

Management information: *Phragmites australis*

Physical:

Prescribed burning does not reduce the growing ability unless root burn occurs. Root burn seldom occurs, however, because the rhizomes are usually covered by a layer of soil, mud, or water. Fires in *P. australis* stands are dangerous because this species can cause spot-fires over 100 feet away (Beall 1984, in Marks *et al.*, 1993). Burning does remove accumulated leaf litter, giving the seeds of other species space to germinate. Prescribed burning has been used with success after chemical treatment for this purpose at some wildlife refuges. Late summer burns may be effective, but winter and spring burning may in fact increase the densities of spring crops (Cross and Fleming 1989, in Marks *et al.*, 1993).

Cutting has been used successfully to control *P. australis*. Since it is a grass, cutting several times during a season, at the wrong times, may increase stand density (Osterbrock 1984, in Marks *et al.*, 1993). Care must be taken to remove cut shoots to prevent their sprouting and forming stolons (Osterbrock 1984, in Marks *et al.*, 1993). Trimmers worked better than loppers and were safer than sickles; a circular blade on a weed whacker was also used and proved faster but was more dangerous for volunteers (Huffman, pers. comm. 1992, in Marks *et al.*, 1993). Grazing, dredging, and draining are other methods that have often been used to reduce stand vigor (Howard *et al.* 1978, in Marks *et al.*, 1993). However, draining and dredging are not appropriate for use on most preserves (Osterbrock, 1984, in Marks *et al.*, 1993). Grazing may trample the rhizomes and reduce vigor but the results are limited (Cross and Fleming 1989, in Marks *et al.*, 1993).

Reintroduced tidal action and salinity can reduce *P. australis* vigor and restore the community's integrity. Flooding can be used to control *Phragmites* when 3 feet of water covers the rhizome for an extended period during the growing season, usually four months (Beall 1984, in Marks *et al.*, 1993). However, many areas cannot be flooded to

such depths. Furthermore, flooding could destroy the communities or plants targeted for protection. Open Marsh Water Management (OMWM) has been used as a method of control. Plugging of ditches and addition of culverts to raise the soil salinities appears to have caused *P. australis* die-back (Niniviaggi, pers. comm. 1991; Rozsa, pers. comm. 1992, in Marks *et al.*, 1993). Mowing only affects the above ground portion of the plant, so mowing would have to occur annually. To remove the rhizome, disking could be employed. However, disking could potentially result in an increase of the species since pieces of the rhizome can produce new plants.

Chemical:

Rodeo, a water solution of the isopropylamine salt of glyphosate is commonly used for *Phragmites* control. This herbicide is not, however, selective and will kill grasses and broadleaved plants alike. Rodeo must be mixed with water and a surfactant, which allows it to stick to and subsequently be absorbed by the plant (Beall 1984, in Marks *et al.*, 1993). Rodeo should not be applied in windy conditions, as the spray will drift (I. Ailes, pers. comm. 1985, in Marks *et al.*, 1993). It also should not be applied if rain is forecast within 12 hours because it will wash away before it has a chance to act (Daly 1984, in Marks *et al.*, 1993). Application of Rodeo must take place after the tasseling stage when the plant is supplying nutrients to the rhizome. In more fragile situations where it is threatening a rare plant or community, aerial spray techniques are inappropriate because such large-scale application could kill the community that the entire operation was designed to protect. Glyphosate can be applied to specific plants and areas by hand with a backpack sprayer.

Biological:

Biological control does not appear to be an option at this time. No organisms that significantly damage *P. australis* without feeding on other plant species have been identified. Naturally occurring parasites have not been proven as successful controls (Tscharntke 1988, Mook and van der Toorn 1982, van der Toorn and Mook 1982, in

Marks *et al.*, 1993). In addition, some of the arthropods that feed on *P. australis* are killed by winter fires and thus would likely be eliminated from the systems where prescribed fires are used. Coots, nutria, and muskrats may feed on this plant but appear to have limited impacts on its populations (Cross and Fleming 1989, in Marks *et al.*, 1993).