



Alice Ferguson Foundation's

Bridging the Watershed

Exotic Invaders



What are Exotic Invaders?

Terms for
species living
outside native
range:

Non-native

Exotic

Introduced

They arrived by human activity either deliberate or accidental.

Exotic Species can be Invasive



Potatoes are non native but do not cause any harm.

Garlic Mustard is non native and invasive

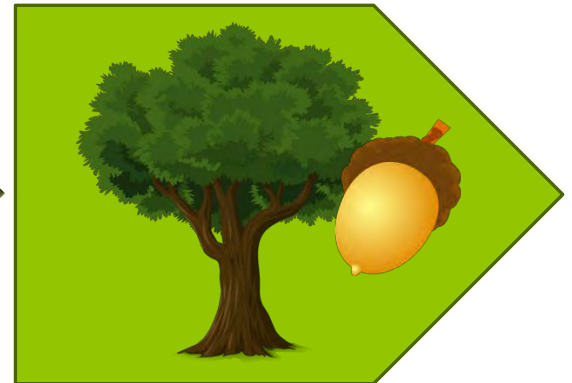


A species that causes harm to ecosystems, the economy, or human health is invasive.



Impact to Ecosystems

- Native species may not be able to compete with a species that has no predators.
- The result can be an ecosystem without diversity and without native food sources for wildlife.



Ecological Impact

Hemlock Woolly Adelgid



Ecological Impact

Emerald Ash Borer



Ecological Impacts

Phragmites (Common Reed)





Seeds
dispersed
by seed
heads

≥ 15 ft

Underground
stems allow the
plant to expand
around area
where it is already
established

