



United States Department of Agriculture

# **A Guide to Nonnative Invasive Plants Inventoried in the North by Forest Inventory and Analysis**

**Cassandra Olson  
Anita F. Cholewa**



Forest Service

**Northern Research  
Station**

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## Cover Photos

Front: clockwise from top left: spotted knapweed, photo by Cindy Roche, Bugwood.org; European privet, photo by Nava Tabak, Invasive Plant Atlas of New England, Bugwood.org; multiflora rose, photo by James H. Miller, U.S. Forest Service, [www.forestryimages.com](http://www.forestryimages.com); Dame's rocket, photo used with permission, by Kelly Kearns, Wisconsin DNR.

Back: Northern Research Station Forest Inventory and Analysis field crew, photos by Cassandra Olson, U.S. Forest Service.

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# **A Guide to Nonnative Invasive Plants Inventoried in the North by Forest Inventory and Analysis**

**Cassandra Olson**

Ecologist, U.S. Forest Service,  
Northern Research Station

**Anita F. Cholewa**

Curator, Bell Museum & Planetarium,  
University of Minnesota



## **Acknowledgments**

Special thanks go out to Anita F. Cholewa, Curator at the Bell Museum & Planetarium for getting this field guide started in 2004 and for all her help making revisions in 2007 and 2017. Also thanks to Katherine Johnson, Dale Gormanson, David Haugen, John Vissage, Keith Moser, James Blehm, Dan Kaisershot, Travis Rymal, Cassandra M. Kurtz, and Barb Winters for helping with my various requests as this guide was put together.

Plant names and data for individual species distribution were taken from the January 2000 version of the NRCS Plants Database: <https://plants.usda.gov>. Other sources for individual species distribution are noted in the References section.

## Foreword

This field guide is intended to aid Forest Inventory and Analysis (FIA) field crews in identifying 43 plants listed in Appendix 9 of the FIA National Core Field Guide, Volume 1 Supplement: Field Data Collection Procedures for Phase 2+ Plots, Version 7.1 (<https://nrs.fs.fed.us/fia/data-collection/>). Species are arranged alphabetically by growth form (trees, woody, vines, etc.).


In the updated version of this guide, no new species have been added, but you will find new pictures and distribution maps plus added descriptive text for some of the plants that will enhance its usefulness.

The first page for each nonnative invasive plant is arranged as follows:

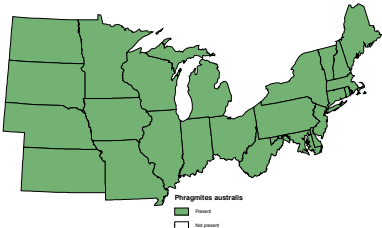
*Scientific name*

Common name	NRCS PLANTS Code
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Elizabeth J. Czarapata



A picture showing infestation



*Paragelasma australis*

Present  
Not present

A distribution map taken from NRCS PLANTS database and showing the Northern Research Station (NRS) region.



# Contents

## TREE SPECIES

Norway maple	<i>Acer platanoides</i>	1
Tree-of-heaven	<i>Ailanthus altissima</i>	5
Silktree	<i>Albizia julibrissin</i>	9
Russian olive	<i>Elaeagnus angustifolia</i>	13
Punktree	<i>Melaleuca quinquenervia</i>	17
Melaleuca		
Chinaberry	<i>Melia azedarach</i>	21
Princesstree	<i>Paulownia tomentosa</i>	25
Royal paulownia		
Black locust	<i>Robinia pseudoacacia</i>	29
Saltcedar	<i>Tamarix ramosissima</i>	33
Tamarisk		
Tallow tree	<i>Triadica sebifera</i>	37
Siberian elm	<i>Ulmus pumila</i>	41

## WOODY SPECIES

Japanese barberry	<i>Berberis thunbergii</i>	45
Common barberry	<i>Berberis vulgaris</i>	49
Autumn olive	<i>Elaeagnus umbellata</i>	53
Glossy buckthorn	<i>Frangula alnus</i>	57
European alder		
Alder buckthorn		
European privet	<i>Ligustrum vulgare</i>	61
Showy fly honeysuckle	<i>Lonicera xbella</i>	65
Amur honeysuckle	<i>Lonicera maackii</i>	69
Morrow's honeysuckle	<i>Lonicera morrowii</i>	73
Tatarian honeysuckle	<i>Lonicera tatarica</i>	77
Common buckthorn	<i>Rhamnus cathartica</i>	81
Multiflora rose	<i>Rosa multiflora</i>	85
Japanese meadowsweet	<i>Spiraea japonica</i>	89
European cranberrybush	<i>Viburnum opulus</i>	93
Snowball bush		

## VINE SPECIES

Asian bittersweet	<i>Celastrus orbiculatus</i>	97
Black swallow-wort	<i>Cynanchum louiseae</i>	101
Louise's swallow-wort		

European swallow-wort	<i>Cynanchum rossicum</i>	105
Pale swallow-wort		
English ivy	<i>Hedera helix</i>	109
Japanese honeysuckle	<i>Lonicera japonica</i>	113
HERBACEOUS SPECIES		
Garlic mustard	<i>Alliaria petiolata</i>	117
Spotted knapweed	<i>Centaurea biebersteinii</i>	121
Canada thistle	<i>Cirsium arvense</i>	125
Bull thistle	<i>Cirsium vulgare</i>	129
Leafy spurge	<i>Euphorbia esula</i>	133
Dame's rocket	<i>Hesperis matronalis</i>	137
Creeping jenny	<i>Lysimachia nummularia</i>	141
moneywort		
Purple loosestrife	<i>Lythrum salicaria</i>	145
Japanese knotweed	<i>Polygonum cuspidatum</i>	149
Mexican bamboo		
Giant knotweed	<i>Polygonum sachalinense</i>	153
Bohemian knotweed	<i>Polygonum ×bohemicum</i>	157
GRASS SPECIES		
Nepalese browntop	<i>Microstegium vimineum</i>	161
Japanese stiltgrass		
Reed canarygrass	<i>Phalaris arundinacea</i>	165
Common reed	<i>Phragmites australis</i>	169
Phragmites		
REFERENCES		173
APPENDIX 1: Leaf and Inflorescence Morphology		175
APPENDIX 2: Comparison of Nonnative Shrubby <i>Lonicera</i>		182
APPENDIX 3: Key to the Species <i>Lonicera</i>		183
APPENDIX 4: Comparison of Nonnative <i>Berberis</i> Species		184
APPENDIX 5: Key to the Species <i>Berberis</i>		185
APPENDIX 6: Notes About the <i>Polygonum (Fallopia)</i> Species		186
APPENDIX 7: Key to the Species <i>Elaeagnus</i>		187
GLOSSARY		189

# *Acer platanoides*

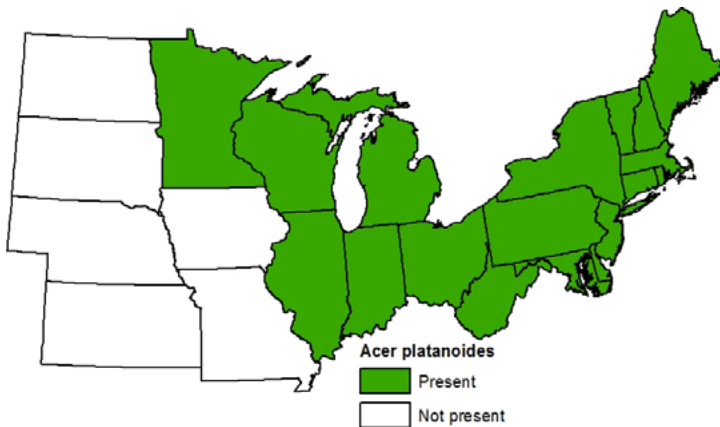
Norway maple

ACPL



Infestation.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



# ***Acer platanoides***

Norway maple

ACPL

**Form:** Deciduous tree 40-80 ft (12-25 m) tall.

**Leaves:** Opposite leaves palmately lobed with 5-7 lobes; the margins have a few large teeth. Buds large, over ¼ inch (0.6 cm), green or reddish, and blunt.

**Flowers/fruit:** Yellowish-green flowers in rounded clusters give way to large samara fruit.

**Habitat:** Vacant lots, successional forests, upland fields, and hedgerows.

**Other distinguishing features/notes:** Broken leafstalk of Norway maple yields milky juice (sugar maple yields clear juice). Also, wings of the samara on Norway maple diverge at almost 180 degrees (sugar maple diverges at a narrower angle, about 120 degrees). Winter: resembles sycamore maple, but edges of opposing leaf scars meet on Norway maple twigs.

## **Notes**

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# ***Acer platanoides***

## Norway maple



Samara.  
Paul Wray, Iowa State University,  
Bugwood.org



Bark.  
Paul Wray, Iowa State University,  
Bugwood.org



Samara.  
Bill Cook Michigan State University,  
Bugwood.org



Flowers.  
Bill Cook Michigan State University,  
Bugwood.org



Buds.  
Paul Wray, Iowa State University,  
Bugwood.org

# ***Acer platanoides***

Norway maple



Leaves.  
Bill Cook Michigan State University,  
[Bugwood.org](http://Bugwood.org)



Twig.  
Paul Wray, Iowa State University,  
[Bugwood.org](http://Bugwood.org)

# *Ailanthus altissima*

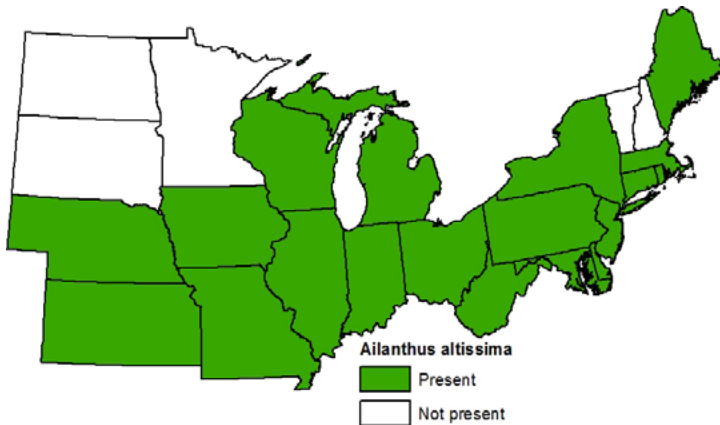
Tree-of-heaven

AIAL



Infestation.

Chris Evans, University of Georgia, Bugwood.org. Note: Small tree-of-heaven plants (center and lower right) growing among the very similar looking, and native, winged sumac (top left and top right).



# ***Ailanthus altissima***

Tree-of-heaven

AIAL

**Form:** Deciduous tree 80-98 ft (25-30 m) tall. Grows rapidly. Twigs hairless, yellow-brown, stout, with yellowish pith.

**Leaves:** Pinnately compound up to 3 ft (1 m) long; 11-41 leaflets not toothed except for a pair of gland-tipped teeth near bases. Leaf scars very large, somewhat triangular with many bundle scars.

**Flowers/fruit:** Blooms June-July. Flowers small, yellowish, often unisexual in pyramidal cluster; male blossoms emit foul odor. Fruits narrow, twisted samaras.

**Habitat:** Woodlands, urban areas, open fields, steep and shallow slopes, and closed canopy forest. Tolerates poor to rich soils.

