

PERENNIAL FEATURES

- ✦ **Diggin' In** - Progress reports on Foothills Restoration Forum activities
- ✦ **Magic Beans** - Recommended reading
- ✦ **Growing Partnerships** - Important partnerships and information sources
- ✦ **Maintaining the Rough Edge** - Professional development including upcoming seminars, conferences, courses & workshops
- ✦ **Mail to the Chief!** - Letters to the editor
- ✦ **Step Forward & Plant Your Own Seeds** - Call for submissions

INSIDE THIS ISSUE:

- Monitoring our Footprint in Alberta's Southeast Foothills** 2
- When Restoring Grassland—Dry is Better!** 2
- Rough Fescue Growing on a Reclaimed Gravel Pit** 5
- A Plug for Working Together** 7
- Native Hay as a Re-Vegetation Seed Source** 8
- Salvaged Foothills Rough Fescue Cuttings** 10
- Skim Grazing: A Tool for Management of Invasive Agronomic Species** 12

The Hard Grass Advocate

VOLUME 1, ISSUE 1

JANUARY 2008

Let's Roll Up Our Sleeves & Get to Work!

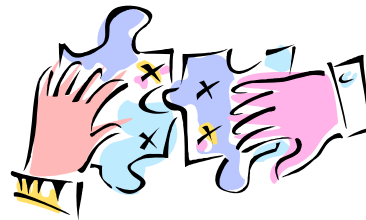
By Marilyn Neville

Welcome to the first edition of The Hard Grass Advocate! The purpose of this newsletter is to promote science-based information sharing regarding the stewardship, maintenance and restoration of our native grassland plant communities located on the south eastern slopes of Alberta's scenic Rocky Mountains.

The need to conserve and restore native prairie and parkland ecosystems for future generations is well recognized through collaborative initiatives such as the Prairie Conservation Forum. The Prairie Conservation Forum is an example of what can be done when individuals from a wide variety of sectors including: non-governmental organizations, provincial and federal departments, agriculture and industry work together to share the responsibility for environmental stewardship.

The foothills region of the south eastern slopes is the focus of intense development pressure on all fronts. Urban and rural residential growth, agriculture and ranching, industrial projects such as oil and gas, mining, renewable energy and forestry are all present in some form on this landscape. Landowners and land managers have expressed

concern over the technical difficulties inherent in maintaining and restoring rough fescue grasslands. Alberta Sustainable Resource Development (SRD), recognized that a collaborative approach was required to address in the concerns of the community. Joining forces with the Southern Alberta Sustainable Community Initiative (SASCI), provided a vehicle to launch the Foothills Restoration Forum.



Currently, research and field studies are not linked or coordinated. The Foothills Restoration Forum will provide a research mechanism, a venue to share research results, and a single-source link to the knowledge we have to the research we are conducting. The concept of the Forum is open, initially focusing on the grassland soils and vegetation interface with a vision of what is necessary to improve restoration potential.

The response to the inaugural session of the Foothills Restoration Forum validated the

need for this community based initiative. We had 117 people attend the November 23rd session at the Maycroft Community Hall. Attendance was broad based, engaging most sectors of the south eastern slopes community. We were impressed with the depth and breadth of knowledge and local experience that was present in the room. Feedback received from the comments form was favorable, with valuable recommendations for improvement. Thank you everyone for attending. The challenge will be to keep the momentum generated at the inaugural session and to move forward with the research institutions to explore the unanswered questions and increase our understanding of the mechanisms of native grassland restoration. For further information on the inaugural session please visit the SASCI website at www.sasci.ca.

Marilyn Neville
Editor-In-Chief



Monitoring our Footprint in Alberta's Southeast Foothills

Contributed By **Arnold Janz**

A rapidly growing economy and population is placing substantial pressures on Southern Alberta landscapes.



These pressures come from a variety of land uses including settlements, agriculture, forestry, oil and gas development, tourism, recreation and conservation efforts. A number of questions remain about how much and

how fast land use is occurring and changing in Alberta's Foothills Fescue landscapes.

To begin to understand the scope of the issues, Alberta Environment proposes to initiate a long-term monitoring project in South West Alberta that will measure the historical and current footprint associated with a variety of land uses on Foothills Fescue landscapes. This project would constitute one of five or six project areas throughout the province, with the objective of eventually generating a province-wide footprint perspective. The monitoring project could cover an area of approximately 10 townships containing a variety of landscapes and land uses in Fescue prairie. Land use indicators that could be used to assess cumulative effects

include corridor density and a variety of footprint area measurements.

Proposed startup of the Foothills Fescue monitoring project is summer 2008. Subsequent measurements would be required at regular intervals to generate information on footprint trajectory and rates of change. A measurement interval of approximately five years may be appropriate.

Any questions about the proposed project can be directed to:

Alberta Environment
9820-106St
Edmonton, Alberta
T5K 2J6
Attn: Arnold Janz
Land Conservation Specialist
780-427-5657



When Restoring Grassland - Dry is Better!

Contributed By **Barry W. Adams**

It seems counter to common sense but grassland restoration is easier to accomplish in drier environments. I became interested in reclamation of wellsites and pipelines in the late 1980's when my colleague Lowell Calder, a Land Management Specialist with ASRD, pulled me away from my normal rangeland duties to look at some of his reclamation projects. Since that time I and many others from government and industry have been able to observe and document a variety of sites from dry to moist and to see that evidence of restoration is

strongest in the prairie environment and very limited in the foothills on range sites characterized by deep black soils.

Restoration is defined as the process of returning a disturbed site to the ecosystem characteristics that existed prior to surface disturbance, usually based on the characteristics of an adjacent reference or control site. Consider restoration success along this gradient from dry to moist:

⇒ A study in the 1990s in the Dry Mixedgrass, compared small diameter pipeline development

options and showed early evidence of restoration success. With natural recovery, choppy sandhills sites showed the most rapid recolonization of key native species followed by loamy and blowout site types. At the 3 to 5 year mark, post development, the key components of the plant community were present and expanding. Sixteen years later, the natural recovery plots closely resemble the controls except in those areas where scalping resulted in topsoil loss (Adams et al 1996).

