Wild Parsnip

(*Pastinaca sativa*)

Best Management Practices in Ontario

2016 Best Management Practices Webinars

The complete 2016 Webinar series includes:

- Building Partnerships to Deal with Invasive *Phragmites australis* – a "Grass Roots Perspective"
- *Phragmites* Management in Municipal Drains in the City of Kingsville
- Invasive *Phragmites:* Best Management Practices
- Clean Equipment Protocol: Inspecting and Cleaning Equipment for the Purposes of Invasive Species Prevention
- Grow Me Instead: Beautiful, Non-Invasive Plants for Your Garden
- Wild Parsnip: Best Management Practices
- Aquatic Invasive Plant Watch List for Ontario
- Japanese Knotweed: Best Management Practices

Ontario Invasive Plant Council (OIPC)

- Formed in 2007
- Provides a coordinated, provincial response to the growing threat of invasive plants
- Created by, and consists of, representatives from:
  - All levels of government
  - Non-government organizations
  - Academia
  - First Nations
  - Industry
- Three staff members take direction from Board of Directors and members
- Projects delivered with help of partners, who sit on the 6 OIPC committees (Fundraising, Policy, Research and Control, Ontario *Phragmites* Working Group, Horticultural Outreach Collaborative, Communications)

Wild Parsnip – Best Management Practices In Ontario

Goal of this Webinar

To provide land managers with the tools for accurate identification and effective control of wild parsnip.

Photo by: David Featherstone

Topics Covered

- Background
- Distribution
- Lifecycle, Identification and Lookalikes
- Habitat and Impacts
- Pathways of Spread
- Best Management Practices
- Resources and Reporting Tools

Background

- Short-lived (monocarpic), perennial or biennial
- Carrot (Apiaceae) family
- Native to Europe and western central Asia (Turkey, Iran, the Caucasus region and western Himalayans)
- Likely brought to North America by early settler as a root crop; most familiar in culinary form
- Wild populations thought to be result of escaped, cultivated plants
- By 1943, reports of wild parsnip growing in every province
- Contains chemicals which can cause burn-like rashes in people exposed to sap, and then to sunlight
- On the Noxious Weed List as of Jan 1, 2015

Photo by: Bob Bowles

Pathways of Spread

Humans / Pets
Can escape cultivated plantations. Seeds can be transported on shoes, clothing and pets

Wind
Seeds area easily spread by wind

Machinery and Soil
Transported on mowing or other equipment or by moving contaminated soil

Water
Seeds are easily dispersed by water

Distribution

Ontario

Common in eastern and southwestern Ontario; large populations east of Belleville; now spreading west across province.

