

**Pennsylvania Field Guide**  
**Common**  
**Invasive Plants**  
**in Riparian Areas**



**Caution:**

Be careful when using pesticides as a method to control invasive plants. Make sure any products used are approved for the specific site location of the invasive plant; especially if the plants being controlled are located near water. Always follow directions and heed all precautions on the labels.

**Additional Resources:**

<http://www.invasivespecies.gov>

<http://www.nps.gov/plants/alien/pubs/midatlantic/index.htm>

<http://tncweeds.ucdavis.edu/links.html>

<http://www.mdflora.org/publications/invasives.htm>

<http://www.paflora.org/Invasive%20species%20fact%20sheets.htm>

<http://www.invasiveplants.net>

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*Parts, Types and Positions of Leaves* illustration courtesy of PA Department of Conservation and Natural Resources, Bureau of Forestry

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## Introduction

Invasive plant species are plants introduced from outside of an ecosystem with characteristics that help them dominate and limit the diversity of species within the invaded area. Their threat lies in an ability to spread aggressively and reproduce prolifically, easily out-competing native plants for light, space and nutrients.

Introduction of an invasive plant species can quickly result in a reduction of native plant species and of habitat for native wildlife. Once established, invasive plants are extremely difficult to control and restoration of the natural ecosystem can require large amounts of financial and labor resources. Early detection and rapid response is the best and most cost effective approach to controlling invasive plant species.

Exotic invasive plant infestations can also threaten the pollution prevention functions of riparian vegetation because an infestation typically results in diminished values, such as soil holding capacity, nutrient uptake capacity and habitat.

The plants featured in this Field Guide have been selected as some of the most significant invasive plant species found in riparian and wetland areas in Pennsylvania. Species were selected after surveying conservation professionals working to restore and maintain native riparian systems in Pennsylvania.



The Alliance for the Chesapeake Bay is a regional, non-profit organization that builds consensus and fosters partnerships for the protection and the restoration of the Bay and its rivers.

# Glossary

**Achene:** Small, dry fruit with single seed.

**Aril:** Fleshy, exterior covering of some seeds.

**Biennial:** Herbaceous plant with two year life cycle.

**Bract:** Modified leaf arising below a flower or inflorescence.

**Drupe:** Fleshy or pulpy fruit with hard stone containing a single seed.

**Heartwood:** Central, dark colored portion in a tree trunk.

**Leaf juncture:** Connection between leaf and stem.

**Lenticel:** Small gas-exchange openings in the cork of a woody stem.

**Ligule:** In grasses, ring of hairs at the junction between sheath and blade.

**Lobe:** Rounded segment of a leaf, forming part of a larger structure.

**Midrib:** Central vein of a leaf.

**Node:** Segment of stem to which leaf is attached.

**Noxious Weed:** A plant determined by Pennsylvania law to be injurious to public health, crops, livestock, agricultural land or other property.

**Ocreae:** Pair of stipules joined in a tubular sheath around the stem.

**Palmately:** Leaves with four or more lobes radiating from a single point, resembling a human palm with outstretched fingers.

**Pappus:** Feathery whorl covering the fruit/seed for dispersal by wind.

**Perennial:** Herbaceous plant living more than two years.

**Petiole:** Stalk between the leaf and stem.

**Rhizome:** Creeping underground stem.

**Rosette:** Circular cluster of leaves radiating from the stem at ground level.

**Sapwood:** Outer, light colored region of secondary xylem.

**Stipule:** Small, leaf-like growth at the base of a leafstalk.

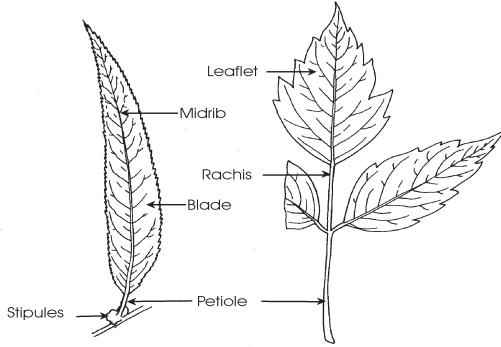
**Vegetative reproduction:** Asexual reproduction, using vegetative tissues.

**Xylem:** Water conducting tissue of plants.

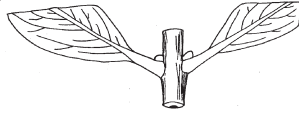


# Leaf Structure

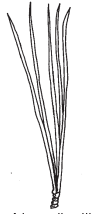
## PARTS, TYPES, AND POSITIONS OF LEAVES



Alternate



Opposite



Needle-like  
(White Pine)



Scale-like  
(Red Cedar)

Awl-like  
(Red Cedar)



Linear  
(Hemlock)



Pinnately Compound  
(White Ash)



Parallel-veined leaf  
of the Ginkgo



Pinnately Lobed  
(White Oak)



Palmately Lobed  
(Red Maple)



Palmately Compound  
(Ohio Buckeye)

# Herbaceous

## Common Reed

*Phragmites australis*

### Identification

#### Plant

Tall perennial rhizomatous grass

Hollow stems

Occasional multiple branches

Grows 3-16 feet in height

#### Habitat

Brackish and freshwater marshes

Wet and riparian areas



#### Leaf

Narrow with stiff, sharp points

Smooth edges

Grows alternately on top half of stem

Up to 12 inches long by 1 inch wide

Connection between stem and leaf (ligule)

has a ring of fine, silky hairs

#### Flower

Purplish-brown plumes fading to tan

Blooms in late June

#### Reproduction

Primarily vegetative through rhizomes

Seed spread by wind

### Look-alike Plants

Common reed is similar in appearance to Giant reed (*Arundo donax*), another non-native grass that is considered to be invasive in some areas. The plumes of *Arundo* are covered with soft, whitish hairs.

