Invasive *Phragmites* Control Efforts in Lake Erie Coastal Wetlands in Rondeau Provincial Park and the Long Point Region

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PILOT PROJECT SUMMARY

- In September 2016, the Ministry of Natural Resources and Forestry successfully undertook a combination of aerial and ground herbicide treatments (as part of an Emergency Registration) to control Phragmites in wet areas at Rondeau Provincial Park and several sites in the Long Point area in partnership with several organizations
- This work was completed as a pilot project to protect the significant natural values of these important wetland ecosystems that were in danger of being lost. The pilot also included an extensive environmental monitoring program to assess the effects of the project.

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EFFECTS OF PHRAGMITES

- Canada's "worst" invasive plant
- Resulting in:
  - Loss of biodiversity
    - Allelopathic
    - High biomass inhibits light penetration to other plant species
    - Reduces shelter and foraging access for various wildlife
  - Impacts to hydrology
  - Recreational impacts
  - Economic impacts of management

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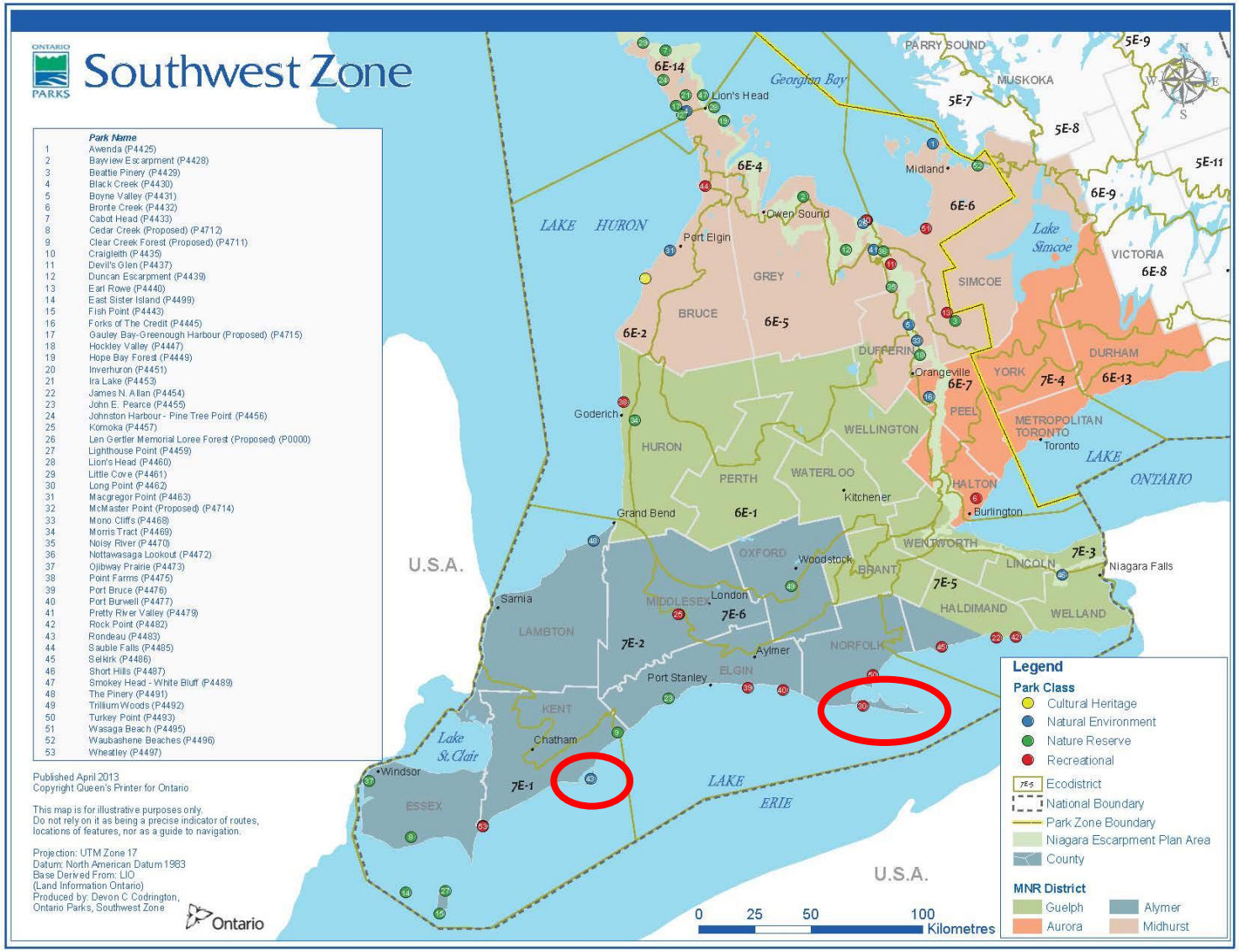
PROJECT LOCATIONS



