

Elbow Partnership News

Elbow River Watershed Partnership (ERWP) Newsletter
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Invasive Weed Control – The Necessity of a Long-Term Commitment

The Weaselhead/Glenmore Park Preservation Society (the Society) – a non-profit organisation – is now in the second year of a 10-year program (with the expectation that it will extend even longer) to combat invasive plant species in the Weaselhead Natural Environment Park (the Park), covering an area of some 400 hectares at the mouth of the Elbow River where it enters the Glenmore Reservoir in Calgary.

One of the most important factors to ensuring a realistic chance of success in controlling invasive plants is a long-term strategy, which the Society recognizes. This has allowed me, as the Invasive Plant Program Coordinator, to focus last year and this year on establishing how many non-native species we have in the Park, what they are, and where exactly they occur (see text box). Entered into a geographic

information system (GIS), this data is invaluable in helping to determine which vegetation communities are most affected and which species should be prioritized for removal and from where. For example, certain non-native plants like common plantain, while relatively abundant, can be seen to be limited to disturbed areas, such as the edge of the trail network, and do not appear to

Non-native plants may not be invasive - in fact (luckily!) most aren't - if they escape into a natural area they don't survive or don't spread. However, just because a particular species is not invasive right now is no guarantee that it won't become invasive in the future - sometimes decades after being first introduced!

invade the interior habitat. Other plants, such as sea buckthorn, while few in number, represent more of a threat as individuals once established in an area can spread rapidly to form extensive colonies. Additionally, the collected data will, in the future, act as a benchmark against which we can determine the success of the program.

A long-term approach also allows a gradual build up of volunteers interested in helping in the program. In the

Weaselhead, we started last year with nine “Early Detection Rapid Response” volunteers, who committed time to searching for invasive plants that are either not yet detected in the Park or only present in small numbers. This team has now grown to 16 volunteers. We hope that gradually a core of committed “expert” team members becomes established that can lead the team and would require minimal staff support. The “Weasel Weeders” – a team of volunteers willing to help with regular weed removal – has just started recruiting. By keeping this team informed about the importance of what they are doing and how it fits into the overall

strategy to control invasive species and by keeping workshops short and varied, we aim to attract about 16 dedicated and interested members. To compliment the regular weeding efforts of these volunteers, we have also started hosting one-off corporate weeding days, whereby employees come to the Park to help tackle the more labour-intensive tasks and in return get a guided introduction to one of the most beautiful areas in Calgary.



The author cutting pulled cotoneaster
Credit: Deidre O'Brien

Building partnerships with other stakeholders also takes time. Our volunteer activities take place as part of the City of Calgary's *Community Stewardship for Biodiversity Program*, and this year, as new contacts and friends have been made, we have had significant support from a number of City staff, including help with data backup/entry, help with acquiring weeding tools, and help with designing appropriate control methods. In turn, we have been able to help the City by providing GPS data on locations of designated species on the new provincial weed lists, taking staff to see species of concern on site, and providing volunteers for an on-going City experiment in caragana control.



Partnerships and support can now come from much further afield too with the availability of easy Internet communications: we have received permission to adapt a volunteer weeding manual from an organisation in Australia for our own Weasel Weeders; been given extensive help with strategic planning from The Nature Conservancy Invasive Species Group in the USA; and provided with informal advice on control of particular species from individual researchers working across North America.

The Society's goals of controlling the spread of certain invasive plants, eradicating others, and preventing the establishment of new invasive species in the Weaselhead we hope will push the 2007 Cows and Fish riparian health rating of this stretch of the Upper Elbow River from "healthy but with problems" to "healthy" – and we will be doing our bit to bring about the success of the Elbow River Basin Watershed Management Plan in general and to preserve the rich biodiversity of this remarkable area in particular. Anyone interested in volunteering with us is welcome, just contact me, Sarah Nevill, at sarahcalgary@yahoo.ca or check our website talkaboutwildlife.ca for upcoming events.

WGPPS gratefully acknowledges the support of the Alberta Conservation Association, the Alberta Stewardship Network, and the Calgary Foundation-Kayak Foundation.

Submitted by Sarah Nevill

What Is the Friends of Kananaskis Country and Why Is It Important to the Elbow Watershed?

If you've ever been to the Elbow Valley Information Centre, you may have noticed for sale the spectacular posters of Kananaskis Country. Proceeds from these posters, as well as the t-shirts, books, and other items, support the Friends of Kananaskis Country (Friends of K-Country). Established in 1996, Friends of K-Country is a registered charity with a mission to enhance, protect, and share the unique natural and cultural experiences of Kananaskis Country through environmental education and public participation. The organization ensures that its programs and projects support the three focus areas of education, participation, and protection.



