

# Invasive Phragmites

## Description and Pathways of Spread

- Invasive perennial wetland reed
- Similar to a rare native species
- Native to Eurasia
- Name derived from the Greek term *phragma* = fence, hedge, or screen
- Introduced along the eastern seaboard, possibly as a seed contaminant in soil ballast in the 1800s
- Agriculture and Agri-food Canada “worst” invasive species in Canada (2005)
- Occasionally sold in the horticultural industry
- Height can reach up to 5 m
- Creates dense monocultures, up to 100% Phragmites
- Stem rigid, beige or tan (under leaf sheath)
- Leaves at 45 degree angle from stem
- Leaves blue-green in colour
- Seedheads dense, large



Photo by: Ron Reinholt

# Invasive Phragmites -Pathways of Spread



Photo courtesy of Matt Smith

- Reproduces via seed, stolons, rhizomes
- Seeds via mud on boots, pets, tires, or equipment and carried to new areas
- Soil contaminant
- Contaminant in municipal mulch or compost
- Horticulture
- Water, air or animal movement

# Phragmites – Habitat and Distribution

## Wide range

- Wetlands, streambanks, lake shores, wet fields, ditches, roadsides
- Survives brackish environments
- Prefers areas of standing water
- Roots can grow to extreme depths
- Survives low water areas
- Thrives in disturbed habitats
- Found on every continent except Antarctica



# Invasive Phragmites-Impacts

- Loss of biodiversity and species richness
- Loss of habitat
- Changes in hydrology
- Changes in nutrient cycling
- Increased fire hazard
- Economic and social



Photos courtesy of  
Janice Gilbert

# Invasive vs. Native Phragmites

Native is *Phragmites australis* subsp. *americanus*

- Not taller than 2m
- Sparse stands
- Stem flexible, reddish-brown under leaf sheath
- Leaves at 30 degree angle from stem
- Leaves yellow-green
- Seedheads sparse, small

Native *Phragmites* (left) and Invasive *Phragmites* (right)



Invasive *Phragmites* (top leaf) and native *Phragmites* (lower leaf)



Native *Phragmites* seedhead (top) and invasive *Phragmites* seedhead (bottom)



Photos by: Erin Sanders, Janice Gilbert

# Giant Hogweed – *Heracleum mantegazzianum*

## What is it?

Biennial or perennial member of the parsley family  
Native to Caucasus region of Europe/Southwest Asia  
First introduced in late 1800's  
First record in Ontario in 1949

## Pathway of Introduction and Spread

Horticultural trade – as a garden curiosity  
Water spread

## Habitat

Moist, rich soil – along riverbanks and stream sides  
Roadsides, trail sides, forest edges, agricultural land



# Giant Hogweed – *Heracleum mantegazzianum*

## Impacts

Threat to human health – sap contains toxins that cause photodermatitis and can result in severe burns

Out competes native vegetation by shading it out and forming dense stands

Hinders recreational activities



Jan Samanek, State Phytosanitary Administration, Bugwood.org

# Giant Hogweed – First Year Description

**First year plants grow in a large basal rosette form**

**Leaves are deeply incised and serrated**



Photo credit: Gord Jopling



Photo credit: MVC



Photo credit: John Benham

**Leaves can reach widths of 1.5m across**

# Giant Hogweed – Second/Third Year Description



The white flowers grow in umbels – each umbel can produce up to 20,000 seeds



Stem is hollow, and bristly with purple splotches

Second or third year plants grow large flowering stalk reaching heights of 5m (15 ft)



Seeds are oval shaped



# Giant Hogweed – Similar Species



Photo credit: Stephen Lea



Photo credit: UNH



Photo credit: B. Douglas



Photo credit: DEC NY

## **Cow Parsnip (*Heracleum maximum*)**

- No purple splotches on the stem
- Hair on stem is downy, not bristly
- Leaves are not as sharply serrated
- Native to Ontario

## **Angelica (*Angelica sinensis*)**

- Globular flower umbels
- Purple Stem
- Compound leaves
- Native to Ontario

**THESE PLANTS ARE COMMONLY CONFUSED, DO YOU KNOW THE SPECIES?**

**WHICH ONE IS NATIVE AND WHICH ONE IS INVASIVE?**

This one's  
native!



