



WATER SOLDIER IN ONTARIO

Control and Management

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Ontario Federation of Anglers and Hunters
OIPC Winter Webinar Series #2

Overview

- What is Water Soldier?
- Where is it located?
- Trent River Monitoring and Treatment 2008-2011
- Trent River Monitoring and Treatment 2014-Present
- Black River Monitoring and Treatment 2015-2016
- 2016 Research
- Policy and Legislation Changes
- Moving Forward

Water Soldier

- Native to Europe and Northwest Asia
- First wild population in NA located in Trent River
- Asexual reproduction by way of offsets and turions
- Forms dense mats of floating and submerged vegetation



Water Soldier

In fall: plants sink for the winter, rosette shoots and turions survive on the bottom of the lake



In spring, plants rise to water surface and form new roots, offsets become active, and vegetative reproduction begins



Reproduction

Vegitative reproduction
through offsets and turions

No viable seed (no sexual
reproduction) Consistent
with popns in Europe

Each plant can have
multiple offsets and turions

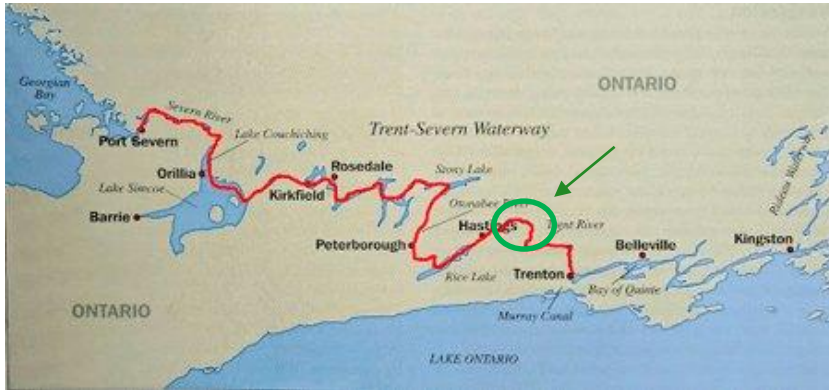
Clonal fragmentation
facilitates dispersal

Fate of Turions (how long
do turions survive? Multiple
years?)



(Smith, 2014)

Trent River Populations



- First observed in 2008
- Hamlet of Trent River within Lake Seymour
- May have been present 2-3 years prior to detection



2015 Black River



Water Soldier Management 2008-2011

Manual Removal



(D, Copplestone, 2009)

Herbicide Emergency Label Extension



(D, Copplestone, 2009)

Integrated Management Plan

- The IMP has three main objectives:
 1. Prevent the introduction and spread of water soldier to new locations in Ontario,
 2. Early detection and rapid response to new water soldier populations detected within Ontario, and
 3. Eradicate established populations of water soldier from public waters in Ontario



Water Soldier Working Group

Inter-agency working group consisting of:

- Ministry of Natural Resources and Forestry
- Ontario Federation of Anglers and Hunters
- Parks Canada
- Trent University
- Lower Trent Conservation Authority
- US Army Corps of Engineers
- Ministry of the Environment and Climate Change.



US Army Corps of Engineers



Management Approach

Monitor ➡ Treat ➡ Repeat

Adapt If Necessary!

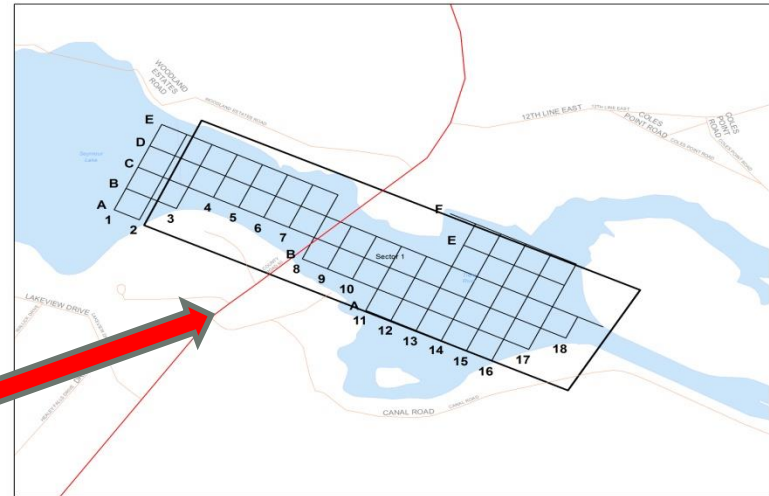
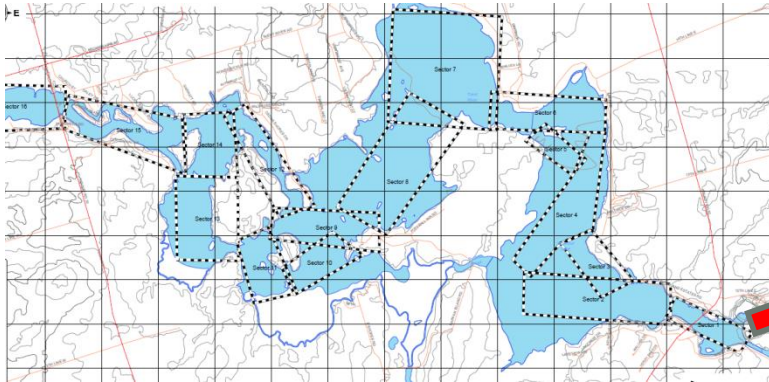


