

# Multiflora Rose

*(Rosa multiflora)*

Best Management Practices in Ontario



# Foreword

These Best Management Practices (BMPs) provide guidance for managing invasive multiflora rose (*Rosa multiflora*) in Ontario. Funding and leadership for the production of this document was provided by Environment and Climate Change Canada, Canadian Wildlife Service - Ontario (CWS - ON). The BMPs were developed by the Ontario Invasive Plant Council (OIPC) and its partners to facilitate the invasive plant control initiatives of individuals and organizations concerned with the protection of biodiversity, agricultural lands, infrastructure, crops and natural lands.

The intent of this document is to relay specific information relating to invasive plant control practices that have been advised by leading professionals across Ontario. This document contains the most up-to-date, effective and environmentally safe research and knowledge available at the time of publication and complies with current provincial and federal legislation regarding pesticide usage, habitat disturbance and species at risk protection. It is subject to change as legislation is updated or new research findings emerge and is not intended to provide legal advice. The timing suggested will differ throughout Ontario and should be tailored to your region. Interested parties are advised to refer to the applicable legislation to address specific circumstances. Check the website of the Ontario Invasive Plant Council ([www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca)) for updates.

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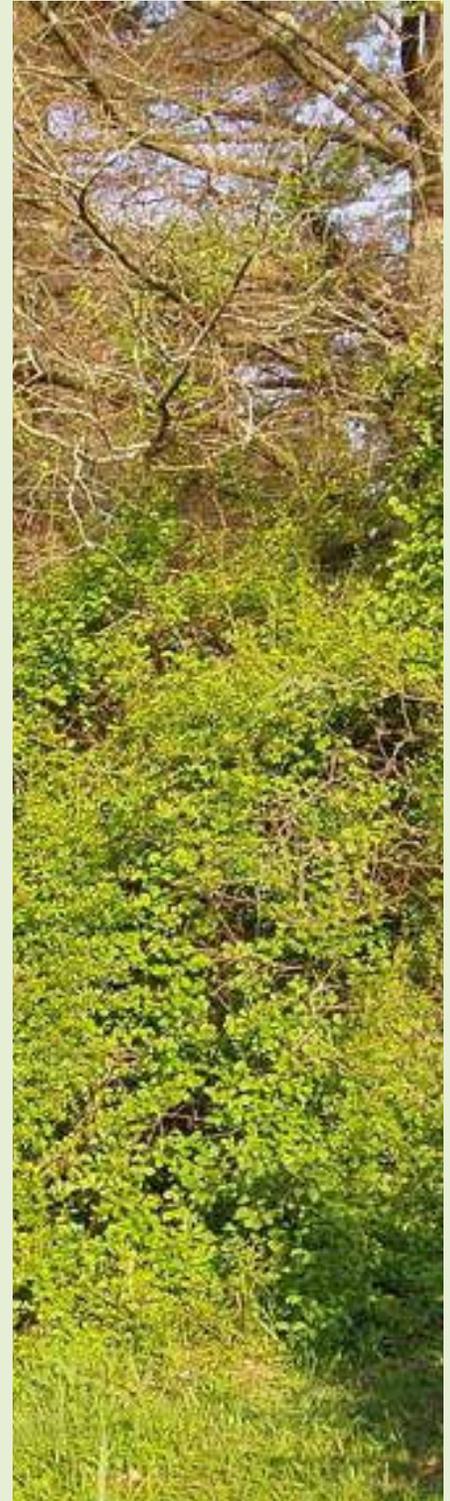
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For more information on invasive plants in Ontario, please visit the following websites:

[www.ontario.ca/invasivespecies](http://www.ontario.ca/invasivespecies), [www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca), [www.invadingspecies.com](http://www.invadingspecies.com) or [www.invasivespeciescentre.ca](http://www.invasivespeciescentre.ca)

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**Multiflora rose (*Rosa multiflora*).**

Photo courtesy of Leslie J. Mehrhoff,  
University of Connecticut, Bugwood.org.



Multiflora rose (*Rosa multiflora*).

Photo courtesy of John F. Foster.

## Introduction

Multiflora rose, also known as baby, Japanese, many-flowered, multiflowered, rambler or seven-sisters rose, is a member of the rose family (Rosaceae). It is an invasive, perennial, fountain-shaped or rambling shrub native to eastern Asia (i.e. Korea, Taiwan, Japan and parts of China). This plant is capable of aggressive growth, often climbing over and outcompeting native plants and trees for light and nutrients. A single plant can form dense, thorny thickets within a few years of introduction.

Although commonly reported as being introduced to North America as a single rootstock for horticultural purposes in the mid-1800s, historical records suggest it was introduced even earlier. Before its invasive traits became apparent, multiflora rose was intentionally introduced and widely promoted beginning in the 1930s for use as a living fence, wildlife cover, food source for song birds and wildlife and to prevent soil erosion. It was also widely planted as highway median strips to provide crash barriers and reduce headlight glare from oncoming traffic. It is still used in the horticultural industry as rose root stock for rose breeding programs, although it is no longer sold as a specimen plant.

This document was developed to help guide the effective and consistent management of this invasive shrub across Ontario.

# Description

## Size and Shape:

Multiflora rose is a multi-stemmed, woody, climbing/rambling shrub. Because of their long, arching canes, single plants appear fountain-shaped. Mature shrubs of up to 4 m wide and 3 m tall have been reported.



Long, arching canes make multiflora rose appear fountain-shaped.

Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

## Leaves:

Leaves are 8 to 11 cm long, alternate and pinnately compound. Each leaflet has 5 to 11 elliptic, oblong or ovate leaflets, each 1 to 5 cm long with serrated edges. Leaflets are smooth on the upper surface and paler with short hairs on the underside. The combination of pinnatifid (fringed) stipules and hairless styles are unique to this species of rose.



Leaves contain 5 to 11 ovate, serrated leaflets.

Photo courtesy of John F. Foster.

## Stem and Bark:

Vertical canes arise from the root crown until they reach approximately 1.2 to 1.5 m long, at which time they become arching, trailing or climbing. Canes are green to red with stiff, curved thorns or prickles which sometimes occur in pairs. Thornless varieties exist but are rare. Individual stems (canes) can grow over 6 m in length, especially if using other plants for support.



Canes are green to red with stiff, curved thorns.

Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

## Flowers:

Hundreds of perfect (i.e. having both male and female parts), white to pinkish flowers form in long or pointed (pyramid-like) terminal panicles (clusters at the end of branches) throughout the bush. Its flowers are 1.3 to 2 cm wide and have 5 petals. Flowers bloom late May through June and produce large amounts of pollen.



Multiflora rose flowers are small, white and have 5 petals.

Photo courtesy of John F. Foster.

## Fruit:

Each flower yields a small (6 mm or less in diameter), globular to ovoid, fleshy fruit (hip) in August that changes from green to bright red upon maturity and persists on the plant well into the winter months.



The fleshy hips change from green to bright red when mature.

Photo courtesy of John F. Foster.

## Seeds:

Each hip contains 1 to 22 tan to yellow seeds which have sharp, thin-pointed spicules. Seeds typically weigh 6 to 9 mg each.



Multiflora rose seeds.

Photo courtesy of James W. Amrine Jr., West Virginia University, Bugwood.org.

## Roots:

Multiflora rose produces a vigorous root system which can be extensive.

# Lookalikes

Multiflora rose can be differentiated from most other wild rose species in that it is generally larger in size, produces more thorns, produces white, many-flowered inflorescences and is the only one to have fringed stipules.

**Table 1:** The main identification features of the multiflora rose in comparison to five other rose species that may appear similar (lookalikes).

