

Morphological Characteristics for Field Identification of Native and Introduced *Phragmites australis*

by Adam M. Lambert

Common Reed, *Phragmites australis* (Cav.) Trin. ex. Steudel, is a perennial grass native to North America. Fossil records show that it has been present in the southwestern United States for 40,000 years (Hansen 1978). *Phragmites* was also present in 3,500-year-old peat cores from Connecticut (Orson et al. 1987). In the past century *Phragmites* has been rapidly increasing in distribution and abundance across North America, especially along the Atlantic Coast. This expansion has been attributed to anthropogenic changes to wetland ecosystems that facilitate *Phragmites* dispersal (Marks et al. 1994). The increase in *Phragmites* has also been attributed to introductions of European genotypes into the eastern US (Besitka 1996).

Kristin Saltonstall, a graduate student at Yale University, has recently identified genetically distinct strains of *Phragmites* with native and exotic origins (Saltonstall 2002). She sequenced two DNA markers (of haplotypes) in over 300 plants collected from around the world. Haplotypes are combinations of alleles that are located close together on the same chromosome. These segments of chromosomes often contain many single base variations that are inherited together. Saltonstall identified 11 native haplotypes, one exotic haplotype, and one haplotype of unknown origin. The 11 native haplotypes have different distributions and abundances throughout North America. The haplotype she designated "E" is the most abundant native haplotype with a range throughout northern North America. Haplotype I occurs along the Gulf Coast, and is most closely related to South American and Asian haplotypes. Haplotype M is the most abundant strain in North America, and is the one seen invading wetlands throughout the east. This haplotype is most closely related to ones in Europe.

We are presently evalu-

ating morphological differences between the native and introduced haplotypes to allow for field identification of them. An easy and accurate identification key based on morphological characteristics will help land managers identify and preserve native stands that might otherwise be controlled by conventional methods. These methods include herbicide spraying, mowing, disking, burning, dredging, flooding, draining, and grazing. Our long-term goal is to identify, evaluate, and release biological control agents that will feed on the introduced haplotype.

Currently, there are no known populations of native *Phragmites* in Rhode Island. We need your help in locating potential populations. Table 1 presents the characteristics that differ between populations of native and exotic *Phragmites* from the East Coast that we have evaluated so far. With the analysis of more stands it is likely that some of these identifying characters will change. Bernd Blossey of Cornell University has developed a website on *Phragmites* (<http://www.invasiveplants.net>). This site begins with a general description of invasive plants, and includes a detailed section on *P. australis*, including diagnostic characteristics for identifying native and introduced haplotypes.

If you see stands of *Phragmites* that appear to be native, please notify us through the URI Biological Control Laboratory (401) 874-2750 or by e-mail (alam9114@postoffice.uri.edu).

Literature Cited:

Trait	Native Haplotypes	Introduced Haplotype
Stem color at base (spring/summer) Note: leaf sheath needs to be removed	Red to Chestnut	Tan
Stem color at base (winter) Note: leaf sheath needs to be removed	Light chestnut to light brown/gray	Tan
Stem texture	Smooth and shiny, often with black spots around nodes	Rough and dull (feels ribbed)
Stem growth to m	Slightly crooked	Straight
Stem flexibility	High	Low
Stem toughness	Low	High
Stem height	Reduced	High
Stem density (stems per unit area)	Low	High
Node color (summer)	Almost purple	Tan
Node color (winter)	Light chestnut to light brown/gray	Tan
Flowering	July-August	August-September
Inflorescence	Sparse	Dense
Senescence	Early	Late
Ligule color at emergence	Red	Green
Leaf color	Yellow-green	Inland: Dark green/gray Coastal: yellow green to dark green/gray
Rhizome density	Low	High
Clonal expansion rate	Low	High

Table 1. Morphological differences between native and introduced *Phragmites* haplotypes from the east coast (adapted from Blossey 2002, <http://www.invasiveplants.net>).

