

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>

Illustration Credits:

Except as noted, all illustrations by Jan Caulfield

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

Photographic Credits:

All photographs in this publication were used with the permission of the photographers. Except as noted, all photographs taken by Deborah J. Rudy and Rebecca J. Wertime, Alliance for the Chesapeake Bay.

Photographs of Glossy Buckthorn and Winged Euonymus downloaded with permission from <http://www.invasive.org> October 2003, Invasive.org- Invasive and Exotic Species of North America. Copyrighted by the University of Georgia.

Photograph of Garlic Mustard courtesy of The Nature Conservancy.

The views expressed herein are those of the author and do not necessarily reflect the views of EPA, DEP, or any of its subagencies.

**Funding provided by:**

The Pennsylvania Department of Environmental Protection through Section 319 of the federal Clean Water Act administered by the U.S. Environmental Agency

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.

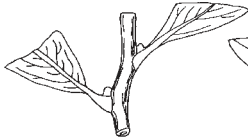
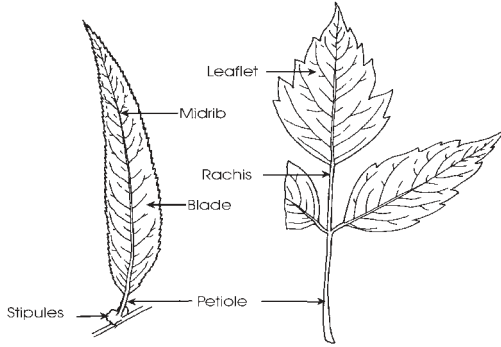
Stipule: Small, leaf-like growth at the base of a leafstalk.

Vegetative reproduction: Asexual reproduction, using vegetative tissues.

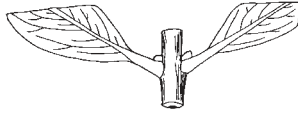
Xylem: Water conducting tissue of plants.

Leaf Structure

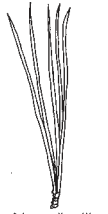
PARTS, TYPES, AND POSITIONS OF LEAVES



Alternate



Opposite



Needle-like
(White Pine)



Scale-like
(Red Cedar)

Awl-like
(Red Cedar)



Linear
(Hemlock)



Pinnately Compound
(White Ash)



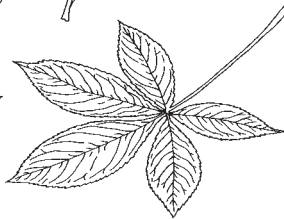
Parallel-veined leaf
of the Ginkgo



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

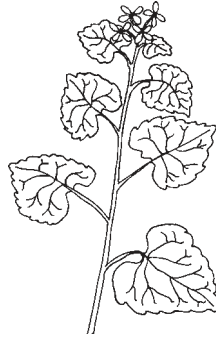
Second year plants grow 2-3½ feet tall and develop single or multiple branched stalks

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 (*Catha 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

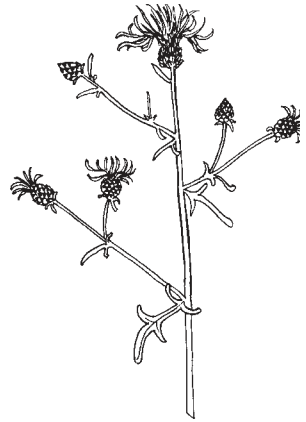
Short-lived perennial or biennial
Grows to 4 feet in height
Single or multiple branched, wiry stems
Stems topped by a solitary flower head
Seedlings form a rosette the first year

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

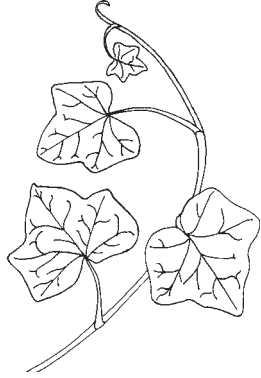
Evergreen woody vine
Climbs and acts as a ground cover
Vines develop root-like structures enabling them to adhere to trees and walls
Vines can reach 12 inches in diameter

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

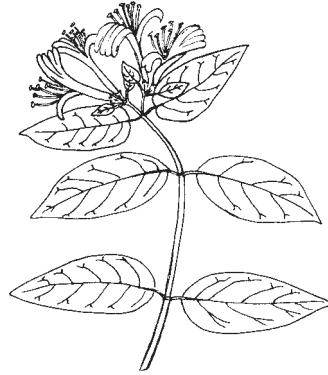
Woody perennial climbing vine
Evergreen in mild climates
Stems and leaves sometimes
covered with fine, soft hairs

