Phragmites Control for Homeowners and Land Stewards

Bob Williams, www.Phragmites.org

June 10, 2015

The webinar is listen only. You can listen by phone or through your computer’s speakers. The webinar will be recorded and posted at greatlakesphragmites.net

We will begin shortly!
Phragmites Control for Homeowners and Land Stewards

2015

By Bob Williams from Phragmites.org
Bob@Phragmites.org
It Blocks Views
Fire Hazard

- Reduces property values & tourism
- Limits access for recreation
- Damages valuable landscaping
Reduces native plant and animal habitat, population and diversity
- Dries out wetlands
- Fills in canals, rivers and streams
- Clogs water intakes
- Navigation hazard on roads and waterways
- Hinders search and rescue operations
Where did this Phragmites come from?

Early 1800’s trade with Europe
When did it become a problem?

We know it was a problem on Staten Island in 1972
Where does it grow?
Not just in wet areas
Small Scale vs. Large Scale Projects

**Homeowners**
- Small Sites
- Limited Resources
- Do the work themselves
  - Want fast results
  - Want complete removal
- Focus on the details

**Conservation Agencies**
- Large Sites
- Short term funding
- Hire Contractors
  - Responsible to provide the greatest service for the $.
- Looks at the big picture

Different goals.
All of these factors can affect your approach to the problem.
Results

Homeowners

- 99 - 100% control
- Invested continued control

Conservation Agencies

- 90 - 95% control
- Control while funding is available
How does it spread?

by seed and rhizome
It is persistent and quickly takes over
Parking lot 2012
Parking lot 2013
Pond 2011
Pond 2015
What can we do to control Phragmites?

- **Prevention**
  Clean equipment being brought onsite

- **Early Detection**
  Know how to ID Phragmites

- **Rapid Response**
  Start controlling it the first season it is found
Can I dig it out?

Digging, tilling, pulling will help it spread
One Exception to not pulling it out
Can I cut it or burn it?
Cutting or Burning alone usually encourages growth

Cutting every two weeks for years may set back a small stand alone patch

Goats and sheep have been used to graze areas infested with Phragmites. They will eat it, but it will just keep growing back.
Exception – cut below the water line
Later in the season
What does control it?

Landscape fabric not compatible to supporting other plants.
The roots may spread outside of the covered area.

Cornell University biological control.
USGS testing for endophyte disruption and gene silencing.

Flooding, cutting and burning in combination
with multi-year herbicide applications can
control Phragmites.
The best Phragmites control

WITHOUT USING HERBICIDES

is achieved by drowning the plant by repeated cutting of the stems below the waterline.

It is best to cut it when the phragmites reaches four feet or more above the waterline.

Cut the stems as low as possible below the waterline.
The best Phragmites control WITHOUT FLOODING or cutting below the waterline is achieved with a multi-year plan of cutting and/or burning in combination with herbicide and surfactant applied Mid-August through September.
How can we get the herbicide into the plant?

- Foliar spraying
- Cut and dab
- Glove of death
- Wipe-It
Wipe-it Tool
Why cut or burn along with the herbicide?

- Stresses the plant
- Allows soil exposure and blackening to encourage native seed bank germination
- Allows chemicals to reach the live plant surfaces easier
- Allows better human access
Don’t waste chemicals on last year’s phragmites
Not Pre-cut

Pre-cut
When best to cut or burn

- November to May

- Not within two weeks following the herbicide treatment

- If cutting with riding equipment the best time to cut to avoid soil disturbance is when the ground is frozen, late January.
My biggest mistake in 10 years of Phragmites Control

*Not pre-cutting before the first season of treatment*
Cutting Recommendations

- No lower than 4” from ground or water.
- 6” min. where native plants are present.
- Up to 12” where there are tall native plants.
Field notes from cutting dense dead Phragmites with a tractor/brush hog