(Borrowman, 2016)



(Borrowman, 2016)

Monitoring



Monitoring

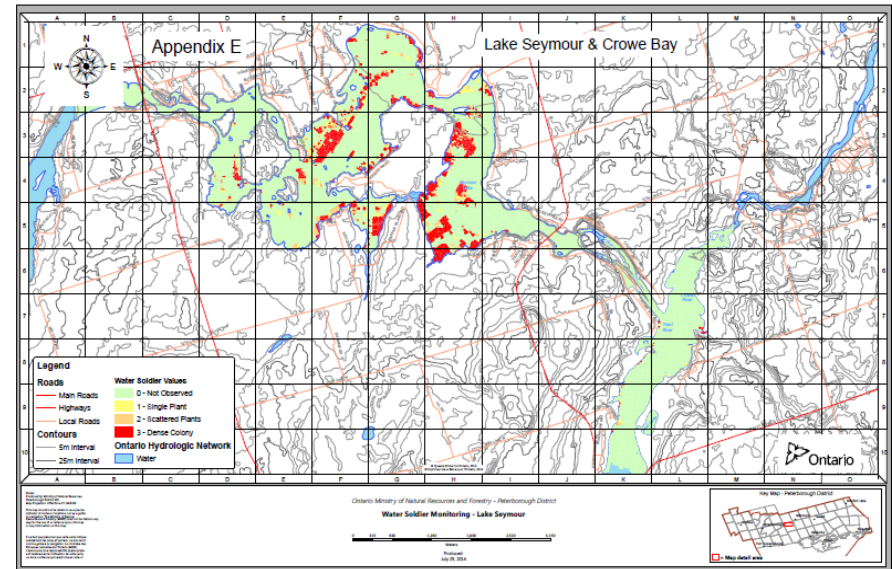
- Systematically sample TSW 50x50 metre grid
 - 2014 – 5,700 point intercepts
 - 2015 – Over 21,000 point intercepts
 - 2016 – Over 10,000 point intercepts
- Each point intercept is given a value of water soldier present
- Shallow areas (< 1 meter) are sampled with canoes



2014 Treatment

Pilot Control Project to utilize Reward
To treat 50 ha between Lake Seymour
And Crowe Bay.

Lake Seymour: 41.7 ha treated
Crowe Bay: 8.3 ha treated



(Wensink, 2014)