Cow Parsnip (*Heracleum maximum*)

Rob Routledge, Sault College, Bugwood.org.



Giant Hogweed (*Heracleum mantegazzianum*)

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

# Wild Parsnip (*Pastinaca sativa*)

## Description and Pathways of Spread

- Biennial, occasionally perennial herb growing 0.5-1.5 m tall
- Originates in Eurasia
- First year plant forms a low, spindly rosette (whorl) of leaves; in the second year the plant forms a flower stalk.
- Leaves consist of 2-5 pairs of compound, sharply toothed leaves with mitten-shaped side leaflets and a diamond-shaped terminal leaflet.
- Small, yellow-green flowers are produced in umbrella-shaped flower clusters that are 10-20 cm wide.
- Seeds are flat and round.
- Brought to North America by European settlers and grown for its edible root.
- Seeds are spread by wind and water, mowing or other outdoor equipment.
- May escape from cultivated fields and spread to natural areas.



John Cardina, The Ohio State University, Bugwood.org

# Wild Parsnip (*Pastinaca sativa*)



Ohio State Weed Lab Archive, The Ohio State University, Bugwood.org



Copyright © 2007 The Regents of the University of California. All rights reserved 5374186

**Leaves and Flowers – typical growth habit**

# Wild Parsnip (*Pastinaca sativa*)

## Impacts

- Forms dense stands that outcompete native plants.
- Stems, leaves and flowers contain chemicals that can cause human skin to blister severely when exposed to sunlight (photodermatitis).
- Wear protective clothing, gloves, and eye wear when working around or with this plant.
- May reduce the quality and saleability of agricultural forage crops such as hay, oats and alfalfa, because the chemical compounds that are present in the plant reduce weight gain and fertility in livestock that eat it.



