Ornamental Grass Threatens Native Biodiversity

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS106E

Ornamental grasses are increasingly popular in landscaping. One species being offered in nurseries and online is ribbongrass, or *Phalaris arundinacea var. picta* ('Castor', 'Feesey', 'Strawberries and Cream', '*luteo-picta*'), a striped ornamental variety of the noxious weed known as reed canarygrass (*P. arundinacea var. arundinacea*) (Figs. 1, 2). Landscapers, garden centers, seed companies, and gardeners are urged not to plant either variety, ribbongrass or reed canarygrass, or offer them for sale.

Invasiveness

Some horticultural references caution that ribbongrass is "invasive", that it may escape its garden bed by vigorous vegetative growth. However, far greater problems may exist at the ecosystem level. Without even leaving the garden, ribbongrass could threaten native plant, invertebrate, and animal diversity in Washington by cross-pollinating existing populations of reed canarygrass. Ornamental ribbongrass could further complicate management of weedy reed canarygrass.

Ecologically, "invasive" species displace others, reducing biological diversity, and altering the processes that keep ecosystems healthy. Invasive species are a major threat to global biodiversity and economic activity. Pimentel et al. (2005) estimate that invasive species cost the US economy over $120 billion per year. Because of its potential to invade and dominate critical streamside and wetland habitats, reed canarygrass is classified as invasive in most of the US States and Canadian provinces (USDA NRCS 2012). Besides its impacts on biodiversity, invasive reed canarygrass degrades fish and wildlife habitat, clogs irrigation systems, and reduces visibility, while increasing fire risk on rights of way. Further, reed canarygrass is often less palatable to wildlife and livestock than other forage species.

No consensus exists that reed canarygrass (*P. arundinacea var. arundinacea*) is native to the Northwest (White et al. 1993; Meriglio and Lesica 1998), but it is widely found in all but the driest, coldest, or most densely-forested parts of this region. Most landscapes, including ditches, construction sites, farms, rights of way, and even dedicated conservation areas such as reserves and wildlife refuges in Washington have reed canarygrass (Fig. 3). Due to this wide distribution, reed canarygrass is a class C noxious weed in Washington, meaning that counties can restrict its sale (WSNWCB 1995).

*Figure 1. Variegated foliage of ribbongrass (***Phalaris arundinacea var. picta***). Photo By Richard Old XID Services. Bugwood.org*

*Figure 2. Naturalized stand of reed canarygrass (***Phalaris arundinacea var. arundinacea***). Photo By Michael Shephard, USDA Forest Service. Bugwood.org*

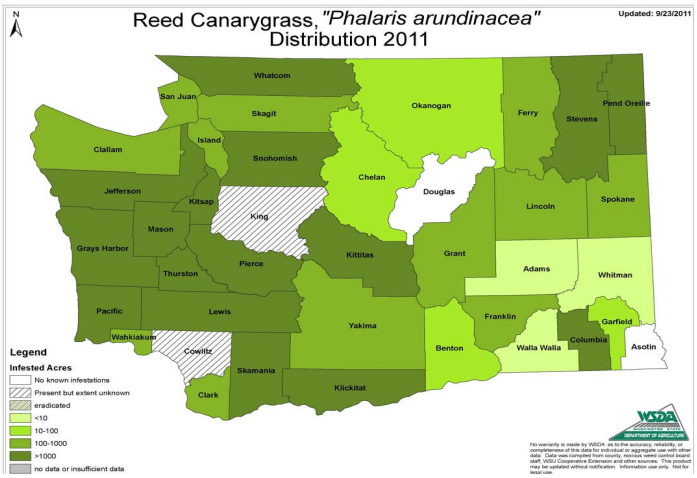

Figure 3. Known extent of reed canarygrass distribution in Washington State 2011(WSDA 2012).

Figure 4. Root crown of a reed canarygrass plant showing cream-colored rhizome to the right. The rhizome is analagous to the joints (or nodes) seen on above-ground shoots of grasses. Roots on rhizome show how, if detached, a segment of rhizome can grow into a new plant. Above-ground nodes have this same capacity. (Author photo)

The threat of cross-pollination by ribbongrass

Recent research demonstrates that aggressive traits result from multiple introductions of reed canarygrass. This creates an expanded gene pool, allowing plants to better adapt to new conditions (Lavergne and Molofsky 2007). Since the 1930s, plant breeders in the US have produced cultivars of reed canarygrass to improve forage characteristics, such as increased seed production and viability, as well as persistence under haying and grazing (USDA 1996). These improvements may have increased the invasiveness and difficulty of controlling unwanted reed canarygrass. Cultivars planted for stream bank stabilization and forage in the Northwest likely contributed genes that allowed reed canarygrass to develop aggressive traits (Merigliano and Lesica 1998). Thus, genes from ribbongrass could exacerbate problems already posed by reed canarygrass. Further, no known techniques provide any long-term control of reed canarygrass. Persistent reed canarygrass is a chronic problem for managers of parks, refuges, farms, irrigation systems, and transportation corridors, who often resort to repeated herbicide applications to maintain some temporary control of reed canarygrass.

Because both varieties reproduce so easily from rhizomes and above-ground nodes (Fig. 4), the importance of seeds in spreading the species and further enhancing its invasiveness has been underestimated. Our current genetic research in an Eastern Washington wetland shows that even in a long-established, dense monoculture of reed canarygrass, more than 96% of plants arose from seeds rather than vegetatively from neighbor plants. The hazard of cross-pollination is that ornamental ribbongrass could contribute to greater genetic diversity in invasive reed canarygrass. The widespread occurrence of reed canarygrass throughout the region creates this opportunity wherever ribbongrass occurs.

You can help

You can help protect Washington's native biodiversity and reduce the public costs of managing reed canarygrass by not selling or planting either variety of *Phalaris arundinacea*: ribbongrass (*var. picta*) or reed canarygrass. (*var. arundinacea*). Further, established ribbongrass plants should be destroyed by uprooting the entire plant, drying and burning it rather than composting or sending it to a landfill, where rhizomes, nodes, pollen, or seeds may escape.

References

Lavergne S. and J. Molofsky. 2007. Increased Genetic Variation and Evolutionary Potential Drive the Success of an Invasive Grass. *Proceedings of the National Academy of Sciences of the United States of America* 104: 3883–3888.

Merigliano, M.F. and P. Lesica. 1998. The Native Status of Reed Canarygrass (*Phalaris arundinacea* L.) in the Inland Northwest, USA. *Natural Areas Journal* 18:223-230.

Pimentel, D., R. Zuniga, and D. Morrison. 2005. Update on the Environmental and Economic Costs Associated with Alien-invasive Species in the United States. *Ecological Economics*, *52*(3), 273–288.

USDA NRCS United States Department of Agriculture Natural Resources Conservation Service. Plants Database. 2012. http://plants.usda.gov. Accessed June 2012.

USDA United States Department of Agriculture. 1996. *Grass Varieties of the United States*. Boca Raton, FL: CRC Press.

White, D.J., E. Haber, and C. Keddy. 1993. Invasive Plants of Natural Habitats in Canada.Ottawa, ON: Canadian Wildlife Service.

WSDA Washington State Department of Agriculture. 2012. Reed Canarygrass "*Phalaris arundinacea*" Distribution 2011. http://www.nwcb.wa.gov/siteFiles/Reed%20Canarygrass%202011.pdf. Accessed June 2012.

WSNWCB. 1995. Written Findings of the Washington State Noxious Weed Control Board *Phalaris arundinacea*. http://www.nwcb.wa.gov/siteFiles/Phalaris_arundinacea.pdf. Accessed June 6, 2010.

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