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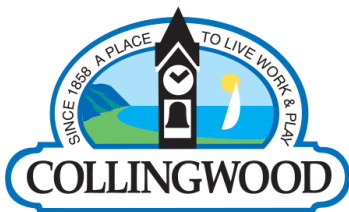
## ***Phragmites australis* management along the Nottawasaga Bay shoreline**

### **Summary Report, 2019-2021**

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Nottawasaga Valley Conservation Authority  
December 17, 2021



**Nottawasaga Valley**  
Conservation Authority



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# Contents

Contents .....	2
1 Introduction and Acknowledgements .....	3
1.1 <i>Phragmites</i> Overview .....	3
1.2 <i>Phragmites</i> and the Coastal Marsh Environment .....	5
1.3 Control Methodology .....	7
1.4 <i>Phragmites</i> Monitoring .....	9
1.5 <i>Phragmites</i> Removal .....	9
2 2019-2021 <i>Phragmites</i> Removal Summary .....	16
2.1 2021 .....	16
2.1.1 Rupert's Landing .....	16
2.1.2 Highway 26 (2020 and 2021) .....	18
2.1.2 Black Ash Creek .....	20
2.1.3 The Cove .....	20
2.1.4 Lighthouse Point .....	21
2.2 2020 .....	22
2.3 2019 .....	22
3 Project Communication and Community Outreach .....	24
4 Conclusion and Next steps .....	25
5 References .....	26

# 1 Introduction and Acknowledgements

*Phragmites australis* subsp. *australis* (European Common Reed; herein referred to as *Phragmites*) is a perennial grass native to Eurasia that is now spreading rapidly throughout Ontario (OFAH, 2015). In 2005, researchers at Agriculture and Agri-food Canada ranked *Phragmites* as Canada's worst terrestrial invasive plant (Catling, 2005). *Phragmites* has since been added to the Ontario *Invasive Species Act* (2015) as a restricted invasive species and is now "illegal to import, deposit, release, breed/grow, buy, sell, lease or trade."

In 2014, stakeholders met to develop a community action plan to manage the *Phragmites* along Collingwood's shoreline. For the past seven years, the NVCA has worked with the Blue Mountain Watershed Trust Foundation, Georgian Bay Forever, the towns of Collingwood and Wasaga Beach, and community groups to monitor and remove invasive *Phragmites* with over 19,000 m<sup>2</sup> removed to date. This ongoing monitoring and removal *Phragmites* project continued in 2021.

The 2021 project would not have been possible without the funding support from Georgian Bay Forever (GBF) and the in-kind support provided by Blue Mountain Water Trust (BMWT), Town of Collingwood, Nottawasaga Valley Conservation Authority (NVCA), and community volunteers. Though there are many to thank, we wish to highlight the following individuals who were key contacts for this effort!

- Heather Sargeant, GBF
- Stella Presthus, BMWT
- Wendy Martin, Town of Collingwood
- Laura Wensink, NVCA
- Bruce Dodgson, Lighthouse Point

The purpose of this summary report is to summarize *Phragmites* control work from 2019-2021 along the Nottawasaga Bay shoreline with some historical data from 2015-2018 also provided. A more comprehensive report detailing the 2019 efforts is forthcoming. We thank Sarah Campbell and Darcy Curran from the Nottawasaga Valley Conservation Authority for their efforts and provision of data with regard to the 2019 data provided in this report.

## 1.1 *Phragmites* Overview

*Phragmites* is commonly observed along shorelines, in wetlands, and in disturbed areas such as ditches (Figure 1). Once established in a location, it is extremely difficult to eradicate due to its extensive root systems and proximity to water, which limits tools available for control.



Figure 1: Infestation of *Phragmites* seen within the coastal wetlands in Collingwood.

*Phragmites* infestations can result in loss of wildlife habitat and biodiversity, including impacts to species at risk (OMNR, 2011). The plant directly attacks surrounding vegetation by secreting toxins from its roots into the soil, preventing growth of native species and allowing the formation of dense stands (OFAH, 2015). It has a high metabolic rate, leading to higher transpiration rates which can alter local hydrology, including the drying out of wetlands (OMNR, 2011). In addition to environmental concerns, there are economic impacts associated with *Phragmites* infestation including increased risk of fires, loss of agricultural land, and reduced recreation and tourism values (OMNR, 2011).

Note there is a native strain of *Phragmites* (*Phragmites australis* subsp. *americanus*) that is relatively uncommon in the NVCA watershed but occasionally is found in fen wetlands such as those present in the Minesing Wetlands. Invasive *Phragmites* is closely related to native *Phragmites*, but it establishes stands which are much denser than the native strain (up to 200 stems per m<sup>2</sup>) and taller (up to 5 m). Key identification features are summarized in Table 1 and illustrated in Figure 2. To date, native *Phragmites* has not been found along the Collingwood shoreline.

Table 1: Comparison of invasive and native *Phragmites* identification characteristics. (Campbell and Boyd, 2018)

Identification Characteristic	Invasive <i>Phragmites</i>	Native <i>Phragmites</i>
Height	Up to 5m	Less than 2m
Stand Density	Dense	Sparse
Seed Heads	Dense, large	Sparse, small
Stems	Rigid, rough, beige	Flexible, smooth, reddish-brown
Leaf Colour	Blue-green	Yellow-green



