



Georgina Island First Nation 2016 Invasive Species Management Activities - Final Report

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Prepared for: Georgina Island First Nation



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1.0 INTRODUCTION

In Ontario there are currently over 440 invasive plants identified with significant environmental and economic impacts felt throughout the forestry, agricultural, and tourism industries. Georgina Island currently contains at least five (5) of these invasive plant species, with suitable habitat for the establishment of many more. Invasive invertebrates have also been noted in the surrounding area, including emerald ash borer, a species shown to decimate ash tree populations. Alien species are defined as "species of plants, animals (including fish), and micro-organisms introduced by human action outside of their natural past or present distribution"; invasive alien species are defined as "those harmful alien species whose introduction or spread threatens the environment, the economy, or society, including human health" (Environment Canada, 2004).

In 2016, Cambium Aboriginal (Cambium) partnered with Georgina Island First Nation (GIFN) to undertake targeted invasive species management actions intended to address plants that currently pose a threat to the lands and ecosystems of GIFN. The area of interest for GIFN included Georgina, Fox, and Snake Islands, as shown on Figure 1. Components of the 2016 work plan sought to utilize the most suitable avenues for improving invasive species awareness and management on the island, while meeting the needs and objectives of the community.

The first major project activity implemented in 2016 involved community outreach and education. Community education sessions combined with on the ground training were provided on Georgina Island, as outlined in Section 2.0. Following the invasive species educational efforts, work was undertaken to identify and assess areas of the island with established populations of invasive species. Efforts completed during a road survey and through targeted spot checks are summarized in Section 3.0. Removal efforts were also instituted on the island in 2016, which intended to both address areas of identified infestation and establish demonstration plots for future educational use. Information on activities completed by GIFN field staff and youth participants is presented in Section 4.0. Photos of the above noted activities are available in Appendix A.

Information collected through the 2016 project activities will be useful in developing a comprehensive Invasive Species Management Plan for Georgina Island. This has been identified as a Future Action and would require the identification of the significant issues to be addressed and development of actions to be continued as time and resources allow. Further discussion of Future Actions is available in Section 5.0.

The Georgina Island Invasive Species Management Activities of 2016 were designed to complement and incorporate the components of the *Invasive Alien Species Strategy for Canada* and the *Ontario Invasive Species Strategic Plan*. Recommendations were in compliance with the proposed *Invasive Species Act* (2014), the *Lake Simcoe Protection Act* (2008), the provincial *Endangered Species Act* (ESA; 2007), and the federal *Species at Risk Act* (SARA; 2002).

2.0 PUBLIC OUTREACH, MATERIALS, AND TRAINING

A key component of the 2016 work around invasive species on Georgina Island was fostering involvement from the community in the activities. Increasing general awareness of the issue for members, seasonal residents, visitors, and employees was considered to be an important first step in undertaking any monitoring, removal, or planning phases for the community as a whole. This was completed through the delivery of one (1) education session with GIFN staff and residents, field identification training with staff, one (1) youth education workshop that included hands-on participation. These activities included the development and distribution of appropriate materials for the target audience (available in Appendix B).

2.1 SPECIES EDUCATION SESSIONS

On July 3, 2016 Cambium and GIFN facilitated an educational workshop at the Georgina Island Community Centre to provide information and resources to GIFN staff and members of the public. A promotional poster was created and distributed to encourage participation from a wide audience (Appendix B). A detailed presentation was given that discussed the invasive species known to occur on the island, and those most likely to become established in the near future. Details were provided on the biology, distribution, identification, and impacts of each species, with particular reference to the areas of Georgina Island most likely to be affected. This session also allowed for interaction with the participants where community knowledge on the current distribution of species and potential pathways of introduction were shared.

At this initial education session a brief training was provided on the use and application of the Early Detection and Distribution Mapping System (EDDMapS). EDDMapS allows for any individual to provide sightings data of invasive species through a free online program and mobile App. This training was intended to enable participants to fully utilize the EDDMapS interface for tracking invasive species on the island and encourage use by those who are most likely to encounter new infestations. Additional resources were provided including printed identification guides, factsheets on key species, and information on control methods.

Following the in-class portion of the education session, GIFN field staff were provided with field training in the identification and documentation of invasive species. Cambium staff travelled around the main roadways of Georgina Island with staff members and identified invasive species populations. Areas with known infestations were visited to confirm species identification and GIFN staff were provided with identification tips, information on the growth and spread patterns to be expected, and a general overview of appropriate control measures that could be implemented for each location. Particular attention was paid to native species that could be confused with local invasives to ensure participants could distinguish between them. Further information on these invasive species survey activities can be found in Section 3.2.



On August 17, 2016 a second educational session was held for a youth audience slated to participate in invasive species removal efforts. Attendees consisted of students in the Georgina Island summer day camp, staff from the program, and a crew of Ontario Stewardship Rangers. A brief overview of the impacts of invasive species was provided and age-appropriate species identification information was included. This training session was intended to engage youth audiences in the topic of invasive species on Georgina Island and provide an opportunity for a hands-on learning experience. Information on the techniques used to manage and control invasive species was also provided, with an emphasis on European common reed and dog strangling vine as the intended targets of the removal day activities. Further information on the removal activities that followed the educational session is available in Section 4.1.

2.2 MATERIALS FOR DISTRIBUTION

A general information pamphlet was created for distribution to members, seasonal residents, and visitors of Georgina Island. This document is intended to provide a broad overview on the issues surrounding invasive species and general information on the species most likely to be encountered or introduced. Recommendations for reporting sightings are included and tips for preventing the spread of species through common pathways. This pamphlet will be made available for distribution at community locations and on the island ferry beginning in 2017. This pamphlet is available in Appendix B. Additional materials could be developed in the future to cater to specific audiences and address the most pressing invasive species issues on the island, discussed further in Section 5.0.

3.0 SURVEY AND DETECTION

Tracking the location, extent, and spread of invasive species is a key component of managing and controlling infestations on the landscape. The prioritization of areas for prevention or removal activities relies on sound information about the current threats posed. This information also allows for the targeted release of outreach information geared towards the audience or region most affected by the identified invasive species.

Invasive species detection also allows for timely reactions to new invasions as they arise. A regular monitoring program with a system in place for tracking change can help identify the pathway through which the species are spreading and allow for immediate action to be taken to help eliminate this introduction pathway. An assortment of data on invasive species currently exists for Georgina Island, and efforts were made in 2016 to gather additional data that establishes baseline conditions for any future monitoring.

