

Leafy Spurge in Manitoba

The Newsletter of the Leafy Spurge Stakeholders Group

Fall 2007

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Leafy Spurge Tour



Leafy Spurge flowering in September



LSSG

Goat Grazing in a Manitoba Provincial Park

The sandy soils of Spruce Woods Provincial Park in southwestern Manitoba are perfect for producing large patches of leafy spurge, an aggressive invader that may have been accidentally introduced to North America almost 200 years ago. Leafy spurge is not the only concern. Aspen encroachment is also a threat to the prairie and the wildlife that reside here.

In 1996, Manitoba Conservation put together a management plan for Spruce Woods Provincial Park to provide clear direction for long-term sustainable management of its mixed grass prairie areas. The hope is that maintaining careful management will improve the diversity, health and vigour of these areas.

Up until now, management plan activities have included spring burns of prairie areas, mowing aspen on prairie margins and using spurge beetles and herbicides for leafy spurge control.

The management team had considered using goats along with the other controls for quite some time, but costs and logistics kept interfering with the plan.



A fence line separating two paddocks of goats in SWPP. The goats had just occupied the paddock pictured on the right.



Goat shelter in SWPP

With a little help from Manitoba's Sustainable Development Innovations Fund (SDIF) Spruce Woods is embarking on a goat grazing project to help control both leafy spurge and aspen encroachment. Over the next five years, goats will graze from May to September on chosen sites within the park in hopes that, by the third grazing season, the density of leafy spurge will decrease significantly.

Right now, there are 31 goats and one guardian dog in a five-acre pasture complete with a solar-powered electric fence and small shelter. A large portable tank provides water. Every week to 10 days, the fence is relocated as the goats pick over an area. There are four paddocks and, as soon as the fourth one has been picked over, the goats are rotated back to the first paddock to start over.

Prior to turning the goats out to pasture, the site was monitored for leafy spurge density and for native species identification. In this way, Manitoba Conservation will know how well this project is doing at restoring native mixed grass prairie.

Madelyn Robinson, Interpreter, Spruce Woods Provincial Park

Partnerships: Manitoba Hydro, CFB Shilo and the Rural Development Institute

In June, 2005 Manitoba Hydro began a partnership with the Rural Development Institute (RDI) of Brandon University. This partnership provided an exchange of information between RDI and Manitoba Hydro, particularly in regards to the collection of baseline information on leafy spurge infestations along transmission lines.

With the assistance of RDI staff, Manitoba Hydro developed methods for surveying leafy spurge, including the collection of GPS waypoints. These GPS waypoints were combined with other GPS data to build province-wide maps of leafy spurge infestations and the spread of this noxious weed. Throughout the summer of 2005, staff from Manitoba Hydro surveyed approximately 675 kilometres of rights-of-way on 15 transmission lines primarily in southwestern Manitoba. Leafy spurge was found at least once on 12 of the 15 transmission lines, primarily in the immediate area surrounding the city

of Brandon.

Following the surveys of 2005, it was recommended by staff from Manitoba Hydro to begin a trial biocontrol program for leafy spurge using flea beetles. In July 2006, staff from Manitoba Hydro and RDI traveled to North Dakota to harvest flea beetles. Manitoba Hydro released 15,000 beetles along a transmission line that runs from Brandon to Winnipeg at five separate sites. These sites are remotely located along a right-of-way in the northern portion of Spruce Woods Provincial Forest.

The same year, surveying protocol for pre and post release of flea beetles was established by Manitoba Hydro with the assistance of RDI as well as staff from CFB Shilo. In the spring of 2007, these sites were revisited to determine if the flea beetles had any success. While limited progress was noted at the sites so far, evidence was found of the beetles hard at work including stunted and dead stems and a halo effect at one of the sites. Beetles were also found at the sites proving that they survived the winter.

It was decided that the populations at these sites should be boosted to help establish a larger beetle



This picture is a biocontrol site along a transmission line right-of-way in a remote section of Spruce Woods Provincial Forreest. The orange stake in the centre of the picture shows the spot of beetle release within a large patch of leafy spurge. July 2006. Photo credit: Erik Dickson

population to provide greater biocontrol. In July of 2007, staff from Manitoba Hydro, RDI and CFB Shilo once again traveled to North Dakota to collect flea beetles. This year Manitoba Hydro returned with approximately 65,000 beetles which were distributed onto the sites from last year. These sites will continue to be monitored to determine the beetle's success and hopefully to become future sites for beetle harvesting within the province. So, when you drive past those transmission lines on the highway remember that there are more than linemen hard at work out there.