**Similar species:** Resembles coffeetree (*Gymnocladus dioica*), which has large compound leaves and leaf scars, but fewer bundle scars, twice-compound leaves, and salmon-colored pith. Winter: stout twigs, false end buds, large leaf scars, and numerous bundle scars distinctive in tree-of-heaven.

## **Notes**

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# *Ailanthus altissima*

Tree-of-heaven



Leaves and flowers.  
Barbara Tokarska-Guzik, University of  
Silesia, Bugwood.org



Leaves.  
Barbara Tokarska-Guzik, University of  
Silesia, Bugwood.org



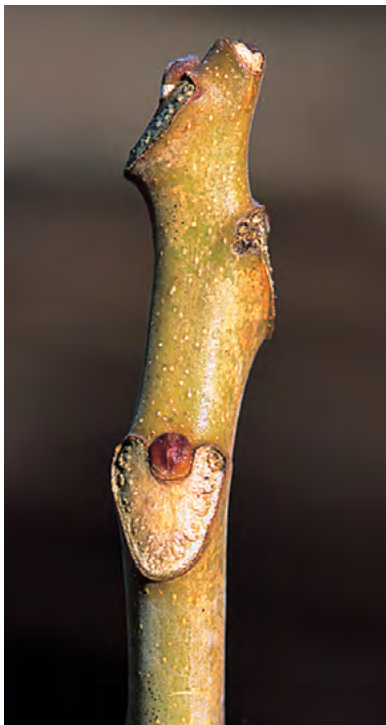
Leaflets.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Twisted samara.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

# *Ailanthus altissima*

## Tree-of-heaven



Large leaf scar.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Bark.  
Chris Evans, University of Georgia,  
Bugwood.org



Sapling.  
Chris Evans, University of Georgia,  
Bugwood.org



Gland-tipped teeth.  
Chris Evans, University of Georgia,  
Bugwood.org



Samaras.  
Steve Dewey, Utah State University,  
Bugwood.org

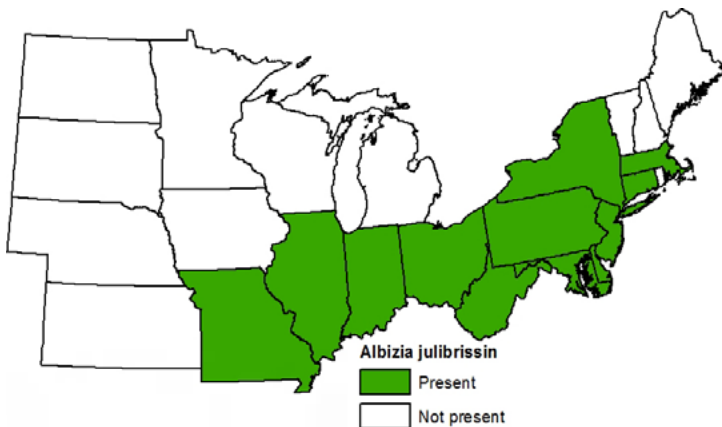
# *Albizia julibrissin*

Silktree

ALJU



Infestation.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



# ***Albizia julibrissin***

Silktree

ALJU

**Form:** Soft-wooded, deciduous tree 20-40 ft (6-12 m) tall. Twigs are hairless, slender. Leaf scars small with 3 bundle scars. Bark smooth, light brownish in color.

**Leaves:** Feathery, fern-like, twice-compound leaves. Buds few-scaled, small, blunt, not sunk in bark. End buds false. Pith whitish.

**Flowers/fruit:** Flowers June-August. Pink flower clusters resemble powder-puffs. Fruits dry, flattened, bean-like legumes that are 2-3 inches (5-7.5 cm) long.

**Habitat:** Dry to wet sites. Spreads along streambanks in open conditions, but can also persist in shade.

**Similar species:** Resembles honeylocust (*Gleditsia tricanthos*), which has only once-compound leaves and thorns on the twigs and the trunk. Seedlings resemble partridge pea (*Chamaecrista fasciculata*), an annual plant with once-pinnately compound leaves.

## **Notes**

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# ***Albizia julibrissin***

## **Silktree**



Flowers.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowers.  
Chris Evans, University of Georgia,  
Bugwood.org



Leaves and flowers.  
James H. Miller, US Forest Service,  
Bugwood.org



Fruit.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Bark.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

# ***Albizia julibrissin***

Silktree



Twice-compound leaves.

© Barry A. Rice, The Nature Conservancy, used with permission.



Tree.

© Barry A. Rice, The Nature Conservancy, used with permission.

# *Elaeagnus angustifolia*

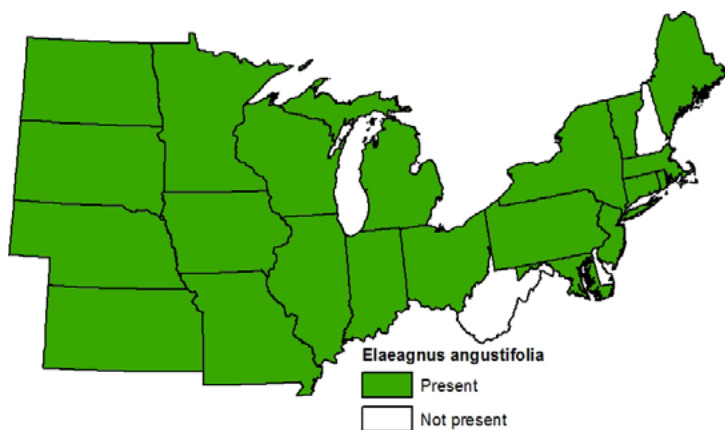
Russian olive

ELAN



Infestation.

Steve Dewey, Utah State University, Bugwood.org



## ***Elaeagnus angustifolia***

Russian olive

ELAN

**Form:** Mid-sized, usually thorny shrub or small tree that grows to 33 ft (10 m) tall.

**Leaves:** Alternate, egg or lance-shaped, smooth margined, silvery on both surfaces.

**Flowers/fruit:** Blooms June-July. Highly aromatic, creamy yellow flowers. Drupelike fruits in clusters; light green to yellow (sometimes tinged with red).

**Habitat:** Forest openings, open forests, and along forest edges; shade intolerant. Thrives in sandy flood plains.

**Similar species:** Silver thorn or thorny olive (*E. pungens*) is an evergreen with brown scaly twigs (Russian olive has silver scaly twigs), fruits reddish silver-scaly. Autumn olive (*E. umbellata*) has leaves that are non-scaly on the upper surface in summer; flowers in early summer and has many reddish, rounded drupes in fall and early winter.

### **Notes**

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# ***Elaeagnus angustifolia***

Russian olive



Fruit clusters.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Bark.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Silvery leaves.  
Steve Dewey, Utah State University,  
Bugwood.org



Fruit.  
Steve Dewey, Utah State University,  
Bugwood.org

# ***Elaeagnus angustifolia***

Russian olive



Thorns.

James H. Miller, U.S. Forest Service, Bugwood.org



Leaves and flowers.

James H. Miller, U.S. Forest Service, Bugwood.org



Leaf.

Chris Evans, University of Georgia, Bugwood.org

# *Melaleuca quinquenervia*

Punktree

MEQU

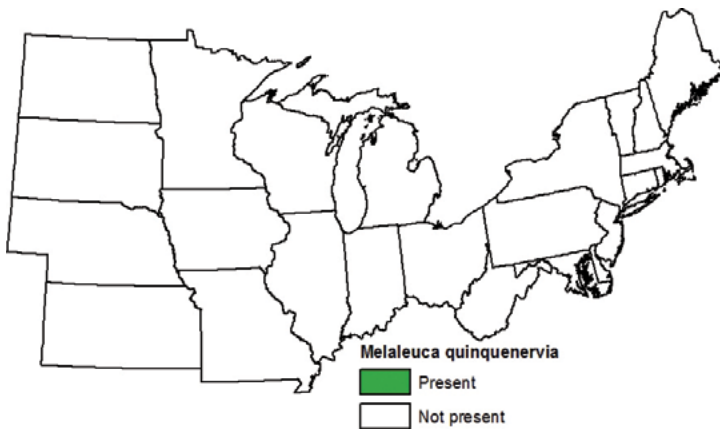
Melaleuca

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Infestation.

Amy Ferritar, South Florida Water Management District,  
Bugwood.org



## ***Melaleuca quinquenervia***

Punktree

MEQU

Melaleuca

**Form:** Evergreen tree up to 108 ft (33 m) tall. Bark whitish (inner layers reddish), spongy, peeling, in many layers.

**Leaves:** Leathery, alternate, simple, grayish green, narrowly lance-shaped (or elliptical); up to 4 inches (10 cm) long and <1 inch (2 cm) wide. Leaf veins are parallel. Smells of camphor when crushed.

**Flowers/fruit:** Flowers creamy white in bottlebrush-like spikes up to 6½ inches (16 cm) long at branch tips. Fruit is a round, woody capsule, about ⅛ inch (3 mm) wide, with many tiny seeds.

**Habitat:** Prefers seasonally wet sites, but also does well in standing water and well-drained uplands.

### **Notes**

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# *Melaleuca quinquenervia*

Punkttree  
Melaleuca



Bottlebrush-like flower.  
Amy Ferritar, South Florida Water  
Management District, Bugwood.org



Bark.  
David Nance, USDA Agricultural  
Research Service, Bugwood.org



Alternative leaves.  
Amy Ferritar, South Florida Water  
Management District, Bugwood.org



Flower spikes.  
Amy Ferritar, South Florida Water  
Management District, Bugwood.org



# ***Melaleuca quinquenervia***

Punktrees  
Melaleuca



Control operation.

Amy Ferritar, South Florida Water Management District,  
[Bugwood.org](http://Bugwood.org)



Bark.

Amy Ferritar, South Florida Water Management District,  
[Bugwood.org](http://Bugwood.org)

# *Melia azedarach*

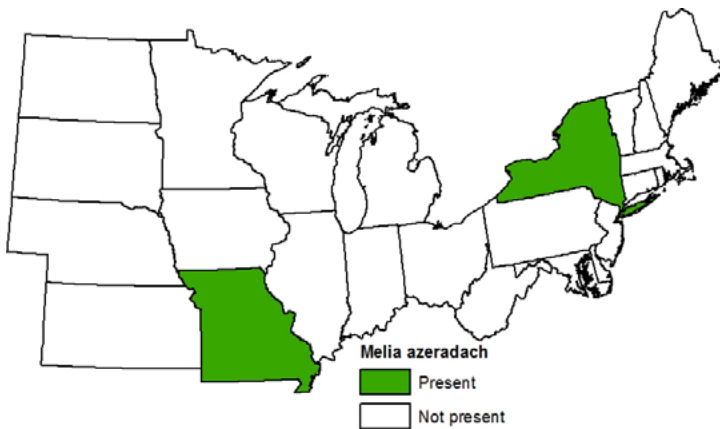
Chinaberry

MEAZ



Infestation.

David. J. Moorhead, University of Georgia, Bugwood.org



## ***Melia azedarach***

Chinaberry

MEAZ

**Form:** Deciduous tree up to 50 ft (15 m) tall. Much branched with multiple boles.

**Leaves:** Alternately whorled, twice-pinnately compound, 12-23½ inches (30-60 cm) long. Dark green with lacy appearance. Leafstalk lime green with base slightly clasping stem. Individual leaflets 1-3 inches (3-7 cm) long, with margins entire to coarsely crenate to serrate and wavy.