3.1 EXISTING INFORMATION

Data was collected on the location and extent of invasive species on Georgina Island through forest inventories completed in 2015. This survey provided data on the distribution of European buckthorn and dog strangling vine on the island with information on the density of infestation at each mapped location. This information is available in Appendix C. The most significant areas of infestation were found in the northeast area of Georgina Island and down the east side, in close proximity to the main road. The infestations of dog strangling vine were recorded as being located primarily in the abandoned agricultural fields to the north. The European buckhorn is mapped within areas of forest and scrubland with a higher density of trees. It is important to note that the majority of this data comes from a forest survey and therefore detection efforts were primarily restricted to large forest tracks.

Additional data on the location and spread of invasive species has been collected as part of a larger field sampling program for other projects including the Lake Simcoe Region Conservation Authority Sub Watershed Study and targeted research projects for Species at Risk and littoral zone condition.

Information has been drawn from the EDDMapS database to assess which species are known to exist at present in close proximity to Georgina Island lands, as no records currently exist for locations on the island. This information is available in Appendix C. This data may be used to help inform and direct future surveys by highlighting the species most likely to spread onto GIFN lands.

3.2 2016 MONITORING EFFORTS

In 2016, targeted efforts were made to increase overall distribution data on invasive species presence on Georgina Island through multiple approaches. Initial surveys for presence of European common reed were completed by GIFN staff in an effort to identify locations that could be used for outreach and removal activities.

This was completed through informal roadside surveillance of easily visible stands with good access for removal by volunteers.

Following the completion of the community education session on July 3, 2016, a detailed survey was completed of areas where participants believed invasive species were present and along major roadways. A combination of private and public lands was included, and particular attention was given to sites of community significance, such as recreational trails and parkland. Participants travelled along the road running around the perimeter of the island thoroughly scanning for any signs of invasive species. At locations where a potential site was noted, further investigation was carried out to confirm the sighting and estimate the extent of the infestation. The results of this survey are available in Figure 2.

This survey collected information on the spread of species already known to be present on the island, including:

- Dog-strangling vine (*Cynanchum rossicum*)
- European common reed (*Phragmites australis subsp. Australis*)
- Wild parsnip (*Pastinaca sativa*)

Additional invasive species were discovered and documented including:

- Goutweed (*Aegopodium podagraria*)
- Purple Loosestrife (*Lythrum salicaria*)

Survey and detection efforts in 2016 did not target European buckthorn (*Rhamnus cathartica*) due to the existence of detailed distribution data for this species available in the 2015 forest inventories. This invasive shrub is known to be widespread across Georgina Island and therefore efforts were directed to other species of concern.

These species reflect a mix of origins, including plants known to be cultivated in private gardens (goutweed) those likely to spread by air or water (European common reed), and others that may have been transferred through contaminated soil or tire treads (dog-strangling vine). The most densely populated area of invasive species appeared to be the northern end of the island where retired agricultural fields have become covered in dog-strangling vine. Populations of European common reed can also be found throughout the island where appropriately moist soil conditions exist. Wild parsnip was noted in multiple locations along disturbed roadways and in ditches where dense patches of this potentially hazardous species have formed.

The survey activities were also intended to identify areas in which there are currently no signs of established invasive species. These locations could then be prioritized for preventative measures and ongoing monitoring practices to watch for signs of encroachment by invasive species. The Nanabush Trail system starting point and



the first segment of the hiking trails was examined in detail to look for any signs of established invasive species. No infestations were noted, and therefore this location could be used as a long-term monitoring point to allow for immediate action should an invasive species become established here.

4.0 CONTROL AND RESTORATION

The removal of invasive species from Georgina Island was considered an important component of the 2016 work activities as both a means of controlling the spread of existing populations and as an educational opportunity. The sites selected for removal of invasives were chosen based on proximity to the roadway, ease of access, presence of readily recognizable species, and suitability of conditions to employ multiple control techniques. All sites at which restoration activities were completed are shown in Figure 3, with additional note made of high priority locations for future removal projects.

4.1 COMPLETED RESTORATION ACTIVITIES

A demonstration restoration site was selected on the east side of the island along Loon Road that contained a large, contiguous stand of European common reed. This site was easily accessible for removal activities, consisted of a dense monoculture, and did not contain any additional invasive species. The stand was selected as European common reed is considered a high priority species for eradication on the island with a strong potential for control and removal activities to have a significant impact. There are also multiple identified control techniques that may be suitable for managing this invasive, and it was determined that the 2016 control project was a suitable opportunity to assess the efficacy of each approach.

Georgina Island summer camp participants, an Ontario Stewardship Ranger Crew, Cambium Aboriginal, and Georgina Island staff worked in cooperation to implement control measures on the selected stand. The area was divided into three plots with different eradication methods employed in each one. In all three plots the first step was to remove all seed heads taking care to ensure that seeds were collected and not allowed to escape the site. The first plot then had the remaining stems and leaves treated with a vinegar based herbicide. The second and third plots had all above ground parts of the plant removed, bagged, and stored at an appropriate location. The second plot was then covered in a dark, thick, tarp, and the third plot was left uncovered. The continued plan for invasive species control at this site involves additional application of herbicide as required, and continued removal of new growth. These sites will be monitored throughout the 2017 growing season to assess which plot has the highest and lowest rate of regrowth, and the treatment determined to be the most effective will be repeated at future removal sites.

The removal activities were also used as an educational opportunity to allow participants to practice hands-on approaches for controlling invasive species. The basic techniques and tools used were outlined to participants as an appropriate method for use on private properties. Future management activities may include signage or educational visits to the removal locations so they may act as demonstration sites.

4.2 ONGOING RESTORATION WORK

Additional removal efforts were carried out throughout the summer of 2016 by Georgina Island staff to remove identified infestations of invasive species as time and resources allowed. A large patch of European common reed combined with wild parsnip was located at the marina on the southeastern corner of the island. This site was prioritized for control activities due to the high visibility and public nature of the location, combined with the toxic nature of wild parsnip. Vegetation was cut and removed before the most densely populated areas were treated with a vinegar based herbicide. Work was also carried out to cut and remove a patch of European common reed identified at the extreme north end of the island. This infestation had not yet spread to surrounding wetland areas and therefore was considered a high priority for removal. Seed heads were removed and bagged from all mature plants, above ground growth was cut, and vinegar herbicide was applied to the most dense patches of vegetation.