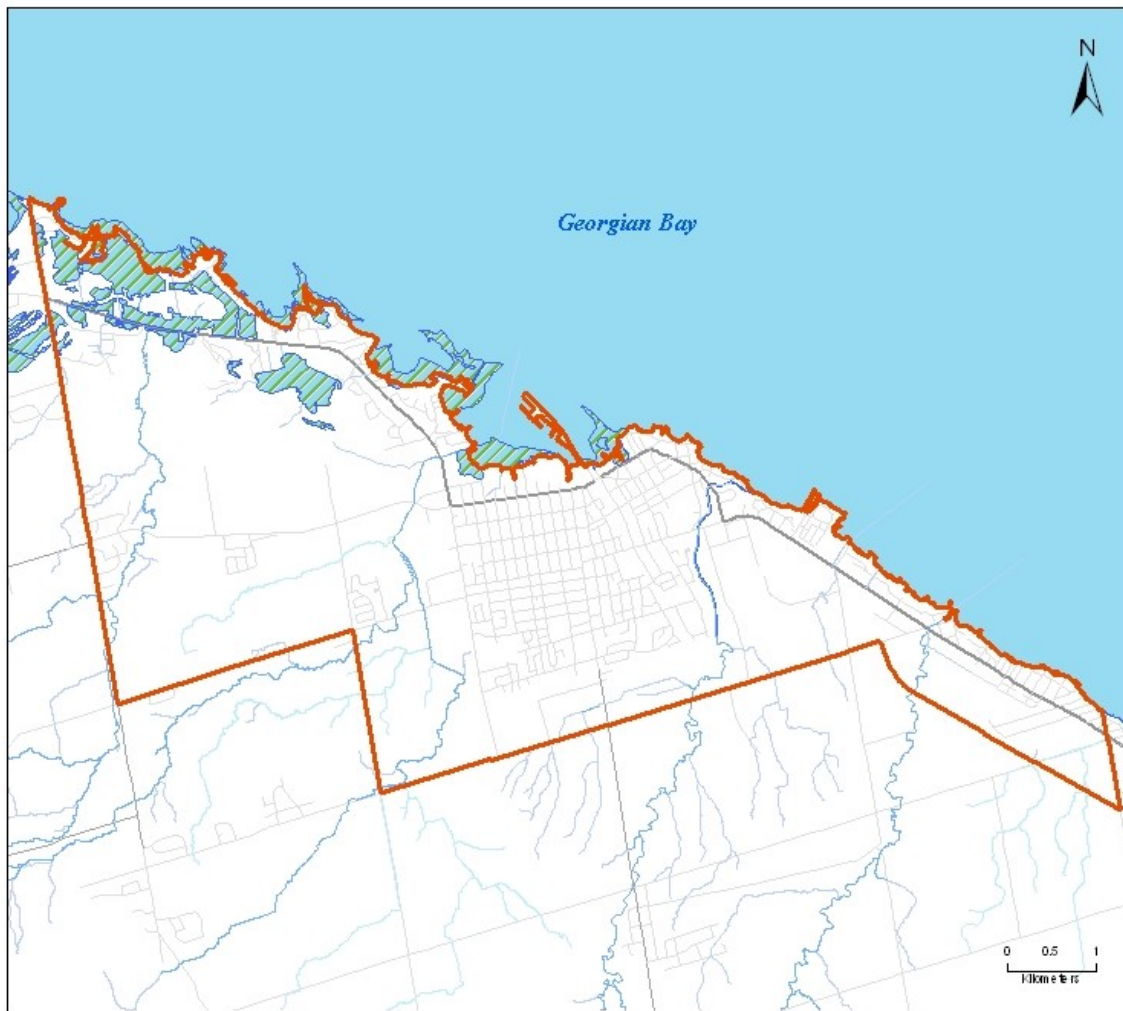


Figure 2: Comparison between native and invasive *Phragmites*. Note reddish-brown stem on native strain versus beige stem of invasive strain (MNR, 2012).

## 1.2 *Phragmites* and the Coastal Marsh Environment

The Collingwood shoreline was chosen as the ongoing focus for *Phragmites* monitoring and control due in part to the threat it poses to the Silver Creek Wetland Complex (Provincially Significant Wetland; PSW; Figure 3) and its associated provincially and globally rare coastal marshes (Figure 4). Endemic to the Great Lakes, these rare coastal marshes are characterized by shallow sloping limestone and shale shorelines, and relatively low nutrient inputs, and are dependent on variable water levels to maintain form and function (Midwood et al, 2012).

Collingwood's coastal marshes, rare and otherwise, are home to a diverse array of flora and fauna, including species at risk and provincially rare species (Featherstone and Fortini, 2011; Cvetkovic et al., 2010). They provide suitable spawning, nursery and feeding areas for many fish species. They are also used by migratory waterfowl for staging, nesting, and feeding and are part of the larger PSW. *Phragmites* is a threat to these marshes as it forms dense monoculture stands which provide poor habitat and resources for wildlife. Although the historical focus of *Phragmites* control has been along the Collingwood shoreline, it is noted that the PSW and associated *Phragmites* issues extends west into the Town of Blue Mountains within the Grey Sauble Conservation Authority jurisdiction. Unevaluated wetlands also extend east into the west end of the Town of Wasaga Beach – a *Phragmites* control effort extended into this area in 2019.



- Provincially Significant Wetlands
- Town of Collingwood Boundary

Figure 3: Provincially Significant Wetlands along the Collingwood shoreline. (Featherstone and Fortini, 2011)

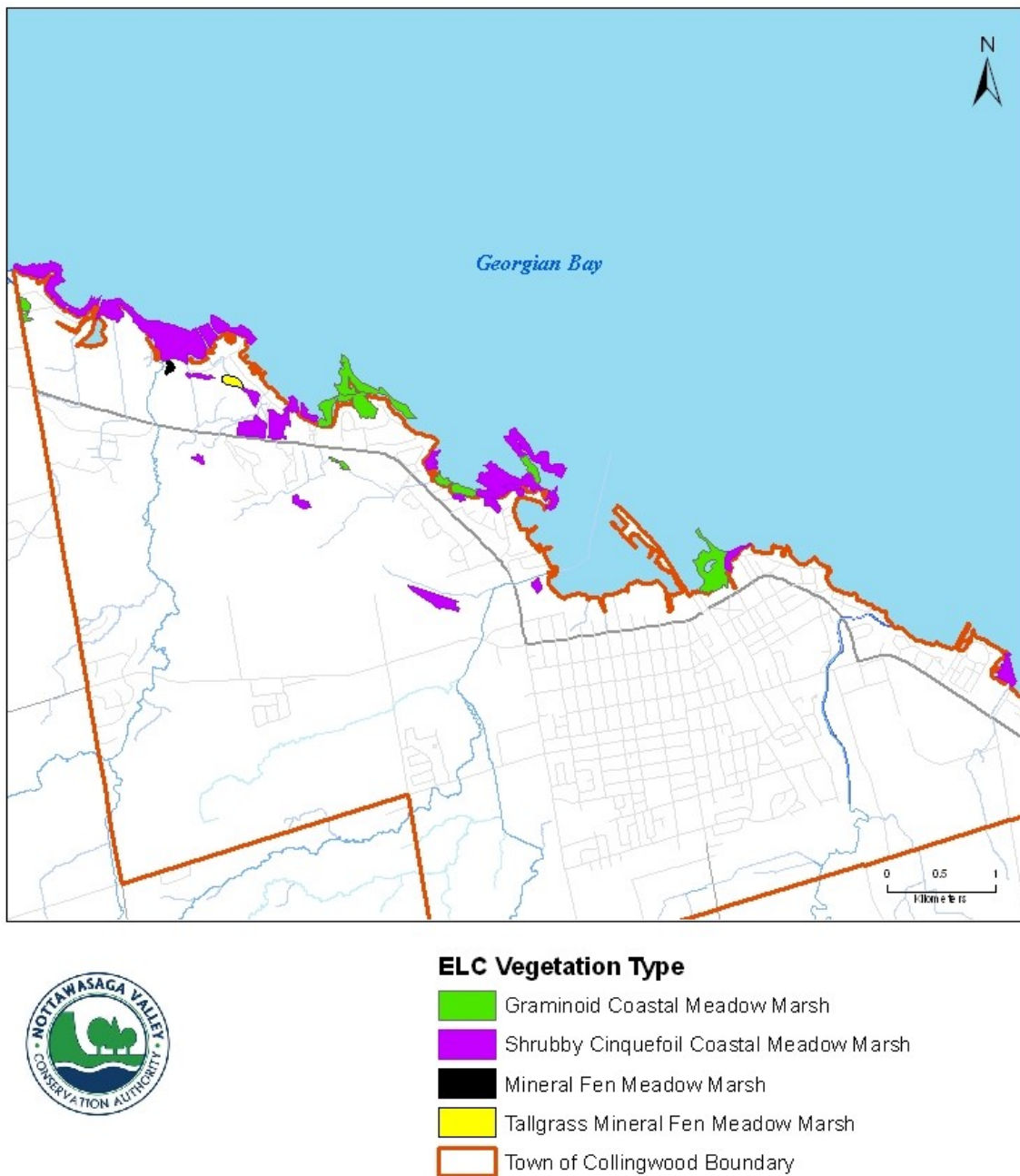


Figure 4: Provincially Rare Habitats along the Collingwood shoreline. (Featherstone and Fortini, 2011)

### 1.3 Control Methodology

Early detection of *Phragmites* allows for control methods to be implemented before stands become well-established and more difficult to successfully eradicate. Management options for *Phragmites* control include mechanical removal, chemical application, and prescribed burning. A holistic approach that combines methods is



recommended by OMNR (2011), however appropriate control methods are dependent on on-site conditions. Monoculture *Phragmites* stands can be cut, mowed, rolled or burned. On dry land, *Phragmites* stands can be controlled with herbicide applications regulated under Regulation 63/09 of the *Pesticides Act* (1990).

