

**DRAFT**

**Prevention and Response Plan for  
European Water Chestnut (*Trapa natans*)  
in Ontario**

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**Prepared by the  
Ontario Ministry of Natural Resources and Forestry**

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This Prevention and Response Plan is prepared under subsection 13(1) of the *Invasive Species Act, 2015*.

## Purpose and Rationale

European water chestnut (*Trapa natans*) is classified as a prohibited invasive species in Ontario Regulation 354/16 made under the *Invasive Species Act, 2015*, and as such, the prohibitions set out in section 7 of the Act apply to European water chestnut. These prohibited activities include bringing a member of the species into Ontario, as well as depositing, releasing, possessing, transporting, buying and selling, and breeding/growing members of the species. This prevention and response plan for European water chestnut authorizes certain activities otherwise prohibited by the Act. Individuals acting in accordance with the plan when carrying out activities to monitor, manage, control or eradicate European water chestnut, or to prevent its further spread may proceed without the need for individual authorizations under the *Invasive Species Act, 2015*.

This prevention and response plan identifies the persons or groups of persons who are authorized to implement the plan, sets out the types of activities for which the plan applies, and describes the conditions under which these persons will be permitted to possess, transport, and deposit European water chestnut in Ontario.

## Background



Figure 1: European water chestnut (*Trapa natans*). (Photo credit: F. Macdonald)

European water chestnut is an invasive annual aquatic plant that is native to warm-temperate regions of Eurasia and Africa. The plant looks different from any other plant species in Ontario; its glossy green floating leaves are fan-shaped with sharply toothed edges and form floating rosettes. European water

chestnut typically grows in calm, shallow waters (2 metres or less) but can grow in depths of up to 5 metres.

European water chestnut forms dense mats of floating and submerged vegetation that aggressively outcompetes native vegetation, and can impede activities such as boating, swimming and angling. In addition, its hard nuts (seeds) with sharp, barbed spines can wash up on shore and cause injury when stepped upon. It can also interfere with infrastructure, including water intakes, navigation canals and locks, and hydroelectric facilities - where periodic removal of entrained water soldier plants or plant parts from trash racks or other in-water structures may be required as part of ongoing facility maintenance.

European water chestnut has the potential to invade lake and river ecosystems throughout Ontario and the Great Lakes basin ecosystem causing significant harm to biodiversity, and affecting recreation, tourism and navigation in aquatic systems.

European water chestnut was first reported in Ontario in 2005, in a section of the Ottawa River within Voyageur Provincial Park. More recently, it has been found in the Rideau River upstream of Black's Rapids, the Greater Cataraqui River in Kingston, and Lake Ontario at Wolfe Island and Oshawa. The likely source of European water chestnut introductions to Ontario is either the result of improper release of water garden plants (where it was used as an ornamental plant) or through the transport of boats contaminated with European water chestnut from infested areas outside of Ontario.

The regulation of European water chestnut in 2016 under the Invasive Species Act has helped to address these key pathways for its introduction. For example, it is now illegal to propagate European water chestnut and to transport it overland on watercraft.

The Ministry of Natural Resources and Forestry (MNRF), Ministry of Environment, Conservation and Parks, and partners such as Ducks Unlimited Canada have been monitoring European water chestnut and have undertaken measures to control populations and prevent spread to new locations.

Volunteer groups, municipalities, shoreline residents, and other members of the public also play an important role monitoring, controlling and preventing the further introduction and spread of this invasive species in Ontario waters. Similarly, operators and staff of infrastructure facilities in areas of European water chestnut infestations can also prevent spread by undertaking precautionary measures to avoid incidental dispersal or downstream transport of plants or plant parts during operation or facility maintenance.

Sightings of European water chestnut in new locations should be reported to the Invading Species Hotline at 1-800-563-7711, or [www.eddmaps.org/ontario](http://www.eddmaps.org/ontario).



