Phragmites Pushback

Is Eradication Possible?

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What is Non-native *Phragmites*?
Cryptic Invader

Which is the invasive *Phragmites*?

**Native**

*Phragmites australis* subsp. *americanus*

**Invasive**

*Phragmites australis* subsp. *australis* i.e., non-native European genotype of *Phragmites australis*
What are the Impacts of Invasive *Phragmites*?

- Reduces biodiversity
- Degrades habitat for wildlife
- Impacts agricultural and transportation infrastructure
- Impacts recreational access to lakes, wetlands, rivers
- Reduces property values

Invasive *Phragmites* is listed as a Restricted Noxious Weed in MN.
How Does Non-native *Phragmites* Spread?
2017-2019 *Phragmites* Research Project

- Document populations of invasive *Phragmites*
- Seed viability and seed germination assessment study
  - Determine genetic diversity within populations
  - Begin to facilitate a coordinated response to slow (reverse) spread
Invasive *Phragmites*: current & predicted distribution
### Where is Invasive *Phragmites* Found in the Landscape?

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Inv Populations</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadside</td>
<td>96</td>
<td>29</td>
</tr>
<tr>
<td>Lakeshore</td>
<td>87</td>
<td>26</td>
</tr>
<tr>
<td>Wetland</td>
<td>64</td>
<td>20</td>
</tr>
<tr>
<td>Combination</td>
<td>45</td>
<td>14</td>
</tr>
<tr>
<td>Stormwater Pond</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>River/Streambank</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>326</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **South Center Lake, Chisago County**
- **Minnesota River, Sibley County**

**Highway/Railroad Corridors**
Evaluate Reproductive Potential

Viable seed does develop in at least the southern 2/3rds of MN

### Preliminary Viability Results

<table>
<thead>
<tr>
<th>Region</th>
<th>Populations</th>
<th>Popul w/ No Seeds</th>
<th>Popul w/ No Viable Seed</th>
<th>Popul w/ Viable Seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td></td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>
Coordinated Statewide Response: What will it take?

- Property access
- Resources and capacity
  - Funding
  - Expertise
  - Specialized equipment
  - Permitting

http://stlouisriver.org/ais-phragmites-control/
https://www.dec.ny.gov/pubs/110383.html
Framework for Coordinated Response

<table>
<thead>
<tr>
<th>District</th>
<th># Pops</th>
<th>#WWTPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest Region - North District</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Northwest Region – South District</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Northeast Region</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>Central Region – North District</td>
<td>108</td>
<td>8</td>
</tr>
<tr>
<td>7 County Metro</td>
<td>73</td>
<td>1</td>
</tr>
<tr>
<td>Central Region – South District</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Southern Region – North District</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Southern Region – South District</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>324</td>
<td>18</td>
</tr>
</tbody>
</table>
Develop Statewide Response Plan

- Identify stakeholders and partners
- Develop cost estimates
- Develop strategies for regional deployment
- Identify and assemble resources for regional deployment
- Identify training resources
# Management Recommendations

<table>
<thead>
<tr>
<th>Summer Mow</th>
<th>Fall Herbicide</th>
<th>Winter Mow</th>
<th>Evaluate</th>
<th>Follow-Up Treatment</th>
</tr>
</thead>
</table>

- Glyphosate and/or Imazapyr
- *Aquatic approved surfactant

- Confirm ID
- Obtain permits
- Applicator license
- Prevent further spread
- Revegetation
Stakeholders and Partners

US Fish and Wildlife Service
MN Dept. of Transportation
MN Dept. of Natural Resources
MN Dept. of Agriculture
Soil & Water Conservation Districts
Tribal Government
Watershed Districts
County Natural Resource Mgrs
County Weed Inspectors
County Highway Depts.
County Public Works
City Government
Lake Associations
Private Contractors

Wastewater treatment plant with invasive Phragmites
Thank You!

MNPHRAG is funded by:

Questions?

https://www.maisrc.umn.edu/about-phragmites
**Native**
Emerging inflorescences are green to purplish-green; may be more sparse compared to the invasive form; persist through winter at lower density.

**Non-native**
Emerging inflorescences are green to purplish-green; may be more dense compared to the native form; persist through winter at higher density.
Non-native
Stem feels rough due to ridges in the stem; typically green, but may be red on the lower stem.

Native
Stem glossy and feels smooth to the touch; typically chestnut-red in lower part of plant.

Note: For color and texture, be sure to assess the stem and not the sheath which covers the stem.

Note that in the upper part of the non-native plants, the sheaths overlap each other, leaving no stem exposed.

In the native the sheaths do not overlap leaving stem exposed. Exposure of the stem to sun causes it to turn red.
Ligule

https://www.maisrc.umn.edu/about-phragmites
Leaf Sheaths

Leaf Sheaths on Current Year’s Stems

Native
Sheaths loosely attached and gap away from the stem; some may be open down to their attachment at the node.

Non-native
Sheaths closely attached to the stem with no gaps.
To find the ligule, hold the leaf blade in one hand and the culm in the other, pull the leaf blade away from the culm to expose the ligule. Measure the height of the ligule as indicated by the red marker. Include the membranous tissue and the short, stiff fringe of hairs in the measurement. Do not include any longer thread-like hairs. A hand lens is helpful to determine the area to measure.

**Helpful Hint:** The ligule in the native type is described as a thick smudged line as if drawn with a lead pencil, while the ligule in the non-native type is described as a discrete thin brown line as if drawn by a fine point marker.
Potential Criteria for Prioritizing Control -

- Distribution of invasive *Phragmites* in MN
- Large genetically diverse populations
- Small discrete populations
- Localized site conditions
- Potential for spread along natural or man-made corridors
- Potential to produce viable seed
- Potential to impact high quality habitat or rare species

*Highway/Railroad Corridors  South Center Lake, Chisago Cty  Minnesota River, Sibley Cty*
17 Wastewater Treatment Plants are permitted to use invasive *Phragmites* in their dewatering systems.

Number of populations within 5 miles of each wastewater treatment plant.

And an introduction in a wetland revegetation project in Kandiyohi County.