⇒ A clear trend is evident in our vegetation plot data of native grassland and riparian sites. The data show that the frequency of trace amounts of invasive plant species increases along a moisture gradient from Dry Mixedgrass to mesic Foothills Parkland sites to moist riparian sites (Bradley 2003).

⇒ A recent study by Peggy Desserud (Desserud 2006) evaluating reclamation success on foothills pipeline projects showed little evidence of restoration success on

References

Adams, B., O. Castelli, W. Tedder, D. Downing. 1996. Reclamation of Mixedgrass Prairie Disturbed by Pipeline Construction. Technical Report to the Reclamation Research Technical Advisory Committee (RRTAC), Alberta Agriculture, Food and Rural Development. 76 pp.

Bradley, C. 2003. Invasion of Non-Native Plant Species. Report of Workshop Results for ALCES Modeling. Alberta Environment and Alberta Sustainable Resource Development. 23 pp.

Desserud, P.A. 2006. Restoration of Rough Fescue (*Festuca campestris*) Grassland on Pipelines in Southwestern Alberta. Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development, Lethbridge, Alberta, Pub. No. 77 pp.

80% of study sites. The other 20% showed some degree of restoration success where minimum disturbance practices and winter development had been applied. A portion of these more successful sites were also located on dry slope crests and south facing aspects.

⇒ In this newsletter, Jake Willms from ASRD Lethbridge, profiles his success in establishing foothills rough fescue on a gravel range site on the Milk River Ridge – a site within the Foothills Fescue Natural Subregion which experiences considerable drought stress due to both climate and gravel soils.



On a gradient from dry to moist, restoration success is easier to accomplish in drier environments. The manipulation of moisture regime may be an important consideration in developing effective restoration practices for foothill plant communities (Image adapted from ALCES presentation slide by Brad Stelfox, photos by Lorne Fitch).

Invasive Species Response to Moisture Gradient

Natural Subregion n=sample plots	Timothy	Awnless brome	Kentucky bluegrass	Crested Wheatgrass
Dry Mixed Grass ¹ n=1628	0	T	5	2
Mixed Grass ¹ n=724	2	6	32	4
Foothills Fescue ¹ n=283	36	7	68	T
Foothills Parkland ¹ n=410	73	21	75	T
Riparian Inventory Plots ² n=872	47	78	87	17

¹ Source - Alberta Sustainable Resource Development ² Source - Cows and Fish Program, Riparian Health Inventory Program



An example of effective restoration of a small diameter pipeline project near Vauxhall Alberta, 16 years post construction.

Most of our noxious weeds, and invasive agronomic species like Timothy, smooth brome, Kentucky bluegrass and crested wheatgrass originated in moister growing conditions like Europe and Asia. So these species tend to be far less competitive in drier environments where natives are better able to prevail. The paradox for foothills grasslands is that rough fescue will

grow to the near exclusion of other species in the absence of grazing, yet once the grassland profile is broken through some form of mechanical disturbance, this competitive edge appears to be lost.

Of course there are other factors that are altered with mechanical disturbance including available nutrients, as the mineralization of the soil profile accelerates and also

moisture regime may be a key factor in the restoration of rough fescue grasslands. Foothills grasslands evolved with the impacts of both bison grazing and periodic fire, natural processes that would have imposed a periodic “drying” effect on the grassland.

At the recent Foothills Restoration Forum meeting we heard from Steven Tannas and Peggy Desserud

with the disturbance of soil microorganisms.

Manipulation of

about possible role that moisture management may have in achieving restoration success. We will watch as their and other new studies sponsored by the FRF will work cooperatively with many stakeholders in an effort to crack the puzzle of grassland restoration in south western Alberta.

By Barry W. Adams, Provincial Rangeland Specialist – Grasslands Lethbridge



Diggin' In

By Marilyn Neville



The steering committee of the Foothills Restoration Forum met on December 20th in Pincher Creek at the SASCI office to select, by consensus, the members of the Technical Advisory Committee (TAC), from the list of nominations received following the November 23rd inaugural session. We were very impressed with the depth of knowledge and experience portrayed in the resumes of the candidates nominated. In response to the feedback forms we received, we expanded the TAC proposed membership from:

- ~ Two government specialists;
 - ~ Two industry specialists;
 - ~ One specialist from environmental NGOs; and
 - ~ One landowner stakeholder.
- To:
- ~ Two government specialists;
 - ~ Three industry specialists;
 - ~ Two specialists from NGOs with active interests in restoration;
 - ~ One representative from the


municipalities; and
~ Three landowners to represent the agricultural sector.

The steering committee was provided with copies of the candidates resumes received. Following the review of each resume, a decision matrix was compiled for each category of membership, and each candidate was given a numerical ranking based on technical expertise, work experience and local knowledge.

The steering committee recommends the following TAC membership:

- ✿ **John Begg**, Head, Industrial and Reclamation Unit, Land Use Branch, SRD
- ✿ **Kevin France**, Rangeland Agrologist, Montane/ Foothills, SRD Rangeland Management Branch
- ✿ **Sandra Marken**, Team Lead Environmental Stewardship, ConocoPhillips Canada

- ✿ **Clare Tannas**, Rangeland Agrologist, Eastern Slopes Rangeland Seeds
- ✿ **Varge Craig**, Rangeland Agrologist, Alta Rangeland Services Ltd.
- ✿ **Cheryl Bradley**, Botanist, Alberta Native Plant Council
- ✿ **Nigel Douglas**, Alberta Wilderness Association Conservation Specialist
- ✿ **John Russell**, Biologist and Councilor for the MD of Pincher Creek
- ✿ **Clay Chattaway**, Landowner
- ✿ **Darryl Carlson**, Landowner
- ✿ **Larry Frith**, Landowner

We have archived all of the contact information for the nominations received. We hope that all of the nominees will continue to be involved in the Forum. We hope the Forum will extend beyond two years at which point we will be looking for renewed membership in the TAC. 

Foothills Restoration Forum

Thank-you to all who attended the inaugural session of the Foothills Restoration Forum at the Maycroft Community Hall on November 23rd, 2007. Hope to see you next time!



