common reed
Phragmites australis (Cav.) Trin. ex Steud.

Synonyms: *Arundo altissima* Benth., *A. australis* Cav., *A. graeca* Link, *A. isiaca* Delile, *A. maxima* Forssk., *A. occidentalis* Sieber. ex Schult., *A. palustris* Salisb., *A. phragmites* L., *A. vulgaris* Lam., *Cynodon phragmites* (L.) Raspail, *Oxyanthe phragmites* (L.) Nieuwl., *Phragmites altissimus* (Benth.) Mabille ex Debeaux, *P. australis* var. *berlandieri* (E. Fourn.) C. F. Reed, *P. australis* ssp. *maximus* (Forssk.) Soó, *P. australis* var. *stenophylla* (Boiss.) Bor, *P. berlandieri* E. Fourn., *P. capensis* Nees, *P. caudatus* Nees ex Meyen, *P. chilensis* Steud., *P. communis* Trin., *P. communis* var. *berlandieri* (E. Fourn) Fernald, *P. communis* ssp. *berlandieri* (E. Fourn) Á. Löve & D. Löve, *P. communis* var. *flavescens* Custer, *P. communis* var. *genuinus* Stuck., *P. communis* var. *hispanicus* (Nees) K. Richt., *P. communis* var. *isiacus* (Delile) Engl., *P. communis* var. *mauritianus* (Kunth) Baker, *P. communis* ssp. *maximus* (Forssk.) Clayton, *P. communis* var. *stenophylla* Boiss., *P. communis* var. *variegatus* Hitchc. ex L. H. Bailey, *P. dioicus* Hack. ex Conert, *P. dioicus* Hack. ex Hicken, *P. fissifolius* Steud., *P. hispanicus* Nees, *P. isiacus* (Delile) Kunth, *P. martinicensis* Trin. ex Steud., *P. mauritianus* Kunth, *P. maxima* (Forssk.) Blatter & McCann, *P. maximus* (Forssk.) Chiov., *P. maximus* var. *berlandieri* (E. Fourn.) Moldenke, *P. maximus* var. *variegatus* Hitchc. ex L. H. Bailey, *P. occidentalis* Trin. ex Steud., *P. phragmites* (L.) Speg., *P. phragmites* (L.) H. Karst, *P. vulgaris* (Lam.) Crép., *P. vulgaris* Britton, Sterns, & Poggenb., *P. vulgaris* var. *mauritianus* (Kunth) T. Durand & Schinz, *P. vulgaris* ssp. *maximus* (Forssk.) Chiov., *Reimaria diffusa* Spreng., *Trichoon phragmites* (Linn.) Rendle
Other common names: carrizo, Danube grass, giant reed, giant reedgrass, Roseau cane, yellow cane
Family: Poaceae

Invasiveness Rank: **83** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Note on Taxonomy: The taxonomy of the *Phragmites* genus is unclear. Recently, *Phragmites* has been considered both monotypic (Allred 2003) and composed of three (Mal and Narine 2004) or four species (Saltonstall et al. 2004). Multiple native genotypes and a non-native genotype of *Phragmites australis* are present in North America (Saltonstall 2002). The species has recently been split into three subspecies: *Phragmites australis* ssp. *americanus*, which is native to North America, *Phragmites australis* ssp. *berlandieri*, which has an unclear origin, and *Phragmites australis* ssp. *australis*, which is non-native and highly aggressive in North America (Saltonstall et al. 2004, Klinkenberg 2010, Barkworth and Allred 2011). No *Phragmites* taxa are native to Alaska, and all are included here.

Description
Common reed is a perennial reed that grows 1 to 6 m tall from rhizomes or stolons. Stems are hollow, simple, erect, and 5 to 15 mm thick with hollow internodes. Dead stems from the previous year's growth often remain standing. Leaves are linear to lanceolate-linear, flat, drooping, 15 to 40 cm long, and 1 to 4 cm wide with pointed tips. They fall from the stems at maturity. Sheathes are glabrous or thinly hairy and loose. Ligules form minute, membranous rims with margins of hairs that are 0.2 to 0.6 mm long. Panicles are purplish when young, straw colored at maturity, 15 to 35 cm long, and 6 to 20 cm wide. Spikelets are 10 to 18 mm long and stalked with 6 to 10 mm long hairs on the stalks. Each spikelet consists of 3 to 10 florets. Lower glumes are 3 to 7 mm long and upper glumes are 5 to 10 mm long. Lemmas are glabrous, linear, and 8 to 15 mm long with somewhat inrolled margins and pointed tips. Lower lemmas are unawned and upper lemmas are awned. Seeds are 2 to 3 mm long (Allred 2003, eFloras 2008, Gucker 2008, Klinkenberg 2010).