### Control

Common Reed is very hard to control once established. Cutting done near the end of July for several years to diminish plant vigor has proved successful. Cut shoots should be removed to prevent resprout. Application of an aquatic form of glyphosate has also been found to be successful and should be done after the plumes have developed. Research into biocontrol is being conducted.

# Herbaceous

## Garlic Mustard

*Alliaria petiolata*

### Identification

#### Plant

Cool season biennial herb

First year plant is a low evergreen rosette

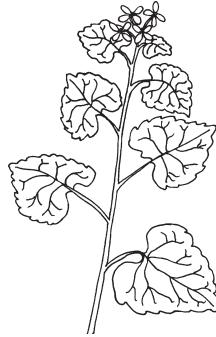
Second year plants grow 2-3½ feet tall and develop single or multiple branched stalks

Second year growth begins in early spring and dies back by late June

#### Habitat

Shady to partly shady areas

Prefers moist soil.



#### Leaf

Heart or triangular shape with sharply toothed edge

Measures 1-3 inches long and wide

Arranged alternately on stalk

Gives off garlic odor when crushed

#### Flower

Small, white with four petals

Clustered at the top of stalks

Blooms April-May in Pennsylvania

#### Seed

Shiny, black, in slender erect pods

Matures in May

Seed develops even on cut flowering plant

#### Reproduction

Prolific and persistent seeds

### Look-alike Plants

First year plants are similar in appearance to other rosette-forming plants such as violets (*Viola sp.*), White avens (*Geum canadense*) and Bittercress (*Cardamine spp.*). Garlic mustard can be distinguished by its strong garlic odor and second year bloom.

### Control

Cutting plant near ground level is recommended. Pulling has the potential to disturb the soil and create an avenue for additional infestations. Burning and herbicides have been used effectively. Seeds mature on flowering cut plants so plants should be disposed of in plastic bags and sent to a landfill. Seeds remain viable for several years.

# Herbaceous

## Japanese Knotweed

*Polygonum cuspidatum*

### Identification

#### Plant

*Upright, bushy perennial*

*Grows to ten feet*

*Forms dense thickets, dies back at first frost leaving bamboo-like debris*

*Stems are smooth, reddish brown, swollen at leaf junctures creating a zig-zag appearance along stem.*

#### Habitat

*In sun or shade near water, low-lying or waste areas, old railroad beds*



#### Leaf

*Broad ovals to triangular with smooth edge*

*Grows in alternate arrangement*

*4-6 inches long by 3-4 inches wide*

#### Flower

*Blooms late summer on female plants*

*Long spikes, white to green-white*

#### Seed

*Shiny, small, triangular*

#### Reproduction

*Primarily through vigorous, deep rhizomes*

*Small rhizome segments spread*

*infestation through flooding or fill dirt*

*Highly viable seed dispersed by wind/water*

### Look-alike Plants

Japanese knotweed and Giant knotweed (*Polygonum sachalinense*) are similar and are known to hybridize. Japanese knotweed leaves are squared off at the base and 4-6 inches long, while those of Giant knotweed are heart shaped and up to 12 inches long.

### Control

Japanese knotweed is very difficult to control. It can regenerate from small segments of rhizomes left in the ground. Pulling young plants can be effective if entire root system is removed. Cutting and covering with weed mats may kill small infestations. Application of systemic herbicide is most effective if done two weeks before fall frost. Combined cutting in June and spraying of plant in fall is recommended. Any control must be repeated over a number of years to be successful.

# Herbaceous

## Japanese Stilt Grass

*Microstegium vimineum*

### Identification

#### Plant

*Upright annual grass*  
*Resembles small bamboo plant*  
*Mature plants can grow to 2-3 feet*  
*Plant sprawls along ground*

#### Habitat

*Low moist areas of sun to deep shade*  
*Spreads rapidly through disturbed or overbrowsed areas*



#### Leaf

*Pale green with a narrow lance shape*  
*Arranged in a sparse, alternate pattern*  
*Measures up to 3 inches*  
*Has a distinctive silver midrib that separates the leaf into unequal halves*

#### Flower

*Pale green spikes at tip of the plant*  
*Appears in September and October*

#### Fruit/Seed

*Yellowish to reddish grain*  
*Matures in fall, shortly after flowering*

#### Reproduction

*By numerous seeds which remain viable for at least 3 years*  
*Spreads vegetatively at joints along stem*

### Look-alike Plants

Japanese stilt grass is similar in appearance to several native grasses including Virginia cutgrass (*Leersia virginica*) and Pennsylvania smartweed (*Polygonum persicaria*). Its silvery midrib is a unique identification characteristic.

### Control

Stilt grass may be hand pulled. Mowing or cutting with a weed whacker when plants are in bloom will prevent seed production. If mechanical methods are not feasible, targeted herbicide application may be appropriate. Seed bank remains viable for three to five years. Pre-emergent control agents can reduce seed germination.