	<b>Multiflora Rose</b> <i>(Rosa multiflora)</i>  Photo courtesy of John F. Foster.	<b>Pasture Rose</b> <i>(Rosa carolina)</i>  Photo courtesy of R. A. Nonenmacher ( <a href="https://creativecommons.org/licenses/by-sa/4.0">https://creativecommons.org/licenses/by-sa/4.0</a> ), via Wikimedia Commons.	<b>Swamp Rose</b> <i>(Rosa palustris)</i>  Photo courtesy of Schmiebel ( <a href="https://creativecommons.org/licenses/by-sa/3.0">https://creativecommons.org/licenses/by-sa/3.0</a> ), via Wikimedia Commons.	<b>Virginia Rose</b> <i>(Rosa virginiana)</i>  Photo courtesy of Sakurai Midori ( <a href="https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en">https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en</a> ), via Wikimedia Commons.	<b>Climbing Prairie Rose</b> <i>(Rosa setigera)</i>  Photo courtesy of Cillas ( <a href="https://creativecommons.org/licenses/by-sa/4.0-3.0-2.5-2.0-1.0">https://creativecommons.org/licenses/by-sa/4.0-3.0-2.5-2.0-1.0</a> ), via Wikimedia Commons.	<b>Smooth Rose</b> <i>(Rosa blanda)</i>  Photo courtesy of Frank Mayfield ( <a href="https://creativecommons.org/licenses/by-sa/2.0">https://creativecommons.org/licenses/by-sa/2.0</a> ), via Wikimedia Commons.
<b>Native Range and Habitat</b>	<ul style="list-style-type: none"> <li>• Non-native</li> <li>• Moderately dry to moist soils</li> <li>• Open woodlands, forest edges, roadsides, thickets, prairie</li> </ul>	<ul style="list-style-type: none"> <li>• Native to eastern North America, including Ontario</li> <li>• Dry to moist soils</li> <li>• Rocky or sandy areas, woodland openings</li> </ul>	<ul style="list-style-type: none"> <li>• Native to eastern North American, including Ontario</li> <li>• Wet soils</li> <li>• Swamps, marshes, bogs, damp shores</li> </ul>	<ul style="list-style-type: none"> <li>• Native to eastern North American, including Ontario</li> <li>• Moist to dry soils</li> <li>• Fields, thickets, roadsides, shores</li> </ul>	<ul style="list-style-type: none"> <li>• Native to eastern North American, including Ontario</li> <li>• Moist prairie, woodland openings, thickets, clearings</li> </ul>	<ul style="list-style-type: none"> <li>• Native to central and eastern North American, including Ontario</li> <li>• Rocky slopes, shores and thickets</li> <li>• Dry-moist soils</li> </ul>
<b>Typical Size and Form</b>	<ul style="list-style-type: none"> <li>• Larger, taller, more extensive than native roses (up to 4 m)</li> <li>• Long, arching, climbing or trailing, flowering canes</li> <li>• Canes have stiff, curved thorns or prickles</li> </ul>	<ul style="list-style-type: none"> <li>• 60-90 cm tall</li> <li>• Bushy, without long, arching flowering canes</li> <li>• Upper stems with straight, slender thorns</li> </ul>	<ul style="list-style-type: none"> <li>• 90-150 cm tall</li> <li>• Bushy, without long, arching, flowering canes</li> <li>• Prickles stout and hooked, backward facing</li> <li>• Upper stems with straight, slender thorns</li> </ul>	<ul style="list-style-type: none"> <li>• 60-180+ cm tall</li> <li>• Bushy, without long, arching, flowering canes</li> <li>• Thorns stout, flattened at base and somewhat curved</li> <li>• Upper stems with straight, slender thorns</li> </ul>	<ul style="list-style-type: none"> <li>• 1.2-2.4 cm tall, with canes up to 5 m long</li> <li>• Slender arching, climbing or trailing, flowering canes</li> <li>• Stout, curving thorns</li> <li>• Deep taproot that branches occasionally</li> </ul>	<ul style="list-style-type: none"> <li>• 60-180 cm tall</li> <li>• Bushy shrub without long, arching flowering canes</li> <li>• Thorns are few and fine</li> <li>• Upper stems with straight, slender thorns</li> </ul>

**Multiflora Rose**  
(*Rosa multiflora*)



Photo courtesy of John F. Foster.

**Pasture Rose**  
(*Rosa carolina*)



Photo courtesy of R. A. Nonenmacher (<https://creativecommons.org/licenses/by-sa/4.0>), via Wikimedia Commons.

**Swamp Rose**  
(*Rosa palustris*)



Photo courtesy of Schmiebel (<https://creativecommons.org/licenses/by-sa/3.0>), via Wikimedia Commons.

**Virginia Rose**  
(*Rosa virginiana*)



Photo courtesy of Sakurai Midori (<https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en>), via Wikimedia Commons.

**Climbing Prairie Rose**  
(*Rosa setigera*)



Photo courtesy of Cillas (<https://creativecommons.org/licenses/by-sa/4.0-3.0-2.5-2.0-1.0>), via Wikimedia Commons.

**Smooth Rose**  
(*Rosa blanda*)



Photo courtesy of Frank Mayfield (<https://creativecommons.org/licenses/by-sa/2.0>), via Wikimedia Commons.

**Leaves**

- Alternate; pinnately compound
- 5-11 elliptic, oblanceolate/obovate leaflets with serrated edges
- Smooth on upper surface and paler with short hairs on underside
- Stipules deeply fringed with long, thin projectiles on the margin

- Alternate; pinnately compound
- 5-7 ovate leaflets with strongly serrated edges
- Dull green or slightly shiny leaflets with no or few hairs on underside
- Stipules entire and narrow

- Alternate; pinnately compound
- 5-9 ovate or elliptic leaflets with finely serrated edges
- Smooth, medium to dark green leaflets above, dull green with few hairs on underside
- Stipules entire and very narrow

- Alternate; pinnately compound
- 7-9 leaflets with course, forward-serrated edges
- Dark green and shiny leaflets
- Stipules entire and broadly winged and leaflike

- Alternate; pinnately compound
- 3 leaflets (3-5 leaflets on younger or vegetative branches)
- Sharply serrated
- Shiny above, dull underneath
- Stipules entire and winged
- Turns deep red to purple in autumn

- Alternate; pinnately compound
- 7 (sometimes 5-9), serrated, ovate or elliptic leaflets
- Smooth, dull green above, paler and finely hairy beneath
- Stipules entire and broadened at tip

**Flowers**

- Clusters of numerous, white, (occasionally pinkish) flowers
- Long, pointed (pyramid-like) terminal panicles
- 1.3-2.5 cm wide with 5 petals
- Blooms May-June

- Solitary or only a few flowers in a cluster
- Axillary and terminal
- Pale to deep pink
- 5 cm wide with 5 petals
- Blooms May-July

- Only a few flowers in a cluster
- Axillary and terminal
- Pink
- 4-6 cm wide
- Booms in May-July

- Single or only a few flowers in a cluster
- Axillary and terminal
- Pink
- 6 cm wide
- Blooms May-July

- Terminal clusters of small flowers
- Pink, fading to whitish-pink
- 6.5-7.5 cm wide with 5 petals
- Bloom late June through July

- 1-4 flowers at tips of branches
- Dark pink becoming pale at end of blooming period
- 5-7.5 cm wide with 5 petals

**Fruit**

- Globular or ovoid hip
- Bright red, fleshy
- <6 mm diameter
- Aug-winter

- Slightly flattened hip
- Dark green turning to red when ripe
- Larger than multiflora rose
- Aug-winter

- Globular hip
- Orange to red
- Stalk glands on surface
- Larger than multiflora rose (~8 mm)
- Aug-winter

- Globular hip
- Red
- Pea-size (~12 mm)
- Aug-winter

- Globular hip
- Orange-bright red
- Small
- Firm
- Late summer

- Globular hip
- Bright red
- 13-19 mm
- 10 mm in diameter
- Late summer

# Biology and Life Cycle

Multiflora rose is a multi-stemmed, deciduous perennial shrub that can grow and reach sexual maturity very quickly. It reproduces both by seed and vegetatively. It is thought to have a very long lifespan, the exact length of which is unknown.

Beginning in May or June, depending on the location, terminal clusters of showy, fragrant, white (occasionally pink) flowers appear. Each cane produces as many as 40 to 50 panicles and each bush may produce many hundreds of white or pinkish flowers. Multiflora rose flowers are perfect, with flowers containing both male and female reproductive parts. The plant can therefore self-pollinate, but is often insect pollinated and is capable of outcrossing.

Beginning in August, each flower produces a small (~5 mm diameter), round berry-like fruit (hip) that changes from green to bright red upon maturity. Unless removed from the plant by the birds or mammals that feed upon them, hips persist on the plant through winter and become leathery. Each panicle produces an average of 50 hips, but can produce up to 100. Each hip typically contains 5 to 11 seeds, but may contain more. A single plant can produce 500,000 seeds or more per year. Seeds can remain viable in soil for 10 to 20 years.

Germination of multiflora rose seeds is complex. The hips require time to dry out before they split apart and release their seeds. Length of dormancy can vary depending on cultivars, environment and on the individual seed. Like many rose species, multiflora rose seeds require a period of cold stratification to break dormancy and begin germination, though a single winter is often enough. Seed germination may also be enhanced by scarification and by the gastric juices in the digestive tracts of animals and birds. Seed viability of up to 90% has been reported.

Multiflora rose also spreads asexually, either by the production of vegetative buds by the roots and canes, or by cane layering, the process by which a portion of the cane touches the ground and forms a shallow root system, generating new shoots. Asexual reproduction is very common when stems are cut or broken. The plant responds by producing many new stems, making this plant very difficult to control.



Each multiflora rose plant can produce hundreds of flowers.

Photo courtesy of John F. Foster.

# Range and Habitat

Multiflora rose is native to eastern Asia, including Japan, Taiwan, North and South Korea and many parts of China. It readily invades a variety of landscapes, including prairies, savannas, open woodlands, forest edges and clearings, fields, pastures, roadsides, margins of marshes or swamps and fencerows. It grows particularly well on steep slopes and hillsides. It can grow in a variety of soil types but cannot often tolerate extremely wet or extremely dry soils. Although seeds require cold stratification to break dormancy, they do not tolerate temperatures below  $-33^{\circ}\text{C}$ . Multiflora rose grows most vigorously in full sun and is moderately shade tolerant, although it does not flower heavily when shaded.