• Make sure you are in 4-wheel drive.
• Keep the cutting blades high.
• Make sure your coolant is topped off.
• The seeds will clog the air intake grilles and screens. In warm weather watch your temperature gage and stop on occasion to clear the seeds and let the engine run 1/3 speed to cool off.
• When done, clear all seeds from motor area with an air compressor.
• If you have a front end bucket in winter you can use it to scrape the Phragmites off clean to the ice.
What do I do with the cuttings

• Burn them standing in place (only by professionals)
• Burn them in place, but mowed down first, with firebreaks
• Burn them after mowing and moved to piles or rows
• Roll down and leave in place
• Mow down and leave in place
• Mow down and move to degraded areas or trails. Check with DEQ to assure you are not violating wetland laws. Do not move cuttings to or through un-infested areas.
• Mow down and remove from the site in bulk
• Hand cut and bag them for removal with trash
• Hand cut and bag the heads only and remove with trash
Getting started

• Make sure you can identify Phragmites and distinguish it from other plants
Phragmites
Native vs. Non-native Phragmites

Make sure you can ID Native Phragmites

see

YouTube.com “Video 9 – Phragmites”

By Kristy Beyer
Collect Information and Make a Plan

- Goals
- Resources – financial & manpower
- Procedures
- Timing
- Equipment needed
- Supplies needed
- Monitoring progress
Equipment

( Do not use any metal tank equipment )

Backpack sprayer

Handheld sprayer
ATV Mounted Sprayer
Gas Powered Pump Sprayer
Gas Powered Pump Sprayer
Equipment for cutting in wet areas

Marshmaster
www.GreatLakesPhragmitesCutter.com
Equipment for cutting over water
Equipment for cutting under water
Chemical Definitions

“PESTICIDE” - A chemical preparation for destroying plant, fungal, or animal pests

“HERBICIDE” - A substance or preparation for killing plants, especially weeds. An “Herbicide” is a type of “Pesticide.”

“SURFACTANT” - A chemical agent capable of reducing the surface tension of a liquid in which it is dissolved [wetting agent]

“A.I.” – The percentage of “Active Ingredient” in the bottle
The Chemicals

On dry land above the ordinary high water mark you can usually use

**Round-Up**
(herbicide and surfactant mix) (Check your State regulations.)

Anywhere near water you should only use

**DEQ approved Glyphosate and surfactant**
The Mix

- Herbicide
- Surfactant
- Water
- Sometimes Water Conditioner
- Dye (optional)
Why mix my own chemicals?

- Aquatic formulas are not available pre-mixed ready to use out of the bottle

- You can mix your own herbicide comparable to RoundUP for about 1/5 the cost.
Do homeowners and volunteers at nature centers need to be certified to mix and apply herbicides?

Usually No. People can mix “general use” herbicide products themselves and they can apply them themselves if in compliance with the label requirements, including the use of personal protective equipment and disposal, and they are not doing it for commercial purposes and not in the course of employment.

(Check with your local DEQ or Department of Agriculture.)
Aquatic Herbicides

- EPA Labeled “CAUTION” as opposed to “WARNING” or “DANGER”

- “General Use Pesticides”
  Not classified by the EPA as Restricted Use.

- “Systemic”
  Taken into the plant and translocated to the roots

- “Non-selective” or “Broad-spectrum”
  Will kill most other plants it contacts
Phragmites Herbicides

- **Imazapyr**
  - Can be applied in the fall and/or in the summer
  - Has a little better control rate than Glyphosate
  - Costs about seven times as much as Glyphosate
  - *Habitat*

- **Glyphosate**
  - Apply to Phragmites only in the fall
  - *Accord, Aquamaster, Aquaneat, AquaPro, AquaStar, Eagles, Glyfos, Glypro, Rodeo, Shoreklear*
## Phragmites Herbicides - Toxicity

