



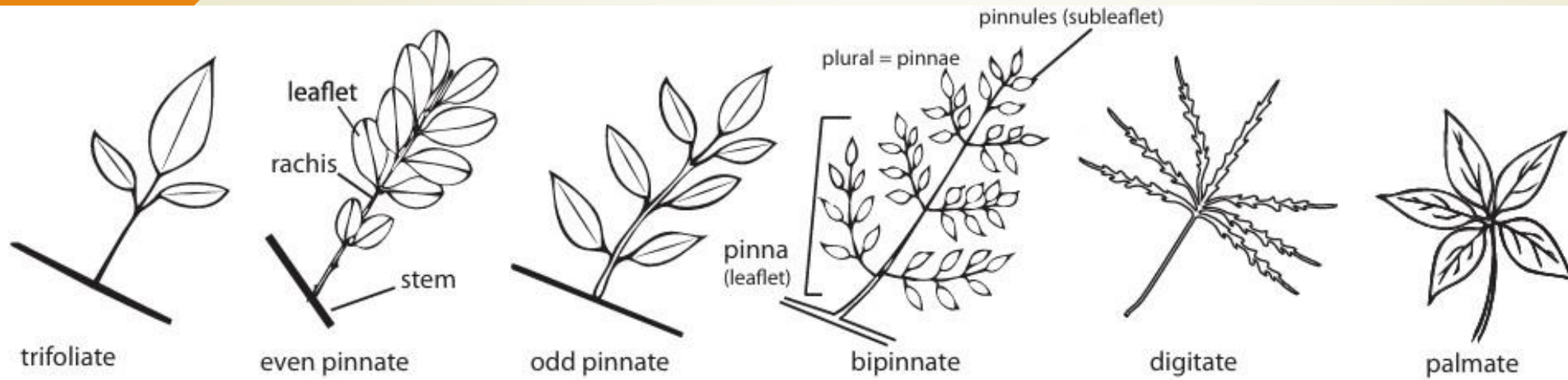
Invasive Species Management Guide

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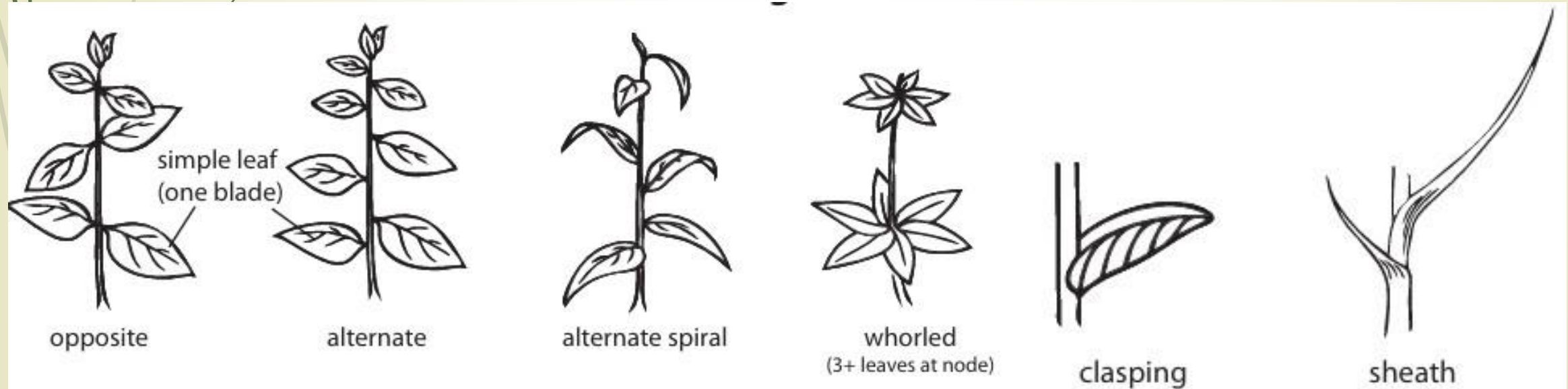
Native vs Non-Native?