Historically, *Phragmites* growing in the water could not be controlled with herbicides as herbicide control for in or over water use was prohibited under the Habitat Protection and Pollution Provisions of the *Fisheries Act* (1985). Further, no herbicide was registered for over water use within the Province. However, in 2021, Health Canada listed Habitat Aqua as an approved registered herbicide for use on emergent invasive vegetation over surface water for control of *Phragmites*. In Ontario, over water control permits are issued to certified, licensed applicators by the Ministry of the Environment, Conservation and Parks (MOECP; Regional Offices). Although this is a promising new tool, it has not been considered to date for the Nottawasaga Bay shoreline. Future consideration of this tool should use a decision-making framework similar to that found in the Ontario Invasive Plant Council *Phragmites* BMP (Nichols, 2020) with particular consideration of potential impacts to provincially/globally rare wetlands along this shoreline.

For the Nottawasaga Bay shoreline *Phragmites* control projects (all years to date), the best management practice has been to cut *Phragmites* stems as far beneath the water surface as possible (Figure 5) in late summer. Cutting close to the underwater substrate enhances the drowning effects on the cut stand as *Phragmites* can “snorkel” oxygen down from hollow above-water stems to the root system. Ensuring no stems, dead or living, remain above the water helps to cut off the oxygen supply to the stand’s root system which decreases regrowth.



Figure 5: Cutting monoculture *Phragmites* underwater with a gas-powered hedge trimmer.

Ideally cutting would take place frequently to ensure stems do not regrow above the water surface. Due to the labour-intensive nature of cutting, one annual cut is often more feasible. The optimal timing for this cut is in late summer. This is when *Phragmites* is in the seed head development phase of its growth cycle. With the plant’s energy being directed upward to seed development, the roots are at their



weakest. Cutting stems during this phase reduces energy in the roots and thus regrowth potential.

Where monoculture stands of *Phragmites* are present, a gas-powered hedge trimmer is ideal to maximize removal efficiency. Where *Phragmites* is mixed in with native emergent marsh vegetation, manual removal via shears/clippers is used to minimize impacts to native marsh vegetation.

One cut is typically not enough to control *Phragmites* and subsequent annual cutting is recommended for effective control. Cut *Phragmites* stems have the potential to spread through seed distribution, rhizomes or stem re-establishment. Once cut, *Phragmites* stems should be removed from the water and spread on a tarp to dry for 1-2 weeks to decrease the likelihood of *Phragmites* re-propagating. The dried *Phragmites* should then be taken to a proper compost disposal facility to be destroyed according to the minimum temperature requirements determined by the MECP Ontario Compost Quality Standards (2012). Where this is not possible, material should be bagged and brought to a landfill for disposal.

#### 1.4 *Phragmites* Monitoring

Mapping the current extent of *Phragmites* and selecting those of most importance for removal is the first priority. Mapping protocols employed by NVCA were replicated annually from 2015 to 2019. For smaller stands of about 1 m<sup>2</sup>, individual GPS points were taken. For larger stands, GPS waypoints were taken to delineate the outer edge and later turned into polygons using ArcGIS. The stands were then categorized based on density and size for removal prioritization (Table 2).

Table 2: Definitions of *Phragmites* Density Terms. (Campbell and Boyd, 2018)

Density	Description
Low	≤20 <i>Phragmites</i> stems per m <sup>2</sup> , with native vegetation
Medium	~50 <i>Phragmites</i> stems per m <sup>2</sup> , with some native vegetation
High	≥100 <i>Phragmites</i> stems per m <sup>2</sup> , with no native vegetation

In 2020, BMWT undertook mapping specific to their *Phragmites* stands of concern. In 2021, mapping was undertaken by BMWT, a subset of condominium associations and NVCA.

#### 1.5 *Phragmites* Removal

*Phragmites* was identified as a community concern in 2014. In the years since, over 300 volunteers have contributed more than 2,000 hours to help NVCA and partners remove more than 19,000 kg of *Phragmites* from Collingwood's shoreline. This removal was recognized by the RAMSAR organization in 2016 (<https://www.ramsar.org/news/cepa-story-10000-kilograms-of-invasive-phragmites-were-removed-from-collingwoods-coastal>). The RAMSAR Convention on

Wetlands is an intergovernmental treaty that provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (<https://www.ramsar.org/about-the-convention-on-wetlands-0>).

From 2014 to 2021, sites in Collingwood and Wasaga Beach (one site) have been monitored and, in part, targeted for *Phragmites* removal including:

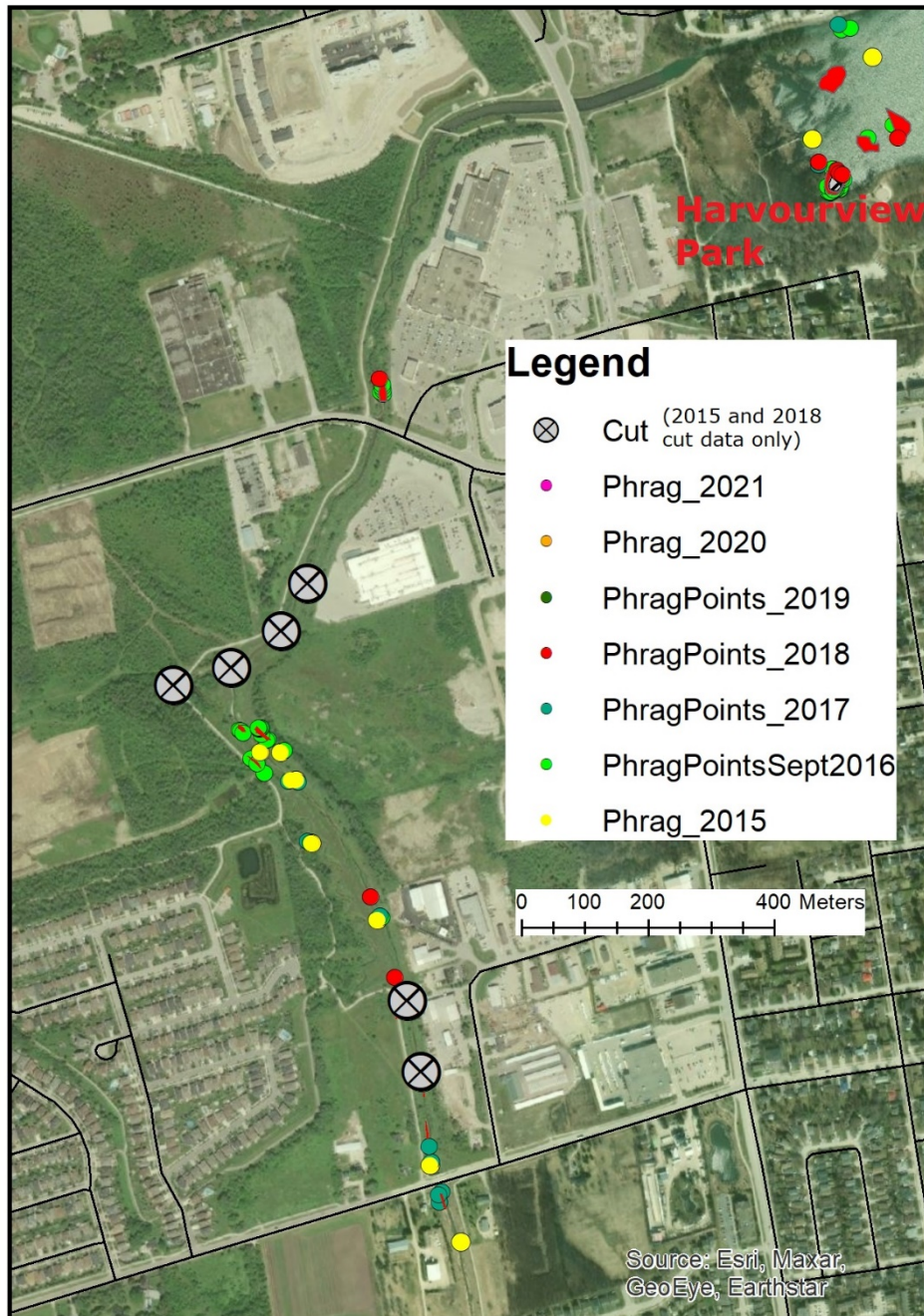
- Black Ash Creek (2015-2017, 2019 and 2021; Figure 6)
- West Collingwood (all mapping, 2021; Figure 7)
- Silver Creek at Hwy 26 (2020, 2021; Figure 7)
- Harbourview Park (2015, 2016, 2018, 2019; Figure 8)
- Sunset Point/Sobeys 39 Huron St (2015-2017, 2019; Figure 8),
- Blue Shores (2016, 2018; Figure 8)
- Hen and Chicken Island (2018, 2019; Figure 9),
- Lighthouse Point (2014-2019, 2021; Figure 9),
- Rupert's Landing (2015-2018, 2021; Figure 9),
- Wyldewood/Dockside (2015-2019; Figure 9) and,
- Admiral's Gate/The Cove (2015-2019; Figure 9)
- Blue Water (Wasaga Beach 2017, 2019; Figure 10)

Protecting native vegetation in Collingwood's coastal wetlands is a priority for the project. For monoculture *Phragmites* stands, a gas-powered cutter with a hedge attachment was used to cut the stands as far beneath the water surface as possible. High water levels in Georgian Bay supported drowning efforts from 2019-2021. When *Phragmites* was intermixed with native vegetation, hand loppers, shears, and raspberry cane cutters were used in place of gas-powered cutters to ensure only *Phragmites* was removed and minimize impacts on native marsh vegetation.

Cutting locations were determined to support past removal efforts, allow for ease of access, optimize volunteer engagement, and enhance wetland restoration. Examples of observations of surveying *Phragmites* stands are given in Table 3. Summary of total area cut and associated weight removed is presented in Table 4. Stands that were treated in 2018 and cut underwater generally showed an improvement in 2019 in terms of area and density. Water levels were notably higher in 2019 in comparison to previous years, which made access to some sites difficult but may also have contributed to the reduction in *Phragmites* observed.

This report focuses on the *Phragmites* removal during 2019, 2020, and 2021 field seasons. It is noted that a comprehensive summary of works completed from 2015-2017 can be found at <https://www.nvca.on.ca/Pages/Invasive-Species-Phragmites.aspx>. A 2018 report is also available from NVCA.

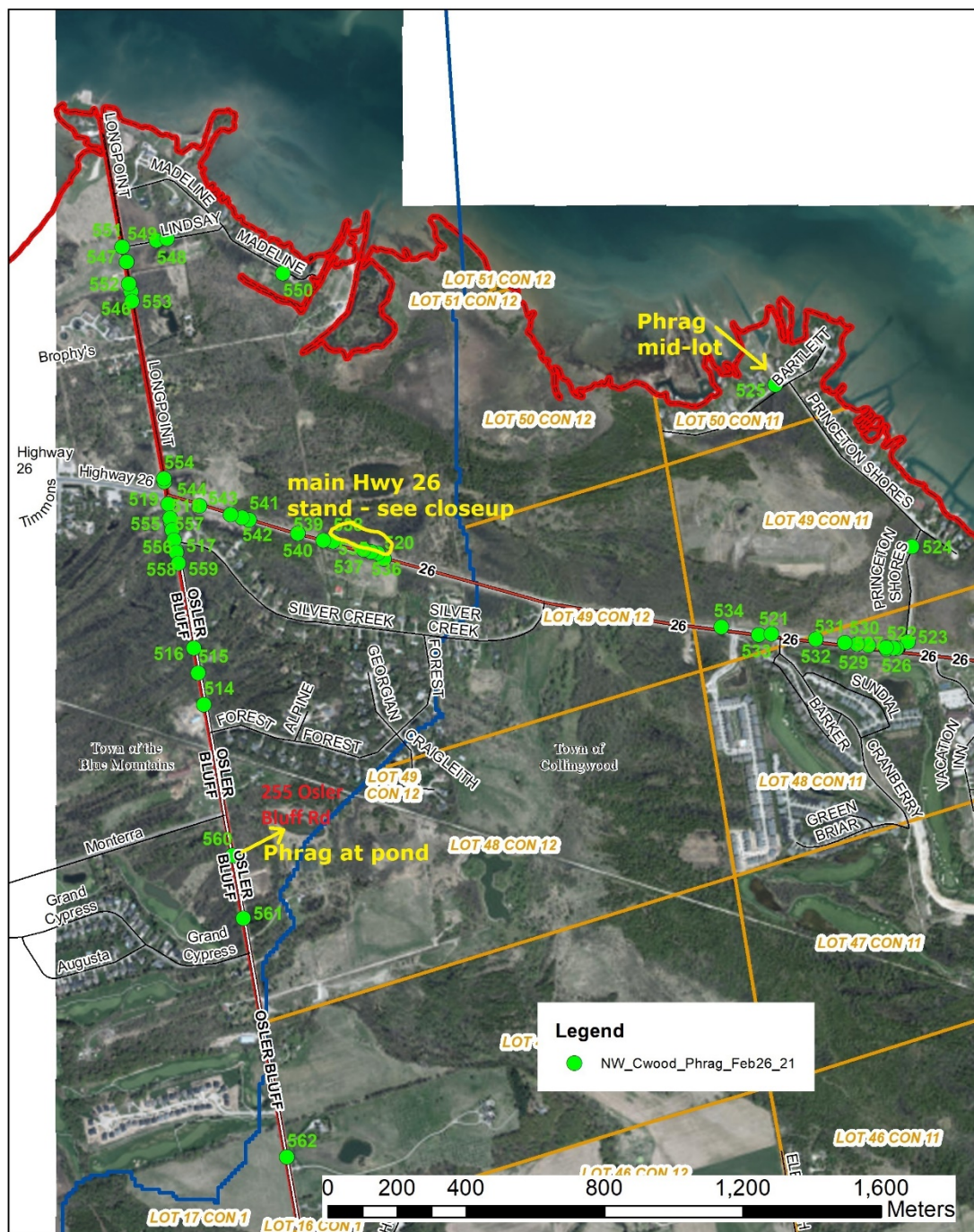
**Figure 6 - Black Ash Creek  
*Phragmites* Monitoring and Control  
2015-2021**