# Herbaceous

## Lesser Celandine

*Ranunculus ficaria*

### Identification

#### Plant

*Small flowering perennial herb  
4-12 inches tall  
Emerges in mid to late winter forming  
a low-growing loose rosette  
Plant dies back by June*

#### Habitat

*Moist forested floodplains*

#### Leaf

*Shiny with smooth, sometimes  
wavy edges  
Dark-green and heart to  
kidney shaped*



*Arranged alternately along the stem  
Leaves have long petioles  
Measures 0.7-1.5 inches long and wide*

#### Flower

*Yellow with 8-12 petals  
Appears in March and April  
Single flower at top of plant on delicate  
stalk*

#### Reproduction

*Primarily through bulblets and tubers  
Bulblets grow along the leaf stalks  
Small, cream colored bulblets are  
easily dislodged from plant by foot traffic  
and flooding  
Tubers can be scattered by disturbance  
Plant also reproduces by seed*

### Look-alike Plants

Lesser celandine is similar in appearance to Marsh marigold (*Caltha palustris*). Marsh marigold can be distinguished by the shallow tooting of its leaf edges and its flowers which lack petals.

### Control

Plants can be hand pulled or dug. Systemic herbicides can also be used with caution. Herbicide application should be done early in the season to avoid injury to native plants.



# Herbaceous

## Purple Loosestrife

*Lythrum salicaria*

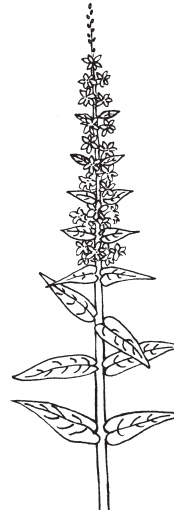
### Identification

#### **Plant**

*Tall upright herbaceous perennial  
Has a square or 6-sided woody stem usually  
covered by downy hair  
Grows from 3-10 feet high  
Mature root can support more than 30 stems*

#### **Habitat**

*Varied wetland areas, ditches, stream edges,  
marshes  
Prefers wet soil but can grow in dry  
upland areas*



#### **Leaf**

*Whorled and opposite with a smooth edge  
Lance shaped and stalkless  
Heart-shaped leaves at the plant's base*

#### **Flower**

*Showy purple spikes  
Individual flowers have five to seven petals  
Blooms from June to September  
Attracts many pollinators*

#### **Reproduction**

*Small, numerous seeds dispersed by wind/water  
Vegetatively along underground stems*

### Control

Small infestations can be hand pulled preferably before seed set. Spot treat with herbicide for older plants using glyphosate formulated for either water or upland. Herbicide applications tend to be more effective when done late in the season.

Several beetle species have been approved by the USDA for biological control of loosestrife. Biocontrol is recommended for large infestations. Contact Pennsylvania Department of Agriculture for additional information: Mailing address: Botany/Weed Program, Department of Weed Industry, 2301 N. Cameron Street, Harrisburg, PA 17110-9408; 717-772-5209.

# Herbaceous

## Reed Canary Grass

*Phalaris arundinacea*

### Identification

#### Plant

*Tall perennial rhizomatous grass*  
*Forms a dense rhizome system in the soil*  
*Grows 2- 9 feet tall*  
*Has erect, hairless, sometimes hollow stems*  
*Among first grasses to appear in spring*  
*Cultivated as a forage crop in some areas*

#### Habitat

*Wetlands, waterways and wet areas*



#### Leaf

*Narrow, gradually tapering*  
*Measures 3-10 inches long*  
*Flat, rough on both sides, smooth edges*

#### Flower

*Appears May to mid-June*  
*Green to purple erect clusters*  
*Fades to beige over time*

#### Seed

*Small and shiny brown*

#### Reproduction

*By prolific seed as well as vigorous*  
*vegetative reproduction in rhizomes*

### Look-alike Plants

Reed canary grass is similar in appearance to non-native Orchard grass (*Dactylis glomerata*) which has wider leaf blades and narrower flower clusters. Bluejoint grass (*Calamagrostis canadensis*) also looks similar before flowering.

### Control

Twice yearly mowing can be effective in encouraging competition from natives and weakening plant. Mowing must be repeated for several years. Herbicides have also been found to be effective.

# Herbaceous

## Spotted Knapweed

*Centaurea maculosa*

### Identification

#### Plant

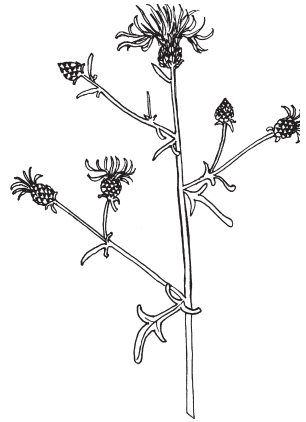
*Short-lived perennial or biennial  
Grows to 4 feet in height  
Single or multiple branched, wiry stems  
Stems topped by a solitary flower head  
Seedlings form a rosette the first year*

#### Habitat

*Fields, roadsides and stream banks*

#### Leaf

*Leaves on rosettes are up to six inches long  
Deeply lobed  
Leaves of mature plant are alternate*



*Leaf has fine hairs on top that become  
coarser at edges  
Size varies with leaves becoming smaller  
toward the top of the plant*

#### Flower

*Flower head is egg-shaped with black tips on  
the bracts, creating a spotted effect  
Plume at top of head is pink to purple  
Approximately 1 inch wide*

#### Seed

*Small seeds dispersed by wind, water and foot  
or vehicle traffic*

#### Reproduction

*Through numerous seeds  
Seeds viable for at least eight years*

### Look-alike Plants

Spotted knapweed is similar in appearance to Cornflower (*Centaurea cyanus*) and Corn cockle (*Agrostemma githago*). It can be distinguished from these by its much more deeply lobed leaves.