- **Invasive:** “*Invasive species*” are species of flora and fauna that are non-native to a region, and do not have predators or competition to prevent a species from outcompeting native species. These species threaten native species by dominating habitats, and not contributing to the balancing of an ecosystem through inter-species interactions the way native species do. (ex. Multiflora Rose, Bittersweet, etc.)
- **Native:** Native species interact with other native species to form a complex web of interactions that strengthens biodiversity and provides resilience to changes within an ecosystem. Some native species rely on other specific species to fulfill a particular role in their lifecycle, creating an “*ecological niche*” that other species cannot fill. (ex. Monarch butterflies and Milkweed)
- **Nuisance Species:** Nuisance species are not necessarily non-native but, for our purposes in land stewardship, may perform similarly. This category also includes species that make recreation less enjoyable, negatively affect other native species, or have defense mechanisms that we deem a nuisance to deal with. (ex. Catbriar, Poison Ivy, etc.)

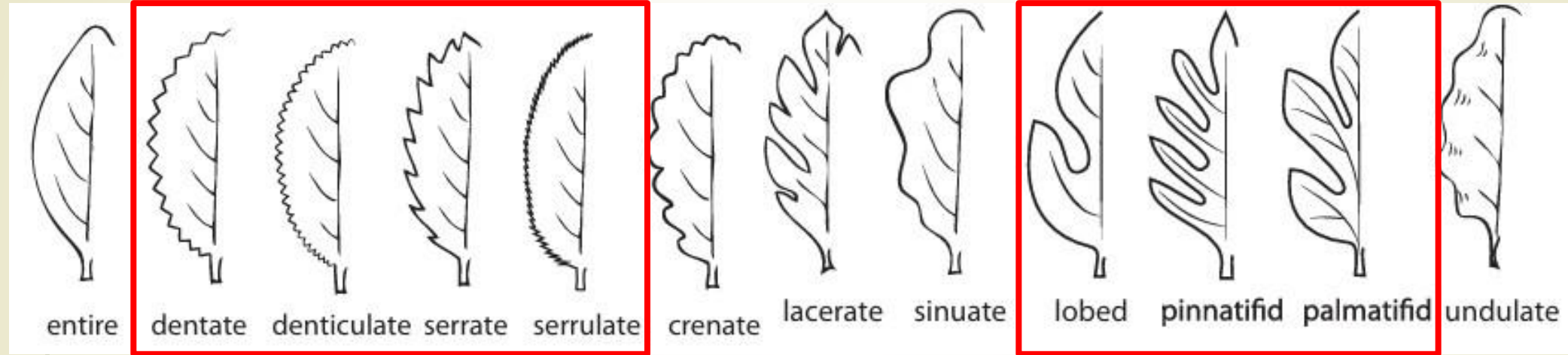
Compound Leaves vs Leaf Arrangement



Compound leaves are technically one leaf each, even when they appear to be multiple on one stem.