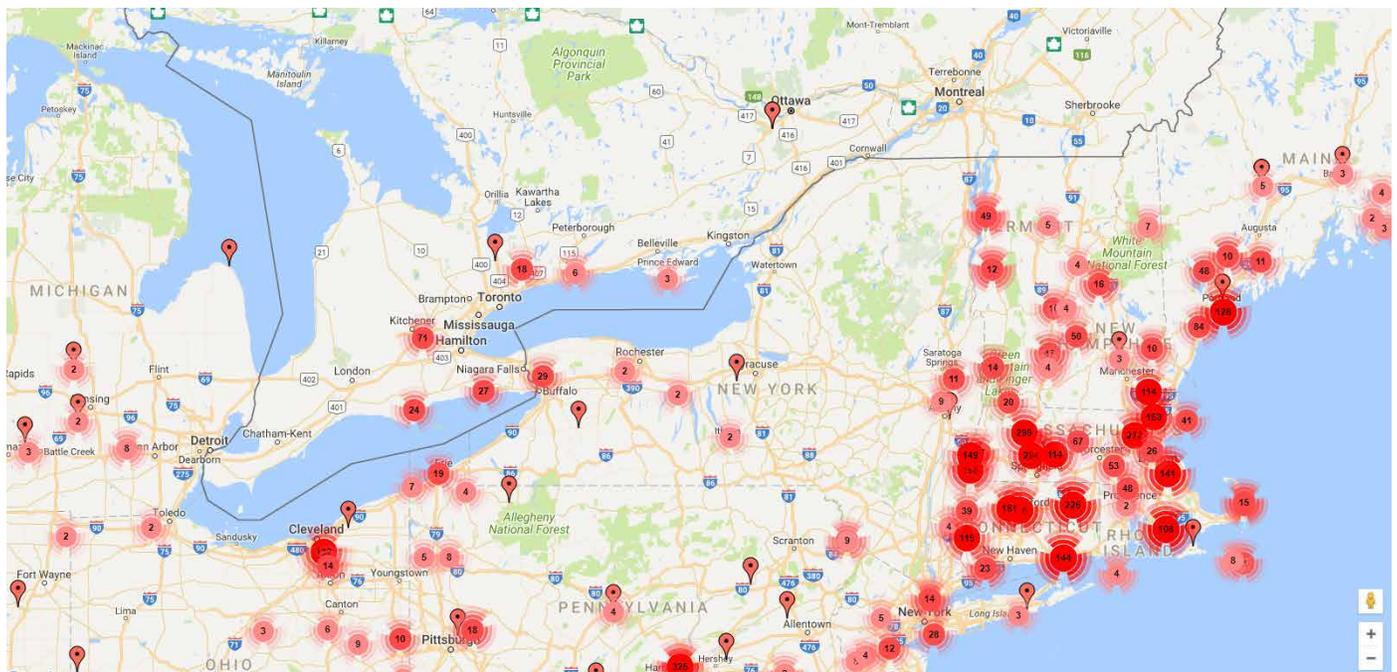
Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

# Pathways of Spread and Distribution in Ontario

Multiflora rose was introduced to North America as a rootstock for horticultural purposes in the late 1700s or mid-1800s. Before its invasive traits became apparent, multiflora rose was intentionally introduced on multiple occasions and was widely promoted beginning in the 1930s for use as a living fence, wildlife cover, food source for song birds and wildlife and to prevent soil erosion. West Virginia alone planted more than 14 million shrubs in the 1940s to 1960s. It was also widely planted in highway median strips to provide crash barriers and reduce headlight glare from oncoming traffic and is still used in the horticultural industry as suitable rose root stock for rose breeding programs.

The hips, which encapsulate the seeds, are too heavy to be wind dispersed. Most hips fall close to the parent plant but many are widely distributed over great distances by the birds and animals that eat the fruit, making wildlife the primary dispersers of multiflora seed. The plant also spreads asexually, producing vegetative buds from roots and canes, with a single rootstock capable of producing a large colony. The plant frequently escapes cultivation and outcrosses.

In North America, multiflora rose is present in at least 30 U.S. states and occurs most commonly in eastern states. It has been reported in all Canadian provinces except Alberta and Prince Edward Island. In Ontario it is most abundant in southern Ontario, although it has been found as far north as Sault Ste. Marie.



Distribution map showing the locations of formally reported multiflora rose. Single red dots represent one record. Red dots with numbers indicate the number of records reported in the area.

Multiflora rose distribution map courtesy of EDDMapS ([www.eddmaps.org/ontario](http://www.eddmaps.org/ontario)). The map point data is based on records contained in the Invasive Species Database, compiled as of January 2018 from various sources on a voluntary basis. This map is illustrative only. Please do not rely on this map as a definitive distribution as it is subject to change based on additional confirmed invasive species sites. This map may contain cartographic errors or omissions.



Multiflora rose is a prolific seed producer.

Photo courtesy of John F. Foster.

## Impacts

Multiflora rose is highly invasive due to the many traits that give this species a competitive advantage over native species. It replicates via asexual and sexual reproduction and is capable of very high seed production. Seeds are dispersed through many vectors, exhibit high viability and can exist in the seed bank for up to 20 years. Despite seeds being a food source for a variety of animals and birds, spread is rapid and not kept under control by consumption. The plant can live in a variety of environments and growing conditions and grows aggressively, reaching reproductive maturity quickly. The plant itself has few predators, leafs out earlier than most native species and loses foliage later than many, thereby producing roots and storing energy for a longer period compared to native species. Once multiflora rose is introduced, its aggressive growth can rapidly invade native plant communities, forming dense, thorny thickets within a few years.

The import, distribution, trade and sale of multiflora rose has been banned or regulated in many U.S. states. In addition to the impacts discussed in more detail below, multiflora rose has been a crucial factor in the loss of Army training land in the U.S. and can severely restrict access to recreational areas with impenetrable thickets.

## Ecological

Wherever multiflora rose establishes, it has the potential to quickly overtake the landscape, shading and outcompeting native species for light and nutrients, thereby reducing plant species richness and diversity. Multiflora rose also uses other trees and plants as “scaffolding”, overgrowing the plant and thereby suppressing its growth and often killing it.

Multiflora rose affects wildlife in a variety of ways. The plant modifies the structure of the habitat it invades, often making it less hospitable for the wildlife that use it, for instance ground- and shrub-nesting birds and animals and breeding bird populations. Multiflora rose bushes are a common winter habitat and food source for some birds and wildlife. Often this causes a shift in the fauna of the area and a change in the ecosystem.

Wherever multiflora rose establishes, it reduces plant species richness and diversity. This is especially concerning for all species of conservation concern (e.g. listed in the *Species at Risk Act* (SARA) as being endangered, threatened or of special concern in Canada). Many of these may be impacted by this reduction in biodiversity. The following are species at risk for which multiflora rose is named as a specific threat in Ontario in their federal Recovery Strategy (for species listed as Threatened or Endangered). More information can be found at the *Species at Risk Act* (SARA) Registry ([www.sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1](http://www.sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1)).



Multiflora rose can form dense thickets, outcompeting native species for light and nutrients.

Photo courtesy of Eric Giles.

**Table 2:** Species listed under the federal *Species of Risk Act* for which multiflora rose is named as a threat in Ontario.

Species at Risk	Status	Habitat / Details	Primary Threat(s) from Multiflora Rose
<b>Colicroot</b> <i>(Aletris farinosa)</i>	<ul style="list-style-type: none"> <li>Threatened</li> </ul>	<ul style="list-style-type: none"> <li>Herbaceous perennial in the Nartheciaceae</li> <li>Restricted to four geographic regions in southwestern Ontario: City of Windsor-Town of LaSalle; Walpole Island; near Eagle (Municipality of West Elgin); Turkey Point (Haldimand-Norfolk County)</li> <li>Grows in open, sunny, moist, sandy or mucky ground, prairies, abandoned fields, roadsides and forest edges, abandoned fields, roadsides and forest edges</li> </ul>	<ul style="list-style-type: none"> <li>Habitat loss due to invasion/competition</li> </ul>
<b>Acadian Flycatcher</b> <i>(Empidonax virescens)</i>	<ul style="list-style-type: none"> <li>Endangered</li> </ul>	<ul style="list-style-type: none"> <li>Songbird of which only 25 to 75 breeding pairs were recorded in Ontario in 2010</li> <li>Nest only in southwestern Ontario, mostly in large forests and forested ravines near the shore of Lake Erie</li> <li>Require large, undisturbed forests, &gt; 40 ha</li> <li>Nests near the tip of a lower limb on a tree and therefore requires open understorey</li> </ul>	<ul style="list-style-type: none"> <li>Requires open understorey which multiflora rose significantly reduces</li> </ul>
<b>American Columbo</b> <i>(Frasera caroliniensis)</i>	<ul style="list-style-type: none"> <li>Endangered</li> </ul>	<ul style="list-style-type: none"> <li>Perennial herb of the Gentian family (Gentianaceae) that can live for many years but flowers only once and then dies (monocarpic)</li> <li>Found in the Carolinian forest region of southern Ontario</li> <li>Grows primarily in open deciduous forests and to a lesser extent along open forest edges and in dense shrub thickets in Ontario</li> <li>Most common in dry upland woods, but can be found in grasslands, moist woods and swampy areas</li> </ul>	<ul style="list-style-type: none"> <li>Habitat alteration due to invasion/competition</li> </ul>
<b>American Ginseng</b> <i>(Panax quinquefolius)</i>	<ul style="list-style-type: none"> <li>Endangered</li> </ul>	<ul style="list-style-type: none"> <li>Perennial herb belonging to the Araliaceae family</li> <li>Grows in small population sizes with low reproductive potential</li> <li>Grows in rich, moist but well-drained and relatively mature deciduous woods in deep, nutrient rich soil over limestone or marble bedrock</li> </ul>	<ul style="list-style-type: none"> <li>Habitat alteration due to invasion/competition</li> </ul>