Thank you to Beth Peers and the RDI and Carmen McNabb at CFB Shilo for their help with establishing this program. A big thank you to Tim Finley and Derrill Fick, both Weed Officers with the North Dakota Department of Agriculture, for helping arrange beetle collection trips the past two years.

Erik Dickson, Forestry Summer Student, Manitoba Hydro



This picture shows a large patch of leafy spurge on top of a hill underneath a transmission tower. The orange stake shows the point of beetle release. July 2007.

Photo credit: Jon Penner.

Beetle Collection 2007

On the early morning of July 9th, equipped with Tim Horton's coffee, coolers, sweep nets and 4x4 trucks; Keith Farquhar, Erik Dickson, Jon Penner, Matt Lepage, and I headed south for the United States border. Our destination was a pasture east of Rugby in Benson County, North Dakota. Benson County, being only a couple hours south, was a preferred collection site as the latitude and habitat is similar to southern Manitoba. This enables leafy spurge (*Aphthosa sp.*) beetles a

better survival rate.

Collection was a relatively simple process. Armed with light wooden sweep nets, we swept the leafy spurge methodically until respite from the hot sun seemed necessary. We would then empty our nets into brown lunch bags fitted



Keith Farquhar using a sweep net to collect flea beetles in Benson County, ND.



*Liberating flea beetles (*Aphthosa lacertosa*) at a Manitoba nurse site.*

with a couple of spurge plants to sustain the beetles for the trip home.

We labelled each brown bag with population estimates and carefully sealed it, then placed all of them in a cooler quipped with ice packs. We soon discovered that leafy spurge beetles are relentless in their struggle for freedom; some made their escape out of the bags and into our truck. These beetles, unfortunately, did not survive the trip. Despite the losses, the collection was a

success, and the beetles found new residence in Manitoba.

The estimated 70 000 or more beetles that we accumulated have since been dispersed on two nurse sites in southern Manitoba. We estimate a total collection of approximately one quarter million beetles along with members of Manitoba Hydro and CFB Shilo.

Funding assistance for the establishment of beetle harvest sites is provided through the Managing Invasive Species: Leafy Spurge Control project awarded to the Leafy Spurge Stakeholders Group. The project is managed by the Rural Development Institute, Brandon University and is supported by the Agri-Food Research and Development Initiative (ARDI) of Agriculture Agri-Food Canada (AAFC).

Alison Ham, Student Research Assistant, RDI, Brandon University

Mapping Leafy Spurge Infestations

Leafy spurge in Manitoba has been a problem for decades. Alison Ham and myself, Keith Farquhar, have spent most of the summer collecting valuable data on spurge infestation on rights of ways within select jurisdictions.

Armed with 2 Garmin GPS map 60's, we set out to collect data and generate maps to show the extent of infestations and hopefully observe trends within the data. We have been collecting points where we find a patch of leafy spurge. Each patch also has data collected on it such as, density, area and a distribution code which categorizes the patch by distribution (small patch, scattered plants, continuous patch).

We are currently working within seven different jurisdictions. So far we have seen how the spurge appears to be moving along roadways. Major roads seem to be the main source of transport of leafy spurge as you can see the trend in the accompanying map (each point relates to a patch of spurge).

As you get further away from the Trans-Canada highway the spurge appears to thin out. This trend could be related to many different things: mowing of ditches, transport of contaminated grains, hay and possibly one of the worst methods of spread would be through contaminated gravel. Once the spurge is established, you also

now have the natural factors of spread through animals, seeds, roots, wind and often waterways.

