

DEFINITIONS

While we have tried to keep the use of technical terms to a minimum we have been unable to avoid all of them. Below is a list of most of the technical terms used in the booklet.

axil - the upper position where a leaf is attached to a stem.

cane - a slender, hollow, and often jointed stem.

glume - one of a pair of bracts at the base of a grass spikelet.

invasive species - usually a non-native species which spreads and establishes in natural areas and pose a serious threat. They typically grow faster, have a higher reproduction rates, tolerate a wide range of environment conditions and have negative impacts on the natural ecosystem.

lenticel - a slightly raised, lens-shaped area in the bark, young stem, or root.

ligule - a narrow strap-shaped part of a plant consisting of a membranous scale, hairs or a combination of membranous scale and hairs on the inside of leaf sheath where the leaf blade joins the sheath as in most grasses and sedges. See page 2 for photo.

native - occurring in our area prior to European settlement or about 1750.

node - a place on the stem where a leaf or branches are (or have been) attached.

sheath - an organ that partly or wholly surrounds another organ.

stamen - the male reproductive part of a flower consisting of the filament which supports the anther which produces the pollen.

stipule - a pair of leaf-like appendages at the base of the stem of some leaves.

weed - a plant that is not valued where it is growing and is usually of vigorous growth.

SOURCES

Gleason & Cronquist, Manual of Vascular Plants of Northeastern United States and Adjacent Canada, 1991.

Ohio Department of Natural Resources and The Nature Conservancy, Ohio's Invasive Species, 2000.

Ohio Invasive Plants Council, Invasive Plants of Ohio Fact Sheets, 2010.



FIELD GUIDE TO THE INVASIVE PLANTS OF THE EUCLID CREEK WATERSHED

The purpose of this field guide is to provide stewards with the diagnostic details of the invasive plants in the Euclid Creek watershed so they are not mistaken for their non-invasive look-alikes. The overall goal with non-native, invasive plants is to **control** their spread. Eradication is almost always totally unrealistic due to the likelihood of reinfestation from surrounding properties. We aim to control their spread so they don't overwhelm the floristic diversity present in our preserves.

We are generally opposed to the use of herbicides for several reasons. Herbicide use has too often been the first choice for invasive control because of chemical company marketing and ease of application. But the Euclid Creek watershed is as are most urban watersheds already overrun with herbicides which bioaccumulates and contaminates everything downstream including eventually our drinking water. Our invasive plants are most frequently found in small plots widely scattered throughout the preserves. In addition, since we don't have a real bad problem with invasives we can usually achieve control with a small group of volunteers who periodically thin the known trouble makers.

Our preferred method of control is hand pulling. This is most effectively done soon after rainfalls. The invasive with long tap roots may need mechanical hand weeders.

Because our preserves are mostly wetlands boots are usually a good idea. When removing thorny plants like Canada thistle it is best done with gloves. Gloves will also provide some protection from poison ivy which is very common throughout the watershed. The timing of invasive plant pulls is also important. Pulling right after a rain is much easier since the soils is wet to saturated. Timing of pulls need to be coordinated with plant flowering times. It is always best to pull when the plant is in flower but before it has mature seeds. Pulling while the plant is in flower should also help in identifying the plant correctly. To make best use of this guide a 10x to 20x hand lens would be helpful in observing some of the smaller characteristics.



Canada thistle (*Cirsium vulgare*)

LEAVES: simple leaves; **deeply cut and irregularly lobed with bristle tipped lobes**; leaves arranged alternately on main stem which has no spines; leaves slightly clasp the main stem;



FLOWERS: pink-purple petals tightly clustered flowing from swollen base; multiple heads in multiple clusters; heads usually about 1" tall; Canada thistle produces both male and female flowers (dioecious).

LOOK-A-LIKE PLANTS: There are many plants that appear similar to Canada thistle.