**Flowers/fruit:** Flowers March-May. Pinkish-lavender to whitish petals, stamens united in dark purple tube. Fragrant. Fruit a spherical drupe ½-¾ inch (1.2-1.8 cm) wide. Light green turning yellowish green then yellowish tan. Poisonous to humans and livestock.

**Habitat:** Roadsides, forest margins, and around old homesites.

**Similar species:** Common elderberry (*Sambucus canadensis*), a spreading-crown shrub with once-pinnately compound leaves, margins finely serrate, and green to dark-purple berries in flat-topped cluster.

### **Notes**

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# ***Melia azedarach***

## **Chinaberry**



Bark.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowers.  
Chris Evans, University of Georgia,  
Bugwood.org



Fruit.  
Cheryl McCormick-Rote, University of  
Florida, Bugwood.org



Compound leaves.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Branch.  
Ted Bodner, Southern Weed Science  
Society, Bugwood.org

# ***Melia azedarach***

## **Chinaberry**



Resprouts.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Large tree.  
Chuck Barger, University of Georgia,  
Bugwood.org



Seedling.  
Chris Evans, University of Georgia,  
Bugwood.org



Twig.  
James H. Miller, U.S. Forest  
Service, Bugwood.org

## ***Paulownia tomentosa***

Princesstree

PATO2

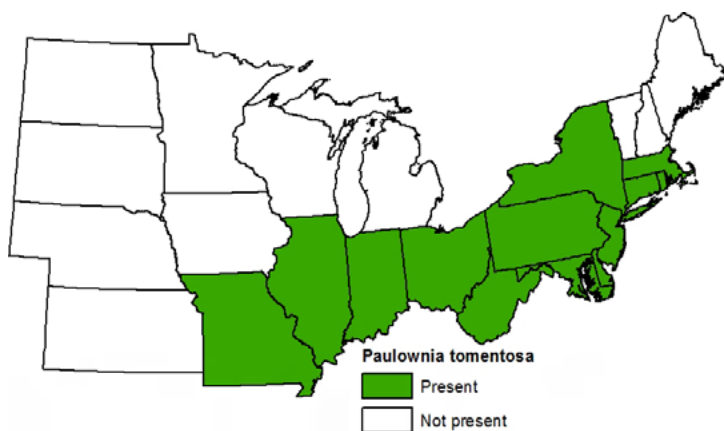
Royal paulownia

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Infestation.

Chris Evans, University of Georgia, Bugwood.org



## ***Paulownia tomentosa***

Princesstree

PATO2

Royal paulownia

**Form:** Deciduous tree up to 60 ft (18 m) tall. Bark light to dark gray, roughened and becoming slightly fissured. Twigs and branches stout, glossy gray brown, and speckled with numerous lenticels. No terminal buds.

**Leaves:** Opposite, heart-shaped and densely hairy on both surfaces, 6-13 inches (15-30 cm) long. Petioles rough hairy, 2-8 inches (5-20 cm) long. Leaves larger on resprouts; 16-20 inches (40-50 cm) across. Flower buds fuzzy, linear, and becoming ovoid in summer and persistent on erect stalks over winter.

**Flowers/fruit:** Blooms before leaves in early spring. Fragrant. Flowers large, 2-3 inches (5-7 cm); showy, pale violet, flared-tubular corollas; in large erect panicles. Fruits terminal clusters of pecan-shaped capsules with pointed tips; 1-2 inches (2.5-5 cm) long and ½-1 inch (1.5-2.5 cm) wide. Pale green in summer turning tan in winter and eventually black, persistent into spring.

**Habitat:** Around old homes, roadsides, riparian areas, and forest margins.

**Similar species:** Resembles catalpa (*Catalpa bignonioides* and *C. speciosa*), which have leaves with hair only on lower surfaces. Flowers are more fringed and fruits are long, slender, persistent capsules.

### **Notes**

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# ***Paulownia tomentosa***

Princesstree  
Royal paulownia



Lenticels on twig.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowers.  
James Allison, Georgia Department of  
Natural Resources, Bugwood.org



Seedling.  
David J. Moorhead, University of  
Georgia, Bugwood.org



Bark.  
Chris Evans, University of Georgia,  
Bugwood.org



Pecan-shaped capsules.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

# ***Paulownia tomentosa***

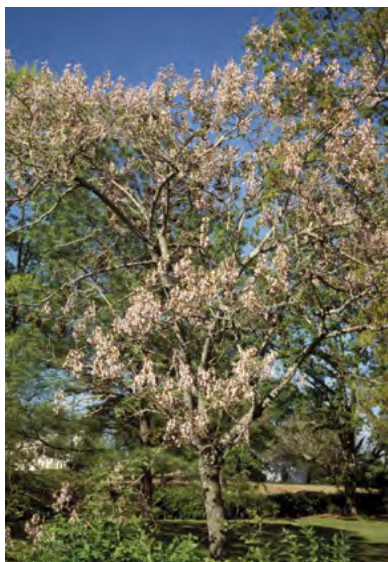
Princesstree  
Royal paulownia



Flowers.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Open seed capsules.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowering tree.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Heart-shaped leaves.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

# *Robinia pseudoacacia*

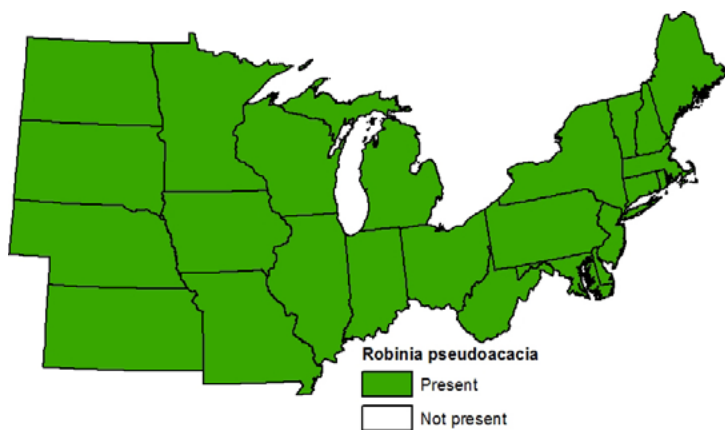
Black locust

ROPS



Infestation.

Elizabeth J. Czarapata, used with permission.



## ***Robinia pseudoacacia***

Black locust

ROPS

**Form:** Deciduous tree 65-80 ft (20-25 m) tall. Bark is gray or light brown, thick and fibrous, heavily ridged and furrowed when older, resembles a woven rope.

**Leaves:** Alternate, once-compound leaves. Leaflets 6-20, egg-shaped, margins entire,  $\frac{3}{4}$ -1½ inches (2-4 cm) long. Older twigs with pair of thick spines at leaf base.

**Flowers/fruit:** Blooms in mid to late spring. Flowers fragrant, white, 1 inch (2.5 cm) long and pea-like, borne in long 4-8 inch (10-20 cm) hanging clusters. Fruit is a flattened legume, mottled, light brown, 2-4 inches (5-10 cm) long; containing 4 to 8 kidney-shaped, smooth, red-brown seeds; ripening in the fall.

**Habitat:** Cove forests, open upland slopes, fence rows, disturbed ground, and limestone soils.

**Other distinguishing features/notes:** Sunken, white-hairy buds burst through leaf scars in spring. Native to the eastern seaboard but widely escaping elsewhere.

**Similar species:** Prickly ash (*Zanthoxylum americanum*) is smaller, rarely over 20 ft (6 m) tall, and has reddish exposed buds, with fewer leaflets (generally not more than 10). Small prickles are present along underside of leaf stalk and a pair of 1/3 inch prickles present just below leaf axils. Honeylocust (*Gleditsia tricanthos*) has smaller leaflets and branched unpaired thorns along the twigs.

### **Notes**

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# ***Robinia pseudoacacia***

## Black locust



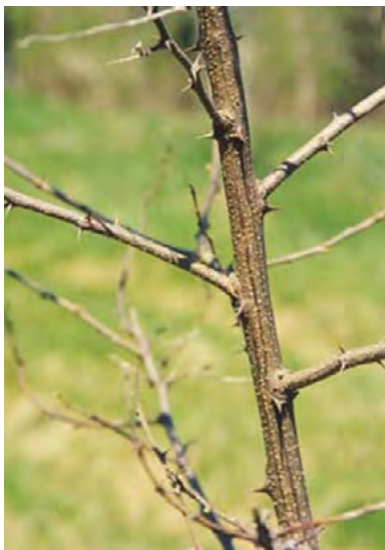
Bark.  
Elizabeth J. Czarapata, used with permission.



Legumes.  
Elizabeth J. Czarapata, used with permission.



Hanging clusters of flowers.  
Elizabeth J. Czarapata, used with permission.



Paired spines.  
Elizabeth J. Czarapata, used with permission.

## ***Robinia pseudoacacia***

Black locust



Leaflets and flowers.  
Charles T. Bryson, USDA Agricultural  
Research Service, Bugwood.org



Thick spines.  
Wisconsin Department of Natural  
Resources, used with permission.

# *Tamarix ramosissima*

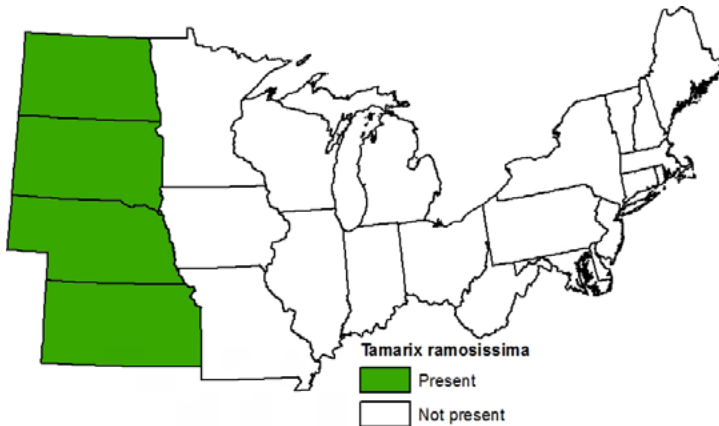
Saltcedar  
Tamarisk

TARA



Infestation.

Steve Dewey, Utah State University, Bugwood.org



## ***Tamarix ramosissima***

Saltcedar

TARA

Tamarisk

**Form:** Small tree or shrub 3-20 ft (1-6 m) tall.

**Leaves:** Small, alternate, scale-like leaves. Sessile with a narrow base, < ¼ inch (1.5-3.5 mm) long.

**Flowers/fruit:** Small flowers pale pink to white; arranged in dense spike-like racemes. Fruit is a capsule.

**Habitat:** Flood plains, salt marshes, and roadsides.

**Other distinguishing features/notes:** Stems and leaves of mature plants secrete salt, which eventually forms a crust above and below ground that inhibits other plants. Also capable of absorbing up to 200 gallons of water a day, lowering ground water levels and drying up springs and marshy areas.

**Similar species:** Superficially resembles *Juniperus*.

### **Notes**

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# ***Tamarix ramosissima***

Saltcedar  
Tamarisk



Plant.  
Steve Dewey, Utah State University,  
Bugwood.org



Shrub in flower.  
Steve Dewey, Utah State University,  
Bugwood.org



Flower racemes.  
© John M. Randall, The Nature  
Conservancy, used with permission



Shrub.  
© John M. Randall, The Nature  
Conservancy, used with permission.



