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Phragmites in Florida[1]

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Phragmites are a tall, perennial, wetland grasses, occurring in both fresh and brackish waters. North American *Phragmites* can be divided into three genetic lineages: native North America types, a Gulf Coast type, and a Eurasian type. The native types are found in the northeast, midwest and western USA, but not in the southeast. The Gulf Coast lineage occurs widely from the Atlantic coast of Florida, along the Gulf Coast from Florida to Texas and south into Mexico and Central and South America (Meyerson et al, 2009). The Eurasian lineage was introduced into Philadelphia with ships ballast in the 1800s (Burk 1877), and has become increasinly abundant and widespread in North America. It is now the dominant type along the Atlantic coast from Georgia northwards, and has moved into the Midwest, the Mississippi River Delta, and western states (Saltonstall 2002).

Native and Eurasian *Phragmites* are considered to be the same species, *Phragmites australis*, while based on morphological characters, the Gulf Coast type is now thought to be a distinct species, *Phragmites karka* (Ward 2010). *Phragmites karka* also occurs in Asia, Australia and Polynesia and therefore may not be native to North America (Saltonstall 2002).

A survey of *Phragmites* conducted in 2009-2010 in coastal areas from South Carolina to Louisiana did not find Eurasian plants in Florida (Figure 1). However, populations of Eurasian *Phragmites* were idenfied in Georgia, South Carolina, Mississippi and Louisiana. The closest the Eurasian type was found to Florida was 42 miles north of the Florida border along Interstate 95 in Georgia. Along the Gulf Coast, a Eurasian population was found 60 miles west of Florida on Petit Bois Island, Mississippi (Williams et al. 2011). Due to the proximity of the Eurasian type to Florida, it would seem likely that it will eventually invade the state.

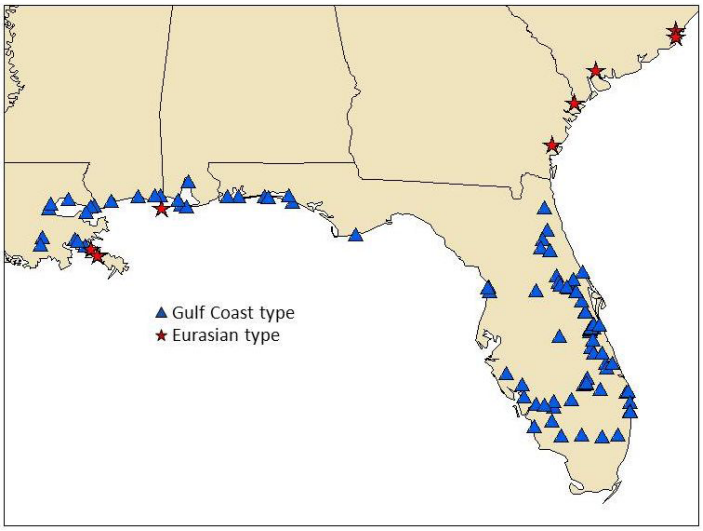

Figure 1. Locations of Eurasian and Gulf Coast type Phragmites found during surveys in 2009-2010.

Reproduction of *Phragmites*

There are reports of prolific seed production in some populations of *Phragmites* (see references in Pellegrin and Hauber 1999), but in the Gulf Coast, little or no seed production has been observed (Hauber et al. 1991, Ward 2010, Williams et al. 2011). The lack of seed may be due to self-incompatibility, as most plants at a given location could belong to a single clone. *Phragmites* does spread through

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the growth of rhizomes, and it is thought that the majority of spread within a population is due to clonal growth. Broken pieces of rhizomes may be responsible for dispersal of *Phragmites* along water courses. How Gulf Coast *Phragmites* became so widespread in the southeastern United States with little or no seed production is unknown.

Why be concerned about the possible invasion of exotic *Phragmites* into Florida

The Eurasian type of *Phragmites* has proven to be a highly aggressive invader, particularly in the northeastern and mid-Atlantic states, where it has largely displaced native *Phragmite*s (Myerson et al. 2009). A study conducted in the Mississippi River Delta in Louisiana demonstrated that the exotic type can out-compete the Gulf Coast type (Howard et al. 2008). Thus, the exotic *Phragmites* may have the potential to displace Gulf Coast *Phragmites* and other wetland plants if it invades Florida.

How can Gulf Coast and Eurasian *Phragmites* be distinguished?

Eurasian and Gulf Coast *Phragmites* are morphologically distinct, and can be separated by three characters indicated in Figure 2. Fine longitudinal ribbing on the stems of Eurasian *Phragmites* may be the best character to separate the two types. The ribbing can be detected visually, but also by slowly rotating the stem under a finger nail.

References

Burk, I. 1877. List of plants recently collected on ships' ballast in the neighborhood of Philadelphia. Proceedings of the Academy of Natural Sciences of Philadelphia 29: 105-109.

Hauber, D. P., D. A. White, S. P. Powers and F. R. Defrancesch. 1991. Isozyme variation and correspondence with unusual infrared reflectance patterns in *Phragmites australis* (Poaceae). Plant Systematics and Evolution 178: 1-8.

Howard, R. J., S. E. Travis and B. A. Sikes. 2008. Rapid growth of a Eurasian haplotype of *Phragmites australis* in a restored brackish marsh in Louisiana, USA. Biological Invasions 10: 369-379.

Meyerson, L. A., K. Saltonstall and R. M. Chambers. 2009. *Phragmites australis* in Eastern North America: A historical and ecological perspective. pp. 57-82. *In*: B. R. Silliman, E. Grosholz and M. D. Bertness (eds.). Salt Marshes Under Global Siege. Univ. of Cal. Press.

Pellegrin, D. and D. P. Hauber. 1999. Isozyme variation among populations of the clonal species, *Phragmites australis* (Cav.) Trin. ex. Steudel. Aquatic Botany 63: 241-259.

Saltonstall, K. 2002. Cryptic invasion by a non-native genotype of the common reed, *Phragmites australis*, into North America. Proceedings of the National Academy of Sciences 99: 2445-2449.

Tucker, G. C. 1990. The genera of Arundinoideae (Graminae) in the southeastern United States. J. Arnold Arboretum 71: 145-177.

Ward, D. B. 2010. North America has two species of *Phragmites* (Gramineae). Castanea 75: 394-401.

Williams, D. A., M. Hanson, R. Diaz and W. A. Overholt. 2011. Testing for cryptic invasions of the common reed (*Phragmites australis* (Cav.) Trin. ex Steudel) in Florida. Journal of Aquatic Plant Management 49: 19-47.

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Character	Gulf Coast	Eurasian
Stem texture	Smooth, shiny 	Ribbed, slightly dull 
Panicle form	Open, often drooping 	Compact, typically erect 
Stem color	Red where exposed (green behind leaf sheath) 	Green where exposed 

Figure 2. Locations of Eurasian and Gulf Coast type *Phragmites* found during surveys in 2009-2010.