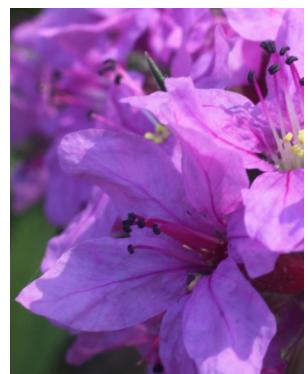
BEST CONTROL MEASURES: Canada thistle is a herbaceous perennial. Mature stands can have very deep, strong roots. Pulling is best done when soil is wet and much of the root can be removed. Narrow trowels can be very useful

Purple loosestrife (*Lythrum salicaria*)

LEAVES: simple, lance-shaped, feather-veined, smooth-edged arranged opposite (sometime in whorls of 3) on the stem. Leaves are **stemless to occasionally clasping**. Plants grow 1 to 2.5 meters tall. Stems are square in cross-section.



FLOWERS: magenta to purple flowers with 5 or 6 petals arranged at the top of a **dense spike** of flowers. Purple loosestrife flowers have **12 stamen**.



LOOK-ALIKE PLANTS: Purple loosestrife can be mistaken for the native wing-angled loosestrife (*Lythrum alatum*) which has alternate leave on the upper stem, wider spaced flowers and is generally shorter. Wing-angled loosestrife has 4-6 stamen, flowers solitary or in 2's in axils and petals are 5 mm long.

BEST CONTROL MEASURES: Small populations can be controlled with hand pulling. For large populations herbicides can be a better choice. The introduction of the European weevil (*Hylobius transversovittatus*) and the flower bud weevil (*Nanophyes marmoratus*) has proven useful in controlling this invasive but not eradicating it.

Periwinkle (*Vinca minor*)

LEAVES: simple, stemmed, opposite leaves with feather-veining and smooth edges. The leaves on a trailing vine are a shiny dark green. The leaves are evergreen.



FLOWERS: 5 blue-violet petal lobes on stemmed regular flowers are usually funnel-shaped. Flowering occurs early usually starting in late March and can easily last through May

LOOK-ALIKE PLANTS: Periwinkle (also known as myrtle) is not easily confused with other plants.

BEST CONTROL MEASURES: Pulling of root systems is the best control method. It is usually most effective when performed in the spring and when soils are moist. Since this plant grows rather slowly it can take a long time for it to become a problem.

Common reed grass

(*Phragmites australis* ssp. *australis*)

LEAVES: long, narrow, simple leaves, with very finely toothed edges. Leaves arrange alternately on stem with parallel venation. Leaves attached without stems and are connected to sheaths that totally surround the stem. Stems overwinter with sheaths attached. Stems are typically green with yellowish nodes (some lower nodes may be maroon.) Stems are slightly ridged and dull (not shiny) in color. The **ligule height is 0.4 to 0.9 mm**.



FLOWERS: July through September, reddish purple to golden in color flowers are multiply clustered at the top of a tall (13 to 25 cm.) stems. Outer bracts on **upper flowers (glumes)** less than 6 mm in length. Outer bracts on **lower flowers (glumes)** mostly less than 4 mm.



LOOK-A-LIKE PLANTS: The invasive phragmites is easily confused with the native phragmites (*Phragmites australis* ssp. *americanus*). The native phragmites have bracts on upper flower (glumes) which are mostly greater than 6 mm in length. The bracts on their lower flowers (glumes) are mostly greater than 4 mm. The ligule height is 1.0 to 1.7 mm.

BEST CONTROL MEASURES: cutting, pulling or mowing can be done in late July for several years. Herbicide applications can be effective if applied in late summer or early fall after tasseling. Management utilizing both methods is usually the most effective means of control.

Garlic mustard (*Alliaria petiolata*)

LEAVES: triangular or kidney-shaped, simple leaves, coarsely toothed. Leaves are arranged alternately on the stem and are palmately veined. Leaves start appearing in early spring and last through October. They smell like garlic when crushed.



FLOWERS: 4 white petals, arranged radially-symmetrically, grouped in small, clusters. Flowers appear at the top of the stem in late April and lasting until mid June.