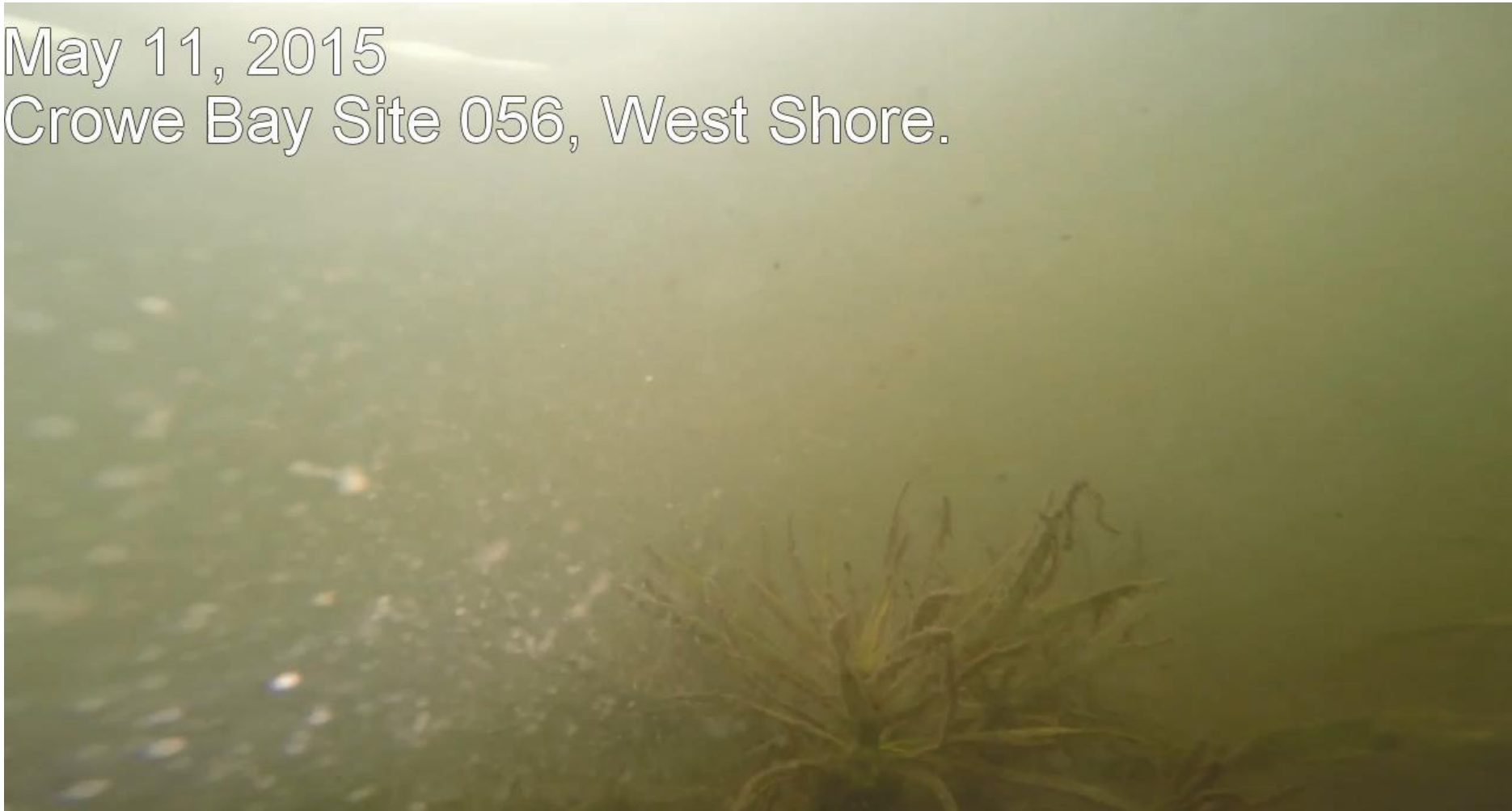


(Smith, 2014)

Spring 2015

Results of 2014 Treatment

May 11, 2015
Crowe Bay Site 056, West Shore.



2015 Management

Mechanical harvester

Two acres of area covered

190 cubic yards removed

40 cubic yards put into Bio digester



(E. Gulhooley, 2015)

Herbicide Treatment

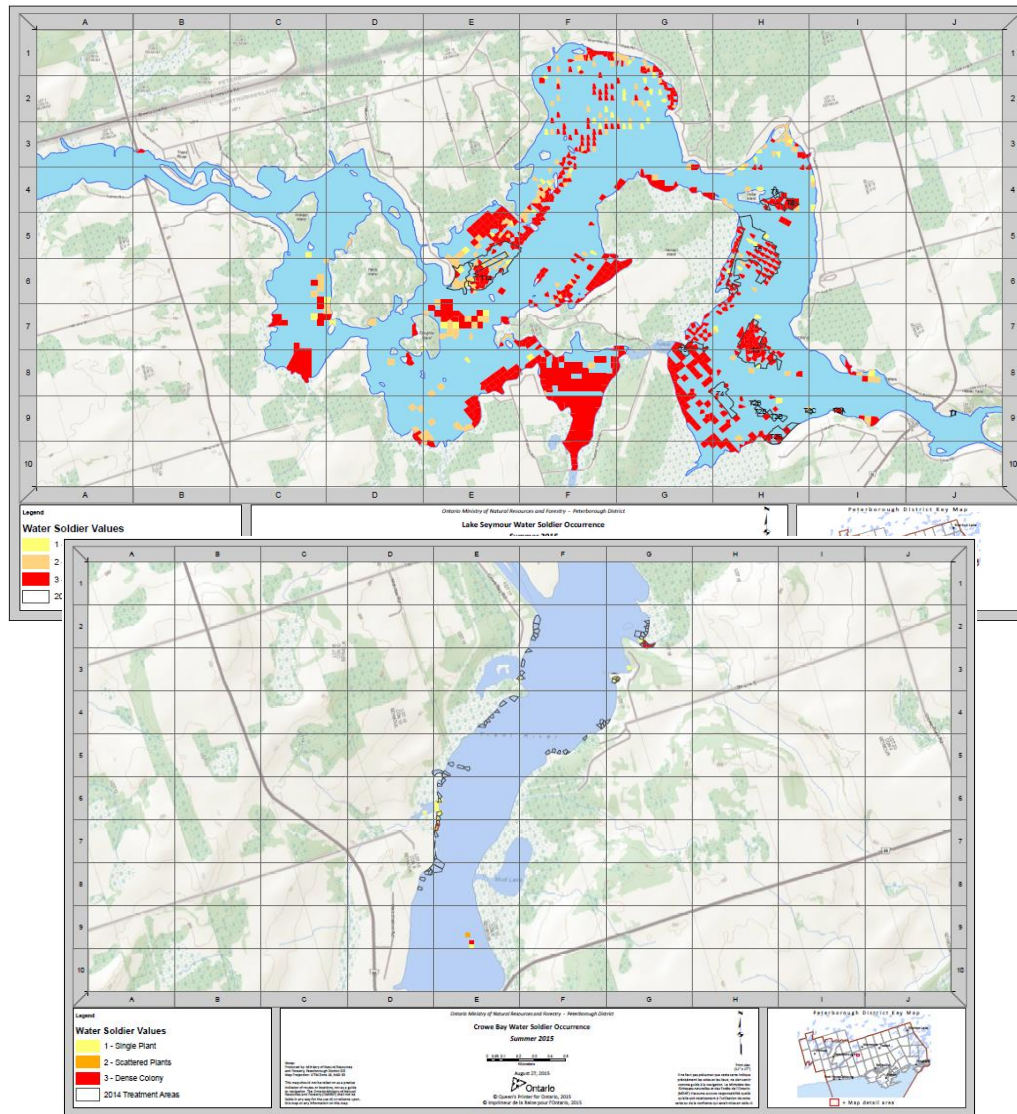
Large Scale Herbicide treatment on Lake Seymour

