

***Phragmites*-Distinguishing the Native from the Non-native**

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INTRODUCTION

Invasive common reed (*Phragmites australis ssp australis*) is a non-native, highly aggressive, perennial wetland grass that rapidly outcompetes its native relatives (*Phragmites australis ssp americanus*), and other vegetation. It is a native of Europe and was introduced to the United States in the early 19th century.

IMPACTS

Non-native phragmites is a serious threat to native biodiversity. It replaces native plant species, reduces fish and wildlife populations and creates ideal breeding grounds for mosquitoes.

Dense, monotypic stands degrade wetlands and coastal areas; reduce recreational value of water bodies for swimming, fishing, and hunting; and can increase the risk and intensity of wildfire.

PROPAGATION AND SPREAD

Invasive *Phragmites* can reproduce sexually via seed and asexually via stolons, and rhizomes (Figure 1) that are spread by wind, water, and human and animal activities.

Stolon: A thin, horizontal above-ground structure that bears roots at the nodes. Stolons can grow several feet a year and new plants can spring from every node.

Rhizome: An underground horizontal stem capable of regenerating new plants.

Rhizomes create thick underground mats and can grow more than 30 feet a year.

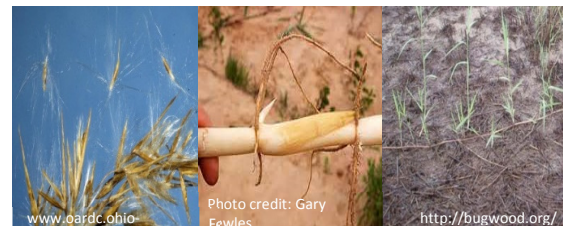


Figure 1: Seed Rhizome Stolon

NATIVE VERSUS NON-NATIVE

Native and non-native *Phragmites* can be distinguished by several characteristics.

PLANT SIZE AND COLOR

Invasive *Phragmites* plants can attain a height of 6 meters or higher and have dark or bluish green leaves while the native *Phragmites* plants are typically 2 meters tall or less and have yellowish green leaves (Figure 1).



Figure 1: Variation in plant color of non-native and native *Phragmites*

LEAF SHEATH

Leaf sheaths of **invasive** *Phragmites* remain tightly attached to the stems whereas the leaf sheaths of **native** *Phragmites* are loosely attached and the lower leaf sheaths fall off naturally resulting in stripped stems (Figure 2).



Figure 2: Leaf sheaths of non-native and native *Phragmites*.

STEM DENSITY AND COLOR

Invasive *Phragmites* have a high stem density resulting in dense, impenetrable, monotypic stands that often block the shoreline view. **Native** *Phragmites* have sparsely scattered stems producing thin see-through stands (Figure 3).



Figure 3: Stem density of non-native and native *Phragmites*.

Invasive *Phragmites* stems are rigid, rough in texture, and have dull light green or tan color basal nodes. **Native** *Phragmites* stems are flexible, smooth, shiny, and reddish-brown or chestnut in color (Figure 4). The area near the node of **native** *Phragmites* is

studded with black spots caused by a native fungus (Figure 5).



Figure 4: Stem color of non-native and native *Phragmites*.



Figure 5: Fungal spots in non-native (absent) and native (present) *Phragmites*.

LIGULE

The ligule is a hairy structure located inside the leaf sheath and near the base of the leaf blade. The **invasive** *Phragmites*' ligule is comparatively shorter (0.4 - 0.9 mm) than that of the **native** *Phragmites* (1.0 - 1.7 mm) (Figure 6).

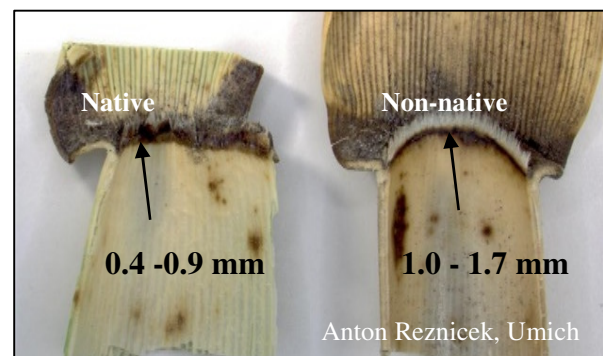


Figure 6: Leaf collar and ligule of a non-native and native *Phragmites*.

INFLORESCENCE

The seedhead of *Phragmites* is called a panicle, which is more compact and longer in **invasive** *Phragmites* while it is more open and smaller in the case of **native** *Phragmites*. Panicles are multi-branched and each branch bears multiple spikelets (Fig 7). Each spikelet contains a number of florets. At the base of each spikelet are two bracket like structures called glumes.



Figure 7: Inflorescence of a non-native and native *Phragmites*.

GLUME

In the **invasive** *Phragmites*, the basal glume usually measures 2.6 to 4.2 mm while that of the **native** *Phragmites* is 4 to 7 mm in length (Fig 8).

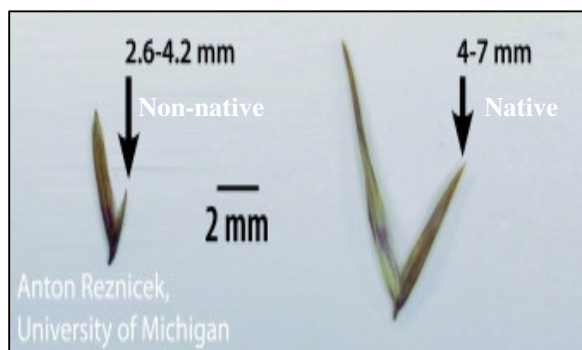


Figure 7: Glume of a non-native and native *Phragmites*.

PHRAGMITES MANAGEMENT

Invasive *Phragmites* can be controlled by several methods but the practicability and

effectiveness of each method varies with the size, density and the site of infestation:

CULTURAL METHODS

Mowing*, Hand Cutting, Prescribed Fire etc., (effective only following an herbicide treatment)

*No pre-herbicide mowing should be done between March 1 and July 15 to avoid impacts to nesting birds and animals.

CHEMICAL METHODS

Glyphosate, Imazapyr, or their combination

INTEGRATED MANAGEMENT APPROACH

- 1) Apply herbicide in midsummer (mid May through June) or late summer (mid-July through August) and wait at least 2 weeks to allow the herbicide to work.
- 2) Conduct the prescribed fire or mowing the next year in late summer or fall until prior to spring green-up.
- 3) Check the site the following growing season for *Phragmites* regrowth and spot treat with herbicide if needed.

Once a control level of 85% or greater is achieved, it is recommended to implement an annual monitoring and maintenance program. The Integrated approach will control *Phragmites* for 1-2 years without additional action. However, *Phragmites* usually begins to reinvade 3 years after treatment if follow-up management is not implemented

INFORMATION SOURCES

- 1) Distinguishing Native and Exotic Forms of Common Reed (*Phragmites australis*) in the United States

http://www.nps.gov/plants/alien/fact/pdf/pha_u1-powerpoint.pdf

- 2) *Phragmites*: Native or Not.

<http://mnfi.anr.msu.edu/phragmites/native-or-not.cfm>

3) Morphological Differences Between Native and Introduced Genotypes
<http://www.invasiveplants.net/phragmites/phrag/morph.htm>

4) A Landowner's Guide to Phragmites Control
https://www.michigan.gov/documents/deq/deq-ogl-Guide-Phragmites_204659_7.pdf

5) A Guide to the Control and Management of Invasive Phragmites
http://www.michigan.gov/documents/deq/deq-ogl-ais-guide-PhragBook-Email_212418_7.pdf

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