

RESEARCH PLAN

We have selected for study native and invasive *Phragmites* stands in east coast marshes extending from New Brunswick, Canada and south to Ft. Lauderdale, Florida. For comparison, we have also selected stands of *Phragmites* in marshes along the Atlantic coast of Europe from southern Portugal to Norway. For each *Phragmites* stand, we have identified the strain by examining the plant's DNA.

Over a three-year period of time (2011-2013), we will visit each *Phragmites* stand in the late spring and in late summer. We will collect insects feeding on *Phragmites* and assess plant damage from herbivores. We will also measure plant traits that are indicators of its reproductive success (flower and seed production), nutritional condition (nitrogen levels), and resistance to insect attack (leaf toughness and levels of defensive chemical compounds like phenolics). In addition, we will take measurements of soil/water salinity and stand growth between years.

Project Leaders

This research project is funded by the National Science Foundation and involves a collaboration between scientists and students at Louisiana State University and the University of Rhode Island.

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Phragmites australis—
Common reed. Roseau cane

Global Invader *Phragmites australis*





HABITAT AND RANGE

Phragmites is found in brackish and fresh-water marshes, edges of rivers, ponds and lakes, roadside ditches, and other disturbed areas. It has a nearly worldwide distribution including all of the continental U.S., all Southern Canadian Provinces, and most of Europe.



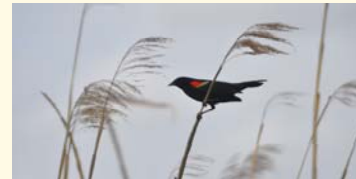
BIOLOGY

Phragmites is a perennial grass that can grow to a height of 15 feet (5m). In North America, two strains of *Phragmites* are present—one that is native (and declining in the mid-Atlantic and northeastern U.S.) and one that was introduced from Eurasia and is considered to be an invasive species. The few remnant native *Phragmites* populations are under great threat from the continued expansion of introduced *Phragmites*.



THREATS

Invasive *Phragmites* is spreading rapidly in marshes along the Atlantic coast and in several locations along the Gulf Coast (particularly the Mississippi River Delta). In addition to displacing native plant species, *Phragmites* invasion affects the structure and function of marsh ecosystems by altering nutrient cycles, hydrological regimes, and soil conditions. The extremely dense and tall stands of *Phragmites* also alter the quality of wetland habitats for migrating waterfowl, wading birds, fish, and



shellfish and negatively impacts biodiversity of native species. In addition, *Phragmites* can increase the potential for marsh fires during

the winter when the above-ground vegetation dies and dries out. Once *Phragmites* becomes established in a marsh, it is very difficult to eradicate.

This pamphlet was designed by Lucia Brus: luciabrus@yahoo.com



RESEARCH OBJECTIVE

This research project focuses on the role of herbivorous insects in the establishment of invasive *Phragmites* along the Atlantic coast from Florida to New Brunswick, Canada. Up to 26 species of insects feed on *Phragmites* in the northeast, but only a few species have been discovered on *Phragmites* in the south. How this change in herbivore biodiversity across a north-south latitudinal gradient affects establishment success and its interaction with native *Phragmites* is unknown.



Phragmites invading coastal marshes