

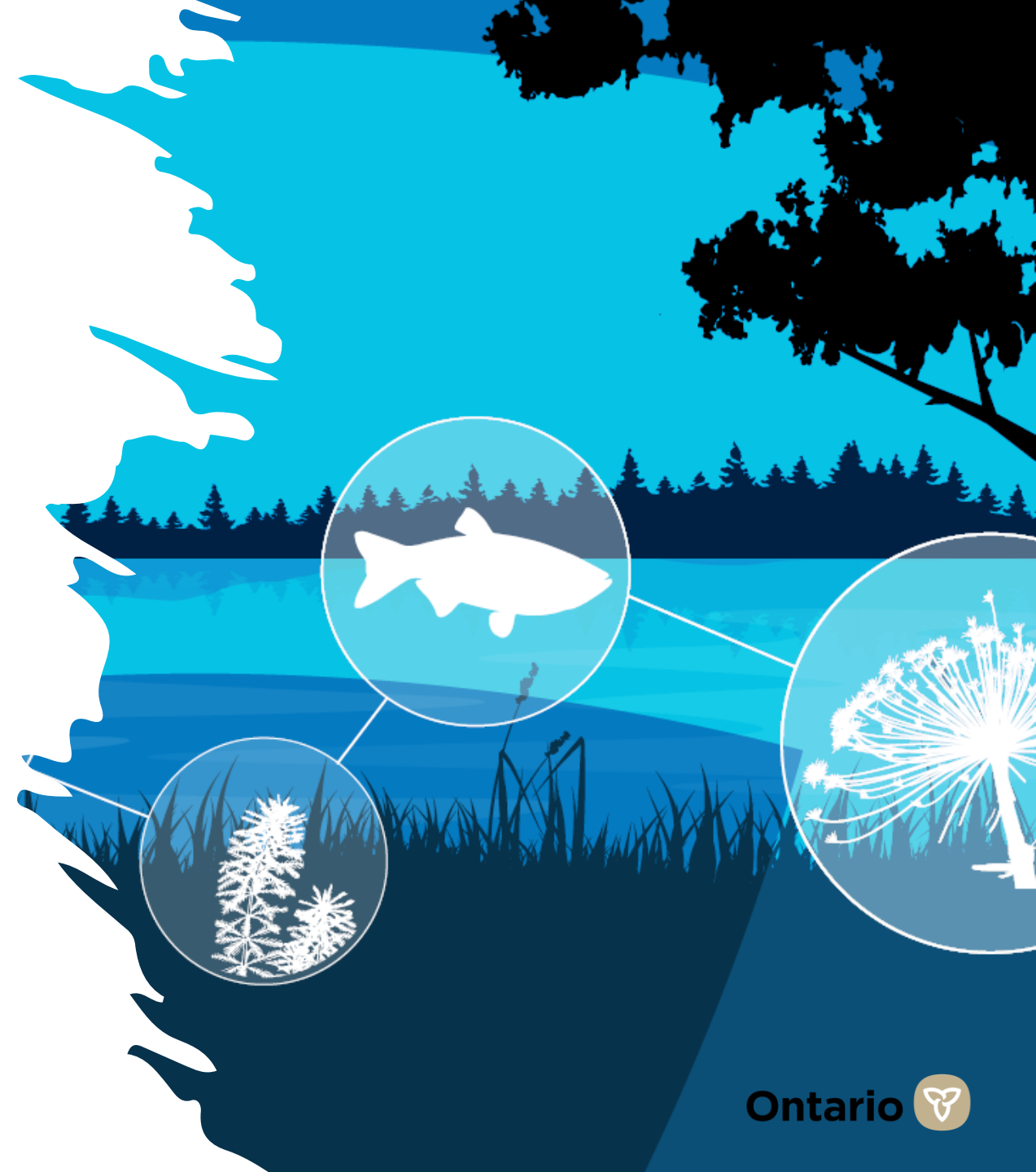
Ontario Invasive Species - Update

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Ministry of Natural Resources

Great Lakes Panel On Aquatic Nuisance Species

Spring Meeting - June 2024



MNRF Role in Invasive Species Management

An Invasive Alien Species Strategy for Canada

Environment Canada (Lead)

Canadian Food Inspection Agency (CFIA)

Fisheries and Oceans Canada (DFO)

Parks Canada

Agriculture and Agri-Food Canada (AAFC)

Natural Resources Canada's Canadian Forest Service (NRCAN-CFS)



Canada Border Services Agency (CBSA)

PROVINCIAL MINISTRIES

Ministry of Natural Resources (Lead)