Georgina Island staff continued to observe and note infestation areas throughout the island for future control and removal. These sites may be prioritized for inclusion in island maintenance and enhancement projects for 2017 and beyond.

5.0 FUTURE ACTIONS

A significant amount of work was accomplished in 2016 to identify invasive species on Georgina Island, provide outreach to the local residents, and implement removal activities as resources allowed. A key component and directive of all work completed was to identify future opportunities to enhance invasive species management and recognize the data and resource gaps currently limiting management actions. This information should be used to accomplish valuable future actions that will enable Georgina Island to work efficiently with local landowners, partner agencies, and interested volunteers to implement a successful overall management approach.

5.1 DEVELOPMENT OF AN INVASIVE SPECIES MANAGEMENT PLAN

The most important first step in long term control of invasive species on Georgina Island is the establishment and approval of a detailed management plan that incorporates existing information, outlines clear goals and objectives, and provides specific recommendations for future actions. Completion of this management plan would require input from multiple parties, agencies, and stakeholders to ensure thorough assessment of all major components.

A major component of the project work completed in 2016 was the collection existing information and evaluation of the resources in context of drafting a future Invasive Species Management Plan for all GIFN lands. Information collected in the 2016 project activities was intended to fill data gaps and provide necessary background research that would allow for creation of a comprehensive document that would address all of the major invasive species issues identified on the island

A draft outline of the management plan has been created based on understanding of the current state of invasive species on the island and the most pressing concerns of the Georgina Island community. This outline is available in Appendix D and draws from multiple guidance documents as to content and structure. 'Creating an Invasive Plant Management Strategy: A Framework for Ontario Municipalities' is a document produced by the Ontario Invasive Plant Council intended to provide a starting point for the establishment of an invasive species management plan that addresses the needs of each unique location. This document was consulted for reference in addition to multiple implemented plans for assorted Ontario jurisdictions. This document is only a general outline and may undergo significant changes as the official plan is developed and implemented.

A graphic has also been produced that seeks to show the key components of the future invasive species management plan in context to each other. The plan is centralized and surrounded by the supporting conditions needed to ensure successful implementation. Main project components are then outlined beneath with the associated activities that will ensure successful achievement of all major goals. This visual is available in Appendix D.

5.1.1 SURVEY AND DETECTION COMPONENTS

An Invasive Species Management Plan should include multiple action items to help improve the detection and tracking of invasive species for the GIFN lands. The following recommendations have been provided by Cambium as items that could be included in a completed plan:

1. Utilization of EDDMapS (or similar application).

The information collected from the 2016 monitoring activities can be combined with all existing information from past studies and compiled in a manner that allows for efficient use and manipulation. Entry into an existing database, such as the Early Detection and Distribution Mapping System (EDDMaps), is a possibility that would avoid the costs of developing a new system while maintaining the capacity to share existing information. Other possibilities should be evaluated to identify the most appropriate management method for GIFN.

2. Selection of Priority Monitoring Locations.

Once the data has been compiled in a central location, efforts should be made to identify areas that are a high priority for monitoring at regular intervals for the presence or spread of invasive species. This should include both locations where species are known to occur and those that were determined to be free of invasives at present. This will allow staff to track changes in the community over time including the density or intensity of infestations, the extent of spread, and the introduction of new species previously not recorded.

It is important that monitoring and survey efforts be expanded to Fox Island and Snake Island which were not assessed in 2016. These locations may contain relatively few invasive species due to their isolation, but the high density of cottage properties and presence of invasives on the adjacent mainland create a potential for introductions.

5.1.2 CONTROL AND RESTORATION COMPONENTS

Survey and detection efforts undertaken in 2016 identified many locations containing invasive species suitable for removal and control efforts. Only a small number of these sites could be targeted for immediate control activities, and the remainder were noted for future action through an Invasive Species Management Plan. The following locations were noted as particularly high priority for intense eradication efforts as resources allow and are shown in Figure 3:

1. Ferry Landing – An infestation of European common reed mixed with wild parsnip was noted at the ferry landing location. This site should be considered high priority for removal due to the potential for seeds and plant fragments at this location to be transported throughout the island by foot and vehicle traffic.

2. Chief Joseph Snake Road – A moderate sized patch of dog-strangling vine was recorded along Chief Joseph Snake Road throughout the ditch in a residential area. The affected area is currently geographically limited, and removal efforts should be employed before significant spread occurs.
3. Ice Road Access Point on Bob's Landing – A dense growth of wild parsnip was identified at the intersection of Bear Road and the access point for the ice road on Bob's Landing to the mainland. This area should be prioritized for removal due to the density of vehicle and foot traffic in this area and the health risk posed by wild parsnip.

Further identification of priority removal areas should be a component of any future invasive species management plan. This will ensure that resources are allocated to those sites most likely to have a significant overall benefit.

5.2 CONTINUING EXISTING EFFORTS

In the interim period before an official management plan is implemented work should continue through Georgina Island public works activities to track and remove invasive species as budgetary and time constraints allow. General removal on public lands and along roadways will continue to be a priority action to prevent further spread and maintain healthy ecosystems. In addition, the removal sites completed in 2016, particularly the test plots, will require continued observation and maintenance to ensure effective and thorough eradication of all invasive species present. These tasks should be combined with other general island maintenance activities where possible so as to become standard operating practice and a regular component of ongoing works.

Outreach actions to the community and landowners should also be continued into the 2017 growing season to ensure that residents are made aware of the most significant invasive species issues that may affect their property, and are properly equipped to manage those found on their land. Additional educational workshops and seminars as funding and resources allow may be appropriate, or an increase in available educational materials for distribution could be provided at community locations.

Community involvement efforts to track and remove invasive species could also be increased through a continued effort to provide events led by Georgina Island staff and partner agencies. Events may include road rallies, where participants are provided with a brief training on species identification and then provided with a section of Georgina, Snake, or Fox Island to survey for signs of infestation. Additional community events could involve the pulling or cutting of invasive species in public areas where the completed work may provide a demonstration for techniques to be applied on private lands.

A key recommendation for continuing invasive species management activities on GIFN lands in the absence of an Invasive Species Management Plan, is to implement a regular, consistent approach. This will ensure that detection and removal activities become an integral component of standard management practices, and community involvement days become a regular, recognized activity.