Rough Fescue Growing on a Reclaimed Gravel Pit

Contributed By Jake L. Wilms

Editor's Note: *There have been very few projects where locally harvested rough fescue seed has been used for the revegetation of industrial disturbances in south western Alberta. The following trial project may provide valuable insight into the use of locally harvested rough fescue seed, and the progress toward the re-establishment of a rough fescue plant community over time.*

The Ross Lake Community Pasture has long been recognized for its unique landforms, portions of which remained unglaciated during the last ice age. The uplands associated with the north Milk River are biologically diverse, with unique rough fescue grassland plant communities. The area was nominated as a potential ecological reserve in 1985, and in 1997 the Ross Lake Natural Area was established by Order in Council. The site is located in the Foothills Fescue Natural Subregion, within

the Del Bonita Plateau ecodistrict. The location is approximately 6 miles west and 4 miles north of the hamlet of Del Bonita, on public land in the Ross Lake Community Pasture. Cardston County operated a gravel pit on the NW ¼ of LSD 2 in SE 6-Tp 2-Rg 22-W4 within the Ross Lake Community Pasture, under Surface Mineral Lease, between 1980 and 1995. By the early 1990's, the county had removed most of the gravel deposit and in 1995 agreed to reclaim the gravel pit. Natural

recovery was the recommended revegetation strategy, to avoid the introduction of non-native species into the potential ecological reserve. On August 25, 1995, the county landscaped the site to 4:1 side slopes in order to blend in with the surrounding landscape. The Rego Black Chernozemic topsoil, conserved prior to the initial excavation, was replaced in a thin layer over the recontoured droughty substrate. Upon request, the west face of the gravel pit was left unreclaimed so that researchers, soils



The terrain adjacent to the reclaimed gravel pit. Photo taken by Marilyn Neville, June 1, 2007.



Photo taken June 1, 2007, view across the base of the reclaimed gravel pit. Photo taken by Marilyn Neville

experts and the public can examine the ice lenses in the soil profile.

In July 1996, Vince and Wilf Petherbridge, (Enviroscapes), received permission to harvest some native rough fescue grass seed from the Ross Lake Community Pasture. The terms of the agreement included the requirement for 10 percent of the native grass seed collected to be provided to public lands for use in revegetation trial projects as a royalty for the Province of Alberta. It was agreed that the reclaimed gravel pit would provide an excellent trial site for

locally harvested rough fescue seed. Cardston County was contacted to ask if they would provide the manpower and equipment required to seed the site. They agreed and on May 12, 1997, the rough fescue seed was broadcast and harrowed across the site, at a rate of 10 pounds per acre. In addition, a portion of the screenings obtained from the seed cleaning process were mixed with the rough fescue seed and applied to the plateau and the bottom of the north facing slope. The screenings included additional native plant species such as green needle grass, coneflower, sticky

geranium and other forb species seeds found in the adjacent landscape. The screenings were applied to determine if they would germinate and increase the species diversity in the seeded stand. It was windy the day the site was seeded. Would the windy conditions, a common occurrence in the area, compromise revegetation success? The effort expended seemed quite futile at the time; however, only the passage of time and further monitoring would provide the answers.

Continued Next Page...

Rough Fescue Growing on a Reclaimed Gravel Pit Continued...

On May 18, 2000 the site was inspected to determine the success of native grass establishment and photos were taken. Results were encouraging with a good cover of native grasses and forbs growing on the site.



Inspection Photo from May 2000

ground cover. How much of the current growth was a result of the seed that was broadcast, and what role natural recovery played, are unanswered questions.

On June 1, 2007 the site was jointly inspected with Marilyn Neville and Varge Craig. We found a very good stand of rough fescue established on the site and some plants of rough fescue were producing seed heads. In places the rows of rough fescue were still visible.



Inspection Photo from July 2003

Rough fescue, Idaho fescue, native bluegrass species, fringe sage, pasture sage, golden bean, sweet clover, wavy leaf thistle, Canada thistle and showy loco weed were identified growing onsite. On the north side grass cover was less dense and growing in rows. The middle of the site had a denser cover of native grasses. It looked like Idaho fescue was more dominant than rough fescue on the site. A few plants of showy loco weed were growing in the center where it was quite bare. The ridge top at the south is more wind blown and had mainly fringed sage and a few thin grass plants. Considering the strong windy weather conditions at the time of seeding it was amazing to see the current

On July 4, 2003 another inspection was conducted to check the success of native grass establishment and photos were taken. A good stand of Idaho fescue, rough fescue, northern wheatgrass was continuing to develop on the site. As well, native forb species such as golden bean, hairy golden aster, yarrow, brown-eyed Susan, American vetch, milk vetch, fringe sage, pasture sage, prairie cinquefoil, and blue bur were also present in the stand. The rows of native grass were still visible but had filled in considerably since the May 12, 2000 inspection. Rough fescue appeared to be more abundant than Idaho fescue.

Another important factor in this trial is that the site has not been fenced, and has been subjected to rotational grazing throughout the trial.

Jake L. Willms
Rangeland Agrologist, Grazing Reserve Program
Prairie Area
Alberta Sustainable Resource Development

Agriculture Centre
#100, 5401 - 1st Avenue South
Lethbridge, Alberta T1J 4V6
Phone: (403) 382-4287
Fax: (403) 381-5792
Cell: (403) 308-9961
E-mail: jake.willms@gov.ab.ca

Literature Cited:
Adams, B. W., R. Ehlert, D. Moisey and R.L. McNeil. Second Approximation Updated April 2005. *Rangeland Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta*. Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development, Lethbridge, Pub. No. T/044. 85 pp.

SPATTERED SEEDLINGS
QUOTE!
"A goal without a plan is just a wish."
- Antoine de Saint-Exupery



A Plug for Working Together

Contributed by Kurtis Averill & Steve Tannas

Compton Petroleum is a Canadian company that has mineral holdings in the southern foothills where some of the last remaining foothills rough fescue (*Festuca campestris*) still exists. Faced with drilling on these lands, Compton is working with rangeland experts and researchers to put their ideas and research to work on rough fescue health and reclamation.

