned drainage basins. Additional details can be found in the sub-sections described further below. In brief, we used a combination of educational outreach and on-the-ground enhancements (e.g., exclusion fencing, off-channel watering structure) to improve the condition of streamside vegetation and offset environmental impacts from grazing and hoof shear. We maintained long-term relationships and commitments to landowner partners, as part of a strategy to successfully complete on-going projects and improve riparian conditions on private lands. It is important to note that we provided only technical advice and support as part of a larger team for conservation work being led by other agencies in Beaver Creek and Lesser Slave Lake drainage basins. In all focal areas, we worked with stewardship groups to implement on-the-ground riparian improvements. We promoted conservation work through various media outlets, including interviews with local newspapers. Also, we placed advertisements in local newspapers soliciting landowners to become involved in riparian projects. We donated and installed ‘recognition signs’ for landowners who practice good riparian stewardship. It is anticipated that such efforts will enhance local interests in ACA riparian conservation programming. Photographs were taken of 2008 activities and related project sites; these are also stored on the ACA internal server.

Importantly, ACA’s riparian program is conducted under an adaptive management (or conservation) framework. This framework is a systematic process for continually improving conservation practices by learning from the outcomes of existing projects and operations (through monitoring, evaluation, review and reporting of progress). Thus, monitoring of riparian conditions at project sites and also of water resources at downstream locations is a critical component of ACA’s riparian program. At new project locations, we contracted Cows and Fish to perform riparian health inventories (RHI; see <http://www.cowsandfish.org/>). In cases where Cows and Fish were unavailable and for a subset of our existing projects, we conducted ‘short-form assessments’ of riparian conditions (Fitch et al. 2001). Short-form assessments are being done on a bi-annual basis for existing project sites. We also conducted qualitative assessments of shorelines, riparian vegetation and enhancement structures at all project sites. Information collected from these surveys have been stored on ACA’s internal server. To quantify riparian conditions at the watershed-scale, we used low-level aerial videography (LLV) as a monitoring tool. Specifically, we collected riparian data at Pigeon Lake by filming the shoreline from a helicopter and analysed the data using the ‘Lentic Riparian Health and Integrity Scorecard’ (Walker and ACA 2006). We selected this lake because it may be highly impacted by adjacent residential and industrial developments.

Results

Beaver and Todd creeks (Brad Taylor and Mike Uchikura):

We maintained communication with the Todd Creek Watershed Group (TCWG) and Beaver Creek Watershed Group (BCWG) throughout the summer of 2008 by means of phone conversations, and meetings with group representatives. Partnering with the Todd Creek and Beaver Creek watershed groups have provided the ACA with a means of contributing to projects that can have large-scale benefits for aquatic and riparian health. We also organized and attended meetings with other stakeholders, including Cows and Fish, and Alberta Agriculture and Agrifood.

As part of the process of initiating new landowner agreements and new projects, we held two events to engage the community in conservation activities. We held a social event (i.e., barbeque) for the Todd Creek Watershed Group at the Willow Valley Schoolhouse (May 15, 2008). We also held electrofishing demonstrations (July 10, 2008), as part of the Beaver Creek Riparian Tour “Shock and Awe” and for landowners adjacent to Todd Creek (Sept. 5, 2008) at the Willow Valley Schoolhouse (Figure 1). These community events were well-received by both watershed groups (B. Taylor, personal observation). The need for fencing material has been expressed by the groups (pasture fencing, fencing around developed springs).



Figure 1. Photograph of electrofishing demonstration for Todd Creek Watershed Group.

We did not complete riparian assessments (Cows and Fish short-form method; Fitch et al. 2001) at existing project sites along Todd Creek during 2008. These surveys are being planned for 2009-2010. However, we completed fish sampling at 11 sites (i.e., 150-500 m transects) during June along Beaver Creek and its tributaries, Five Mile Creek and Nine Mile Creek. We collected fish via standard electrofishing methods and Smith-Root backpack types 15 and 12B. We identified six species of fish in the Beaver Creek watershed (Table 1). Longnose dace was the most common species found at 63% of the sites sampled. Cutthroat trout was present at only two sites in upper reaches of Beaver Creek; trout were the only fish species present at these locations (i.e., 100% of fish catch). Downstream from cutthroat trout sites, fish assemblages were dominated by long-nose dace (36%), followed by white sucker (25%), fathead minnow (20%), lake chub (12%) and long-nose sucker (7%).

