



# STATE OF ONTARIO'S PROTECTED AREAS

Alien Invasive Plants

2021

# State of Ontario's Protected Areas Indicator Report

## Alien Invasive Plants

This indicator report tracks the presence of alien invasive plants in Ontario's provincial parks and conservation reserves.

### Status



**Status:** Needs Improvement



**Trend:** Undetermined

### Why it's important

Alien plants are plants that have been introduced to areas outside of their natural range by human activity. An alien plant becomes invasive when its introduction or spread threatens biodiversity, economy, or society. While there are hundreds of alien species in Ontario, only a small portion exhibit invasive tendency. Invasive tendency of a species may be widespread in Ontario, or it may only be in certain regions or ecosystems. Since it is not always known if a species is invasive, we also assess alien species to better understand potential threats.

Ecological communities in provincial parks and conservation reserves are threatened by alien invasive plant species that can:

- reduce wildlife habitat
- reduce native tree, shrub and herb growth and diversity
- change ecosystem and community dynamics
- impact species at risk either through outcompeting or making habitats unsuitable
- affect recreation and aesthetic values

Invasive plants colonize protected areas through a variety of pathways depending on their ecology, including unintentional transport of seed by humans (on clothes or footwear) and animals (in their fur), wind and contaminated soil or gravel used for park infrastructure. They can also be transported by fragments of plants moved by equipment, vehicles, and boats. Populations of invasive species planted on properties close to protected area boundaries are a significant threat.

Garlic Mustard and Dog Strangling Vine are examples of species that have been introduced to protected areas by seeds embedded in dirt and mud and transported on footwear and vehicle tires. Garlic Mustard has even been introduced through the soil that comes with worms brought in as bait for fishing. Reducing the chance of accidentally introducing these species can be as straightforward as removing mud and seeds from clothing and footwear and brushing your dog to remove seeds in their fur before visiting a provincial park or conservation reserve. It is also important to dispose of unused worms in the garbage instead of by dumping them. Worms used as bait are also non-native to Ontario and are also considered invasive species that can have significant effects on the forest understory.

Other pathways of invasion are much harder to control. For example, invasive Honeysuckles are often spread by the distribution of seeds by birds who have eaten the fruit. Planting native species in gardens instead of alien and invasive species, however, especially where there are nearby natural areas, can help reduce the spread of invasive species.

The best way to address invasive species in protected areas is to prevent them from becoming established. Monitoring and reporting are essential to understanding if efforts to prevent the spread of invasive species and reduce their harmful impacts are successful.

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## How we monitor

We report on the presence of plant species of ecological concern, and efforts to manage them, in provincial parks and conservation reserves for the reporting period.

We utilize verified data collected by Ontario Parks staff and invasive species observation repositories, including the Early Detection and Distribution Mapping System (EDDMapS) and iNaturalist, to determine the presence of terrestrial and aquatic alien and invasive plant species within provincial parks and conservation reserves. EDDMapS and iNaturalist are community platforms that allow individuals (including Ontario Parks staff), environmental agencies, and organizations to voluntarily document sightings of invasive species online. Ontario Parks actively promotes iNaturalist through social media, in-person programming and publications, and the number of users has grown exponentially in recent years. Although EDDMapS and iNaturalist were established in 2005 and 2008, respectively, prior to 2010 data was very limited, making it difficult to make meaningful comparisons between reporting periods.

Because of how community science data is collected, and differences in factors that affect how data is collected in various parks and conservation reserves (e.g., location, remoteness, access, staffing levels), these data have the following limitations:

- a lack of records does not necessarily mean that alien and invasive species are absent from a provincial park or conservation reserve
- areas with the most information available tend to be located in more populated and easily accessible locations, primarily in southern Ontario
- focused efforts to collect data in specific provincial parks and conservation reserves may over-represent that site
- there is potential for duplicate records based on the multiple sources of data
- presence of alien or invasive species that are unfamiliar to the observer may not be recorded

More province-wide data are needed to fully monitor trends in the numbers and spread of alien and invasive plant species in provincial parks, and particularly in conservation reserves, where monitoring efforts are in their infancy. We anticipate that reporting tools and available data will continue to improve over time.

## What's happening

### Presence of Invasive Plants

Alien plants likely exist in all protected areas; however, many alien species have become naturalized in Ontario and do not possess invasive qualities or pose an ecological threat. Monitoring and management efforts in protected areas were focused on species of ecological concern that are invasive in nature and a potential threat to biodiversity, ecological integrity, or human health and safety. The status of this indicator is "Needs Improvement" because better prevention and management of species with the highest ecological threat is needed, including through the availability of better data in protected areas across the province and an established list of species of ecological concern to support tracking future management and data collection efforts.