Over the last several years, Compton Petroleum has funded and provided sites for the U of A on the subject. Kurtis Averill from Compton is working with PhD candidate Steve Tannas to examine the issue and evaluate the competitive nature of rough fescue a climax native species compared to Kentucky bluegrass, an invasive, species.

Steve indicates “we have been unsuccessful at consistently establishing healthy rough fescue stands due to the seedlings sensitivity

to the environment, their unavailability and their uncompetitive nature.”

Steve worked on a Carbon, Alberta reclamation site in fall 2007 using plugs and seed to ensure an optimum/ desired plant community. He planted one plains rough fescue (*Festuca hallii*) plug/square meter and seeded a mixture of rough fescue (50%), alkali bluegrass (20%), June grass (10%), green needle grass (10%) and northern and western wheatgrass (5% each). He planted a heavy 40 kg/ha seed-mix to ensure a thick stand of native grass to compete with weeds and watered the wellsite to increase plug survival and seed-germination.

Steve indicates that “it is possible to regenerate rough fescue given key environmental conditions are met. Using rough fescue plugs could be a key to regeneration of this species and the grassland community.”



A Mature Foothills Rough Fescue Plant



Trial Plot at Tannas Farm of Three Year Old Transplants



Seeding at Carbon before adding plugs

Steve’s research points to numerous solutions that will enhance reclamation success. They include:

- ⇒Planting rough fescue greenhouse-grown ‘plugs’ (this is showing great promise);
- ⇒Seeding-in successional species that grow quickly after disturbance but eventually the fescue overtakes them. They suppress weeds while the fescue establishes;
- ⇒Ensuring a weed-free seed bed;
- ⇒Seeding at high rates to make plants more competitive;
- ⇒Ensuring the soil is moist and conducive to growth;
- ⇒Targeting planting during optimal conditions in late fall and early spring;
- ⇒Experimenting with soil nitrogen since this may suppress certain weeds.



Plugs being planted at Carbon



Planting Plugs

The Carbon project is only one of several research sites on which Compton and Steve are conducting trials. Their goal for this research is to promote not only the preservation of natural spaces but also to engage in efforts that promote restoration and growth of natural areas.

Hats off to Steve and Kurtis on their work together -- we look forward to hearing more about the results.



Magic Beans

Suggested Literature, Readings & Resources

Recommended reading for those who love to garden in our climate:

NatureScape Alberta

Creating and caring for wildlife habitat at home—By Myrna Pearman and Ted Pike
Published by the Red Deer River Naturalists and the Federation of Alberta Naturalists

Gardening Under the Arch

Updated and expanded edition 2006—Compiled and Published by the Millarville Horticultural Club

Cooking Under the Arch

Cherished Recipes and Gardening Tips from the Rigorous High Country of Alberta's Chinook Zone—Compiled and Published by the Millarville Horticultural Club

Recommended night time reading with local history:

The Palliser Expedition

The Dramatic Story of Western Canadian Exploration 1857-1860—By Irene M.Spry

Resources:

There is a wealth of information on the SRD website www.srd.gov.ab.ca. You can find Range Health Assessment Guides and forms; Range Plant Community Guides; Rangeland Monitoring and Reference Areas; plus much more at: <http://www.srd.gov.ab.ca/lands/managingpublicland/rangemanagement/default.aspx>

The Alberta Environment Website:

www.environment.alberta.ca also contains a wide variety of information on reclamation, land trust leadership, and much more. <http://www.environment.gov.ab.ca/initiatives.aspx> provides information on the Energy Environment Technology Fund and links to the Sustainable Resource and Environmental Management initiative.

Stay tuned for more Magic Beans in our next issue...

SPATTERED SEEDLINGS~ QUOTE!

“Outside of a dog, a book is a man’s best friend.
Inside of a dog, it’s too dark to read.”

- Groucho Marx



Native Hay as a Re-vegetation Seed Source

Contributed by Peggy Desserud

Straw has long been used for mulch or erosion control, usually with a focus on few or no seeds in the straw. On the other hand, hay cut from native grassland and used as mulch could provide a native seed source. The benefits of native hay include no cash outlay for seeds, a natural mix of adapted native grasses, protective mulch for emerging seedlings and no special native grass seed processing or drill seeding required. Factors which affect the viability of native hay include the variability of native seed production from year to year for some species that do

not seed every year; the timing, which will result in the dominance of whichever species have seeded at that time; and methods, such as crimping, to keep the hay in place.

To test the viability of native hay as a revegetation seed source an experiment was conducted in the Rumsey Natural Area in an area of plains rough fescue (*Festuca hallii*) grassland. In 2006 plains rough fescue flowered en masse in the Rumsey area which made it an ideal time to test native hay as a rough fescue seed source. The

disturbance was a 15 by 150 m pipeline RoW (right of way), stripped of topsoil prior to pipeline installation, which was spread back and feathered following construction (Fig 1). In mid July 2006, 2-4-D (2, 4-Dichlorophenoxyacetic acid) was applied to the RoW to remove weeds. Three days later a modified combine was used to cut hay from rough fescue grassland adjacent to the pipeline (Fig. 2). The grass was cut at a height of 10 – 15 cm, to target grass seed, in staggered strips leaving much of the grassland intact. The hay was partially chopped and



Fig. 1 Pipeline June 2006

Native Hay as a Re-vegetation Seed Source Continued...



Fig. 2 Native grass harvester, developed by Tim Wilkes, Saskatchewan



Fig. 3 Pipeline July 2006 following hay application

“Although the focus of the experiment was rough fescue seed, initial results indicate that other species may be seeded this way.”

then sprayed upon the RoW to a depth of 1 to 3 cm. It was then evenly spread by hand and crimped into the soil with a light harrow (Fig 3).

Promising results appeared in the following year. In July 2007, rough fescue seedlings were found throughout much of the site at 3 to 15 cm heights. The majority of other species included slender wheat grass, June grass, western porcupine grass, green needle grass, Kentucky blue grass and various native flowers (Fig 4). A few undesirables also appeared, e.g. foxtail barley and flixweed, probably originating from a nearby cattle watering station or the seed bank. This site will be monitored for another two years, with a focus on how the

rough fescue seedlings develop.