Species at Risk	Status	Habitat / Details	Primary Threat(s) from Multiflora Rose
<b>Goldenseal</b> <i>(Hydrastis canadensis)</i>	<ul style="list-style-type: none"> <li>Threatened</li> </ul>	<ul style="list-style-type: none"> <li>Perennial herb in the Buttercup family (<i>Ranunculaceae</i>)</li> <li>Grows in rich, moist semi-open to closed areas of deciduous forests and periodically in flooded upland sites and moist lowlands near floodplains</li> <li>Prefers sandy loam, loam soils or clay soils depending on whether it is growing in an upland or lowland area</li> </ul>	<ul style="list-style-type: none"> <li>Habitat alteration due to invasion/competition</li> </ul>
<b>Purple Twayblade</b> <i>(Liparis liliifolia)</i>	<ul style="list-style-type: none"> <li>Endangered</li> </ul>	<ul style="list-style-type: none"> <li>Orchid (Orchidaceae)</li> <li>In Canada, it is found only in southern Ontario</li> <li>In 1989, it was known from 11 locations, since then, a few small sites have been found in Windsor, but the plant has not been relocated at some former sites, and has generally declined</li> <li>Requires open oak savannah and secondary successional, deciduous or mixed forest habitats</li> <li>Will grow in partial shade but does not tolerate dense shade</li> </ul>	<ul style="list-style-type: none"> <li>Habitat alteration due to invasion/competition</li> </ul>
<b>Virginia Goat's-rue</b> <i>(Tephrosia virginiana)</i>	<ul style="list-style-type: none"> <li>Endangered</li> </ul>	<ul style="list-style-type: none"> <li>Member of the pea family (Fabaceae)</li> <li>Found only in southwestern Ontario where it is believed to be restricted to two sites on the Norfolk Sand Plain near Turkey Point on Lake Erie's north shore</li> <li>Limited to acidic sand deposits in remnant black oak savanna and open black oak woodland</li> <li>Prefers open, sunny areas with sandy soil, such as prairies, open oak and pine forests on sandy ridges, and sand dunes, roadsides and abandoned fields</li> </ul>	<ul style="list-style-type: none"> <li>Habitat alteration due to invasion/competition in areas where open sandy habitat was previously maintained by natural fire regime</li> </ul>

## Economic

### Agriculture

Multiflora rose is increasingly a problem on agricultural land, especially on steep slopes where it is difficult to control, or where it was planted as a living fence and is therefore well established. It readily invades agricultural fields and pasture areas, creating impenetrable thickets that outcompete other plant species. This has resulted in degraded forage quality, reduced grazing area and reduced agricultural productivity. It can also cause severe eye and skin irritation in cattle and some other livestock species.

### Forestry

As mentioned above, multiflora rose also uses other trees and plants as “scaffolding”, overgrowing the plant and thereby suppressing its growth and often killing it. The plant also suppresses regeneration of some tree species, such as oak, by outcompeting the seedlings for light and nutrients and replacing them in the understory. In addition, the bush can be a hazard to humans working in the forest, as the thorns can tear flesh and clothes easily.



Multiflora rose uses other trees and plants as “scaffolding”.

Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

# Legislation

Many plant species and control methods are regulated under federal and/or provincial legislation. Regulations regarding chemical, mechanical and biological control of multiflora rose at the time of writing are summarized in this document. **Please note that this is for clarity only and not legal advice.**

Land/vegetation managers are responsible for ensuring that the project complies with all relevant legislation. If protected species or habitats are present, an assessment of the potential effects of the control project could be required. For activities that may affect species listed in the *Endangered Species Act* (ESA), species listed on Schedule 1 of SARA and for activities which contravene SARA's general or critical habitat prohibitions, permits may be required. Depending on the species and its location, applications should be directed to the appropriate authorities. See details below. Consult with your local Ministry of Natural Resources and Forestry (MNRF) district office early in your control plans for advice (<https://www.ontario.ca/page/ministry-natural-resources-and-forestry-regional-and-district-offices>).

Not all of the legislation below currently applies to any one project but legislation is always changing and may become relevant after publication of this document. Always refer to the most current legislation.

## Federal

### **Plant Protection Act and Plant Protection Regulations**

Under the *Plant Protection Act* and Plant Protection Regulations, the Canadian Food Inspection Agency (CFIA) is responsible for protecting plant resources in Canada by preventing the importation of new plant pests and limiting the movement and spread of pests within Canada. Invasive plants that are regulated under the *Plant Protection Act* are included in the list of [Pests Regulated by Canada](#).

At the time of publication, multiflora rose was not listed under the Pests Regulated by Canada.

### **Weed Seeds Order**

The Weed Seeds Order (WSO), 2016 is a ministerial order made under the *Seeds Act* which lists invasive plants regulated under the *Seeds Act*. Under this order the CFIA restricts the presence of weed species in commercially sold seeds in an effort to prevent the introduction and spread of new weeds.

At the time of publication, multiflora rose was not listed under the WSO.

### **Pest Control Products Act**

The management of pesticides is the joint responsibility of the federal and provincial governments. Under the *Pest Control Products Act*, (PCPA) Health Canada's Pest Management Regulatory Agency (PMRA) registers pesticides for use in Canada with an approved label after conducting a stringent, science-based evaluation that ensures any risks are acceptable. The pesticide label is a legal document that prescribes how the pesticide can be used; pesticides must be applied in accordance with all label directions. Ensure you have the most current label and are aware of any re-evaluation decision: visit the Pest Management Regulatory Agency's product label search site at <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>.

## **Fisheries Act**

The *Fisheries Act*, administered by Fisheries and Oceans Canada (DFO) and Environment and Climate Change Canada (ECCC), applies to both the plant and pesticide use as it specifies that it is an offence to (for example):

- harmfully alter, disrupt, or destroy fish habitat, including streamside vegetation.
- move or introduce aquatic organisms (including plants) to new habitats.
- damage fish habitat or put harmful substances such as pesticides (including pesticide drift) into water frequented by fish.

To find out if you need a permit under the *Fisheries Act*, consult <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>.

## **Species at Risk Act**

ECCC also enforces the *Species at Risk Act* (SARA), whose purpose is “to prevent wildlife species in Canada from disappearing, to provide for the recovery of wildlife species that are extirpated (no longer exist in the wild in Canada), endangered, or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened.” Permits are required by those persons conducting activities that may affect species at risk, such as invasive plant management. To find out which species are at risk, for more information about critical habitat, or information on obtaining a permit, consult the SARA Public Registry (<http://www.sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1>).

## **Migratory Birds Convention Act**

The *Migratory Birds Convention Act* (MBCA) administered by ECCC, provides for the protection of migratory birds through the Migratory Birds Regulations and the Migratory Birds Sanctuary Regulations. For birds protected under the MBCA (<http://www.ec.gc.ca/nature/default.asp?lang=En&n=496E2702-1>), it is an offence to kill, capture, injure, take or disturb a migratory bird or damage, destroy, remove or disturb its nest without authorization from a permit issued under the Migratory Birds Regulations. Information on general nesting periods is available to minimize the risk to breeding birds (<https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>). Operating outside nesting periods is not a guarantee that birds will not be killed or disturbed; therefore, it is the individual’s responsibility to ensure they do not contravene the Act. For more information or to find out if you require a permit under the *Migratory Birds Convention Act*, visit: <https://www.ec.gc.ca/nature/default.asp?lang=En&n=2D16D723-1>.

## Provincial

### **Weed Control Act**

The *Weed Control Act* is administered by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and enforced provincially. The intent of the *Weed Control Act* is to reduce negative impacts of noxious weeds on agriculture and horticulture, to reduce plant diseases by eliminating plant disease host plants such as European buckthorn and to reduce health hazards to livestock caused by poisonous plants.

A noxious weed includes a plant that has been listed in the schedule of noxious weeds found in regulation 1096 made under the *Weed Control Act*. This list is commonly referred to as the “Noxious Weed List”.

In general, a species designated as a noxious weed under the *Weed Control Act* has one or more of the following characteristics:

- Difficult to manage on agricultural land once established and will reduce the yield and quality of the crop being grown;
- Negatively affects the health and well-being of livestock; or
- Poses a risk to the health and well-being of agricultural workers.

In Ontario, 25 weeds are designated as noxious under the *Weed Control Act*. Municipalities are responsible for appointing one or more weed inspectors at their discretion. The weed inspector is responsible for responding to calls made to the municipal clerk with regard to a noxious weed that has been reported on someone’s property. The weed inspector can order the landowner to destroy the weed within seven days.

At the time of publication multiflora rose was not regulated under the *Weed Control Act*’s Noxious Weeds List. The noxious weeds list can be found here: [http://www.omafra.gov.on.ca/english/crops/facts/noxious\\_weeds.htm](http://www.omafra.gov.on.ca/english/crops/facts/noxious_weeds.htm).

### **Invasive Species Act**

Under the *Invasive Species Act*, there are rules to prevent and control the spread of invasive species. At the time of publication multiflora rose was not listed under this Act. For more information on which species are listed, visit: <https://www.ontario.ca/page/stop-spread-invasive-species>.

### **Pesticides Act**

A federally registered pesticide must also be classified by the Ministry of the Environment and Climate Change (MOECC) under the *Pesticides Act* before it can be sold, stored or used in Ontario. The provincial classification of federally registered pesticides can be found at [www.lrcsde.lrc.gov.on.ca/PCDWeb/home.action](http://www.lrcsde.lrc.gov.on.ca/PCDWeb/home.action). Pesticides must also only be used for purposes allowed under Ontario’s Cosmetic Pesticides Ban. The Ontario’s Cosmetic Pesticides Ban specifies exceptions for the use of certain pesticides (Class 9), including the use of pesticides related to protecting public works including roads, buildings and structures, and provided certain conditions are met. For example, an exemption for a Class 9 active ingredient may apply if a plant interferes with the essential maintenance of a public works.

### **Endangered Species Act**

The Ministry of Natural Resources and Forestry (MNRF) enforces the *Endangered Species Act*, whose purpose is to provide protection for species and habitat classified by the province of Ontario as endangered or threatened. Permits are required by those persons conducting activities that may affect species at risk, such as invasive plant management. To find out which species are at risk in Ontario or for information on obtaining a permit, consult [www.ontario.ca/environment-and-energy/species-risk-ontario-list](http://www.ontario.ca/environment-and-energy/species-risk-ontario-list).