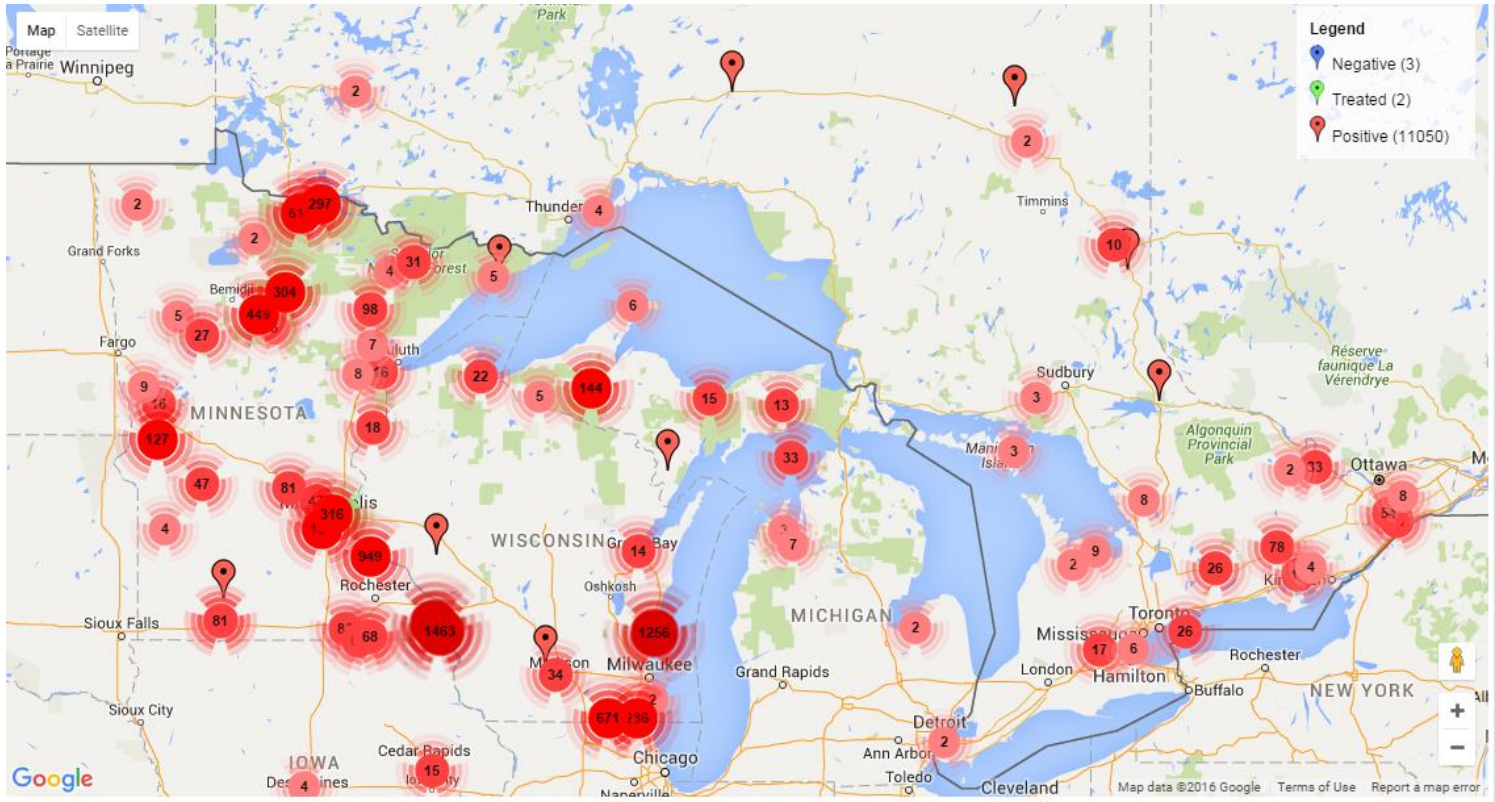

Image by: EDDMapS Ontario (March 7, 2016)

Nationally

Found in every province and territory (except Nunavut).

Internationally

Found in most U.S. states except Alabama, Hawaii, Georgia and Florida.

Wild Parsnip

Lifecycle, Identification and Lookalikes

Photo by: David Featherstone

Lifecycle

- Monocarpic perennial: matures, flowers and fruits once, then dies
- Reproduces only via seed
- One plant produces on average 975 seeds
- Growth begins in spring and lasts through early autumn
- Two+ years to mature and spends first year or more as a basal rosette
- During first year, plant stores its reserves in taproot
- Parsnip still cultivated for human consumption

Photos by: Owen Williams and Bugwood.org

Stems

- 0.5 to 1.5 m in height
- Single stem
- Light green, sometimes purple-tinged
- Deeply grooved
- Hollow, except at nodes
- Smooth with very few hairs
- Typically 2.5 to 5 cm in diameter

Photos by: Owen Williams

Leaves

Photos by: Owen Williams and Bugwood.org

- Alternate
- Pinnately compound
- 15 cm in length
- Saw-toothed edges
- 2-5 pairs of opposite leaflets and one diamond-shaped terminal leaflet
- Petiole on lower leaves is longer than on leaves closer to top of stem

Photo by: David Featherstone

Flowers

- Small, yellow, flowers with 5 petals, grow in clusters
- Petals usually without bracts (small leaf-like structures at base of flower), small or non-existent sepals (small leaves that protect flowers before they open)
- Arranged in 15 to 25 rays (individual stalks), unequal in length, in flat umbrella-shaped umbel (rays spreading from a common point), 5 to 15 cm across
- Bloom from June through to October

Photos by: Owen Williams, David McMurrary and David Featherstone

Fruit

- Dry fruit (schizocarp) produced after flowering
- 6 mm long
- Oval
- Splits into 2 sections (mericarps) once matured
- Each mericarp contains a seed which can remain attached to dead stalks
- Dispersal occurs between August and November, (mainly September)
- Seeds viable in the soil up to 5 years

