



PRAIRIE BREEZE

THE LIVING PRAIRIE MUSEUM NEWSLETTER

SUMMER 2021

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INTERPRETIVE CENTRE HOURS

Please see our website for changes to restrictions.

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All About Aspen

With so many of Winnipeg's trees at risk from Dutch elm disease and emerald ash borer, the city's 'Million Tree Challenge' aims to help re-establish a glorious and diverse urban canopy over the coming decades. So why at the Living Prairie Museum are we actively removing healthy stands one of our thriving native tree species?

Trembling aspen (*Populus tremuloides*) is a ubiquitous tree across many Manitoba landscapes, including the tall grass prairie ecosystem, where it typically occurs in isolated bluffs and along the periphery of once vast stretches of prairie. Its encroachment into open grasslands is a natural part of **ecological succession** on the tall grass prairie, but it was historically countered by the combined pressures of fire and grazing by bison, elk, deer, and antelope. These forces prevented the large-scale loss of grasslands to encroaching aspen while ensuring an ever-shifting diversity of habitats within the tall grass prairie ecosystem.

With tall grass prairie occupying 0.1% of its original range, much of what is left is in fragmented pockets. This means the ratio of

Ecological Succession

The natural development of a biological community over time after a disturbance such as fire, flooding or heavy grazing. Different plant and animal species dominate at different successional stages. Grasses and forbs are characteristic of early successional stages while woody species dominate later.

forested edge habitat to open grasslands has increased significantly. Grazing pressure has largely disappeared and the frequency of fire events on prairie habitats has been drastically reduced. As a result, current 'pocket prairies' are at greater risk from aspen encroachment than the expansive prairies that existed historically. This, coupled with the fact that aspen is thriving throughout the province, has led us to prioritize one over the other. Inside, we'll discuss more about the methods we are using to stop aspen encroachment on this special ecosystem, and reclaim areas of prairie hidden under tree canopy for many years.

An Explanation of Girdling to Keep Aspen at Bay

Though best known for our 32 acres (13 ha) of remnant tall grass prairie, Living Prairie Museum (LPM) is also home to a Trembling Aspen - dominated forest that occupies approximately 8 acres (3 ha) of the preserve's northwest corner. Despite its relatively small size, this section of LPM is home to a diverse range of native flora and fauna, and is perhaps one of the least-disturbed small remnants of an historic Trembling Aspen and Bur Oak (*Quercus macrocarpa*) mixed forest that once dotted the landscape east and west along the banks of Sturgeon Creek.

Trembling Aspen is a clonal species: its primary mechanism for spread is by sending up suckers from its shallow root system. These suckers mature into what appear to be individual aspen trees; in fact, they typically form part of a stand of genetically identical stems all growing from a single, sometimes vast underground root network. In other words, what looks like thirty individual aspen trees might actually be one giant, multi-stemmed organism connected by a shared root system. Individual aspen can be enormous: the largest organism on Earth is a Trembling Aspen stand that spreads nearly 8 km across a Utah forest!

This aspect of aspen biology can make its control very challenging; maintaining the boundary between LPM's forest and grassland isn't as simple as felling an errant aspen that encroaches too far into the prairie. The leftover stump of a freshly cut, healthy Aspen is very likely to yield several fast-growing suckers (a principle that should be familiar to any home gardener who has ever cut back an invasive thistle, only to see three appear in its place several days later).

One of the most effective and least-invasive methods of aspen control we employ is called girdling. This technique—which slowly starves a plant of energy by interrupting its ability to

transfer sugars from leaves-to-roots and back again—has been used by cultures around the world for centuries to control undesirable vegetation.

The process we use at LPM is relatively simple: a sharp blade is used to strip a band of bark from around the entire circumference of an aspen trunk. This band is several inches wide, and slices deep enough into the bark to sever the plant's phloem—a tube-like tissue that runs the full length of the plant, connecting the leaves to the roots.



Severing the phloem disconnects the leaves from the roots, and prevents sugars produced during photosynthesis from travelling down into the roots for winter storage. In the springtime, stored sugars are then unable to travel up the aspen trunk to support the growth of new leaves and stems. This results in the slow decline of individual aspen trunks, which typically die back and can be removed with little risk of resprouting 2-3 years following girdling.

Once felled, we leave a number of these aspen behind on the forest floor, where their soft, punky wood decomposes relatively quickly, returning nutrients to the soil and providing food and habitat for an array of woodland creatures.

