

Examination of Comparative
Manual Removal Strategies for
Non-Chemical Control of
Invasive Non-Native
Phragmites australis subsp.
australis: Phase II

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Phragmites Removal Technique



- Identify Phragmites
- Use leg muscles on spade
- Cut below soil surface
- Remove plant stalk
- Leave soil undisturbed



Benefits of the Technique

- Green parts of plant are removed to prevent photosynthesis
- Plant stalk removed below soil surface which results in more comfort walking over soil (no sharp stalks protruding from soil)
- Surrounding soil is not disturbed, allowing for continued growth of native species already present and slowing regrowth of Phragmites (which thrives in disturbed soil)

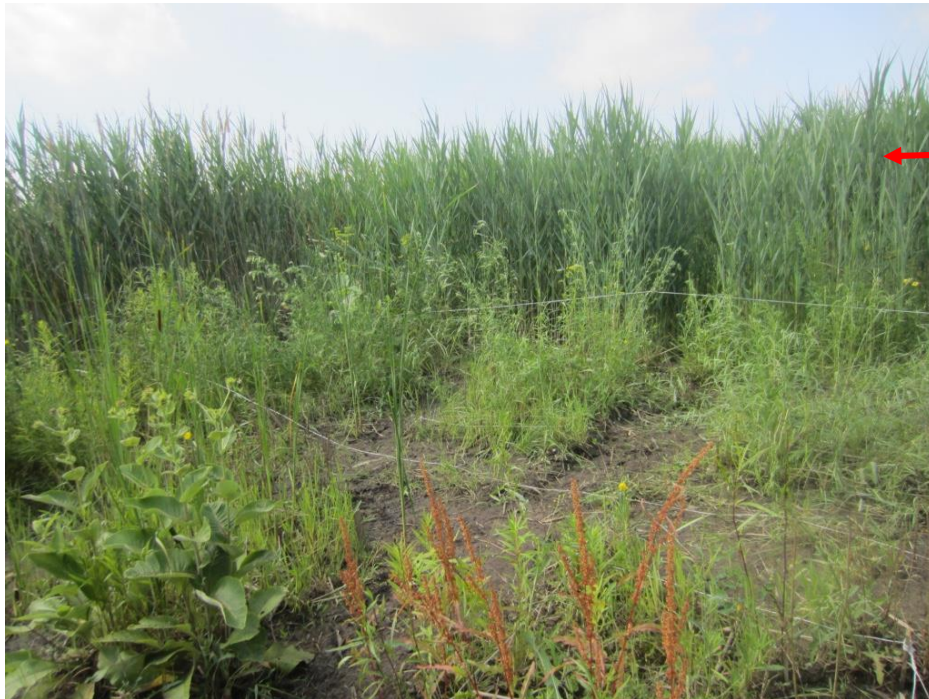
The Humber River Valley Locations

Humber Arboretum adjacent to Humber College, Toronto

– project supported by Humber Research:

1. Wet Patch - wet in spring, some standing water which dried up over the summer, soil remained very wet - soil was classified as sandy loam

2. Dry Patch - in a dry meadow – soil was classified as loam



Wet
Patch



Dry
Patch

The Beach Location

Wymbolwood Beach on Nottawasaga Bay, Georgian Bay, Tiny Township
– project supported by Tiny Township:

3. Shoreline Patch - in moist sandy soil separated from the shore by a small dune populated by shrub willows, infiltrated with Phragmites



The Protocol

- Compare the effect of the timing of the spading technique to a control section during the second season on the same sites as last year
- Collect data on stalk density, height and diameter

Section 1. Control – plants untouched

Section 2. All stalks cut 5 cm above soil surface using secateurs in mid-July (Humber locations only)

Section 3. All stalks cut 5 cm below soil surface using sharpened spade in mid-July

Section 4. All stalks cut 5 cm below soil surface using sharpened spade in mid-July and mid-August

Section 5. All stalks cut 5 cm below soil surface using sharpened spade in mid-June, mid-July and mid-August

Wet Patch: Average Stalk Density/m²

Section	June 2016	August 2016	June 2017	August 2017
1. Control - no removals	112	138	73	73
2. cut 5cm above soil, 1X	115	11	85	1
3. spaded 5cm below, 1X	116	17	75	24
4. spaded 5cm below, 2X	135	11	96	14
5. spaded 5cm below, 3X	134	10	105	9

Dry Patch: Average Stalk Density/m²

Section	June 2016	August 2016	June 2017	August 2017
1. Control – no removals	126	127	102	59
2. cut 5cm above soil, 1X	78	93	91	34
3. spaded 5cm below, 1X	121	78	115	65
4. spaded 5cm below, 2X	175	55	120	23
5. spaded 5cm below, 3X	147	8	60	6

Wymbolwood Beach: Average Stalk Density/m²

Section	June 2016	September 2016	June 2017	August 2017
1. Control – no removals	110	156	107	109
2. spaded 5cm below, 1X	127	59	154	8
3. spaded 5cm below, 2X	108	19	106	4
4. spaded 5cm below, 3X	104	21	114	4

Results: Improved Plant Diversity - Wet Patch



Results: Improved Plant Diversity - Dry Patch



Results: Improved Plant Diversity - Wymbolwood Beach



Interesting findings

- new shoot growth observed on mature stalks in October 2017



Next Steps

- Make a deputation to Tiny Township to obtain support for continued research next season (3rd summer) on same site
- Examine results of late fall removal (Wymbolwood) on regrowth in spring
- Continue with timing of spade removals and data collection throughout the summer 2018 growing season to document effects of three seasons of control