Figure 2: European water chestnut infestation at Voyageur Provincial Park in 2009. (Photo credit: F. MacDonald)

## Legislative Context

Under the *Invasive Species Act, 2015*, the Minister may cause a prevention and response plan to be prepared with respect to an invasive species. A prevention and response plan may include measures, practices or courses of action to deal with invasive species and may authorize persons identified in the plan to carry out activities to assist in the implementation of the plan.

Pursuant to subsection 13(4) of the Act this prevention and response plan authorizes the persons identified in this plan to carry out the measures and practices set out under this plan. Under subsection 9(3) of the Act, the persons identified in this plan will be permitted to possess, transport, deposit and release European water chestnut in the course of implementing the activities specified in this plan and in accordance with the conditions and provisions of this plan.

Note: As of the date of preparation of this plan, there is also an exception in Ontario Regulation 354/16 for the incidental possession and transport of European water chestnut plants that attach to a boat as a result of operating it in infested waters. This exception is subject to conditions which include requirements to take reasonable precautions to avoid moving plants to other areas of the body of

water, to remove any European water chestnut from the boat before transporting the boat overland and dispose of European water chestnut in a manner that ensures the species does not re-enter the body of water or enter any other body of water. Please refer to the regulation for the complete requirements and for any updates. This plan does not affect activities taken pursuant to the conditions of the regulation.

If you are considering an activity related to European water chestnut that is outside of the scope of this plan, authorization under the *Invasive Species Act, 2015* may be needed if the activity is likely to involve actions that are prohibited under the Act (e.g. possession or transport of this plant). For information about obtaining an authorization under the Invasive Species Act, 2015 such as research or education, contact the Ministry of Natural Resources and Forestry's Natural Resources Information and Support Centre at 1-800-667-1940, or via [email](#).

## Scope of the Plan

This prevention and response plan:

- (a) applies only to European water chestnut (*Trapa natans*); and
- (b) applies to all areas in Ontario where the species is present

For greater certainty, any reference to European water chestnut in this plan includes any part of European water chestnut including leaves, stems, flowers and seeds.

## Authorized Persons

The following persons are authorized to carry out the following measures and practices to help control, eradicate and prevent the spread of European water chestnut in Ontario:

- (a) Any person engaged in European water chestnut prevention, monitoring, control or removal activities of European water chestnut by mechanical means or by hand under the control or supervision of a not-for-profit corporation, municipality or conservation authority.
- (b) Shoreline residents or waterfront property owners engaged in the control and removal of European water chestnut by mechanical means or by hand, including agents acting on their behalf, if the residence or waterfront property is:
  - i. adjacent to the shore lands (lands covered or seasonally inundated by the water of a lake, river, stream or pond) where the control and removal of European water chestnut is to be carried out, or
  - ii. separated from the shore lands where the control and removal of European water chestnut is to be carried out only by an unopened road allowance or a strip of public.

(c) Individuals engaged in control and removal of European water chestnut from an offline private pond or water garden, including agents acting on their behalf. An offline pond is separated from any other body of water and has no inlets or outlets to a stream channel.

(d) Owners, operators and employees of hydroelectric facilities or other in-water structures engaged in activities to control or manage European water chestnut as part of the facility maintenance or construction activities.

## **Authorized Activities**

Authorized persons are permitted to undertake the following activities for the purpose of carrying out the measures and practices set out above, provided all the conditions set out in this plan are met:

(a) Possession and transportation of European water chestnut in the course of prevention, monitoring, control, removal, maintenance and construction activities and for the purpose of disposal or destruction of the plant material.

(b) Deposit and release of European water chestnut away from any body of water as required to dispose of plants or plant parts that were removed from a body of water, by mechanical means or by hand.

## **Conditions**

The following conditions apply to all persons carrying out activities authorized under this prevention and response plan:

1. No person acting under the authority of this prevention and response plan shall remove European water chestnut by means other than by mechanical means (e.g. rake, cutter bar) or by hand-pulling.

Note: The use of herbicides to control European water chestnut is not subject to this condition as it does not involve the removal of European water chestnut from the water and is governed by other provincial legislation.

