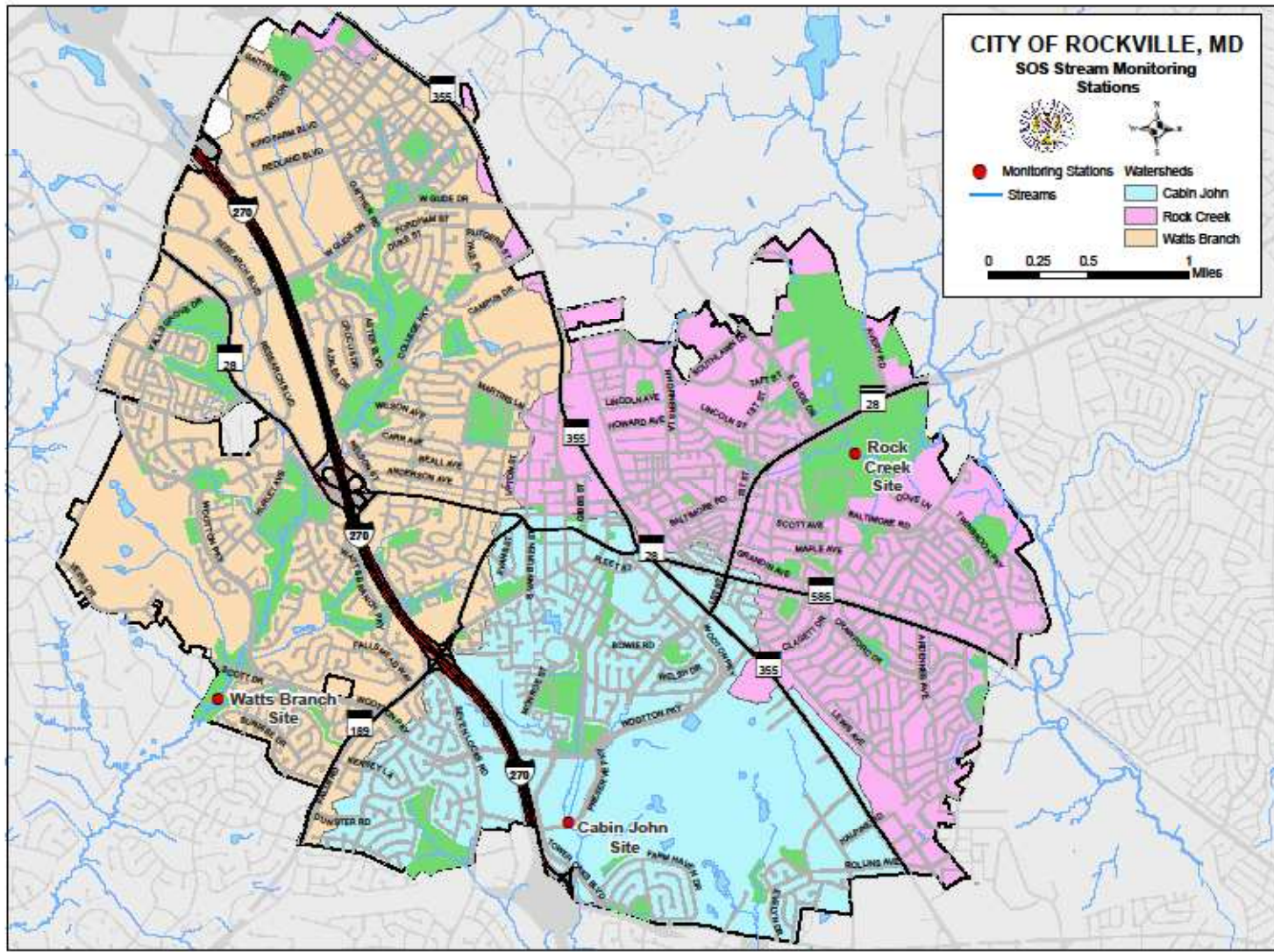


Invasive Species Identification Training

City of Rockville SOS

Rockville's Three Watersheds



Rockville's
watersheds drain to:

- Potomac River
- Chesapeake Bay

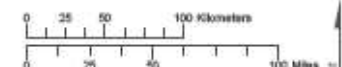
Chesapeake Bay Tributary Basins



- ▭ Tributary Basin Boundary
- ▭ Chesapeake Bay Watershed
- ▭ Chesapeake Bay
- State Boundary



Data Sources: Chesapeake Bay Program
For more information, visit www.chesapeakebay.net
Disclaimer: www.chesapeakebay.net/termsanduse.htm



Created by EA, 2/8/08

UTM Zone 18N, NAD 83

Other Volunteer Opportunities

- Adopt-a-Stream
- Stream clean-ups
- Storm drain marking
- Invasive plant pulls
- Other

Investigation Topics

- Benthic macroinvertebrate populations
- Habitat assessment
- Buffer health assessment
- Water Chemistry
- **Invasive plant inventory**

What are Invasive Plants?

- Pose a threat to the ecosystem because their aggressive behavior competes with native plants for water, pollinators, and sunlight.
- So successful because they have no natural predators to keep them in check.
- Can significantly alter the ecosystem.
- Can be controlled through educating the public on the threats that these species have.

Quick Botany Lesson

ANATOMY OF LEAVES

apex — the tip or distal end of a leaf

margin — the outer edge of a leaf blade

leaflet — an individual blade of a compound leaf

midrib — the central or main vein of a leaf

blade (lamina) — the flat or expanded part of a leaf



© Ted Bodner
Pinnately compound leaf of *Toxicodendron radicans* (poison ivy)

TYPES of LEAVES

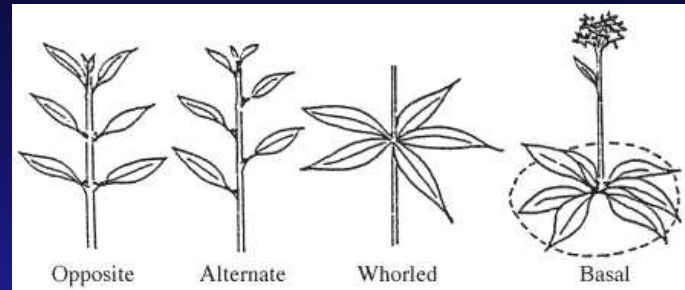
compound leaf — a type of leaf that has three or more leaflets attached to a common stalk

palmately compound — veins or lobes of a leaf radiating from a central point

pinnately compound — arrangement of leaflets attached laterally along the midrib of a compound leaf

simple leaf — a leaf that is not divided into parts

Quick Botany Lesson, cont.



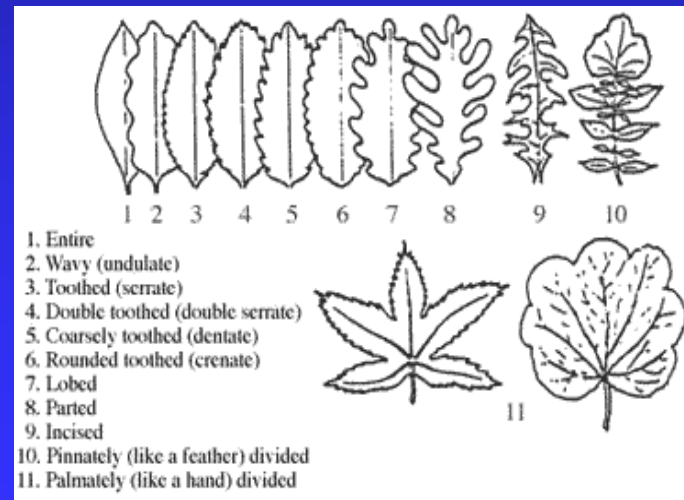
LEAF ARRANGEMENT

opposite — leaves occurring in pairs at the nodes

alternate — leaves arranged singly at intervals along the stems

whorled — leaves occurring three or more at a single node

basal — leaves occurring at the bottom of the plant near the ground



LEAF MARGINS refer to the spacing between the teeth along the edge of the leaf blade.