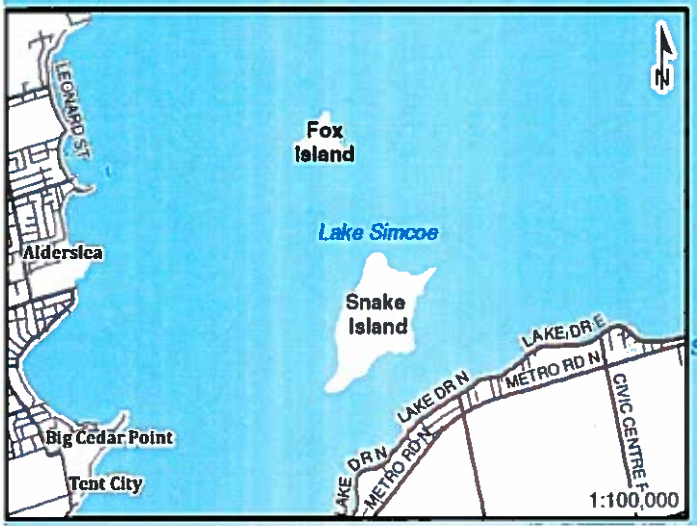
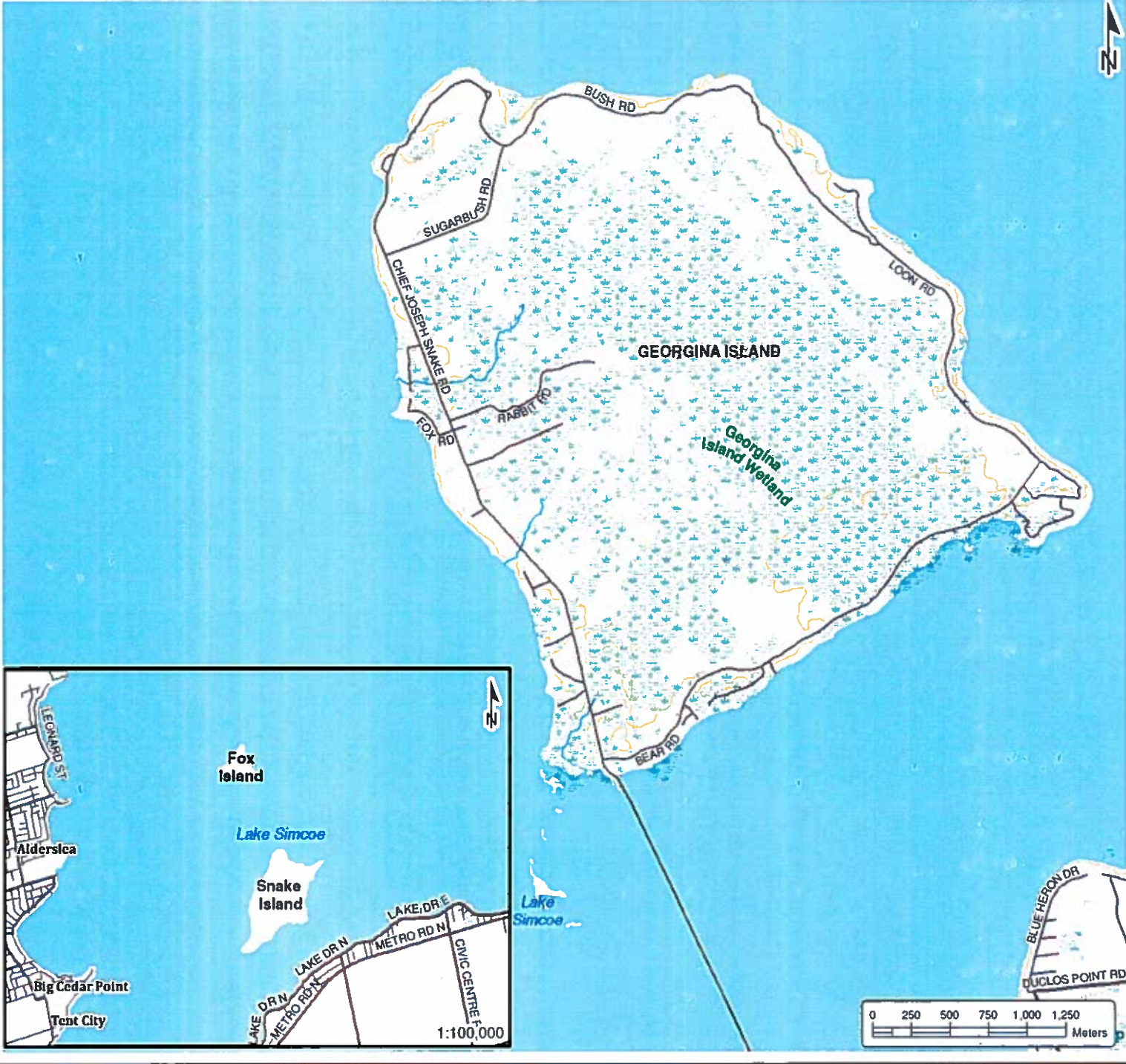
REFERENCES

Environment Canada. (2004). *An invasive alien species strategy for Canada.*



Appended Figures

GEORGINA ISLAND FIRST NATION 2016 INVASIVE SPECIES MANAGEMENT ACTIVITIES - FINAL REPORT
GEORGINA ISLAND FIRST NATION
 Georgina Island,
 Lake Simcoe, Ontario



LEGEND

- Major Road
- Minor Road
- ~ Watercourse, Permanent
- Contour (10m)
- Lot
- Wetland Area
- Water Area
- Wooded Area