## Conservation Authorities Act

Ontario's Conservation Authorities were formed under the *Conservation Authorities Act* to ensure conservation, restoration and responsible management of water, land and natural habitat through programs that balance human, environmental and economic needs. They provide approval for projects that are close to or affecting bodies of water, or above the high water mark, but not for projects that are directly in water, or below the high water mark\*.

\*The high water mark is the level where a body of water reaches its highest point in the season. Sometimes, an impression of the high water mark is left on the landscape, such as a line on rocks.

Consult your local conservation authority here: <http://conservationontario.ca/> to determine if you need a permit to undertake your project.

## Municipal

Under the *Building Code Act*, municipalities are able to pass bylaws to address the presence of invasive plants. Municipalities can enact bylaws to control plants when there is a risk of negative impact to human health and safety.

Municipalities are also responsible for enforcing the *Weed Control Act* to reduce the infestation of noxious weeds that negatively impact agricultural and horticultural land. Municipalities can designate additional plants not listed on the Ontario Noxious Weed list in their own jurisdiction.

Check with your local municipality to determine if there are further restrictions around multiflora rose in your community.



Photo courtesy of Ohio State Weed Lab, The Ohio State University, Bugwood.org.

# Best Management Practices

## Management Considerations

Preventing the spread of and controlling multiflora rose before it becomes locally established will reduce its impacts on, biodiversity, the economy and society.

It is important to use a control plan that incorporates integrated pest management (IPM) principles. This means using existing knowledge about the pest species and its surrounding environment to prevent and fight infestations and may require more than one type of control measure to be successful.

Once multiflora rose has been confirmed at a location, a control plan can be developed based on infestation size, site accessibility, potential for spread and the risk of environmental, economic or social impacts. Site specific conditions such as native plant richness and diversity, wildlife usage and water table fluctuations should also be considered when developing control plans. A detailed inventory of each site is strongly recommended before starting control efforts to help ensure proper methods and timing are used to minimize negative impacts to wildlife and native plant species.

## Mapping

If you are unsure if you have multiflora rose on your land, conduct an ecological survey to determine if there are any infestations. For large land managers, such as conservation authorities or municipalities, hiring an appropriately qualified summer student or recruiting volunteers (who are appropriately qualified), can assist with this. For landowners with a smaller property, surveys are more manageable on your own. If you know you have multiflora rose in one area of your property, ensure you map the rest of your property to identify other infestations and to document its current and potential future distribution. For detailed information on mapping techniques the *Landowners Guide for Managing and Controlling Invasive Plants in Ontario* here: <http://www.ontarioinvasiveplants.ca/resources/technical-documents>.

To see what might already in your area, visit EDDMapS Ontario here: <http://www.eddmaps.org/ontario/>



Photo courtesy of Randy Westbrooks, Invasive Plant Control, Inc., Bugwood.org.

## Landscape Level Management

If multiflora rose has become widely established, a more detailed management strategy should be undertaken. A detailed management strategy should consider, where possible, a landscape level management approach. This means engaging surrounding landowners and managers in your management strategy. Focusing on individual, local challenges, without looking at the broader landscape, can require intense labour and increased management costs and does not always have a strategic impact across larger areas. A strategic and integrated landscape level approach to management, conservation and planning serves to bring partners, landowners and land managers together to work toward common and shared goals that consider both site-level needs and wider landscape considerations. This approach makes the use and balance of resources more effective by coordinating activities.

Effective management and control requires several treatments and a combination of control measures. It's not always realistic, especially for large infestations, to try and eliminate the infestation all at once. Determine the desired plant community and the land use objective, and then develop an appropriate IPM strategy.

## Setting Priorities

Determining what your highest priority locations for control are prior to management will help to determine your best course of action. Therefore, when developing a management strategy, it's important to take into account the following considerations to help inform control decisions:

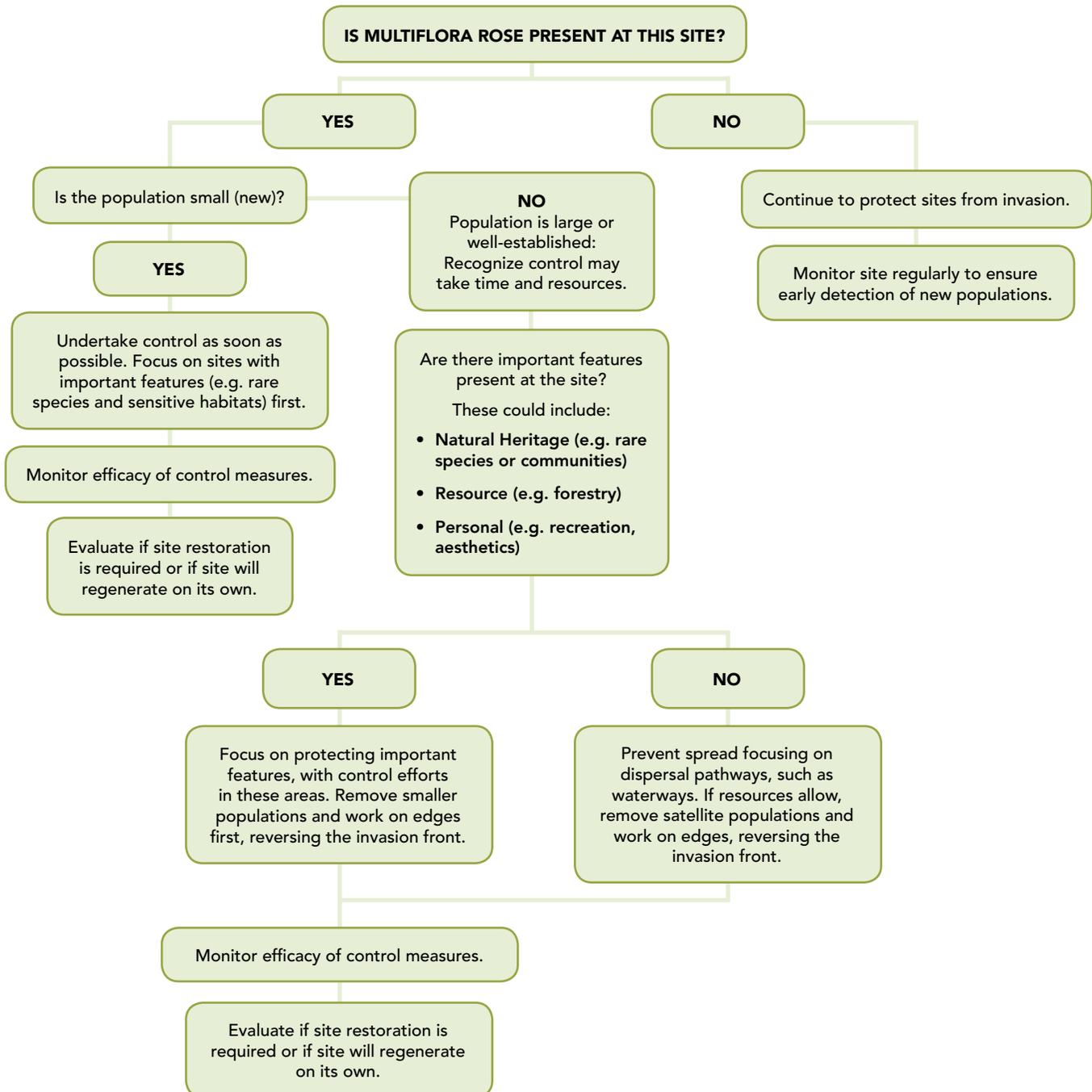
1. If you have limited resources, try to remove the outlying populations (isolated plants or satellite populations) first, to prevent further spread.
2. If you have more resources, working into larger, "core" populations of multiflora rose is an important step which can reduce the quantity of seed dispersing into uninfested areas. In many cases, resource limitations may prohibit immediate removal of entire core populations. Under these circumstances, core areas should be prioritized and addressed strategically.
3. Concentrate on high-priority areas or areas where the plant is going to cause the most problems in terms of spread, such as the most productive or sensitive part of an ecosystem, along a creek, near species at risk, a favourite natural area, or the side of a trail where people may come into contact with the plants.
4. Protect federally, provincially and regionally rare species and communities by removing invasive plants and ensuring rare species are not negatively impacted by control efforts.
5. Review the different control options and costs with considerations to surrounding water, habitat, time of year and type of land use i.e. high-traffic recreational areas, agriculture.
6. Ensure all landowners have been identified and consulted before control takes place.
7. Consider dedicating a certain time each year to control efforts, and make it a joint effort with neighbouring landowners/land managers.
8. Begin to assess whether regeneration or restoration is appropriate, and if seeding or planting of native plants is needed to help jump-start natural succession and increase biodiversity in the area (see page 21 for more information).
9. Follow-up monitoring is crucial to remove seedlings that may sprout after initial control efforts. Multiflora rose seedbanks may exist for as many as 20 years after control.

## Prioritizing within a Control Area

(This section is modified from *The Landowners Guide to Managing and Controlling Invasive Plants*, published by Credit Valley Conservation).

1. Focus on large blocks of un-invaded areas and keep them free of invaders.
2. Control small, younger, outlier (satellite) populations first.
3. Remove outlying plants.
4. Reverse the invasion, expand the un-invaded area outward.