### Comparative Oral Toxicity of Aquatic Herbicides and Common Household Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Oral LD$_{50}$ (mg/kg)</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine</td>
<td>50</td>
<td>Personal choice</td>
</tr>
<tr>
<td>Caffeine</td>
<td>140</td>
<td>Personal choice</td>
</tr>
<tr>
<td>Hot sauce (capsaicin)</td>
<td>161</td>
<td>Food seasoning</td>
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<tr>
<td>Bleach (sodium hypochlorite)</td>
<td>192</td>
<td>Household cleaner</td>
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<tr>
<td>Aspirin</td>
<td>200</td>
<td>Medication</td>
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<tr>
<td>Endothall</td>
<td>233</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Naproxen sodium</td>
<td>248</td>
<td>Medication</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>275</td>
<td>Food seasoning</td>
</tr>
<tr>
<td>Diphenhydramine HCl</td>
<td>500</td>
<td>Antihistamine</td>
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<tr>
<td>Diquat</td>
<td>866</td>
<td>Herbicide</td>
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<tr>
<td>Pink bismuth (bismuth subsalicylate)</td>
<td>1,200</td>
<td>Medication</td>
</tr>
<tr>
<td>Vitamin A</td>
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<td>Vitamin</td>
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<td>Triclopyr</td>
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<tr>
<td>Acetaminophen</td>
<td>1,944</td>
<td>Medication</td>
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<tr>
<td>Vitamin C</td>
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<td>Vitamin</td>
</tr>
<tr>
<td>Topramezone</td>
<td>&gt;2,000</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Table Salt</td>
<td>3,000</td>
<td>Food seasoning</td>
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<tr>
<td>2,4-D</td>
<td>3,129</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Vinegar (Acetic Acid)</td>
<td>3,310</td>
<td>Food seasoning, household cleaner</td>
</tr>
<tr>
<td>Bispyribac-sodium</td>
<td>4,077</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Carfentrazone</td>
<td>&gt;5,000</td>
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<tr>
<td>Flumioxazin</td>
<td>&gt;5,000</td>
<td>Herbicide</td>
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<td>Fluridone</td>
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<td>Glyphosate</td>
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<td>Imazapyr</td>
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<tr>
<td>Nail Polish Remover</td>
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<td>Beauty product</td>
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<tr>
<td>Penoxsulam</td>
<td>&gt;5,000</td>
<td>Herbicide</td>
</tr>
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</table>
Surfactants

• Enhance spreading, sticking and wetting properties of the herbicide. Break down the waxy surface coating on plants.

• Cygnet Plus
Water carries the herbicide to the plant cells

- Over 98% of your mix will be water
- Glyphosate is a mild acid
  - In water it can split into pieces and connect to other larger molecules
  - The parts not split are more readily absorbed by the plants
  - Hard water or dirty water can split the Glyphosate
Desirable Water Qualities

- Clean, clear and free of organic materials
- Low mineral content (soft water)
- Slightly acidic (pH from 3 to 6)
Water Conditioner

• Lowers pH

• Do not use if treating under DEQ permit

• I prefer *AquaBupH* liquid water conditioner
  – Use 1/2 oz. per gallon
Preferred Water

- Distilled water
- Soft water
- Municipal water
- Clean clear lake water
- Clean clear rain water.

- Not well water or pond water
Application Rates

- **Maximum amount allowed per treatment are**
  - Glyphosate – 6 pints per acre
  - Cygnet Plus – 1 pint per acre
  - Water Conditioner – not specified

- **Low Volume sprayer mix recommendations from the USFWS, MDEQ, MDNR document “A Guide to the Control and Management of Invasive Phragmites”**
  - 1 to 1.5% solution of a 53.8% A.I. Glyphosate product.
    (2 oz. per gallon = 0.84% A.I.) \( \frac{2}{128} \times 0.538 = 0.0084 \)
  - Use a state-approved nonionic surfactant at a rate recommended on the label. (The label states 1 pint to 2 quarts per acre)
  - There is no mention of using a water conditioner
Mixing one gallon of low volume sprayer mix