Plants.  
© John M. Randall, The Nature  
Conservancy, used with permission.



## ***Tamarix ramosissima***

Saltcedar

Tamarisk



Shrub.

© John M. Randall, The Nature Conservancy, used with permission.



Invasion in flower.

© John M. Randall, The Nature Conservancy, used with permission.



Invasion at water's edge.

© John M. Randall, The Nature Conservancy, used with permission.



## *Triadica sebifera*

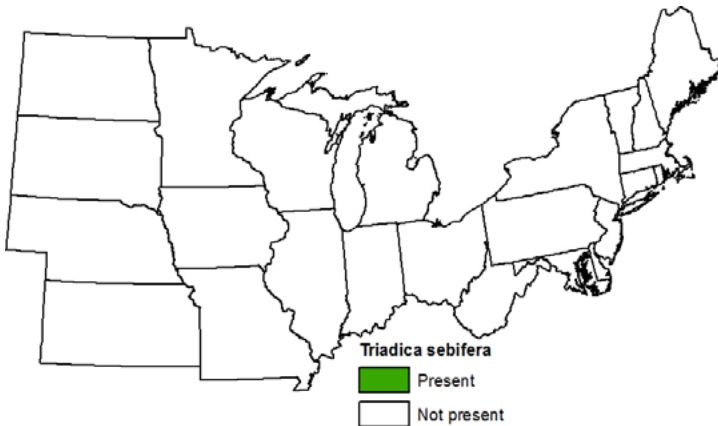
Tallow tree

TRSE6



Infestation.

Cheryl McCormick-Rote, University of Florida, Bugwood.org



## ***Triadica sebifera***

Tallow tree

TRSE6

**Form:** Deciduous tree up to 59 ft (18 m) tall.

**Leaves:** Alternately whorled, distinctly heart-shaped with rounded wide-angled base and a short or long attenuate tip. Blades 2-3 inches (5-8 cm) long and 1½-2½ inches (4-6 cm) wide. Hairless, lime-green petioles 1-3 inches (2.5 -8 cm).

**Flowers/fruit:** Slender, drooping spikes about 8 inches (20 cm) long of tiny flowers, yellowish-green sepals, but no petals. Fruit small terminal clusters of 3-lobed capsules (occasionally 4-5 lobed), ½-¾ inches (1.2-2 cm) across. Dark green in summer becoming black and splitting to reveal 3 wax coated seeds resembling popcorn.

**Habitat:** Streambanks, riverbanks, and wet areas such as ditches as well as upland sites. Thrives in freshwater and saline soils. Also shade tolerant, flood tolerant, and allelopathic.

**Similar species:** Cottonwoods (*Populus* spp.) have wavy margined leaves without the long attenuate tips, and flaking bark.

### **Notes**

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# ***Triadica sebifera***

## Tallow tree



Bark.  
Chris Evans, University of Georgia,  
Bugwood.org



Leaf and flower spike.  
Chuck Barger, University of Georgia,  
Bugwood.org



Seeds.  
Charles T. Bryson, USDA Agricultural  
Research Service, Bugwood.org



Heart-shaped leaves.  
Chris Evans, University of Georgia,  
Bugwood.org



Leaves and flower spikes.  
Chuck Barger, University of Georgia,  
Bugwood.org

## ***Triadica sebifera***

Tallow tree



Leaves and fruit.

Cheryl McCormick-Rote, University of Florida, Bugwood.org



Splitting fruit.

James H. Miller, U.S. Forest Service, Bugwood.org



Infestation.

Chris Evans, University of Georgia, Bugwood.org

# *Ulmus pumila*

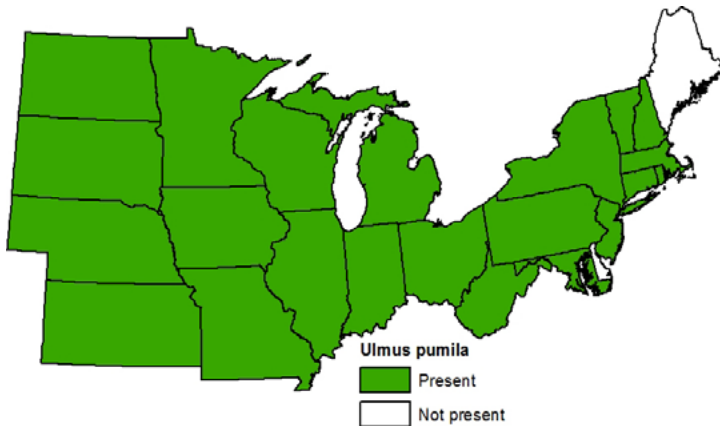
Siberian elm

ULPU



Infestation.

Steve Dewey, Utah State University, Bugwood.org



## *Ulmus pumila*

Siberian elm

ULPU

**Form:** Deciduous tree up to 65 ft (20 m) tall. Bark is irregularly furrowed, light grayish brown, often streaked with lighter stains.

**Leaves:** Alternate, simple, singly-serrate, small, < 2¾ inches (< 7 cm). Older leaves sometimes irregularly and minutely doubly-toothed. Nearly an equilateral base, dark green and smooth above, paler and smooth below.

**Flowers/fruit:** Blooms in early spring before leaves. Flowers small, pale green clusters. Fruit is a hairless samara, nearly round, notched at the top, ½ inch (1.2 cm) in diameter, initially pale green, later turning light brown when ripe in spring.

**Habitat:** Pastures, roadsides, prairies, and disturbed wooded sites.

**Other distinguishing features/notes:** All the native elms have obviously doubly-serrate margins and fruits with some hairs, either over the surface or along the margins.

### Notes

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# ***Ulmus pumila***

Siberian elm



Tree.  
Patrick Breen, Oregon State University,  
Bugwood.org



Leaves.  
Patrick Breen, Oregon State University,  
Bugwood.org



Leaves.  
Steve Dewey, Utah State University,  
Bugwood.org



Leaves.  
USDA NRCS Archives, Bugwood.org



Ripe samaras.  
USDA NRCS Archives, Bugwood.org

# ***Ulmus pumila***

Siberian elm



Bark.

© John M. Randall, The Nature Conservancy, used with permission.



Seedling.

© John M. Randall, The Nature Conservancy, used with permission.

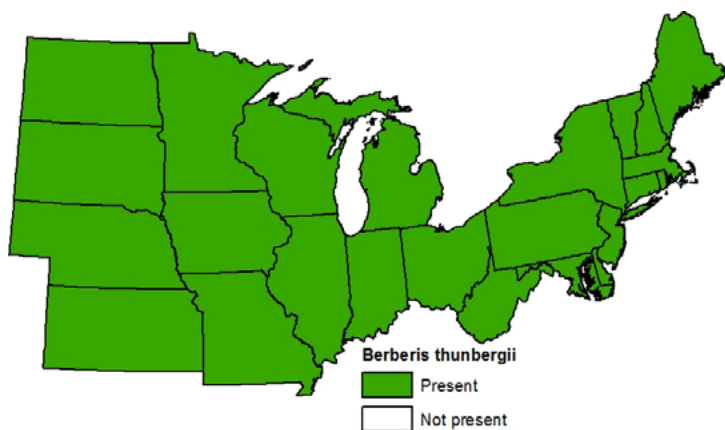
## ***Berberis thunbergii***

Japanese barberry

BETH



Infestation.  
Kelly Kearns, Wisconsin DNR, used with permission.



## ***Berberis thunbergii***

Japanese barberry

BETH

**Form:** Deciduous shrub 1½-6½ ft (0.5-2 m) tall. Branches are deeply grooved, brown to purple, often with unbranched side (spur) shoots. Spines present on branches. Inner bark and wood yellow.

**Leaves:** Entire (toothed in most other species), mostly obovate (tapering to petiole); axillary clusters of leaves often present; ranging in color from green to bluish green or green to dark reddish purple.

**Flowers/fruits:** Blooms mid-April to May. Solitary or in small clusters of pale yellow flowers (no more than 4). Fruit is a berry; bright red and globose; about ⅓ inch (1 cm) long; often persist through winter.

**Habitat:** Closed canopy forests, open woodlands, wetlands, pastures, meadows, and wastelands.

### **Notes**

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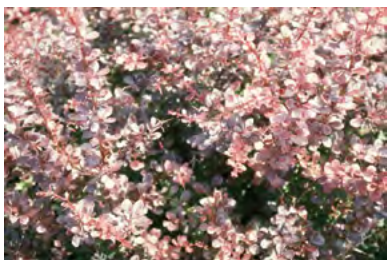
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# ***Berberis thunbergii***

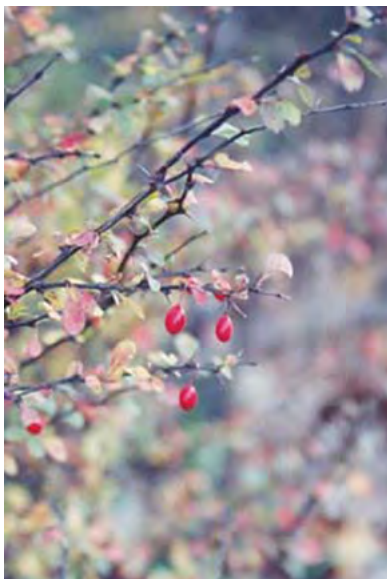
## Japanese barberry



Flower clusters.  
Kelly Kearns, Wisconsin DNR, used with permission.



Small, yellow flowers.  
Elizabeth J. Czarapata, used with permission.



Bright red fruit.  
Elizabeth J. Czarapata, used with permission.



Reddish-purple leaves.  
Britt Slattery,  
U.S. Fish and Wildlife Service

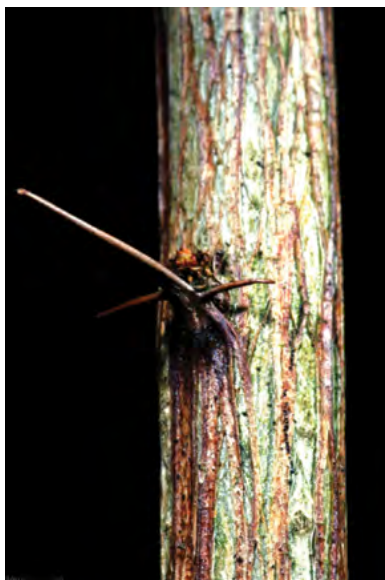


Shrub in urban setting.  
Cassandra Olson, U.S. Forest Service



# ***Berberis thunbergii***

Japanese barberry



Spines on branch.

© Barry A. Rice, The Nature Conservancy, used with permission.



Seedling.

© John M. Randall, The Nature Conservancy, used with permission.



# *Berberis vulgaris*

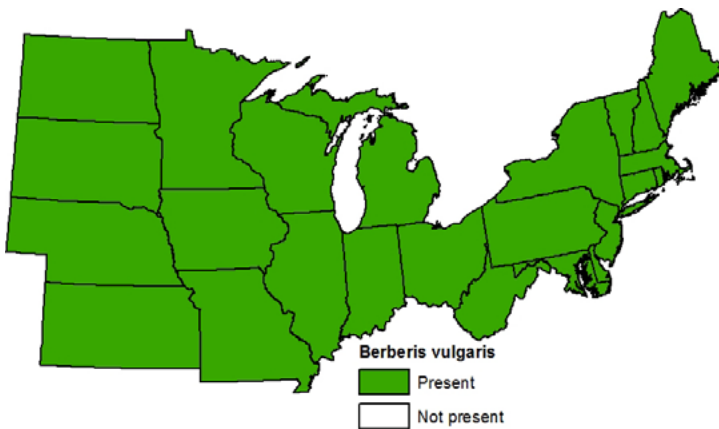
Common barberry

BEVU



Infestation.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



## ***Berberis vulgaris***

Common barberry

BEVU

**Form:** Deciduous shrub up to 10 ft (3 m) tall. Branches are grooved, gray, and usually have groupings of 3 spines (can be as few as one) along them.