This flow chart can help land managers choose where to first focus control efforts if controlling satellite populations due to limited resources:



**Figure 1:** How to prioritize multiflora rose sites for effective control.

## Long-term Management and Monitoring

Because of the persistent and aggressive nature of multiflora rose and its ability to recolonize quickly, a long-term management and monitoring plan is imperative to achieve control success. A long-term management and monitoring plan should be created prior to control implementation. Monitoring will provide data to determine the effectiveness of the initial control treatments and enables assessment of the initial control measures used as well as the types of follow-up treatments that are necessary. Long-term management is important because after removal, there are still other factors to consider including the seed bank left by multiflora rose, other multiflora rose populations that might be nearby and other invasive plant seed banks. One of the most important factors to consider is which native plant species will be re-introduced to the control area after control has been conducted.

Monitoring could be as simple as taking photos or performing a visual inspection, or it could be more complex and include extensive surveys. In general, annual treatment is imperative and should focus on selectively removing isolated populations as they appear. Spot treatment will assist in allowing for native plant regeneration. For more information on monitoring see the *Landowners Guide for Managing and Controlling Invasive Plants in Ontario* here: <http://ontarioinvasiveplants.ca/resources/technical-documents>

### After Management: Assessing Regeneration vs. Restoration

Consider the following factors:

1. **Level of disturbance at the site:** What is the level of disturbance at the site? Was it a heavily invaded site (e.g. a lot of disturbance was caused during control measures)? Will it continue to be disturbed (e.g. through beach use or trail use/management)?
2. **Invasive species biology:** Invasive species biology: What is the biology of the invasive species removed and is there a seed bank to consider (e.g. there is a long-lived multiflora rose seedbank, but you should consider seedbanks of other invasive plants)?
3. **Re-invasion risk:** Are there invasive species nearby which could re-invade the site from nearby trails, watercourses or other pathways of introduction?
4. **Existing native vegetation:** What native vegetation is left? How long before it regenerates by itself? Does it need help? Species with specific habitat requirements or reproductive strategies resulting in low fecundity, such as species at risk, may require re-introduction. The majority of plant species should be able to recover naturally, especially if healthy populations exist adjacent to the controlled area.

If you answered yes to most of the questions above, it is most likely that the site will be re-invaded before it has a chance to regenerate on its own or it will continue to invade and be present among the native species, which may require annual control. Restoration will be needed to reduce the risk of re-invasion. See page 32 for restoration methods.

# Control Measures

**Caution:** Multiflora rose can vigorously resprout if disturbed. When applying manual control, the entire root must be removed to prevent re-sprouting. Because of the thorns, it is recommended that protective clothing, including gloves and safety glasses, is worn when applying control measures.

Multiflora rose, once established, is very difficult to eradicate completely. Frequent monitoring and repeated treatments will be needed to achieve successful management. It is therefore important to prevent seed production and dispersal both within the managed site and outside it, as nearby plants provide a seed source for repeated invasion.

If using a non-selective method of control, make sure to go through the infested area first to flag species at risk plants or important non-target species in order to avoid damaging them during control efforts. If there may be nesting or breeding bird populations within the control site, control during nesting/breeding season (typically May to August) should be avoided.

Hand pulling can be effective for eradicating seedlings. When individual plants or infestations are too large for hand pulling to be practical, cutting the stems and then using a digging tool, mechanical lever or winch to pull out the roots can be effective. Cutting or mowing infestations will cause vigorous re-sprouting and are only effective when combined with another method of control, such as herbicide treatment. Continuous cutting will slowly exhaust the stored supply of nutrients and keep growth in check. Mulching entire thickets of multiflora rose is also a useful control option. Burning and girdling are not recommended control measures.



Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

## Mechanical

Pulling and Digging:	
<b>Infestation Size:</b>	Small (<300 m <sup>2</sup> ) or scattered infestations of seedlings and small plants.
<b>Goal:</b>	Eradication.
<b>Timing (season):</b>	Can be performed any time of the year, preferably after a rain when soil is moist and pliable. Autumn is best for reducing disturbance to ground vegetation and nesting birds. Multiflora rose leaves stay greener longer than most native plants. Therefore, manual control in the fall or early winter, before the ground freezes, may be favorable, as identification is easier and most of the ground vegetation will have gone dormant by this time, reducing disturbance to surrounding plants.
<b>Treatment Frequency:</b>	Once, if roots are completely removed.
<b>Best Practices:</b>	Seedlings can be hand-pulled (using gloves) any time of the year. Larger plants can be removed using a weed pulling tool, fork or winch. The entire root crown must be removed in order to prevent re-sprouting. Disturbed soil will result from these techniques and should be tamped down or covered in a thick layer of mulch to minimize exposing new multiflora rose seeds. Wear gloves, safety glasses and protective clothing.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act.</i>
<b>Advantages:</b>	Inexpensive, simple, effective and selective. Can be done in remote locations. Removes entire plant.
<b>Disadvantages:</b>	Labour intensive. Must remove entire root or regeneration can occur. Can cause soil disturbance and knock off hips. Thorn hazard.
<b>Ideal For:</b>	Landowners with restricted access to chemical control or who have small, recent infestations requiring immediate control. Can be done in remote locations or in environmentally sensitive habitats.

### Girdling:

Not recommended as stems are too small and numerous to make this practical.

### Prescribed burning:

Although burning multiflora rose has had some limited success in fire-adapted communities to hinder invasion, reduce biomass and prevent establishment, re-growth begins as early as two weeks after burning and regeneration is very fast. If using burning as part of the overall control plan, do so 8 to 12 months after applying herbicide to destroy dead canes and rejuvenate grasses.

## Hand-Cutting:

<b>Infestation Size:</b>	Small (<300 m <sup>2</sup> ) or scattered infestations and for infestations requiring immediate control.
<b>Goal:</b>	Controlling spread. Cutting slows the plants growth but may not inhibit flower, fruit and seed production. However, regular cutting will deplete its energy (carbohydrate) reserves and may eventually kill it.
<b>Timing (season):</b>	Make the first cut in spring or early summer, followed by monthly cuts into the fall.
<b>Treatment Frequency:</b>	3-6 cuttings per growing season over 2-4 years.
<b>Best Practices:</b>	Cut plants as close to the ground as possible.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act.</i>
<b>Advantages:</b>	Inexpensive. Does not use chemicals
<b>Disadvantages:</b>	Will increase sunlight reaching the seedbank which will enhance germination. Labour-intensive. Thorn hazard if cutting by hand. Cutting in nesting season may disturb nesting migratory birds, which is prohibited by MBCA.
<b>Ideal For:</b>	Useful for environmentally sensitive habitats, steep slopes and for landowners with restricted access to chemical control.

## Cutting/Mowing:

<b>Infestation Size:</b>	Large infestations (>300 m <sup>2</sup> ) of small plants in open areas.
<b>Goal:</b>	Controlling spread or preventing establishment. Mowing slows the plants growth but may not inhibit flower, fruit and seed production. However, regular mowing will deplete its energy reserves and may eventually kill it.
<b>Timing (season):</b>	Make the first cut in spring or early summer, followed by monthly cuts into the fall.
<b>Treatment Frequency:</b>	3-6 mowings per growing season over 2-4 years.
<b>Best Practices:</b>	Cut plants as close to the ground as possible. For large plants, a tractor or similar piece of equipment is required.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act.</i>
<b>Advantages:</b>	Inexpensive. Not labour-intensive. Does not use chemicals.
<b>Disadvantages:</b>	Mowing is non-selective. Stems may cause flat tires. Once established, multiflora rose becomes tolerant of infrequent mowing. Will increase sunlight reaching the seedbank which will enhance germination. Difficult on steep slopes or in areas where mowing equipment is impractical. Mowing in nesting season may disturb nesting migratory birds, which is prohibited by MBCA.
<b>Ideal For:</b>	Large areas, such as pastures, where mowing equipment can operate.

## Mechanical Mulching:

<b>Infestation Size:</b>	Small to large infestations and thickets of impenetrable shrubs.
<b>Goal:</b>	Used to slow or reduce spread and halt seed production. Regular mulching will deplete its energy reserves and may eventually kill it.
<b>Timing (season):</b>	Winter or early spring, preferably before leaf-out.
<b>Treatment Frequency:</b>	Annually over several years.
<b>Best Practices:</b>	Use a mulching head on a skid steer or similar equipment and follow with foliar treatment of suckering stems. Use together with basal bark treatment for what cannot be reached with mulcher.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act.</i>
<b>Advantages:</b>	Effective. Relatively inexpensive.
<b>Disadvantages:</b>	Non-selective. Takes a long time until plants are exhausted. Creates multiple stems.
<b>Ideal For:</b>	Landowners with restricted access to chemical control and for large infestations of impenetrable shrubs. Also ideal for large areas you want to open up for restoration or for recreation i.e. walking trails.



(BEFORE) Multiflora thicket before control.

Photo courtesy of Eric Giles.



(AFTER) After mechanical mulching.

Photo courtesy of Eric Giles.

## Biological

Biological control is the use of an herbivore, predator, disease or other natural enemy to reduce established populations of invasive species. Most invasive species have few natural enemies in their new habitats. Biological control aims to re-establish relationships between invasive species and its natural enemies by selecting highly host-specific natural enemies from the country of origin, and moving them to the country where the invasive species is a problem. This is only done after extensive host-range testing in the country of origin or quarantine, to ensure that the potential biocontrol agent is host-specific to the targeted invasive species. This method has been used successfully for invasive plants in North America, including purple loosestrife (*Lythrum salicaria*), leafy spurge (*Euphorbia esula*) and St John's wort (*Hypericum perforatum*). Biological control agent selection, testing and initial release are coordinated by agencies of the federal government.