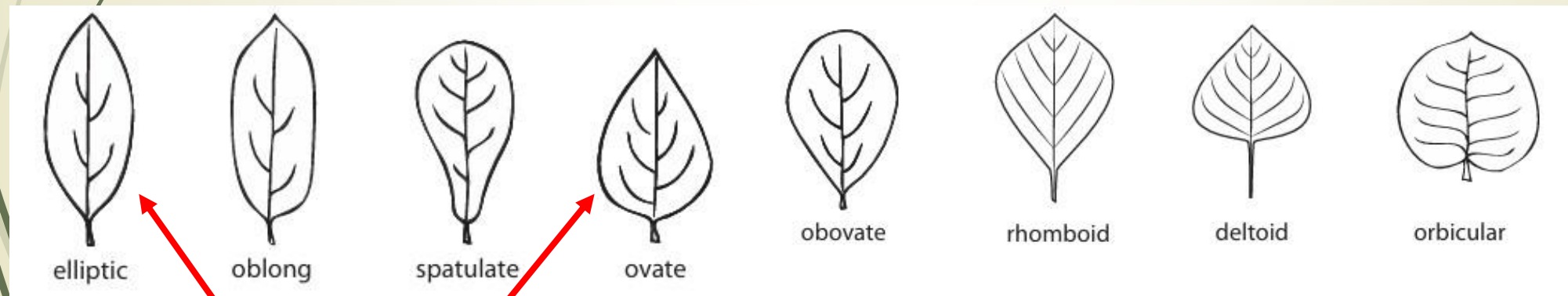


Leaf Margin Types and Leaf Shapes



Common variations of serrate leaves

Common variations of lobed leaves



Look similar but are functionally different

Invasive

Mugwort

Grows quickly and can overwhelm other species, dominating an area



Irregular, lobed leaves



Underside of leaf is lighter with pronounced vasculature

Invasive

Spotted Knapweed

Leaves grow radially from center



Flowers sprout from bulb located at the end of the stem



Invasive

Porcelain berry



Invasive

Multiflora Rose



Curved Thorns



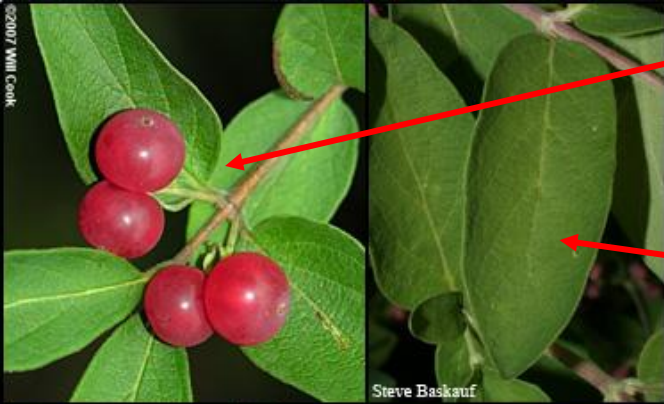
Grows into dense thickets that make removal difficult