Spread via rhizomes

DISPERSAL

Diverse
habitat types

Roots
exude a
toxin that
kills native
plants

High species
diversity



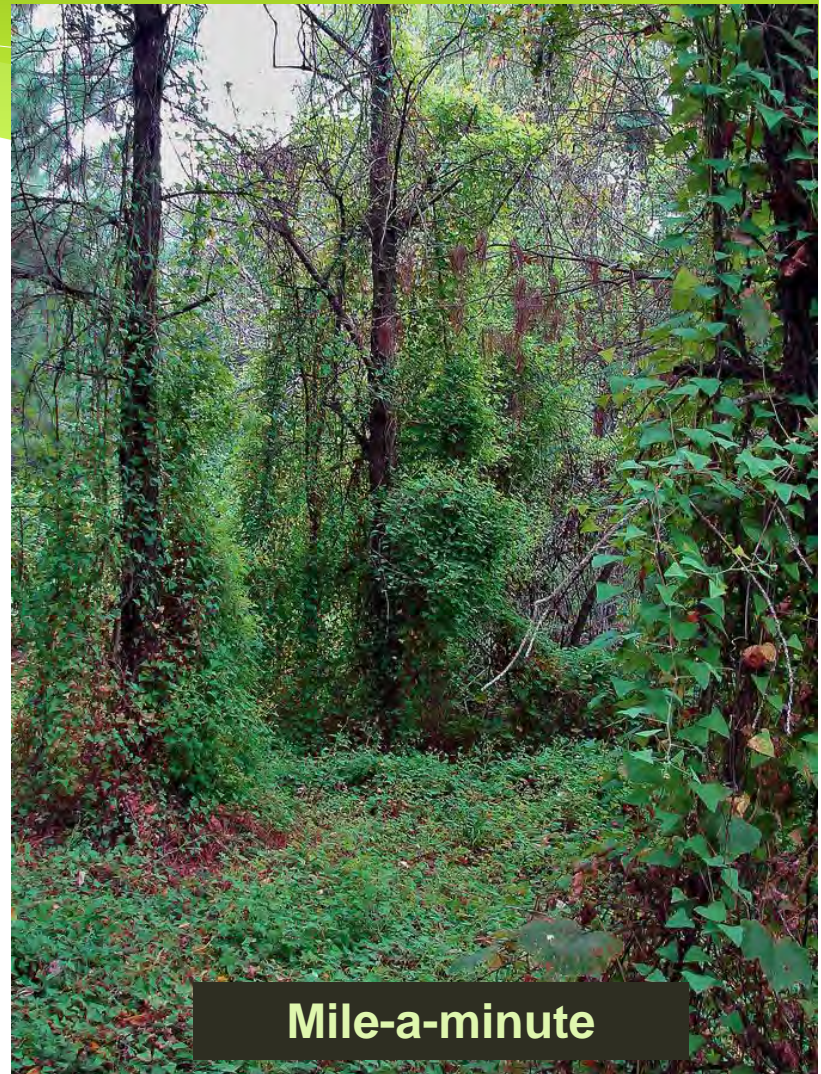
Characteristics of Invasive Species

Produce large quantities of seed.

Thrive on many soil types.

Have aggressive root systems.

Produce chemicals that can inhibit growth of plants around them.



Mile-a-minute

Ways of Introduction



Accidental Introductions



Kudzu

- * Introduced to US from Japan in 1876 at World's Fair
- * The Civillian Conservation Corp planted it for erosion control

Deliberate Introduction

Garlic Mustard



Deliberate Introduction

Early European settlers brought the herb to the New World to use as a garlic type flavoring and for medicinal purposes.

Wineberry



Deliberate Introduction

Introduced to the United States in 1890 for its potential in breeding hybrid raspberries (rubus).

Nutria



Deliberate Introduction

Brought to the U.S. in 1889
for their fur.

English Ivy



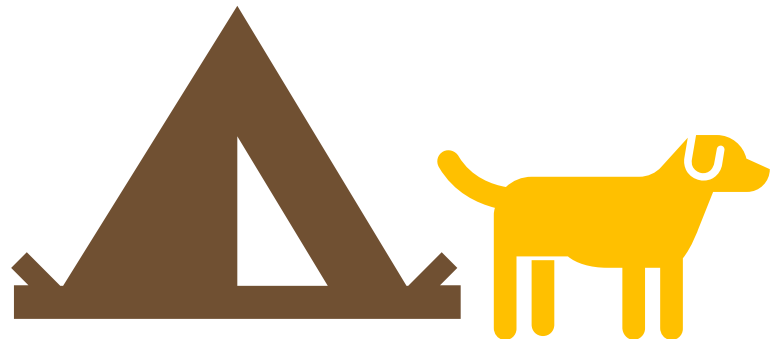
Deliberate Introduction



What Can I Do?

“An ounce of prevention is worth a pound of cure.”

- * Shake out your tent (or other camping accessories)
- * Keep pets on leash
- * Use local firewood



What Can I Do

- * Contact your local native plant society or Department of Natural Resources to find out which plants are invasive in your area
- * Report new invasive species to one of these organizations (depending on your location)
- * Remove invasive plants on your property



What Can I Do (Cont'd)

Use native plants when landscaping your property

Mimosa



EXOTIC

Dogwood



NATIVE



Redbud

What Can I Do

Volunteer



student
conservation
association
thesca.org



National Public Lands Day
A National Environmental Education Foundation Program



Goals

Identify plants by determining:

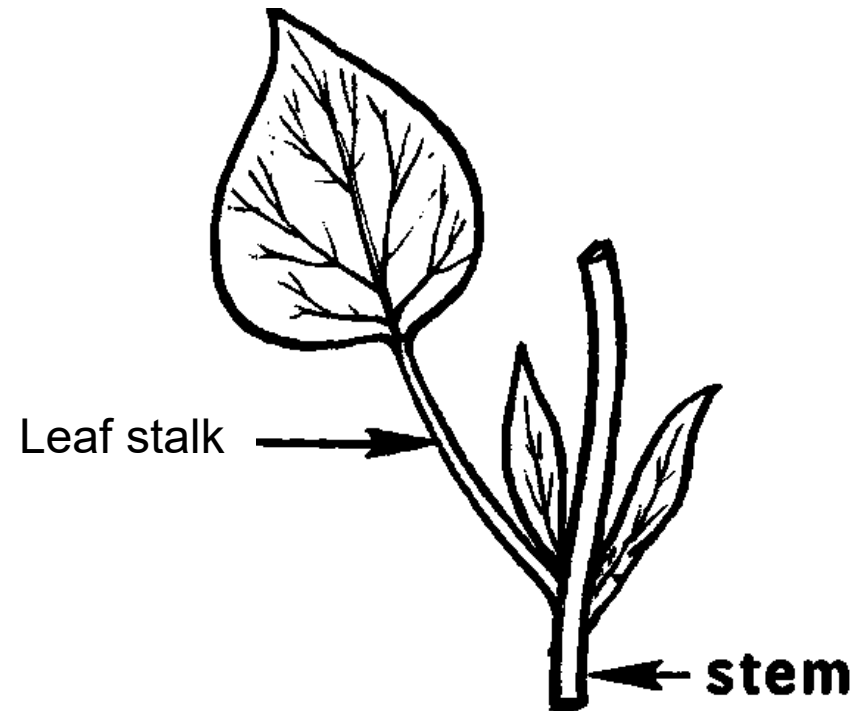
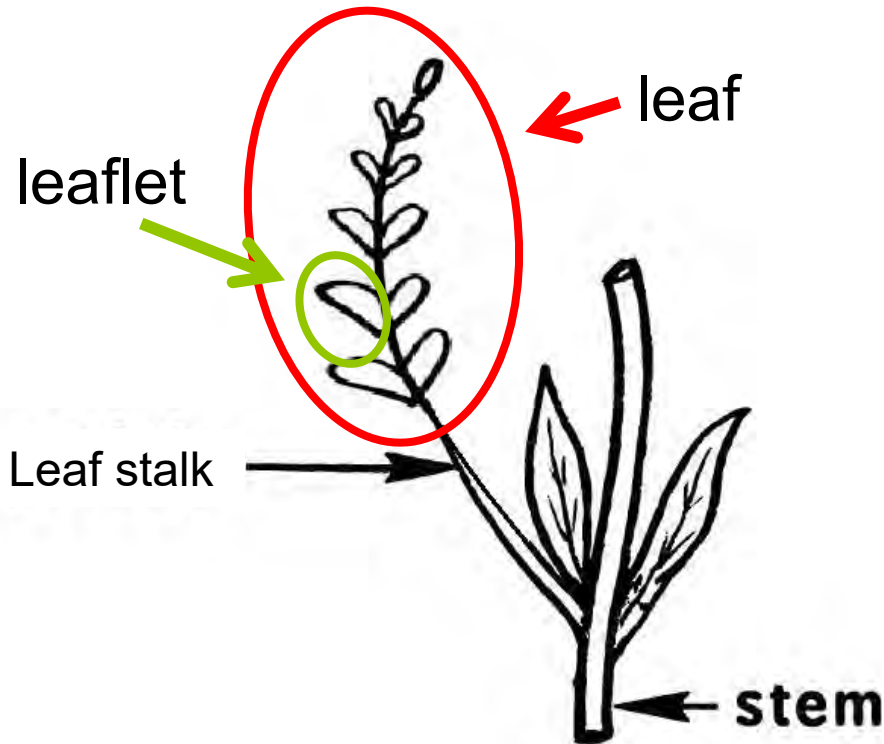
- 1 Leaf Shape
- 2 Leaf Margin
- 3 Leaf Arrangement

Quantify percentage of native and non native plant species in a park.