### Control

Mowing or cutting within ten days of flower heads opening prevents seed development that season. Four insect species have been introduced to control the plant, including root boring moths, seedhead moths, seedhead gall flies and seedhead weavils. Herbicide has also been used successfully. Repeated treatments are necessary because of the long life of the seed.

# Herbaceous

## Thistle - Canada & Bull

*Cirsium arvense/Cirsium vulgare*

### Identification

#### Plant

Both are Pennsylvania noxious weeds  
Erect branching stems topped by flowers  
Mature plants stand 1.5-5 feet tall  
Bull thistle grows taller than Canada  
Canada thistle is a perennial  
Bull thistle is a biennial - first year plant  
forms a rosette of lance shaped, spine  
tipped leaves; second year plant develops  
a stem by mid-summer

#### Habitat

Pastures, rangeland and disturbed  
non-forested areas

#### Leaf

Alternate spiny, oblong to lance-shaped  
leaves with toothed edges  
Bull thistle has coarse hairs on the upper  
surface and softer whitish hairs below



Bull Thistle



Canada Thistle



#### Flower

Disk shaped flowers -1 inch in diameter  
Flower head surrounded by spiny bracts in  
Bull thistle, spineless bracts in Canada  
thistle  
Pink to purple in Canada thistle  
Reddish pink to purple in Bull thistle  
Appears from June to early fall

#### Seed

Flattened and brown attached to feathery  
pappus that allows it to float in the wind

#### Reproduction

Abundant seed  
Canada thistle also spreads vegetatively by  
creeping rhizomes

### Control

Cutting before seed set will control spread of Bull thistle. Repeated cutting of  
Canada thistle will eventually weaken and exhaust root system. Targeted applica-  
tion of systemic herbicide such as glyphosate may be appropriate.

# Vine

## English Ivy

*Hedera helix* L.

### Identification

#### **Plant**

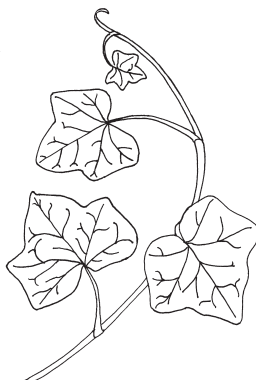
*Evergreen woody vine*  
*Climbs and acts as a ground cover*  
*Vines develop root-like structures enabling them to adhere to trees and walls*  
*Vines can reach 12 inches in diameter*

#### **Habitat**

*Woodlands, forest edges and fields*  
*Full sun to full shade*

#### **Leaf**

*Varies in shape but is palmately lobed*  
*Shiny, dark green with smooth edge*  
*Arranged alternately on vine.*  
*Measures up to 4 inches*



#### **Flower**

*Small, green-white*  
*Umbrella-shaped clusters*  
*Flowers in fall if plant has sufficient light*

#### **Fruit**

*Matures in spring*  
*Round, blue/black in color*  
*Eaten by birds*

#### **Reproduction**

*Through seed dispersed by birds*

### Look-alike Plants

Boston ivy (*Parthenocissus japonicus*) is very similar in appearance but is deciduous. English ivy is evergreen.

### Control

Hand pulling is effective. Plant should be bagged and removed. Roots remain alive after removal of above ground portions of plant. Systemic herbicide can be applied to cut stems to kill roots.

# Vine

## Japanese Honeysuckle

*Lonicera japonica*

### Identification

#### Plant

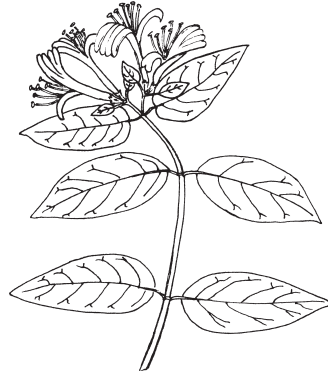
Woody perennial climbing vine  
Evergreen in mild climates  
Stems and leaves sometimes  
covered with fine, soft hairs

#### Habitat

Sun to shade  
Disturbed areas including fields,  
forests, wetlands, barrens

#### Leaf

Oblong to oval with a smooth edge  
or in a slightly lobed shape  
Opposite arrangement along the stem  
Leaf size 1.5-3 inches long



#### Flower

Small, fragrant, tubular-shaped  
Grows in pairs along stem at leaf junctures  
Blooms late April through July or later  
Creamy white, turning yellow with age

#### Fruit

Appears in late summer to fall  
Small, black, round berry  
Contains many seeds

#### Reproduction

Abundant seed spread by birds and wildlife  
Vegetatively along runners at leaf  
junctions and along underground  
rhizomes

### Look-alike Plants

The native vine honeysuckles, Trumpet honeysuckle (*Lonicera sempervirens*) and Twining honeysuckle (*L. dioica*), can be distinguished from Japanese honeysuckle by their red to orange flowers and berries. The last two leaves of new growth of both natives are joined at their bases along the stem in a cuplike shape.