Ministry of Agriculture, Food and Rural Affairs

Ministry of the Environment

Ministry of Transportation



KEY PARTNERS

Invading Species Awareness Program

Ontario Invasive Plant Council

Municipalities

Conservation Authorities

Universities

Biodiversity Education and Awareness Network

Other Partners



(A Canada and Ontario Partnership)



Prevent

Prevention

- Regulate high risk species under the *Invasive Species Act, 2015*
- Engage with industry on prevention efforts
- Raise awareness of Ontarians and key stakeholders



Detect

Detection and Response

- Monitoring and assessment programs (aquatic/ forest)
- Detection (e.g. environmental DNA, reporting tools)
- Response actions for new invaders



Respond

Manage and Adapt

- Build capacity to address invasive species threats
- Develop management tools



Manage and Adapt

Collaboration

- Coordinate with other ministries, jurisdictions, and organizations to leverage resources and capacity



Ontario's Invasive Species Act

Ontario's Invasive Species Act

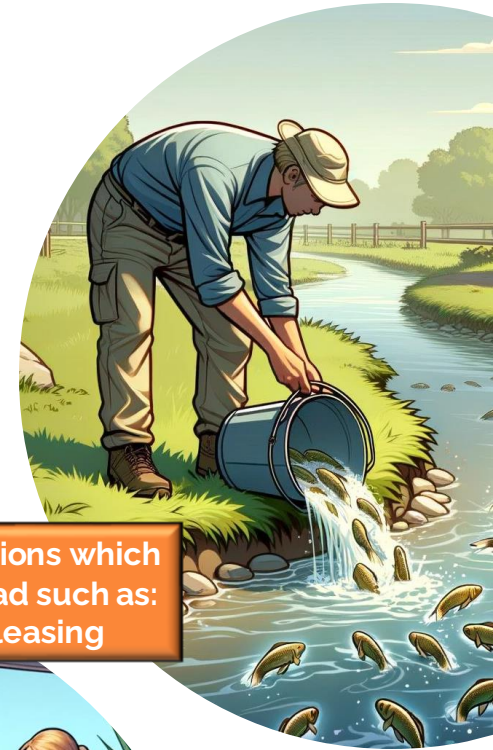
Regulatory framework to address invasive species that threaten Ontario's **natural environment**.

Tools for:

- Regulation of invasive species and carriers
- Survey, inspection and enforcement authorities
- Control and eradication

Focus on prevention: Stop the introduction and spread of invasive species.

Science-based: A risk assessment process is used to identify **high risk** species for regulatory consideration.



Regulations under the ISA prohibit actions which may lead to their introduction or spread such as: propagating, buying/selling, or releasing



Invasive Species Act- Species Classifications

Prohibited

No person shall:

- import
- possess
- transport
- deposit
- release
- propagate
- buy, sell, lease or trade

Full suite of prohibitions apply

Restricted

No person shall:








- bring into Provincial Parks and Conservation Reserves
- deposit or release*

Prohibitions applied through regulation

- No person shall:
- import
- possess
- propagate
- buy, sell, lease or trade






*Exemption for restricted plants for control, if reasonable precautions taken to prevent spread.

All species regulated under the Invasive Species Act




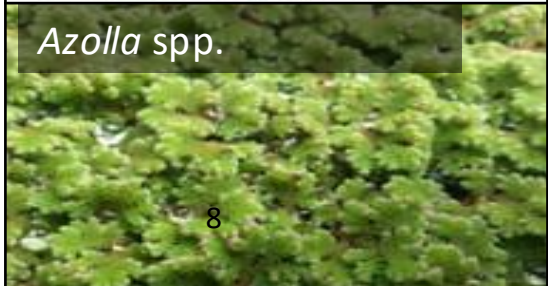
 Aquatic Plants		 Fish		 Aquatic Inverts	
Parrotfeather	Prohibited	Snakeheads	Prohibited	Killer shrimp	Prohibited
Brazilian elodea	Prohibited	*Red shiner	Prohibited	New Zealand mudsnail	Prohibited
*Salvinia spp.	Prohibited	*Ide	Prohibited	Golden mussel	Prohibited
Hydrilla	Prohibited	*Eastern and Western Mosquitofish	Prohibited	 Terrestrial Plants	
European water Chestnut	Prohibited	Wels catfish	Prohibited	Bohemian knotweed	Restricted
Water soldier	Prohibited	Stone moroko	Prohibited	Himalayan knotweed	Restricted
*Oxygen weed	Prohibited	Prussian carp	Prohibited	Giant knotweed	Restricted
*Azolla spp.	Restricted	Zander	Prohibited	*Tree-of-heaven	Restricted
Fanwort	Restricted	Tench	Prohibited	Japanese Knotweed	Restricted
Yellow Floating Heart	Restricted	Invasive carps including Bighead, Black, Grass, and Silver Carp	Prohibited	Dog strangling vines (2)	Restricted
European frog-bit	Restricted	 Crayfish		 Mammals	
*Flowering-rush	Restricted	*Procambarus spp. Including red swamp and marbled crayfish	Prohibited	*Nutria	Prohibited
Phragmites	Restricted	*Pacifastacus spp.	Prohibited	Pig	Restricted
*Floating primrose willow	Restricted	Common yabby	Prohibited	 Insect	
*Eurasian water-milfoil	Restricted			Mountain pine beetle	Prohibited