146.5 ha treated by Allied Biological

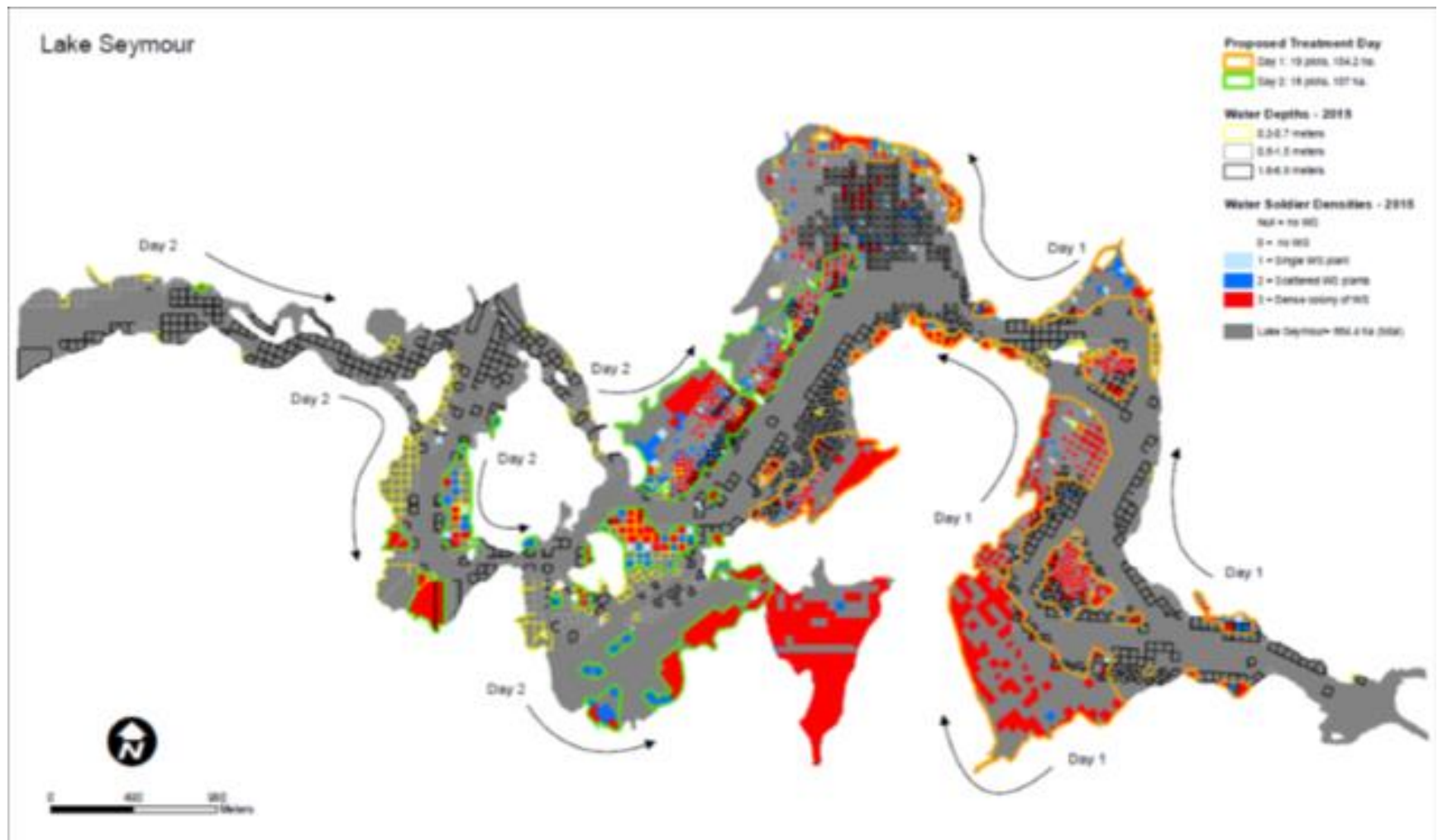


(M. Smith, 2015)