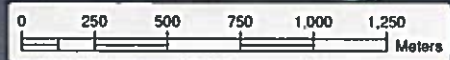
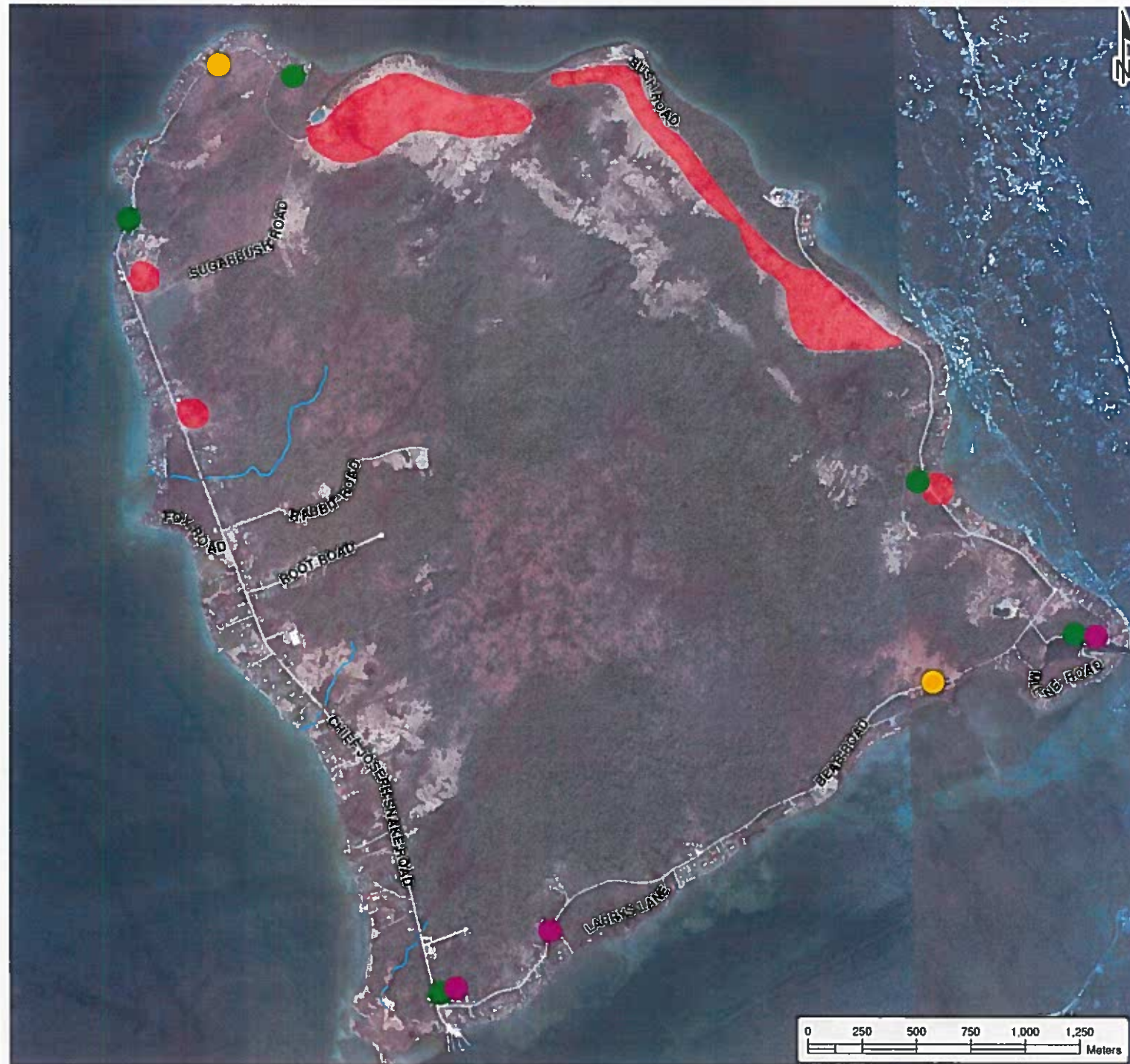
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 - Distances on this plan are in meters and can be converted to feet by dividing by 0.3048
 - Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.



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PROJECT APPLICATION AREA

Project No.:	4382-001	Date:	January 2017
Scale:	1:35,000	Projection:	NAD 1983 UTM Zone 17N
Created by:	TLC	Checked by:	ALH
		Figura:	1



GEORGINA ISLAND FIRST NATION 2016 INVASIVE SPECIES MANAGEMENT ACTIVITIES - FINAL REPORT
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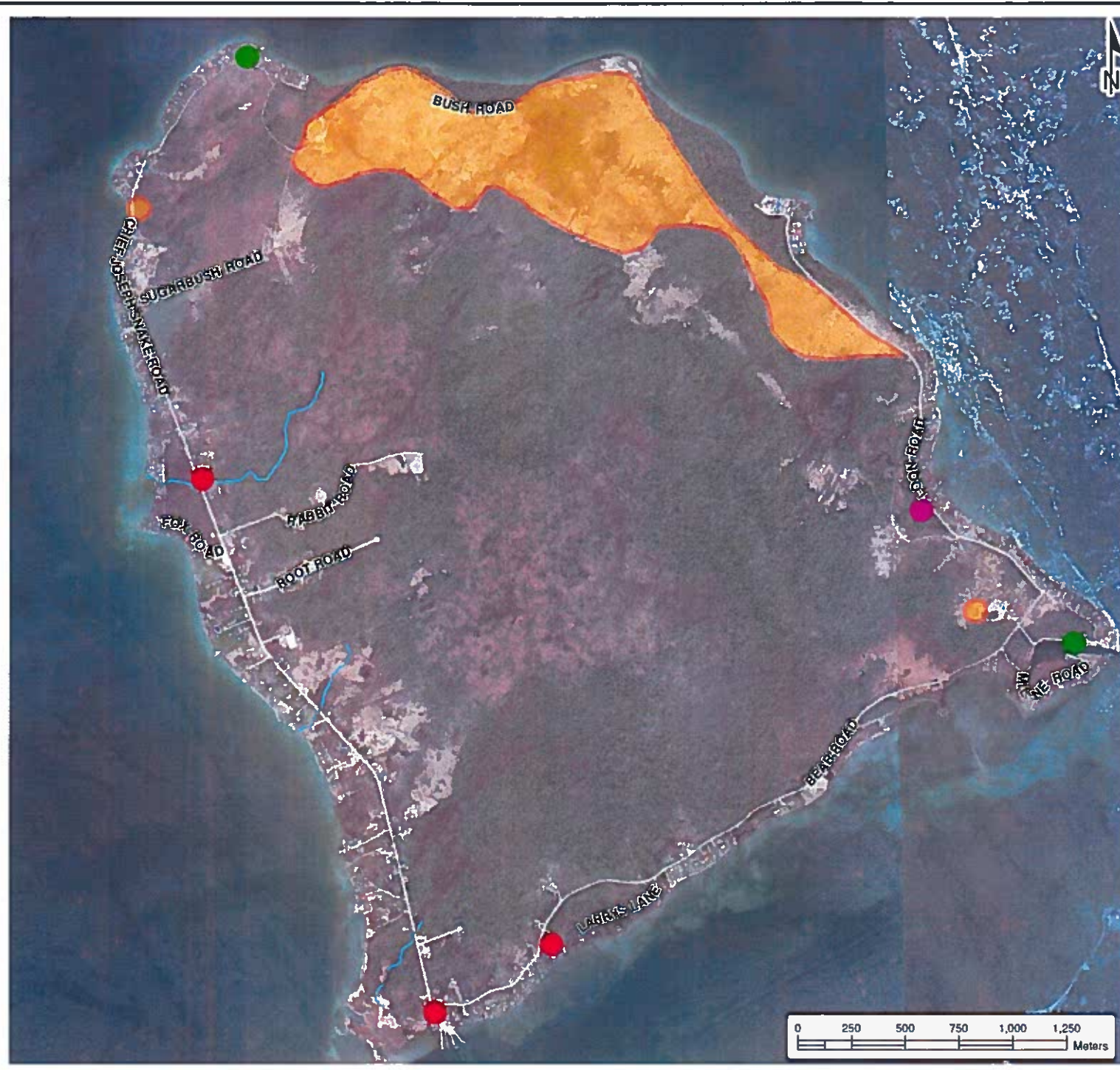
- LEGEND**
- Wild Parsnip
 - European Common Reed (Phragmites)
 - Other
 - Dog Strangling Vine
 - ~ Watercourse, Permanent
 - - - Watercourse, Intermittent