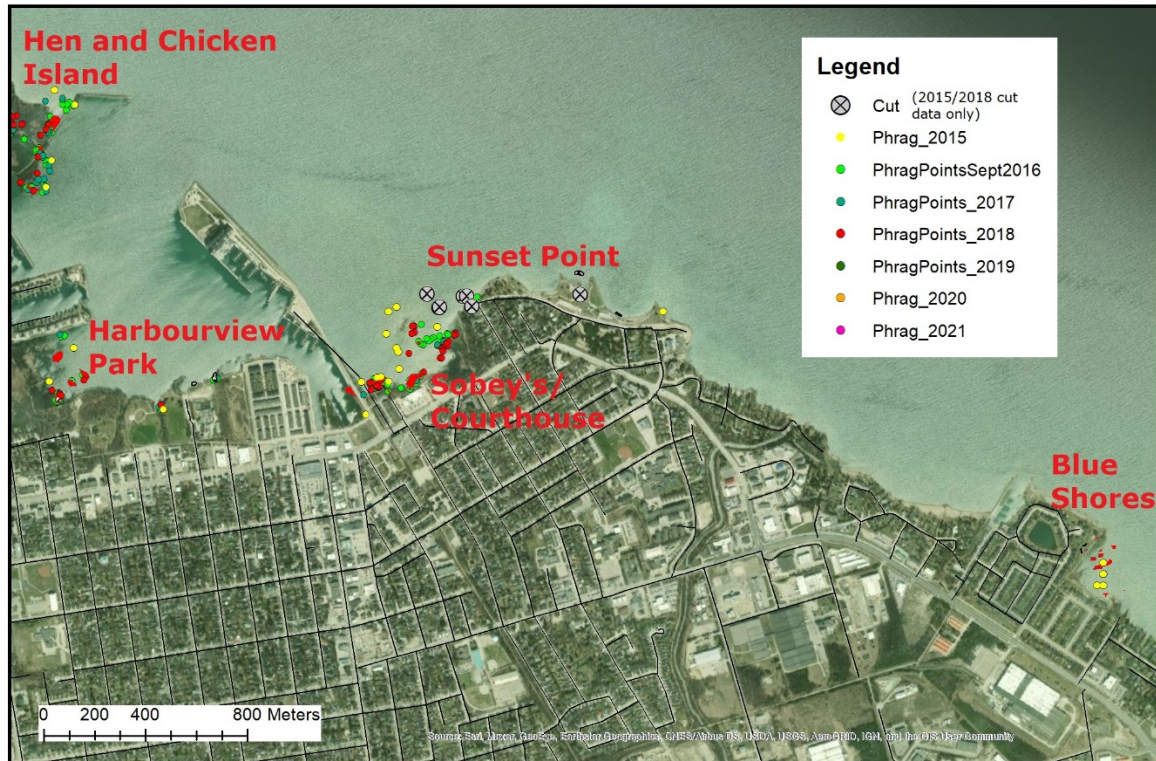
**Figure 7 - Northwest Collingwood  
NVCA (DF) February 26/21  
*Phragmites* Observations**





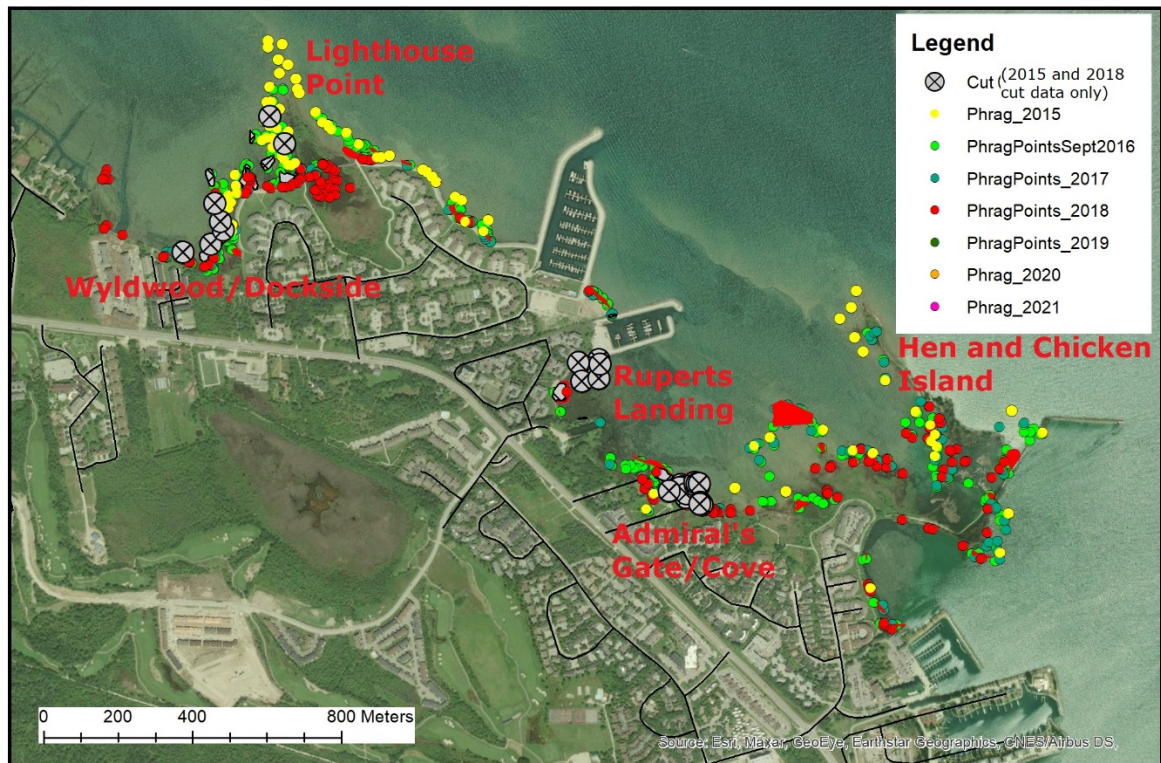


**Figure 8 - Harbourview Park and East Collingwood Shoreline  
*Phragmites* Monitoring and Control 2015-2021**





**Figure 9 - West Collingwood Shoreline  
Phragmites Monitoring and Control 2015-2021**







**Figure 10 - Blue Water (Wasaga Beach)  
Phragmites Control Area (2017 and 2019)**



*Table 3: Surveyed Phragmites stand observations, 2019.*

Location	Most recent <i>Phragmites</i> Observations
Rupert's Landing	<ul style="list-style-type: none"> <li>Cattails continue to be crowded out. Several large, dense patches mixed in with cattails and bulrushes (shoreline)</li> </ul>
Admiral's Gate	<ul style="list-style-type: none"> <li>High density patch persists along the boardwalk</li> <li>Lower density stands continue to expand in the water</li> </ul>
The Cove	<ul style="list-style-type: none"> <li>Low density regrowth along shoreline</li> <li>Phrag continues to regrow in large, low density patches</li> </ul>
Wyldewood Cove	<ul style="list-style-type: none"> <li>Large, dense monoculture with little native vegetation</li> <li>Several small patches intermixed with native vegetation along the shoreline</li> </ul>
Hen and Chicken Island	<ul style="list-style-type: none"> <li>Limited growth to the east of Hen and Chicken Trail. May be associated with high water levels.</li> </ul>