From the available records for over 250 alien and invasive plants, 157 provincial parks and 22 conservation reserves were identified as having at least one documented alien or invasive species up to and including 2019. Data for conservation reserves is very limited overall, and it is expected that the number of conservation reserves with alien or invasive species is higher than have been reported.

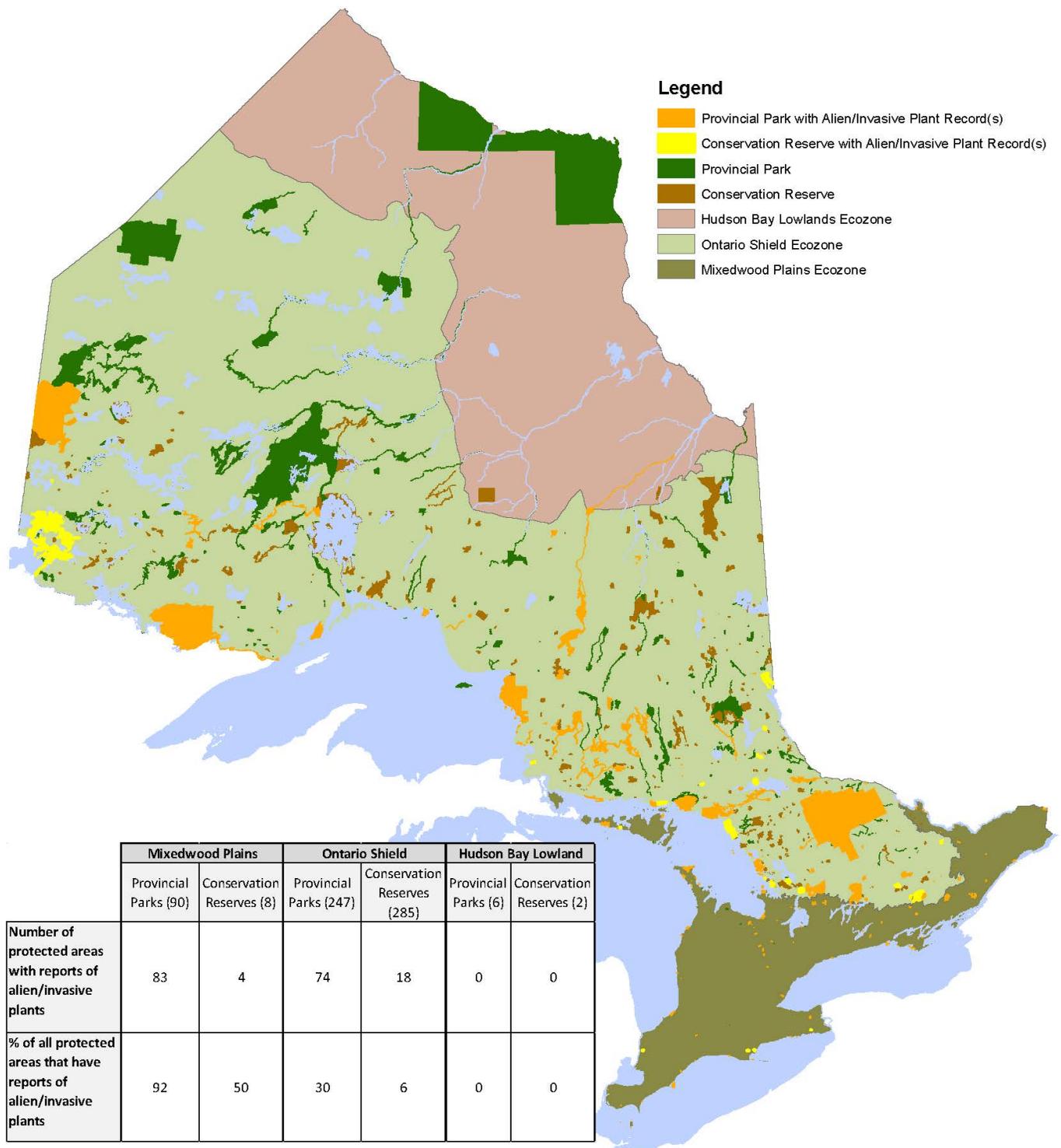
**Mixedwood Plains** - The Mixedwood Plains ecozone has 90 provincial parks and 8 conservation reserves that fall within its boundaries. Of these protected areas, 92% of

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provincial parks and 50% of conservation reserves had records for alien or invasive plants. While the Mixedwood Plains ecozone does not have the highest number of protected areas, it had the highest percentage of protected areas with documented alien or invasive plant species (Figure 1) and has the highest human population in Ontario. The higher spread of alien and invasive species in its protected areas is likely due to proximity to higher densities of alien and invasive species sources (e.g., gardens, agriculture etc.) and higher human activity, including levels of visitation.