Notes:
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CURRENT INVASIVE SPECIES DISTRIBUTION

Project No.:	4382-001	Date:	January 2017
Scale:	1:25,000	Projection:	NAD 1983 UTM Zone 17N
Created by:	TLC	Checked by:	ALH
		Figure:	2



GEORGINA ISLAND FIRST NATION 2016 INVASIVE SPECIES MANAGEMENT ACTIVITIES - FINAL REPORT
 GEORGINA ISLAND FIRST NATION
 Georgina Island,
 Lake Simcoe, Ontario

- LEGEND**
- First Priority Control Locations
 - 2016 Georgina Island Control Sites
 - 2016 Phragmites Control Day
 - Secondary Priority Control Locations
 - Watercourse, Permanent
 - - - Watercourse, Intermittent

Notes:
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REMOVAL AND CONTROL ACTIVITIES

Project No.:	4382-001	Date:	January 2017
Scale:	1:25,000	Rev.:	
Created by:	TLC	Checked by:	ALH
		Figure:	3



Appendix A
Photo Appendix



Photo 1 Dog-strangling vine infestation along roadway, July 2016



Photo 2 Goutweed identified on private property, July 2016



Photo 3 *Small European common reed infestation at northeast corner of island, July 2016*



Photo 4 *Area of dense dog-strangling vine infestation on historic agricultural land, July 2016*



Photo 5 Dense stand of European Common Reed selected for removal activities, July 2016



Photo 6 Purple loosestrife identified in south wetland area, July 2016



Photo 7 Wild parsnip identified growing along roadside, July 2016



Photo 8 European common reed identified near ferry landing, July 2016



Photo 9 Ontario Stewardship Rangers and Georgina Island staff carrying out removal activities, August 2016



Photo 10 European common reed removal test plots, August 2016



Photo 11 European common reed removal test plots, August 2016



Appendix B

Education and Outreach Materials

INVASIVE SPECIES: Identifying, Reporting and Removal



Wednesday, August 3, 2016
9:00 am - 12:00 noon

Staff & Community Education Workshop

Invasive species threaten and cause damage to our ecosystem, wetlands and beaches. There are several invasive species already present on Georgina Island, including Invasive Phragmites (European Common Reed) and Dog Strangling Vine. We need your help to find and remove them! This workshop will provide valuable information on:

- Identifying the species,
- Understanding the impacts,
- Learning how you can help,
- Where to access resources.

The workshop is open to staff, students, and the general public. The more we are informed about invasive species, the better decisions we can make about how to protect the land.



**CAMBIUM
ABORIGINAL**

Presentation by:

Andrea Hicks

Biologist and Project Coordinator
Cambium Aboriginal

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Before and After



Invasive species can drastically alter the landscape they invade. The above figure depicts a shoreline in Utah before and after invasive phragmites has been removed. The invasive plant swallows the beach and crowds out native plant species.

Minimize The Risks

Minimize the risks of introducing and spreading invasive species by:

- Be careful and mindful about what you transport and plant onto Georgina Island.
- Not moving firewood onto Georgina Island
- Only planting native species in your garden
- Staying on trails and washing off muddy boots before leaving an area.



Identify and Report Invasive Species

You can report sightings of any invasive species by calling Georgina Island First Nation's Administration Office or by contacting your local Environmental Coordinator, Kerry Ann Charles at 705-437-1337.

EDDMapS Ontario

Further sightings can be reported to the Invading Species Hotline at 1-800-563-7711 or by emailing info@invadingspecies.com. Sightings can also be reported on the Early Detection & Distribution Mapping System (EDDMapS Ontario) at www.eddmaps.org/ontario/ or by downloading the smartphone app. Any information provided by community members or cottagers is much appreciated to keep Georgian Island healthy.



Removal and Control

Each invading species requires different methods of removal and control. The extent of the infestation also determines which steps should be taken. Remember that some invasive species can cause bodily harm if removed by an untrained professional. Contact your local Environmental Coordinator, Kerry Ann Charles at 705-437-1337 for further inquiries. Visit the Ontario Invading Species Awareness Program website to learn more, call the Invading Species Hotline for advice (1-800-563-7711).

Questions and Concerns

More information on invasive species can be accessed through Georgina Island First Nation's Administration Office and your local Environmental Coordinator, Kerry Ann Charles at 705-437-1337. Further information can be found on Ontario's Invading Species Awareness Program website (www.invadingspecies.com) and the Ontario Ministry of Natural Resources website (www.ontario.ca/page/invasive-species-ontario)



Chippewas of Georgina Island



Invasive Species

Invasive species can have devastating effects on native species, often outcompeting native species for resources or threatening their survival.

Many invading species can have a negative impact on the environment, economy, society and health. They are responsible for impacting and limiting the biodiversity that Georgina Island offers.

Our community can help with the fight against invasive species by learning about which species are threatening the community, ways of removing and controlling invasive species, as well as monitoring our environment and lands to ensure that they no longer pose a threat.

Help keep our environment healthy





Invasive Phragmites (*Phragmites australis subsp. australis*)

This perennial terrestrial grass species, known as European Common Reed, grows to heights of almost 5 meters tall. It has been spotted throughout Georgina Island, with some plants targeted for removal and monitoring. As a result of a large seed head and its ability to release toxins into soil, it aggressively hinders the growth of surrounding native plant species and out competes them for water and nutrients. Don't get the invasive Phragmites confused with native species of phragmites, which offers greater biodiversity, grows less dense and has smaller seed heads.