***BOLD denotes species regulated in 2024**




Invasive Animals Regulated Under the ISA as of Jan 1, 2024

Species	Information	Presence in ON	Reg classification
 <p>Ide</p>	<ul style="list-style-type: none"> • Native to Europe and Asia • Can grow up to 100 cm • Similar impacts to common carp • Sold in aquarium trade 	Not known in Ontario	Prohibited
 <p>E. and W. Mosquitofish</p>	<ul style="list-style-type: none"> • Native to N. and C. America • Introduced for mosquito control (ineffective) • Sold in aquarium and pond trade 	Not known in Ontario	Prohibited
 <p>Red Shiner</p>	<ul style="list-style-type: none"> • Native to the US (Mississippi River and Gulf of Mexico) • Pathways include aquarium and bait trade in U.S. 	Not known in Ontario	Prohibited <ul style="list-style-type: none"> • transition period for possession and transportation
 <p>Crayfish</p>	<ul style="list-style-type: none"> • Two genera: Procambarus and Pacifastacus • Regulation applied to genera due to difficulty with identification • Outcompete native crayfish species 	Recently detected at 2 sites in ON	Prohibited <ul style="list-style-type: none"> • transition period for possession and transportation • Exception for human consumption when prepared
 <p>Nutria</p>	<ul style="list-style-type: none"> • Native to S. America • Reservoirs for pathogenic and zoonotic diseases (e.g. rabies) • Grows up to 20 pounds/ 4-9kg 	Not known in the wild or farmed in Ontario	Prohibited

Invasive Plants Regulated Under the ISA as of Jan 1, 2024

Species	Information	Presence in ON	Reg classification
 <p>Oxygen Weed</p>	<ul style="list-style-type: none"> • Oxygen weed, native to Southern Africa • Pathways include aquarium and ornamental pond releases • Dense mats outcompete native plants and impede recreation/ navigation 	<p>Not known to occur in Ontario</p>	<p>Prohibited</p>
 <p>Salvinia spp.</p>	<ul style="list-style-type: none"> • Entire genus of water mosses (includes 12 species) • Native to C. and S. America, Euro-Siberia and S. Asia • Spread through boating, contaminated shipments of plants and fish in aquarium trade • Aggressive growth causes decline of native plants and impedes boating and swimming 	<p>Not known to occur in Ontario</p>	<p>Prohibited</p>
 <p>E. Water-milfoil</p>	<ul style="list-style-type: none"> • Eurasian water-milfoil, native to Europe, Asia and N. Africa • Easily spread via plant fragments attached to watercraft • Impacts waterfront property owners, boating and swimming 	<p>Occurs throughout southern Ontario</p>	<p>Restricted</p>
 <p>Azolla spp.</p>	<ul style="list-style-type: none"> • Genus, native to the Southern hemisphere (called water ferns) • Pathways include waterfowl, watercraft and equipment • Outcompetes native plants, detrimental to wild rice 	<p>Non-native members of genus, not known to occur in Ontario</p>	<p>Restricted</p>

Invasive Plants Regulated Under the ISA as of Jan 1, 2024

Species	Information	Presence in ON	Reg classification
 <p>Floating primrose-willow</p>	<ul style="list-style-type: none"> • Floating primrose-willow is native to S. America and S.E. US • Pathways include water gardens • Outcompetes native plants and impedes recreation 	<p>Occurrences in Lake Erie/Lake St. Clair basin</p>	<p>Restricted</p>
 <p>Flowering rush</p>	<ul style="list-style-type: none"> • Native to Africa, Asia and Eurasia • Pathways include water gardens, boating • Concern to waterfront property owners in N.W. Ontario (e.g., Lake of the Woods/ Winnipeg River) 	<p>Lake Erie/St. Clair, Lake Ontario, St. Lawrence River, N.W. Ontario</p>	<p>Restricted</p>
 <p>Tree of Heaven</p>	<ul style="list-style-type: none"> • Native to Asia • Introduced through horticulture, rarely planted today due to invasive tendencies • Impacts habitat, primary host-tree of the spotted lanternfly 	<p>S. Ontario, Ottawa and Toronto</p>	<p>Restricted</p>

