Herbaceous Weed Control
Common Reed – *Phragmites australis*

Conservation Practice Job Sheet ***NH-315***

Common Reed (*Phragmites australis*)

Common Reed, leaves

Common Reed
Phragmites is widely distributed across the world but, the origin of the species is unclear. In the U.S. phragmites is most abundant along the Atlantic Coast though it is present throughout the entire country and southern Canada.

Phragmites is most commonly found in freshwater wetlands but it readily invades salt marshes that have been degraded by some type of flow restriction. It can also be found along river edges, shores of lakes and ponds, roadsides and disturbed areas.

Phragmites alters the structure and function of diverse marsh ecosystems by changing species composition, nutrient cycles and hydrological regimes. Dense phragmites stands decrease biodiversity and quality of wetland habitat, particularly for migrating waders and waterfowl species.

Similar Natives

There exists an uncommon native variety of Phragmites in New Hampshire.

Description
Phragmites is a perennial grass that can grow to approximately 14 feet in height. The leaves (see picture above) are lanceolate, often 20-40 cm long and 1-4 cm wide. Flowering and seed set occur between July and September, resulting in a large feathery inflorescence, purple-hued turning to tan. Phragmites reproduces through wind dispersal and vigorous vegetative reproduction through rhizomes. It often forms dense, virtually monospecific stands.

Control
Before control methods are implemented, it is important to evaluate the site properly to determine the density of phragmites within the overall stand of plants, the wetness of the site and the size of the area infested by phragmites. It is also important to be aware of animal species utilizing the habitat. Many waterfowl will utilize Phragmites habitats so long as

they have not become too dense to nest in. Using this information and recognizing that control of phragmites likely will require a long-term commitment, a comprehensive management plan can be formulated and implemented.

An initial herbicide treatment stresses the plants, making them particularly vulnerable to subsequent treatments. Because of the physiology of Phragmites, well-established stands are difficult to control with only one herbicide treatment. Creating multiple stresses on the plants is the most effective way to control phragmites. Herbicide treatment in conjunction with prescribed fire, mechanical treatment or flooding have proven to be effective in controlling phragmites and allowing native plants to reestablish.

Biological Control
Currently there are no commercially available biological methods for the control of phragmites; however, several insects and microorganisms native to Europe are known to attack phragmites. Ongoing research at Cornell University is exploring the possibility of using these species as a means of biological control.

Mechanical Control
Cutting, Pulling, Excavation: Cutting or pulling has been used successfully to control small stands of phragmites. Excavation is also effective. Treatments usually need to be repeated annually. The best time to cut phragmites is at the end of July. Cutting at other times may increase stand density. Phragmites stems should be cut below the lowest leaf, leaving a 6" or shorter stump.

Cut or pulled material should be removed from the site and composted or allowed to decay on the upland. Some patches may be too large to cut by hand, but repeated cutting of the perimeter of a stand can prevent vegetative expansion. Cutting or pulling can be expensive and labor intensive, but are effective techniques for controlling phragmites in small areas with sandy soils.

Black Plastic: Black plastic is feasible on small areas, and heavy tarps or other type mats should be used, as Phragmites can pierce through typical black plastic used for vegetable operations. After cutting a stand of phragmites, anchor a sheet of black plastic over the cut area using sand bags or rocks and leave in place for a full growing season. High temperatures under the plastic will eventually kill off the plants. This technique works best when the treated area is in direct sunlight. The following year when the plastic is removed, a few phragmites shoots may return. These can be cut or hand-pulled.

Prescribed Burning
Prescribed burning, as a treatment by itself, can actually increase shoot densities and below ground biomass of phragmites. Burns can be effective, however, if followed by flooding in the marsh. Flooding a marsh after a burn requires the capacity to manipulate water levels. Burning has also been used successfully following herbicide applications. All applicable permits and licenses must be obtained prior to conducting a controlled burn. Phragmites fires can burn very hot and fast, and may start spot fires some distance away. This technique, therefore, can be dangerous, and is only appropriate for professional land managers.