European Buckthorn (*Rhamnus cathartica*)

This Eurasian shrub/tree species has aggressively spread throughout southern Canada, including Georgina Island. Its ability to invade a wide range of soil types allows it survives in many environments such as roadsides, riverbanks, forests and fields. The dark fruit of buckthorn is eaten and digested by birds and animals, resulting in a large seed dispersal area. The shrub grows thickly and shades out other plants, produces fruit which germinates more quickly than most other native plants, and alters the nitrogen levels in soil which puts surrounding plants at a disadvantage. European buckthorn may resemble the native alder-leaf buckthorn, which is much smaller in comparison.



Emerald Ash Borer (*Agrilus planipennis*)

This terrestrial beetle is responsible for killing millions of ash trees throughout southwestern Ontario and Great Lakes area. The insect was first found in Canada in 2002, most likely shipped in untreated wood from Asia. The Canadian Food Inspection Agency has prohibited the movement of firewood and other ash materials outside of designated areas under an Infested Places Order. The female beetle lays her eggs on the bark of ash trees, and the larvae burrow into the vascular system where it exploits the water, nutrients and sugars of the tree. The emerald ash borer does not easily disperse on its own, but the movement of wood and other infested materials put the insect at a great advantage. Watch for the beetle in the community, identify infested ash trees, and do not move any firewood onto Georgina Island.

Garlic Mustard (*Alliaria petiolata*)

Since this invasive herb resembles a few native plant species, the best way to identify it is to crush its leaves. If it emits a strong garlic odour, it is most likely garlic mustard. It is an aggressive terrestrial plant species which out competes other plants by displacement and by inhibiting fungi growth which provides nutrients to native species. Garlic mustard development spans two years: First by forming a strong root system and growing only a cluster of leaves. In Second year it produces flowers and seeds which help it to expand in future years. This invasive plant is a major threat to native plants like American ginseng and wood poppy.



Purple Loosestrife (*Lythrum salicaria*)

Native to Europe and Asia, the purple loosestrife is a highly aggressive wetland invader. It forms a thick mat with its roots and starves native plants of nutrients. It reduces biodiversity of wetland plant species and takes over valuable habitat for birds, insects and amphibians. When the plant flowers it can produce almost 30 million seeds which spread easily through water, wind, wildlife, and humans.

Dog Strangling Vine (*Cynanchum rossicum and Cynanchum louisae*)

There are two species of the invasive dog strangling vine, the black and the pale swallowwort. This plant was brought over from Eurasia as a garden plant, but has now become invasive in Ontario and Quebec, including Georgina Island. This vine is a part of the milkweed family and can produce up to 28,000 seeds/m² which are then dispersed by the wind. It can invade a wide range of locations, preferring sunny areas. It can grow up to 2 meters high by climbing other plants, which can "strangle" native plant species. The roots of the plant can reproduce new plants, which makes removal of this vine very difficult. Roots of this plant may also be toxic to native plant species.



Giant Hogweed (*Heracleum mantegazzianum*)

This invasive plant of the carrot species originates from Asia, but has spread to fields, woodlands, and roadsides in southern and central Ontario. This plant can grow up to 5.5 meters tall and when sap is released, causes severe dermatitis and blisters when exposed to sunlight. It can cause permanent blindness if the sap comes into contact with the eyes. It takes between 2 to 5 years before the plant flowers and produces seeds. Seeds can then disperse up to 10 meters in the wind and even farther in streams and rivers. It is recommended that a trained exterminator remove and dispose of this dangerous invasive species.



Appendix C
Existing Invasive Species Distribution Data

CURRENT SPECIES OF CONCERN FOR GEORGINA ISLAND

Invasive Phragmites:

This invasive perennial terrestrial grass species, also known as European Common Reed, can grow to heights of almost 5 meters tall. It has been spotted throughout Georgina Island, with some plants targeted for removal and monitoring. As a result of a large seed head and its ability to release toxins into soil, it aggressively hinders the growth of surrounding native plant species, out competing them for water and nutrients (OFAH/OMNR, 2012). Don't get the invasive Phragmites confused with native species which offers greater biodiversity, grows less dense and has smaller seed heads.



(Photo by: Wasyl Bakowsky)

Dog Strangling Vine

There are two species of the invasive dog strangling vine, the black and the pale swallowwort. This plant was brought over from Eurasia as a garden plant, but has now become invasive on Georgina Island. This vine is a part of the milkweed family and can produce up to 28,000 seeds per square meter which are then dispersed by the wind. It can invade a wide range of locations, preferring sunny areas. It can grow up to 2 meters high by climbing other plants, which can strangle native plant species. The roots of the plant can produce new plants, which makes removal of this vine very difficult. The leaves and roots may also be toxic to livestock and deer, which can put further pressure on native plant species (OFAH/OMNR, 2012).



(Photo by: MaureenSH (MaureenSH, 2012))

European Buckthorn

This Eurasian shrub/tree species was brought to North America as an ornamental plant in the 1880's. Since then it has aggressively spread throughout southern Canada, including Georgina Island. As a result of its ability to invade a wide range of soil types, it is able to survive in many environments including, but not limited to roadsides, riverbanks, forests and fields. The dark fruit of buckthorn is eaten and digested by birds and animals, resulting in a large dispersal area. The shrub grows thickly and shades out other plants, produces fruit which germinates



(Photo by: Daniel Laubhann)

more quickly than most other native plants, and alters the nitrogen levels in soil which puts surrounding plants at a disadvantage to compete with this invasive plant (OFAH/OMNR, 2012). European buckthorn may resemble the native alder-leaf buckthorn, which is much smaller in comparison.

Emerald Ash Borer

This invasive terrestrial beetle is responsible for killing millions of ash trees throughout southwestern Ontario and Great Lakes area. The insect was first found in Canada in 2002, most likely shipped in untreated wood from Asia. The Canadian Food Inspection Agency has prohibited the movement of firewood and other ash materials outside of designated areas under an Infested Places Order. The female beetle lays her eggs on the bark of ash trees, and the larvae burrow into the vascular system where it exploits the water, nutrients and sugars of the tree. The emerald ash borer does not easily disperse on its own, but the movement of wood and other infested materials put the insect at a great advantage (OFAH/OMNR, 2012). Watch for the beetle in the community, help identify infested ash trees, and do not move any firewood onto Georgina Island.