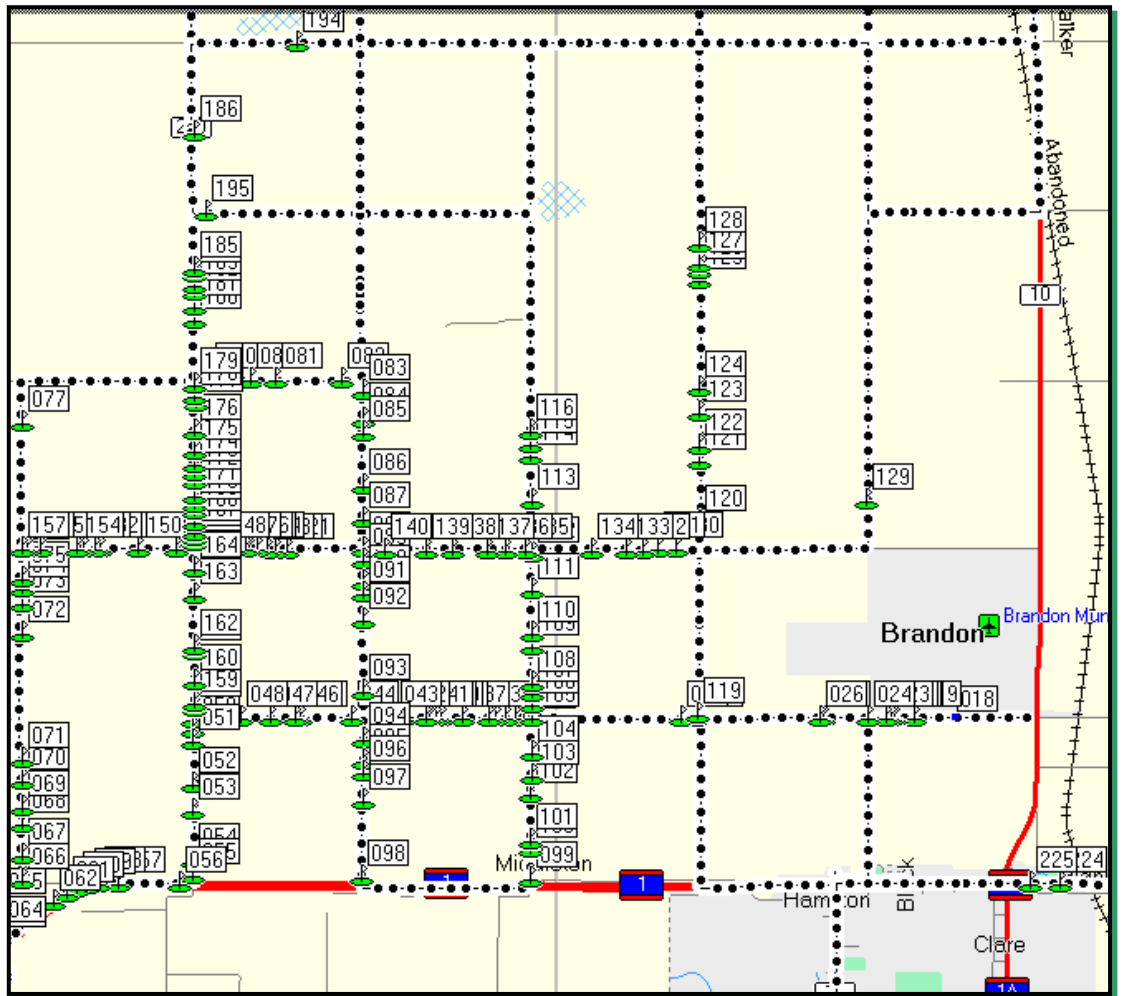
Through our research and data collection we hope to provide each jurisdiction a map of their infestations throughout their area to assist them in the control of leafy spurge. They can use the maps as tools to help visually assess their priority areas and also assist in deciding which control method will be most cost-effective in the control of leafy spurge.

These maps can be very useful when it comes to spraying spurge. As we all know one missed plant can lead to a new thriving

infestation. Using these maps weed supervisors can annually monitor their roadways and hopefully throughout the years be able to see the progress they are making.



Keith Farquhar, Student Research Assistant, RDI, Brandon University



Leafy Spurge infestations along right-of-ways in the Rural Municipality of Elton; each number represents a GPS coordinate indicating the location of one or more plants.

Invasive Species Council of Manitoba (ISCM) Formed

Officially formed on December 8, 2006, the Invasive Species Council of Manitoba (ISCM) is a non-profit organization consisting of collaborative partnerships between organizations, industry, government and non-government groups such as Ducks Unlimited Canada, Manitoba Conservation, Canadian Wildlife Services, Manitoba Agriculture, Food and Rural Initiatives, Prairie Farm Rehabilitation Administration, Manitoba Weed Supervisors Association, City of Winnipeg, Leafy Spurge Stakeholders Group and the Manitoba Purple Loosestrife Project.

The goal of the ISCM is to provide a centralized and coordinated province-wide leadership body for the prevention, early detection, management and potential eradication of invasive species in Manitoba. A volunteer Council Executive agreed to meet on a regular basis to act on behalf of the rest of the ISCM stakeholders. In early April 2007 the ISCM hired a full-time Coordinator to continue to secure ISCM funding and to build Council capacity.