There are no approved biocontrol agents for this species. Three biological control agents of multiflora rose have been identified as having the potential to reduce its spread: rose rosette disease (caused by *Emaravirus* sp.), rose seed chalcid (*Megastigmus aculeatus* var. *nigroflavus*) and rose stem girdler (*Agrilus aurichalceus*). Some of these species, however, have the potential to negatively impact food production and agriculture and are therefore not practical as a control measure.

Rose rosette disease is a mite-vectoring virus (*Emaravirus* sp.) first reported in Canada in 1940. The disease causes dwarfed foliage, reddened and compacted lateral shoots and slows the rate of seed production and clonal spread, typically resulting in death within 5 years. It spreads most rapidly in dense thickets and is most effective in sunny areas, as opposed to wooded areas. While the disease can be transmitted by grafting buds and stems from infected to healthy stems, it is ill-advised to do so, as the virus is also fatal to native and ornamental rose species, plum trees, apple trees and some types of berry species.

The rose seed chalcid is a small wasp native to Japan which has become established in the United States as a naturalized beneficial insect. The wasp lays its eggs in multiflora rose hips and the larvae subsequently consumes the seeds of the plant. The spread of this wasp is slow and limited to areas that do not experience severe cold.

The rose stem girdler is a beetle whose larvae girdle rose canes, often killing them. Affected canes are unable to reproduce and developing hips and seeds above the girdle will die. However, as only individual canes are affected, the plant itself will not die.

Grazing has been shown to have limited success as a control measure in pastures, rangelands and forests. Goats can be a more effective control agent than cattle, but due to the presence of thorns, success can be limited. Overgrazed areas may be more susceptible to colonization from off-site seed sources as well as erosion.

## Chemical

The management of pesticides is a joint responsibility of the federal and provincial governments. Before a pesticide can be sold or used in Ontario, it must be registered under the federal *Pest Control Products Act* by Health Canada's Pest Management Regulatory Agency (PMRA) and be classified under the provincial *Pesticides Act* by MOECC.

It is important that pesticides are applied in accordance with all label directions. The pesticide label is a **legal document** and prescribes how the pesticide can be legally and safely used. Ensure you have the most current label and are aware of any re-evaluation decisions.

For an up-to-date list of pesticides labelled for multiflora rose plant control and to access the most current label, visit the Pest Management Regulatory Agency's product label search site at <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>. To determine if a federally registered pesticide is also classified for use in Ontario, visit: <https://www.lrcsde.lrc.gov.on.ca/PCDWeb/home.action>

In addition to being used in accordance with label directions, pesticides must also only be used for purposes allowed under Ontario's cosmetic pesticides ban.

The province's Cosmetic Pesticides Ban contains exceptions for the use of pesticides (class 9), including the use of pesticides related to agriculture, forestry, and the protection of natural resources (provided certain conditions are met) which may allow chemical control of multiflora rose on your property (see below).

Furthermore, non-domestic (i.e. commercial, restricted etc.) herbicides can only be purchased, stored and applied by appropriately licensed exterminators.

For more information on pesticides and all aspects of weed control, The Ontario Ministry of Agriculture, Food and Rural Affairs Publication 75, Guide to Weed Control 2014-2015 can be found

at: <http://www.omafra.gov.on.ca/english/crops/pub75/pub75toc.htm>.

### Exceptions to the Ontario Pesticides Ban

The following is a list of exceptions to the Ontario Pesticides Ban. For details on each exception, refer to the Ontario Governments document "Technical Guidance: Pesticides Act and Ontario Regulation 63/09 Municipalities". This document provides information to the municipalities industry about Ontario's cosmetic pesticides ban. <https://www.ontario.ca/page/technical-guidance-pesticides-act-and-ontario-regulation-6309-municipalities>

#### Are you protecting a Natural Resource?

The "natural resources" exception exists for the use of prohibited pesticides to manage, protect, establish or restore a natural resource. In order to qualify for this exception your project must meet the criteria specified in Section 33 of Ontario Regulation 63/09, including the use of pesticides in accordance with Integrated Pest Management principles outlined in this BMP guide. You will need to contact the Ontario Ministry of Natural Resources and Forestry ([www.ontario.ca](http://www.ontario.ca)) to obtain a written letter of opinion from the MNRF Regional or Branch Director.

#### Are you a farmer?

The agriculture exception allows a farmer to use Class 9 pesticides for the purposes of the agricultural operation that he or she owns or operates. This exception may apply to the control of multiflora rose if it impacts their agricultural or horticultural operation. Agricultural operations include agriculture, aquaculture and horticulture activities. Examples include:

- growing, producing or raising farm animals.

- production of crops, including greenhouse crops, maple syrup, mushrooms, nursery stock, tobacco, trees and turf grass, and any additional agricultural crops prescribed under the *Nutrient Management Act, 2002*.
- activities that are part of an agricultural operation such as maintenance of a shelterbelt for the purposes of the agricultural operation.
- the production of wood from a farm woodlot, if at least one of the activities described earlier is carried out on the property where the farm woodlot is located.

Some activities are not included in the definition of an “agricultural operation”.

### **Herbicides and Multiflora Rose**

Systemic herbicides are often more effective during the late summer and early fall months, when downward flow of plant compounds from the leaves helps facilitate the transport of herbicides to the roots. However, some herbicides may be more effective in the spring.

Professionals consulted for this document recommend using glyphosate-based, triclopyr-based or metsulfuron-based herbicides.

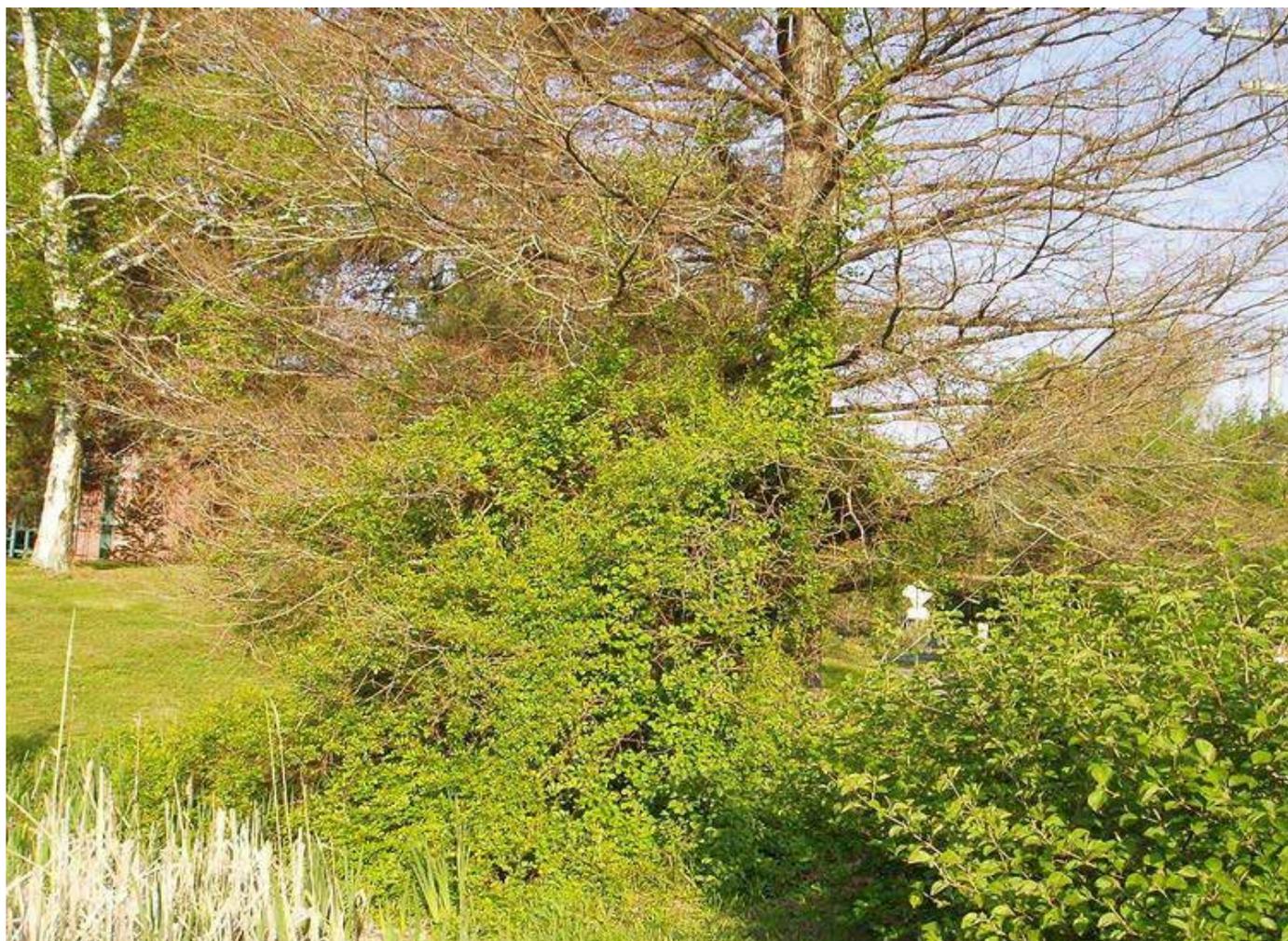


Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

## Foliar Application:

<b>Infestation Size:</b>	Large plants or dense patches and for suckers or seedlings smaller than 2.5 m tall.
<b>Goal:</b>	Eradication.
<b>Timing (season):</b>	Do not apply during bird nesting season (May-August). Must be applied when leaves have fully opened, preferably before shrubs become seed bearing, although some herbicides recommend use July to mid-September. See label for details.
<b>Treatment Frequency:</b>	Re-apply as needed; generally annual application over at least two years is needed for large plants because of the size of the root system.
<b>Best Practices:</b>	In general, foliar applications of herbicides are most effective early in the growing season, as they often require growing leaves for effectiveness. Metsulfuron is only recommended for grassland plantings and not tree plantings, as the herbicide may be taken up by the roots of non-target woody species. A combination of triclopyr and 2,4-D is safer for non-target grasses than metsulfuron, but is also not recommended in tree plantings. Foliar application of glyphosate is less effective than metsulfuron, but is safer for foliar applications in tree plantings.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act, Pesticides Act.</i>
<b>Advantages:</b>	Less soil disturbance and quicker than pulling out all the roots. Kills plants whole. Effective on seedlings when they emerge from the seedbank.
<b>Disadvantages:</b>	Risk to non-target, native species. May need to be repeated multiple times. May need exemptions from MOECC. Height restrictive.
<b>Ideal For:</b>	Landowners who have access to chemical control.