Simple vs Compound Leaf Shape

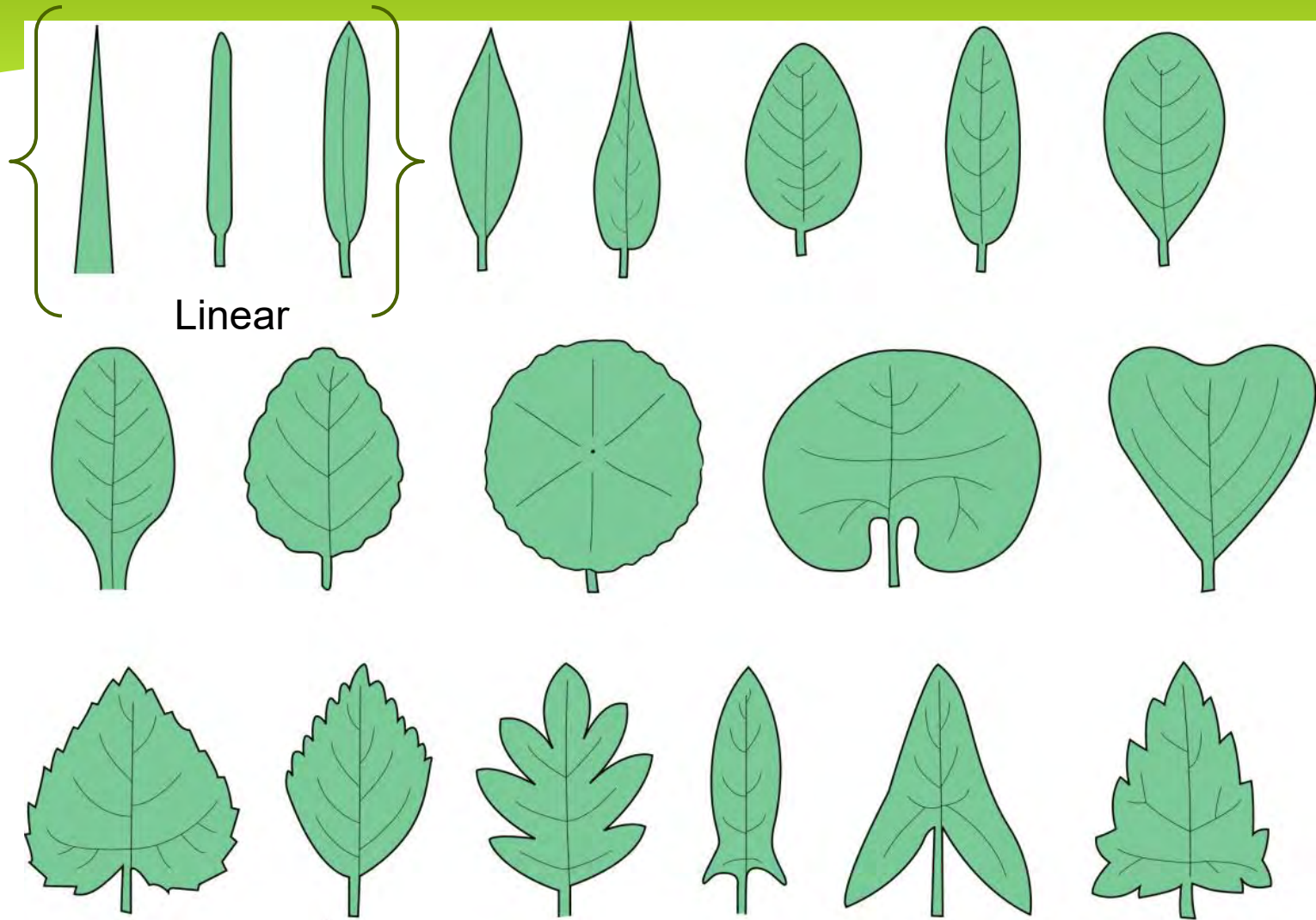
Compound leaf is divided into several leaflets

Simple leaf is undivided



petiole: where leaf attaches to the stem.