Friends of K-Country, along with Alberta Tourism, Parks and Recreation and the Elbow River Watershed Partnership, established the Elbow Watershed Field Study Program 6 years ago. The program, aimed at grade 8 and 9 students and Biology 20 students, has been highly successful over the years. This success would not have been possible without the organization's

significant on-going operational and financial support. The Field Study Program is just one of the Watershed Education Initiatives that Friends of K-Country supports. By purchasing items at the four Visitor Information Centres within Kananaskis Country, you are helping to support these important initiatives.

The organization also runs several volunteer programs. If you've spent quite a bit of time hiking in the Elbow watershed, chances are that you've been on a trail maintained or created thanks to volunteers participating in



Friends intern leading the Elbow Watershed Field Study Program

Friends of K-Country's Trail Care Program. This may be an opportunity for you to give back; if you would like to lend a hand, send an e-mail to ann.makin@kananaskis.org.

City of Calgary Streambank Study

The City of Calgary Water Resources is currently undertaking a Streambank Slope Stability, Flood Control, and Riparian Assessment Study. The study includes the Bow River, Elbow River, West Nose Creek, Nose Creek, and Fish Creek within City limits. This represents approximately 260 km of streambank. The study started in June of this year and is expected to be completed in June 2011.

The overall objective of the study is to compile baseline information on riparian and streambank health and to develop an Integrated Bank Stability and Flood Control Structure Development and Maintenance Program. This program will help prioritize the capital and maintenance work required to restore and maintain a healthy and stable riparian and streambank system, as well as reduce the impact of urban development on water quality.

The study will include the development of a set of design guidelines for riparian restoration, streambank slope stability, and erosion control works. Bio-engineering solutions will be considered. Stakeholder engagement and input will be incorporated to assist in the selection and ranking of sites that require restoration.

Submitted by Norma Posada-Flaherty

Bioengineering in Southern Alberta - What Does It Take to Be Successful?

Get a group of watershed stewardship groups together in a meeting and chances are that most of them have been involved in a bioengineering project. Bio-engineering involves “using live plants alone or combined with dead or inorganic materials [e.g., wood, twine, cable ties] to produce living, functioning systems to prevent erosion, control sediment and provide habitat. Bioengineering uses combinations of structural practices and live vegetation to provide erosion protection for hillslopes and streambanks.”¹ This approach to restoring degraded streambank (riparian) areas has numerous advantages compared to using traditional “hard” engineering solutions such as rip-rap and concrete armouring, although is not appropriate in all circumstances (e.g., protecting infrastructure).

| Bioengineering | Traditional approach |
|---|--|
| Low cost | Expensive |
| Low maintenance once plants have been established (self-sustaining) | Requires regular maintenance over lifespan of structure |
| Provides riparian functions | Provides limited, if any, riparian functions and may increase downstream erosion |

Bioengineering also provides an opportunity to engage volunteers in on-the-ground stewardship since the biggest resource component in undertaking any such project is labour. In light of all these benefits, bioengineering appears quite attractive. However, over the past four years, groups in Southern Alberta have been meeting with mixed success. Based on a bioengineering workshop,¹ experiences from the ERWP’s two bioengineering sites, a site visit by the author with Dave Polster,² and research from the United States,^{3,4} the following appear to be key variables in any bioengineering project:

- 1) Site selection—North vs. south facing: south-facing sites have a higher tendency to dry out. Straight vs. bend: structures that are built on the outer edge of a curve can face significant force compared to those along the inner bend or a straightaway.



Live reinforced earth wall on the outer bank of a bend at McLean Creek.