Photo by: Bugwood.org

Roots

- Thick, funnel-shaped taproot
- White to yellow
- Up to 1.5 m deep
- Root is where energy reserves are stored during its first year of growth
- Thought to benefit the plant during times of drought

Photo by: Wikimedia Commons

Lookalikes: Cow Parsnip (*Heracleaum maximum*)

- Also perennial plant
- Native to Ontario
- Taller (1 to 2.5 m)
- Also contains furanocoumarins
- Stem:
  - Similarities: Also hollow; also green
  - Differences: Thicker (5 cm thick at base); soft, fuzzy hairs
- Flowers:
  - Similarities: Umbrella-shaped clusters
  - Differences: White; bigger (10 to 30 cm across, 5 to 30 rays)
    Leaves: much bigger leaves; divided into 3 large, broad leaflets, deeply-lobed and serrated

Photo by: Thomas L. Muller

Lookalikes: Queen Anne's Lace (*Daucus carota*)

- Biennial plant
- Invasive
- Similar height (0.3 to 1.5 m)
- Stem:
  - Similarities: Green;
  - Differences: Thinner (1 to 2.5 cm thick); fine, bristly hairs
- Flowers:
  - Similarities: Umbrella-shaped, in clusters
  - Differences: White, often with single purple flower in the centre of the flower cluster; pale pink before fully opened; smaller cluster (5 to 10 cm across)
- Leaves: Finally divided; feathery

Photos by: Bugwood.org

Lookalikes: Angelica (*Angelica spp.)*

- Perennial
- Native to Ontario
- Taller (1.2 to 2.1 m)
- Stem:
  - Similarities: Smooth with no hairs
  - Differences: Purple or purple blotched
- Flowers:
  - Similarities: Clusters; 8 to 25 cm across
  - Differences: Green-white; globe-like
- Leaves: Also alternate and divided into many leaflets

Photo by: Owen Williams
(left) and Rod Krick (below)

Giant Hogweed (*Heracleum mantegazzianum*)

- Also biennial or perennial
- Invasive in Ontario
- Much, much taller (2.5 to 5 m)
- Also contains furanocoumarins
- Stem:
  - Similarities: Hollow
  - Differences: Much thicker (5 to 15 cm); prominent purple blotches; distinct coarse, bristly hairs
- Flowers:
  - Similarities: Umbrella-shaped; clusters
  - Differences: White; much wider (30-90 cm across with 50-150 rays)
- Leaves: Much, much bigger (up to 1.5 m long); prominently spiked edges; leaflets grow out of each side of main stem (no leaf stalk)

