



Prescribed Burns in Toronto's Savannah Habitats

What is a prescribed burn?

A prescribed burn is a deliberately set and carefully controlled fire that burns low to the ground and consumes dried leaves, small twigs and grass stems, but does not harm larger trees or wildlife. A prescribed burn is designed to mimic the natural fires that once occurred in prairie and savannah ecosystems. Fire-dependant ecosystems, such as Toronto's rare Black Oak savannah, contain prairie plants that respond positively to burning, and that grow more vigorously than they would in the absence of fire. These burns are a part of Urban Forestry's long-term management plan to restore and protect Toronto's rare Black Oak woodlands and savannahs.

Why is the Black Oak savannah important?

High Park contains approximately 23ha of fragmented black oak savannah and is the most significant area of remnant prairie and savannah plant communities in the Toronto region. It is estimated that only 1% of the original pre-settlement cover of prairie and oak savannah ecosystems remains in Ontario.

High Park has a healthy population of uncommon and rare savannah plants. This was recognized by the Province of Ontario when it was designated an Area of Natural and Scientific Interest (ANSI) in 1989. Since that time the City of Toronto has studied the health of the Black Oaks and other plants and has developed a plan of restoration that includes annual burning, weed control and native species planting. This work is done in consultation with the High Park Community, the Ministry of Natural Resources, and other local experts and organizations who share a common interest in savannah plants and wildlife.



Why is the prescribed burn important for the Black Oak savannah?

Prior to settlement, wildfires were a natural occurrence. Prairies and savannahs have evolved to be fire-dependant and as a result, prescribed burns benefit native plants and animals by removing exotic plants and grasses, by restoring wildlife habitat, and by returning essential nutrients to the soil.



Typical example of low burning fire in a prescribed burn in High Park's Savannah.

How do fire-adapted species benefit from the prescribed burn?

Prescribed burns improve growing conditions for the fire-adapted plant species in numerous ways. When the leaf layer is burned off it is converted to ash and acts as a fertilizer that boosts plant growth. The blackening of the soil through the burn process increases light absorption from the sun and warms the soil which increases germination time and allows native plants to better compete with fast-growing invasive species. Additionally, some seeds, such as acorns, have adapted to fire by producing a thick shell that requires fire to soften and weaken before germination can occur. Finally, burning the savannah is a method for controlling species that are not fire-adapted and that do not belong in a savannah ecosystem.



Fire Boss and crew igniting a prescribed burn at South Humber Park.

Who is responsible for setting and controlling the fire?

The City hires a Fire Boss who is trained and certified by the Ministry of Natural Resources. The Fire Boss and his crew are in charge of the technical aspects of setting and controlling the fire. The Fire Boss visits the site 6 months prior to the burn to assess the area and review numerous factors, including the type of fuel on site (leaves, twigs, and stems), topography, proximity to park buildings and private property. After preparing a plan and reviewing this with the Ministry of Natural Resources and City staff, the Fire Boss then begins a detailed study of weather conditions. City staff monitor rainfall daily and report this to the Fire Boss who will determine when the site is ready. The Fire Boss makes this decision by assessing the dryness of the site as well as forecasting the expected temperatures, humidity levels and wind patterns. From this information, the Fire Boss sets the burn date.

On the day of the burn, the Fire Boss has determined the appropriate time to set the fire so that it will remain under control, progress across the site at a "walking pace", and so that it will give the desired effect of killing or setting back undesirable plants.

When will the prescribed burn occur?

Since weather is difficult to predict with certainty, the time of the burn is set within 48 hours of the selected day in spring. The burn will take approximately 2 hours to complete. The optimal

time to implement a prescribed burn is in the early afternoon.

It is possible for there to be a year in which the weather and site conditions do not align and in such a situation, the burn will not occur. In Toronto we have been fortunate; in each of the years we have scheduled a prescribed burn, we have had at least one day where we have been able to implement the program.

Why is the park closed during the burn?

City staff determined that temporary trail and road closures are necessary in order to ensure public safety by keeping the public away from the active burn areas. In addition to this, temporarily restricting access ensures that there will be fewer delays in completing the burn as roads will be kept free of traffic which will ease movement of burn professionals and city staff. In past years, delays have diminished the success of some burn units as fire was not introduced to these areas until later in the afternoon when burn conditions were less ideal. By closing the park the burn will be completed quickly under the safest possible conditions.



Wild Blue Lupines (*Lupinus perennis*) are one species that have responded very well to the prescribed burn program in High Park.

How do you determine the success of the burn?

The impact of the burn is determined by City staff who are trained in ecosystem management. Staff monitor the burn areas over many years and determine the positive and negative impacts on the different plant species. The desired effect is to see increased vigour and greater populations of prairie



plants, while at the same time seeing reduced growth and decreased populations of invasive plants. Increased oak regeneration is another big indicator of success. Studies undertaken in High Park in the '70s and '80s raised great concern over the lack of oak seedlings naturally regenerating. This was of great concern as many of the mature oaks in the GTA are in decline. In Toronto we are now seeing increased oak regeneration in areas that have received prescribed burn treatments.

Why have so many oaks recently died?

Many of the oak trees in the city are reaching maturity. In 1995, an evaluation of the oaks in High Park determined that more than half the oaks would likely die before 2025. In actuality, the oaks are dying even faster than predicted. This is due to several primary factors; age, successive years of drought, fungal disease, and stress caused by insect infestation. The problem of oak dieback in southern Ontario is widespread and is of concern to other municipalities such as Mississauga and Oakville. Forest Health Care Inspectors in Toronto will continue to meet with experts to monitor and evaluate the health of oak trees in our city.



Young oak seedling regenerating in an area frequently burned in High Park.

Do we need to keep burning every year?

We do not need to keep burning our savannah habitats every year. In the early stages, the burns were scheduled annually to compensate for the approximate 100 year break in the natural cycle of fires in Toronto. Now after approximately 10 years of burning Toronto savannahs, the program is being evaluated. Individual site features and habitat health will be taken into consideration, and burns

will occur only as often as required to sustain conditions that support the growth of prairie plants.

Why do we burn small areas of the park? Why not burn all of the areas that we want to burn in one year?

Prescribed burns will ultimately enhance habitat conditions for the unique wildlife populations that rely on Toronto's savannahs, but while we work to improve this habitat we must be cautious of protecting the existing populations residing there. The natural habitat supports diverse insect and butterfly populations, as well as some breeding birds. It is not desirable to burn all the areas at once since this might destroy too much of one type of habitat in a given year. It is better to preserve unburned islands of habitat within the park for wildlife refuge. Burning small patches also allows for periods of rest for vegetation to rebound and resprout before being burned again.

How can I get involved in the restoration of High Park?

Urban Forestry Staff oversee restoration projects in the park and meet regularly with the Natural Environment Committee, a group of citizens that act in an advisory role on projects in the park. They also help to support a work program for the Volunteer Stewardship Program (VSP) who contribute to the restoration of High Park through hands-on planting, weed control, education and monitoring programs in the park. Various nature walks, interpretive programs, and activities are also held in the park for the public to get involved. For more information visit: www.highparknature.org or www.highparknaturecentre.com



For more information on prescribed burns visit:

www.toronto.ca/trees www.mnr.gov.on.ca