**Leaves:** Alternate or fascicled,  $\frac{3}{4}$ -2 inches (2-5 cm) long. Dull green, obovate to obovate-oblong with finely serrate margins (occasionally the serrations are more prominent).

**Flowers/fruits:** Bright yellow flowers have unpleasant smell, in a pendant raceme 1-2½ inches (3-6 cm) long with 10+ flowers. Fruit is oblong, dark red to purplish,  $\frac{1}{3}$  inch (1 cm) long, containing 1-3 small, black seed.

**Habitat:** Open canopy forests and sometimes along roads; also very successful in calcareous soils.

### **Notes**

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# ***Berberis vulgaris***

## Common barberry



Flowers.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Spines along branch.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Finely serrate leaves.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Branch specimens. Top: *B. vulgaris*;  
Middle: hybrid; Bottom: *B. thunbergii*.  
Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org

# ***Berberis vulgaris***

Common barberry



Fruit.

Leslie J. Mehrhoff, University of Connecticut,  
Bugwood.org



Stems.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

## *Elaeagnus umbellata*

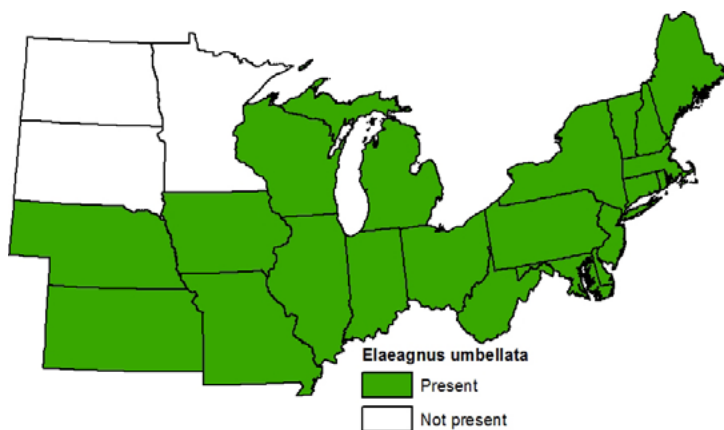
Autumn olive

ELUM



Infestation.

Chris Evans, University of Georgia, Bugwood.org



## ***Elaeagnus umbellata***

Autumn olive

ELUM

**Form:** Shrubby tree up to 23 ft (7 m) tall with scattered thorny branches.

**Leaves:** Alternate, elliptic, 2-3 inches (5.5 -7.5 cm) long by <2 inches (0.5 -5 cm) wide; margins entire and wavy; bright green to gray green above, densely silver scaly beneath or sometimes with stellate hairs; petioles short and silvery.

**Flowers/fruit:** Axillary clusters of 5-10 tubular flowers with 4 lobes; silvery white to yellow, fragrant. Fruits are drupes, <1/3 inch (6-8 mm) long; red and finely dotted with silvery to silvery-brown scales.

**Habitat:** Forest openings and open forests.

**Similar species:** Could be confused with Russian olive (*Elaeagnus angustifolia*), which has silver scaly twigs and leaves; flowers in early summer with many yellow drupes in fall and winter. Autumn olive (*E. umbellata*) has silver and brown scaly twigs; flowers in early summer with many reddish, rounded drupes in fall and early winter. See **Trees** section for more on Russian olive (*E. angustifolia*).

### **Notes**

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# ***Elaeagnus umbellata***

Autumn olive



Shrubby tree.  
Chris Evans, University of Georgia,  
Bugwood.org



Thorny branch.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Leaves - upper and lower surfaces.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Tubular flower and silvery scaly leaf.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

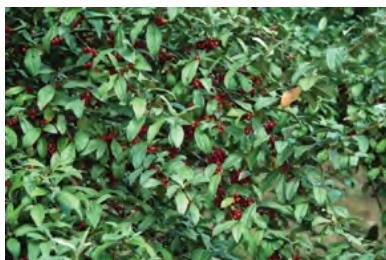
# ***Elaeagnus umbellata***

Autumn olive



Bark.

James H. Miller, U.S. Forest Service,  
Bugwood.org



Foliage.

James Allison, Georgia DNR,  
Bugwood.org



Fruit.

James Allison, Georgia DNR,  
Bugwood.org



Flowers.

Nancy Loewenstein, Auburn University,  
Bugwood.org

***Frangula alnus***

## Glossy buckthorn

FRAL4

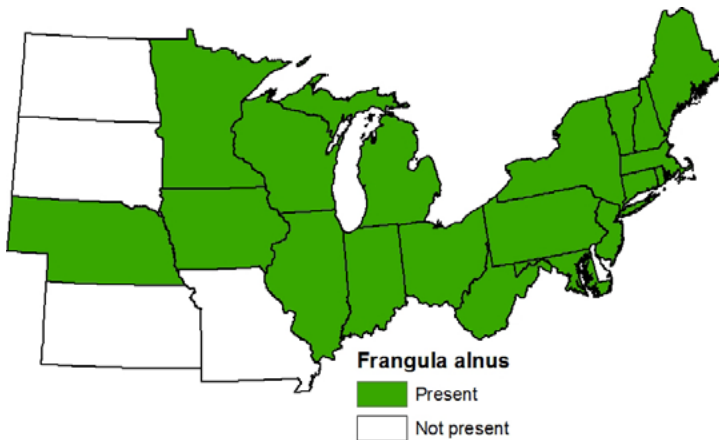
European alder

## Alder buckthorn



Infestation.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



## ***Frangula alnus***

Glossy buckthorn

FRAL4

European alder

Alder buckthorn

**Form:** Understory shrub/tree up to 23 ft (7 m) tall; often with multiple stems at the base.

**Leaves:** Alternate, with several pectinate lateral veins; margins mostly entire (sometimes with some marginal glands); mostly alternate, 1-3 inches (2.5 -7.5 cm) long, usually more than half as wide as long. Leaves stay green well into autumn.

**Flowers/fruit:** Flowers bisexual, unlike most relatives; sepals, petals, and stamens in fives; pale yellow. Fruit red to black with 2-3 seeds.

**Habitat:** Wetlands including acidic bogs, calcareous fens, and sedge meadows. Also does well in upland habitats. Can tolerate full sun to deep shade.

**Other distinguishing features/notes:** Bark is brown with silvery, slightly “corky” lenticels that make it resemble native cherries or plums. Cutting a branch will expose yellow sapwood and orange heartwood. Similar to Carolina buckthorn (*Rhamnus caroliniana*) except not as tall. *R. caroliniana* can get as tall as 39 ft (12 m).

**Winter/early spring identification tip:** Buds are naked (common buckthorn and alderleaf buckthorn have scaly buds). Additionally, common buckthorn has opposite leaves with serrate margins. Carolina buckthorn also has naked buds, but Carolina buckthorn is taller than glossy buckthorn.

### **Notes**

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## ***Frangula alnus***

Glossy buckthorn

European alder

Alder buckthorn



Lateral veins on leaf.

© John M. Randall, The Nature Conservancy, used with permission.



Fruit.

Elizabeth J. Czarapata, used with permission.



Lenticels on bark.

Elizabeth J. Czarapata, used with permission.

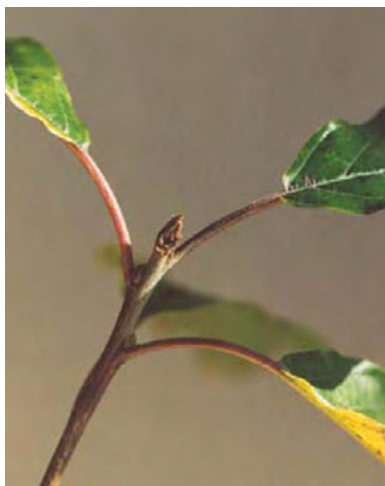


Foliage.

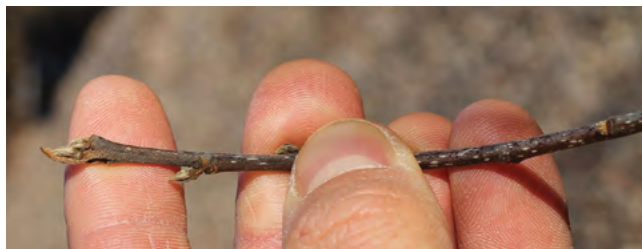
Kelly Kearns, Wisconsin DNR, used with permission.

## ***Frangula alnus***

Glossy buckthorn  
European alder  
Alder buckthorn



Naked bud.  
Elizabeth J. Czarapata, used with  
permission.



Twig.  
Rob Routledge, Sault College, Bugwood.org



# *Ligustrum vulgare*

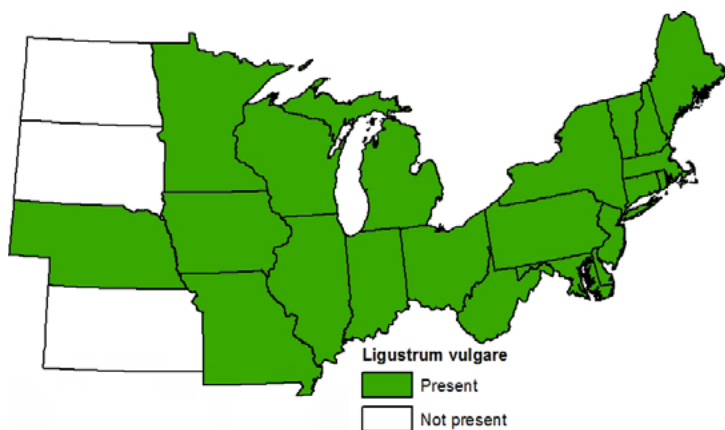
European privet

LIVU



Infestation.

Elizabeth J. Czarapata, used with permission.



## ***Ligustrum vulgare***

European privet

LIVU

**Form:** Shrub up to 16 ft (5 m) tall. Twigs stiff and minutely pubescent, slender- $\frac{1}{8}$  inch (2 mm) thick or less.

**Leaves:** Dark green, opposite, narrowly elliptical, 1-2 inches (2.5-5 cm) long; firm without being tough and leathery.

**Flowers/fruit:** Small, white flowers in dense panicles; tubular with flaring lobes,  $< \frac{1}{4}$  inch (0.5 cm) wide; corolla tube much longer than lobes. Fruits small black drupes.

**Habitat:** Bottomland forests, thickets, and roadsides.

### **Notes**

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# *Ligustrum vulgare*

European privet



Fruit.  
Kelly Kearns, Wisconsin DNR, used with permission.



Flower panicles.  
Nava Tabak, Invasive Plant Atlas of New England, Bugwood.org



Twigs with fruit.  
Elizabeth J. Czarapata, used with permission.



Twigs with flowers.  
Elizabeth J. Czarapata, used with permission.

# ***Ligustrum vulgare***

European privet



Flower.

Kelly Kearns, Wisconsin DNR, used with permission.