Although the focus of the experiment was rough fescue seed, initial results indicate that other species may be seeded this way. The hay provided a variety of seeds, whatever was ready at the time of cutting, and all were species already found in the area. The results following an additional two years of monitoring should show if this is a viable alternative for re-vegetating disturbances in native grassland.

Peggy Desserud
 Graduate Student
 University of Alberta
 Edmonton, AB
 desserud@ualberta.ca



Fig. 4 Pipeline July 2007

Salvaged Foothills Rough Fescue Cuttings - An Early Evaluation of a Trial Site

Contributed by Varge Craig

Editor's note: *If avoidance is not possible in rough fescue plant communities, then salvaging plant material prior to disturbance, for use during reclamation should be considered as an option. Thanks to Compton Petroleum, Marilyn Neville, Varge Craig, Kyle Rast and Steve Tannas for implementing this trial project.*



Figure 1. Staked cuttings on the topsoil pile at the Compton 15-28-9-1 W5M wellsite (2006)



Figure 2. Staked rough fescue cutting

Reclamation leading to the restoration of rough fescue plant communities has had limited success in the past. Trial plots consisting of salvaged rough fescue cuttings were established by Compton Petroleum to evaluate alternatives for improving rough fescue competitiveness over invasive tame species such as Kentucky bluegrass and timothy.

Two trial plots and one doctoral thesis research plot of salvaged rough fescue cuttings were established at three Compton wellsites in the Porcupine Hills. The cuttings were planted in a re-contoured wellsite and in the topsoil and subsoil stockpiles at two active wellsites. This article will focus on the data and initial results collected from the cuttings planted in the topsoil stockpile on one of the active wellsites.

Prior to the start of construction at the wellsite, relatively large, healthy fescue tussocks were salvaged in July, 2006 from the area to be stripped. Intact tussocks, were salvaged and transported to Glenfiddich Farm, located near the site, for processing and storage.

The tussocks were divided into approximately 10 cm wide cuttings. Each mature tussock yielded approximately 4 cuttings, increasing the amount of plant material available for future use. The cuttings were stored upright in porous burlap sacks (wool sacks), in partial sun light to reduce desiccation, and watered to increase the survival rate of the plant material. The salvage operation, transporting and processing of the tussocks took three people less than eight hours to complete.

Upon completion of the wellsite construction in mid August, the cuttings were transported to the site and planted on the topsoil pile. Approximately 120 cuttings were planted and staked for identification and monitoring. The cuttings appeared to be in good condition at the time of planting with considerable regrowth. No additional amendments were added to the soil or cuttings after planting.

The rough fescue cuttings were examined in late October of 2007 to determine the number of plants that produced tillers during the previous growing season. The results are illustrated in Table 1.

Approximately 62 % of the cuttings produced tillers during the 2007 growing season. Rodent activity accounted for approximately 5 % mortality, either by burial under soil mounds or complete removal. The rough fescue cuttings recorded as uncertain could not be verified due to the accidental removal of the stake or burial by rodents.

The following observations and comments were recorded:

- ⇒ The topsoil pile appeared to have a higher amount of soil disturbance from rodent activity compared to the adjacent undisturbed native grassland.
- ⇒ Some cuttings had Kentucky bluegrass as part of, or whole tiller growth. During the processing of the cuttings, attempts were made to remove vegetative Kentucky bluegrass material. Kentucky bluegrass tillers may have come from either crowns or rhizomes.
- ⇒ None of the cuttings produced flowering stalks in 2007.
- ⇒ Further monitoring is required to document the survival rate of the cuttings.

¹ Tussock: a dense tuft or bunch, a term mostly used of grasses or sedges.

Table 1. Rough Rescue Cuttings

Category	%
Survival	62
Mortality	32
Destroyed or covered with soil	5
Uncertain	1



Trimming top growth on salvaged plants



Divided cuttings stored in wool sacks



Seed Set on Salvaged Fescue Plugs June 2007

⇒ The initial results at the other two wellsites appear favourable. The trial plot had survival rates on the topsoil and subsoil piles of 86 % and 98%, respectively. Some of the cuttings planted in the subsoil storage pile produced flowering stalks at this site in 2007. The research plot had a survival rate of 55% on the re-contoured wellsite.

If a rough fescue plant community must be disturbed, salvaging the rough fescue plants prior to disturbance and planting the cuttings during

site restoration may be another useful procedure in our restoration “tool box“. The procedure could be applied to oil and gas related disturbances, acreage developments, landscaping projects in parks, and stewardship initiatives in protected natural areas. This practice may be more useful during years when rough fescue seed is not available and on disturbances where competition from invasive species is an issue. The use of cuttings to “jump start” the establishment of rough fescue plants, that will in turn provide

seed for the propagation of new plants, appears initially to be a viable alternative for reclamation and restoration of disturbances in the Foothills grasslands.

Varge Craig, P.Ag.
Alta Rangeland Services Ltd.
PO Box 151
Coaldale, AB
TIM 1M3
telephone: 403-345-2956
cell: 403-308-8615
e-mail: vcraig@telusplanet.net



Skim Grazing: A Tool for Management of Invasive Agronomic Species

Contributed by Jody Best

Editor's notes: Comments received from local ranchers in attendance at the inaugural session of the Foothills Restoration Forum stressed the importance of grazing management in the maintenance of rangeland plant communities. Thanks to Jody Best, of the Rangeland Management Branch, Lands Division, Alberta Sustainable Resource Development, for submitting this article based on available literature and recent interviews with local ranchers. Many thanks to Cody Bateman and Raymond Nadeau, local ranchers, for providing comments regarding their experience with skim grazing as a management tool.

The art of skim grazing has been practiced in southwestern Alberta since the 1960s as a method to maintain invasive agronomic species such as timothy, Kentucky bluegrass and smooth brome in a vegetative state, while trying to conserve native species such as foothills rough fescue and Parry's oat grass.

While many ranchers across North America are familiar with the practice of skim grazing, very little scientific information exists. Reports have cited skim grazing as a tool for pasture management during drought, wildlife habitat conservation, and weed control. Recent research indicates that the practice of skim grazing may not be based on livestock preference for tame versus native forage species at different times of year, but rather on livestock preference for micro-site characteristics and topographical features.