- 2) Creek characteristics—Bioengineering is better suited to lower-energy streams; high energy streams may undermine the chance of success.
- 3) Timing of installation—Ideally, planting should take place at a time when the plants will have adequate moisture for establishment and yet will not be subject to high flow events. This can be quite difficult in Southern Alberta as planting after the spring freshet would push most projects into the summer months. It is generally recommended to plant either in the spring (which occurs in most cases) or the fall. A study done by the Natural Resources Conservation Service found that pre-soaked willow cuttings planted in the fall did better than those planted in the spring.⁴ However, according to Polster, as long as willow cuttings are kept moist, successful establishment can be achieved at any time of year.⁶
- 4) Species selection—A vegetation inventory of the local area should be conducted prior to embarking on a project to determine what species would be suitable.
- 5) Type of installation—Among the various types of bioengineering installations available, wattle fences are no longer encouraged as they appear to have a fairly high failure rate in Southern Alberta. These failures have been due to (1) water getting behind the fence and eroding the soil, and (2) dessication. Polster is now promoting the use of contour fascines.³ However, if a wattle fence is being installed and there are beavers in the area, the use of lodgepole pine is suggested.
- 6) Cutting selection and preparation—A healthy, native stand for harvesting as close to the project site as possible should be found. Cuttings (stakes) should be taken from healthy parent plants when dormant and should be about 0.5 m in length. Avoid damage to the stakes. Cut off the top of the stakes and soak for 10 – 14 day to remove the rooting inhibitors and ensure that the stakes are fully hydrated. The general recommendation is that stakes should be at least a thumb’s width (1/2 inch) in diameter, depending upon the species, as larger diameter cuttings have a greater supply of stored energy for rooting than smaller diameter cuttings. Based on the ERWP’s experience at McLean Creek, this may not apply in all cases. The native stands in the area do not tend to have large-diameter willows, and the small-diameter willow stakes had better survival rates than the larger-diameter stakes.
- 7) Depth of insertion—Stakes should be 3/4 to 7/8 buried. This is critical in our semi-arid climate to prevent the stakes from drying out.

8) Water, water, water—Don't just water in the spring and summer; ensure to water in the fall before the ground freezes so that the plants are well hydrated for the winter.

9) Fencing—If the site is visited by cows and other ungulates, temporary fences must be installed before planting to ensure that no grazing and trampling takes place for the first 2 to 4 years after planting. This also applies if there is human usage.



A cow's hoof puts ten times more pressure per unit area than a bulldozer. (Source: Cows and Fish).

10) Monitoring and maintenance—Both are absolutely essential and should be built into the project budget. Willow mortality can occur for a variety of reasons, including the freezing and thawing that occur during Southern Alberta winters due to chinooks. Thankfully, there is a low-budget solution: replant. Fencing, if installed, should also be monitored and maintained. As a project matures, less monitoring and maintenance are required. A word of advice, do not be quick to assume that your stakes are dead. At McLean Creek, some of the stakes that appeared dead after the winter sprouted new plants through their rhizomes (modified roots).

Notwithstanding the above, at the end of the day, the two most important things to realize are as follows:

- Bioengineering is not only a science, but an art. You can do everything right given the knowledge available at the time and still experience high plant mortality.
- Sometimes the best approach is to do nothing; let nature run its course.

Works cited

- [1] Thapa, Kalyan. Importance of Bio-engineering. <http://www.terraerosion.com/documents/Importance-of-Bio-engineering.pdf>
- [2] Bioengineering – The Good, the Bad, and the Ugly Workshop. November 10, 2009. Lethbridge AB.
- [3] Polster, David F. Personal communication. Site visit to McLean Creek. October 4, 2009.

[4] Tilley, Derek, and J. Chris Hoag. Evaluation of fall versus spring planting of dormant hardwood willow cuttings with and without soaking treatment. *Riparian / Wetland Project Information Series No. 25*, November 2008.

[5] Gary Bentrup and J. Chris Hoag. 1998. *The Practical Streambank Bioengineering Guide*. USDA Natural Resources Conservation Centre. <http://www.plant-materials.nrcs.usda.gov/pubs/idpmcpustguid.pdf>

[6] Polster, David F. 2007. *Soil Bioengineering for Land Restoration and Slope Stabilization*. Polster Environmental Services Ltd.

ERWP Fall Forum on Groundwater + AGM

Location: Elbow Valley Residents Club
100 Misty Morning Drive

Date: September 23, 2010

Time: 6:30 p.m. – 9:00 p.m.

Topics: Upper Bow Basin Cumulative Effects Study: Phase 1 Results (Eric Lloyd)

Domestic Well Monitoring Program in Rocky View County (Matt Wilkinson, Project Coordinator)

Groundwater Protection Areas (Akin Owojori, Dillon Consulting Limited)

Groundwater Management in the Elbow Basin and Southern Alberta (Claude Eckert, Alberta Environment)

Sponsored by [Alberta Ecotrust](#). No registration is required.



Drilling a groundwater monitoring well south of the Highway 22 bridge crossing the Elbow River.

To contact the Elbow River Watershed Partnership, call 403-268-4520 or e-mail coordinator@erwp.org.