Foliage.

The Dow Gardens Archive,  
[bugwood.org](http://bugwood.org)

## *Lonicera x bella*

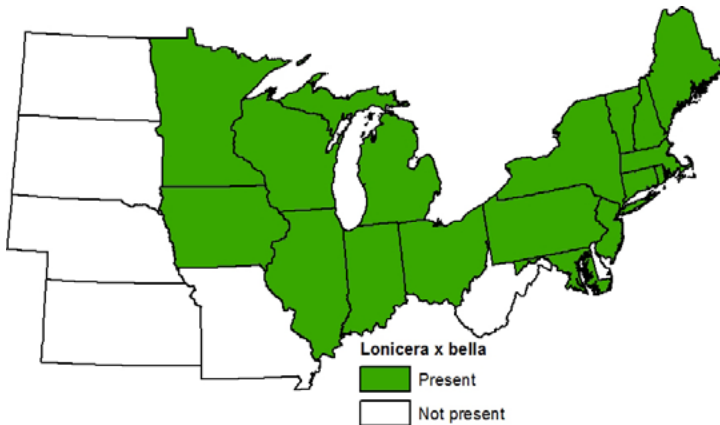
Showy fly honeysuckle

LOBE



Infestation.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



## ***Lonicera ×bella***

Showy fly honeysuckle

LOBE

**Form:** Deciduous, upright, arching-branched shrub up to 20 ft (6 m) tall. Twigs often pubescent, typically hollow.

**Leaves:** Opposite, simple, ovate to oblong, margins entire; sparsely hairy beneath. Sometimes persistent into winter.

**Flowers/fruit:** Flowers paired in leaf axils. Pink turning yellow with age; exterior surface of corolla usually glabrous; on peduncles ~½ inch (5-15 mm) long. Fruit generally a red berry. See appendix 2 for a comparison of nonnative species.

**Habitat:** Open forests, forest edge, pastures, roadsides, and fields.

**Other distinguishing features/notes:** The shrubby native forms of *Lonicera* have white solid pith. The nonnative forms have dark, usually hollow pith. In the NRS region, the most commonly encountered nonnative species are *L. tatarica* and the hybrid *L. ×bella* (a hybrid of *L. morrowii* and *L. tatarica*). Because this is a hybrid, it tends also to be the most variable in terms of pubescence and leaf shape.

### **Notes**

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## ***Lonicera ×bella***

Showy fly honeysuckle



Foliage.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Flowers - color stages.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Fruit.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org

## ***Lonicera xbella***

Showy fly honeysuckle



Flowers.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Hollow twig.

Elizabeth J. Czarapata, used with  
permission.

## *Lonicera maackii*

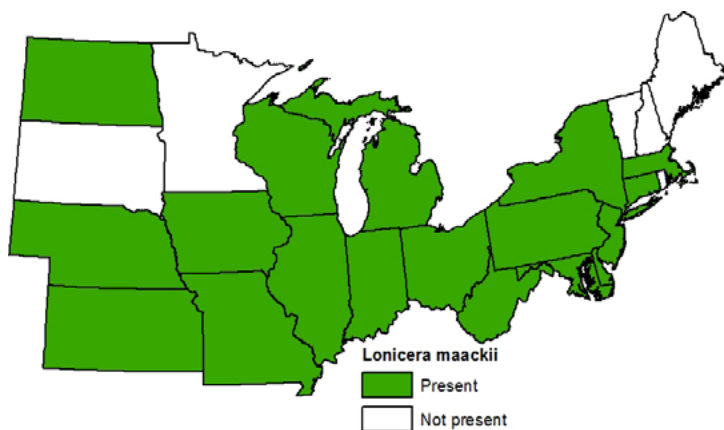
Amur honeysuckle

LOMA6



Infestation.

James H. Miller, U.S. Forest Service, Bugwood.org



# ***Lonicera maackii***

Amur honeysuckle

LOMA6

**Form:** Deciduous, upright, arching-branched shrub up to 16 ft (5 m) tall. Twigs densely pubescent and typically hollow.

**Leaves:** Opposite, petiolate, simple. Petioles tomentose. Blades elliptic to ovate to somewhat lanceolate, acuminate, entire; up to 3½ inches (~9 cm) long and 1½ inches (~4 cm) broad; typically densely pubescent at least along lower veins.

**Flowers/fruit:** Flowers paired, in leaf axils. White, turning yellow with age, outer surface of corolla usually glabrous; peduncles less than ¼ inch (5 mm), shorter than petioles. Berries dark red. See appendix 2 for a comparison of nonnative species.

**Habitat:** Open forests, forest edge, pastures, roadsides, and fields.

**Other distinguishing features/notes:** Generally speaking, the shrubby native forms of *Lonicera* have white solid pith. The nonnative forms have dark, hollow pith. In the NRS region, the most commonly encountered nonnative species are *L. tatarica* and the hybrid *L. ×bella* (a hybrid of *L. morrowii* and *L. tatarica*).

## **Notes**

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# ***Lonicera maackii***

## **Amur honeysuckle**



Bark.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Leaves.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Fruit.  
Chuck Barger, University of Georgia,  
Bugwood.org



Foliage.  
Warner Park Nature Center Archive,  
Bugwood.org

## ***Lonicera maackii***

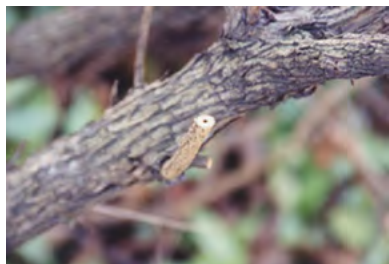
Amur honeysuckle



Flowers and foliage.  
Chris Evans, University of Georgia,  
Bugwood.org



Flowers.  
Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Hollow twig.  
Elizabeth J. Czarapata, used with permission.



## *Lonicera morrowii*

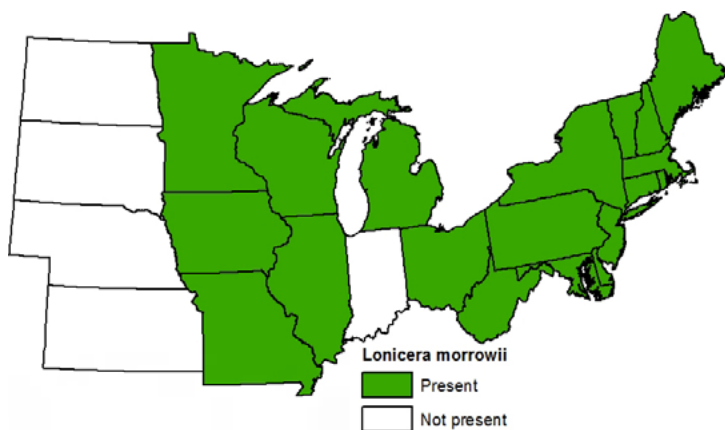
Morrow's honeysuckle

LOMO2



Infestation.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



## ***Lonicera morrowii***

Morrow's honeysuckle

LOMO2

**Form:** Deciduous, upright, arching-branched shrub up to 10 ft (3 m) tall. Twigs pubescent, typically hollow.

**Leaves:** Opposite, simple, ovate to elliptical to oval, margins entire, apex obtuse to acute; ±densely pubescent over the whole undersurface. Sometimes persistent into winter.

**Flowers/fruit:** Flowers paired in leaf axils; white turning yellow with age; on long peduncles, ~½ inch (5-15 mm), outer surface of corolla with scattered hairs. Fruit generally a red or yellow berry. See appendix 2 for a comparison of nonnative species.

**Habitat:** Open forests, forest edge, pastures, roadsides, fields.

**Other distinguishing features/notes:** Generally speaking, the shrubby native forms of *Lonicera* have white solid pith. The nonnative forms have dark usually hollow pith. In the NRS region, the most commonly encountered nonnative species are *L. tatarica* and the hybrid *L. ×bella* (a hybrid of *L. morrowii* and *L. tatarica*).

### **Notes**

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## ***Lonicera morrowii***

### Morrow's honeysuckle



Plant.

© John M. Randall, The Nature Conservancy, used with permission.



Flowers and foliage.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Flower.

Chris Evans, University of Georgia, Bugwood.org



Fruit.

Stacey Leicht, University of Connecticut, Bugwood.org

## ***Lonicera morrowii***

Morrow's honeysuckle



Infestation.

© John M. Randall, The Nature Conservancy, used with permission.



Fruit.

Courtesy Missouri Botanical Plant Finder, used with permission.



Hollow stem.

Elizabeth J. Czarapata, used with permission.

## ***Lonicera tatarica***

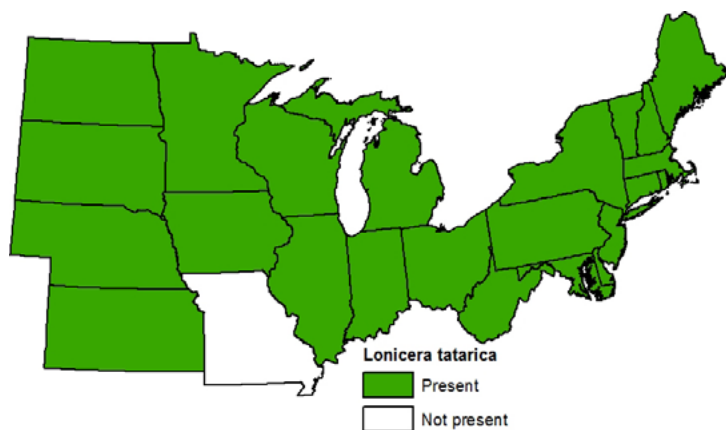
Tatarian honeysuckle

LOTA



Infestation.

Patrick Breen, Oregon State University, Bugwood.org



## ***Lonicera tatarica***

Tatarian honeysuckle

LOTA

**Form:** Deciduous, upright, arching-branched shrubs up to 10 ft (3 m) tall. Twigs glabrous, typically hollow.

**Leaves:** Opposite, simple, ovate to oblong, margins entire, apex acute to obtuse, glabrous except margins, which are ciliate; sometimes persistent into winter.

**Flowers/fruit:** Flowers paired in leaf axils; pink or white, usually not fading to yellow; exterior surface of corolla glabrous; on peduncles ½-1 inch (1.5-2.5 cm) long. Fruit generally a red (rarely yellow) berry. See appendix 2 for a comparison of nonnative species.

**Habitat:** Open forests, forest edge, pastures, roadsides, and fields.

**Other distinguishing features/notes:** Generally speaking, the shrubby native forms of *Lonicera* have white solid pith. The nonnative forms have dark, hollow pith. In the NRS region, the most commonly encountered nonnative species are *L. tatarica* and the hybrid *L. ×bella* (a hybrid of *L. morrowii* and *L. tatarica*).

### **Notes**

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# ***Lonicera tatarica***

## Tatarian honeysuckle



Flowers.  
Patrick Breen, Oregon State University,  
Bugwood.org



Flower.  
Richard Old, XID Services, Inc.,  
Bugwood.org



Fruit.  
Chris Evans, University of Georgia,  
Bugwood.org



Hollow twig.  
Elizabeth J. Czarapata, used with  
permission.

## ***Lonicera tatarica***

Tatarian honeysuckle



Leaves.  
Ohio State Weed Lab Archives, used  
with permission.



Bark.  
Ohio State Weed Lab Archives, used  
with permission.