Table 1. Summary of fish species captured during electrofishing in the Beaver Creek basin in June 2008.

| Species | Taxonomic Name | Acronym | No. of Sites Present (of 11) |
|-----------------|-------------------------------|---------|------------------------------|
| Cutthroat trout | <i>Oncorhynchus clarki</i> | CTTR | 2 |
| Longnose dace | <i>Rhinichthys cataractae</i> | LNDC | 7 |
| Lake chub | <i>Couesius plumbeus</i> | LKCH | 6 |
| Fathead minnow | <i>Pimephales promelas</i> | FTMN | 6 |
| Longnose sucker | <i>Catostomas catostomus</i> | LNSC | 3 |
| White sucker | <i>Catostomas commersoni</i> | WHSC | 5 |

Communications: We have no significant communications to report for Beaver and Todd creeks.

Battle River and Red Deer River basins (Diana Rung):

We worked with stewardship groups to implement on-the-ground riparian improvements. Groups included the Alberta Stewardship Network (ASN), the Red Deer River Watershed Alliance, the Alberta Environmental Farm Plan Company, and the Vermilion River Flow Advisory Committee. While attending annual meetings, we promoted ACA's riparian program using displays and promotional items such as brochures and publications.

We were very active with ASN, remained a member on the board of directors and attendend six general meetings. We participated on the ASN Stewardship Grant committee, which is funded by Alberta Environment's 'Water for Life Strategy'. We also participated in the planning and implementation of the sixth annual 'Stewards in Motion Workshop' on June 11, 2008. ACA assisted with hall rental and speaker costs; 80 people attended this event. We also participated in the ASN Stewardship Recognition Committee which acknowledged exceptional accomplishments by stewardship groups, individuals and stewardship projects. We partnered with numerous agencies to create the 2009 Environmental Stewardship Calendar which contains photographs and environmental stewardship facts. The calendar was distributed to 1900 recipients throughout the province.

In the summer of 2008 an advertisement was posted in two newspapers (The Ponoka News and the Rimbey Review) for two consecutive weeks soliciting landowners to become involved in riparian projects. However, the newspaper advertisements resulted in no new contracts.

Importantly, a new restoration project was completed on the Battle River near Vermilion (ACA site identification code = GL02_Wi). Exclusion fencing (2.4 km) was installed at this site. A

riparian assessment was completed at the new project location and vegetative photograph points were collected for future evaluations (Fitch et al. 2001).

We also completed five riparian assessments at existing project sites. A summary of 2008 riparian assessments is captured in Table 2. We also completed a qualitative survey of all previously-completed restoration projects in the Red Deer River and Battle River basins. It is important to note that we are still negotiating with a landowner on a tributary of the Red Deer River to develop an additional project before the fiscal year-end.

Table 2. Summary of riparian assessments conducted in 2008.

| ACA site code | Health rating (%)* | Riparian health description |
|---------------|--------------------|-----------------------------|
| BR99_Mc | 88 | Healthy |
| GL02_Wi | 72 | Healthy with Problems |
| BL05_Be | 66 | Healthy with Problems |
| BL07_Sp | 48 | Unhealthy |
| RDR07_Ab | 27 | Unhealthy |
| BR08_Hu | 78 | Healthy with problems |

*Based on Cows and Fish short-form assessment method.

Results from our videography surveys showed that 65% of the shoreline was highly impaired, 11% was moderately impaired and 24% was healthy (see Figure 2). A ‘User Guide to the Pigeon Lake Shoreline Video’ is in final draft and will be distributed to watershed groups and municipalities upon completion during 2009-2010.



Figure 2. Photograph taken during the low-level aerial videography of Pigeon Lake in June 2008.

Communications: We have no significant communications to report for this region.