**Ontario Shield** - The Ontario Shield ecozone has the most protected areas that fall within its boundaries; 247 provincial parks and 285 conservation reserves. Of these protected areas, 30% of provincial parks and 6% of conservation reserves had documented records of alien or invasive plant species (Figure 1).

**Hudson Bay Lowlands** - There were no documented records of alien or invasive species in provincial parks or conservation reserves in the Hudson Bay Lowlands ecozone (Figure 1).



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**Figure 1:** Provincial parks and conservation reserves where alien and invasive plants have been recorded. Note: Not all provincial parks and conservation reserves have been monitored specifically for invasive species.

## Management Effort

Management of invasive species is necessary to maintain ecological integrity, which includes maintaining healthy and viable populations of native species, including species at risk, and the habitat on which the species depend. Where practical, Ontario Parks conducted management efforts to reduce or eliminate invasive species which may have been affecting ecological integrity. Although the capacity for management efforts have increased since the last reporting period, invasive species have continued to spread throughout the protected areas system.

Management efforts in provincial parks between 2010 and 2019 varied by Ontario Parks administrative zone and management goals. Goals included prevention through public awareness of species and impacts, measures to block pathways such as placement of boot scrubs and implementing best practices, and control by removing parts of or entire populations in an area. Several factors affected management decisions such as:

- potential impacts of the invasive species
- extent of invasion in a particular protected area
- availability of trained staff to apply control methods (e.g., licensed herbicide applicators)
- the presence of species at risk that may be affected by control methods
- project funding and partnerships
- available resources and dedicated staffing
- available data
- availability of suitable treatment methods
- species resistance to previous treatments

Continued management to reduce populations or prevent them from spreading was often required for high priority species. Management efforts require a significant amount of staff time. While efforts were focused on both large and small populations, small populations of species identified as an ecological concern had a higher likelihood of successful control or eradication in an area, highlighting the need for early detection and response. Since management of conservation reserves was transferred to Ontario Parks in 2019, effort to better understand distribution and impacts of invasive species within them is needed to assist with future management effort planning. No efforts to control invasive plants in conservation reserves were made during the reporting period. It is expected that occurrence/impacts of invasive species and management efforts required in conservation reserves would be lower than provincial parks in the same area due to lower levels of infrastructure and visitation.

The following six invasive species were identified as high priority for management efforts in provincial parks:

- **European Common Reed (Invasive Phragmites)**  
Invasive Phragmites is aggressive and widespread across the province. Ontario Parks has implemented both large (directed) and small scale (ad hoc) projects over the last decade to manage the spread of Invasive Phragmites. Methods included mechanical treatments and/or herbicide application in provincial parks such as Rondeau, Long Point, The Massasauga, Killarney, La Cloche, Killbear, Blue Jay Creek, Komoka, Turkey Point, Port Burwell, Peter's Woods, Holland Landing Prairie, Kawartha Highlands, and Algonquin. Management efforts were generally focused on the reduction of large populations; however, eradication of small populations in accessible areas did occur. Phragmites spreads quickly and

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impacts biodiversity by creating monoculture stands that reduce growth of native plants and animal use. There were records of Invasive Phragmites in 51 protected areas up to 2019 (Figure 2).

- **Garlic Mustard**

Garlic mustard is widespread across the province. Management efforts for Garlic Mustard mostly focused on control or reduction of populations and included manual removal (second-year plants), application of herbicide (first-year plants), and/or installation of boot scrubs at trailheads in provincial parks such as Rushing River, Pigeon River, Lake Superior, Arrowhead, Restoule, Grundy Lake, Killbear, Six Mile Lake, Pinery and Bon Echo. In 2015, it was surveyed that 37% of trail users in Rushing River Provincial Park used the boot scrubs. Garlic Mustard threatens biodiversity by spreading aggressively and changing the chemical composition of the soil, preventing the growth of other plants. There were records for Garlic Mustard in 54 protected areas up to 2019 (Figure 2).

- **Giant Hogweed and Wild Parsnip**

While occurrences in provincial parks and conservation reserves for the reporting period were relatively low, Giant Hogweed and Wild Parsnip have been managed in provincial parks such as Arrowhead, Bronte Creek, Mono Cliffs, and Rene Brunelle on an ongoing, ad hoc basis because of its ability to spread quickly, impacting ecological integrity and visitor safety. Giant Hogweed and Wild Parsnip look alike and are sometimes confused; the sap from both these invasive plants can cause severe burns on skin when exposed to light. There were records for Giant Hogweed in 3 protected areas and Wild Parsnip in 12 protected areas (Figure 2).

