

FreshkillsPark // invasive plant guide

Phragmites australis Common Reed Grass



Phragmites, or Common Reed Grass, is an extremely invasive plant that thrives in wetlands (Swearingen & Saltonstall 2005). It out competes most other wetland plants, creating a monoculture and altering ecosystems in negative ways (Saltonstall, 2005). Two varieties exist in America, the native version and the European/invasive version. The variety found inside Freshkills Park (FKP) and throughout the Northeast is the invasive form, thought to have arrived in America in the late 18th or early 19th century from ship ballast (Swearingen & Saltonstall, 2010). The North American native *Phragmites* is no longer found in the Northeast (Saltonstall, 2002), so what we are seeing at Freshkills Park is the invasives from Europe.



'Phrag' is an exceptionally fast grower, reaching 10+ feet in a matter of weeks (Gucker, 2008). Additionally, it spreads vigorously by rhizomes which run horizontally underground and sprout new genetically identical plants (Gucker, 2008). Most stands reproduce in this manner, however new stands generally come from dispersed seed (Saltonstall, 2005). It can grow in freshwater or saltwater wetlands as found in FKP's North Park wetlands; though it doesn't typically grow where water is fast moving (Gucker, 2008; URI CELS, 2010). The invasive nature of the plant is exacerbated by its propensity to colonize sites disturbed by human activities including construction or pollution (Saltonstall, 2005).



Various methods to control *Phragmites* are difficult, expensive, and potentially harmful to the environment (URI CELS, 2010). Despite this, there are certain uses which the plant can be exploited for. In Europe, the plant is used on commercial scales for thatched roofing, livestock feed, and paper-making (Saltonstall, 2005), a practice that we are experimenting with in this art project. This also draws upon the historical use by Native Americans of making arrow shafts, musical instruments and mats with North American *Phragmites* (Saltonstall, 2005).

Polygonum cuspidatum Japanese knotweed



Polygonum cuspidatum, or Japanese knotweed, is another exotic, invasive plant which has created problems for land managers and gardeners alike. Originally from Northern Asia, Japanese knotweed made its foray into the United States as an ornamental plant during the 19th century (Nice, 2007). Many horticulturists and amateur gardeners planted it in small plots and were drawn to the beautiful plumes of white flowers it produces. However, the plant soon escaped into wild areas and has wrecked havoc, creating a monoculture of plant life and altering ecosystems, as well as intensifying erosion around river banks (Nguyen, 2002; Weston et al, 2005).



P. cuspidatum can be found in many areas where the ground has been disturbed, but takes a particular stronghold in riparian environments (IPSAWG, 2010; MIDNR, 2012). As with many of the other plants mentioned in this guide, this plant's success can be attributed to its vegetative reproduction using rhizomes. In fact, most Japanese knotweed in the U.S. comes from a single parent plant (Nguyen, 2002; Weston et al, 2005). This is due to the fact that no male Japanese knotweed plants are known to exist within America (Weston et al, 2005). The rhizomes contain a great deal of energy, so even a very small fragment can produce a new stand quickly (Nice, 2007). All parts of the plant must be placed in doubled-up garbage bags to prevent the plant from re-rooting (Wilson, 2003).



Herbicides and mechanical means of removing Japanese knotweed produce mixed results. Often it takes years of hacking or spraying to exhaust the plant's energy reserves (MIDNR, 2012; Nice, 2007). Harvesting the young stems for use in culinary dishes (Wang, 2012) is an alternative control method as the plant is quite edible as its young shoots emerge from the ground (Roman et al, 2012). There is a whole movement around harvesting and using knotweed in a variety of scrumptious recipes (Brill, 2008) and with a plentiful supply, this plant has the potential to feed populations.

Ampelopsis brevipedunculata Porcelain berry



Ampelopsis brevipedunculata, or Porcelain berry, is an invasive vine species that has spread throughout the Mid-Atlantic and Northeast regions. A native of eastern Asia, Porcelain berry was brought in as an ornamental plant for gardens in North America (Emerine et al, 2013; Norcross, 2014). With distinctive berries that glisten in many shades of blue and purple, this plant may look pretty, but once established it can spread quickly and dominate many habitats such as at the edge of marshlands (Norcross, 2014). Porcelain berry competes very well against other plants for resources, plus it remains relatively free of insects, herbivory, and disease in this area of the world (Emerine, 2011; Norcross, 2014).



One of the reasons that makes Porcelain berry such a threat to other plants is its rapid growth rate (Emerine et al, 2013). It can easily grow up to 20 feet in one growing season – in many directions – making it a spatial competitor for prime growing habitat (Emerine, 2011; MISC, 2004). *A. brevipedunculata* found to be growing on trees or other plants will take over the tree in a few years, shading out all light, thus killing the host plant (MISC, 2004). Its brilliant berries have evolved to attract birds and insects which eat the small berries, ultimately depositing the seeds elsewhere (MISC, 2004; Rowe, 2010). This is the primary method the plant spreads from one location to another (Emerine, 2011).



Controlling the growth of Porcelain berry is the principal means of keeping the plant in check. The plant is moderately easy to pull up by the roots. If the vine has grown and extended over other plants, use caution to prevent damage to other plants (Norcross, 2014). The berries of *A. brevipedunculata* albeit bland are edible as it is closely related to grape vine (Forager, 2012) and may be used for jam. This is a potential use of the berry for consumption (Rowe, 2010). Another utilization of porcelain berry is harvesting and weaving denuded vines into baskets.