Chemical Control
There are two broad-spectrum herbicides, Glyphosate and Imazapyr that are commercially available and known to control Phragmites effectively when used properly[1]. These chemicals are nonselective and will enter any plant species through contact with the leaves or stems and be translocated to the rhizomes. If the dosage is too concentrated, top kill may occur before the herbicide can be translocated to the rhizome rendering treatment ineffective. Care should also be taken not to break the stems during treatment, as this would also prevent the herbicide from reaching the rhizomes[2].

Impacts on other native plants may occur if the product is applied incorrectly. Both herbicides are available in separate formulas for application either on aquatic or terrestrial sites. Improper use of the terrestrial formulations in an aquatic habitat may harm fish and macro invertebrates and is a violation of federal and state laws[3].

Herbicides are best applied in late summer/early fall after the plant has flowered for either cut stem treatments or foliar application. In most cases herbicides should be used in conjunction with burning or mechanical methods, and follow-up spot treatments should be expected for best results.

Foliar Treatment: Numerous methods may be used to apply these herbicides depending on the size of the phragmites stand and existing site conditions. To ensure that the herbicide is taken up by the plants, a

state approved nonionic surfactant must be used in conjunction with the herbicides at the recommended rate. Spray should be applied to wet the leaves and, when present, the flower plumes of the target plants. Excessive application, such that the chemicals are dripping off the plants, should be avoided due to injuries to desirable native plants and cost[3].

Glyphosate and Imazapyr based herbicides (e.g. Rodeo/Roundup and Arsenal) are the most effective chemicals to control phragmites[1]. If the plants are too tall to spray, cut back in mid summer and apply glyphosate when regrowth reaches 2 to 3 ft tall. Choose Rodeo formulation for applications in standing water or along a shoreline. Rules and regulations as well as a licensed applicator should be consulted before application.

[1]- Kay, Stratford. "Efficacy of Wipe-On Applications of Glyphosate and Imazapyr On Common Reed in Aquatic Sites."
[2]- "Control of Phragmites or Common Reed." Water Fowl Management Handbook.
[3]- "A Guide to the Control and Management of Invasive Phragmites." US Fish and Wildlife.

Cut stem treatment: This method should be used in isolated or scattered stands of Phragmites, where impacts to desirable, native plant species must be avoided. Cut plants to waist height and add one drop of herbicide to hollow stems with a squirt bottle or syringe. Be careful to remove seed heads from the site after cutting to prevent seed spread.

Important Note
Mention of specific pesticide products in this document does not constitute an endorsement. These products are mentioned specifically in control literature used to create this document.

Long-Term Management and Monitoring
Due to the pervasiveness of this species and its ability to aggressively recolonize through seed or rhizomes, long-term management and monitoring are necessary. Once areas of phragmites have been controlled (e.g., greater than 85-percent reduction), it is recommended that an annual maintenance control program be implemented.

Disposal
There are a few general rules of thumb that will ensure proper disposal. Be sure the plant is dead before placing in a mulch or compost pile. Either dry it out in the sun, or bag it in a heavy duty black plastic bag. If you have flowers and/or seeds on the plant, put the flowers and seed heads into the bag head first so that there is minimal risk in dispersing seed.

Information and Recommendations compiled from:

- Alien Plant Invaders of Natural Areas (NPS)
- "A Guide to the Control and Management of Invasive Phragmites." US Fish and Wildlife.
- "Control of Phragmites or Common Reed." Water Fowl Management Handbook.
- Ecology and Management of Invasive Plants Program, Cornell University. http://www.invasiveplants.net/phragmites/Default.asp
- "Invasive Plant Management Guide." Stewardship Subcommittee of the Connecticut Invasive Plant Working Group. http://www.hort.uconn.edu/cipwg/art_pubs/GUIDE/guideframe.htm
- Kay, Stratford. "Efficacy of Wipe-On Applications of Glyphosate and Imazapyr On Common Reed in Aquatic Sites."
- Chambers M., Randolph et al. 2002. "Hydrological and chemical control of *Phragmites* growth in tidal marshes of SW Connecticut, USA." Mar Ecol Prog Ser.