2. Reasonable precautions must be taken to ensure that European water chestnut is not dislodged or otherwise released downstream or to other waters during the course of prevention, monitoring, control, or removal activities, in-water structure or facility maintenance or construction activities.

3. All equipment and/or water craft used in infested waters during the course of European water chestnut prevention, monitoring, control or removal activities must be inspected and cleaned of any European water chestnut prior to movement overland.

4. If transported overland, any European water chestnut must be contained or secured in a manner that ensures that no plants or plant parts fall out during transport.

5. European water chestnut must be disposed of or destroyed in a manner that ensures that no part of the plant will re-enter the body of water or enter into any other body of water.

## TIPS FOR CONTROLLING EUROPEAN WATER CHESTNUT

### 1) Prevent seed production

- European water chestnut reproduces solely by seed (July to September).
- Stop seed production with manual, mechanical or chemical controls before seeds begin to drop in mid-August

### 2) Start early and maintain effort

- Begin control early in the season (June) to stop new plants from developing seeds.
- Maintain control over several years to address remnant seeds in the sediment (can be viable for up to 12 + years).

### 3) Prevent spread during control

- Water current, wave and wind action can dislodge plants and seeds and carry them to new areas.
- Take precautions to prevent the release of plants downstream during control

### 4) Clean equipment and watercraft

- All equipment and or watercraft used in infested waters during control must be inspected and cleaned prior to movement overland.

### 5) Dispose of European water chestnut carefully

- If transporting European water chestnut overland for disposal, it must be secured to ensure that no plants or plant parts are lost during transport.

### 6) Beware of the seeds

- The seeds have sharp spines that can cut the skin. Use proper safety gear (e.g., gloves) when handling.



## **Best Management Practices for Authorized Persons Undertaking the Control of European Water Chestnut**

The following information provides a summary of control techniques for European water chestnut. It is provided for information purposes only, and does not provide legal authority to engage in activities that may otherwise require authorization under other applicable laws.

**Do not carry out work during fish spawning season and other critical fish life stages, as set out in Ontario's [In-water Work Timing Window Guidelines](#)**

### **Hand pulling**

Individual plants and small populations of European water chestnut can be controlled by pulling by hand or with tools such as a garden rake. This can be performed by wading or from canoes, kayaks, and small boats. When pulling a European water chestnut plant, reach down as far as possible to get the whole stem and root. This will prevent the development of small rosettes that are growing on the same plant but have not yet reached the water's surface.

Manual removal should occur early in the growing season because it is easier to pull plants and roots while they are small. As the plant matures seeds may begin to drop from the plants. Plants with mature seeds (nutlets) should be pulled gently and flipped upside down while retrieving them, to prevent nutlets from falling into the water.

### **Mechanical control**

Larger infestations can be controlled using mechanical devices that cut the rosettes from the stem of the plant or pulls the plant and its roots from the water. Some harvesting equipment can cut and transport simultaneously; however, these activities can be conducted separately. For example, European water chestnut at Voyageur Provincial Park on the Ottawa River is controlled with two modified boats, one to cut flowering/fruitlet rosettes of the plants, and the other to collect and transport them for disposal.

Mechanical controls must be repeated several times per growing season to ensure no new seeds are produced on plants that regrow. Shallow waters, or areas with many obstacles such as stumps can impede control operations.

Precautionary measures are also necessary to contain and collect all plant parts to prevent spread within the waterbody. Floating artificial barriers may assist with containing cut plants until they can be collected.

Mechanical controls have been used in several large-scale water chestnut control programs in Canada and the United States including those in Voyageur Provincial Park. These programs have had success in reducing the density of plants, some effectively to eradication, particularly after several consecutive years of control.

### **Aquatic Herbicides**

Within Canada, diquat (trade name Reward® Aquatic Herbicide) is the only herbicide currently registered by Health Canada's Pest Management Regulatory Agency (PMRA) for control of European water chestnut in aquatic systems.