Herbaceous Plants



ID in spring

Garlic Mustard

Alliaria petiolata

- Loves disturbance (DO NOT pull while seeding)
- Garlic mustard is a cool season biennial herb with stalked, triangular to heart-shaped, coarsely toothed leaves that give off an odor of garlic when crushed.
- First-year plants appear as a rosette of green leaves close to the ground. Flowering plants of garlic mustard reach from 2 to 3-½ feet in height and produce buttonlike clusters of small white flowers, each with four petals in the shape of a cross.

<http://www.nps.gov/plants/alien/fact/alpe1.htm>

http://na.fs.fed.us/fhp/invasive_plants/weeds/



Japanese Knotweed

Polygonum cuspidatum

- Upright, shrublike, herbaceous perennial that can grow to over 10 feet in height.
- Base of the zig-zag stem above each joint is surrounded by a membranous sheath.
- Although leaf size may vary, they are normally about 6 inches long by 3 to 4 inches wide, broadly oval to somewhat triangular and pointed at the tip.
- The minute greenish-white flowers occur in attractive, branched sprays in summer and are followed soon after by small winged fruits.
- Seeds are triangular, shiny, and very small, about 1/10 inch long.





ID in fall

Japanese Stiltgrass

Microstegium vimineum

- Accidentally escaped in 1919, when being used for porcelain packaging material
- Annual grass with a sprawling habit. It germinates in spring and grows slowly through the summer months, ultimately reaching heights of 2 to 3½ ft.
- The leaves are pale green, lance-shaped, asymmetrical, 1 to 3 in. long, and have a distinctive shiny midrib.
- Slender stalks of tiny flowers are produced in late summer (August through September-early October) and dry fruits called achenes are produced soon afterwards.

http://na.fs.fed.us/fhp/invasive_plants/weeds/





Lesser Celandine

Ranunculus ficaria

- Plants have a basal rosette of dark green, shiny, stalked leaves that are kidney- to heart-shaped.
- The flowers open in March and April, have eight glossy, butter-yellow petals, and are borne singly on delicate stalks that rise above the leaves.
- When in bloom, large infestations of lesser celandine appear as a green carpet with yellow dots, spreading across the forest floor.
- **NOTE: Lesser celandine closely resembles marsh marigold (*Caltha palustris*), a native wetland plant that occurs in the eastern United States. Extreme care should be taken to correctly identify lesser celandine before undertaking any control measures to avoid impacts to this plant.**





Canada Thistle

Cirsium arvense

- Perennial with erect stems 1½-4 feet tall, prickly leaves and an extensive creeping rootstock.
- Stems are branched, often slightly hairy, and ridged. Leaves are lance-shaped, irregularly lobed with spiny, toothed margins and are borne singly and alternately along the stem.
- Rose-purple, lavender, or sometimes white flower heads appear from June through October, generally, and occur in rounded, umbrella-shaped clusters.

http://na.fs.fed.us/fhp/invasive_plants/weeds/



Trees

Tree-of-Heaven

Ailanthus altissima

- Mature trees can reach 80 feet or more in height.
- Ailanthus has smooth stems with pale gray bark, and twigs which are light chestnut brown, especially in the dormant season.
- Large compound leaves, 1-4 feet in length, composed of 11-25 smaller alternate leaflets.
- Each leaflet has one to several glandular teeth near the base.
- All parts of the tree, especially the flowers, have a strong, offensive odor, which some have likened to peanuts or cashews.
- Can be confused for **ash**, **pecan**, or **black walnut trees**.