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RONDEAU AND LONG POINT ECONOMICAL AND SOCIAL SIGNIFICANCE

- Resource-related industries
  - Hunting, fishing, camping, bird watching… Valued at $4 million annually
- Local communities are concerned the impact of Phragmites will directly translate to a decline in tourism
- Hydrological changes as a result of Phragmites:
  - Overgrown boating channels
  - Wetlands drying up
  - Elimination of nursery/spawning fish habitats
  - Loss of access points for recreation


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RONDEAU AND LONG POINT ECOLOGICAL SIGNIFICANCE

- Two of the few remaining large coastal wetlands on Lake Erie with natural, hydrological connections and pulses
- Global, national and provincial designations (i.e. UNESCO Biosphere Reserve, Earth Science and Life Science Areas of Natural & Scientific Interest, Provincially Significant Wetland, RAMSAR Site, Important Bird Area, etc.)
- Habitat for wetland dependant species, including 23 species at risk
- High number of provincially rare plants and wildlife



EMERGENCY USE REGISTRATION RATIONALE

- The initiation of this Pilot Program was based on the presence of **significant natural values** in Rondeau and Long Point. Local scientists and biologists advised that these locations were at an ecological tipping point and, if action was not taken, many of these values may become critically imperilled at Rondeau and Long Point.
- While controls (mechanical, cultural, etc.) and Best Management Practices provided short-term relief from Phragmites, their effectiveness was ultimately limited by the lack of registered herbicides for use in aquatic habitats in Canada.

Photo courtesy of Janice Gilbert, MNR.

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PROJECT TIMELINE

March 2015 ----------	Project Initiation (PD, ROD, PSD)
April - June 2015 -------	Planning meetings with stakeholders, PMRA, and herbicide manufacturers
July/August 2015 ------	MNRF Class EAs completed
December 2015 --------	MOECC Letter of No Objection Received
January 2016 ----------	Emergency Registration (ER) Application submitted
February 2016 ----------	Briefing with PMRA
June 2016 ----------	Approval of ER by PMRA

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PROJECT TIMELINE

June - August 2016 -----	Procurement Process for Applicator(s)
July 2016 ----------	OPAC Classification
August 2016 ----------	Monitoring Plans provided to MOECC and DFO
September 2016 -------	DFO – SARA Permit and Fisheries Program Review
September 5-9 ----------	Permit(s) to Perform an Aquatic Extermination (MOECC)
September 9 ----------	Landowner and Public Notifications (48 hours notice)
September 13-21 -------	Implementation of Aerial Herbicide Program
September - January -----	Monitoring and Ongoing Evaluation

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PUBLIC COMMUNICATION (PRE-TREATMENT)

- Notifications at Rondeau
  - Campers
  - Park day-users
  - Cottage leaseholders and other tenure holders
  - Park staff
  - Friends of Rondeau
  - Rondeau Yacht Club and boaters
  - Waterfowl hunters
  - Local municipality, police service, OPP, fire department
  - Health unit and local hospitals

- Notification at Long Point
  - Residents
  - Long Point Ratepayers' Association
  - Bird Studies Canada
  - Boaters
  - Waterfowl hunters
  - Local municipality, police service, OPP, fire department
  - Health unit and local hospitals