# Wild Parsnip (*Pastinaca sativa*)

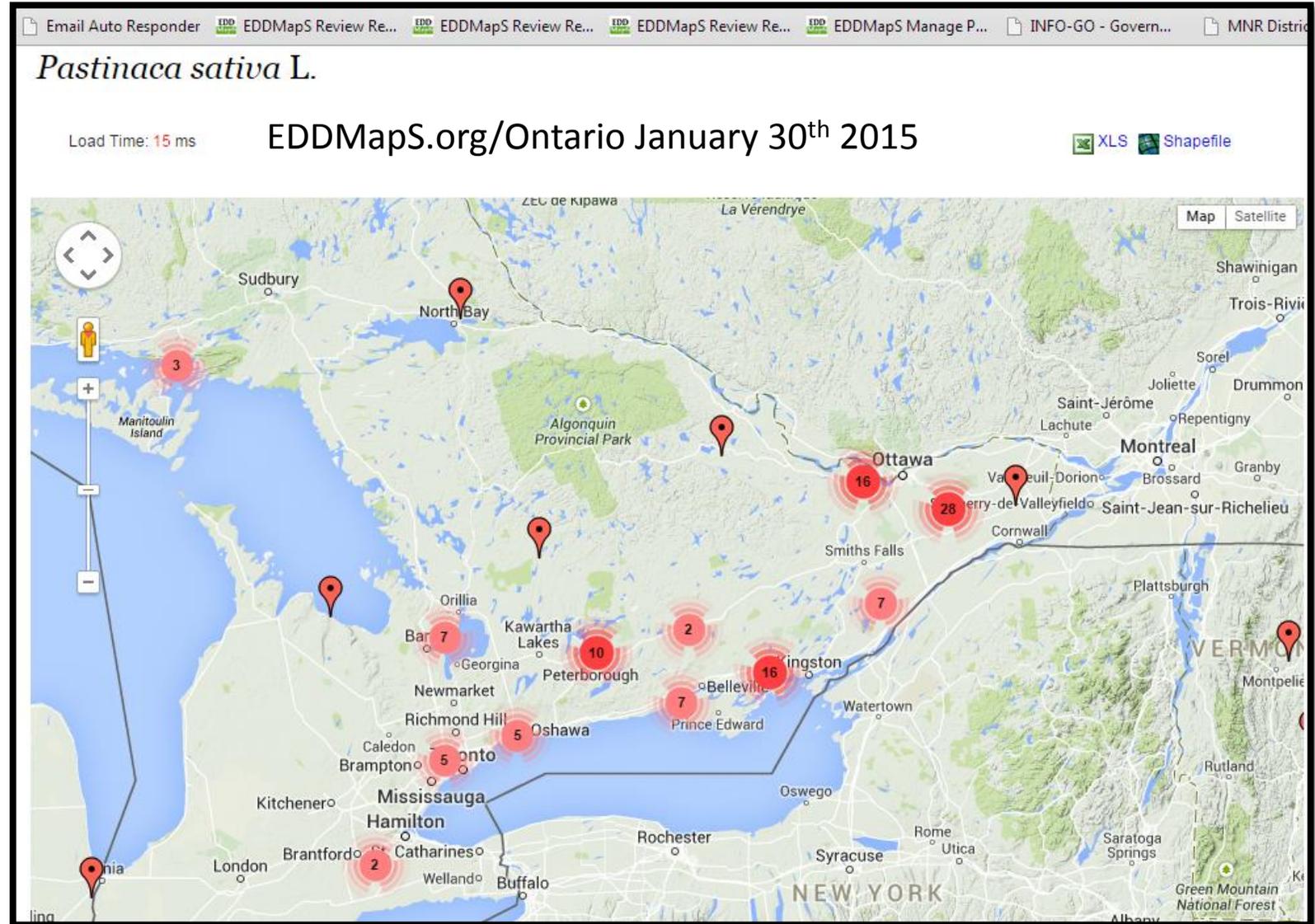
## Distribution and Habitat

In Ontario: found in eastern and southern parts of the province.

In Canada: reported in every province and territory except Nunavut.

In the United States: reported in every state except Mississippi, Alabama, Georgia and Florida.

Grows in disturbed areas such as abandoned yards, waste clumps, meadows, open fields, roadsides and railway embankments.



Other  
Invaders

# American Bittersweet (native) compared to Oriental Bittersweet (INVASIVE)



**Native Bittersweet**  
*(Celastrus scandens)*  
produces berries at the  
terminal ends of stems,  
and have fruit capsules  
that are orange, with  
orange fruit inside.



**Invasive Bittersweet**  
*(Celastrus orbiculatus)*  
produces berries along  
the stems, at the leaf  
axis, and have fruit  
capsules that are yellow,  
with orange fruit inside.





Adult (magnified)



Egg sacs and adult



Crawler Stage



Infested Hemlock branch

- Hemlock woolly adelgid (*Adelges tsugae*), is an invasive insect that can damage and kill eastern North American hemlock species.
- The adelgid is very tiny, less than 1mm in length.
- In North America there are only female HWA, which reproduce asexually.

Photos: top left: Kelly Oten, North Carolina Forest Service. Centre: Ashley Lamb, Virginia Polytechnic Institute and State University. Far right: USDA Forest Service Southern Research Station Archive, USDA Forest Service, SRS. Far left: Lorraine Graney, Bartlett Tree Experts. All from Bugwood.org

# PREVENTING the Spread

## Stay on trails

Avoid travelling off-trail and in areas known to have common buckthorn 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 DSV in your garden or hedgerows. Encourage your local garden centre to sell non-invasive or native plants.

## 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

## REPORT IT!

[www.eddmaps.org/Ontario](http://www.eddmaps.org/Ontario)

Invading Species Hotline 1-800-563-7711

# Look Before You Leave!

Invasive Species may be joining you on vacation.

You could unknowingly be carrying stowaways (invasive species) to your favourite natural area.

- 1 Watercraft** – ✓ *Inspect and clean your boat & motor.*  
✓ *Dispose of bait properly.*
- 2 Pets** – ✓ *Groom your pets after hiking.*
- 3 Firewood** – ✓ *Buy firewood locally.*
- 4 Plants** – ✓ *Garden with non-Invasive plants.*
- 5 Hiking Gear/ATV's/Bikes**  
– ✓ *Clean mud, seeds & plant parts before transport.*