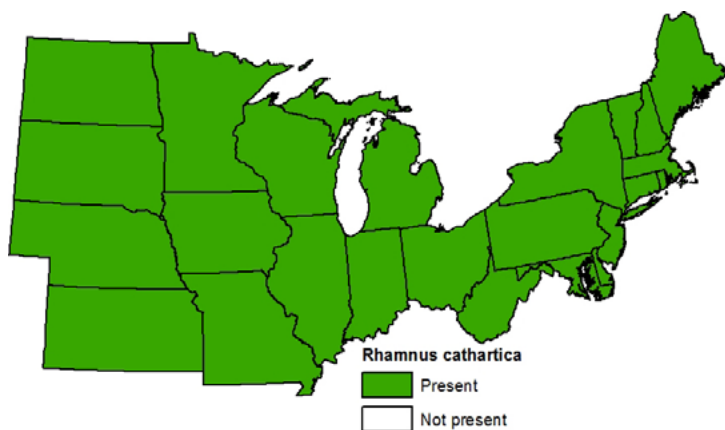
# *Rhamnus cathartica*

Common buckthorn

RHCA3



Infestation.  
Steven Katovich, USDA Forest Service,  
[Bugwood.org](http://Bugwood.org)



## ***Rhamnus cathartica***

Common buckthorn

RHCA3

**Form:** Shrub or small tree up to 23 ft (7 m) tall; often with multiple stems at the base.

**Leaves:** Mostly opposite with 2-4 pairs of lateral veins curving toward leaf apex; margins toothed.

**Flowers:** Unisexual; sepals, petals, and stamens in fours. Fruit black with 4 seeds.

**Habitat:** Forests, savannas, prairies. Thrives on well-drained soils.

**Other distinguishing features/notes:** Thorn-tipped twigs and the yellow inner bark are distinctive characteristics of common buckthorn. Also, other buckthorns have alternate leaves, while common buckthorn has opposite leaves and twigs are often tipped with a spine.

**Similar species:** Native alderleaf buckthorn (*R. alnifolia*) has scaly buds but alternate leaves with 5-8 pairs of veins, sepals and stamens in fives, no petals, and black fruit with 3 seeds.

### **Notes**

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# ***Rhamnus cathartica***

Common buckthorn



Bark.  
Elizabeth J. Czarapata, used with permission.



Foliage and fruit.  
Elizabeth J. Czarapata, used with permission.



Flowers.  
Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Foliage.  
Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

# ***Rhamnus cathartica***

## **Common buckthorn**



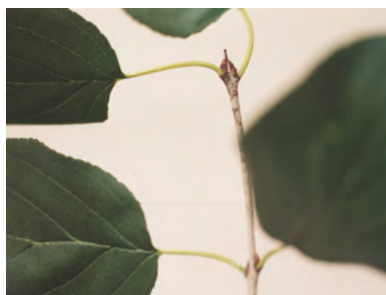
Fruit.

Kelly Kearns, Wisconsin DNR, used with permission.



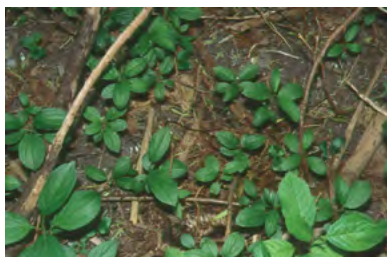
Seedling.

Elizabeth J. Czarapata, used with permission.



Thorn-tipped twig.

Elizabeth J. Czarapata, used with permission.



Seedlings.

Kelly Kearns, Wisconsin DNR, used with permission.



Foliage.

Chris Evans, University of Georgia,  
Bugwood.org



## *Rosa multiflora*

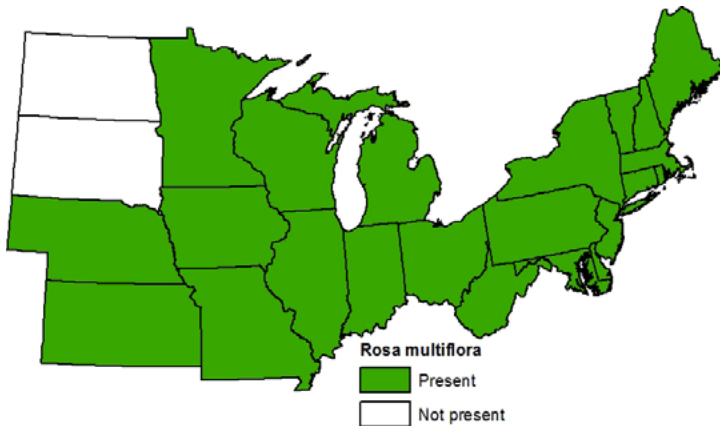
## Multiflora rose

ROMU



Infestation.

James H. Miller, U.S. Forest Service, Bugwood.org



## ***Rosa multiflora***

Multiflora rose

ROMU

**Form:** Shrubs with slender, arching or trailing, flowering stems up to 10 ft (3 m) long.

**Leaves:** Leaf stipules conspicuously pectinately toothed (deeply fringed) and glandular with 5-11 leaflets.

**Flowers/fruits:** White, small,  $\sim\frac{1}{2}$  inch (about 1 cm wide); styles united and protruding from the hypanthium (most roses have separate styles and only the stigmas are visible above the hypanthium); not to be confused with protruding stamens. Rose hips,  $\sim\frac{1}{2}$ - $\frac{3}{4}$  inch (0.5 -1.5 cm), ripen to a glossy red.

**Habitat:** Fields, forests, prairies, some wetlands, and roadsides.

**Other distinguishing features/notes:** Most rose species in NRS have pink flowers; multiflora rose (*R. multiflora*) is one of just a few species that have white flowers. Also, fringed stipules extend about half the length of the leafstalks. *R. rugosa*, the Japanese rose, is also beginning to show invasive tendencies in coastal areas and waterways. This species has rugose leathery leaves with deeply indented veins, purplish-pink flowers, and petals are often doubled.

### **Notes**

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# ***Rosa multiflora***

## Multiflora rose



Foliage.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowers.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Fringed stipule.  
Chris Evans, University of Georgia,  
Bugwood.org



Fruit.  
Elizabeth J. Czarapata, used with  
permission.

## ***Rosa multiflora***

Multiflora rose



Stipule - close up.

James H. Miller, U.S. Forest Service, Bugwood.org



Foliage.

Ted Bodner, Southern Weed Science Society,  
Bugwood.org

# *Spiraea japonica*

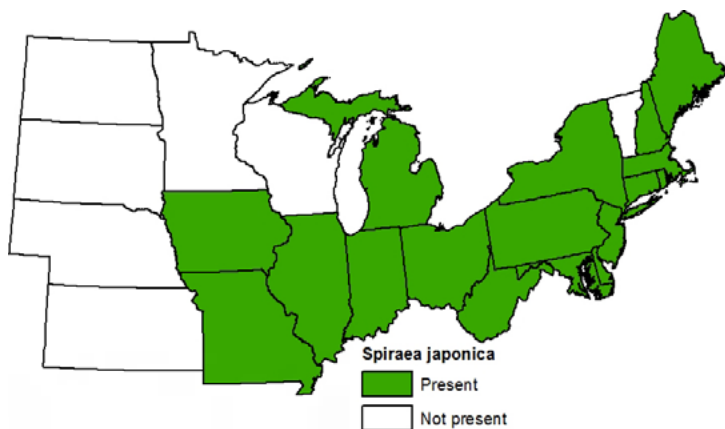
Japanese meadowsweet

SPJA



Infestation.

UConn Plant Database, [www.hort.uconn.edu/plants](http://www.hort.uconn.edu/plants), Bugwood.org



# ***Spiraea japonica***

Japanese meadowsweet

SPJA

**Form:** Perennial, deciduous shrub in rose family. Grows 4-6 ft (1.2-1.8 m) tall and about the same in width. Naturally variable in form; many varieties in the horticultural trade.

**Leaves:** Alternate, serrate, generally lanceolate to ovate, apex acute, ½-3 inches (1-7.5 cm) long.

**Flowers/fruit:** Rosy-pink, borne at the tips of branches in flat-topped clusters, 2 inches (5 cm) wide. Fruits about 1/8 inch (2.5 mm) long; small lustrous capsules.

**Habitat:** Adapted to disturbed areas; tolerates a wide range of soil conditions and grows in full sun to partial shade. Commonly found along streams and rivers, forest edges, roadsides, and in successional fields and power line rights-of-way.

**Similar species:** Japanese meadowsweet (*S. japonica*) is similar to Virginia meadowsweet (*S. virginiana*), but has gray-hairy twigs and long-pointed, narrow, toothed leaves.

## **Notes**

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# *Spiraea japonica*

Japanese meadowsweet



Flowers.

James H. Miller, U.S. Forest Service,  
Bugwood.org



Stems.

James H. Miller, U.S. Forest Service,  
Bugwood.org



Plant.

James H. Miller, U.S. Forest Service,  
Bugwood.org



Leaves.

James H. Miller, U.S. Forest Service,  
Bugwood.org

## ***Spiraea japonica***

Japanese meadowsweet



Flowers.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flower clusters.  
The Dow Gardens Archive, Bugwood.org



Fruit.  
James H. Miller, U.S. Forest Service,  
Bugwood.org

## *Viburnum opulus*

European cranberrybush

VIOP

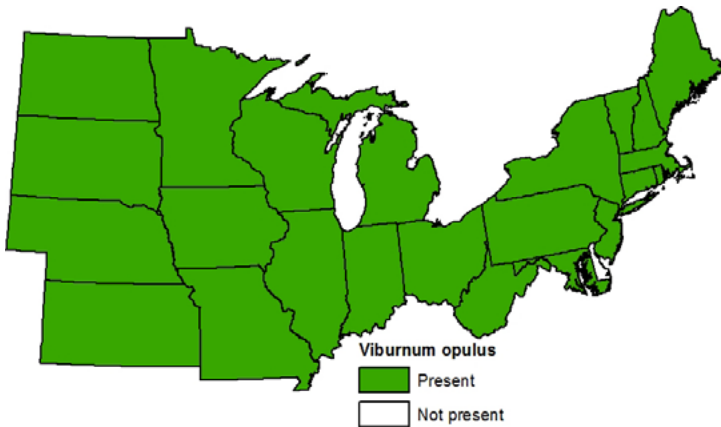
Snowball bush

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Infestation.

The Dow Gardens Archive, Bugwood.org



## ***Viburnum opulus***

European cranberrybush

VIOP

Snowball bush

**Form:** Deciduous shrub 3-16 ft (1-5 m) tall.

**Leaves:** Opposite, palmately lobed and veined (maple-like); margins with a few coarse teeth; pubescent on abaxial surface (at least on veins); petioles with sessile glands that are concave and wider than high.

**Flowers/fruit:** White with narrow to broadly campanulate corollas, in large clusters; outer flowers somewhat larger and with broadly flaring corollas. Fruit a reddish drupe about ½ inch (1 cm) in diameter.

**Habitat:** Moist to wet soils along lake margins, slopes, or open woods; also found in cultivated fields.

**Similar species:** Cranberry viburnum or highbush-cranberry (*Viburnum trilobum* or *V. opulus* var. *americanum*) has stalked petiole glands that are rounded and higher than wide.

### **Notes**

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## ***Viburnum opulus***

European cranberrybush  
Snowball bush



Flowers.

The Dow Gardens Archive, Bugwood.org



Fruit.