Examples of Simple Leaf Shape

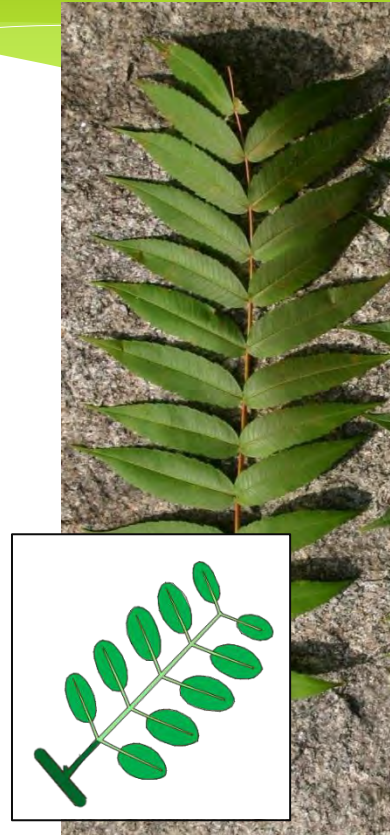


Examples of Compound Leaf Shape



Palmate

Leaflets radiate from one point



Pinnate

Leaflets arranged in pairs along stem



Bi-Pinnate

Each leaflet is pinnately compound

Examples of Leaf Arrangement

Basal

Leaves originate
from base of
plant



Alternate



Opposite



Whorled

3 or more leaves arranged
around central point along
stem

Leaf Margin (Edge of the Leaf)

Lobed

Pinnately
Feather-like



Palmately
Finger-like



Dissected
Cut into slender
segments

Not Lobed

Toothed
serrations

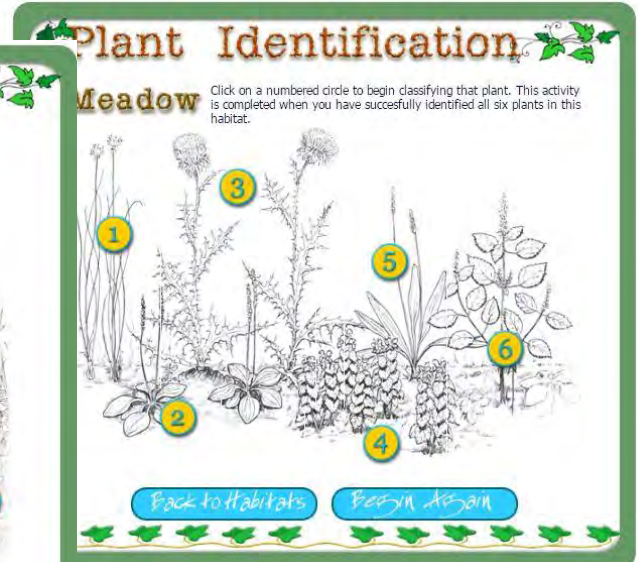
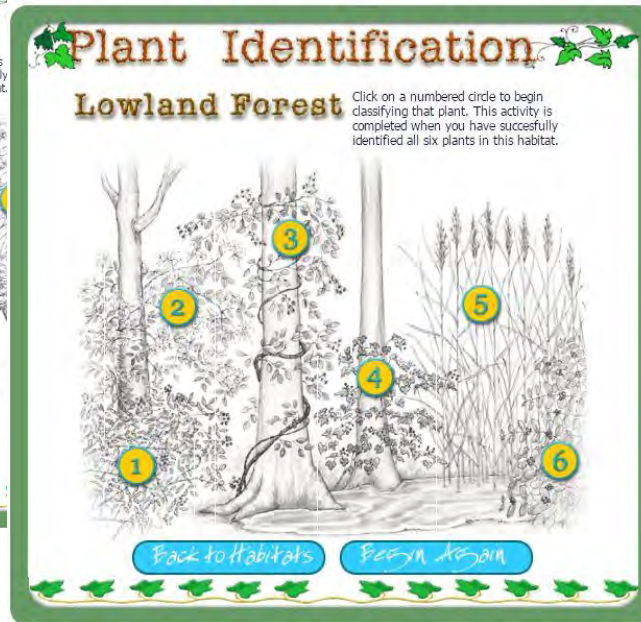
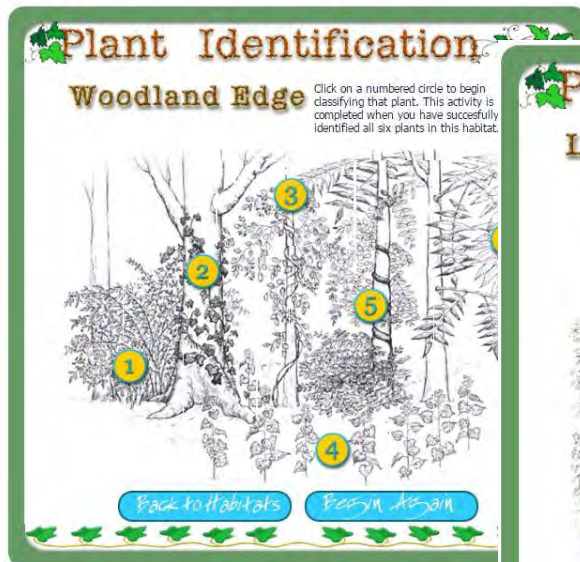