### Control

Repeated pulling of entire root system can be effective. If the plant is hanging from a tree, tie roots up at shoulder height. Monitor for new plants frequently. Frequent mowing, twice a year in July and September, can limit growth and spread. Systemic herbicides have also proved effective.



# Vine

## Japanese Hops

*Humulus japonicus*

### Identification

#### **Plant**

*Annual climbing or trailing vine*

*Grows 2-8 feet during season*

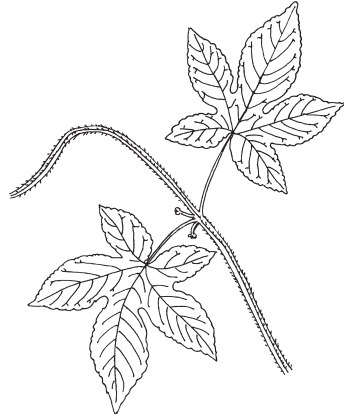
*Covered with barbs that irritate skin*

*Forms dense mats covering existing plants*

*Occasionally grows as a perennial*

#### **Habitat**

*River banks, stream banks, forest edges, abandoned fields, open disturbed areas*



#### **Leaf**

*Palmately lobed with 5-9 lobes*

*Measures between 2-4 inches*

*Edges are toothed*

#### **Flower**

*Dull green cone-shaped spikes*

*2-3 inches*

*Appears in midsummer.*

#### **Fruit**

*Small yellow-brown achenes*

#### **Reproduction**

*Numerous small seeds in late summer and early fall*

*Seed spreads along waterways*

### Look-alike Plants

Similar in appearance to Wild cucumber (*Echinocystis lobata*), hops can be identified by its downward pointing hooked barbs. It also does not have tendrils as *E. lobata* does.

### Control

Can be hand pulled. Remove before it sets seed in August-September. May resprout from unpulled root or re-root from pulled plant so remove pulled plant from site. Glyphosate can be used as well. The seedbank is exhausted in approximately three years.

# Vine

## Mile-a-Minute *Polygonum perfoliatum*

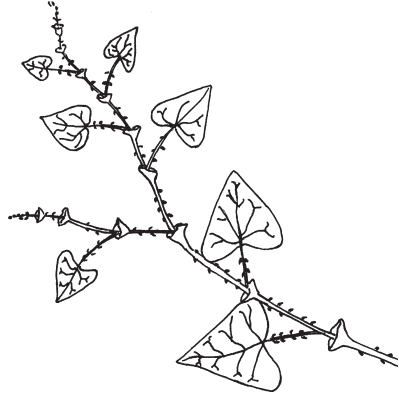
### Identification

#### Plant

*Trailing annual vine*  
*Delicate stem contains sharp, downward pointing barbs*  
*Grows rapidly forming dense mats blanketing other vegetation*  
*Distinctive, small, round, funnel shaped structure (ocreae) encircles stem at intervals.*

#### Habitat

*Sun to part shade*  
*Moist well-drained soils*  
*Disturbed areas such as wood edges, wetlands and stream banks.*



#### Leaf

*Alternate, light green (occasionally reddish)*  
*Triangular to heart-shaped, smooth edges*  
*Barbs on underside*  
*Measures 1 1/4 to 3 inches at base*

#### Flower

*Small, white and inconspicuous*  
*Emerges from the ocreae late June until fall.*

#### Fruit

*Small, segmented berry*  
*Color varies: metallic blue, white, green*  
*Contains small, round, black, shiny seed*

#### Reproduction

*Through numerous seeds disbursed by birds and water*

### Control

Mile-a-minute can be removed by hand with protective clothing to avoid barbs. Young seedlings do not have barbs. Repeated removal throughout the summer is necessary, as new seedlings will emerge. Mowing throughout the summer will also restrict flowering. Seed stock lasts several years. Herbicidal soap has been used successfully and requires repeated treatments throughout the summer.

# Vine

## Oriental Bittersweet

*Celastrus orbiculatus*

### Identification

#### **Plant**

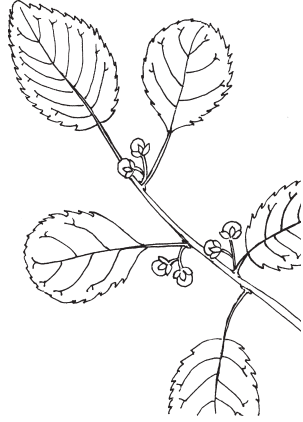
*Deciduous, woody, perennial vine  
Produces a dense mass of vines  
Can blanket all vegetation within  
infested area*

#### **Habitat**

*Woodland edge, woodlands  
Shade tolerant but found more  
often in sun*

#### **Leaf**

*Oval-shaped and glossy  
Finely toothed edge  
1-3 inches long and wide  
Alternate arrangement along vine*



#### **Flower**

*Small and greenish  
Emerges in clusters along stems at leaf axils  
Blooms in spring*

#### **Fruit**

*Green to yellow berries form in September  
Outer fruit splits open to show red/orange  
arils that contain seeds  
Berries are eaten by many species of bird*

#### **Reproduction**

*By prolific seeds in late spring  
Vegetatively through root suckers and along  
stems above ground*

### Look-alike Plants

The native climbing bittersweet (*Celastrus scandens*) is very similar in appearance, but it flowers at the tips of vines rather than along stems at leaf axils.

