

Driving *Phragmites* to Eradication:

Five Years of Management at Royal Botanical Gardens



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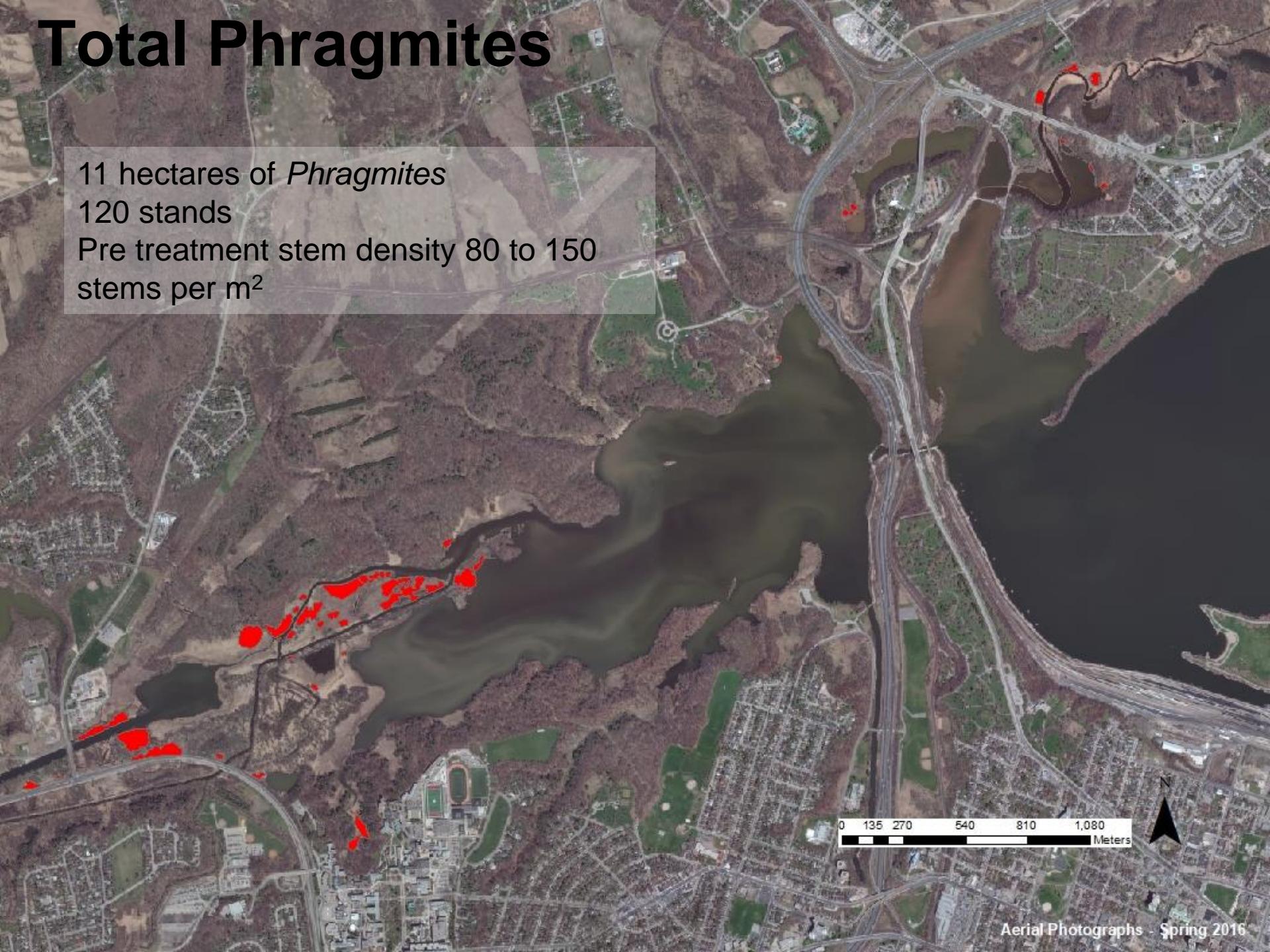
Creek Side Trail
Hendrie Valley
September 4th, 2013