Panicle of *Phragmites australis* (Cav.) Trin. ex Steud. Photo by Ohio State Weed Lab Archive.

Similar species: No other species in Alaska are likely to be confused with common reed.

Long-hairy ligules of *Phragmites australis* (Cav.) Trin. ex Steud. Photo by Rasbak.

Dense infestation of *Phragmites australis* (Cav.) Trin. ex Steud. Photo by G. Lovell.

Ecological Impact

Impact on community composition, structure, and interactions: Because stems can grow up to 6 m tall, common reed can establish a new tall graminoid layer and outshade layers underneath, thereby reducing the density of or eliminating lower layers (Haslam 1972, Mal and Narine 2004, eFloras 2008, Million pers. obs.). It is capable of displacing native species in wetland communities (Catling 2005), and infestations are known to reduce plant biodiversity (Chambers et al. 1999, Mal and Narine 2004). Dense stands of common reed decrease the quality of wetland habitats for migratory waterfowl and reduce the overall diversity of bird species (Chambers et al. 1999, Blossey et al. 2002). Common reed is consumed by a variety of mammals, including deer, voles, and muskrats (Mal and Narine 2004). This species reduces habitat quality for larval and juvenile fish (Hudon et al. 2005). It provides a food source to a large number of insects and is associated with many fungi (Haslam 1972). Dense populations accumulate litter and can create anoxic conditions, reducing the efficiency of decomposition (Mal and Narine 2004).

Impact on ecosystem processes: Infestations of common reed reduce concentrations of dissolved and particulate nutrients in wetlands. In some wetlands, this species increases sedimentation while in others it increases subsidence (Chambers et al. 1999). The root and rhizome networks generally reduce soil erosion. Dead stems decompose slowly and increase the risk of fires in wetlands (Mal and Narine 2004).

Biology and Invasive Potential

Reproductive potential: Common reed reproduces sexually by seeds and vegetatively from rhizomes and occasionally from stolons (Haslam 1972, Allred 2003, Mal and Narine 2004, eFloras 2008). Although many seeds are produced (Luneva 2009), most do not mature (Allred 2003). Each shoot can produce from 500 to 2,000 seeds, but germination rates are often low (Haslam 1972, Gucker 2008). Seeds can remain viable for up to five years (Mal and Narine 2004). However, common reed does not appear to form large or long-lived seed banks (Gucker 2008, Luneva 2009). Although seeds are important for establishing new populations, existing populations primarily expand vegetatively (Chambers et al. 1999, Hudon et al. 2005). Vegetative spread is extensive and populations can have up to 200 stems per square meter (Haslam 1972, Blossey et al. 2002). Populations damaged by frost can produce up to 400 stems per square meter, and burned populations can produce up to 600 stems per square meter (Haslam 1972). Rhizomes normally survive for three to seven years, and populations can persist by vegetative spread for hundreds of years (Mal and Narine 2004).

Role of disturbance in establishment: Seeds germinate in open or sparsely vegetated areas but do not germinate well under vegetation or litter cover (Mal and Narine 2004). The natural disturbances that create openings in wetland habitats, such as geomorphic processes, favor the establishment of common reed (Chambers et al. 1999, Mal and Narine 2004). Although seeds do not germinate in vegetated areas (Mal and Narine 2004), established populations can spread by rhizomes into vegetated areas.

Potential for long-distance dispersal: Seeds are plumed

and are primarily dispersed by wind. However, they can also be transported on birds. Seeds and rhizome fragments can be transported in waterways or by flooding (Haslam 1972, Mal and Narine 2004).

Potential to be spread by human activity: Common reed is sold in nurseries in North America for planting in water gardens (Mal and Narine 2004). This species has spread along roads and highways in Canada and the U.S. (Jodoin et al. 2008, Brisson et al. 2010), suggesting that it can be spread by vehicles or human activities.