In the black soil zone of southwestern Alberta, one of the major problems faced by land managers and reclamation specialists is the invasion of highly competitive agronomic species on to fescue grassland sites that have been disturbed. While the disturbance mechanism can vary from overgrazing, to encroachment from an adjacent disturbance (ie. roads), to invasion of sites that have been mechanically disturbed (ie. well sites), the ability of these species to encroach and out-compete native species seems to be consistent.

Restoration efforts in this area may be more successful if site invasion by agronomic species could be controlled. This article explores the utility of skim grazing as a tool for the reduction of competition by invasive agronomic species on disturbed sites in the process of being reclaimed.

Skim grazing may be defined as the practice of briefly grazing a pasture with a high concentration of livestock early in the season (May or June) to take advantage of early maturing species grazing tolerant species such as Kentucky bluegrass, timothy and smooth

brome. Livestock are removed from the pasture before grazing preference shifts to less tolerant native species such as rough fescue. Later in the year livestock are returned to the pasture to graze the native species. This system has the potential to allow managers to utilize both tame and native forage types at optimal times for each species type.

It is important to note that, while many think of skim grazing in terms of tame versus native species, studies have indicated that livestock preference may not relate to the species themselves, but instead be correlated with plant accessibility, local topography, distance from water, pasture size and uniformity of plant community composition within pastures. It is suggested that rough fescue is a preferred species on some sites throughout the year, and that micro-site characteristics and topography may play a larger role in livestock grazing preference than species composition. Range managers in southwestern Alberta have acknowledged that skim grazing may be more art than science, and that the ability to use skim grazing varies with the manager, the landscape, the presence of poisonous plants, and the employment of other tools to attract livestock to tame forage areas where necessary (ie. herding, salting, water development).

This said, anecdotal correlations may loosely associate tame forage species with micro-site and topographical features that seem to be more attractive to livestock. For example, it may be observed that agronomic forage



This photo shows the general landscape of the southern Porcupine Hills. The foreground slope is dominated by rough fescue grassland, while patches of the valley bottom and opposite slopes are dominated by smooth brome and Kentucky bluegrass, as evidenced by rusty coloured areas in the photograph. This pasture lends itself to the application of skim grazing as a method to try to control further encroachment by these invasive species.

communities generally populate areas of richer soils, previous disturbance or moisture collection. In southwestern Alberta specifically, species such as timothy, smooth brome and Kentucky bluegrass are typically found in valley bottoms, ravines, and in areas of higher elevation where there is relief in the micro-topography which allows site alterations such as snow or soil collection (ie. small basins and north facing slopes). While more research is needed to ascertain how and why livestock choose these sites for early season grazing, recent discussion with local rancher, Cody Bateman revealed that, regardless of whether

livestock selectively graze based on site conditions or plant species composition, he has been able to utilize livestock preferences to employ skim-grazing as a management tool on his family's ranch in the Porcupine Hills.

Keys to successful skim grazing seem to be knowledge of plant species and phenology, time to monitor livestock behaviour, and flexibility within pasture rotations to allow livestock to be removed from the pasture at the appropriate time, as well as understanding how site and topographical characteristics will impact grazing behaviour.

Generally, skim grazing should occur when tame species are vegetative and have not begun to set seed (ie. prior to the bolting stage). Grazing these species at this time should maintain them in a vegetative state and defer seed set, which may help in reducing the competitive vigor of these communities.

Studies have indicated that early season and growing season defoliation of rough fescue is detrimental to the maintenance of these stands. Therefore, it is recommended that rough fescue plant communities be grazed later in the year (ie. post-senescence) in order to conserve these stands.

For skim grazing to succeed in promoting native species, livestock should be removed from the field prior to grazing preferences

switching to native species. For example, a report on drought management for range in Nebraska and South Dakota recommends that tame species be utilized at levels of 40 - 60% before livestock are removed from the pasture, while the primary forage species being conserved should be grazed at levels no greater than 20-30%. Ideally, livestock should graze the tame stands, clipping each plant once, and be removed from the pasture before any grazing of rough fescue or other native species occurred.

There are several valuable potential benefits of skim grazing to managers and plant communities alike. As previously discussed, skim grazing may reduce competition and invasion by agronomic species by deferring seed set and keeping plants in a vegetative state. Vigour of native plants in the sward may be improved as they are grazed later in the year when they are less vulnerable. The manager is ideally able to utilize both early and late maturing forage species on the same pasture.

On the flip-side, there are some drawbacks to using skim grazing. These include increases to management requirements (ie. more time, more effort, closer monitoring of plant communities and grazing behaviour), as well as the need for more flexibility in the grazing

operation to facilitate the additional pasture rotations.

As discussed previously, invasive agronomic species are a great concern to range managers in southwestern Alberta, particularly where native foothills rough fescue communities have been disturbed and agronomic species are encroaching. Successful skim grazing may be a tool managers can use to reduce the vigor of invading agronomic species while trying to promote recovery of the native communities. However, more information is required to better understand the mechanisms of livestock grazing preferences and the mechanism by which skim-grazing seems to work, in order to facilitate more accurate use of skim-grazing on the landscape. Anecdotal evidence indicates that skim-grazing can be used to control the spread of invasive agronomic species, but may not work to eradicate them.