Fungal Friends - Using Fungi to Reduce Aspen

For well over a year now, we haven't been able to deliver nearly as much environmental programming as we normally would due restrictions on gatherings and province-wide museum closures. While we dearly miss all of our field trippers and passionate community visitors, we are using our museum closure as an opportunity to direct our energies towards site conservation, specifically the management of invasive plant species. In 2020, our team walked the whole prairie surveying the following undesirable vegetation: Canada Thistle (*Cirsium arvense*), Smooth Brome (*Bromus inermis*), Tufted Vetch (*Vicia cracca*) and Trembling Aspen. We mapped locations and densities of each species and then developed respective strategic short- and long-term management plans.

This approach followed the first steps of prevention, identification and monitoring outlined within Integrated Pest Management (IPM); a system the Naturalist Services Branch (NSB) of the City of Winnipeg employs when dealing with undesirable vegetation. Through the process of IPM we have pinpointed high-quality patches of prairie to focus on reducing (or even eradicating) the above-mentioned invasives, and other lower quality and densely invaded areas, where halting further spread and colonization is the foreseeable goal. The latter will prove challenging given that each of those invasives not only reproduce by seed, but also, and sometimes more successfully, via rhizome (a root structure). In the case of Trembling Aspen, if simply one mature tree is felled, a hundred plus new shoots or suckers will grow up from that tree's root system and spread radially outwards. Of course, cutting those suckers just encourages additional tree growth! You can see this exact scenario playing out at LPM on the east side of the path between trail markers 10 and 11, where a single Trembling Aspen was felled and a small sea of

young aspen trees have taken its place.

So how do we approach this hydra of a problem as prairie conservationists? Since the aspen in this patch haven't put on enough trunk girth yet, we are unable to manage them mechanically through girdling. Our controlled burn regime for LPM rotates around the site on a five-year schedule, so fire in this case is also unlikely to control the spread. Brush-cutting and grazing can stress the plants and use up rooted energy stores, but it can also encourage additional suckering. Chemical herbicides are a logical next consideration and can be very effective if applied properly. However, there is much warranted concern when applying these products in such a high-quality remnant ecosystem.

In our constant search for more environmentally sensitive options, the NSB has turned to biologicals for help controlling invasives. From 2010 to 2015, through a special research permit, a biological herbicide containing a naturally-occurring fungus called *Chondrostereum purpureum* was trialed in Winnipeg on European buckthorn (*Rhamnus cathartica*), an introduced woody shrub that suppresses native forest vegetation. The fungus, applied as a paste to a stump or girdled area, essentially kills the plant from the inside out and prevents any re-sprouting. After buying the patent and more research/development, the Bioforest company has made the fungus commercially available as of this spring! The formulated product is called Lalcide Chondro; it poses negligible risk to humans, animals/environment and is approved for use on several woody species, including *Populus tremuloides*! So here at LPM we are very excited to be doing a first trial of Lalcide Chondro on our advancing Trembling Aspen later this summer. Now, the process of fungal colonization can be slow, and it can take up to 2 years to see the full effects, so hold tight until next spring for a mycological update!

Friends AGM



FRIENDS OF THE
LIVING PRAIRIE
MUSEUM

The 2020-2021
report is available at
FriendsOfLivingPrairie.
org

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Thank you for
receiving your
newsletter
electronically.

UPCOMING EVENTS

Milkweed Giveaway

We're hoping to hold another Milkweed Giveaway in place of the Monarch Butterfly Festival this summer. If Public Health Orders allow, the event will take place the weekend of July 24-25th, with pick-up times by online registration to allow for physical distancing. Watch your inboxes and social media for updates.

Sheep Grazing

LPM will be continuing to incorporate grazing as a means of reducing non-native species in the preserve. This year, we will be joined by 20 sheep and 5 goats.

Guests are welcome to visit the animals, which should be arriving on July 5th:

- The museum will not allow the public to feed, pet, or interact directly with the sheep to ensure both the animals' and public safety.
- Visitors are reminded to use the designated trails, and that all dogs must be on-leash.



Be like the coyote.

The coyote only plays with the coyotes it lives with and only communicates from afar.

Practice social distancing.

Visit winnipeg.ca/COVID-19 or contact 311 for updates



Please visit Winnipeg.ca/livingprairie for updates.



LIVING PRAIRIE MUSEUM

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