Entire
Smooth



Interactive Lesson

- * <http://fergusonfoundation.org/btw-students/plant-identification/>



Field Sampling and Data Analysis

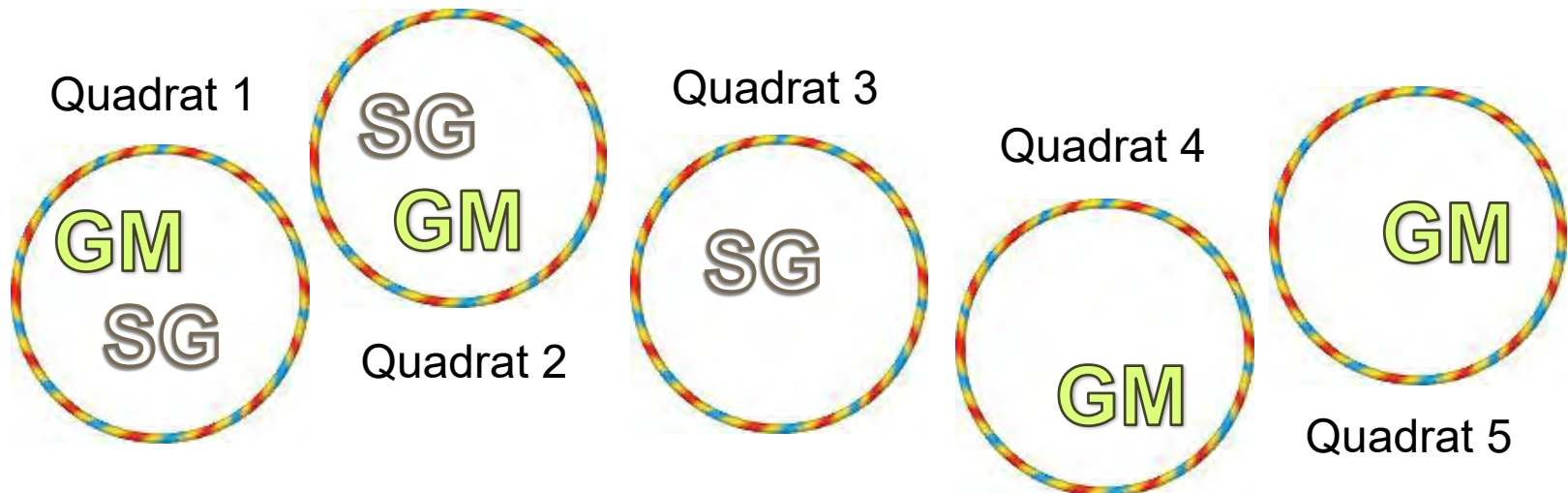


Plant Species Found:

Abbreviation	Plant Description	Plant Name	Alien?	Total Plants	Total Aliens
Totals:					
				% Aliens:	

Field Sampling and Data Analysis

Name of Species	Quadrat number each 1 m ² size					Plots in which species occurs	Density
	Q1	Q2	Q3	Q4	Q5		
Garlic Mustard	x	x		x	x	4	80%
Silt Grass	x	x	x			3	60%





Practice ID

Compound

Simple

Palmately Compound

Not Palmately Compound

Margin lobed

Margin Not Lobed

Margin Toothed

Margin Entire

Basal Leaf Arrangement

Stem Leaf Arrangement

Whorled

Not Whorled

Opposite Leaf Arrangement

Alternate Leaf Arrangement

Virginia Creeper

References

- * <https://www.fws.gov/invasives/faq.html> (Accessed 1/27/17)
- * <http://www.emeraldashborer.info/>
- * https://www.nature.nps.gov/biology/invasivespecies/strat_pl.cfm