The ISCM objectives are as follows:

1. **Focus on prevention** and coordination of a system of early detection and rapid response to suppress and investigate possible control or eradication measures of invasive species in Manitoba;
2. **Improve cooperation between stakeholders** including individuals, land owners, resource managers,

communities, agencies, industry, stewardship groups and government;

3. **Establish a provincial digital inventory** of existing invasive species throughout the province, as well as those species that pose a significant risk to Manitoba;
4. **Identify and promote coordinated monitoring and research** in Manitoba that supports strategic planning of programs;
5. **Promote public awareness and understanding** in stakeholder groups and public to encourage and support shared stewardship; and
6. **Operate in the spirit of partnership and collaboration** to facilitate communication and information flow internally and externally among provincial counterparts and the international community. Efforts will be aimed at reducing overlap and duplicity of programs while still fostering cooperation of effort.

The ISCM has collaborated with Agriculture and Agri-Food Canada,

the Province of Manitoba, the City of Winnipeg and the Manitoba Weed Supervisors Association to create a 2007 invasive plants calendar called *Manitoba's Unwanted Invaders*. Each month features an invasive plant, characteristics for identification and reasons for concern.

The ISCM will also publish a quarterly newsletter for stakeholders and the general public. The newsletter is designed as an information exchange regarding on-going programs, activities and progress relating to invasive species in Manitoba. It will also provide details of emerging invasive species concerns, project reports, relevant news, as well as upcoming events, etc.

For further information about the ISCM or to obtain a copy of either *Manitoba's Unwanted Invaders* 2007 calendar or an electronic copy of the *Unwanted Invaders* newsletter, please contact the coordinator Haley Catton at (204) 232-6021 or via email at hcatton@winnipeg.ca.

*Candace Parks, Coordinator,
the Invasive Species Council of
Manitoba*

*New organization provides
leadership for the prevention, early
detection, rapid response,
management, and eradication of
invasive species in Manitoba*

Continuing Leafy Spurge Awareness

Ducks Unlimited Canada and the Leafy Spurge Stakeholders Group (LSSG) are teaming up to recognize the concerns associated with the presence of leafy spurge along the riverbank corridor in the city of Brandon.

Brandon Riverbank Inc. has agreed to allow the group four signs along the river corridor that will compliment the signs already there and ten more that will be placed out next summer.



The leafy spurge signs will be placed where this noxious weed is already present so passers by are more aware of the foothold it already has in these areas.

The four signs will include one describing the weed complete with very visual images of what it looks like. Another sign will confirm its province wide presence and spread as a result of an assessment conducted by the LSSG in 1999.

The remaining two signs will exhibit management techniques in the control against this very aggressive invasive weed with one focusing on biocontrol, an environmentally friendly method of utilizing bugs that prey specifically on leafy spurge.



A Leafy Spurge awareness sign located at the Riverbank Discovery Centre, Brandon, MB.

Keep an eye out for these signs in the summer of 2008! For more information visit www.brandonu.ca/rdi/lssg.html
Robin Hamilton, Biologist, Ducks Unlimited Canada

Update: the ARDI Project

The ARDI project, *Managing Invasive Species ~ Leafy Spurge Control*, is nearing completion. With the extension to September 2007, we gained another field season and produced additional awareness products.

Alison Ham and Keith Farquhar, RDI student research assistants for the summer, collected beetles from North Dakota for release at the nurse/harvest sites. With this boost in beetle population, it is hoped that monitoring in 2008 will indicate a healthy population. Annual monitoring is essential to ensure that these two sites will be home to enough beetles to sustain future harvesting by Manitobans. The biocontrol portion of the ARDI project included the establishment of these nurse sites as well as the provision of beetles to some participating producers (see the story elsewhere in this issue).



Teagan Mauthe pictured here with her dad, Dennis at Spruce Woods Provincial Park during the Leafy Spurge Tour on July 19th.

An exciting addition to the leafy spurge line of awareness products is a group of five sound bites aired on local radio. The star attraction was

Teagan Mauthe, a youth from the Brandon area who is keenly interested in leafy spurge. Teagan taped these messages for the LSSG

to be aired three times per day over several months. Teagan won the Silver Medal in the Westman Science Fair for her display on spurge.

A significant product of the ARDI project is the development of leafy spurge curriculum materials. Karen Hill, a teacher in the Miniota area, developed materials for delivery to grades 4, 7 and 10. In addition, Karen created materials for use by Agriculture in the Classroom, of which she is a Resource Committee member. The teacher resources will be available via the LSSG website (www.brandonu.ca/rdi/leafyspurge.html) as well as in print form, and there will be a kids' page of activities also on the website.

Additional fact sheets have been produced. A gravel pit fact sheet, aimed at identification and prevention, is intended for pit owners and the construction

industry, as well as municipal leaders and others who require construction aggregates. A second fact sheet examines the economics of using a combination of spring fertilization of hay land and fall herbicide application in a demonstration plot established by RDI under a Green Cover project. Observations and plant counts from the demonstration plots indicate that this combined approach was highly effective in controlling spurge.