### Control

Bittersweet can be hand pulled by the roots. Place plants that have already set fruit in a garbage bag and remove from site. Systemic herbicide, either glyphosate or triclopyr, can be applied directly to cut stem to kill root system.

# Shrub

## Common Privet

*Ligustrum vulgare*

### Identification

#### Plant

*Fast growing deciduous shrub*

*Grows to 15 feet tall*

*Smooth gray-brown bark*

*Multiple branches*

#### Habitat

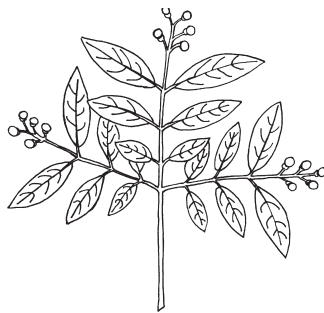
*Commonly used landscape plant naturalizes  
in areas of full sun to part shade*

#### Leaf

*Simple oval to elliptical*

*1-2½-inches long*

*Dark green, glossy, waxy appearance*



*Smooth edge*

*Grows in opposite arrangement along stem*

*Turns purplish in fall*

#### Flower

*Grows in clusters at the end of branches*

*Small, white with a strong scent*

#### Fruit

*Small, blue-black berries*

*Appears in late summer-early fall*

#### Reproduction

*Seed is widely dispersed by birds and  
other wildlife*

### Look-alike Plants

Inkberry (*Ilex glabra*) is similar in appearance but it has alternate leaf arrangement and is evergreen. Privet is deciduous with opposite leaves.

### Control

Entire plant including roots can be dug out if plants are small. This method will disturb the soil producing an avenue for additional infestations. Plant will resprout from remaining roots. Cut larger plants and paint stumps with systemic herbicide like glyphosate.

# Shrub

## Exotic Bush Honeysuckles

*Lonicera*: *L. maackii*, *L. morrowii*, *L. tatarica*, *L. standishii*

### Identification

#### Plants

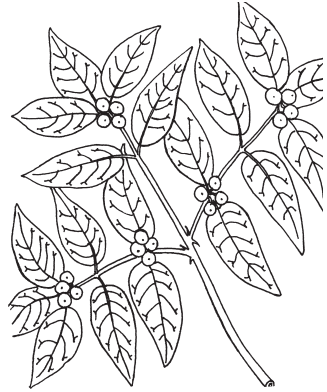
*Woody deciduous shrub*  
*Multi-stemmed, oppositely branched*  
*Grows from 6-15 feet in height*

#### Habitat

*Sun to part shade*  
*Forest edges and disturbed areas*

#### Leaf

*Elliptical or lance shaped with a smooth edge*  
*1-2½ inches long*  
*Opposite leaf arrangement*



#### Flower

*Small, fragrant, tubular*  
*Grows in pairs along stem at leaf junction*  
*Blooms in May*  
*Creamy white, pink or crimson in color*

#### Fruit

*Matures in September*  
*Color: red to orange*  
*Popular with birds*

#### Reproduction

*By seed dispersed by birds and small mammals.*

### Look-alike Plants

Fruit of the native bush honeysuckles are blue or black rather than red or orange. The exotic honeysuckles tend to leaf earlier than natives and retain leaves later in the season and their flowers have a hairy style (stalk between stigma and ovary).

### Control

Hand removal of seedlings and small plants is effective but requires monitoring for new sprouts. Repeated cutting will eventually diminish plant vigor and kill the shrub, although winter cutting will encourage vigorous re-sprouting. Treatment with systemic herbicides late in the growing season is effective.

# Shrub

## Glossy Buckthorn

*Rhamnus frangula*

### Identification

#### **Plant**

*Fast growing deciduous shrub or small tree*

*Grows to 20-25 feet*

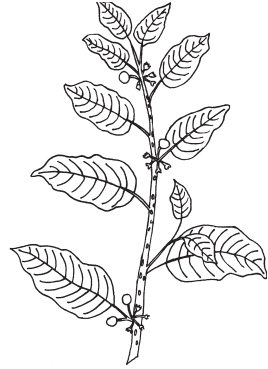
*Leaves out very early in the year*

*Retains leaves late into growing season*

*Gray-brown bark with a speckled appearance,  
due to light colored lenticels*

*Distinctive winter appearance – with hairy  
terminal buds and curving or arching twigs*

*Cut stems show distinctive yellow sapwood  
and pink heartwood*



#### **Habitat**

*Full sun to shade*

*Favors damp locations*



#### **Leaf**

*Oval and shiny between 1-3 inches long*

*Edges are smooth and slightly wavy*

#### **Flower**

*Appears on female plants in May*

*5-petaled, greenish-white*

*Appears in clusters along stem*

#### **Fruit/Seeds**

*Red ovals turning purplish-black when ripe*

*Eaten by birds*

*Fruit appears on the plant July-September*

#### **Reproduction**

*Prolific seed is spread by birds*

### Look-alike Plants

Glossy buckthorn is similar in appearance to two smaller native shrubs, Alder buckthorn (*Rhamnus alnifolia*) and Lance-leaved buckthorn (*Rhamnus lanceolata*). The native buckthorns have bud scales in the winter and hairless twigs.

### Control

The plant resprouts vigorously when cut. Hand pulling of smaller plants can be successful but disturbed soil can cause seed germination. Cutting and treating of stumps in fall with glyphosate has been successful. Control of seedlings will be necessary in subsequent years.