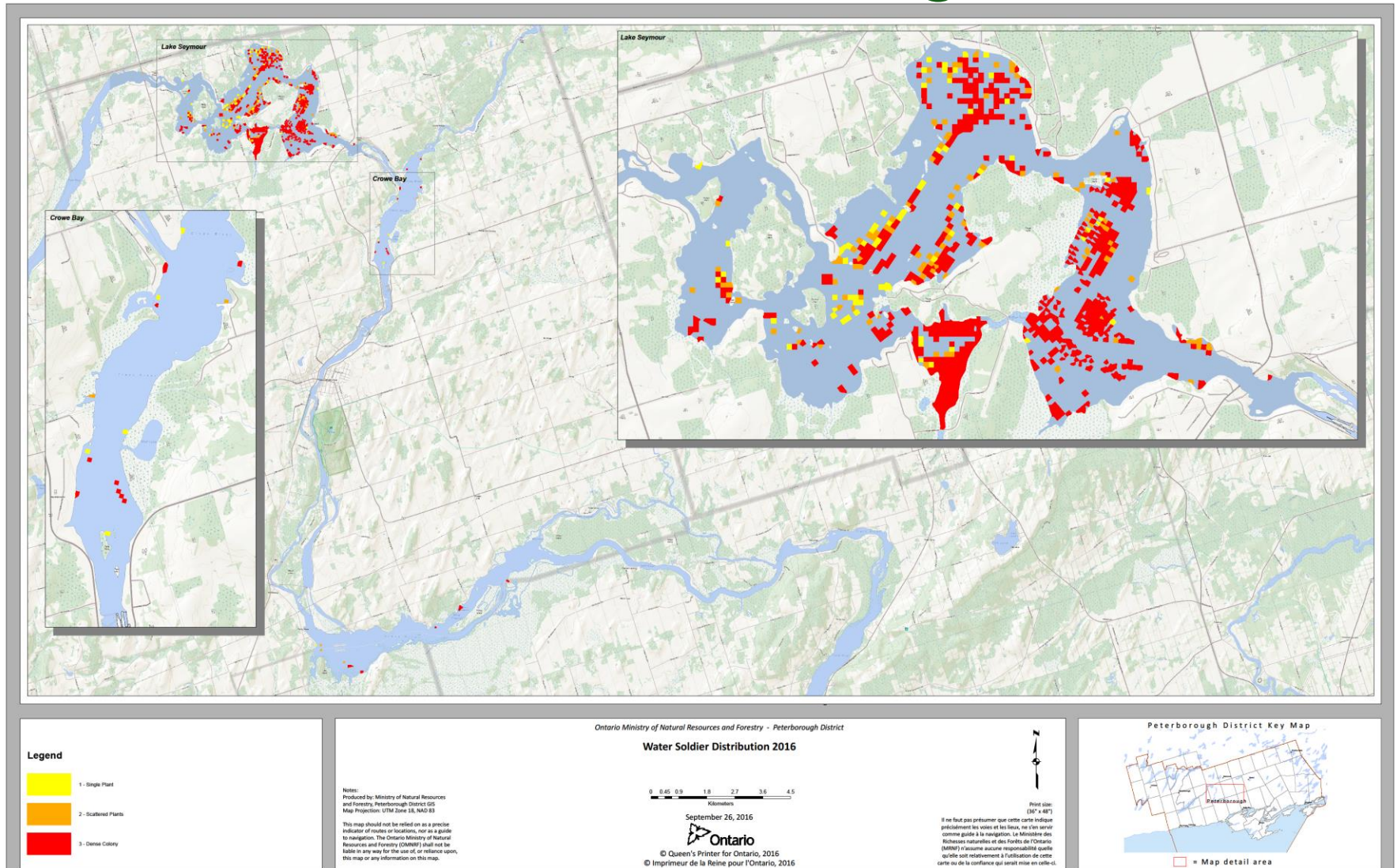
Results of 2015 Monitoring



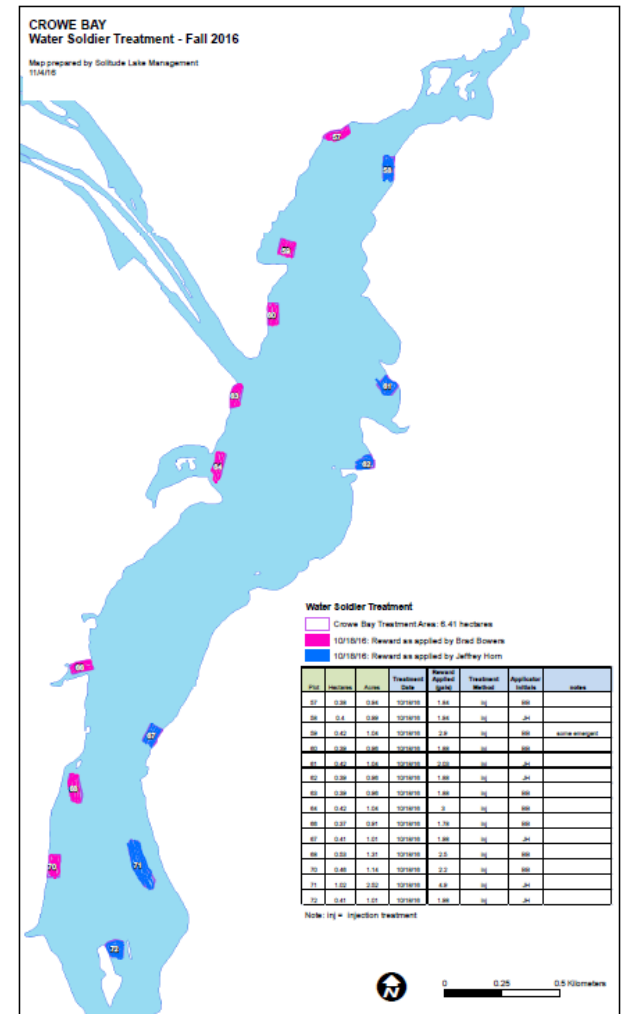