FRUITS: black seeds in very narrow, green turning brown with age, pea-like pods. Fruiting occurs from June through October. Garlic mustard produces a large number of seeds which can remain viable for up to 10 years.

LOOK-A-LIKE PLANTS: Garlic mustard is not easily confused with other plants.

BEST CONTROL MEASURES: Hand-pulling while the plant is in flower is an effective method as long as the entire plant (roots included) is removed. Successfully removing roots is best accomplished when the soil is moist. Pulling may need to be repeated yearly until the seed bank is eliminated.

Reed canary grass (*Phalaris arundinaceae*)

LEAVES: simple, long (7.5-25 cm.), narrow (0.5 to 2 cm.) leaves with a rough surface. Plant is usually 1.5 to 2.5 m. feet tall with hairless stems.



FLOWERS: occur in dense clusters at the top of the stem and are green to purple, changing to beige and become more open over time. They start forming in May to mid-June.

FRUITS: shiny brown seeds mature in late June.

LOOK-ALIKE PLANTS: There are native genotypes of reed canary grass.

BEST CONTROL MEASURES: Hand pulling can be very effective with small, not-well-established populations. Mowing is also effect when faced with modes infestations. Repeat efforts are usually required.

Narrow-leaved cattail (*Typha angustifolia*)

LEAVES: simple, parallel-veined leaves arising near soil line with smooth edges, **less than 1 1/2 cm. wide** and rounded on the back of the leaf.



FLOWERS: brownish flowers in dense cylindrical spikes which are about 1 1/2 cm. wide at maturity. Male (staminate) flowers are on top with female (pistillate) flowers below. The upper and lower flowers are separated by a distinct **non-flowering gap in the flowering stem**.

LOOK-ALIKE PLANTS: The native, common cattail looks very much like the narrow-leaved cattail except for the width of the leaves (native common cattail leaves are about 2.5 cm. wide) and there is no gap between the male and female flowers on the flower stem. There is also a hybrid cattail with features of both the common cattail and the narrow-leaved cattail.

BEST CONTROL MEASURES: The mechanical removal of leaves and submerged roots can be useful in controlling small populations. Herbicides may be more effective on larger populations.

Glossy buckthorn (*Rhamnus frangula* formerly known as *Frangula alnus*)

LEAVES: **simple, stemmed, glossy** leaves with smooth edges on small tree or tall shrub. Veins are feather-like with several almost straight parallel side veins. Leaves are 2.5 to 8 cm. long, shiny dark green above.



FLOWERS: a **bell-shaped, creamy yellow flower** arises in May to June. Each flower with 5 pointed greenish-yellow sepals. Flower arranged in small clusters.

FRUITS: red to purple to black berry-like fruits appear July to September.

BARK & HEARTWOOD: Bark is gray-brown with light-colored, lens-shaped areas on young stems (lenticels). Stem cuts reveal a distinctive yellow sapwood and pink to orange heartwood.



LOOK-ALIKE PLANTS:

BEST CONTROL METHODS: Hand pulling can work for seedlings and smaller plants. Cutting and treating stumps with systemic herbicide is the best method of control for mature plants. But control may be difficult due to the large seedbank produced by each plant.

Japanese honeysuckle (*Lonicera japonica*)

LEAVES: simple stemmed leaves arranged oppositely on the stem with feather venation and smooth leaf edges. Leaves growing on vine which often becomes woody. Leaves are semi-evergreen persisting into late winter or early spring.



FLOWERS: tubular white to pink (turning yellow with age) bilaterally-symmetrical, stemmed flowers arranged in pairs. Flowers with **5 lobes fused**. Flowers appearing April through July. Flowers are very fragrant.

FRUIT: black berry-like.

LOOK-ALIKE PLANTS: native species wild honeysuckle (*Lonicera dioica*) and grape honeysuckle (*Lonicera reticulata*) bear fruit at the ends of stems and the upper leaves of the stem are joined together.