Bearberry Creek (Marco Fontana and Kelly Hooey):

To establish a new partnership, we made a presentation on riparian conservation projects to Trout Unlimited Canada (TUC) head office in Calgary on April 2008. We continue to maintain ongoing communications with TUC on future collaborations. We also developed a proposal and met with Pembina Petroleum in November 2008 to acquire future funding for 2009-2010.

We promoted conservation work through various media outlets, including an article in the Mountain View Gazette on 10 June 2008, contributions to the Red Deer River Watershed Alliance's State of the Watershed report (<http://www.rdrwa.ca/>), displays at both the Ranching Opportunities Conference at Olds College in July 2008 and the Cows and Creeks Workshop in Caroline in August 2008, participation in the Sundre parade in September 2008, and a presentation to a high school environmental education class. We attended quarterly meetings of the Rocky Riparian Group. We worked with Mountain View County to coordinate landowners interested in riparian protection projects and utilized the East Slopes draft guidelines (Fontana and Judd 2007) to negotiate project designs and determine funding.

Due to the small number of existing projects, we postponed a demonstration site tour in favor of supporting the Bearberry Creek promotional evening event, which included riparian presentations, cowboy poetry, music and comedy at the Bearberry Hall on 28 February 2009.

One landowner used ACA's demonstration watering system during summer 2008 (Figure 3) and expressed interest in a cost-shared purchase. Thus, we purchased a second system for future demonstration purposes. We provided funds towards the purchase of a portable, solar-powered off-channel livestock watering system and towards the installation of a riparian fence, as part of new landowner agreements. In addition, we constructed a bank stabilization project incorporating approximately 50 m of wattle fencing, 30 modified brush layers, and 300 m² of live staking (Figure 4).



Figure 3. ACA's portable, solar-powered off-channel watering system in use on Bearberry Creek (Photograph by Chad Judd).



Figure 4. Before (left) and after (right) photos of the bank stabilization project completed in 2008 (Photographs by Kelly Hooey).

We contracted Cows and Fish to perform riparian health inventories at three sites: a project site and two non-project sites, including one that is relatively pristine site and one that is degraded. Riparian health inventories results are summarized in Table 3.

Table 3. Summary of riparian health inventories conducted along Bearberry Creek during summer 2008.

| Site | Date | Overall health rating (%) | Riparian health description |
|-----------------------------|-----------|---------------------------|-----------------------------|
| ‘Impaired’ non-project site | 12-Jun-08 | 70 | Healthy with problems |
| ‘Healthy’ non-project site | 11-Jun-08 | 88 | Healthy |
| Project site (treatment) | 10-Jun-08 | 75 | Healthy with problems |

Communications: We had a busy year with the Bearberry Creek program. First, we received a full front page photo and interview that was published in the Mountain View Gazette. We also developed a mock press release to meet the funding requirements of DFO’s Stewardship in Action Initiative. Finally, we developed the ‘Bearberry Creek Riparian Conservation Project Landowner Guide’ for distribution.

Beaverlodge River (John Hallett):

In spring 2008 we delivered a presentation on riparian conservation to the County of Grande Prairie and the Aboriginal and Community Engagement Coordinator with ConocoPhillips.

ConocoPhillips is an industrial stakeholder in the Wapiti River drainage basin and is interested in habitat improvement programs. Later in the year we successfully received funding from the ConocoPhillips Community Investment Funding Program for restoration work to be completed during 2009-2010.

In spring 2008 we also posted an advertisement in the Beaverlodge and District News for three consecutive weeks soliciting landowners to become involved in riparian projects. Two existing landowner partners received recognition signs (30x36 inch) for good stewardship (site codes = BLC07_Sm and BLC08_To). We hope that such recognition will encourage more interest in riparian conservation.

In June of 2008, McAllister Drilling drilled and cased a water-well on a landowner property (site BLC06_Ja (to provide off-channel watering) as part of a partnership agreement initiated in 2006; Encana Petroleum was a key partner on this project. Also, the landowners on site 'BLC08_To' completed their riparian fencing in 2008. A total of approximately 840m of fencing has been installed on the property. Importantly, a new project agreement was signed with a landowner to complete fencing around a lotic wetland at site 'BLC08_AI'. The landowner will supply materials and labour in exchange for ACA-purchased spruce trees to be planted at two riparian locations.