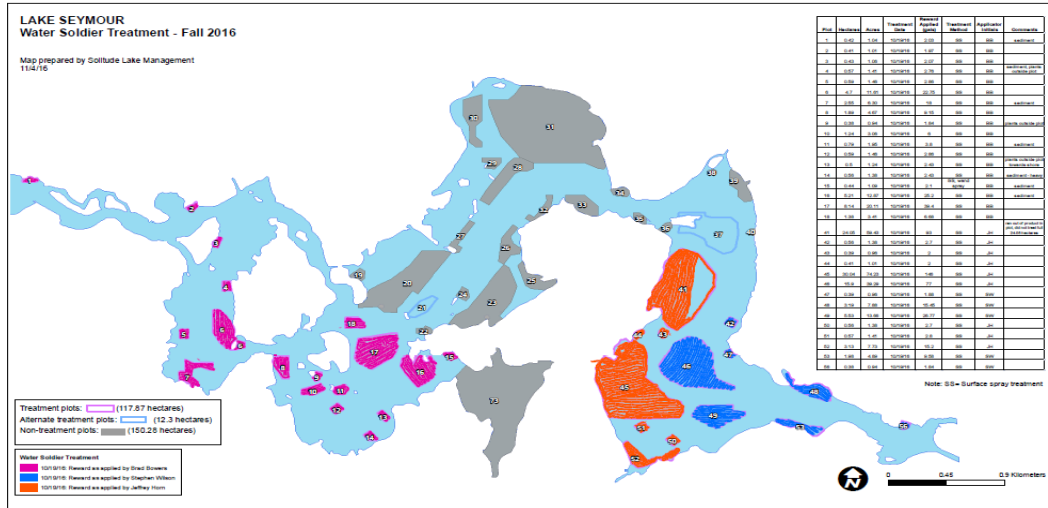
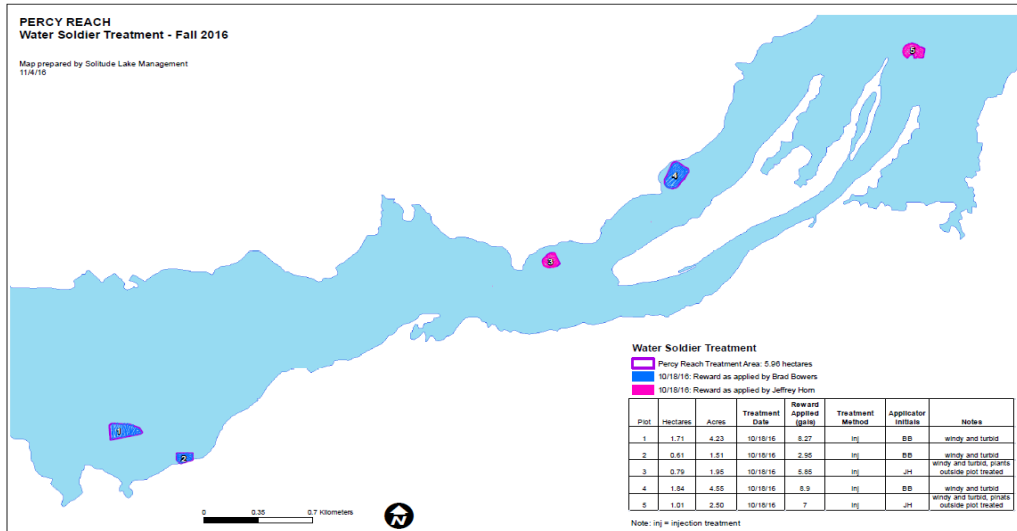
2015 Treatment