Total Phragmites

11 hectares of *Phragmites*

120 stands

Pre treatment stem density 80 to 150
stems per m²



0 135 270 540 810 1,080
Meters

Management

- Started Management in 2013

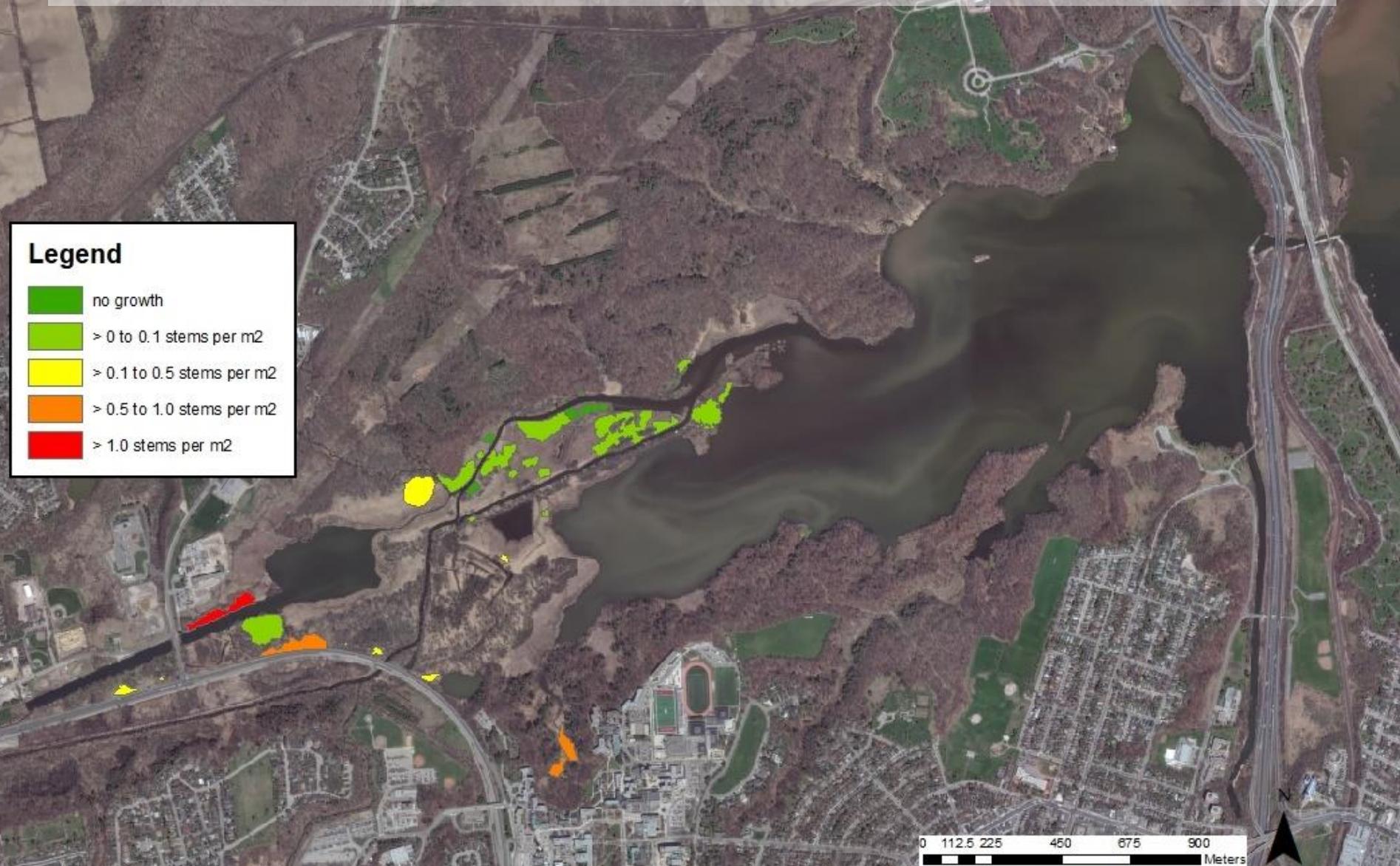
September – Herbicide application

Winter – smash or roll dead stalks

Monitoring takes place just before spraying.