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

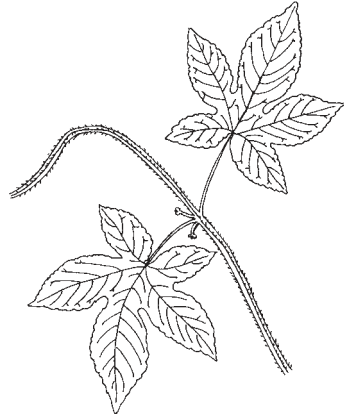
Covered with barbs that irritate skin

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*

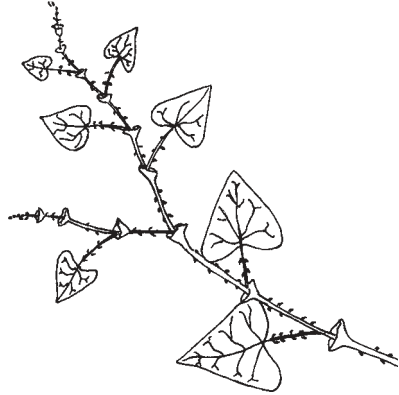
Identification

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

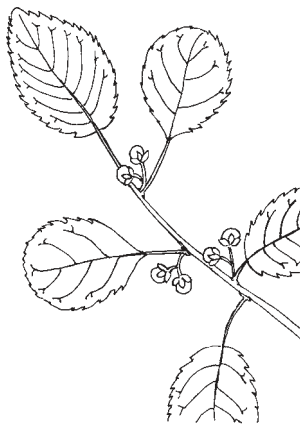
Leaf

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

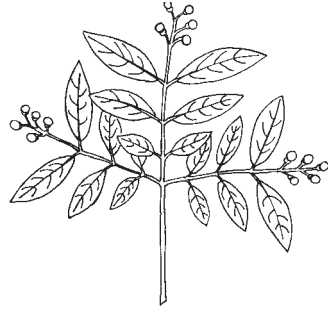
*Commonly used landscape plant naturalizes
in areas of full sun to part shade*

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

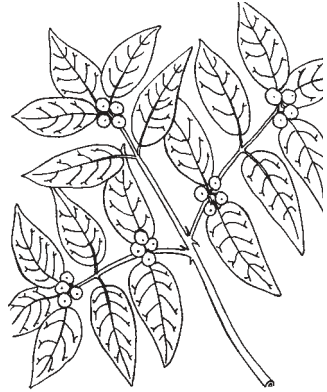
Woody deciduous shrub
Multi-stemmed, oppositely branched
Grows from 6-15 feet in height

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

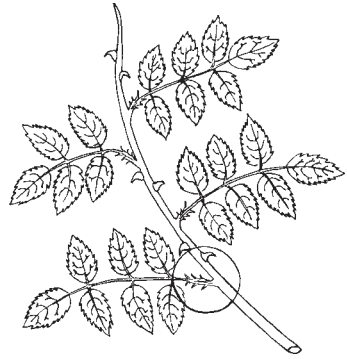
Fields, forests, prairies and riparian areas.

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

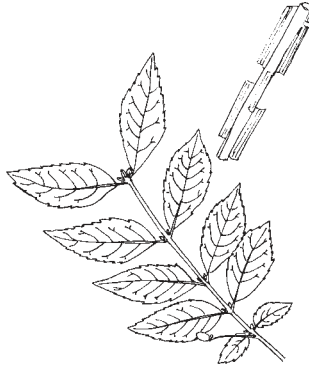
Winged Euonymus or Burning Bush

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

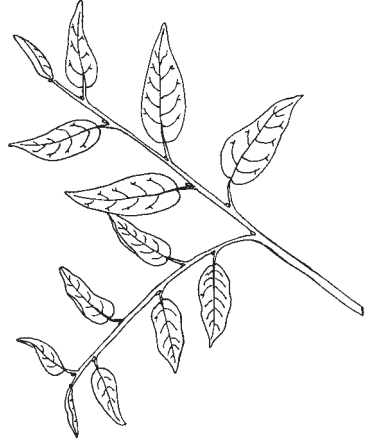
Leaf

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

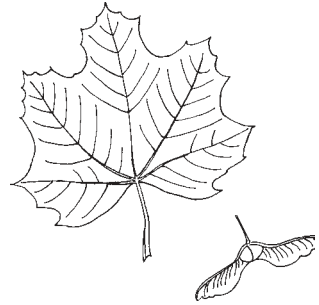
Thrives in poor, compacted soils

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.