- Besitka, M.A.R. 1996. *An Ecological and Historical Study of Phragmites australis along the Atlantic Coast*. Masters Thesis, Drexel University, Philadelphia, PA.
- Hansen, R.M. 1978. Shasta ground sloth food habits, Rampart Cave, Arizona. *Paleobiology* 4: 302-319.
- Marks, M., B. Lapin, and J. Randall. 1994. *Phragmites australis* (*P. communis*): Threats, management, and monitoring. *Natural Areas Journal* 14: 285-294.
- Orson, R.A., R.S. Warren, W.A. Niering. 1987. Development of a tidal marsh in a New England river valley. *Estuaries* 10: 20-27.
- 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.

Adam Lambert is a graduate student working with Dr. Richard Casagrande in the Department of Plant Science at the University of Rhode Island.

RINHS Organizational Members: Special News & Events

Announcing the publication of the *Southeastern Naturalist*, a companion journal for the *Northeastern Naturalist*

The *Northeastern Naturalist* is pleased to announce the publication of its companion journal, the *Southeastern Naturalist*! This new journal serves as the southeastern regional counterpart for the Northeastern, Northwestern, and Southwestern Naturalists. These journals, together with the *American Midland Naturalist*, provide broad coverage of scientific research efforts throughout the United States.

Like the *Northeastern Naturalist*, the *Southeastern Naturalist* is a broad-based effort involving many people from many organizations. It is co-sponsored by the Association of Southeastern Biologists and the Humboldt Field Research Institute. Both journals welcome submissions of manuscripts on terrestrial, freshwater, and marine organisms and their habitats.

Subject areas include, but are not limited to: field ecology, biology, behavior, biogeography, taxonomy, evolution, anatomy, physiology, geology, and related fields. Manuscripts on genetics, molecular biology, archaeology, and anthropology, etc., are welcome if they provide natural history insights that are of strategic interest to field scientists.

Regional journals need your subscription support! The broader the subscription base of our country's regional journals, the more articles the journals can publish! This makes the journals more interesting to their readers and more useful as standard research and publishing resources. This is something that is of interest to the scientific community in the entire country as a whole!

Information about the journals is available from the Humboldt Field Research Institute, PO Box 9, Steuben, ME 04680. Phone: 207-546-2821; humboldt@loa.com.

Come join the *South Kingstown Land Trust* as we

Celebrate Open Space at the foot of the DuVal Trail in Perryville this June 22nd. The trail lies in Susanna's Woods, noted for its stands of oak and Mountain Laurel, so lace up your hiking boots for a fun-filled day with events for all ages.

- Enjoy guided and unguided trail hikes on our celebrated DuVal Trail
- Bird Hike with staff from Birdwatcher's Natureview
- Wild Plant hike with Christopher Nerone, naturalist and botanist from URI
- Challenge yourself on the rock-climbing wall
- Get up-close and personal with an assortment of reptiles and amphibians from the Rhode Island Herpetological Association
- Learn about native birds of prey rehabilitated by the Rhode Island Raptor Center
- Relax to the folk music of South County's own Hatfield McCoy Trio
- Don't miss free pony rides for the kids

Thanks to the generosity of many local businesses, we will also hold a raffle of nature-related items. Please join us on Saturday, June 22nd, 11am-3pm, Post Road, Perryville. The approximate hiking time for the DuVal Trail is 1.5 hours. Shuttle service will be provided from both the trail's midsection and its end back to the main event. Pre-registration is required for the guided hikes due to limited space. Please phone Cynthia Gleason at 789-7628 to register or for more information. Food and refreshments will be available. Rain date: Saturday, June 29th.

Seventh RINHS Conference a Great Success!

Nearly 300 participants filled the conference rooms at the Radisson Airport Hotel in Warwick on March 1st, to hear excellent presentations on geology, hydrology, water quality, vertebrates, invertebrates, plants and forests, and coastal habitats and to view a variety of posters and organizational displays. Keynote speaker Orrin H. Pilkey of Duke University offered a global view of barrier islands, and the 2001 and 2002 Distinguished Naturalist Awards were presented to Doug Rayner, Grace Klein-MacPhee, and Les Sirkin (see separate articles). One hundred and thirty-five high school students and teachers joined the participants to get first-hand exposure to a real scientific conference. To read abstracts of the papers and posters, visit the RINHS website at: <http://www.uri.edu/ce/rinhs/pages/abstract2002.html>.

RINHS is grateful to the Virginia Butler Fund of the Rhode Island Foundation, a charitable community trust serving the people of Rhode Island, for its support of the conference.