Vines

English Ivy

Hedera helix

- If ingested can cause toxicosis
- Evergreen climbing vine that attaches to the bark of trees, by way of small rootlike structures which exude a sticky substance that helps the vines adhere to various surfaces.
- Leaves are dark green with white veins, waxy to somewhat leathery, and arranged alternately along the stem.
- Vines may grow for up to ten years before producing flowers. Under sufficient light conditions, terminal clusters of small, pale yellow-green flowers are produced in the fall.





Kudzu

Pueraria lobata

- Climbing, semi-woody, perennial vine in the pea family.
- Deciduous leaves are alternate and compound, with three broad leaflets up to 4 inches across. Leaflets may be entire or deeply 2-3 lobed with hairy margins. Individual flowers, about ½ inch long, are purple, highly fragrant and borne in long hanging clusters.
- Flowering occurs in late summer and is soon followed by production of brown, hairy, flattened, seed pods, each of which contains three to ten hard seeds.
- Extensive root system must be destroyed

http://na.fs.fed.us/fhp/invasive_plants/weeds/

<http://www.hiltonpond.org/images/KudzuStems01.jpg>





Mile-a-Minute

Polygonum perfoliatum

- Stems are armed with recurved barbs which are also present on the underside of the leaf blades.
- Light green colored leaves are shaped like an equilateral (equal-sided) triangle and alternate along the narrow, delicate stems.
- Distinctive circular, cup-shaped leafy structures, called ocreae, surround the stem at nodes, thus the name 'perfoliatum.'
- Flower buds, and later flowers and fruits, emerge from within the ocreae. Flowers are small, white and generally inconspicuous.
- The fruits are attractive, deep blue and arranged in clusters at terminals. Each berry-like fruit contains a single glossy, black or reddish-black hard seed called an achene.

http://na.fs.fed.us/fhp/invasive_plants/weeds/

<http://www.nps.gov/plants/alien/fact/alpe1.htm>





Oriental Bittersweet

Celastrus orbiculatus

- Deciduous woody perennial plant which grows as a climbing vine and a trailing shrub.
- The leaves are alternate, glossy, nearly as wide as they are long (round), with finely toothed margins.
- There are separate female (fruiting) and male (non-fruiting) plants. Female plants produce clusters of small greenish flowers in axillary clusters (from most leaf axils), and each plant can produce large numbers of fruits and seeds.
- The fruits are three-valved, yellow, globular capsules that at maturity split open to reveal three red-orange, fleshy arils each containing one or two seeds.

NOTE: Oriental bittersweet can be confused with our native American bittersweet (*Celastrus scandens*).



http://na.fs.fed.us/fhp/invasive_plants/weeds/

http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Celastrus_orbiculatus_files/image001.jpg



Porcelain Berry

Ampelopsis brevipedunculata

- Deciduous, woody, perennial vine.
- Twines with the help of non-adhesive tendrils that occur opposite the leaves.
- The leaves are alternate, broadly ovate with a heart-shaped base, palmately 3-5 lobed or more deeply dissected, and have coarsely toothed margins.
- Fruits appear in September-October and are colorful, changing from pale lilac, to green, to a bright blue. Porcelain-berry is often confused with species of grape (*Vitis*).





Wisterias, exotic

Wisteria sinensis

- Exotic wisterias flower in the springtime (April-May) and produce a velvety seed pod. American wisteria (*Wisteria frutescens*), native to the southeastern U.S., flowers June through August, and produces a non-hairy seed pod 2-4 inches long.
- Fuzzy brown seed pods are 4-6 inches long, narrowed toward the base, with constrictions between the seeds.
- White-barked Japanese wisteria vines twine clockwise around the host plant and Chinese wisteria twines counter-clockwise.
- The compound leaves, consisting of 7-13 (Chinese) or 13-19 (Japanese) smaller leaf units, called leaflets, are about 1 foot long and alternate along the stem.
- Fragrant, violet to blue-violet flowers, ½ to 1 inch long, occur in showy, pendulous clusters that hang gracefully from the twining stems.