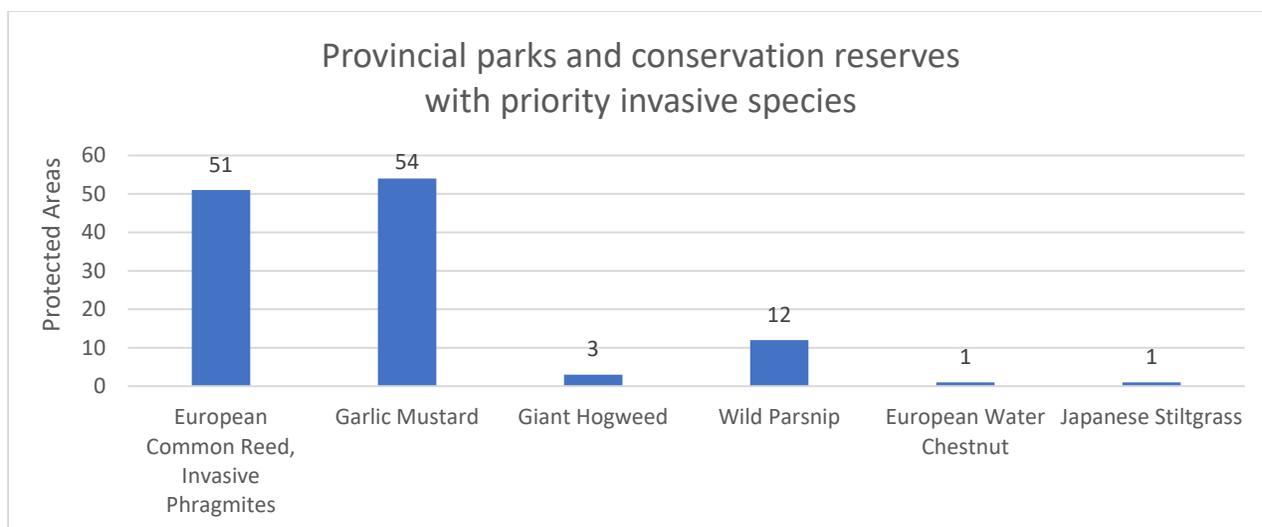
- **European Water Chestnut**

This plant is listed as a prohibited species in Ontario under the Invasive Species Act and while Voyageur Provincial Park is one of only a few places it occurs in the province, there is high potential for this plant to spread. Directed efforts to control European Water Chestnut in Voyageur Provincial Park were ongoing throughout the reporting period. Manual and mechanical treatments were applied to the bays of the Ottawa River within the park boundary. European Water Chestnut develops dense floating leaves that shade out native aquatic plant species and create a hazard for boating and swimming. Currently, Voyageur Provincial Park is the only known protected area where this plant is found (Figure 2).

- **Japanese Stiltgrass**

Japanese Stiltgrass is a federally regulated species in Canada under the Plant Protection Act, and at the time of reporting was limited to a small area in the Niagara Region. Ad hoc management efforts through chemical treatment have been made to control the spread on an ongoing basis at Short Hills Provincial Park throughout the reporting period. This rapidly spreading plant can completely displace native vegetation and wildlife habitats. Currently, Short Hills Provincial Park is the only known protected area where this plant is found (Figure 2); however, it is considered a priority species because of its ecological impacts.

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**Figure 2:** Number of provincial parks and conservation reserves that had records for the 6 priority plant species of ecological concern (up to 2019).

Other examples of invasive species targeted in provincial parks for management within the reporting period included:

- Purple Loosestrife
- Japanese Chaff Flower
- Invasive Honeysuckle
- Common Periwinkle
- Wild Chervil
- Oriental Bittersweet
- Goutweed
- Spotted Knapweed
- White Sweetclover
- Common Mullein
- various Thistles
- Buckthorn
- Multiflora Rose
- Scots Pine
- Autumn Olive
- Japanese Barberry
- Black Locust

Additional efforts Ontario Parks has taken to help prevent or reduce the spread of invasive species in provincial parks are:

- requiring staff, researchers, and contractors to follow best practices such as cleaning apparel and equipment
- staff education and training
- public awareness through signage, Discovery programs and social media platforms
- stewardship teams
- including invasive species management in management plans

Visitors to provincial parks and conservation reserves can help stop the spread of invasive plants by:

- cleaning clothing, equipment, and vehicles of seeds and other plant parts
- removing seeds and other plant parts from pet fur
- throwing unused earth worms (bait), and the soil they come with, in the garbage
- planting native species in gardens at home
- cleaning up after horses that are brought into parks or conservation reserves where permitted (seeds can be spread through manure)

## Indicator last updated

December, 2021

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## Data source(s)

- Early Detection and Distribution Mapping System (EDDMapS Ontario) database with occurrence records from 2010 to 2019
- iNaturalist
- Ontario Parks

## Related links

[Provincial Parks and Conservation Reserves Act, 2006](#)

[Ontario Invasive Plant Council – Clean Equipment Protocol](#)

<http://www.invadingspecies.com/>

<https://www.invasivespeciescentre.ca/>