Location	Most recent <i>Phragmites</i> Observations
	<ul style="list-style-type: none"> <li>Established stand continues to expand. Difficult to get to due to high water levels and wave action</li> <li>Limited regrowth north of White's Bay Park</li> </ul>
Harbourview Park	<ul style="list-style-type: none"> <li>Patches starting to become denser and cover a greater surface area. Increasingly becoming a monoculture.</li> </ul>
Sunset Point	<ul style="list-style-type: none"> <li>Regrowth of stands behind Sobeys and courthouse. Scattered stands in wetland continue to grow</li> </ul>
Black Ash Creek	<ul style="list-style-type: none"> <li>Large patches located north of Mountain Rd. and South of 6<sup>th</sup> St. continue to expand. Difficult to control as they are not rooted in substantial water</li> </ul>

Table 4: Summary of *Phragmites* removal from 2015-2021.

Year	<i>Phragmites</i> Cut (m <sup>2</sup> )	<i>Phragmites</i> Cut (kg)	Number of Volunteers	Volunteer Hours
2015	Not available	4,480	41	468
2016	Not available	5,179	89	690
2017	3,257	2,150	82	507
2018	7,953	3,900	146	484.5
2019	4,547	2,810	68	258
2020	487	Not available	2 *COVID impacted	17
2021 <sup>a</sup>	1,327	1,190	19	91

a Minimum values excluding Lighthouse Point removals and The Cove “deadheading” efforts.

## 2 2019-2021 *Phragmites* Removal Summary

### 2.1 2021

The 2021 field season efforts were focused at Rupert's Landing, Highway 26, Black Ash Creek, The Cove and Lighthouse Point.

#### 2.1.1 Rupert's Landing

NVCA staff assisted with two volunteer removal days: September 11 with 12 people putting in 42 hours of work and September 16 with 6 volunteers putting in 21 hours of work. This collectively equated to more than 850m<sup>2</sup> (910 kg) of *Phragmites* removed. Figure 11 identifies the shoreline and inwater *Phragmites* stands where control was implemented. Figure 12 shows the patches of *Phragmites* prior to and after control.



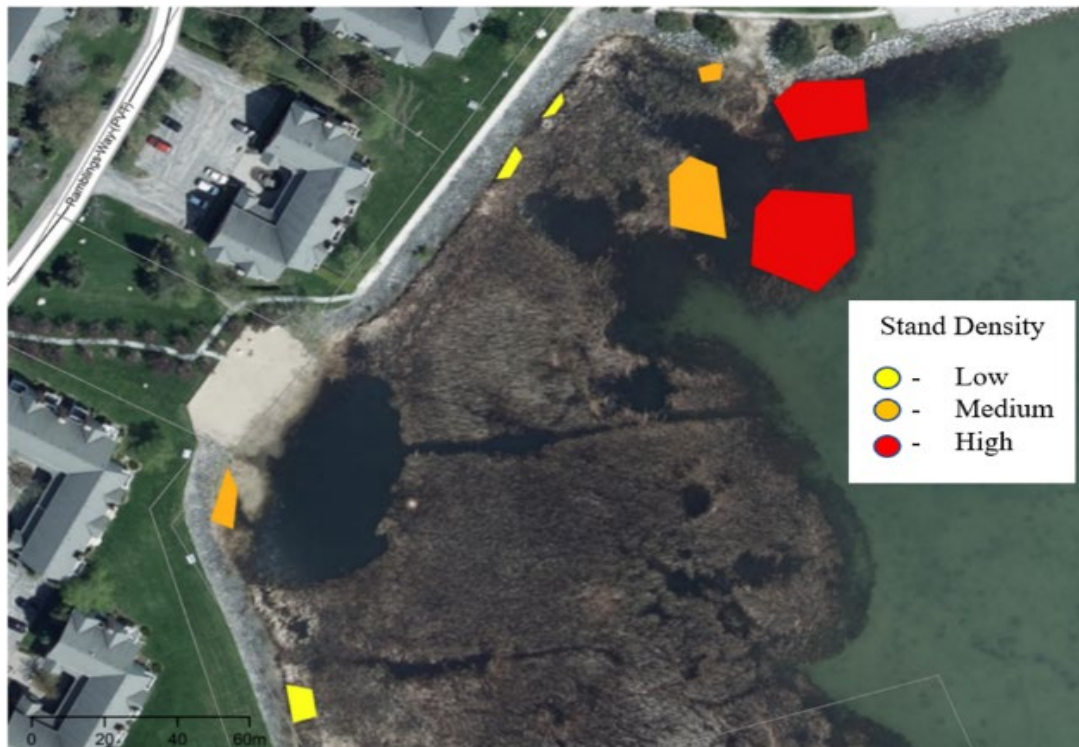


Figure 11: Shoreline Phragmites mapping at Rupert's Landing prior to September 11, 2021 removal efforts (note beach Phragmites not mapped).





Figure 12: Aerial footage of before (top) and after (bottom) volunteer removal efforts at Rupert's Landing, September 2021.

### 2.1.2 Highway 26 (2020 and 2021)

In the following weeks, BMWT contributed to a significant amount of time removing *Phragmites*. On September 16, a group of 3 volunteers spent 10.5 hours removing over 167 m<sup>2</sup> of *Phragmites* from a dense stand that has been advancing towards Silver Creek PSW along Highway 26 for a number of years. (Figure 13). MTO has previously sprayed the roadside for *Phragmites*; however, it has regenerated, at least in part, from contiguous *Phragmites* just north of the road allowance.

This site was monitored in November of 2020 at which time they 'deadheaded' (removed seed heads) the *Phragmites* with hopes in limiting the infestation. NVCA staff mapped the main stand from the right-of-way in February 2021 (Figure 13). When volunteers returned in September of 2021, the stand had increased by approximately 25% density (pers. Comm. Ref). On September 12, BMWT and NVCA staff worked on roadside *Phragmites* removal over 4.5 hours.

This roadside work will hopefully assist in limiting roadside spread. Long-term control of this stand which in part lies within the PSW will likely not be possible until the property north of the highway comes into public ownership. It is highly unlikely that current landowners would allow access onto the property.





Northwest Collingwood Phragmites  
Main Hwy 26 Stand  
DF Feb 26/21 Observations



Figure 13: Main *Phragmites* Patch along Highway 26 (February 26, 2021; NVCA observations).