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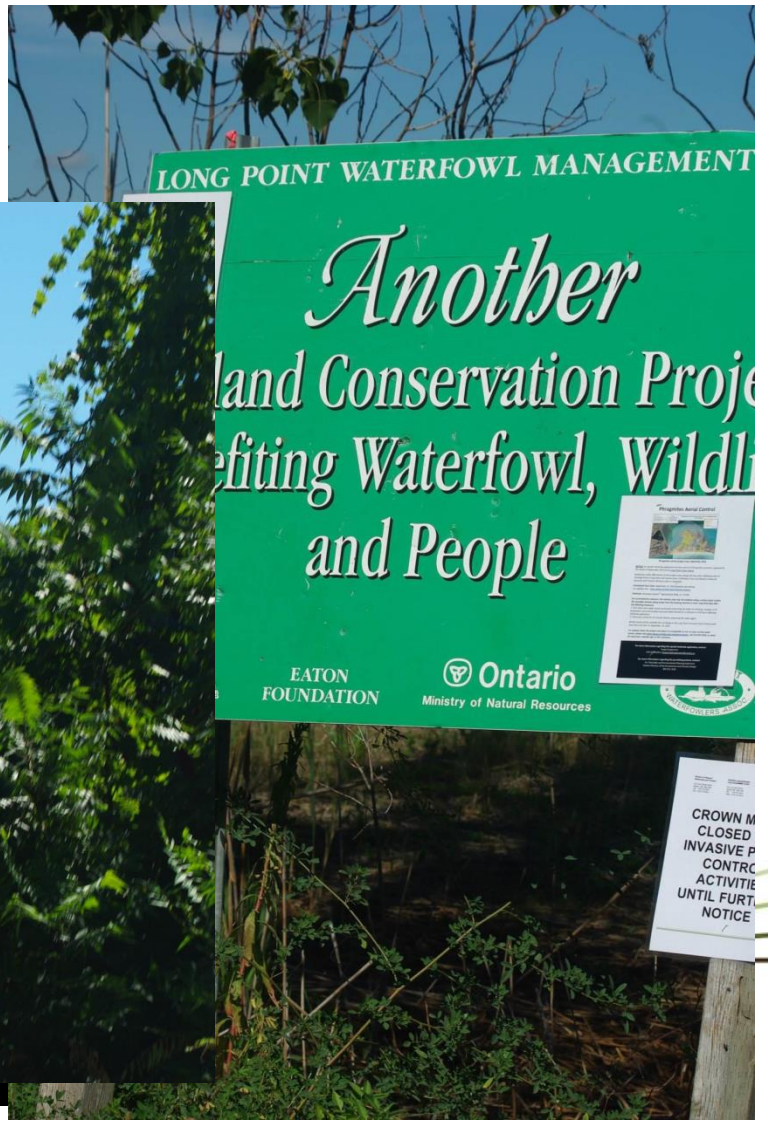
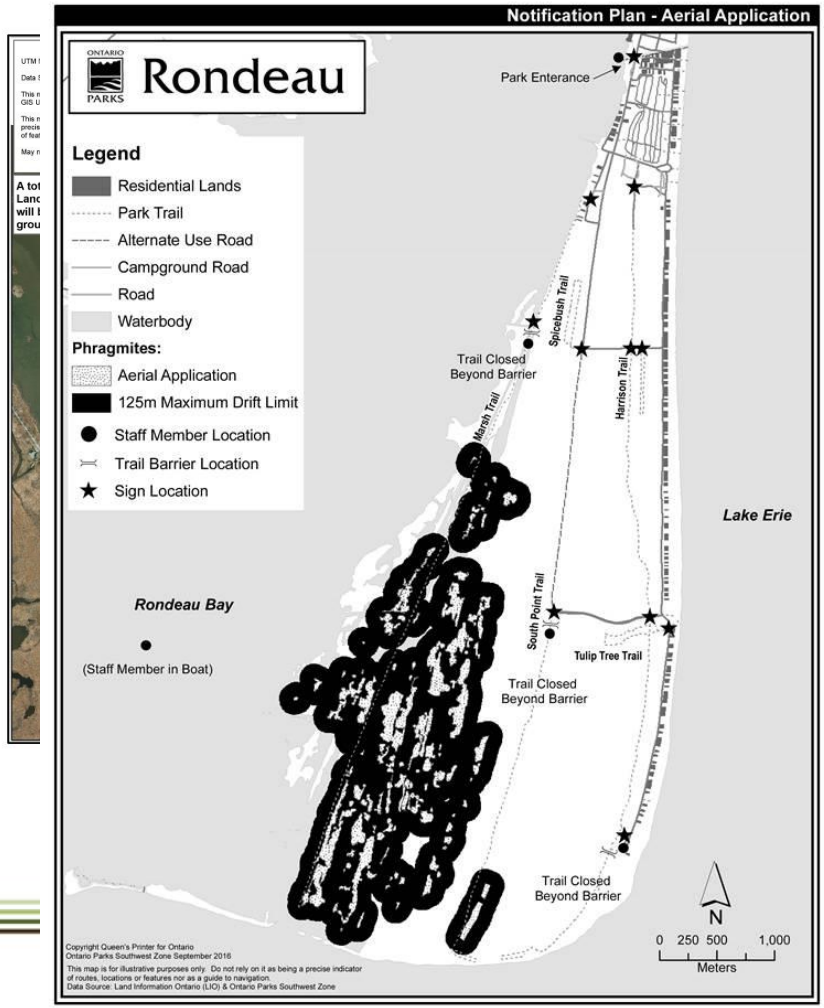
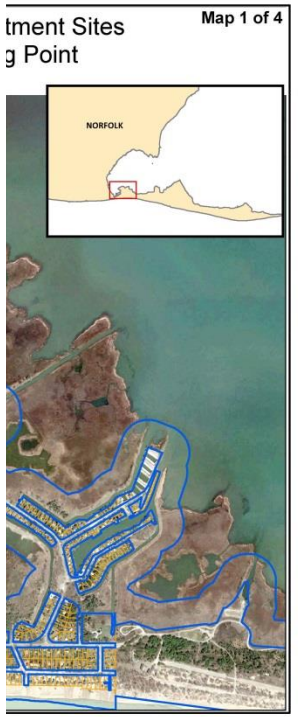
NOTIFICATION EXAMPLES