Implementation of Regulations

1- Communication with industry and stakeholders

- Pre-regulation consultation with nursery, landscape and pet industries
- Post-regulation communications

2- Training and Education for Industry

Landscape Ontario-led initiatives

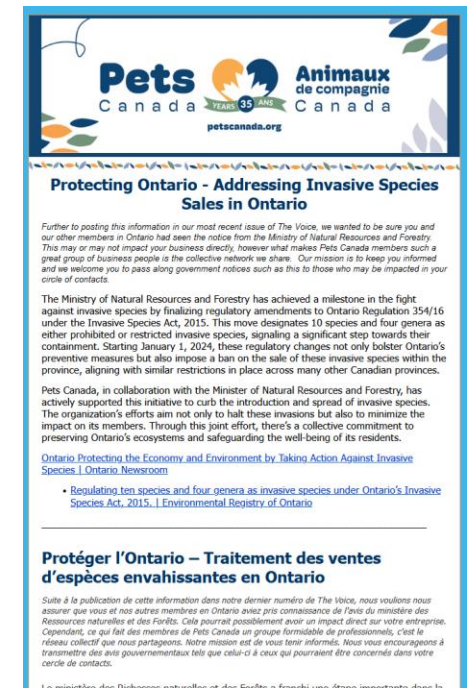
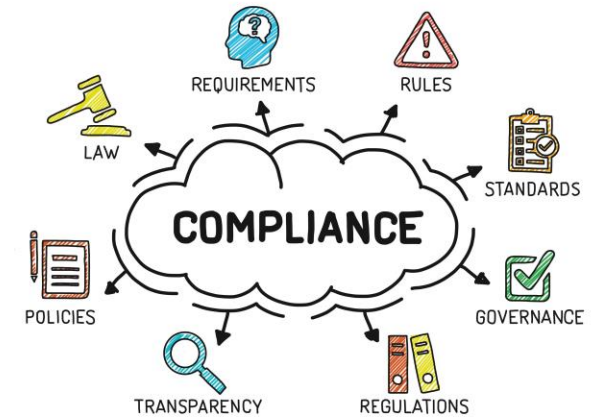
- Short course for Nursery Growers in 2023/24
- Promote Invasive Species' Code of Conduct
- Exploring label approaches and garden alternatives

3- Enforcement

- Training of officers on newly regulated species
- Prompt responses to detected offenses

4- Challenges

- Confirmation of identification for enforcement purposes
- Best practices for disposal of regulated species




Ontario Invasive Species Strategic Plan

Ontario Invasive Species Strategic Plan Renewal

Policy document to provide updated direction and commitments on invasive species management in the province

- Early engagement :
 - [Ontario Invasive Species Strategic Plan – Review of Progress](#)
 - [Policy proposal](#) on the Environmental Registry of Ontario
 - Closed on Jan 4th, 2024
- Considering input received based on responses to three main questions:
 - What is your vision for the future of invasive species prevention and management in the province?
 - What opportunities are there for the future of invasive species prevention and management in Ontario?
 - Do you think there are barriers related to invasive species prevention and management in Ontario? How could these barriers be addressed?



Ontario Invasive Species Strategic Plan: Review of Progress (2012–2022)

<https://www.ontario.ca/files/2023-11/mnrf-invasive-species-strategic-plan-en-2023-11-15.pdf>

Ontario Invasive Species Strategic Plan - Renewal

Government of Ontario

- Ministry of Natural Resources (lead)
- Ministry of Agriculture, Food and Rural Affairs
- Ministry of the Environment, Conservation and Parks
- Ministry of Transportation

Government of Canada

- Environment and Climate Change Canada
- Fisheries and Oceans Canada
- Canadian Food Inspection Agency
- Parks Canada
- **Indigenous Communities and Organizations**
- **Strategic Partners**
- **Key Stakeholders**
- **Public**





Next steps to renew the Ontario Invasive Species Strategic Plan



Considered input received through ERO proposal and other sources



Clarified roles and responsibilities with relevant government ministries and agencies



Developing draft of renewed Ontario Invasive Species Strategic Plan



Seek and consider input on draft (e.g., through upcoming ERO proposal)



Publish and share final document

New Funding for Invasive Species

NEWS RELEASE

Ontario Protecting Environment from Harmful Invasive Species

\$16 million investment will help communities better manage this growing threat

June 20, 2024

[Ministry of Natural Resources](#)

YORK REGION —The Ontario government is investing \$16 million over three years to protect the economy and environment from the threat of invasive species. The grant funding will help municipalities, conservation authorities and Indigenous communities help stop invasive species from establishing or spreading in the province.