# How to Use EDDMapS to Report Invasive Species in Ontario

The screenshot shows the EDDMapS Ontario website. At the top left is the logo "EDD MapS Ontario" with "Early Detection & Distribution Mapping System" below it. To the right are links for "About | Partners | Contact" and a "Welcome: Emily Johnston, Ontario Federation of Anglers and Hunters" message. A green navigation bar contains "Report Sightings", "Distribution Maps", "Species Information", "Tools", and "My EDDMapS", with a "sign out" button on the right. The main heading is "Report Invasive Species Sightings in Ontario". Below this are eight category tiles: "AQUATIC PLANTS" (purple flower), "HERBS/FORBS" (green leaves), "GRASSES" (tall grasses), "SHRUBS" (green shrub), "TREES" (deciduous tree), "VINES" (white vine flower), "FISH" (mouth of a fish), and "INVERTEBRATES" (crab). A secondary navigation bar at the bottom of the main content area repeats the menu items. The footer contains the University of Georgia Center for Invasive Species and Ecosystem Health logo and contact information (2360 Rainwater Road, Tifton, GA 31793-5766, www.bugwood.org), along with logos for the Ontario Federation of Anglers and Hunters, the Invasive Species Centre, the Ontario Invading Species Awareness Program, and the Province of Ontario.

# Why Use This Tool?

- A key component in an invasive species Early Detection & Rapid Response (EDRR) program is the development of species distribution maps.
- Entering and tracking locations of invasives can identify the “leading edge” of invasive species heading our way.
- This gives each of us a chance to implement Early Detection & Rapid Response programs in our area. These EDRR programs allow us to stop or minimize an invasive species before it becomes a problem and allows land managers and agencies to prioritize control needs and strategies while populations are still small.
- The Early Detection & Distribution Mapping System, or EDDMapS, is a web-based mapping system for invasive species distribution that is fast and easy to use and doesn't require GIS experience or software.



# First Time User: Register

- First time only: Register as an EDDMapS user.
- Go to the EDDMapS website: [www.eddmaps.org/Ontario](http://www.eddmaps.org/Ontario)
- Click “Join Now”



The screenshot shows the EDDMapS Ontario website interface. At the top, the navigation menu includes "Report Sightings", "Distribution Maps", "Species Information", "Tools", and "My EDDMapS". In the top right corner, there are "join now" and "sign in" buttons. A large red arrow points to the "join now" button. The main content area features a map of Ontario with a text box that reads "Map it. Zap it. Map it Again." and lists several benefits of the system. To the right of the map is a "Highlighted Species" section featuring a photograph of a garlic mustard plant and its scientific name, *Alliaria petiolata*. Below the main content, there are three columns: "Ontario Partners" with logos for the Ontario Federation of Anglers and Hunters and the Invasive Species Centre; "Recent Reports" listing sightings of dog-strangling vine, Norway maple, and round goby; and "Smartphone App" with a description of the app and a smartphone icon.



# Choose Your Species

Choose the specific species you are reporting from the drop down list.

Note: Species are listed in alphabetical order by scientific name, although the common name is also listed.

You can click on the Species Information tab and then on Subject Name and the list will then alphabetize by common name.

The screenshot shows the EDD MapS Ontario website interface. At the top, there is a navigation bar with tabs for 'Report Sightings', 'Distribution Maps', 'Species Information', 'Tools', and 'My EDDMaps'. The 'Species Information' tab is active. Below the navigation bar, the page title is 'Report an Invasive Species Occurrence'. A red arrow points to the 'Species' dropdown menu, which is currently open and displaying a list of species names in alphabetical order by scientific name. The species listed include: rusty crayfish - Orconectes rusticus (Girard, 1852), amphipod - Echinogammarus ischnus (Stebbing, 1899), Asian clam - Corbicula fluminea (O.F. Müller, 1774), banded mysterysnail - Viviparus georgianus (L. Lea, 1834), bloody red shrimp - Hemimysis anomala G.O. Sars, 1907, channeled apple snail - Pomacea canaliculata Lamarck, 1819, Chinese mitten crab - Eriocheir sinensis H. Milne Edwards, 1853, Chinese mysterysnail - Cipangopaludina chinensis (Gray, 1834), fishhook waterflea - Cercopagis pengoi (Ostroumov, 1891), freshwater jellyfish - Craspedacusta sowerbyi Lankester, 1854, golden mussel - Limnoperna fortunei (Dunker, 1857), killer shrimp - Dikergammarus villosus (Sowinsky, 1888), Louisiana red crayfish - Procambarus clarkii (Girard), New Zealand mud snail - Potamopyrgus antipodarum (J. L. G. Rees, 1842), quagga mussel - Dreissena bugensis Andrusov, 1897, rusty crayfish - Orconectes rusticus (Girard, 1852), spiny waterflea - Bythotrephes longimanus Leydig, 1860, water flea - Daphnia lumholzi G. O. Sars, 1885, and yabby - Cherax destructor Clark, 1936. Below the species list, there are fields for 'Habitat' (a dropdown menu), 'Jurisdiction' (a dropdown menu), 'Latitude' (a text input field), 'Longitude' (a text input field), and 'Location' (a text input field). A map of Ontario is visible on the right side of the form.



