Phragmites Control for Homeowners and Land Stewards

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It Blocks Views

- Reduces property values & tourism
- Limits access for recreation
- Damages valuable landscaping

Fire Hazard

- Dries out wetlands
- Fills in canals, rivers and streams
- Clogs water intakes
- Navigation hazard on roads and waterways
- Hinders search and rescue operations

Reduces native plant and animal habitat, population and diversity
Where did this Phragmites come from?

Early 1800’s trade with Europe

Where does it grow?

Not just in wet areas

When did it become a problem?

We know it was a problem on Staten Island in 1972

Where does it grow?
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
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

Can I cut it or burn it?

Cutting or Burning alone usually encourages growth

One Exception to not pulling it out

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 gauge 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 DIIQ to assure you are not violating wetland laws. Do not move cuttings to or through uninhabited 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

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, Aquaheat, AquaPro, AquaStar, Eager, Glyfos, Glypro, Rodeo, Shoreklear

Phragmites Herbicides - Toxicity

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.) (2/128 x 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)

<table>
<thead>
<tr>
<th>Method</th>
<th>0.42% to .85% A.I.</th>
<th>2.5 to 5% A.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foliar spraying</td>
<td>0.42% to .85% A.I.</td>
<td>2.5 to 5% A.I.</td>
</tr>
<tr>
<td>Glove of death</td>
<td>2.5 to 5% A.I.</td>
<td>2.5 to 5% A.I.</td>
</tr>
<tr>
<td>Wipe-It</td>
<td>2.5 to 5% A.I.</td>
<td>2.5 to 5% A.I.</td>
</tr>
</tbody>
</table>

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
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
Funnels
Dedicated Location & Pesticide Spill Kit
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

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."