Germination requirements: Most seeds germinate 10 to 30 days after maturation. Seeds do not germinate under flooded conditions, and they germinate best on drained but moist soil or under 1 cm or less of water. Temperatures between 25°C and 35°C and the presence of light favor germination. Seeds of some biotypes adapted to cold regions require cold stratification to germinate (Mal and Narine 2004).

Growth requirements: Seedlings are sensitive to frost, flooding and drought; most do not survive these conditions. Once seedlings have reached a height of 13 to 15 cm, they can survive in up to 10 cm of water. Plants are moderately tolerant of saline conditions and can survive in estuaries. Common reed grows best in sites with pH between 5.5 and 8.1, but it has been found growing in sites with pH as low as 2.9. Low calcium, nitrogen, and phosphorous availability in the soil can limit the growth and productivity of common reed. Cold weather can halt growth, and severe frost can kill shoots. However, this species can survive temperatures as low as -20°C. Common reed produces floating mats in slow moving water, allowing plants to grow without soil contact. In Manitoba, this species grows well in water 50 cm deep but does not grow in water more than 1 m deep. Shoots have been shown to grow up to 4 cm per day under favorable conditions in western Canada. Rhizomes can survive low temperatures, fire, water stress, physical damage, and disease. Plants usually require 3 to 4 years of maturation before they are able to flower (Haslam 1972, Mal and Narine 2004).

Congeneric weeds: No other *Phragmites* species are known to be invasive.

Legal Listings

- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (AL, NH, VT, WA; invasive and banned in CT; prohibited in MA; plant pest in SC)
- ☐ Federal noxious weed
- ☐ Listed noxious in Canada or other countries

Distribution and Abundance

Stems have been used as a source of cellulose and for thatching or fodder in Europe, and common reed is associated with several manufacturing processes (Haslam 1972, Mal and Narine 2004). It is an agricultural weed in Russia (Luneva 2009). This species is sold in nurseries in North America for planting in water gardens (Mal and Narine 2004). However, it is not grown in Alaska. Common reed is known to invade wetlands, including tidal wetlands and estuaries, throughout much of North America (Chambers et al. 1999, Gucker 2008).

Native and current distribution: Common reed has a worldwide distribution (Saltonstall 2002, Allred 2003), including North America, South America, Europe, Asia, Africa, Australia, and New Zealand (Haslam 1972, Mal and Narine 2004). It grows in 49 states of the U.S. and throughout much of Canada (USDA 2011). Some genotypes are native to North America. The non-native *Phragmites australis* ssp. *australis* was introduced to North America likely from contaminated ship ballast in the 19th century along the Atlantic coast of the U.S. (Saltonstall 2002, Barkworth and Allred 2011). This species grows in arctic regions of Russia and as far north as 70.5°N in Norway (Luneva and Budrevskaya 2004, Vascular Plant Herbarium Oslo 2011). Common reed has not been documented from Alaska.

Management

Plants can regenerate from rhizome fragments as short as 20 cm (Haslam 1972, Mal and Narine 2004, Luneva 2009). Individual plants and small populations can be dug out as long as the rhizomes are removed (King County 2010); however, rhizomes commonly reach depths of 40 to 100 cm (Haslam 1972). Populations have been effectively controlled by covering with polypropylene shading fabric for 12 weeks (Mal and Narine 2004). Burning and mowing do not control common reed, but these methods do allow native seeds to germinate (Mal and Narine 2004). Populations should not be burned in spring or summer because this may stimulate regrowth. Burning is most effective following herbicide treatment (Saltonstall 2010). Herbicide applications provide effective control (Mal and Narine 2004). Foliar applications of 2% glyphosate solution with 0.25% nonionic surfactant or 1% imazapyr with 0.25% nonionic surfactant in summer or fall can be effective for large and dense populations. Applications of 3% fosamine with 0.25% ionic surfactant are moderately effective when applied in fall (Derr 2008). Applications are most effective when applied on foliage or cut stems (Saltonstall 2010). Herbicides applied after mowing a population provided 95% to 98% control in the first year and required minimal retreatment during the following two years (Million pers. obs.). Control efforts will likely need to be repeated for several years, as herbicide treatments do not completely eliminate populations (Mal and Narine 2004, Derr 2008). Several biological control agents have been accidentally introduced to the Northeastern U.S., and many potential biological control agents have been identified (Blossey

et al. 2002), but none are currently approved for use in the U.S. (Saltonstall 2010).

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