

Impact: Grows quickly and easily. With extensive root systems, it dries out wetlands and waterways. It releases toxins from its roots which kills off neighbouring plants.

Management/Control: To reduce the spread, cut all stems at ground level in mid-summer and remove plants from the site. Do not cut stands early in the growing season; doing so will stimulate increased growth. Removing phragmites using manual methods can be very difficult and may require years of treatment.

Fun Fact: The reeds can be used for roof thatching. In the Philippines, the reeds are used to create brooms referred to as a “walis.”

6 Manitoba Maple (*Acer negundo*)

Origin: Manitoba, Canada

Description: Has compound leaves, with irregular-shaped leaflets. Leaflets are a light-green colour on top and greyish green on the bottom. They have coarsely toothed or lobed edges. New twigs are a purplish/green colour. Seeds grow as keys in drooping clusters.

Impact: This tree has an extensive root system and deep taproot, making them difficult to remove. It can shade out ground cover and displace native plants.

Management/Control: Hand pull or remove seedlings with a trowel, making sure to get all the roots. Branches of small saplings should be removed and disposed of to prevent seed spread.

Fun Fact: Can be used for maple syrup. Its wood is used for decorative projects such as wood turning.

7 European Buckthorn (*Rhamnus cathartica* & *R. frangula*)

Origin: Europe & Asia

Description: A shrub 2-3m tall, its leaves have curved veins and finely toothed edges. Twigs end in a sharp thorn. They have dark purple berries that grow in clusters.

Impact: These shrubs alter the chemistry of the soil in order to suit their growing conditions. It also grows rapidly and creates dense patches that shade out native vegetation. During the winter, soybean aphids hibernate in these shrubs, which have been known to impact local agricultural operations.

Management/Control: Controlling European Buckthorn depends on its size. Plants that are less than a centimetre in diameter can be hand-pulled—especially during the spring or fall when soils are moist. Ensure that the entire root is removed to prevent re-sprouting. For larger plants, use shears or a saw to cut the stems close to ground level. Larger trees can also be girdled by cutting a 2-3cm ring around the trunk.

Fun Fact: Dried berries can be used for dyes. When gathered before they're ripe, they make a yellow dye. If mixed with gum-arabic and limewater, mature berries create a green dye.

8 Goutweed (*Aegopodium podagraria*)

Origin: Europe & Northern Asia

Description: Basal leaved plant divided into three groups of three leaflets. Leaflets are toothed and sometimes irregularly lobed. Has a light green colour, or bluish green leaves with white edging. It has small, white flowers arranged in flat-topped clusters.

Impact: Spreads by underground rhizomes to form dense patches that crowd out native vegetation.

Management/Control: Can be controlled by digging up the plant by the roots, or covering it with a tarp for one growing season (solarization method). Plants dug up should be dried in the sun for several days to ensure they are dead prior to disposal in the garbage.

9 Bindweed (*Convolvulus arvensis*)

Origin: Europe & Asia

Description: Has an extensive root and rhizome system, slender twining or trailing stems, which often form dense tangled mats. They have white or pink trumpet-shaped flowers. The leaves are triangular to arrowhead-shaped with smooth edges, and vary from 2-5cm in length.

Impact: Twining and rapid growth interferes with crops, orchards, vineyards and gardens. It can be a nuisance during harvest and limits water and nutrient availability for other plants.

Management/Control: Hand pull the plant before it seeds, taking as much of the root system as possible. Imported topsoil used for garden applications can be a seed source for this plant, so make sure you know where your soil is coming from!

10 Black Locust (*Robinia pseudoacacia*)

Origin: United States

Description: Medium tree with stems that have 7 to 21 leaflets. Leaflets are thin, elliptical, dark green above and pale beneath. Flowers are white to yellow in colour and grow in long, large clusters. Smaller branches have thorns at the base of the leaf.

Impact: Rapidly growing tree, which uses all available nutrients and resources in its proximity. It can form large stands along roadsides, pastures and woodlands—shading out the amount of sun available to native seedlings and changing the nitrogen levels within the soil.

Management/Control: Black Locust produces shoots from its root system, so any control effort should be targeted against the roots. Girdling and stumping are most effective—especially when controlling mature trees.