Photo by: Joe Perreira

Wild Parsnip
Habitat and Impacts

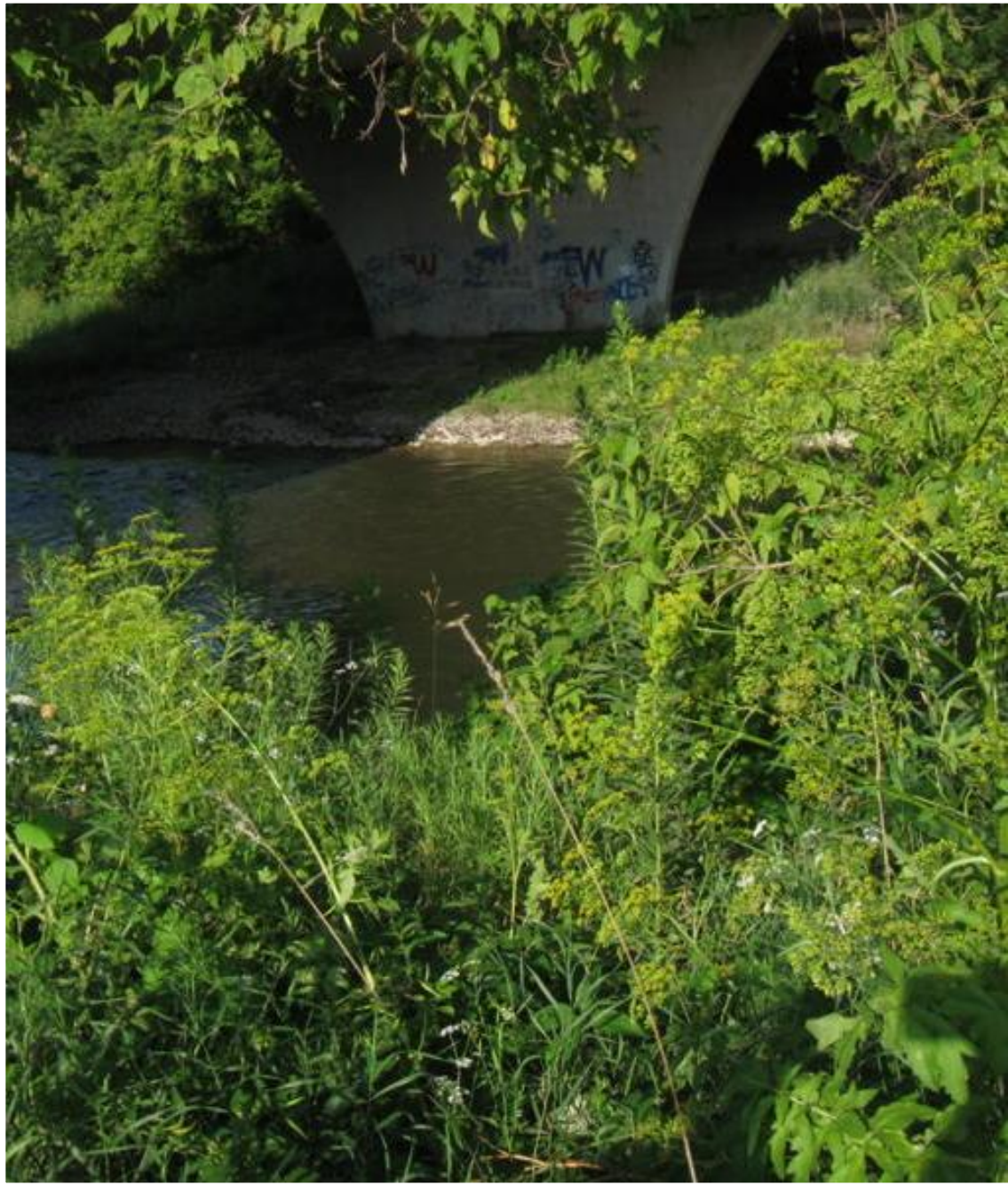

Photo by: Adriana Bernardo

Habitat

- Found most in full sun, but can withstand semi-shade
- Tolerant of a variety of soils, but not flooded environments
- Most often found in disturbed areas like railway embankments, roadsides, trails, shorelines, ditches
- In Ontario, commonly found along fence rows, the edges of farm fields, watercourses and drainage area; often grows with perennial grasses

Photos by: David Featherstone

Impacts on Biodiversity and Agriculture

Biodiversity

- Outcompetes native vegetation and crowding out important, low-growing plants
- Pollinators may not visit as often as other native species

Photos by: David Featherstone

Agriculture

- Can reduce quality of some agricultural forage crops
- Takes over in agricultural operations using no-till or reduced-till
- Not valuable as forage plant
- Chemical compounds found in the plant can inhibit weight gain and fertility in livestock

Impacts on Health

- Both wild and cultivated forms of parsnip contain toxic compounds (furanocoumarins)
- Furanocoumarins cause serious burns or blisters when exposed to sap and then sunlight
- Poses high risk to agricultural works, those involved with vegetation control and people unknowingly exposed

Photo by: Michael Irvine

Wild Parsnip
Best Management Practices

Photo by: Bob Bowles

Integrated Pest Management (IPM): Definition

Integrated Pest Management (IPM): Preventing or reducing damage caused by pests by using all best available information, and a variety of ecologically and economically sustainable approaches and control methods.

An IPM approach to wild parsnip control will depend on:

- Life cycle & biology of the plant
- Time of year
- Location of plants – presence of other sensitive species (i.e. species at risk)
- Size of infestation
- Skill level

Successful eradication may require several years and a variety of tools & approaches.

A management plan will ideally involve replanting of native plants to prevent soil erosion and help outcompete future invasions of invasive plants.