Artemisia vulgaris Mugwort



Artemisia vulgaris, commonly known as mugwort, is an invasive weed that has become synonymous with disturbed land (Weston et al, 2005). Originally from Eurasia, it was planted by European settlers to North America for ornamental and medicinal purposes. With some records sourcing establishment of mugwort 400 years ago, it is considered a naturalized species of the continent (Weston et al, 2005). *A. vulgaris* is part of the sunflower family and the wider genus (*Artemisia*) has many species important to humans both for horticultural and consumption purposes – such as absinthe and tarragon.



Mugwort does well on disturbed land because of its ability to reproduce vegetatively. This plant uses a vast network of underground rhizomes (horizontal roots) which sprout new plants (Barney et al, 2005). Disturbing this network of rhizomes by mechanical means (shoveling, hand removal, plowing, etc.) activates vigorous vegetative and further rhizomal growth (Barney & DiTommaso, 2003; Sweeney, 2012). Leaving even a small amount of the root system in the ground is enough for an entire stand to become reestablished in a short amount of time (Weston et al, 2005). Other notable features of this plant are the silver hairs that cover the plant and the chrysanthemum-like odor that emanates when brushed up against (Zheng et al, 2006). **Please be aware that mugwort pollen typically activates hayfever for those who suffer from seasonal allergies** (Himly et al, 2003).



Effective control methods of *A. vulgaris* are limited but the plants has many uses. Mugwort has long been a medicinal herb, originally thought to be a good insect repellent and to treat fatigue, as well as skin irritation (Barney & DiTommaso, 2003; Sweeney, 2012). Many important chemicals have been found to be contained within the plant which can be used to treat other invasive plant species (Barney et al, 2005). One medicinal treatment achieved from *Artemisia vulgaris* is the anti-malaria drug artemisinin (Barney et al, 2005). In addition to medicinal uses, mugwort is used in culinary dishes throughout

Alliaria petiolata Garlic mustard



Alliaria petiolata, or Garlic mustard, was imported from Europe as an herb, it has spread from its first American soil on Long Island in 1868 to over 30 states (Kleinstein, 2001; Rowe & Swearingen, 2005). This biennial plant that completes its lifecycle in two years starts off as a rosette of green, heart-shaped leaves that remain close to the ground, until sprouting a tall, flowering stem the next year that produces seeds (NJDEP, 2008). The white flowers are striking against the lime green leaves, but do not be fooled by its beauty! Garlic mustard has created a monoculture in many forest understories and open fields, significantly out competing the natives seed production (Kleinstein, 2001).



Not only does *A. petiolata* produce massive amounts of seeds that can last in the ground for up to five years, it has also been found to produce chemicals that inhibit plant growth in neighboring plants (Rowe & Swearingen, 2005). One scientific study even found that stands of Garlic mustard reduced the symbiotic fungi, mycorrhizae, which live on tree roots and help them obtain vital nutrients and water (Wolfe et al, 2008). This promotes the spread and dominance of Garlic mustard in the area threatening native flora and insects that depend on native plants for their life-cycle (NJDEP, 2008; Rowe & Swearingen, 2005).



Since the plant is fairly easy to pick, it is best controlled by pulling it directly out of the ground before it has a chance to set seed (NJDEP, 2008). *A. petiolata* gets its common name from the fact that anytime you crush the leaves, a strong fragrance of garlic hangs in the air (Kleinstein, 2001). Just like Japanese knotweed, there is a strong contingent of foragers who see this edible herb as a way to control an invader, as well as being able to feed the masses. Many "foodies" have used it in salads, cooked in soups, or as a sauce for meats (Brill, 1994; Viljoen, 2013). Garlic mustard is also very nutritious, being very high in both Vitamin A and Vitamin C (Needham, 2014).

Lythrum salicaria Purple loosestrife



Lythrum salicaria, better known as Purple loosestrife, is an aggressive invasive species of wetland areas. Brought into this country by avid gardeners, it was introduced from the continents of Europe and Asia in the early 19th century (INDNR, 2014; Thompson et al, 1987). It did not take long for Purple loosestrife to assert its dominance in a new territory, as it rapidly overtook much of the cattail stands in the Northeast by the 1850s (Thompson et al, 1987). *L. salicaria* can be distinguished by its 4-10 foot stems with a spike covered in small and beautiful magenta flowers (Blossey, 2002; Swearingen et al, 2010).



Purple loosestrife's ability to spread and out-compete native plants arises from two main factors. A single plant can produce more than 2.7 million seeds in a given season (Blossey, 2002; INDNR, 2014) and loosestrife does extremely well in poorly-drained, very wet soil (Allen & Strain, 2013). Viable hybrids have been produced when crossed with its cousin in the wild, severely undercutting the claims that horticultural varieties are sterile (INDNR, 2014). New stands have also arisen from broken stems (likely from a disturbance or from weeding) being able to root again in the soil when deposited in a new location (Thompson et al, 1987). Marshes that are dominated by loosestrife have a greatly reduced rate of biodiversity as both plants and animals that thrive on the native plants are crowded out (Allen & Strain, 2013).



L. salicaria does have a few uses that could beat back the growing populations. It is known to have medicinal properties that can help cure running sores and ulcers, and it was an established historical treatment for cholera (Hartman, 2007; Seedaholic, 2013). These properties are made possible by a high concentration of compounds that make it a good astringent (Humadi & Istudor, 2009). Additionally, the plant is very high in tannins, making it a good substitute for the chemicals used to tan animal hides (Humadi & Istudor, 2009; Seedaholic, 2013).