Winter Creeper

Euonymus fortunei

- Evergreen, clinging vine.
- It can form a dense groundcover or shrub to 3 feet in height, or climb 40-70 foot high vertical surfaces with the aid of aerial roots.
- Dark green, shiny, egg-shaped leaves, from 1-2 ½ inches long, with toothed margins and silvery veins, occur in pairs along the stems.
- Stems are narrow, minutely warty, and have abundant rootlets or trailing roots.
- Clusters of inconspicuous green-white flowers are produced on a long stalk from June to July and are followed in the autumn by pinkish to red capsules that split open to expose seeds adorned with a fleshy orange seed coat, or aril.



http://na.fs.fed.us/fhp/invasive_plants/weeds/

<http://www.duke.edu/~cwcook/trees/eufo30974.jpg>

Japanese Honeysuckle

Lonicera japonica

- Climbs by twisting its stems around vertical structures, including limbs and trunks of shrubs and small trees.
- Leaves are oblong to oval, sometimes lobed, have short stalks, and occur in pairs along the stem.
- Flowers are tubular, with five fused petals, white to pink, turning yellow with age, very fragrant, and occur in pairs along the stem at leaf junctures.
- Stems and leaves are sometimes covered with fine, soft hairs. Japanese honeysuckle blooms from late April through July and sometimes into October.
- Small black fruits are produced in autumn, each containing 2-3 oval to oblong, dark brown seeds about 1/4 inch across.



Shrubs

Autumn Olive

Elaeagnus umbellata

- Deciduous shrub or small tree that grows to approximately 20 feet in height.
- Leaves are dark green, alternate, oval to lanceolate, and untoothed. The underside is covered with silver-white scales.
- Small, light yellow flowers are borne along twigs after the leaves have appeared early in the growing season.
- Small, round, juicy fruits are reddish to pink, dotted with scales, and produced in great quantity.



Bush honeysuckles, exotic

Lonicera species

- Upright, generally deciduous shrubs that range from 6 to 15 feet in height.
- 1-2 ½ inch, egg-shaped leaves are opposite along the stem and short-stalked.
- Pairs of fragrant, tubular flowers less than an inch long are borne along the stem in the leaf axils. Flower color varies from creamy white to pink. Flowering generally occurs from early to late spring.
- The fruits are red to orange, many-seeded berries. Native bush honeysuckles may be confused with these exotic species and cultivars, so proper identification is necessary. Unlike the exotics, most of our native bush honeysuckles have solid stems.



<http://www.nps.gov/plants/ALIEN/fact/loni1.htm>

http://plants.usda.gov/java/profile?symbol=LONIC&photoID=lonic_004_ahp.tif

Multiflora Rose

Rosa multiflora

- Thorny, perennial shrub with arching stems (canes).
- Leaves are alternate, pinnately compound, and have five to eleven sharply toothed oval leaflets.
- Beginning in May or June, clusters of showy, fragrant, white to pink flowers appear, each about an inch across.
- Small bright red fruits, or rose hips, develop during the summer, becoming leathery, and remain on the plant through the winter.



Wineberry

Rubus phoenicolasius

- A perennial shrub with long arching stems (canes) up to 9 feet in length.
- Upright stems have red gland tipped hairs and small spines.
- Leaves are alternate, palmately compound, with 3 heartshaped serrated leaflets.
- Small greenish flowers with white petals and reddish hairs occur in late spring to early summer.
- The raspberry like fruit is bright red and ripens during June and July.



Tips on Identifying Invasive Plants

- Focus on Five
 - ◆ Each year get to know 5 plants
- Become an expert
 - ◆ Each team member can become an expert on a few plants.
- Use seasonal cues
- Photo document
- When in doubt ask us out!