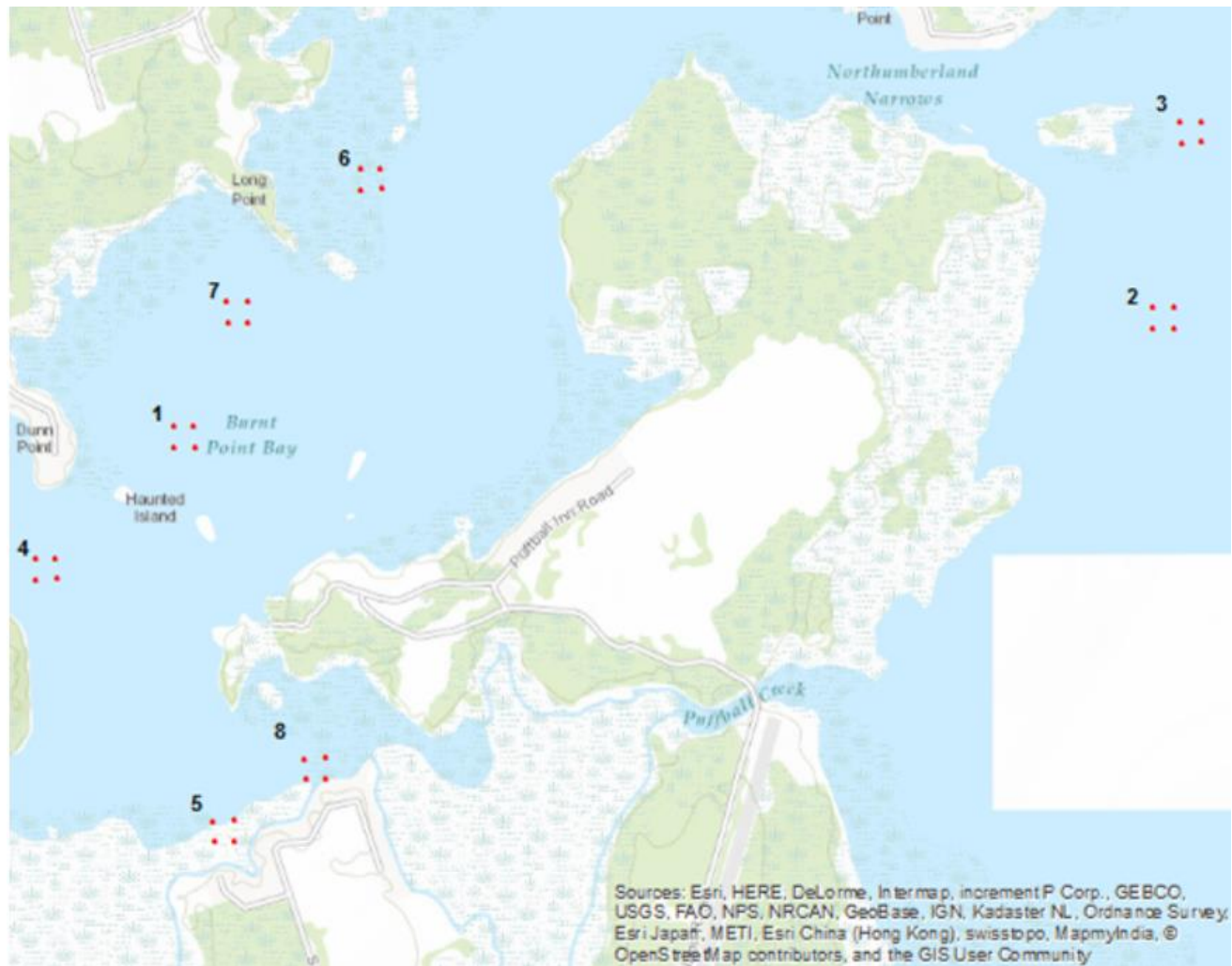
Results of 2016 Monitoring



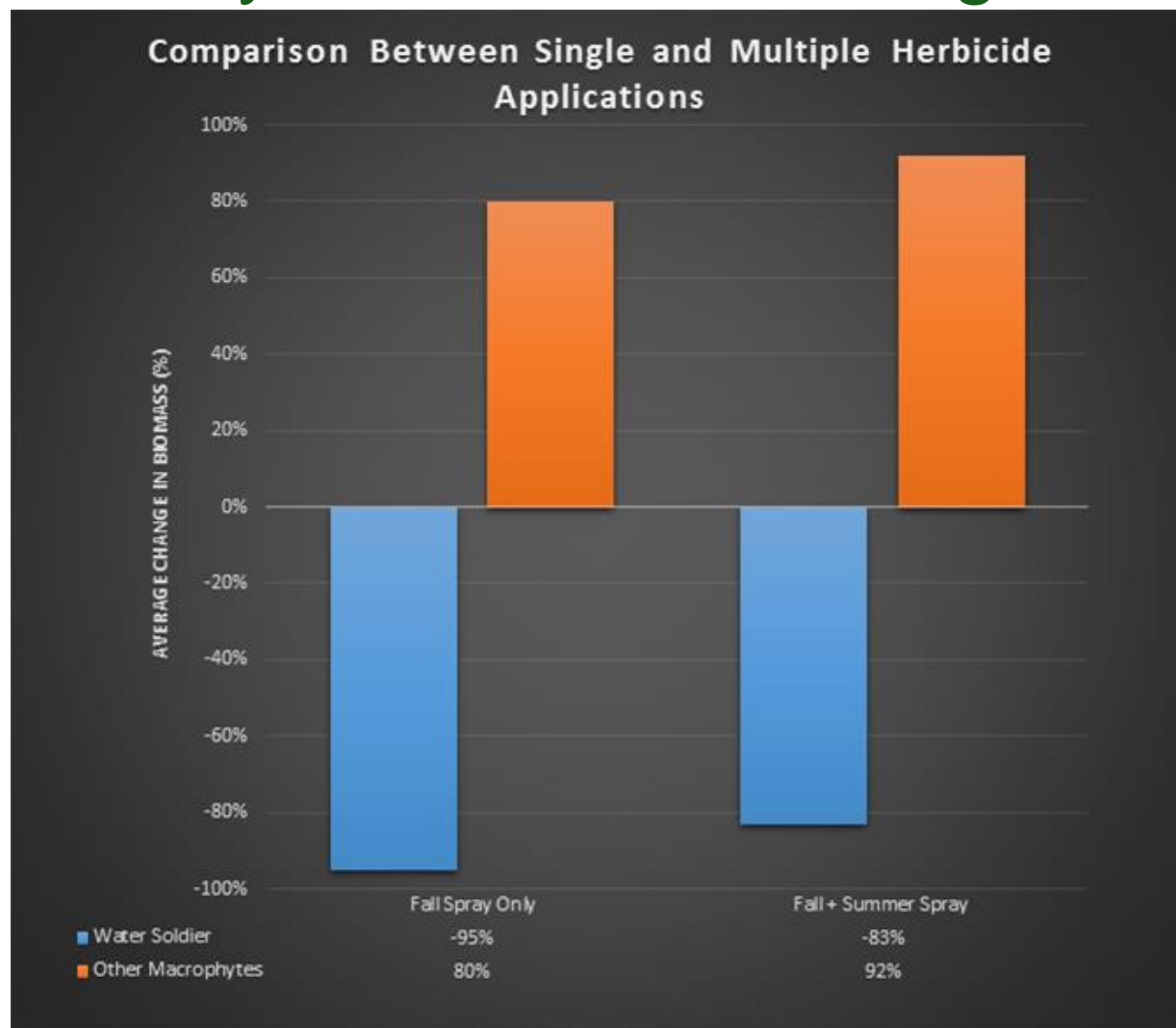
Treatment Plots 2016



2016 Research on Trent River



Trent University Herbicide Monitoring 2016



Shade Cloth Enclosures 2016

Shade Cloth Enclosures Pilot Project with Trent University

Three 10 ft X 10 ft enclosures Crowe Bay and Percy Reach

All three enclosures had a 100% reduction in water soldier

Great management for small populations, constraints with larger populations.



2015-2016 Black River Population



2013



(McCulloch, 2013)

2014



(McCulloch, 2014)

2015



(McCulloch, 2015)

2016



(McCulloch, 2016)

Invasive Species Act 2015

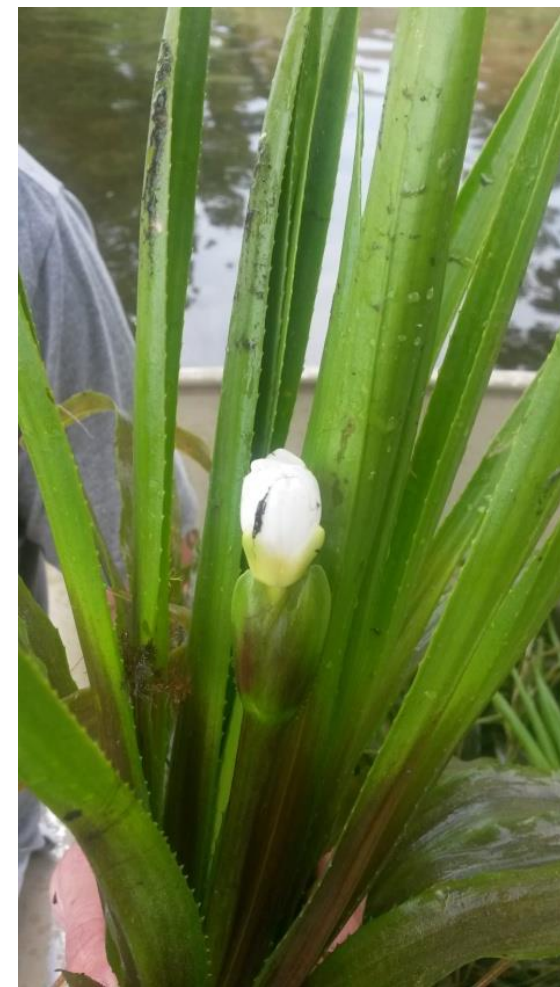
As of November 3, 2016, water soldier has been listed as a prohibited species under the Invasive Species Act 2015.

This means no person shall:

- (a) bring a member of a prohibited invasive species into Ontario or cause it to be brought into Ontario;
- (b) deposit or release a member of a prohibited invasive species or cause it to be deposited or released;
- (c) possess or transport a member of a prohibited invasive species;
- (d) propagate a member of a prohibited invasive species; or
- (e) buy, sell, lease or trade or offer to buy, sell, lease or trade a member of a prohibited invasive species.

Looking Forward to 2017

- How to sustain multi-year efforts
 - Funding
- Efforts to control small/new populations
 - D.A.S.H.(Diver Assisted Suction Harvesting)
 - Shade Cloth Enclosures
- Overall impact of repeated control efforts
- Continued monitoring/surveillance
- Education & awareness
 - Invading Species Hotline/EDDMapS Ontario for new sightings
 - Workshops in 2017 for landowners



(Wensink, 2014)

Questions?

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Invading Species Hotline

1-800-563-7711

www.eddmaps.org/Ontario

www.invadingspecies.com