BEST CONTROL MEASURES: Hand-pulling especially the roots can be an effective control measure for small populations. Controlled plants should be removed from the site.

Narrowleaf bittercress (*Cardamine impatiens*)

LEAVES: compound leaves arranged alternately on the main stem; leaflets lobed (some may say toothed); terminal leaflet is usually longer than other leaflets; **pair of ears** (auricles) at the leaf base where it joins the main stem;



FLOWERS: April and May; **four whitish petals about 50% longer than all of the sepals** (calyx); anthers longer than petals by about 50%

LOOK-A-LIKE PLANTS: The overall appearance of hoary bittercress is very similar to narrowleaf bittercress.

BEST CONTROL MEASURES: Pulling is the best way to remove these plants. That is most easily done when the soil is moist. The flowers of this plant mature in seed pods (silique) which eject seeds at maturity making removal of plants before they throw seed imperative.

Multiflora rose (*Rosa multiflora*)

LEAVES: 5 to 11 oval- or elliptic shaped, feather-veined, toothed leaflets on compound leaf, the leaf base bearing a pair of **fringed stipules**. Leaves are borne on arching stems (canes).



FLOWERS: **white to pale pink, 5-petaled**, about 1 inch across. Flowers appear in May and June.



FRUIT: small, bright red, berry-like fruit called hips. The fruits appear begin appearing in July

LOOK-A-LIKE PLANTS: Many other rose species look superficially like multiflora rose. The **fringed stipule** is the best attribute to positively identify the rose as multiflora.

BEST CONTROL MEASURES: Pulling or removing the entire plant including roots is effective when plants are small. Mowing has proved effective in controlling large populations.

Japanese knotweed (*Polygonum cuspidatum*)

LEAVES: oval-shaped, simple leaves with smooth edge and pointed tip. Leaves are arranged alternatively on the stem and are feather-veined. Leaves start appearing in early spring and last until first frost.

They are attached to the **hollow stem at swollen nodes** which are enclosed in a leaf-like structure.



FLOWERS: minute, greenish-white flowers are borne on plume-like cluster at the upper leaf joints. Flowering typically begins in May and lasts until August.



FRUITS: seeds are small and shiny and are winged. Fruits are available September through October.

LOOK-A-LIKE PLANTS: none

BEST CONTROL MEASURES: repetitive cutting within a single growing season has been found to be effective. Foliar spray with herbicides has also proven effective but repeat applications are usually necessary.

Lesser celandine (*Ranunculus ficaria*)

LEAVES; heart-shaped and 1 to 2" long; most leaves basal but some may be alternate; leaf edge bluntly tooth; vein are palm-like; leaf usually as wide as long; **no stipules** on leaf base



FLOWERS: buttercup-like with 7-12 **shiny yellow petals**; usually about 1" wide; flowering can begin in April and last through May; flowers have a long stalk

LOOK-A-LIKE PLANTS: the marsh marigold (*Caltha palustris*) is considered by some to be similar to lesser celandine but it's petals are less numerous and not shiny.

BEST CONTROL MEASURES: Hand pulling when the soil is wet is a good time to remove lesser celandine. But because it frequently is found in mat along creeks, there should be a plan of immediate replacement to reduce the likelihood of erosion. Plants such as blood root and twin-leaf may be good replacement choices. Be careful not to plant the species deer love to eat.

Moneywort (*Lysimachia nummularia*)

LEAVES: **round, simple, stemless**, smooth-edged leaves with feather venation arranged **opposite** each other on vining stems. Plant is creeping and may form dense mats



FLOWERS: regular flowers with **5 yellow petals** on short stems arranged in multiple clusters.

LOOK-A-LIKE PLANTS: There are no real look-alike plants which hug the ground like moneywort. But beginners may confuse moneywort with lesser celandine another invasive since both hug the ground. However, lesser celandine has 8 to 12 petals and heart-shaped, alternate leaves.

BEST CONTROL MEASURES: Hand pulling can be very effective when done when the soil is very moist.