Jody Best
Rangeland Agrologist, P. Ag.
M. Sc. Range Management & Wildlife
Conservation
Rangeland Management Branch
Lands Division, Alberta Sustainable Resource
Development
Pincher Creek, Alberta
403-627-1129
jody.best@gov.ab.ca



References

- Alexander, M.J. 2004. Adaptive management strategies for the foothills fescue grasslands: dealing with human disturbances. In Natural History Occasional Paper No. 26: Proceedings of the 7th Prairie Conservation and Endangered Species Conference. Edited by G.C. Trotter, E. Anderson, and M. Steinhilber. The Provincial Museum of Alberta, Calgary, Alberta. 272 pp.
- Bailey, D.W., J.E. Gross, E.A. Laca, L.R. Rittenhouse, M.B. Coughenour, D.M. Swift, and P.L. Sims. 1996. Invited synthesis paper: Mechanisms that result in large herbivore grazing distribution patterns. *JRM*, 49(5): 386-400.
- Bateman, C. 2008. Personal communication. Pincher Creek, Alberta.
- Carscallen, J. 2008. Personal communication. Calgary, Alberta.
- Desserud, P.A. 2006. Restoration of rough fescue grassland on pipelines in southwestern Alberta. Alberta Sustainable Resource Development, T/121. 67 pp.
- Dormaar, J.F., S. Smoliak, and W.D. Willms. 1989. Vegetation and soil responses to short-duration grazing on fescue grasslands. *JRM*, 42(3): 252-256.
- Irving, B.D., P.L. Rutledge, A.W. Bailey, M.A. Naeth, and D.S. Chanasyk. 1995. Grass utilization and grazing distribution within intensively managed fields in Central Alberta. *JRM*, 48(4): 358-361.
- Masters, R.A., and R.L. Sheley. 2001. Invited synthesis paper: Principles and practices for managing rangeland invasive plants. *JRM*, 54(5): 502-517.
- McLean, A. and S. Wikeem. 1985. Rough fescue response to season and intensity of defoliation. *JRM*, 38(2): 100-103.
- Moisey, D.M., E.W. Bork, and W.D. Willms. 2005. Non-destructive assessment of cattle forage selection: a test of skim grazing in fescue grassland. *J. Appl. Anim. Behav.*, 94: 205-222.
- Nadeau, R. 2008. Personal communication. Pincher Creek, Alberta.
- Page, H. 2004. Reclamation of southwestern Alberta fescue grasslands: a literature review. Alberta Sustainable Resource Development. 40 pp.
- Pitt, M.D. 1986. Assessment of spring defoliation to improve fall forage quality of blue bunch wheatgrass (*Agropyron spicatum*). *JRM*, 39(2): 175-181.
- Reece, P.E., J.D. Alexander III, and J.R. Johnson. Drought management on range and pastureland: a handbook for Nebraska and South Dakota. Nebraska Cooperative Extension Service, EC91-123. 27 pp. <http://wrrac.sdstate.edu/pubs/range/ec91-123.pdf>.
- SRM South Dakota. 2005. Bickel family receive excellence in grazing management award. <http://sdsrm.sdstate.org/Bickel%20Family%20EGM%20Award%20Article.pdf>.
- Willms, W.D., and L.M. Rode. 1998. Forage selection by cattle on fescue prairie in summer or winter. *JRM*, 51(5): 496-500.

Growing Partnerships

Fostering stakeholder partnerships is an important mechanism for initiating and maintaining successful community based initiatives. The partnership forged between SRD, and SASCI made it possible to launch the inaugural working session of the Foothills Restoration Forum. Feedback received from that first important session validated the need for the Forum and identified additional information sharing partnerships. The following list of "not for profit organizations" are important sources of information. Check out their websites. Consider membership. It's the people involved that make these organizations successful.

- ✿ **The Alberta Invasive Plant Council**
www.invasiveplants.ab.ca
- ✿ **The Alberta Native Plant Council**
www.anpc.ab.ca
- ✿ **The Oldman Watershed Council**
www.oldmanbasin.org
- ✿ **The Canadian Land Reclamation Association**
www.clra.ca
- ✿ **Cows and Fish**
www.cowsandfish.org
- ✿ **The Alberta Prairie Conservation Action Plan**
www.albertapcf.org
- ✿ **The Society for Range Management**
www.rangelands.org/srm.shtml
- ✿ **The Nature Conservancy of Canada**
www.natureconservancy.ca

While you are on the internet check out progress reports on two more important community initiatives:

The Chief Mountain Study

www.cardstoncounty.com

The Southern Foothills

www.salts-landtrust.org

We realize this is not a complete list and look to Forum members to provide us with additional contacts. Email us with your ideas for additional information sharing contacts. Contact sasci@telus.net and we will include in our next edition of the Hard Grass Advocate.

Mail to the Chief!

We are looking for letters to the Editor-in-Chief, Marilyn Neville, to be included in future issues of the Hard Grass Advocate. We are looking for questions you have had trouble finding answers to. We are also open to suggestions for improvement or content regarding the newsletter — though we wouldn't be adverse to hearing something positive about our work...

If there is any issue you feel is important and needs to be heard, have a funny or 'learning

experience' story to relate, write Marilyn a letter and send it in!

Send your 'Mail to the Chief!' to:

Marilyn Neville
PO Box 95
Lundbreck, Alberta
T0K 1H0
Phone: (403) 628-2354
Email: graminea@telusplanet.net



SPATTERED SEEDLINGS~ FUN FACT!

Did you know that...

Alberta celebrated the addition of a new provincial emblem - Rough Fescue grass - in April, 2003. The addition of this new emblem was coordinated by the Prairie Conservation Forum. The Forum consulted a range of Alberta scientists and resource managers to identify five candidate grasses for Albertans to vote on through a mail-in or online ballot. Rough fescue (*Festuca scabrella*) was the winner as selected by Albertans, with the other potentials being: blue grama grass, green needle grass, june grass, and western wheat grass.



Maintaining the “Rough Edge”

This column is intended to alert readers of upcoming seminars, conferences and workshops and to provide an opportunity for Forum members to report on events they have attended. By sharing information this way more events can be covered, we can build relationships with other organizations and improve our professional development.

Feedback from the inaugural working session of the Foothills Restoration Forum indicated the need to involve and share information with watershed groups. I attended the following summit with two neighbors and found it very worthwhile. Especially as my family is part of the Todd Creek Watershed Group.