Ovate leaves with serrate edges



Invasive

Bush Honeysuckle



Red berries
grow in pairs

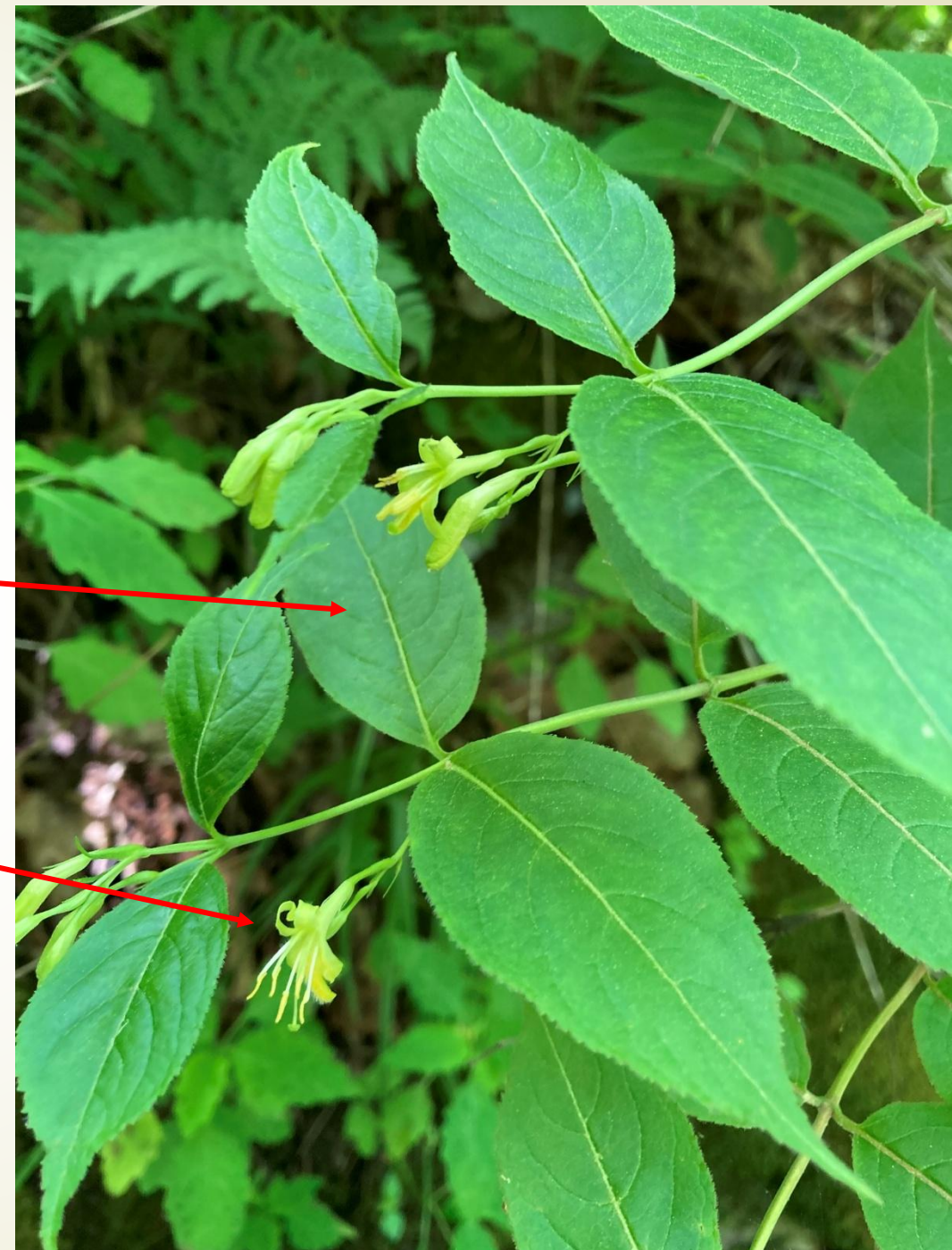


Oblong or elliptic
leaves, growing in
opposite pattern
along stem

White to yellow
flowers with
prominent
stamen



Main woody
stem is hollow

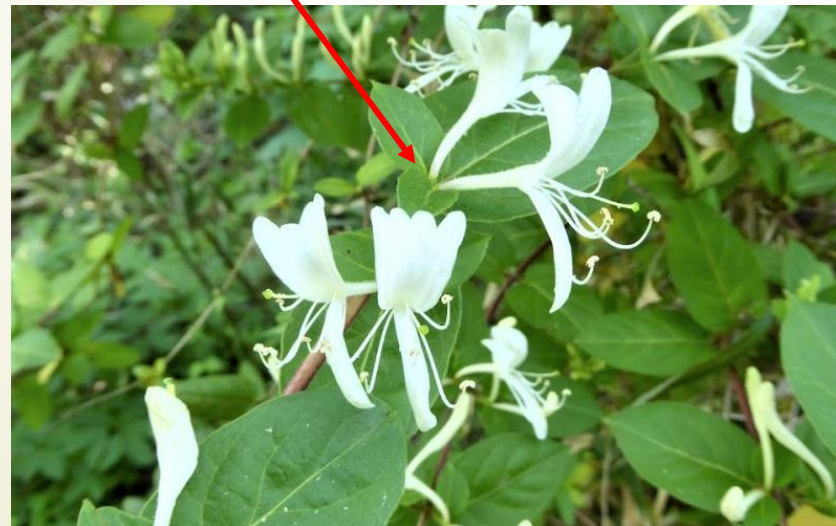


Invasive

Japanese Honeysuckle



Spreads as a climbing or creeping vine and can cover trees or smother ground growth



White, tubular flowers grow in pairs



Black berries grow in pairs along stem



Ovate leaves grow in pairs

Leaves and stem covered in fine hairs, leaves may curl and appear oblong depending on growth stage

Invasive

Oriental Bittersweet



Signature bright orange roots

Climbing vine that will wrap around other plants/structures, brown bark covered with lighter, raised bumps (lenticels)