# Shrub

## Japanese Barberry

*Berberis thunbergii*

### Identification

#### Plant

*Small, dense deciduous shrub*  
*Grows 2-8 feet in height*  
*Grey/brown bark with grooved*  
*brown branches*  
*Thorns at the leaf nodes*  
*Bright yellow wood when bark is scratched*

#### Habitat

*Full sun to shade including forest, open*  
*woodlands, wetlands and meadows*

#### Leaf

*Small (1/2 to 1 1/2 inches long)*  
*Bright green and oval to spatula-shaped*  
*Smooth edge*  
*Arranged alternately on the stem*



#### Flower

*Appears in mid-April to May*  
*Clusters of small pale yellow flowers*  
*along stem*

#### Fruit/Seed

*Egg-shaped shiny red berries*  
*Approximately 1/3 inch long*  
*Appears from July to October*  
*Persists on shrub throughout the winter*  
*Berries are eaten by small mammals and birds*

#### Reproduction

*Seed spread by animals; vegetatively*

### Control

Plants can be hand pulled while wearing thick gloves to protect skin from sharp thorns. Repeated cutting or mowing has been successful as has treatment with systemic herbicides.

# Shrub

## Multiflora Rose

*Rosa multiflora*

### Identification

#### Plant

Thorny, perennial shrub with arching stems

Grows to approximately 13 feet tall

Can form large dense hedges as it spreads

#### Habitat

Fields, forests, prairies and riparian areas.

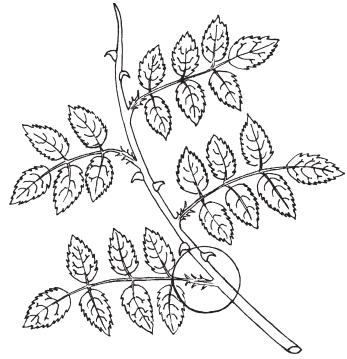
#### Leaf

Compound

Divided into five to eleven leaflets with

sharply toothed edges

Fringed or hairy structure at leaf stipules



#### Flower

Grows in clusters

Small, white to pinkish-white, fragrant,  
five-petal flowers

Appears May-June

#### Fruit

Reddish, fleshy, known as rose hips

Develops during the summer

Remains on plant through winter

Provides food for birds and wildlife

#### Reproduction

Through numerous seed spread by birds

Vegetatively on sprouted tips of arching  
canes

### Look-alike Plants

Several plants including pasture rose (*Rosa carolina*), swamp rose (*Rosa palustris*) and Allegheny blackberry (*Rubus allegheniensis*) are similar in appearance. Multiflora rose can be distinguished by the pair of fringed bracts found at the base of each leaf stalk and upright stems.

### Control

Hand pulling of young plants can be successful. Larger plants can be cut or mowed repeatedly (3-6 times during growing season) to weaken and eventually kill. Cut stumps or resprouted stump may be treated with systemic herbicide to kill roots. Herbicide treatment is most effective late in the growing season.

# Shrub

## Winged Euonymus or Burning Bush

*Euonymus alata*

### Identification

#### Plant

Multi-stemmed, woody shrub  
Grows to over 15 feet tall  
Stems have distinctive tan to brown  
rectangular, corky wings  
Develops bright red foliage in fall  
Popular landscape plant



#### Habitat

Full sun to shade  
Forests and scrublands



#### Leaf

Opposite arrangement  
Elliptical with a finely toothed edge  
Measures from 1½ to 3 inches long

#### Flower

Small, yellowish green, inconspicuous  
Blooms in clusters late April-June

#### Fruit/Seed

Dark red, oblong capsule  
splits to reveal bright orange-red  
Eaten and dispersed by birds

#### Reproduction

Vegetative through root shoots and seed

### Look-alike Plants

Similar in appearance to other euonymus including strawberry bush (*Euonymus americana*) which does not have the winged stems. Winged euonymus is also similar in appearance to saplings of native sweetgum (*Liquidambar styraciflua*) that have winged stems but lobed leaves.

### Control

Seedlings can be hand pulled. Repeated cutting or cutting with treatment with systemic herbicides can be effective.

# Shrub/Tree

## Autumn Olive and Russian Olive

*Elaeagnus umbellata* & *Elaeagnus angustifolia* L.

### Identification

#### Plant

*Shrub or small tree*

*Autumn olive grows to 20 feet*

*Russian olive grows to 30 feet  
with twigs often covered with thorns*

#### Habitat

*Full or part sun*

*Can survive in very poor soils*

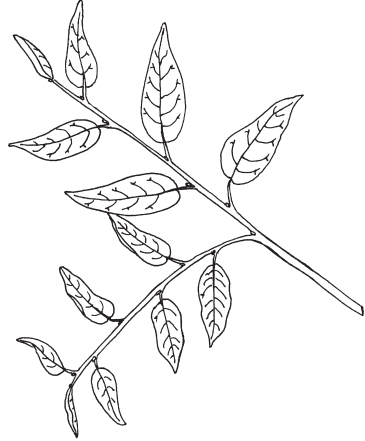
#### Leaf

*Elliptical to lance-shaped*

*Smooth edge*

*Arranged alternately along the stem*

*Distinctive silvery-green scaling on lower  
surface*



#### Flower

*Fragrant, light yellow trumpet shaped*

*Appears in clusters*

*Early spring on Autumn olive*

*June to July on Russian olive*

#### Fruit

*Appears along stem*

*Small, pink or red, round drupe on  
Autumn olive*

*Dry, yellow, mealy fruit on Russian olive*

*Eaten by many species of birds and some  
mammals*

#### Reproduction

*Through copious seed dispersed by wildlife*

*Russian olive can spread vegetatively*

### Control

Hand pulling of young plants is possible. Burning, cutting or girdling can encourage vigorous re-growth. Cutting followed by herbicide application has been found to be effective.