(Assuming you will only be treating once during the season)

• Start with about 3/4 of the water (96 oz.)
• If using a water conditioner add ½ oz. per gallon here – mix it
• Add Herbicide – 53.8 % Glyphosate (2 oz.=.085% A.I.) – mix it
• Add Surfactant - Cygnet Plus (1/6 oz.) – mix it
• Top it off with water to 128 oz. total – mix it
• Add Dye (optional) – Cygnet Select (1/6 oz.) – mix it

The maximum application rate of 6 pints of glyphosate per acre would be comparable to spraying 900 square feet (about 30’ x 30’ area) with one gallon of the above mix
My second biggest mistake in 10 years of Phragmites Control

*Not applying multiple treatments in the first year*
Retreatment

• The maximum herbicide quantities to be used that are given on the label are “per treatment”

• DEQ permits sometimes state that there shall be a minimum of 24 hours between treatments.

• I have obtained the best results by mixing the herbicide at a lower a.i. rate and retreating at two week intervals any remaining green phragmites.

• Not retreating the surviving phragmites is like not taking all of your antibiotic prescription. The strong ones survive to reproduce next year.
Samples of Phragmites Needing Retreatment
Samples of Phragmites Needing Retreatment
Samples of Phragmites Needing Retreatment
Samples of Phragmites Needing Retreatment
The WIPEOUT program
Williams Invasive Phragmites Eradication OUTline

(short term, labor intensive, maximum control)

- Prior to June – Pre-cut
- August 15 - treat
- September 1, 15 & 30 – retreat any green phragmites
- October 15 – Post-cut
Mixing one gallon of low volume mix under the WIPEOUT program

• Start with about 3/4 of the water (96 oz.)
• If using a water conditioner add ½ oz. per gallon here – mix it
• Add Herbicide – 53.8% Glyphosate (1 oz. = 0.42% A.I.) – mix it
• Add Surfactant - Cygnet Plus (1/2 oz.) – mix it
• Top it off with water to 128 oz. total – mix it
• Optionally add Dye – Cygnet Select (1/6 oz.) – mix it

The maximum application rate of 6 pints of glyphosate per acre would be comparable to spraying 450 square feet (about 21’ x 21’ area) with one gallon of the above mix
Different A.I.’s for Different Treatment Methods
(followed by ounces of 53.8% product per gallon of mix)

Foliar spraying – 0.42% to .85% A.I. (1 oz. – 2 oz.)
Glove of death – 2.5 to 5% A.I. (6 oz. – 12 oz.)
Wipe-It – 2.5 to 5% A.I. (6 oz. – 12 oz.)

Cut and dab or injection – 15% to 25% A.I. (36 oz.– 60 oz.)
(which equals 4.5 oz. – 7.5 oz. per pint of mix)
Chemical Availability & Costs

• HERBICIDE - Glyphosate (53.8% a.i.)
  – 2.5 gallons, $100
  – *Shoreklear*, 1 quart, $50
• SURFACTANT - *Cygnet Plus*
  – 1 gallon, $25
• WATER CONDITIONER - *AquaBupH*
  – 2.5 gallons, $70
• DYE - *Cygnet Select*
  – 1 gallon, $25
• OPTION - *Shoreklear Plus*, Glyphosate (18% a.i.) plus surfactant
  – 1 gallon, $60
  – However, you are paying about 2.5 times as much for the A.I. for the convenience of being able to have the surfactant included.
Minimum Purchase Option
to make low volume sprayer mix

– 1 gallon of *Shoreklear plus* = $60 + s&h
– Skip the water conditioner, skip the dye
– For $80 you can treat about 1/3 acre.
– $240 per acre per treatment
Larger, More Economical Purchase Option to make low volume sprayer mix