SELECTING TREATMENT POLYGONS

- Based on:
  - Phragmites density
  - Accessibility
  - Patch size





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FLIGHT CONDITIONS AND ACCURACY

- Conditions:
  - Wind and Weather
    - No rain or forecasted for 12 hours
    - No morning dew present
    - Winds less than 16km/hour
  - Speed & Height Restrictions
    - Maximum helicopter speed while spraying is 60km/hour
    - Treatment occurs at 3m above plant
- Accuracy:
  - MNRF provided GIS data mapping high density Phragmites cells; data was loaded into an automated navigation system
  - Boom width is not more than 65% of the propeller diameter (down draft)

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THE ACTION

HERBICIDE LOADING

AERIAL TREATMENT

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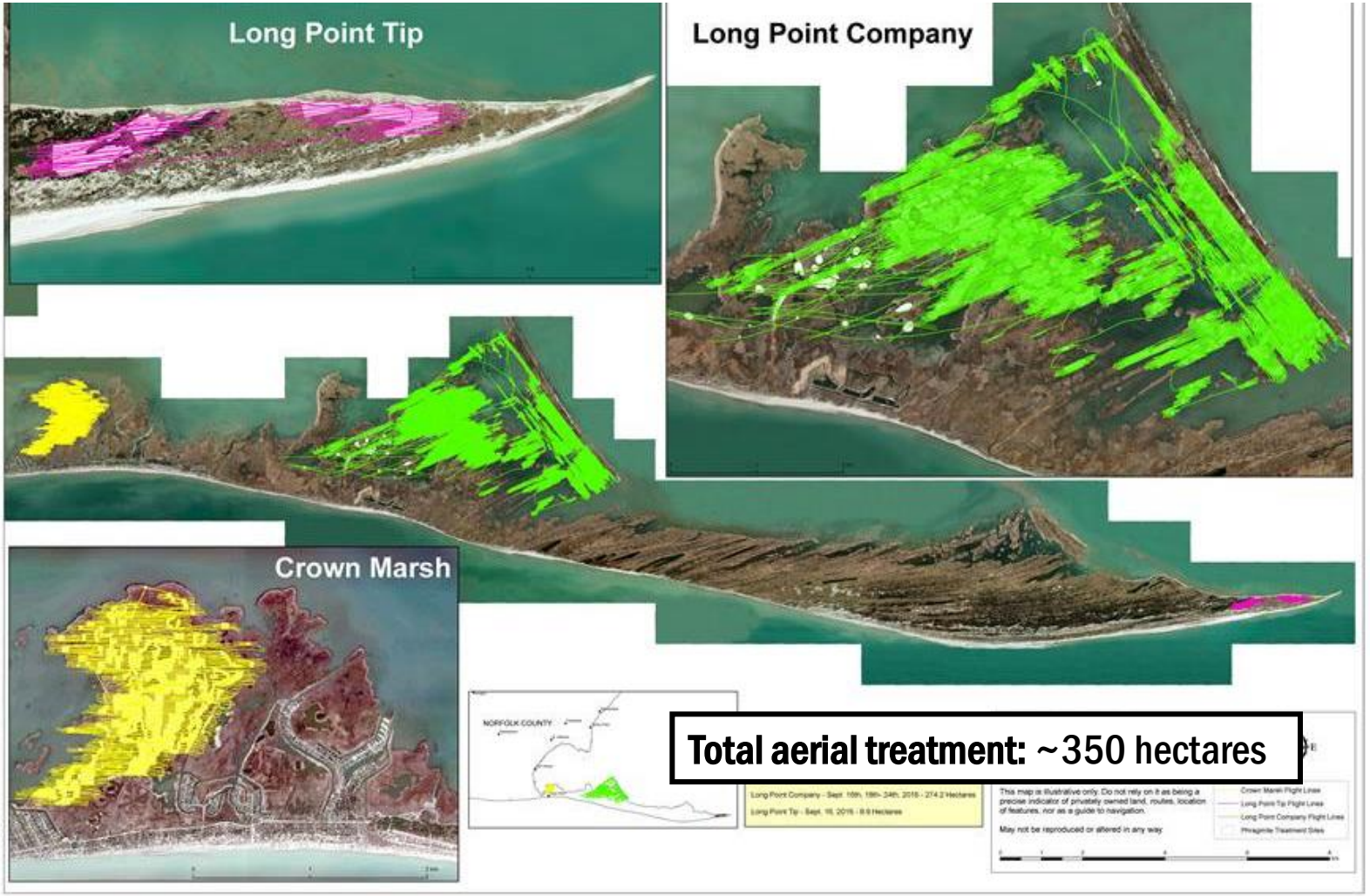
FLIGHT SUMMARY: LONG POINT REGION