Diquat can provide control of dense infestations of European water chestnut particularly in areas with obstacles that prevent access by mechanical harvesters. However, because it is a non-selective contact herbicide, its use should be targeted to large dense infestations of European water chestnut to reduce impacts to non-target plants. To be most effective, it should be applied early to mid-summer when European water chestnut is actively growing and before seed production. Follow up treatments within the season may be necessary to address regrowth and to prevent seed production.

Note: The efficacy of diquat can be affected by temperature, turbidity, and water flow. Follow the product label for directions on application rate and limitations of use.

## **Updates to or Cancellation of the Prevention and Response Plan**

Under the *Invasive Species Act, 2015*, the Minister may cause a prevention and response plan to be updated from time to time as he or she considers appropriate. The Minister will publish and give notice of any updates to the prevention and response plan as appropriate.

The Minister may also cancel a prevention and response plan by publishing notice of the cancellation on a website maintained by the government of Ontario and by giving notice of the cancellation of the plan in any other manner that he or she considers appropriate.

## **Other Considerations**

Permits, approvals or authorizations may be required from other agencies and/or levels of government before an activity related to the control or removal of European water chestnut can be initiated. It is the responsibility of the individual to ensure that all other permissions, approvals and authorizations are acquired prior to proceeding with any European water chestnut control or removal activities. For example, the presence of a species at risk may require additional authorizations.

Other requirements (such as requirements for permits) that could apply to European water chestnut control activities will depend on the location in Ontario, as well as the timing and type of activity being undertaken. While not an exhaustive list of permits or rules that may apply to European water chestnut control or removal activities, some examples for consideration include:

## **Aquatic Plant Removal in Provincial Crown Land and Shore Lands**

In Ontario, the beds of most water bodies are provincial Crown land. This does not include federal lands and water bodies (e.g., the Trent-Severn and Rideau Canal waterways), and certain isolated, or offline waterbodies on private lands. The Ministry of Natural Resources and Forestry (MNRF) manages Crown and shore lands under the Public Lands Act (PLA). According to the Regulations under the Act, a person can remove invasive aquatic plants, including European water chestnut, by mechanical means or by hand without a permit if they follow all of the [rules for removing aquatic invasive plants](#) prescribed by

the Regulations (O. Reg. 239/13, s. 9 (1)). These rules include following the [In-water Work Timing Window Guidelines](#) established to protect fish from impacts during spawning migrations and other critical life stages. If you cannot meet all the prescribed rules or want to conduct control or removal activities outside of the timing window guidelines, you will need a work permit to remove European water chestnut. Information on how and when you need a work permit for projects on Crown land and shore lands as well as permit applications can be obtained [online](#) at or by contacting your local [MNRF office](#).

Please also refer to e-laws regularly, to check for any updates to the requirements under the PLA.

## Herbicides

If you plan to use herbicides to control European water chestnut or other aquatic plants, approval is required from the Ontario Ministry of Conservation, Environment and Parks (MECP). Information on requirements for aquatic herbicide applications can be obtained by contacting a MECP [ministry regional office](#) to discuss plans and what pesticide permits may be required.

## Aquatic Plant Removal in the Rideau Canal, Trent Severn Waterway or other Federal Waters

The Rideau Canal and Trent-Severn Waterway are National Historic Sites under the federal authority of the Parks Canada Agency. As a result, approval is required from the Parks Canada Agency for European water chestnut and any other plant removal activity in these waters. Permit applications and guidelines for aquatic plant removal in these waters can be obtained [online](#).

Federal waters that are not regulated by Parks Canada are generally under the authority of Fisheries and Oceans Canada. Information about requirements related to projects near water can be obtained [online](#).

## Resources to Support the Implementation of the Prevention and Response Plan

For more information about the [Invasive Species Act, 2015](#) and [regulations](#) pertaining to European water chestnut and other regulated invasive species visit the invasive species website at <https://www.ontario.ca/page/invasive-species-ontario>.

For more information about how to identify European water chestnut, report new occurrences, and prevent its further spread in Ontario, see the European water chestnut fact sheet on the Invasive Species Awareness Program website at <http://www.invadingspecies.com>.