"Invasive species are one of the main threats to biodiversity in Ontario and they also have a negative impact on our economy," said Graydon Smith, Minister of Natural Resources. "This investment is the latest step our government is taking to protect Ontario's critical industries as well as our natural environment to ensure we can continue to enjoy the natural beauty in our province."

The funding will be administered by the Invasive Species Centre and Nature Conservancy of Canada to support a comprehensive, Ontario-wide plan to fight the invasive plant Phragmites, and for the Invasive Species Action Fund to provide grants to municipalities, conservation authorities and Indigenous communities to manage other harmful invasive species.

"Invasive species pose a serious threat to our environment and can have devastating impacts on community staples such as agriculture businesses and our parks and rivers," said Dawn Gallagher, MPP, Newmarket-Aurora. "By funding organizations to manage and prevent the spread of these species, we are taking crucial steps to preserve the natural beauty and stability of Newmarket-Aurora for future generations." In 2019, the Invasive Species Centre estimated that the potential impacts of invasive species to agricultural, fisheries, forestry, health care, tourism and the recreation industry may be as high as \$3.6 billion per year in Ontario.

To further prevent the introduction and spread of invasive species in the province, Ontario recently [added 10 new non-native species and four genera \(groups of species\) under the Invasive Species Act, 2015](#) and is renewing the Ontario Invasive

- Ontario is investing \$16 Million over 3 years to address invasive species
- Build community capacity for detection, response and management actions
- Invasive Species Centre and Nature Conservancy of Canada – will lead administration of funds
 - Invasive Species Action Fund (\$5M)
 - Ontario Phragmites Action Program (\$11M)

Invasive Species Action Fund



- Administered by the Invasive Species Centre
- Focus on ISA regulated species, to support “on the ground” actions in Ontario communities
- 3 tiers of projects:
 - Microgrants: \$2,500
 - Accelerated Impact: up to \$10,000
 - Transformative Action: up to \$50,000
- Recipients: Municipalities, conservation authorities, Indigenous communities, and NGOs.
- Total amount invested FY 24/25: \$1M



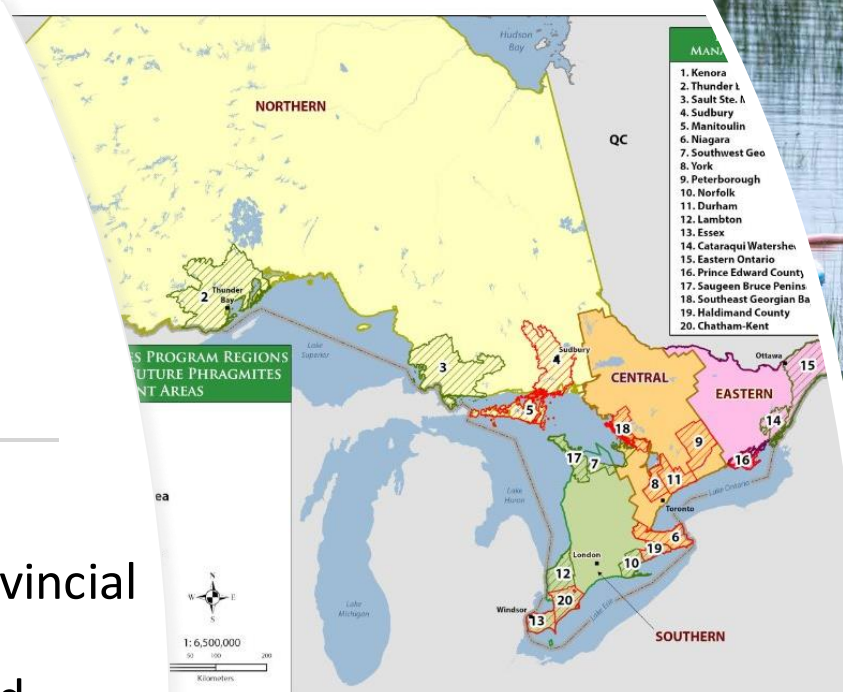
Ontario Phragmites Action Program

Program overview:

- Build local initiatives into a coordinated provincial Phragmites program
- Administered by Invasive Species Centre and Nature Conservancy of Canada with guidance from MNR