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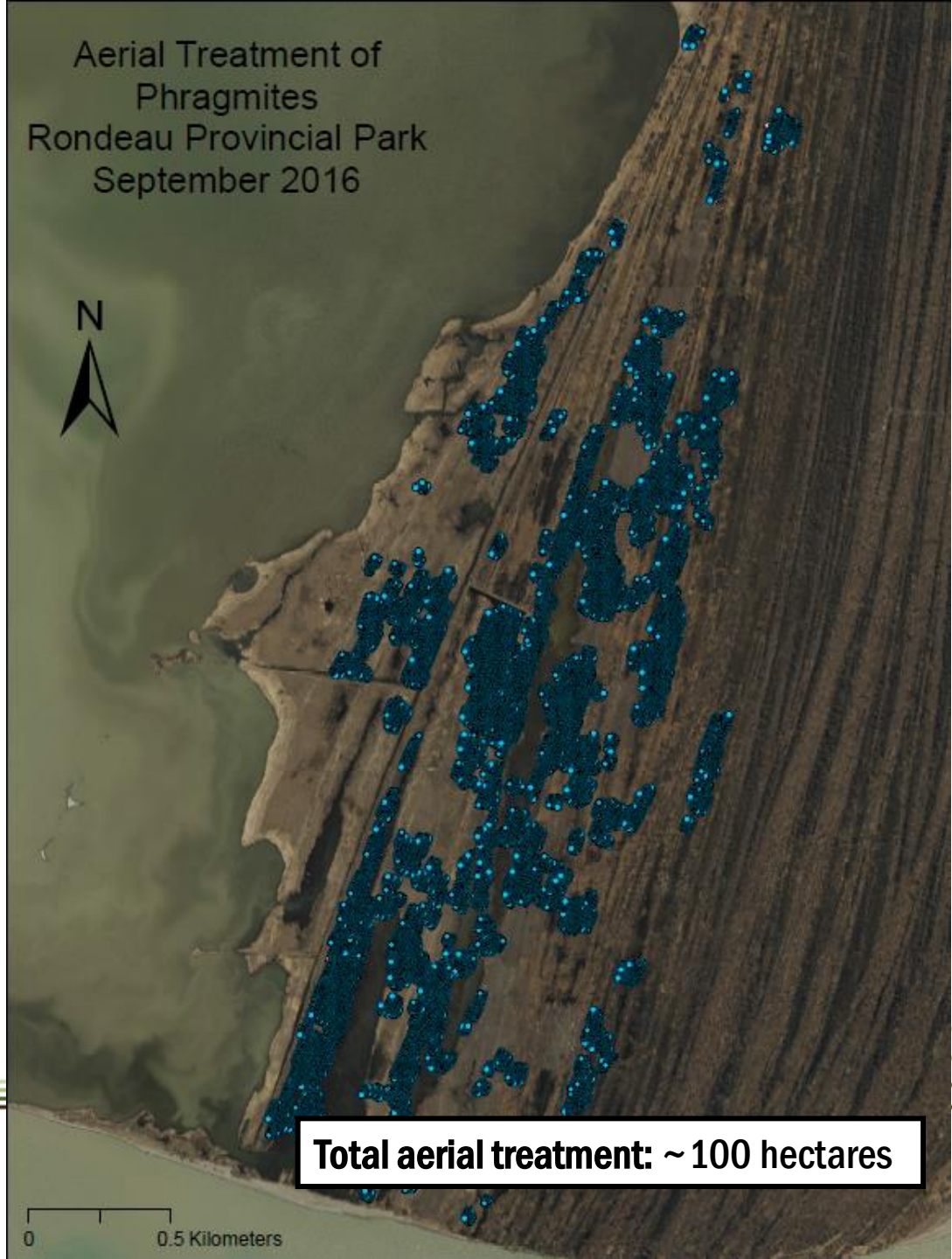
FLIGHT SUMMARY: RONDEAU PROVINCIAL PARK