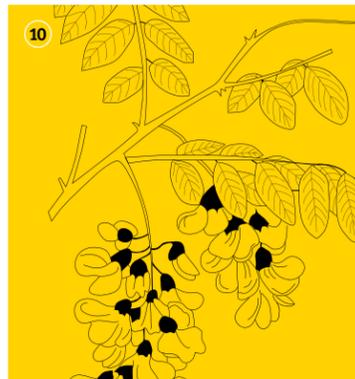
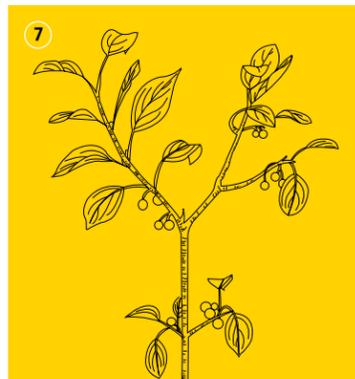
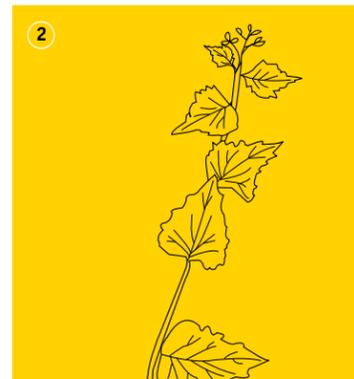
11 Russian Olive (*Elaeagnus angustifolia*)

Origin: Southeastern Europe & Western Asia

Description: This plant has elongated oval-shaped leaves and thorny branches. The leaves of the Russian olive are dull green to gray in colour on the top and silvery on the bottom. The flowers of Russian olive blooms are yellow with silvery-gray, willow-like leaves.

Impact: It threatens to displace native species that grow along waterways and open fields. They limit water and sun availability for native plants and do not provide valuable wildlife habitat.

Management/Control: Spreads using root shoots, which are very difficult to remove. If you see young seedlings, loosen the soil and pull out the plant, ensuring you get most of the root. Mature trees should be cut.



EVERGREEN

Invasive Plants in the GTA

A quick guide for identifying some of the invasive and non-native plants that affect natural landscapes in Toronto and surrounding areas.

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About this guide

Evergreen provides a range of on-the-ground activities that create wildlife habitat and enhance biodiversity throughout Canada. With this pocket guide, focused on the Greater Toronto Area (GTA), we hope to inspire individuals to get involved with stewardship initiatives in their community and to work together to have a positive impact on our ecosystems.

The following pages provide a quick reference on some of the GTA's invasive and non-native plants, and a summary of some of the issues they cause. The guide offers a resource for identifying these plants, as well as a brief explanation on why we need to control their spread, and why native species are so important in restoring and maintaining healthy urban green spaces.



The Benefits of Urban Naturalization

Urban natural areas are an essential part of healthy cities. They filter pollutants from our air and water, and provide valuable habitat for animals and insects. They also provide much-needed shade cover, which cools urban areas and reduces our energy use.

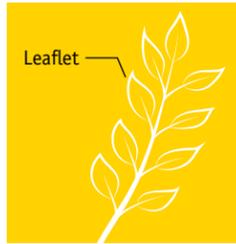
As Toronto and its surrounding urban centres continue to grow rapidly, there has never been a greater need to conserve and create more green spaces in neighbourhoods across the city.



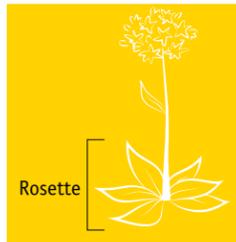
Glossary of Terms



Simple Leaf: A leaf that is not divided into parts.



Compound Leaf: A leaf that is divided into smaller parts called leaflets.



Rosette: Leaves that grow in a circular pattern that resemble the shape of a rose.

Stolon: A creeping horizontal plant stem that takes root at various points in order to form new growth.

Rhizome: A continuously growing horizontal underground stem that puts out lateral shoots and roots at intervals.

Basal: Leaves that form at the base of a plant.

Stewardship: To care for and enhance the land and its living and non-living communities in a way that maintains or improves it for future generations.

Habitat: A place or environment where a plant or animal lives and grows. Habitat includes all plant, animal, climate and soil factors affecting life.

Ecosystem: The dynamic interactions of plant and animal communities and their associated non-living environment, including physical and climatic features.

Naturalization and Native Plants

Naturalization involves re-establishing healthy plant communities that attract and support many levels of life—from bacteria in the soil to plants, insects, birds and mammals. The process of naturalization puts in place necessary conditions to allow nature to re-establish and prosper with little help.

Native plants are particularly adapted to their environment. Through a complex evolutionary process of checks and balances, the local fauna and flora have formed working systems of life. Restoring native plant communities preserves these complex relationships between plants and wildlife and protects the region's naturally occurring biodiversity.

From a practical standpoint, native plants require less maintenance because they've adapted to our climate. This means that in hot, dry summers they require less water and are not dependent on chemical fertilizers and pesticides to stay healthy and beautiful.

Invasive and Non-Native Plants

Invasive or non-native plants are species that are introduced to a new ecosystem in which they did not evolve naturally. As a result, they can often adversely affect the new habitat.

In their native habitat they are part of a complex system that controls their growth, including nutrient availability, natural predators and disease. Lacking these controls, invasive plant species can grow and spread quickly, smothering or out-competing native plants in the process. This leads to a decrease in plant diversity and a loss of habitat.