# When Did You See It?

- Select the date the species was observed on by clicking the calendar, (1) and then clicking on the day (2).
- Tip: You can use the arrows on either side of the month and year to change the month.

**EDD MapS Ontario**  
Early Detection & Distribution Mapping System

About | Partners | Contact Us  
Welcome, Emily Johnston, Ontario Federation of Anglers and Hunters

Report Sightings | Distribution Maps | Species Information | Tools | My EDDMapS | sign out

### Report an Invasive Species Occurrence

Please provide as much information about the sighting as possible.

Species:  
rusty crayfish - *Orconectes rusticus* (Girard, 1859)

Observation:  
Observation Date: 09/13/2013  
Method Used:  
Protocol Used:  
Habitat: Select One (?)

Location:  
Jurisdiction: Select One

Latitude:   
Must be expressed in Decimal Degrees (XX.XXXX) and DATUM NAD83/WGS84.

Longitude:   
Must be expressed in Decimal Degrees (XX.XXXX) and DATUM NAD83/WGS84.

Jump to Point

Unnamed Road, Cochrane, Unorganized, North Part, ON, P0L, Canada

Map | Satellite



# How Was It Identified?

Choose the method used to determine the species.

For most public reporters, this will be “photograph” or “observation”.

In our example, “Observation” was chosen because the reporter is a known expert on crayfish.

The screenshot shows the "Report an Invasive Species Occurrence" form on the EDD MapS Ontario website. The form includes fields for Species (rusty crayfish - Orconectes rusticus), Observation Date (09/13/2013), Method Used (Observation), Protocol Used (Observation), Location, and Jurisdiction. A red arrow points to the "Method Used" dropdown menu, which is open and shows "Observation" selected. The form also includes a map of Ontario and a "Jump to Point" button.

EDD MapS Ontario  
Early Detection & Distribution Mapping System

About | Partners | Contact  
Welcome:  
Emily Johnston, Ontario Federation of Anglers and Hunters  
sign out

Report Sightings Distribution Maps Species Information Tools My EDDMapS

### Report an Invasive Species Occurrence

Please provide as much information about the sighting as possible.

Species:  
rusty crayfish - Orconectes rusticus (Girard, 1852)

Observation:  
Observation Date: 09/13/2013  
Habitat: Select One (?)  
Method Used: Select One  
Protocol Used: Observation  
Location:  
Jurisdiction: Sel  
Latitude:   
Longitude:   
Jump to Point

Map Satellite

# Where is the Geographical Location?

Here there are two options:

1. You can choose the Jurisdiction from the drop down menu.

OR

2. Enter the Latitude and Longitude coordinates from your GPS device.

A screenshot of a web form for reporting an observation. The form is titled "Species:" and "Observation:". The "Species:" field is a dropdown menu with "rusty crayfish - Orconectes rusticus (Girard, 1852)" selected. The "Observation:" section includes fields for "Observation Date:" (12/02/2013), "Method Used:" (Observation), "Protocol Used:" (Angler Diary), and "Habitat:" (Select One). Below these is a "Location:" dropdown menu. Further down are "Latitude:" (43.64777) and "Longitude:" (-80.28141) fields, both with instructions: "Must be expressed in Decimal Degrees (XX.XXXXX) and DATUM NAD83/MG-S84." A "Jump to Point" button is below the coordinates. A "Location Description:" text area contains the message "Cannot determine address at this location." To the right is a Google Maps embed showing a red location pin. Two large red arrows point to the "Location:" dropdown (labeled '2') and the "Habitat:" dropdown (labeled '1'). At the bottom, there is a "Lat/Long Conversion Tools:" link.