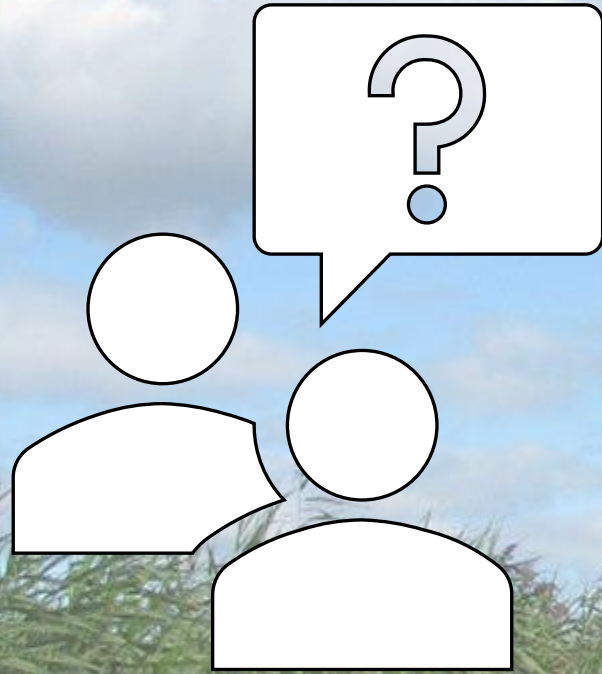
Program pillars:

- Phragmites Management Areas - Working Groups
- Invasive Phragmites Control Fund
- Support Services
 - Genetic testing to identify native Phragmites
 - GIS/Mapping extension services
 - Biological control agent access
 - Supporting Indigenous-led action
- \$2M invested in 2024/25



Ontario
Phragmites
Action





Questions?

Thank you

For more information, please contact
Francine MacDonald

Francine.macdonald@ontario.ca

Procambarus spp. (freshwater crayfish genus)

- Includes more than 160 species, predominantly native to the southern United States and northern Mexico.
- Adaptable, can thrive in various aquatic environments.

Pathways:

- Aquarium use
- Food fish
- Biological supply warehouses
- Bait (secondary for established species)

All species in genus are **Prohibited** under the ISA

Notable Species in this genus:

Marbled Crayfish (*Procambarus virginalis*)* Self-cloning!

- Medium-sized, 3-10 cm in length.
- Body: dark brown, tan, brown-green or sometimes blue, always with marble patterning.
- Juveniles develop spotted pigmentation, then marble patterning in adolescence.

Red Swamp Crayfish (*Procambarus clarkii*)*

- Adults are 5.5-12 cm long. Body is dark red, and claws and head are elongated.
- Head, claws and mid-body segment have small red bumps.

White River Crayfish (*Procambarus acutus*)

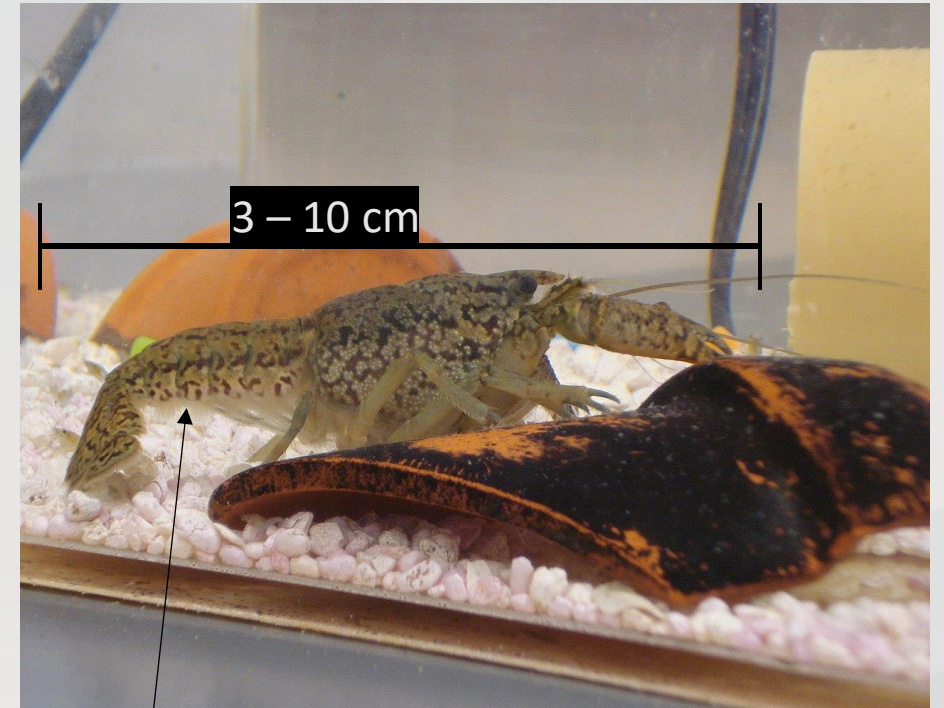
- Large crayfish, typically about 7-13 cm in length
- Adult is brown to grey with wide black stripe on tail.
- Juveniles are sandy-white, with black spots on the head, body, and tail.
- Has asymmetrical claws, with the right one typically larger.