# Tree

## Norway Maple

*Acer platanoides*

### Identification

#### Plant

*Deciduous tree with broad, rounded crown*

*Grows to 90 feet tall*

*Bark of young trees is smooth, gray brown*

*becoming black and furrowed with age*

#### Habitat

*Thrives in poor, compacted soils*

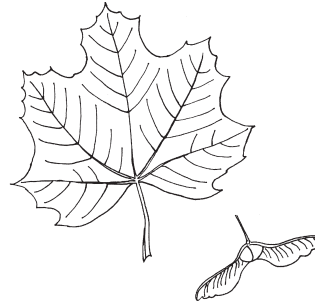
*Forests and fields*

#### Leaf

*Palmately lobed with 5 to 7 lobes*

*and long, pointed teeth*

*Dark green leaf is broader than long*



#### Flower

*Bright yellow-green*

*Appears in early spring before leaves*

#### Fruit

*Matures during the summer as pairs of winged blades*

*Each blade contains one seed*

#### Reproduction

*Seed dispersed by wind and water*

*Plant also spreads vegetatively along roots*

### Look-alike Plants

Norway maple is similar in appearance to many maples especially sugar maple (*Acer saccharum*). Norway maple has a distinctive milky white sap that oozes out of leaf veins and stalks when broken and turns yellow late in the fall. Sugar maple leaves display a distinctive shade of orange-red in autumn.

### Control

Hand pull seedlings. Repeated cutting or cutting followed by herbicidal treatment on resprouts can be effective.

# Tree

## Princess Tree

*Paulownia tomentosa*

### Identification

#### Plant

*Deciduous tree with a rounded crown and heavy branches*

*Grows to 60 feet tall*

*Bark is rough, gray-brown with smooth shiny patches*

*Stems are olive to dark brown and hairy*

#### Habitat

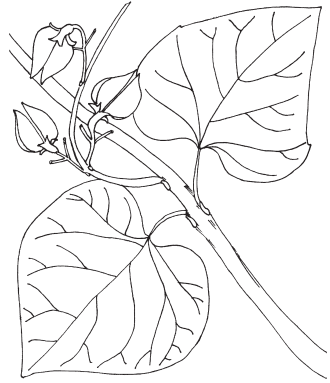
*Disturbed woods, stream banks and steep rocky slopes*

#### Leaf

*Large, paired, 5-12 inches long*

*Heart shaped to oval, occasionally appearing shallowly three-lobed*

*Velvety texture on underside*



#### Flower

*Appears in early spring before leaves emerge*

*Large, showy, upright clusters of purple, tube-like flowers*

#### Fruit

*Appears in clusters in late summer*

*Hard, oval capsules 1-1½ inches long*

*Filled with numerous small, winged seeds*

*Green, maturing to brown*

*Matures in fall*

*Remains on tree through winter*

#### Reproduction

*Through numerous seeds dispersed by wind and water*

*Tree can produce 20 million viable seeds*



### Look-alike Plants

Paulownia resembles the native Catalpa (*Catalpa speciosa*). Catalpa leaves are whorled around the stem and have a more pointed tip. In summer, slender green pods resembling cigars form on Catalpa.

### Control

Hand pulling is effective for young seedlings. Plant can resprout from root fragments. Repeated cutting or cutting followed by herbicidal treatment on resprouts can be effective.



# Tree

## Tree-of-Heaven

*Ailanthus altissima*

### Identification

#### Plant

*Grows over 80 feet tall*

*Single trunk with rounded crown*

*Plant gives off strong distinct odor*

*when cut, similar to peanut butter*

*Bark is thin, light gray to brown*

*Large, heart-shaped leaf scars*

#### Habitat

*Thrives in disturbed soil, poor soil*

*Roadside, forest and field edges*



#### Leaves

*Compound, 11-25 opposite leaflets*

*Smooth with glandular teeth near base*

*Between 1-4 feet in length*

*Arranged alternately on branch*

#### Flowers

*Yellow-green, grows at ends of branches*

*Appears in June*

#### Fruit

*Twisted, oblong 1-1.5 inches long*

*Light-green, drying to tan or pink*

*Seeds often remain on tree through the year*

#### Reproduction

*Prolific seed with high germination rate*

*Vegetatively by root shoots and suckers*

### Look-alike Plants

Several plants are confused with Tree-of-heaven including staghorn sumac (*Rhus typhina*) distinguished by its fuzzy, reddish brown leaves and stems, ash

(*Fraxinus* species) distinguished by opposite leaves, and black walnut (*Juglans nigra* L.) distinguished by its toothed leaves and large green fruits.

### Control

Seedlings can be hand pulled. Girdled or cut trees will re-sprout vigorously.

Glyphosate can be applied as a foliar spray, stump treatment, injection or with the hack and squirt method. Most effective when applied during growing season.

Basal bark treatment with the chemical Triclopyr is also very effective particularly when done in the fall. There is anecdotal evidence that copper roofing nails driven into the trunk can kill the tree.