Also in spring 2008, we directed Alberta Agriculture and Rural Development (Peace River office) to apply to the ACA grant eligible conservation fund. Their goal was to plant donated seedlings at ACA riparian restoration projects along the Beaverlodge River. In partnership with the County of Grande Prairie, they received and planted approximately 24,000 donated seedlings from private tree nurseries (Table 4; Figure 5). Next Generation Reforestation Ltd., from Beaverlodge, planted the trees (\$0.455 per tree) during May 2008. In addition to these seedlings, ACA employees planted approximately 200 willow whips (cut from willows along the Peace River) at various pre-existing project locations. On Aug. 25 and Sept. 18, we inspected the planting sites because the Beaverlodge area had experienced drought conditions during the summer, and therefore, tree mortality was a concern. In general, spruce survival was high (ranging from 70-95%), pine survival moderately high (60-80%), whereas aspen had 100% mortality (John Hallet, personal observation).

Table 4. Tree seedlings planted at Beaverlodge River project sites in 2008.

| Site | # of Aspen | # of Spruce | # of Pine |
|-----------------------|------------|-------------|-----------|
| BLC05_Ca (10.6 acres) | 440 | 675 | 1800 |
| BLC07_Sm (16.4 acres) | 1253 | 6225 | 3600 |
| BLC08_To (2.5 acres) | 0 | 0 | 3240 |
| BLC08_Da (7.8 acres) | 0 | 2520 | 0 |
| BLC08_AI (4.2 acres) | 0 | 1785 | 1080 |



Figure 5. Photographs of tree planting project, including volunteers ‘in action’ (on right) and a spruce planted on the ‘BLC08_AI’ site 4 months after planting (on left). Photographs by John Hallett.

All existing ACA riparian projects on the Beaverlodge River drainage were inspected during summer 2008. We did not complete Cows and Fish riparian short-form inspections (Fitch et al. 2001), as these were done in 2007. Such assessments are typically done on a bi-annual basis.

Communications:

We received local news paper (The Peace Country Sun) coverage on 23 May 2008 of tree planting at site BLC05_Ca by students from Grande Prairie Composite High School and volunteers from the Woodmere Tree Nursery. County of Grande Prairie organized a public demonstration tour of selected Beaverlodge riparian project sites. Approximately 12 people attended the riparian demonstration tour, including a newspaper reporter for the Peace Country Sun. Craig Johnson, a fisheries biologist (ASRD), talked about the problems in the river, and John Hallett (ACA) talked about the riparian projects done thus far on the river. We presented a local family with a landowner recognition sign during this demonstration tour, and the landowner talked about her experience with the program with the reporter. The Peace Country Sun published an article about this tour on Oct. 24, 2008.

South Heart River-Lesser Slave Lake system (Ed Kolodychuk)

We attended two meetings with the High Prairie Riparian Action Team (HPRAT), one on April 17, 2008 (12 members in total at meeting) and the other on December 11, 2008 (14 members in total at meeting). We also responded to approximately four public enquiries regarding support for a riparian conservation project. Unfortunately, we did not have ACA staff committed (full-time) to riparian conservation work in the South Heart River-Lesser Slave Lake system during 2008-09.

Conclusions

We continue to lead riparian conservation activities in Bearberry Creek, Battle River, and Beaverlodge River. For Beaver Creek and South Heart River-Lesser Slave Lake systems in 2008, the ACA provided only technical advice and support for work being led by the Beaver Creek Watershed Group and the High Prairie Riparian Action Team. We delivered six new riparian restoration projects with landowner agreements (e.g., livestock exclusion fencing, off-site watering structures); three at Beaverlodge River, two at Bearberry Creek and one at the Battle River. Monitoring data collected during 2008 for these projects, as well as for pre-existing projects have been archived for future evaluation of the riparian program. The riparian team agreed that a standardized monitoring protocol be developed during the upcoming year to assist ACA staff with evaluating riparian projects as part of an adaptive conservation strategy.

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