*added to ISA in 2022

Red Swamp Crayfish



Marbled Crayfish



White River Crayfish



Pacifastacus spp. (freshwater crayfish genus)

- Much smaller genus than *Procambarus* with ~ 6 species (2 of which are extinct).

Pathways:

- Aquarium use
- Food fish
- Biological supply warehouses

All species in this genus are regulated as **Prohibited Invasive Species** under the ISA

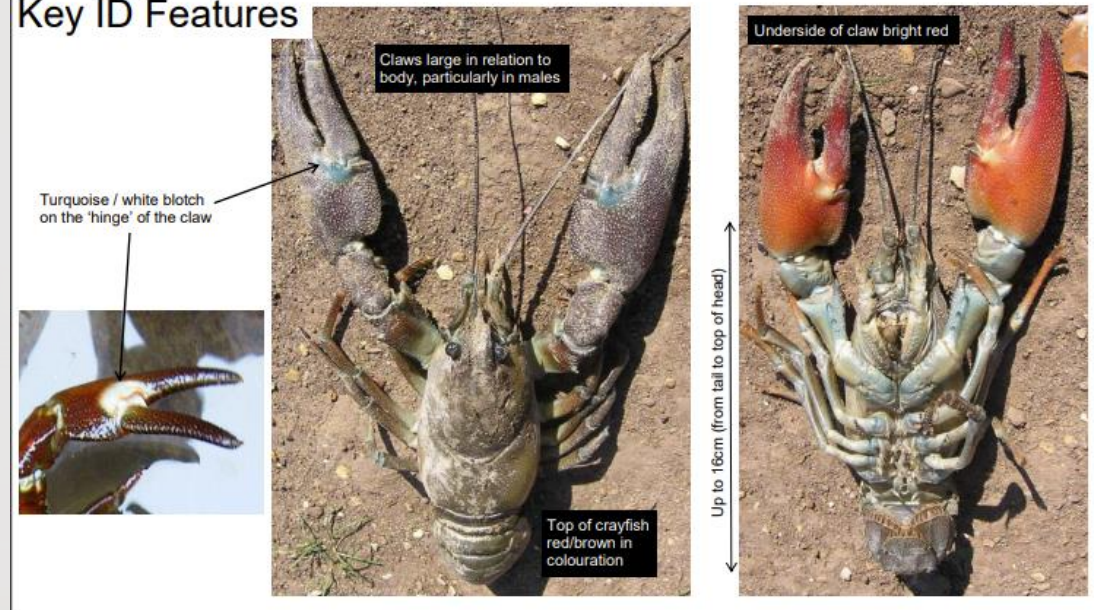
Signal Crayfish (*Pacifastacus leniusculus*)

Uniform brownish or blue-tinged coloration as adults with

- White/turquoise band at the joint of the claws.
- Carapace surface is smooth



Key ID Features



Red Shiner

- Small freshwater minnow species native to the United States.
- Highly adaptable, can thrive in harsh environments such as waters with low flow, high murkiness, and poor water quality.
- Reproduces rapidly and can aggressively take over habitat from native species.
- Pathways:
 - Aquarium trade under the name rainbow dace
 - Has been introduced to new areas intentionally as forage fish or by bait bucket releases.

Regulated as a **Prohibited Invasive Species** under the ISA



Eastern and Western Mosquitofish

- Small slender fish - do not lay eggs but give birth to live fish.
- Considered one of the world's worst invasive species by the Invasive Species Specialist Group of the IUCN Species Survival Commission.

Pathways

- Outside of Ontario, once intentionally introduced for mosquito control in many parts of the world.
- Aquarium or backyard pond use.

Regulated as **Prohibited Invasive Species** under the ISA



Oxygen weed (aquatic plant)

- Also known as African elodea, is a perennial aquatic invasive plant, can easily spread via plant fragments.
- Prefers clear, cool temperate waters with direct sunlight where it can grow to depths of 6.6 m.
- Can survive in a range of nutrient levels, but abundance declines with low water clarity in nutrient-rich waters.

Pathways:

- Aquarium
- Ornamental water gardens (backyard ponds).