Integrated Pest Management: Wild Parsnip

Controlling wild parsnip **before it becomes established** will reduce its impacts on biodiversity, economy and society.

Develop a feasible, long-term strategy with the following considerations:

1. Try to remove isolated plants and small (newer) populations first outside of the main infestation site, to prevent further spread.
2. Concentrate on high-priority areas such as the most productive or sensitive part of a woodlot or a favourite natural area.
3. Consider dedicating a certain time each year to control, and make it a joint effort with neighbouring landowners/land managers.
4. Plan to replant native trees/shrubs once wild parsnip is eradicated or under control. Re-planting with native species will help to restore soil conditions and jump-start restoration.

Note: Because wild parsnip reproduces only by seed, the reduction or prevention of seed production is an important goal.

Health and Safety Considerations

Regardless of the management option, always wear protective clothing and eye protection when controlling wild parsnip!!

Protective clothing includes:

- ✓ Eye protection (face shield)
- ✓ Waterproof gloves and rubber boots
- ✓ Long sleeve shirts and pants
- ✓ Ideal to wear disposable “spray suit” over clothing. Tape coveralls at wrist and ankles to minimize potential contact with skin

Keep pets and animals clear of wild parsnip, as the sap can be transferred on their fur!!

Health and Safety Considerations

Remove protective clothing carefully to reduce the risk of skin contact with sap:

- ✓ Wash rubber gloves with soap* and water
- ✓ Remove disposable spray suit or other protective clothing
- ✓ Wash rubber gloves again just before taking them off
- ✓ Remove protective eye wear last!
- ✓ Put non-disposable clothing in the laundry and wash immediately with soap and water

If exposed to sap:

- ✓ Wash thoroughly with soap and water
- ✓ Avoid further exposure of affected skin to UV/sunlight
- ✓ If burns occurs (symptoms appear within 48 hours) seek medical consultation
- ✓ If there is direct exposure to the eye (cornea), immediately flush with water and seek medical attention

Control Measures – Manual/Mechanical

Mowing

- If timed correctly, mowing can be an effective way at controlling larger infestations
- Infested areas should be mowed as soon as flower stalks appear (May/June) but before seeds set to prevent seed production
- Poorly timed (July/August), and it can increase populations
- Must be repeated for several seasons to be effective
- Care must be taken to avoid transfer of sap; thoroughly clean equipment

Photo by: John Kemp

Control Measures – Manual/Mechanical

Pulling/Digging

- For small infestations, you can remove using a shovel
- Hand pulling is not recommended due to risk of toxic sap
- Remove after rain, when ground is soft or during drought when taproot shrinks
- Severing tap root with hoe before plant goes to seed (2.5-5 cm below the soil) can also be effective

Tarping

- Can be used after digging or mowing, to smother growth of new plants
- Leave in place for one full growing season; restoration afterwards is recommended

Photo by: David Featherstone and Parks Canada

Control Measures – Biological

Biological control: Using an herbivore, predator, pathogen or other natural enemy to reduce established populations of invasive species

- Many species feed on wild parsnip, but most do not cause enough damage to the plants to provide control i.e. insects will feed on it, but when plant is damaged, it will compensate by producing more flowers

- Because of the cultivated form of parsnip in Ontario, an introduced biological control could potentially impact parsnip agricultural operations

Control Measures – Cultural

Planting Native Plants

- Wild parsnip can be outcompeted by other plants, mostly in high-quality prairie settings and by aggressive growth

Tillage

- In agricultural settings, where tilling is used, wild parsnip is not usually a problem

Prescribed Burning

- Burning (planned and deliberate use by authorized personnel only) does not control it directly, but can encourage growth of more tolerant species to outcompete it
- Caution must be taken if burning an area with wild parsnip, as burning could potentially release toxic sap into the air

Control Measures – Chemical

Herbicides must be applied in accordance with all label directions! For an up-to date list of herbicides labelled for Wild Parsnip control, search PMRA Label Search and type in wild parsnip to find out which ones are registered.