Density of *Phragmites* stands in Cootes Paradise as determined in Fall of 2018



Aerial photos from Spring 2016

Pre-management *Phragmites* stands had 80 to 150 stems per m²



Aerial photos from Spring 2016

Pre-management *Phragmites* stands had 80 to 150 stems per m²



**Pre-herbicide treatment
2014**



Post-herbicide (primary) treatment 2015



2017



Least Bittern Stats @ RBG

O. Reg. 167/17 sch.3 #50

L: 13" WS: 17" WT: 2.8 oz

Least Bittern

Ixobrychus exilis

Year	# Stns Surveyed	Observed At
2007	78	0
2010	7	1
2014	17	3
2017	24	11

Status: Threatened

Hemi-marsh nesting obligate
Just finished its 4th round of
formal surveys at RBG



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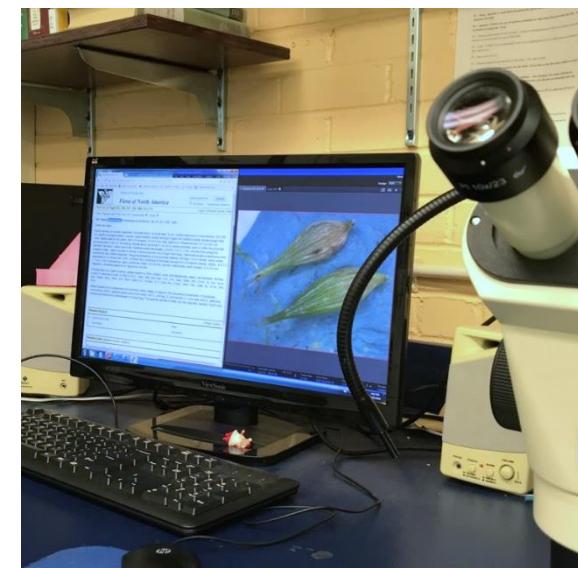
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What plant species are regenerating in the managed *Phragmites* sites?



Vegetation surveys of treated *Phragmites* sites

- Used Ecological Land Classification
- Record all species in site
- Score abundance for each:
 - Rare
 - Occasional
 - Abundant
 - Dominant



Regeneration survey results: Species diversity

- 210 species across 11 surveyed sites (= 3.4 hectares)
- 63.5% of all identified species were native



Regeneration survey results: Dominant species

- Cattails¹ (*Typha* spp.)
- Devil's beggartick² (*Bidens frondosa*)
- Common reed (*Phragmites australis* subsp. *australis*)
- Rough managrass (*Glyceria maxima*)
- Purple loosestrife (*Lythrum salicaria*)
- No dominant species at 3 of 11 sites



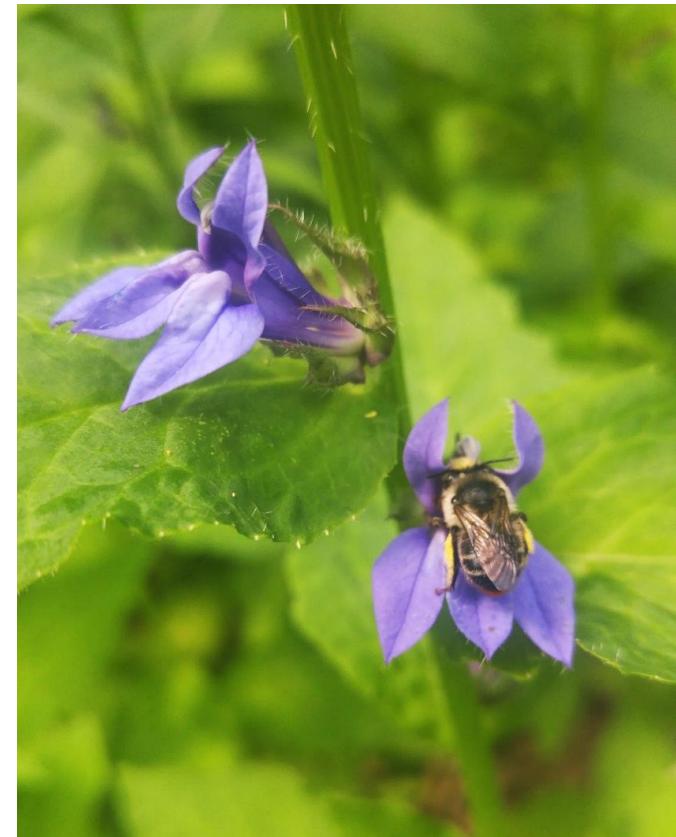
Regeneration survey results: Desirable species

- Sedges (*Carex* spp.)
- Softstem bulrush¹ (*Schoenoplectus tabernaemontani*)
- Spotted Joe-Pye weed (*Eutrochium maculatum*)
- Swamp milkweed (*Asclepias incarnata*)
- Square-stemmed monkeyflower² (*Mimulus ringens*)
- Broad-leaved arrowhead (*Sagittaria latifolia*)
- Blue vervain³ (*Verbena hastata*)
- Large-fruited burreed⁴ (*Sparganium eurycarpum*)



Has our *Phragmites* management been successful?

- In 2018: *Phragmites* showed no regrowth in 53% of sites
 - Only 1% of sites had > 1 stem / m²
- Most (64%) regenerating species are native
- Increased wildlife use (least bittern, insects, amphibians) of managed areas



Lessons learned

- Biomass removal and burning are unnecessary if using rolling or smashing
- Don't plant in first few years of treatment to allow ease of touch-up treatments
- Try seeding, then planting if nothing native is regenerating
- Full eradication is not a realistic goal with our current management tools





Thank you!