(Photo by: P.D.Pratt)

Garlic Mustard

Since this invasive herb resembles some native plant species, the best way to identify it is to crush its leaves. If it emits a strong garlic odour, it is probably garlic mustard. It is an aggressive terrestrial plant species, often out competing other plants by displacement and by inhibiting fungi growth which provides nutrients to native species. Garlic mustard develops by forming a strong root system and by growing only a cluster of leaves in the first year. In second year it produces flowers and seeds which help it to expand in future years. This invasive plant is a major threat to the American ginseng, wood poppy, drooping trillium, white wood aster, and hoary mountain mint; all of which are Species at Risk. (OFAH/OMNR , 2012)



(Photo by Ken Towle)

Purple Loosestrife

Native to Europe and Asia, the purple loosestrife is a highly aggressive wetland invader. It forms a thick mat with its roots and starves native plants of nutrients. It reduces biodiversity of wetland plant species and takes over valuable habitat for birds, insects and amphibians. When the



(Photo by: Liz West)

plant flowers it can produce almost 30 million seeds which spread easily through water, wind, wildlife, and humans. (OFAH/OMNR, 2012)

Giant Hogweed

This plant of the carrot family originates from Asia, but has spread to fields, woodlands, and roadsides in southern and central Ontario. This plant can grow up to 5.5 meters tall. When sap is released, causes severe dermatitis and blisters when exposed to sunlight. It can cause permanent blindness if the sap comes into contact with the eyes. It takes 2 to 5 years before the plant flowers and produces seeds. Seeds can then disperse up to 10 meters in the wind and even farther in streams and rivers (OFAH/OMNR, 2012). It is recommended that a trained exterminator remove and dispose of this dangerous invasive species.



(Photo by: Karen Rimmer)

EDDMAPS DISTRIBUTION DATA FOR LOCAL INVASIVE SPECIES

The following information does not definitively show all local instances of the identified invasive species, but merely documents reported and verified infestations.

Bush Honeysuckles (Exotic) *Lonicera spp.*



37 exotic bush honeysuckles have been reported near Georgina Island First Nation in Sibley Point Provincial Park.

Common Barberry *Berberis vulgaris*



1 common barberry plant has been reported near Cedarhurst Golf Club

Common Periwinkle *Vinca minor*



13 common periwinkle plants have been reported in Sibley Point Provincial Park, and 1 reported just South of Ontario Highway 48.

European Frog-Bit *Hydrocharis morsus-ranae*



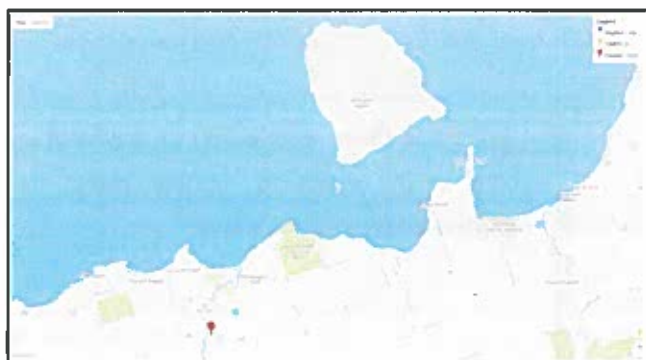
1 plant has been reported between the Georgina Island ferry launch and McRae Beach near a watercourse. Another has been reported at a much farther distance close to Gamebridge.

Garlic Mustard *Alliaria petiolata*



Upwards of 30 garlic mustard plants have been reported in Sibbald Point Provincial Park.

Giant Hogweed *Heracleum mantegazzianum*



One plant has been reported near a watercourse in Sutton. Although it is a fair distance from Georgina Island, this plant has been inventoried as a precautionary measure as result of the dangers presented by this plant.

Goutweed *Aegopodium podagraria*



1 goutweed plant has been reported in Sibbald Point Provincial Park.

Japanese Knotweed *Reynoutria japonica*



Japanese knotweed plants have been reported in 5 different locations along the southeast shore of Lake Simcoe. 1 plant has also been reported in a nearby watercourse.

Miscanthus *Miscanthus spp.*



1 plant has been reported on an adjacent south east shore of the mainland. Farther plants have been reported closer to Cook's Bay.

Purple Loosestrife *Lythrum salicaria*



Purple loosestrife plants have been reported near Georgina Island First Nation on the lakeshore, watercourses, Sibbald Point Provincial Park, and roadsides.

Tatarian Honeysuckle *Lonicera tatarica*



1 plant has been reported near Franklin Beach, and another has been reported near Crook's Bay.

Watersoldier *Stratiotes aloides*



1 watersoldier plant has been reported on a watercourse near Sutton.

Chinese MysterySnail *Cipangopaludina chinensis*



There are 2 locations in Lake Simcoe which the Chinese mystery snail have been reported; The first along the eastern shore, and a second in a watercourse on the southern portion of the lake.

Quagga Mussel *Dreissena bugensis*



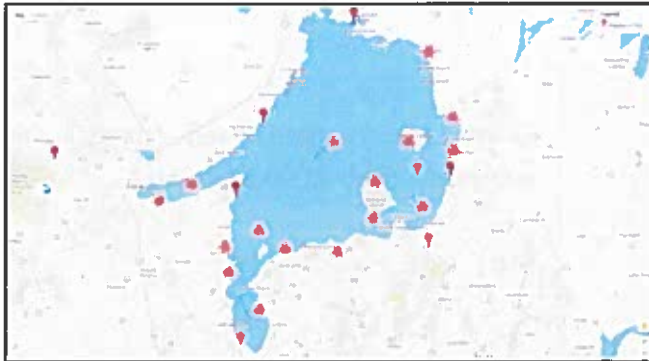
There are 4 locations in Lake Simcoe which quagga mussels have been found.

Rainbow Smelt *Osmerus mordax*



There have been 7 locations in Lake Simcoe where rainbow smelts have been found.

Round Goby *Neogobius melanostomus*



Round gobies have been found in many locations across Lake Simcoe, with 4 locations on the shores of Georgina Island.

Rusty Crayfish *Orconectes rusticus*



1 rusty crayfish has been found near Sibbald Point Provincial Park, as well as 5 others near a watercourse southeast of Duclos Point Provincial Nature Reserve.

Spiny Waterflea *Bythotrephes longimanus*



There have been 3 locations in Lake Simcoe in which spiny waterfleas have been reported.

Zebra Mussel *Dreissena polymorpha*



Zebra mussels have been found in numerous locations throughout Lake Simcoe



Appendix D
Invasive Species Management Plan Development Materials



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