



# Controlling *Phragmites australis* in Connecticut's Fresh and Salt-water Marshes

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## Introduction

*Phragmites australis* (Phragmites) is an aggressive invasive plant species that has taken over thousands of acres of marsh in Connecticut. The State of Connecticut, Department of Environmental Protection's Wildlife Division, Wetlands Habitat and Mosquito Management (WHAMM) Program has been doing Phragmites control since 1997. Over sixty-six sites have been under the WHAMM Program's control.

## Ecology of Phragmites

Phragmites is a tall, perennial grass that grows in brackish, tidal fresh water and non-tidal freshwater wetlands. Native Phragmites may have been present as a minor component of Connecticut tidal marshes as early as 3000 years ago, in the last 30-50 years Mono-typical Phragmites has begun spreading at rates as high as 1-3% per year in areas like the lower Connecticut River. It is estimated that approximately 10% of Connecticut's tidal wetlands are dominated by Phragmites. It is now confirmed that the new, pestiferous type that has been introduced, possibly on ballast stone from ships is genetically different from the native plant stock and most commonly found in Europe. Scientists, environmental managers, and conservationists are increasingly concerned about the potential threat that the spread of Phragmites poses to tidal wetlands throughout Connecticut. Phragmites is intolerant of soil salinities greater than 18 parts per thousand, and is not typically found in salt marshes, unless the salinity regime has been altered through impounding, diking, or some other means of restricting tidal flow. Phragmites is most abundant in brackish and tidal fresh marshes. Other factors that may contribute to the spread of Phragmites include disturbances such as excavation, sedimentation, and increasing nutrient concentrations.

Phragmites forms dense colonies or clones, mainly spreading through thick underground rhizomes. New shoots form at the nodes along the rhizomes. In nutrient rich areas such as tidal marshes, this simple and rapid method of spread allows Phragmites to out compete the native plant species for both nutrients and light. In addition to the threat imposed on native plant and animal species, the density of the Phragmites stems, and the slow rate of decomposition in the winter after the stems die provide an ample supply of combustible material that creates a serious fire hazard, particularly in suburban areas.

Thick stands of Phragmites form nearly impenetrable barriers to the movement of animals and large birds such as ducks, shorebirds, and wading birds. These thick monotypic stands result in a degradation of habitat



Phragmites will grow up to twenty feet tall.

by raising the marsh elevation and by filling in the open water areas. This habitat loss starts the decline in the diversity of bird species utilizing a marsh. The Seaside sparrow, Salt marsh Sharp-tailed sparrow (both Connecticut species of special concern), as well as the Willet and Marsh wren are less abundant in Phragmites marshes. In part, this is because they are highly adapted to nesting in native plant-dominated salt and brackish marshes. Although a few bird and animal species such as rail, American bittern, Red-winged blackbird, deer and muskrat may inhabit Phragmites marshes, most other animals and birds avoid these areas because they cannot penetrate the thick stands.

The shade from these large stands also hinders the growth of native plants. Studies have shown that plant diversity is greatly reduced after forming dense monocultures of Phragmites, and that it appears to be detrimental to the overall ecological functioning of tidal wetlands.

## Control Methods

The objective of Phragmites control is not to completely eradicate the species, because in certain circumstances it may contribute to overall habitat diversity of tidal wetlands, but rather to reduce the extent of monotypic stands that have invaded brackish and tidal-fresh water wetlands. There are two methods commonly used to control the spread of Phragmites:

- 1) **Restoring Salt Water Tidal Flows:** The Connecticut Department of Environmental Protection's Office of Long Island Sound Programs, Tidal Wetland Restoration Program uses this method for restoring degraded tidal wetlands. Since Phragmites is intolerant of salinities greater than 18 ppt, reintroduction of salt water results in a gradual replacement of Phragmites by native vegetation. However, this generally takes between ten to twenty years. Planting of native vegetation is usually not necessary because of abundant natural seed sources. Since 1980, this restoration technique has been applied to approximately 1500 acres in Connecticut.
- 2) **Three-year Herbicide Application and Mowing:** Glyphosate, Habitat and Renovate are aquatic herbicides used to control dense stands of Phragmites in brackish tidal marshes of Connecticut. An aquatic surfactant (sticking agent) is typically mixed with the herbicide prior to its application. Spraying occurs during the mid summer months until the first frost. A month after the spraying, mowing can begin and is done with low ground pressure equipment. This ground spraying and mowing is done for three successive years. About eighty percent of the Phragmites will be eliminated after the first year. Since 1997, the WHAMM Program has controlled 1,497 acres.



DEP WHAMM Program's Igp ARGO with tower and tank with high-pressure sprayer.



DEP WHAMM Program's Posi-Track ASV MD2810 Low Ground Pressure Mower.