Regulated as **Prohibited Invasive Species**
under the ISA



Salvinia spp. (aquatic plant genus)

- *Salvinia* spp., also known as watermoss, is a genus of aquatic invasive ferns.
- They inhabit freshwater lakes, rivers, streams and ditches and prefer slow-moving or stagnant water
- They are free-floating and thrive in nutrient-rich waters.

Pathways

- Aquarium
- Ornamental water gardens (backyard ponds).

Regulated as **Prohibited Invasive Species** under the ISA

Notable Species:

- ***Salvinia molesta*** giant salvinia
- ***Salvinia minima*** water spangles or floating fern
- ***Salvinia natans***



Azolla spp. (Waterferns)

- The *Azolla* genus (has approximately 7 species) of free-floating water ferns, is also known as mosquito ferns.
- They are found in freshwater habitats, often forming a dense green layer on the water's surface.

Pathways

- Backyard ponds and aquaria
- Bio-fertilizer

All species of *Azolla* are regulated as **Restricted invasive species** under the ISA.





Eurasian water-milfoil (aquatic plant)

- Submerged perennial aquatic invasive plant
- Tolerates a range of environmental conditions; thrives in still or slow-moving water
- Likely first introduced via ballast water of Trans-Atlantic shipping vessels to the northeastern United States between late 1800s - 1940.
- Can reproduce from small plant fragments; easily spread through various pathways including contaminated watercraft and equipment, connected waterbodies, fishing gear, and improper disposal of aquaria or water garden contents.

Regulated as a **Restricted invasive species** under the ISA

Floating Primrose-willow (aquatic plant)

- Also known as creeping primrose-willow; is an herbaceous perennial aquatic plant
- Thrives in shallow waters of wetlands, ponds, and slow-moving streams where it forms dense mats on the water's surface, impeding water flow and crowding out native species.

Pathways:

- Backyard ponds (ornamental water gardens)
- Aquaria
 - Once established, it can easily spread via vegetative reproduction.
 - Pieces of stems can spread by flowing water to connected waterbodies, wildlife or through human activities including the movement of boats and equipment or use in water gardens.

Regulated as a **Restricted invasive species** under the ISA.





Tree-of-heaven

- Tall deciduous tree native to China and Taiwan.
- Known for rapid growth and hardiness, it's often found in urban areas, along roadsides, or in disturbed soils.
- Introduced to North America in the late 1700s as an ornamental plant, and later used for urban landscaping. Its prolific seeding and root suckering has allowed it to spread aggressively and outcompete native vegetation.
- It is also a primary host for the spotted lanternfly, an invasive pest that's harmful to agriculture and forestry

Pathways:

- Ornamental planting
- Incidental and natural movement

Regulated as a **Restricted invasive species** under the ISA.

Flowering-rush (aquatic plant)



- Perennial aquatic plant native to Africa, Europe and Asia.
- Grows in shallow waters up to 3 m in depth of lakes, rivers, and wetlands and was brought to North America intentionally as an ornamental garden plant.
- It is suspected that ballast waters from trans-Atlantic ships also played a role in its initial introduction.

Pathways:

- Rapid spread along shorelines and in shallow areas of waterbodies, often through improperly discarded plant material, movement of boats, or flooding events.
- Natural spread via seed or rhizomes (underground stems)
- Flowering rush is regulated as a **Restricted invasive species** under the ISA.

Ide



- Also known as orfe, are a full-bodied freshwater fish in the *Cyprinidae* (minnows and carps) family.
- Typically found in slow-moving clear freshwater with vegetation including lakes, rivers, and ponds; can tolerate a broad range of temperature and salinity conditions.
- Ability to survive in many environmental conditions means they can easily establish in new places and increases the risk of their invasion.

Pathways

- Ornamental use for ponds or aquaria
- Food fish

Regulated as a **Prohibited Invasive Species** under the ISA.



Nutria

- Nutria (*Myocastor coypus*), also known as coypu, are large semi-aquatic rodents originally from South America.
- Brought to North America and Europe for fur farming in the early 20th century.
- Have become invasive in many regions due to escapes and releases from fur farms.
- Nutria have webbed hind feet and distinctive orange incisors; are nocturnal but will feed during day if food is scarce.

Pathways

- Fur Farming

Regulated as **Prohibited Invasive Species** under the ISA.

Eurasian wild boar update

- In 2022, Ontario regulated Pigs as a **Restricted invasive species** under the ISA.
- The two-year period (from Jan 1, 2022, to Dec 31, 2023) to phase out live Eurasian wild boar and their hybrids is over.
- As of January 1, 2024, it is illegal to:
 - import,
 - possess
 - transport,
 - propagate,
 - lease, trade, buy or sell **live Eurasian wild boar and their hybrids**