Photo courtesy of Nancy Dagley, USDI National Park Service, Bugwood.org.

## Cut Stump/Stem:

<b>Infestation Size:</b>	Any infestation size of large plants.
<b>Goal:</b>	Eradication.
<b>Timing (season):</b>	Later in the growing season (July through September) or during the dormant season. Not effective during spring/sap flow.
<b>Treatment Frequency:</b>	As needed.
<b>Best Practices:</b>	Cut stem as close to the ground as possible and paint or spray immediately (within minutes) with herbicide to kill the roots. Wear protective clothing, gloves and safety glasses. For cut stump applications, triclopyr or glyphosate are recommended. Triclopyr can be used year-round but should not be used in extremely hot temperatures. Glyphosate must always be applied immediately following the cut.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act, Pesticides Act.</i>
<b>Advantages:</b>	Selective. Less soil disturbance and quicker than pulling out all the roots. Kills plants whole.
<b>Disadvantages:</b>	May need to be repeated multiple times. May need exemptions from MOECC. Thorn hazard when cutting.
<b>Ideal For:</b>	Environmentally sensitive habitats or in restoration sites. Areas where standing dead brush is not desired.

## Basal Bark:

<b>Infestation Size:</b>	Small plants (if the shrub is large, many stems likely cannot be reached to be treated). Low to medium density.
<b>Goal:</b>	Eradication.
<b>Timing (season):</b>	Any time of year. Dry conditions. Not during bird nesting season.
<b>Treatment Frequency:</b>	As needed.
<b>Best Practices:</b>	For basal bark application, triclopyr mixed with bark oil is recommended. Triclopyr can be applied from January to fall colouration but should not be used in extremely hot temperatures. Apply chemical all the way around the stem in a 30-60 cm high strip starting at the root collar.
<b>Regulatory Considerations:</b>	<i>Species at Risk Act, Migratory Birds Convention Act, Endangered Species Act, Invasive Species Act, Conservation Authorities Act, Pesticides Act.</i>
<b>Advantages:</b>	Selective. Less soil disturbance and quicker than pulling out all the roots. Kills plants whole. Less labour intensive than pulling.
<b>Disadvantages:</b>	May need to be repeated multiple times. May need exemptions from MOECC. In populations with many branches, typically 10 to 20% of stems are missed, resulting in a plant that may be more difficult to treat the following growing season. Does not always eliminate suckering.
<b>Ideal For:</b>	Environmentally sensitive habitats or in restoration sites.

# Disposal of Plant Material

## Do not backyard compost:

Home composters do not reach the necessary temperature to kill viable plant material (seeds, canes, hips and roots) of the plant.

## Municipal disposal:

Call ahead to your local municipality about disposal availability for invasive plant material. If your local municipality accepts invasive plant material in the local landfill, carefully dispose of the material in a container that the thorns and woody stems will not rip or puncture and, if possible, allow to dry out before transporting it to the municipal facility.

## Municipal compost:

Viable plant material (seeds, canes, hips and roots) should only be composted if the material is taken to a large-scale municipal composting facility where temperatures in the compost pile reach high enough to kill the living material. Composting operations that demonstrate strict adherence to pathogen kill processes and maintain optimal moisture conditions may provide sufficient conditions to destroy most seeds or rhizomes of invasive plants. Ontario composting facilities are required to routinely monitor the compost process and meet strict, provincially regulated time-temperature parameters for pathogen kill.

## Burn:

Hang removed shrub to dry out, keep roots off the ground to prevent re-rooting before burning.



Do not home compost viable plant parts.

Photo courtesy of Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

# Types of Restoration

## During Control

### Mulching:

Covering sites with mulch immediately after invasive species control (i.e. manual or chemical control) may aid in the recovery of native species and prevent immediate re-colonization by other invaders. Mulching reduces light availability, allowing more shade-tolerant native plant species to germinate and colonize the gaps left by multiflora rose removal. This will also limit the amount of re-growth due to the seed bank.

### Seeding:

Seeding an area with other plant species immediately after management activities may be useful to prevent the establishment of new invasive species. This can give desirable native species the chance to establish themselves.

## After Control

### Planting:

If there are invasive plants nearby or in the seedbank which may colonize the control area, planting larger native species stock (e.g. potted) will help them outcompete invasive seedlings. It may however be better to monitor and remove invasive species over several seasons before investing in restoration planting. Wait until all management is completed before doing a large stock re-planting if you find it difficult to distinguish between newly planted native species and invasive seedlings.

When completing planting at control sites, consider light availability (have any trees recently been removed which have opened up an area?). These environmental changes should be taken into account when choosing plant species for restoration, as they will affect the growing and soil conditions. Also, additional management activities may disturb the newly planted materials, so it is best to postpone planting until all invasive plant control is complete.

# Preventing the Spread

Early detection is the most effective tool for controlling the spread of multiflora rose and everyone can help. Follow these tips:

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## Report it.

If you think you see multiflora rose take a picture, record the location and report it using the tools listed below.

## Watch for it.

Learn what multiflora rose looks like and then monitor hedges, property boundaries, riparian areas, fence lines and trails. Early detection of invasive plants can make it easier and less expensive to remove or control them.

## Stay on trails.

Avoid traveling off-trail and in areas known to have multiflora rose or other invasive species.

## Stop the spread.

Inspect, clean and remove mud, seeds and plant parts from clothing, pets (and horses), vehicles (including bicycles, trucks, ATVs, etc.) and equipment such as mowers and tools. Clean vehicles and equipment in an area away from natural areas where plant seeds or parts aren't likely to spread (e.g. wash vehicles in a driveway or at a car wash) before travelling to a new area.

## Keep it natural.

Try to avoid disturbing soil and never remove native plants from natural areas. This leaves the soil bare and vulnerable to invasive species.

## Use native species

Try to use local native species in your garden. Don't plant multiflora rose and if you have removed it, replant with native species. Encourage your local garden centre to sell non-invasive or native plants.

[The Grow Me Instead guides list alternatives to plant instead of invasive species.](#)

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# Tracking the Spread (Outreach, Monitoring, Mapping)

Several reporting tools have been developed to assist the public and resource professionals to report multiflora rose sightings, track the spread, detect it early, and respond to it quickly. These include:

- 1) EDDMapS: an online reporting tool where users can view existing sightings of multiflora rose and other invasive species in Ontario, and document their sightings. This tool, at [www.eddmaps.org/ontario](http://www.eddmaps.org/ontario), is free to use.
- 2) Toll-free Invading Species Hotline: a telephone number (1-800-563-7711) which individuals can use to report sightings verbally.
- 3) Invading Species Website: an online reporting tool ([www.invadingspecies.com](http://www.invadingspecies.com)).

If you think you have multiflora rose on your property or if you see it in your community, please report it. You will be asked to send in photos of the leaf, stem and flower for identification.

# Best Management Practices Documents Series

Autumn Olive Best Management Practices in Ontario  
Black Locust Best Management Practices in Ontario  
European Black Alder Best Management Practices in Ontario  
Garlic Mustard Best Management Practices in Ontario  
Giant Hogweed Best Management Practices in Ontario  
Invasive Common (European) Buckthorn Best Management Practices in Ontario  
Invasive Dog-strangling Vine Best Management Practices in Ontario  
Invasive Honeysuckles Best Management Practices in Ontario  
Invasive Reed Canary Grass Best Management Practices in Ontario  
Japanese Knotweed Best Management Practices in Ontario  
Multiflora Rose Best Management Practices in Ontario  
Phragmites (Common Reed) Best Management Practices (EN, FR)  
Phragmites (Common Reed) Best Management Practices for Ontario Roadways  
Purple Loosestrife Best Management Practices in Ontario  
Scots Pine Best Management Practices in Ontario  
Spotted Knapweed Best Management Practices in Ontario  
White Sweet Clover Best Management Practices in Ontario  
Wild Parsnip Best Management Practices in Ontario

## Additional Publications from the Ontario Invasive Plant Council

Invasive Plant Technical Bulletin Series  
A Landowner's Guide to Managing and Controlling Invasive Plants in Ontario  
A Quick Reference Guide to Invasive Plant Species  
Clean Equipment Protocol for Industry  
Creating an Invasive Plant Management Strategy: A Framework for Ontario Municipalities  
Grow Me Instead! Beautiful Non-Invasive Plants for Your Garden, a Guide for Southern Ontario (EN, FR)  
Grow Me Instead! Beautiful Non-Invasive Plants for Your Garden, a Guide for Northern Ontario  
The Landowners Guide to Controlling Invasive Woodland Plants  
Invasive Phragmites Site Prioritization Tool

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