Glossy leaves are rounded with fine serration and pointed tips

Bright red berries grow in clusters along vine



Grows to form dense thickets that can smother underbrush



Invasive

English Ivy

Waxy, triangular leaves
with 3 deep lobes and
light colored veins
spreading from stem



Blue-black berries
grow in clusters at
the end of stems



Grows as both a climbing vine that
will scale trees or man-made
structures, as well as creeping
groundcover that will spread and
overwhelm understory

Invasive

Japanese Knotweed

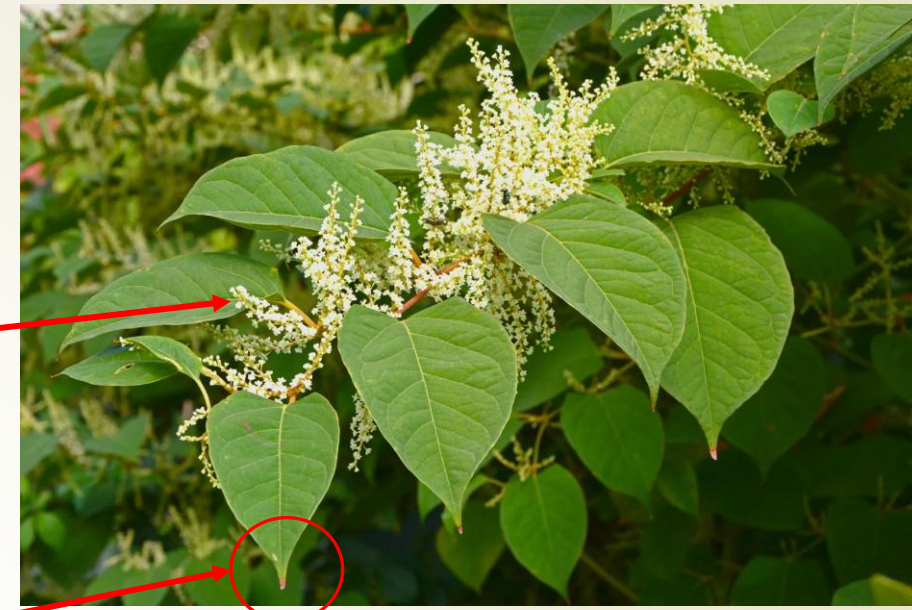


Grows to form dense thickets of reedy stems, with leaves blocking the majority of sunlight from reaching the ground

