

# Invasive *Phragmites* Impacts



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# *Phragmites* History (*Phragmites australis*, *subsp. australis*)

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- ❑ Native statewide
- ❑ Non-native appears: 1980(?)
- ❑ Great Lakes shores & Jackson County mine site
- ❑ Established in east
- ❑ Now spreading, inland & away from early infestations



# Why is non-native *Phragmites* a problem?

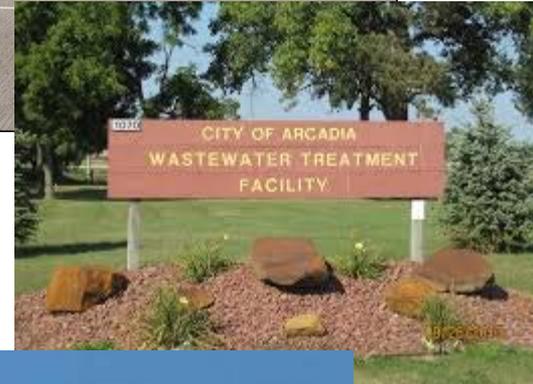
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- ❑ Tall, dense stands:
- ❑ Decrease native plant biodiversity and wetland habitat, particularly for migrating waterfowl
- ❑ Reduce beach and shoreline use, viewsheds and values
- ❑ Alter the structure and function of marsh systems by changing species composition, nutrient cycles and hydrological regimes.



# How does *Phragmites* Disperse?

- ❑ Natural dispersal by birds, wind, and flowing water for rhizomes and seed
- ❑ Rhizomes in contaminated fill
- ❑ Vehicles and mowing along roadways (seed)
- ❑ Other plantings, including WWTFs