**2nd Annual “Holding the Reins”
Landowners Summit for the Oldman Watershed**
In Fort Macleod, January 22, 2008

The conference was well attended with a good turnout from all sectors with an interest in the watershed. Glen French of the Pass Quad Squad gave an informative presentation on their ongoing stewardship and education programs. An excellent presentation was given by Mike Alexander, SRD Lands Division Rangeland Management Specialist for the Montane/Foothills, on the Forest Management Plans in progress following the Lost Creek and Pole Haven Fires. Mike has indicated he will provide an article for upcoming issues of the *Hard Grass Advocate*, so stay tuned. Joe Harrington, Agriculture Water Specialist, AFRD, described innovative water development projects and the importance of water quality in livestock production. Kurtis Averill of Compton Petroleum stressed the importance of science and research in the oil and gas sector and Steve Tannas from the U of A gave an update on his rough fescue research project. Steve and Kurtis had to leave early, but several landowners approached me with interest in Steve's research. Barry Wilson of Silvatech Consulting gave an overview of the Chief Mountain Study. Andrea Kalischuk, Agri-Environmental Systems Section Lead, AFRD gave an update on the Nutrient Beneficial Management Practice project in progress. Landowners and stewardship groups gave updates on their projects, providing a “grass roots” view of their ongoing stewardship initiatives. And finally two of our neighbors to the south from Montana: Jim Stone Rancher and Greg Neudecker of the US Fish and Wildlife Service gave an excellent presentation on the “Blackfoot Challenge”, an important community based initiative that illustrated the benefits of watershed groups when members come together to define the issues and focus on solutions. I missed Dr. Stuart Rood's keynote address at dinner, but I know his work and he is an excellent resource. We had to leave early as Mother West Wind was restless. Time to leave or we might not get home. My congratulations to the organizers; I certainly will be back next year!

The presentations given at the Seminar will be posted on the Oldman Watershed Council website: www.oldmanbasin.org Check them out!

An upcoming seminar I plan to attend with two of my colleagues is:

Invasive Species in Natural Areas-A Conference on Impacts & Management
February 12th to 14th in Missoula, Montana
http://missoulaeduplace.org/weeds_conference.php

I heard about this conference through the Alberta Invasive Plant Council (AIPC) and decided to attend. Missoula is not all that far from my home office north of the Crowsnest Pass. I plan to share information with the AIPC and Forum members and write an article for both newsletters. Thanks to Karen Sundquist of the AIPC.

The AIPC also will be hosting an international seminar:

2008 Weeds Across Borders

May 27 to 30, 2008 in Banff, Alberta

“Weeds Across Borders” is an international conference covering the interests of professionals and organizations involved in weed management and regulation. It is an affiliation of organizations across North America with a common interest in sharing information and promoting cooperative weed management.”

Check out the details on the AIPC website: www.invasiveplants.ab.ca Great website!!

The Canadian Land Reclamation Association, Alberta Chapter is hosting their
2008 Annual General Meeting and Conference
“Continuing Change”

February 27 to 29, 2008 in Red Deer Alberta

The following presentations are of particular interest: *Defining Reclamation Success by Ecological Functionality*, with Heather Sinton and David Walker AND *Reclamation Criteria Advisory Group, Overview and Update*, by Terry Forkheim

The Columbia Mountains Institute of Applied Ecology will be presenting a
Soil Bioengineering Course

April 29-30, 2008 in Revelstoke, BC

This two day course will focus on the use of soil bioengineering as a tool in restoration and reclamation of damaged ecosystems to include topics such as: Factors involved in successful restoration, Successional reclamation, Soil bioengineering techniques, and Regional differences.

Details, registration, and course outline at www.cmiae.org



**Send us the links you feel important to include in the next newsletter.
Also send your summary of conferences you have attended.
Information sharing will maintain that “Rough Edge”!**

A final note from the Editor-in-Chief:

It has been a great pleasure to produce the first edition of the *Hard Grass Advocate*. Many thanks to the steering committee of the Foothills Restoration Forum: Barry Adams and Mike Alexander of SRD, Steve Demkiw of Alberta Environment, David Green and Kurtis Averill of SASCI. There was always help and encouragement when needed. Thanks to Compton Petroleum Corporation for submitting articles on the current trials and research projects they are funding. These projects funded by industry are very valuable and we hope industry will continue to fund trials/research projects and share information. Special thanks to Dr. Anne Naeth and Dr. Edward Bork of the University of Alberta for guiding Peggy Desserud and Steve Tannas through their research projects. Thanks to Varge Craig, Arnold Janz, Barry Adams, Jake Willms, and Jody Best for taking time from your busy schedules to contribute articles. Jody Best also assisted in editing technical content. It was a pleasure to work with you Jody. Donna Kubian worked with tireless energy on the layout and design for the newsletter. It was amazing to watch the newsletter grow! Finally, and most important, SASCI and the steering committee of the Foothills Restoration Forum would like to acknowledge the support and funding provided by Alberta Sustainable Resource Development.

-Marilyn Neville

Editor-in-Chief

Marilyn Neville
PO Box 95
Lundbreck, Alberta T0K 1H0
Phone: (403) 628-2354
Email: graminea@telusplanet.net



Editor / Layout

Donna Kubian
PO Box 478
Bellevue, Alberta T0K 0C0
Phone: (403) 973-8451
Email: corpirate@shaw.ca

Would you like to be added to our mailing list for future editions of the *Hard Grass Advocate* or to learn about the next Foothills Restoration Forum? Contact Marilyn or Donna and we will be happy to help!!!

www.sasci.ca

Step Forward & Plant Your Own Seeds

We are already seeking submissions for future editions of the *Hard Grass Advocate*. Anyone with an interest in the land is welcome to submit.

The purpose of the Newsletter is to provide a readily accessible medium for information sharing, focused on the maintenance and restoration of native plant communities on the Eastern Slopes and would like you to share your research, experiences and lessons so we can all move forward together!

Please feel free to submit on topics related to restoration and reclamation in the Foothills and Eastern Slopes. Let us know about ongoing projects and trials you may be involved with. Use the

Newsletter to network with other stakeholders. Tell us about your failures as well as your success. The purpose is to foster continual improvement through knowledge and experience.

To submit, please provide a brief summary of the project in approximately 300 to 500 words to either Marilyn Neville or Donna Kubian.

If life (or cows) keep you too busy to write an article, don't worry — just contact Marilyn or Donna — we will be happy to come out and interview you!

You are welcome to conclude your submission with contact name(s), phone number(s), email address(es)

and/or a website address to direct readers toward additional information. Pictures in electronic format are appreciated, but other arrangements can be made if you only have hard copies.

We appreciate all efforts made towards contributing — thank-you!