- 2.5 gallons of *AquaPro* (53.8% a.i.) = $100 + s&h
- 1 gallon of *Cygnet Plus* = $25 + s&h
- 2.5 gallons of *AquabupH* = $65 + s&h
- 1 gallon of *Cygnet Select* = $25 + s&h
- For $250 you can make enough mix to spray over 3 acres with water conditioner and dye and have some *AquaPro*, *AquabupH* and *Cygnet Select* left over.
- $75 per acre per treatment
- w/o water cond. or dye $50 per acre per treatment
- Unused Glyphosate can be stored for up to 5 years
My Preferences

Cygnet Plus
2.5 gallon

From Cygnet Enterprises in Flint, MI
1-800-359-7531 – Joe Bondra

AquaPro
2.5 gallon
When to Treat

• In Southern Great Lakes Region - Mid-August to end of September

• Not after the first killing frost

• Not within 4 weeks of the last cutting or burning
Before Treatment Day

• Check the weather reports

• Post signs as required by permits

• If spraying over water close down potable water intakes within ½ mile

• Review your plan

• Reread the chemical labels
Treatment Day

- Not too windy, unless you want the wind to carry the herbicide into a deep stand
- Not expecting rain – needs 6 hours set time
- Sunny – Increases absorption
- Spray the leaves and stems to coverage without drip off
- If possible spray while walking backwards
- Try to use all of the mix that day or soon after
- Clean all equipment and save rinsate for next time
Record Keeping

- Date, time, weather
- Person doing the treatment
- Location and area treated
- Chemicals and source of water
- Rates of mix
- Equipment used
- Comments
- Observations later in the month
- Photos
After Treatment Day

- Do not re-enter the area or swim there for 24 hours

- Potable water intakes within ½ mile should remain closed 48 hours

- Be patient – Don’t expect plant discoloration symptoms for two weeks or more

- Don’t cut or burn for two weeks
Herbicide Safety

- Glyphosate products are labeled “Caution”
- Follow all instructions on the labels
- Use proper procedures
- Use recommended safety equipment
Safety Equipment

• PPE as specified on the label
  – Personal Protection Equipment
  – Equipment recommended for the person using the diluted mixed solution.

• Additional protection recommended
  – More stringent for persons handling the concentrates and doing the mixing.
Diluted Glyphosate Applicator PPE

- Dedicated clothing
- Long Sleeves, Long Pants
- Closed Shoes, Socks
- Gloves, Hat
Glyphosate Mixer Protection

- Dedicated Clothing
- Long Sleeves, Long Pants
- Closed Shoes, Socks
- Nitrile Gloves
- Nitrile Apron
- Goggles or Face Shield
Measuring Cups

Dedicated Location & Pesticide Spill Kit

Funnels
Emergency Information

Secondary Containment Buckets
Phragmites.org

Locked Storage Cabinet
Measuring Bottles

Spill Containment Pan
Abbreviated Herbicide Safety Procedures

• After working with chemicals
  – Wash hands thoroughly before eating, drinking, using tobacco products or going to the bathroom.
  – If possible wash gloves and footwear with detergent and water before removing them.
  – Change clothes and take a shower at the end of the workday.
  – Do not wash those clothes with the family laundry.

• Read all labels for specific instructions.
Additional Pesticide Safety Tips

• Always read the label before buying or using pesticides. Use pesticides only for the purpose(s) listed and in the manner directed.
• Do not apply more than the amount of pesticide specified in the permit. Overdoses may harm you and the environment, and will likely not result in better control of the nuisance.
• Keep pesticides away from food and dishes.
• Keep children and pets away from pesticides and treated area.
• Do not smoke while spraying.
• Avoid inhalation of pesticides.
• Never spray outdoors on a windy day.
• Pesticides that require special protective clothing or equipment should be used only by trained, experienced applicators.
Additional Pesticide Safety Tips - Continued

• Avoid splashing if you mix pesticides.
• Avoid breaks or spills of pesticide containers.
• If you spill a pesticide on your skin or on your clothing, wash with soap and water and change your clothing immediately.
• Store pesticides under lock in the original containers with proper labels. Never transfer a pesticide to a container, such as a soft drink bottle, that would attract children.
• Refer to the pesticide label for proper disposal methods.
• Wash with soap and water after using pesticides, and launder your clothes before wearing them again.
• If a pesticide is swallowed, check the label for first aid. Call or go to the doctor or the hospital immediately and take the pesticide label with you.
Permits

- To Remove
- To Burn
- To Cut
- To Herbicide
Permits to Remove Phragmites

Do not attempt to remove, dig, till or pull Phragmites.