### 2.1.2 Black Ash Creek

Three NVCA staff and one volunteer (BMWt) conducted control work along Black Ash Creek on October 6. A total of 18 hours of *Phragmites* removal was undertaken at two different locations along Black Ash Creek north and south of Mountain Road (Figure 14). A total of 310 m<sup>2</sup> (280 kg) was removed to assist in reducing the spread. Power hedge trimmers, raspberry cane cutters and garden sheers were used to cut *Phragmites* at the base of the stem on all patches. Additionally, two patches upstream were 'dead headed' due to lack of time and the ability to further prevent the spread.

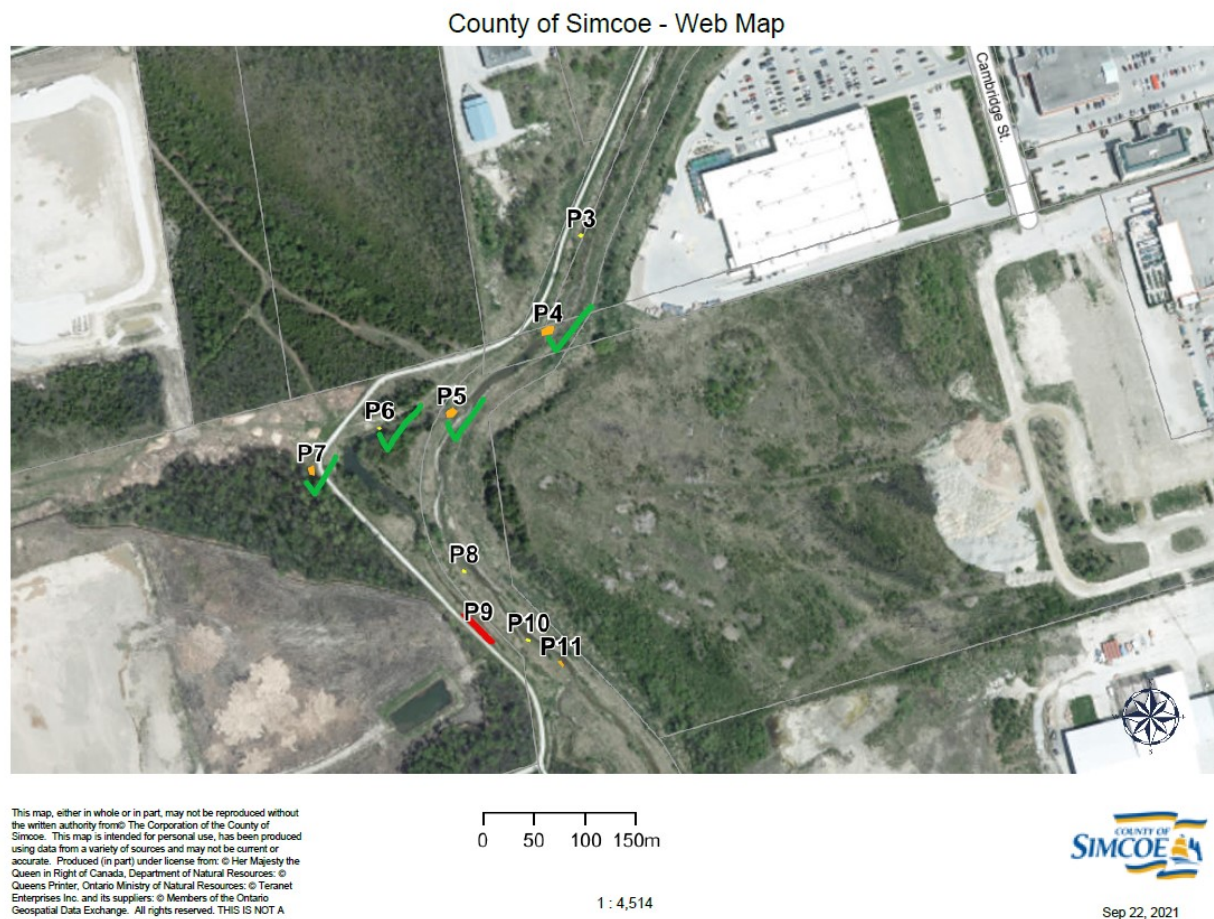


Figure 14: *Phragmites* removal map from October 6, 2021 work along Black Ash Creek.

### 2.1.3 The Cove

A final effort was made by the BMWt volunteer group to deadhead (Figure 15) a few patches surrounding their homes in the Cove, Collingwood (Figure 9). Several volunteers spent a Saturday afternoon removing a medium density mixed stand in the wetland. The removal of seed heads can reduce the spread of *Phragmites* significantly, stopping potential thousands of seeds from traveling through the water ways to new locations. The removal of seed heads will not however, prevent the mature plant from recurring next season. Efforts will need to be made for an



increased chance of eradicating the species from the area. The stewardship team is looking to revisit the site next August to assist further with removal efforts with the hopes to eradicate the invasive species.



*Figure 15: A volunteer 'deadheading' a patch of Phragmites.*

#### **2.1.4 Lighthouse Point**

Lighthouse Point has been diligently working on *Phragmites* control along their shoreline since 2014. No control was undertaken in 2020 as no *Phragmites* was visible, likely due to a combination of annual control efforts and record high water levels on Georgian Bay (B. Dodgson, pers. comm.). In 2021, with lower water levels (though still above historical average) residents observed a series of small to medium stands on both sides of the boardwalk across the marsh wetlands. They noted a surprising number of long stolons originating from some of these stands. Bruce Dodgson mapped the approximate locations of mapped and managed stands in Figure 16 (B. Dodgson, pers.comm).