Registration No	Registrant's Name	Product Name	Compound
29745	Dow Agrosciences	GF2050 Herbicide	Aminopyralid + Metsulfuron-methyl
29752	Dow Agrosciences	Clearview Herbicide	Aminopyralid + Metsulfuron-methyl
30062	Dow Agrosciences	Reclaim IIA Herbicide	Aminopyralid, present as potassium salt + Metsulfuron–methyl
30063	Dow Agrosciences	Reclaim IIB Herbicide	2,4-D, present as 2-ethylhexyl ester
30409	Dow Agrosciences	Sightline A Herbicide	Aminopyralid, present as potassium salt + Metsulfuron – methy
30920	Bayer Cropscience	Truvist Herbicide	Chlorsulfuron + Aminocyclopyrachlor

Control Measures – Chemical

- Follow all regulations including Ontario *Pesticides Act* and Ontario Regulation 63/09
- The most effective time to apply a systemic herbicide is in the early spring on newly bolted plants, or in late fall on rosettes
- If using herbicide in spring, follow with a subsequent summer application for missed plants or plants that have re-grown
- Treating a wild parsnip flower would likely not prevent setting of the seeds and is not recommended
- When conducting a foliar spray, avoid over spraying
- If using a foliar spray, it is recommended that the areas treated are covered in mulch 10-14 days after application to manage seedling germination
- Some herbicides can be applied directly to leaves, using a wick or wiper application
- Herbicide applications need to be repeated on an annual basis for them to be effective

Permitting and Other Requirements

Permits and other requirements may be necessary for your control project, depending on the work involved and the location. It is your responsibility to ensure that your project follows all relevant laws including municipal by-laws, and provincial / federal legislation.

Some key items to consider with chemical control:

- In Ontario herbicide storage, disposal, use, transport and sale are regulated under the *Pesticides Act* and Regulation 63/09
- There are exceptions under the *Pesticides Act* which may allow chemical control of invasive plants on your property (e.g. natural resources, forestry, agriculture)
- If you think you fall under any of the exceptions, contact the MOE or the MNRF to ensure your project meets the requirements of the exception or to obtain a letter of opinion for applying class 9 pesticides (natural resources exception)
- Any pesticide application must be done by a licenced exterminator or you must hold the appropriate certificate
- Projects in partnership with a Conservation Authority may not require a letter of opinion from the MNR

Disposal

Do not burn or compost wild parsnip!!!

1. If possible, leave stems at removal site allowing them to completely dry out.
2. Taking safety precautions while handling! Place in black plastic bags and leave in the direct sun **for at least one week.**
3. Contact local municipality to see if they can be sent to local landfill or to the municipal compost (green waste).

Restoration and Monitoring

Restoration During Control

Mulching: Reduces light availability, allowing shade-tolerant native species to germinate

Seeding: Seeding with an annual cover crop or native plant species during control activities will help to establish native species

Restoration After Control

Mulching: Areas treated with glyphosate should be covered in mulch 10-14 days after application to manage seedling germination

Planting: If there are invasive plants nearby, planting larger (i.e. potted) native species stock will give them an advantage over any invasive seedlings that germinate after control is completed

Monitoring

With any of the control options listed in the module, monitoring should be repeated throughout the growing season to ensure plants are not re-sprouting

Preventing the Spread

✓ Report it!

If you think you see wild parsnip, take a picture, record the location and contact the Invading Species Hotline to report it. 1-800-563-7711 or visit www.invadingspecies.com.

✓ Watch for it!

Monitor hedges, property lines, fence lines and trails. Early detection of invasive plants can increase the success of control and removal efforts.

✓ Stay on trails!

Avoid travelling off-trail (dogs and ATVs, too) and in areas known to have wild parsnip or other invasive species.

✓ Stop the spread!

Inspect, clean and remove mud, seeds and plant parts from clothing, pets (horses), vehicles (including bicycles), and equipment such as mowers and tools. Clean vehicles and equipment in an area where plant seeds or parts aren't likely to spread.

✓ 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. Never use wild parsnip in your garden or hedgerows. Encourage your local garden centre to sell non-invasive or native plants.

Help Track the Spread of Wild Parsnip

You can help track the spread of wild parsnip in a couple of ways:

You can call the Invading Species Hotline:

1-800-563-7711

Or report sightings online to Ontario's new mapping system (requires a photo & location)

www.eddmaps.org/ontario

We Gratefully Acknowledge the Contributions of:

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For More Information

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