# Where is the Geographical Location?

In this example we have chosen the City of Kawartha Lakes as our jurisdiction.

Clicking on a specific jurisdiction will automatically show the location in the Google map to the bottom right of your screen.



**EDD MapS Ontario**  
Early Detection & Distribution Mapping System

Report Sightings | Distribution Maps | Species Information | Tools | My EDDMapS

Welcome: Emily Johnston, Ontario Federation of Anglers and Hunters | sign out

### Report an Invasive Species Occurrence

Please provide as much information about the sighting as possible.

Species: rusty crayfish - *Orconectes rusticus* (Girard, 1852)

Observation Date: **City of Kawartha Lakes**

Method Used: City of Kawartha Lakes

Protocol Used: City of Kawartha Lakes

Location: Unnamed Road, Cochrane, Unorganized, North Part, ON P0L, Canada

Jurisdiction: Select One

Latitude:   
Must be expressed in Decimal Degrees (XX.XXXX) and DATUM NAD83/WGS84.

Longitude:   
Must be expressed in Decimal Degrees (XX.XXXX) and DATUM NAD83/WGS84.

Location Description:

Map: Satellite

Canada, Manitoba, Ontario, Quebec, Winnipeg

Taskbar: Microsoft Outlook, Microsoft PowerPoint - [...], Report an Invasive A..., Logos, Microsoft Office Picture ...

# Upload Photos TIPS

- ❖ Good quality photos are KEY to confirming the species that you wish to report.
- ❖ Be sure to include any easily identifiable characteristics of the species. For example, with plants, leaf shape and arrangement, flowers, fruit, roots, and unique features like thorns should be documented.
- ❖ Try to include something in the picture that gives an indication of size. (ex. A coin, tube of lip balm, or measuring tape) This is especially important when reporting invasive fish species.
- ❖ Images showing the habit of the species, (such as a large zebra mussel infestation on a dock for instance), are also appropriate when included with close-up images.
- ❖ Take photos with the sun behind you.



# Upload Photos

Upload Images with Your Report:

For verification purposes, take at least two digital images, a close up of the species and one of the site.

Image:  No file chosen (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  No file chosen (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  No file chosen (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  No file chosen (jpg, < 4 mb)

Caption:

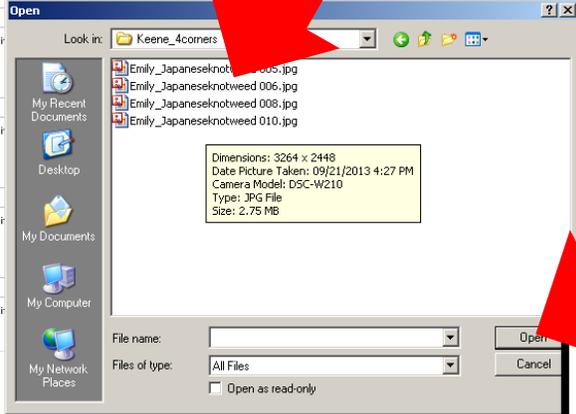
(provide as much detail as possible, include credit if image is not yours)

Image:  No file chosen (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Additional Information:



1. Click "Chose File"
2. Find the image you want to use on your computer and double click it.
3. Click open, file name will appear beside the "Choose File" button.

4. Note file names and sizes.  
(Pictures must be less than 4MB each)

Note: You can add photo credits or information about the photo in the box below beside "Caption".

Upload Images with Your Report:

For verification purposes, take at least two digital images, a close up of the species and one of the site.

Image:  Emily\_Japan...ed 005.jpg (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  Emily\_Japan...ed 006.jpg (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  Emily\_Japan...ed 008.jpg (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  Emily\_Japan...ed 010.jpg (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)

Image:  No file chosen (jpg, < 4 mb)

Caption:

(provide as much detail as possible, include credit if image is not yours)



# Upload Photos

1. In this example, the reporter is uploading 4 pictures with credits.

2. In the “Comments” section, notes on the location and the infestation are added.

3. This reporter works with Invasive Species, and so a sample was collected and pressed for a teaching herbarium, currently located at the reporter’s home.