Once a foreign plant is thriving, it can quickly disrupt the natural ecosystem. When this happens a species is considered invasive. Invasive species often spread in such a way that they form large patches, making it unsuitable for anything else to grow. In urban settings where natural areas are very limited, it is important to have a diverse range of plant species to provide as much habitat as possible for local wildlife. Unfortunately, urban settings are often the areas where invasive species are most prevalent because the land is often disturbed and ecosystems are disrupted. After development, invasive species are the second greatest threat to endangered species.

Controlling Invasive Non-Native Plants

Selective invasive species removal and restoration is a practice that encourages greater species diversity and recreates ecosystems with the ability to provide more habitat.

The following are some general rules for invasive plant species removal:

- Have a plan for replanting before beginning removal. A three-year plan to remove invasive plants and monitor the site will meet with much more success than a single-removal event.
- Replant sites densely with native species and mulch heavily. Invasive plants grow best in disturbed soil, so it is important to get other plants established quickly.
- Understand how the invasive plant spreads so that the most appropriate technique for removal can be used.
- Be careful how you dispose of invasive species. They can often sprout from tiny stems, flowers or root sections.

The next section provides an overview of the most common invasive species and non-natives in urban parks and some common removal practices.

Understanding the Threat of Invasive Species

It is important to understand the delicate balance that ecosystems maintain. In a healthy ecosystem, everything has a function.

1 Dog Strangling Vine (*Cynanchum rossicum*, *Cynanchum louiseae*)

Country/Continent of Origin: Europe & Asia

Description: Tear-drop shape, dark, shiny green leaves. Flowers have a pink/purple colour and five petals shaped like a star. Fruits form in long pods and release fluffy white seeds. They can regrow through their rooting system.

Impact: The vines twine onto neighbouring plants and block out resources, creating dense mats that strangle plants. The plant's similarity to native milkweed confuses monarch butterfly populations who depend on viable milkweed to lay their eggs. Larvae hatched on Dog Strangling Vine do not survive.

Management/Control: If you have a small infestation, dig up the Dog Strangling Vine, ensuring that the entire root system is removed. Hand-pulling is the only effective method in controlling its spread. It is best to target Dog Strangling Vine before it is in full flower. If you have a large infestation, removing seed pods can be an effective control method. Once a patch has gone to seed, it is necessary to continually weed for several years since the seeds continue to sprout from the seed bank.

2 Garlic Mustard (*Alliaria petiolata*)

Origin: Europe

Description: Strong smell of garlic, first-year plants have dark green, kidney-shaped leaves with scalloped edges that grow in rosettes. Second-year plants are triangular with sharply-toothed edges. It has small white flowers with four petals and narrow, erect seed pods.

Impact: Displaces native ground cover and alters soil chemistry to best suit its own growing conditions. The roots contain a chemical that affects root fungi required by many native trees.

Management/Control: Remove pods before they go to seed or remove plant by pulling at the root. Dispose of plants in the garbage to prevent re-establishment in the compost pile.

Fun Fact: Garlic Mustard is edible! Leaves and roots can be ground to create sauces, or eaten whole in salads.

3 Norway Maple (*Acer platanoides*)

Origin: Europe

Description: Wide, dark green to purple leaves with five lobes. Black spot fungus on leaves is common. Seed wings are at a 180-degree angle.

Impact: This tree has a high seed output and is fast growing, displacing native trees in woodlots. The dense shade from this tree keeps sunlight from reaching the ground, making it difficult for groundcover and shrubs to grow. The bare soil becomes susceptible to erosion and there is loss of wildlife habitat.

Management/Control: Pull seedlings up by the root; be sure to collect the entire root. Larger trees can also be girdled by cutting a 2-3cm ring around of bark of the trunk.

Fun Fact: Norway maple syrup has less sugar content than Sugar maple syrup.

4 Periwinkle (*Vinca minor*)

Origin: Europe

Description: This plant trails along the ground, reproducing through stolons. It has shiny, dark green and elliptical leaves. The flowers are a pale lavender colour with five petals.

Impact: Creates dense mats, crowding out native ground vegetation.

Management/Control: Periwinkle can be removed by using a trowel to loosen the soil around the plant and carefully digging up the root system. Remove all roots and stems from the area to prevent re-sprouting, seed formation and dispersal. Mowing or cutting is not recommended since it may stimulate dense growth from the remaining roots. Hand removal is quite labour-intensive but can yield good results if the entire root is removed.

Fun Fact: The leaves of periwinkle can be used to relieve skin rashes.

5 Phragmites (*Phragmites australis*)

Origin: Europe & Asia

Description: Water-loving plant that can grow to heights of up to 5m. The stem is a beige/tan colour with a rough and dull texture. Leaves are a blue/green colour and the seeds form in dense brooms.