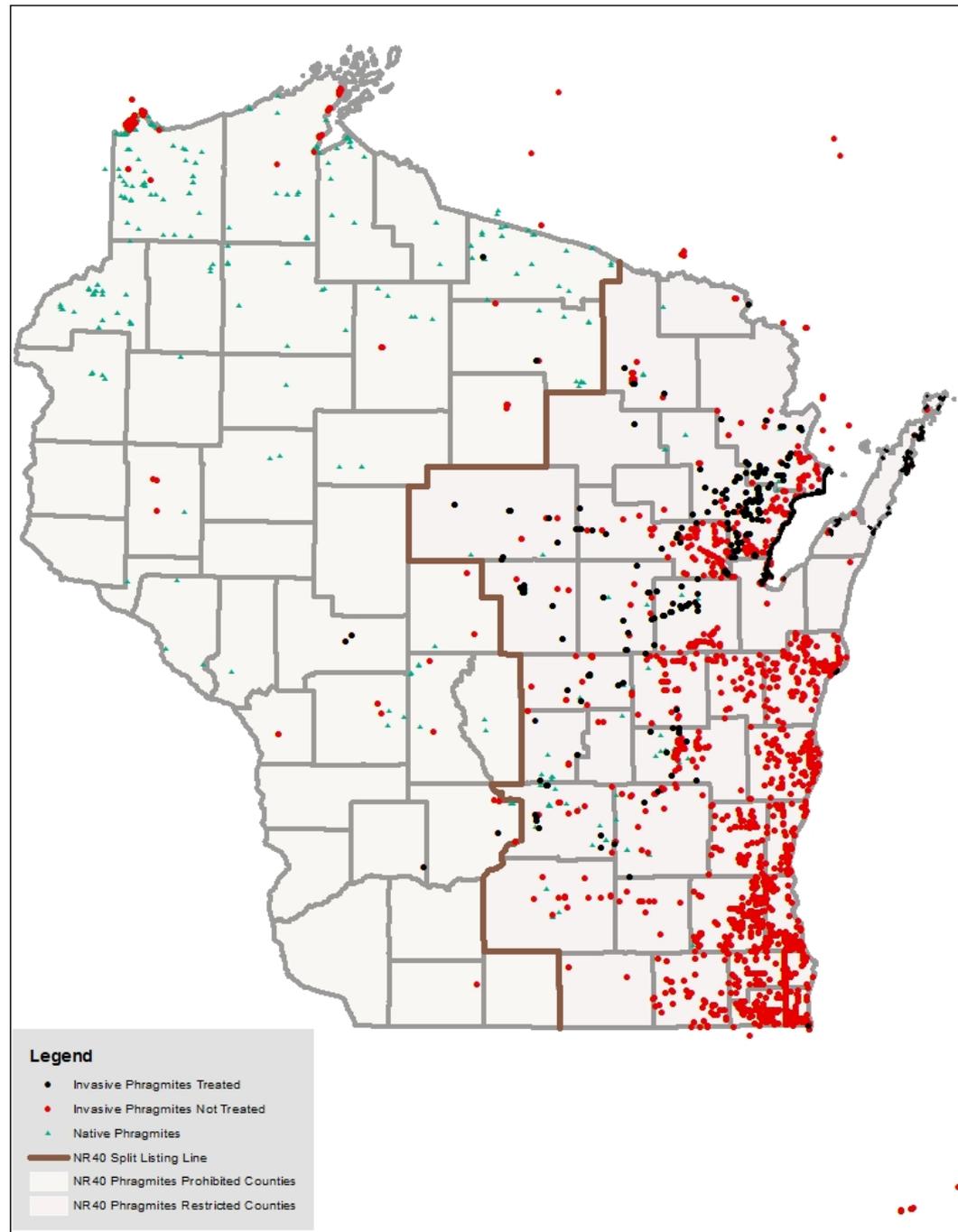
# Known Phragmites Sites

## □ Map

- Red: Non-native
- Black: Treated N-N
- Green: Native

## □ NR 40 revision

- *Phragmites* split listing (brown line) between restricted in east versus prohibited in west



# Who is treating non-native *Phragmites*?

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- ❑ 2011-2012: \$805,000 GLRI grant to WDNR (4,841 acres of N-N *Phragmites* )
- ❑ 2013-2014: \$400,000 GLRI grant for follow-up treatments, plus 700 additional acres
- ❑ Ducks Unlimited grant (\$)
- ❑ OWLT grant (\$143,000 for *Phragmites*)
- ❑ \$1,778,000 spent just on Great Lake wetlands
  - Good results, but continuing work and money are required.

# How to treat for *Phragmites*?

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## General strategies

- ❑ Identification of native versus non-native *Phragmites*
- ❑ Find locations
- ❑ Site treatment
- ❑ Containment
- ❑ Monitoring

## WWTP strategies

- ❑ Identification
- ❑ Disposal of contaminated soil
- ❑ Species replacement
- ❑ Prevent reinfestation
- ❑ Monitoring

# Native and Non-Native *Phragmites*

## □ Stem color



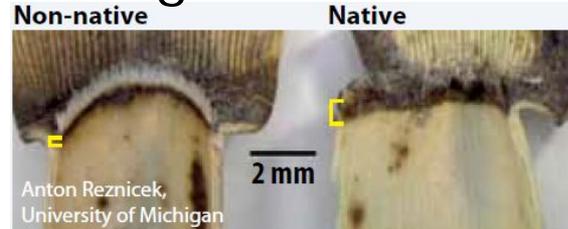
## □ Stem Texture

- Native: Smooth & Shiny
- N-N: Dull & Ridged

## □ Stem fungus

- Native: circle dots
- N-N: No circle dots

## □ Ligules



## □ Glumes



## □ Seed head



## □ Leaf color



## □ Other features

- In winter “Naked is Native” and leaf sheaths absent or pull away easily
- N-N: Leaf sheaths retained and hard to pull off.

# General strategies for controlling Non-native *Phragmites*

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- ❑ Data mining online databases and other records from partners.
- ❑ Stop *Phragmites*' advance: eliminate as many pioneer populations as possible in Lake Michigan/Superior basin counties (GLRI grant).
- ❑ Clean out lightly infested areas: find and eliminate all the few western/southern populations of *Phragmites* (Early Detection/Rapid Response AIS grants).
  - Treatment with Imazapyr. Combine with other mechanical removal or prescribed burns.
- ❑ Prevent further human spread, monitor, and act quickly to curb natural spread.

# WWTP strategies for controlling Non-native *Phragmites*

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- Identification
- Disposal of contaminated soil
  - Viable rhizomes will remain in soil, can resprout either in WWTP or at disposal site.
  - Deep burial, dry-out soil, or composting.
- Species replacement
  - Option 1: Replace with native *Phragmites*.
  - Option 2: Replace with multiple species.
- Prevent reinfestation
  - Treat sites outside of WWTP
- Monitoring

# Species replacement strategies

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## Option 1: Native *Phragmites*

- ❑ Lower cost to design & install
- ❑ Minimal upkeep after established
- ❑ Use local source populations if possible

## Option 2: Diverse plantings

- ❑ Biodiversity & Ecosystem Function approach
- ❑ More expensive but has more benefits:
  - Higher biomass, denitrification, nitrogen & ammonia retention, micropollutant control
  - Can act as habitat for multiple species & ecological corridors

# Reinfestation strategies

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- ❑ Control *Phragmites* on site and in the immediate landscape.
- ❑ If sites nearby are not treated as well, they will be seed sources that can recolonize the WWTP.
- ❑ *Phragmites* seeds can disperse up to 10 km.