It doesn’t do anything except spread them.

It is not allowed under any permit as a method of controlling Phragmites
Permits to Burn Phragmites

Local Fire Department

(Hire a prescribed burn contractor)
Permits to Cut Phragmites
Many State DEQs

If between the OHWM and the water’s edge a permit to cut may be required.

For any phragmites in standing water a permit may be required.
Permit to herbicide Phragmites
U.S. Environmental Protection Agency
National Pollutant Discharge Elimination System (NPDES)

Only required for large control projects.

May be issued through your local or State DEQ.
Contact them.
Permit to herbicide Phragmites
State DEQ

MAY NOT BE REQUIRED
Above the Ordinary High Water Mark (OHWM) or
On small ponds with no outlet.

IN ONTARIO HERBICIDES CANNOT
BE USED AROUND WATER.
Hiring a Contractor

• If spraying below the Ordinary High Water Mark (OHWM) they need to have
  – Pesticide Application Business License
  – Aquatic Pest Management certification for spraying in wet areas
  – Right-of-Way certification for spraying in dry areas

• For a list of approved contractors contact your state Department of Agriculture.
Clay Township Phragmites Management Plan

- Adopted June 7, 2010
- Includes
  - Surveying the infestations – using GIS
  - Establishing priority treatment areas
  - Communicating with and educating property owners
  - Assisting with permits and treatment
  - Making chemicals and equipment easily available
  - Exploring funding
  - Creating a coordinator and a volunteer organization
Clay Township Permits Procedure

• Property owners apply to be in the program
• The Township applies to the State for a permit
• Applicants attend a Phragmites Management Workshop
• The Township receives permits from the State
• The Township issues individual approvals to proceed along with the needed posting signs and treatment report forms
• The property owner completes the treatment and files a treatment report with the Township.
• The Township files a treatment report with the State.
Clay Township Herbicide Distribution

• Property owners apply to be in the program
• Participants attend a Phragmites Management Workshop
• Participants order chemicals from the Township
• Purchasers can pick up herbicides from the Township
Clay Township assistance with Contractor Procurement

• The Township obtains a list of contractors certified by the State of Michigan to control Phragmites.

• The Township prepares a list of recommended contractors based on certification, experience with Phragmites control and interest in working in this area.

• The list is made available to all property owners.

• The Township obtains the necessary permits and files the required reports following treatment, thereby reducing the amount of work needed by the contractors.
View Enhancement
Recreational Access

before
after
Fire Safety

before
Spring 2012

Fall 2013 before treatment

Fall 2013 after treatment

Fall 2014
Ecosystem Restoration

After winter cutting & before first treatment
After fall treatment and winter cutting
After dredging
2 years later
Natural regrowth
Long Range planning

• Fall herbicide treatment for three years in a row with annual winter cutting or burning preferably starting the winter before the first treatment. Spot treatments after three years.

  • Treat the outliers first.
  
  • Work with your neighbors.
  
  • Photograph your progress.
  
  • Be patient.
Please Pass It On

• Involve your neighborhood association or local nature club.

• Offer to show others, with workshops and literature, how to control Phragmites.
Resources

- PHRAGMITES.ORG
- “Subscribe” to Newsletter@phragmites.org

- USFWS, MDEQ, MDNR Publication
  “A Guide to the Control and Management of Invasive Phragmites.”
Q & A

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THANK YOU!

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Great Lakes Phragmites Collaborative