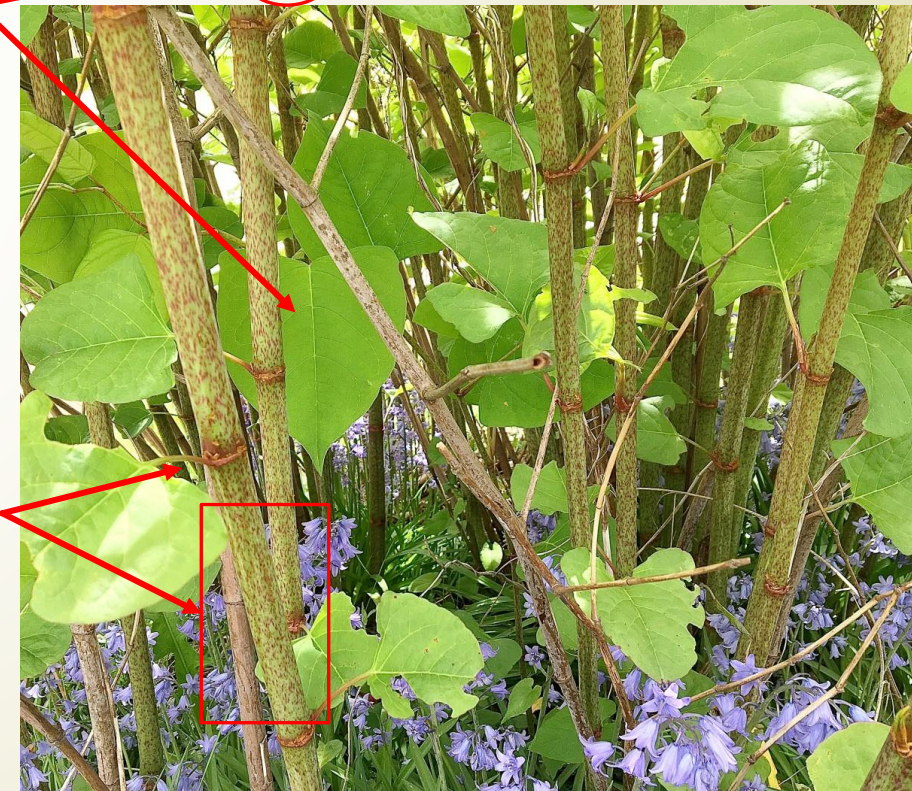


Stems are hollow and segmented when cut

Flowers grow in clusters branching off stem



Wide, spade-shaped leaves with a pointed tip branch off stem in an alternating pattern



Green stems are mottled with red spots, also visible at point where petiole meets stem

Invasive

Autumn Olive

Leaves are elliptic with a smooth margin and have a dark green color. The leaves may develop a curl or become wavy along margin depending on growth stage

Leaves grow in an alternate pattern along stem



Underside of leaves has a lighter color and can appear silvery

Small, yellow-white flowers with four petals bloom in clusters along stems



Bark is smooth and brown/gray, silver scales are present on younger growth, giving a speckled appearance

Small, red berries with white/silver spots



Catbrier (Greenbrier)



**Straight thorns,
often with a
brown or black
tip, grow
perpendicular
to the stem**

**Forms dense
thickets along
open spaces or in
understory of
forests**



**Provides habitat
for birds and
small animals,
but can
dominate
groundcover
and is difficult to
remove due to
thorns**

**Rounded,
spade-shaped
leaves with
smooth
margins grow
in alternating
pattern along
stem**



**Blue-black
berries
grow in
clusters
along stem**

Poison Ivy



Leaves grow in groups of 3, with two asymmetrical leaves on the sides and a symmetrical leaf in the middle



Leaves may or may not have lobes on outside margin of outer leaves

The leaf in the middle of the trio has a characteristically longer petiole that connects back to the stem

Leaves can appear glossy with oils visible, or dry. Even if they appear dry they still carry urushiol oils

Also grows as a climbing vine that can be found on trees or other structures. Notice the adventitious roots growing from the vine to anchor it to the tree

NOTE: ALL PARTS CARRY URUSHIOL OIL EVEN WHEN THE PLANT IS DEAD

Poison ivy leaves change from green to yellow followed by a dark red that makes it easy to notice in the fall



Grapevine



Bark grows with deep ridges running laterally along vine and appears to peel or hang loosely on vine

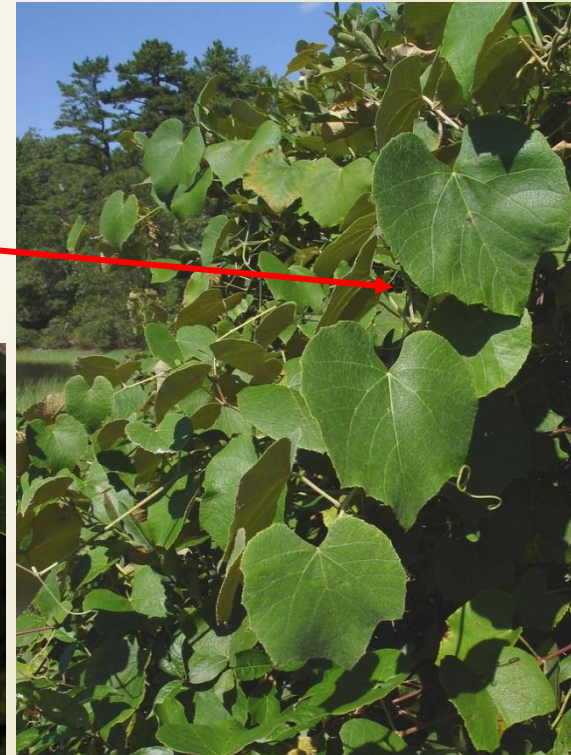
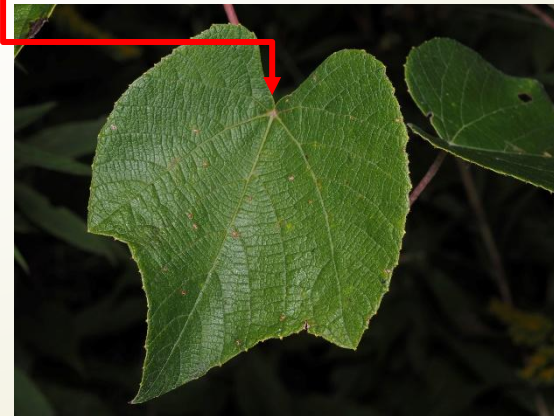