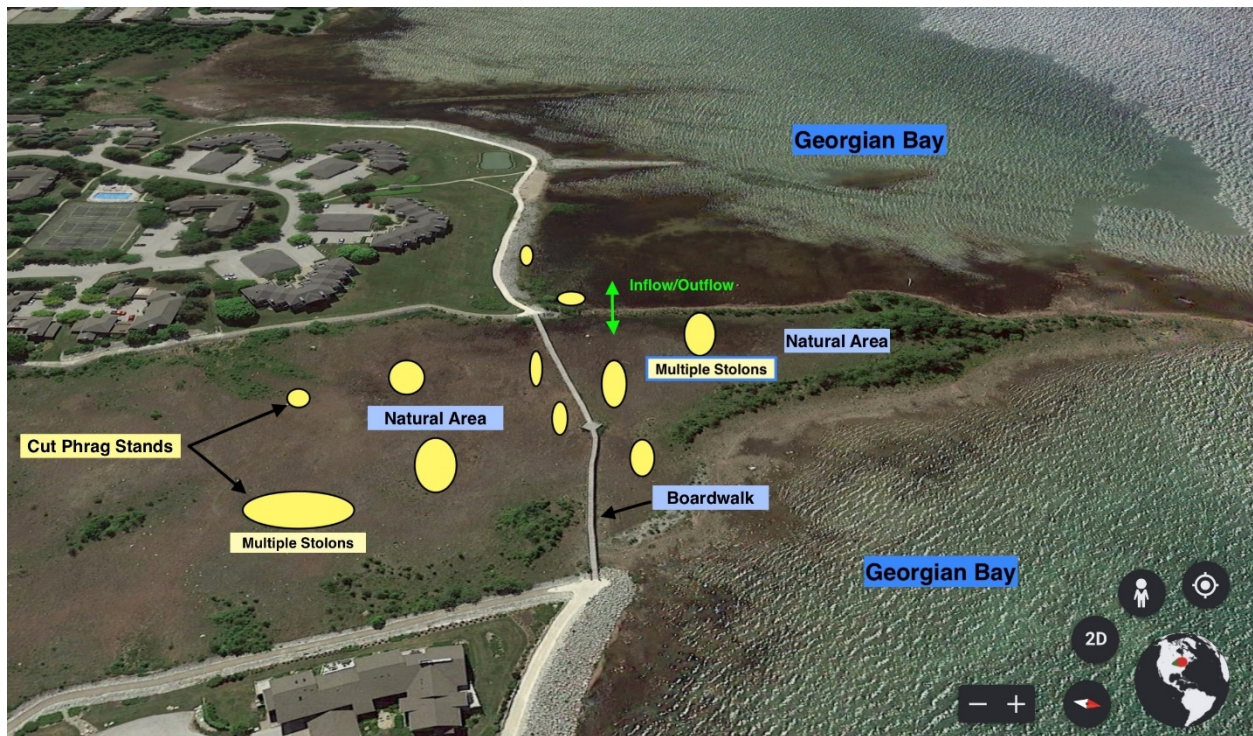


Figure 16: Lighthouse Point *Phragmites* observations and removal efforts (2021; B. Dodgson mapping)

## 2.2 2020

During the 2020 season, efforts were hindered due to the pandemic. Even with these restrictions, BMWT members were able to remove 5,250 m<sup>2</sup> from the Collingwood region. Two members with 2 sets of garden shears took on the task of continuing to 'Fight the Phrag' regardless of the hardships face during the year. They dedicated their hard-working efforts to the memory of Don Kerr, for his valiant efforts to protect Silver Creek and the Silver Creek PSW.

Work was undertaken along the main Highway 26 stand (Figure 13). The total area cut was 350 feet long by 15 feet wide, in an 8-foot ditch – putting in 8.5 hours worth of hard work. In addition to stalk removal, deadheading was also used later in the season to hopefully slow the spread along the highway.

## 2.3 2019

This data is associated with draft reporting provided by Sarah Campbell and Darcy Curran (NVCA; Campbell and Curran, 2019, unpublished).

NVCA staff, with support from community volunteers and partners, mapped *Phragmites* stands in August 2019. The Collingwood shoreline was monitored from Wyldewood Cove Condominium eastward to Sunset Point Beach. The lower Black Ash Creek in Collingwood was monitored from Sixth Street to the creek outlet at Georgian Bay. The Blue Water condominium development was monitored at the

west end of the Town of Wasaga Beach. Summary descriptions of this monitoring/mapping are provided in Table 3.

In total, 9,175 m<sup>2</sup> of *Phragmites* was mapped along these shorelines in 2019. In the primary Collingwood study area, 8,737 m<sup>2</sup> was mapped, and an additional 438 m<sup>2</sup> was mapped at the Blue Water development shoreline in Wasaga Beach.

Control/cutting locations were prioritized based on an analysis of mapped stands and landowner interests. *Phragmites* removal workdays were undertaken from late August to early September. Gas-powered cutters, hand loppers/shears and raspberry cane cutters were used to selectively cut *Phragmites* and minimize impact to wetland habitat.

Cutting efforts were coordinated by NVCA with support from the Blue Mountain Watershed Trust Foundation (BMWT), condominium associations, Georgian Bay Forever (GBF) and community volunteers. In addition to NVCA-led efforts, shoreline condominiums organized additional work days.

As part of the cutting efforts, NVCA hosted the 5th annual "Fight the Phrag" volunteer work-day on August 24, 2019 (figure 10). This event engaged 68 volunteers who provided 258 hours of work to the project. Cutting efforts were concentrated on shoreline areas near the courthouse off of Huron St. and in Harbourview Park near the Arboretum. This community day continues to be a critical program activity, accounting for almost half of the total volunteer recruitment and 37% of the total area of *Phragmites* cut in 2019.

Despite reduced program funding and a late start relative to 2015-2018 efforts, high levels of success were achieved. Thanks to the efforts of 68 volunteers who contributed 258 hours to the project, 2,810 kg of *Phragmites* were removed from 4,547 m<sup>2</sup> of Georgian Bay shoreline (Table 4).

2019 work was made possible by financial support provided by the Blue Mountain Watershed Trust Foundation (W. Garfield Weston Foundation), Government of Canada and World Wildlife Fund Canada-Loblaw Water Fund. Georgian Bay Forever once again provided valuable technical and staff support. NVCA provided project supervision and staffing support. For the fifth year, the Town of Collingwood provided critical in-kind support to the program through the pickup, transport and safe disposal of cut *Phragmites* stalks. The Town of Wasaga Beach also provided pick up and disposal of stalks at the Blue Water project site. Shoreline condominium "champions" continued to be key partners in *Phragmites* control.





Figure 10: Community volunteers assisting NVCA with *Phragmites* removal in Collingwood, 2019.

### 3 Project Communication and Community Outreach

The NVCA spreads awareness to Collingwood's communities about the invasion of *Phragmites* through speaking with community members and reaching out to groups and condominium associations during the summer (NVCA, 2017). Fact sheets have also been produced by NVCA to increase awareness of Collingwood's globally rare coastal marsh, *Phragmites*, and other invasive species.

Now in its seventh year, "Fight the Phrag" has become a recognized community effort in Collingwood typically organized by the NVCA (Figure 11). Additionally, 'Phrag Buster' volunteer days are organized by members of the BMWT when groups of volunteers are available to do so and in compliance with COVID19 restrictions. Typically, NVCA Stewardship staff and BMWT members coordinate cutting efforts along the shoreline with condominium associations, partner groups and volunteers during the months of August and September which has been deemed the best time to cut invasive *Phragmites*. With support from BMWT, Georgian Bay Forever, condominium associations and the Town of Collingwood the NVCA has had continued success with the "Fight the Phrag" efforts.





Figure 11: Fight the Phrag day, 2019.

## 4 Conclusion and Next steps

*Phragmites* was first identified as a community concern in 2014. In the years since, over 445 volunteers have contributed over 2,500 hours to help remove more than 16,000kg of *Phragmites* from Collingwood's shoreline. Community members and NVCA staff are noting progress with *Phragmites* control in Collingwood. Treating areas on an annual basis have led to observations of reduced density and size of *Phragmites* regrowth. With consistent annual management and continued efforts, it may be possible to control *Phragmites* along the shoreline. New tools should be considered as they emerge to assist with control efforts. Decision-making should be guided by ecological principles along this environmentally-sensitive shoreline.

NVCA aims to continue the monitoring and control of *Phragmites* as a long-term sustainable initiative in both the Collingwood and west Wasaga Beach communities through education and outreach, annual monitoring, and large-scale cutting events.

While NVCA and project partners are committed to assisting with the program, these organizations do not have the capacity to maintain current project effort without funding. It is the hope of the partners, that through education and outreach conducted during this project, shoreline residents and the general public will be more aware of *Phragmites*; and better able to access resources to help them control the invasive plant on their properties. It is advised that continued education and support be provided for municipalities and residents alike.

Building on the momentum of this project, NVCA and its partners will be exploring funding opportunities in order to continue the fight against *Phragmites* in the Collingwood area.

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