4. Click “Report”



The screenshot shows a web form for reporting an invasive species sighting. It contains five "Image" sections, each with a "Choose File" button and a "Caption" text box. A red arrow labeled "1" points to the first "Image" section. Below the images is an "Additional Information:" section with a "Comments" text box containing the text: "Large dense patch of Japanese Knotweed completely covering a small ravine beside road. Just past Keene main 4 corners intersection on SW side. Looks like a horticultural planting that has gotten out of control. E. Buckthorn also noted at this site." A red arrow labeled "2" points to this text box. Below the comments is a "Specimen" section with a "Specimen collected:" radio button (set to "Yes") and a "Location of Specimen:" text box containing "Home of Emily Johnston". A red arrow labeled "3" points to the "Specimen collected:" radio button. At the bottom right is a "Report" button, with a red arrow labeled "4" pointing to it.

# Upload Report

The data is now entered into EDDMapS and your images are uploaded.

A unique Record ID number is given to each report.

**Congratulations!** You have successfully completed an entry into EDDMapS.

**EDD MapS Ontario**  
Early Detection & Distribution Mapping System

About | Partners | Contact

Welcome:  
Emily Johnston, Ontario Federation of Anglers and Hunters

Report Sightings | Distribution Maps | Species Information | Tools | My EDDMapS | [sign out](#)

### Thank You for Your Submission

Your report has been forwarded to the OFAH/OMNR Invading Species Awareness Program for review. Your report will not be displayed on EDDMapS until it has been verified. Please contact us at 1-800-563-7711 or [eddmaps@ofah.org](mailto:eddmaps@ofah.org) if you have any questions.

Your Record ID is **3109822**

[View this Record in EDDMapS](#)

[Manage Your Records](#)

[Return to Submission Form](#)

Report Sightings | Distribution Maps | Species Information | Tools | My EDDMapS | About | Partners | Contact

 Website Developed by: The University of Georgia Center for Invasive Species and Ecosystem Health  
2360 Rainwater Road | Contact Us  
Tifton, GA 31793-5766 | [www.bugwood.org](http://www.bugwood.org)



# Manage Your Reports

- ❖ Be sure to go to your personal EDDMapS page, (My EDDMapS).
- ❖ This is where you can keep track of “Your Stats”; view, revisit or edit the data you have entered; view or edit your profile, as well as set up and manage alerts for invasive species.

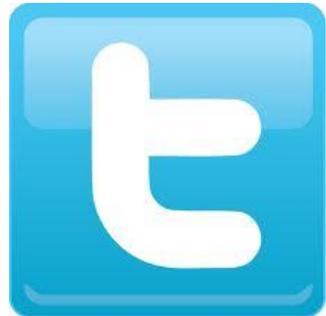
The screenshot shows the EDD MapS Ontario website interface. At the top, the logo reads "EDD MapS Ontario" with the subtitle "Early Detection & Distribution Mapping System". A navigation bar includes links for "Report Sightings", "Distribution Maps", "Species Information", "Tools", and "My EDDMapS". A "sign out" button is visible in the top right. Below the navigation bar, the page title is "My EDDMapS" with the instruction "Manage your reports, alerts and account settings." The main content area is divided into two columns. The left column, titled "Your Stats", shows a bar chart icon and lists "32 reports" and "7 species". The right column, titled "Your Data", shows a folder icon with a warning sign and lists several actions: "Report an Observation", "Manage My Reports", "Download My Reports", "Upload Data", "View My Profile", and "Edit My Profile". A large red arrow points from the right towards the "Manage My Reports" link. The footer contains a secondary navigation bar and contact information for the University of Georgia Center for Invasive Species and Ecosystem Health.



Questions?



Like us on Facebook/[invspecies](https://www.facebook.com/invspecies)



Follow us on Twitter [@invspecies](https://twitter.com/invspecies)

[www.invadingspecies.com](http://www.invadingspecies.com)

1-800-563-7711



[www.invadingspecies.com](http://www.invadingspecies.com)

# Partners



[www.invadingspecies.com](http://www.invadingspecies.com)

1-800-563-7711



*Catalyst for research and response*



[www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca)