A Best Management Practices (BMP) for rights-of-way was produced with the assistance of Candace Parks of the Invasive Species Council of Manitoba. Originally produced for the Highways Department by John Johnston of the Manitoba Weed Supervisors Association, the BMP was expanded to include more management options and to reach a broader audience. The BMP will be

available in both print and electronic formats.

The Leafy Spurge Tour 2007 included site visits to a fertilizer/herbicide plot demonstration, a gravel pit and a goat-grazing project in Spruce Woods Provincial Park. Seeing control methods and their results first hand is a valuable education and awareness tool that can be gained no other way than through a field tour. See the articles on the tour and goat grazing elsewhere in this issue.

Several meetings of the LSSG were held, with a focus on the progress of the ARDI project. These meetings enabled project team members to update stakeholders as well as provided an opportunity for feedback. This issue of the LSSG newsletter was also a product of the ARDI project.

Annual Leafy Spurge Awareness Tour

The LSSG tour held on July 19th 2007 was a great success. We had a beautiful day with approximately 25 participants. The day started off with a LSSG meeting held at the Riverbank Discovery Centre.

The tour commenced at 1:00. Our first stop on the tour was at the Greencover Canada Technical Assistance Program Plot and Demonstration Sites for leafy spurge. Dr. Byron Irvine and Mr. Clayton Robins spoke of how each of the plots was set up and which chemical/fertilizer application was applied to each plot.

The intent of the plot trials is to target the spurge plants with as many control measures as possible within the growing season to attempt to weaken the spurge stand and encourage the grass plants in the stand to become more

dominant. The fertilizer applied in the spring should be taken up mainly by the shallow-rooted systems of the grassy plants and increase their overall growth and competitiveness. The goal is to demonstrate within the growing season how landowners can weaken the spurge stand while increasing the biomass of desirable plant species, in this case, bluegrass and brome grass, using three integrated pest management approaches.

Our next site was a gravel pit owned by Mr. Bryan Abey. Abey's Sand and Gravel was first established in the 1960s. The gravel site was free of spurge until sometime in the 1970s. Following that, seedlings have appeared and continuous growth has been detected at the site. Each time there



Clayton Robins of Agriculture and Agri-Food Canada explains the control mechanisms used in the plot trials

is a disturbance in the pit, new seedlings emerge thus triggering new establishments.

At Bryan's pit we had Mr. Tim Case of Manitoba Energy and Mines speaking on a gravel pit reclamation program. Tim outlined how the reclamation program worked and how to apply. The program is mainly used towards reclaiming "used up" gravel pits by tapering off the outside edges making the pits safe and giving opportunity to restore the land. (For



Leafy Spurge Tour: 2007

further information on this program, visit:

<http://www.gov.mb.ca/iedm/mrd/mines/sustain/quarry.html#wtp>.

Our final site on the tour was a goat-grazing program in Spruce Woods Provincial Park. We had senior park interpreter, Ms. Madelyn Robinson, speak. She gave a brief outline on the history of the park and explained how the Park set up their goat-grazing program.

Spruce Woods Provincial Park was established in 1970 and covers 7,460 acres. After identifying that leafy spurge was a problem in the park, Manitoba Conservation created a management plan in an effort to maintain the park's natural mixed grass prairie.

Over the next five years, goats will be rotationally

grazed between May and September. There are presently 31 goats and one guardian dog contained within a five-acre solar-powered electric fence.

Approximately every week to 10 days, the fence is relocated. The hope is that by the third grazing year, leafy spurge densities will be significantly reduced. The park has also been experimenting with leafy spurge beetles and herbicide.

Everyone who attended the tour left with a much greater knowledge of leafy spurge control practices. Don't worry if you missed this year's tour, you can look forward to attending next year's exciting LSSG leafy spurge tour!

Keith Farquhar, Student Research Assistant, RDI, Brandon University

New on the Web

Check out the Leafy Spurge website for these new documents:

Fact sheets

Leafy Spurge and Gravel Pits

Increasing the Productivity of Range and Pastures

Best Management Practices for Industry

Educational Resources

Teachers

Curriculum for grades 4, 7 and 10

Students

Games

Activities

Leafy Spurge Stakeholders Group

Rural Development Institute

Brandon University

Brandon, Manitoba

R7A 6A9

Phone: (204) 571-8551

Fax: (204) 725-0364



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www.brandonu.ca/rdi/leafyspurge.html