GROUND TREATMENT: LONG POINT REGION

Total ground treatment: ~40 hectares

"The Marsh Master"

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ENVIRONMENTAL IMPACT MITIGATION

- Chemical Control:
  - Herbicide application followed all requirements outlined by PMRA, MOECC, and product label
  - Application occurred during vulnerable life stages of *Phragmites* (after seed-set)

- Reducing non-target impact to wildlife and plants:
  - Herbicide application occurred over dense Phragmites stands
  - Timing window factors
    - Outside of bird breeding/nesting window
    - Critical insect life stages complete
    - Most native plants have senesced
    - Amphibians and reptiles will be staging
    - Outside of hunting days

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ENVIRONMENTAL MONITORING

MNRF has partnered with the University of Waterloo to monitor and analyse the following, as part of the pilot project:

- Efficacy of herbicide treatment
- Effects of the control activity on sensitive communities
- Effects of the control activity on fish and fish habitat
- Fate of glyphosate, AMPA, and the adjuvant in water and sediment at the treatment sites, and their dispersal from treatment sites
- Glyphosate concentrations in ambient water samples within 800m of shoreline residences adjacent to the treatment area at Long Point

Photo: Rebecca Rooney (UW)

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ENVIRONMENTAL MONITORING

- Treatment efficacy
  - Permanent plots in treated and un-treated areas
- Fate of glyphosate
  - Plots at increasing distances from the mouth of existing ponds in both treatment areas

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INITIAL RESULTS

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POST-TREATMENT ACTIVITIES

- Following herbicide application
  - MNRF's 2011 BMP document recommends a follow up of rolling and prescribed burning of biomass where possible
  - Rolling occurs at a minimum of 3 weeks after treatment (usually much later)
  - Rolling must occur immediately prior to burning (within 48 hours)
  - Prescribed burns typically occur in the winter months

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CONSIDERATIONS FOR FUTURE WORK

- Highly process-oriented
- Timeframes for approvals
- Need for increased capacity in qualified contractors possessing the necessary skills and expertise to perform the work
- No registered herbicide for use over water in Canada

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PARTNERS & ACKNOWLEDGEMENTS

- Internal Partners
  - Southern Region, Aylmer District; Ontario Parks, Southwest Zone and Rondeau Provincial Park; Natural Heritage Conservation Policy Branch, Natural Heritage Section; Crown Forests and Lands Policy Branch, Forest Guides and Silviculture Section; Aviation, Forest Fire and Emergency Services, Aviation Services.
- Nature Conservancy of Canada
- Ducks Unlimited Canada
- University of Waterloo
- Bird Studies Canada
- Ontario Invasive Plant Council
- Long Point Waterfowlers' Association
- Rondeau Bay Waterfowlers
- Long Point Ratepayers' Association
- Norfolk County
- Haldimand-Norfolk Health Unit

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Photo: Ontario Invading Species Awareness Program

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