The underside of the leaves are a yellow-white due to small hairs covering the surface

Soft, blue berries grow in clusters along stem



Large, broad leaves with palmate veins have 3 lobes and a serrate margin. The distinction of the lobes may vary in depth.





Invasive Removal and Trail Maintenance Tips

Invasive Species Removal

- Invasive plants can be controlled using a variety of techniques/methods:
 - **Physical:** Removal by hand (i.e. hand pulling)
 - **Biological:** Animals eat the plant (insects, livestock)
 - **Mechanical:** Removal using tools (i.e. mowing, power tools)
 - **Chemical:** Use of pesticides and herbicides to kill the plant

Our stewardship activities will focus on physical and mechanical removal





Removal of Different Species

- ▶ **Mugwort and Knapweed:** Hand pulling/digging of young plants, cutting, mowing, smothering
- ▶ **Japanese Knotweed:** Cut stems frequently and treat cut stems with herbicide.
 - ▶ Never leave cut stems on site as they can re-root
 - ▶ Do not attempt to pull out by the roots as this can leave behind root fragments that could re-sprout
 - ▶ Don't mow!
- ▶ **Vines (bittersweet, porcelain berry, English ivy):** Cut at the base and/or pull by hand.
- ▶ **Multiflora Rose and Bush Honeysuckle:** Cut with hand or power tools as flush with the ground as possible
 - ▶ Can also try and dig out root ball/stump



Cutting and Pruning of Natives and Invasives

- ▶ For invasives, cut flush with the ground and remove as much of the plant as possible
- ▶ When cutting natives for general trail maintenance, take care not to damage the plant
 - ▶ Cut branches just below the collar, or thickest part of the branch
 - ▶ Cut saplings and shrubs flush with the ground
- ▶ When to cut native plants for trail maintenance:
 - ▶ low hanging branches
 - ▶ Overgrown paths
 - ▶ Vegetation obstructing signs, fences, or other important infrastructure
 - ▶ Cut trails to maintain a width of **4 feet** and height of **8 feet**
- ▶ Variety of tools used for vegetation management:
 - ▶ **Hand Tools:** Loppers, pruning shears, hand saws
 - ▶ **Power Tools:** Weed whackers, chainsaw, hedge trimmer, electric pole saw, brush cutters

Collar



Cut right below the collar



Collar

Use loppers for thinner branches

Use hand saws for thicker branches



This is an improperly cut stump



Why?

- It is not cut flush with the ground
- The cut edge is jagged

This is a properly cut stump



Why?

- It is cut close to the ground
- The cut edge is mostly flat

Tool and Outdoor Safety

- ▶ *Do not* use a tool without the proper knowledge or experience
- ▶ *Never* point the sharp end of a tool at someone else
- ▶ *Always* wear appropriate PPE and outdoor clothing
- ▶ *Avoid* walking long distances or running when power tools are turned on
- ▶ *Don't* force your loppers to cut material that is too thick
- ▶ *Practice* regular tool maintenance (sharpening, replenishing fuel)
- ▶ *Be aware* of poison ivy, ticks/other biting insects, plants with thorns, sunburns



If it has leaves of three, let it be! Poison ivy can give you a nasty rash if you come into contact with it.