The Dow Gardens Archive, Bugwood.org



Fruit.

Richard Webb, self-employed  
horticulturist, Bugwood.org



Flowers.

Richard Webb, self-employed  
horticulturist, Bugwood.org

## ***Viburnum opulus***

European cranberrybush  
Snowball bush



Flowers.

Iain Harrison, [images.swinburne.edu.au/handle/1111.1/193](https://images.swinburne.edu.au/handle/1111.1/193),  
Creative Commons, BY-NC-ND



## ***Celastrus orbiculatus***

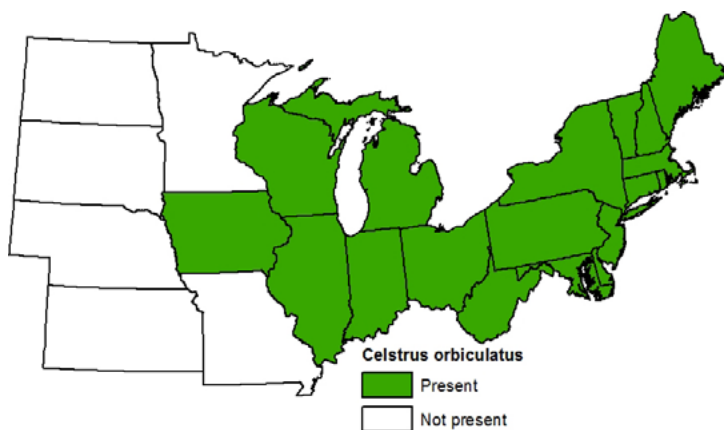
Asian bittersweet

CEOR7



Infestation.

Kelly Kearns, Wisconsin DNR, used with permission.



## ***Celastrus orbiculatus***

Asian bittersweet

CEOR7

**Form:** Deciduous twining vine up to 65 ft (20 m) long. Stems can measure up to 4 inches (10 cm) in diameter; olive drab with many raised, whitish lenticels.

**Leaves:** Alternate, mostly oval, sometimes slightly tapering to petiole, margins with broadly rounded teeth.

**Flowers/fruit:** Flowers unisexual (and plants dioecious); bloom in spring. Fruits 3-valved capsule; seeds with a fleshy red aril; has flowers/fruits in small (2 or 3, maybe 4) axillary clusters.

**Habitat:** Thickets, fence rows, meadows, forest openings, margins, and roadsides.

**Similar species:** Similar to American bittersweet (*C. scandens*) except leaves are nearly circular and it has numerous flowers in terminal panicles.

### **Notes**

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# ***Celastrus orbiculatus***

Asian bittersweet



Leaves and fruit.

Kelly Kearns, Wisconsin DNR, used with permission.



Infestation.

Kelly Kearns, Wisconsin DNR, used with permission.



Oval shaped leaves.

Elizabeth J. Czarapata, used with permission.



Twining vine.

James H. Miller,  
U.S. Forest Service,  
Bugwood.org

# ***Celastrus orbiculatus***

Asian bittersweet



Leaves.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Flower.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Fruit.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Vine.

James H. Miller, U.S. Forest Service, Bugwood.org



Vine.

Chris Evans, University of Georgia, Bugwood.org

# ***Cynanchum louiseae***

(Syn.: *Vincetoxicum nigrum*)

Black swallow-wort

CYLO11

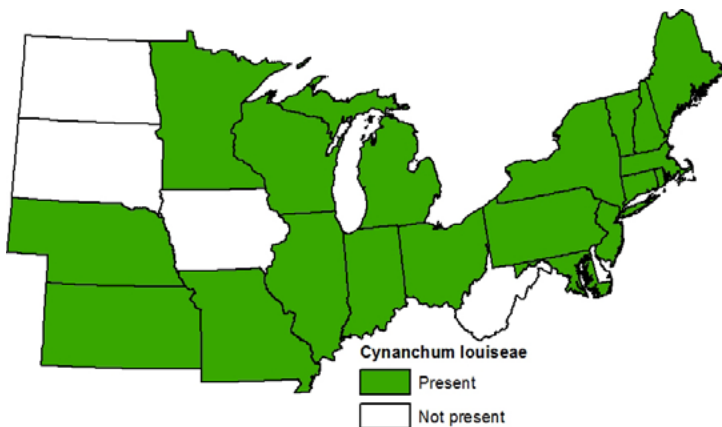
Louise's swallow-wort

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Infestation.

Kelly Kearns, Wisconsin DNR, used with permission.



# ***Cynanchum louiseae***

(Syn.: ***Vincetoxicum nigrum***)

Black swallow-wort

CYLO11

Louise's swallow-wort

**Form:** Scrambling or climbing vine up to 6½ ft (2 m) long. Stems mostly very slender.

**Leaves:** Opposite, narrowly to broadly ovate; apex long-tapering or acute.

**Flowers/fruit:** Few-flowered clusters axillary to the leaves; flowers small, 5-petaled, star-shaped; corolla purple to purplish-black. Milkweed-like fruits 1½-3 inches (4-7 cm) long and slender, with pubescent seeds.

**Habitat:** Moist, sunny places including woods.

**Other distinguishing features/notes:** Also known as *Vincetoxicum nigrum*.

**Similar species:** European or pale swallow-wort (*Cynanchum rossicum*) has creamy pink to reddish brown flowers. Its twining habit and opposite, smooth leaves with somewhat shiny or reflective quality distinguish *Cynanchum louiseae* from other native and introduced species in the northeastern quarter of the United States and adjacent Canada.

## **Notes**

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***Cynanchum louiseae***  
(Syn.: *Vincetoxicum nigrum*)

Black swallow-wort  
Louise's swallow-wort



Milkweed-like fruit.  
Kelly Kearns, Wisconsin DNR, used with permission



Leaves.  
Kelly Kearns, Wisconsin DNR, used with permission.



Leaves and flowers.  
Elizabeth J. Czarapata, used with permission.

***Cynanchum louiseae***  
(Syn.: *Vincetoxicum nigrum*)

Black swallow-wort  
Louise's swallow-wort



Foliage.  
Kelly Kearns, Wisconsin DNR, used with permission.



Climbing vine.  
Elizabeth J. Czarapata, used with permission.



Flowers.  
Kelly Kearns, Wisconsin DNR, used with permission.

# ***Cynanchum rossicum***

(Syn.: *Vincetoxicum hirundinaria*)

European swallow-wort

CYRO8

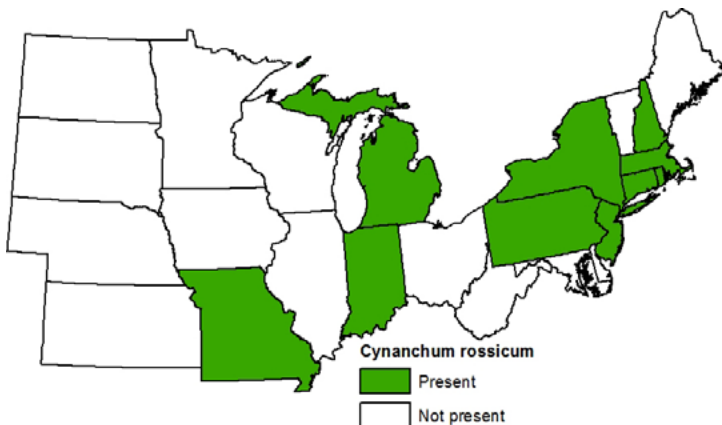
Pale swallow-wort

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Infestation.

Leslie J. Mehrhoff, University of Connecticut,  
Bugwood.org



# ***Cynanchum rossicum***

(Syn.: ***Vincetoxicum hirundinaria***)

European swallow-wort

CYRO8

Pale swallow-wort

**Form:** Perennial, twining, herbaceous vine up to 6½ ft (2 m) long.

**Leaves:** Oval shaped with pointed tips, 3-4 inches (7-10 cm) long by 2-3 inches (5-7 cm) wide, occurring in pairs along the stem.

**Flowers/fruit:** Few-flowered clusters axillary to leaves; small, 5-petaled, star shaped, creamy pink to pale maroon; about ¼ inch (0.6 cm) across. Milkweed-like fruits are nearly identical to black swallow-wort.

**Habitat:** Roadsides, fields, edges of woods, rocky areas.

**Other distinguishing features/notes:** Also known as *Vincetoxicum hirundinaria*.

**Similar species:** Black swallow-wort (*Cynanchum louiseae*) has purple to purplish black flowers and does not have rhizomes. Honeyvine (*Cynanchum leave*), a native species, has white flowers; leaves have distinct heart-shaped bases and do not have shiny surfaces. The twining habit and opposite, smooth leaves with their somewhat shiny or reflective quality distinguish black swallow-wort from other native and introduced species in the northeastern quarter of the United States and adjacent Canada.

## **Notes**

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# ***Cynanchum rossicum***

(Syn.: ***Vincetoxicum hirundinaria***)

European swallow-wort

Pale swallow-wort



Star-shaped flowers.

© John M. Randall, The Nature Conservancy, used with permission.



Fruit.

© John M. Randall, The Nature Conservancy, used with permission.



Seeds.

Leslie J. Mehrhoff, University of Connecticut,  
Bugwood.org

## ***Cynanchum rossicum***

(Syn.: ***Vincetoxicum hirundinaria***)

European swallow-wort

Pale swallow-wort



Infestation.

Leslie J. Mehrhoff, University of  
Connecticut, Bugwood.org



Plants.

Leslie J. Mehrhoff, University of Connecticut,  
Bugwood.org



***Hedera helix***

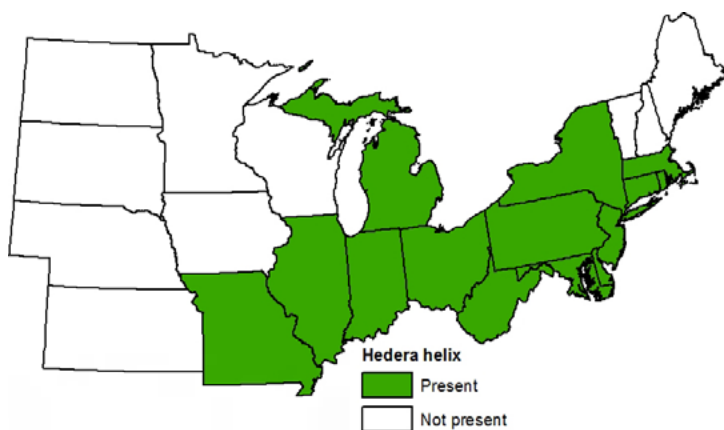
English ivy

HEHE



Infestation.

David J. Moorhead, University of Georgia,  
Bugwood.org



# ***Hedera helix***

English ivy

HEHE

**Form:** Evergreen climbing vine. Stems attach to the bark of trees, brickwork, and other surfaces by way of numerous, small root-like structures that exude a glue-like substance. Older vines are known to reach 12 inches (30 cm) in diameter. Young shoots densely covered with stellate hairs.

**Leaves:** Alternate, dark green, waxy, somewhat leathery. Many recognized leaf forms, the most common a 3-lobed leaf with a heart-shaped base. Leaves in full sun are often unlobed, oval, and have wedge-shaped bases.

**Flowers/fruit:** Umbrella-like clusters of small, greenish-white flowers bloom in the fall. Fruit is black with a fleshy outer covering enclosing one to a few hard, stone-like seeds. Fruiting occurs in spring.

**Habitat:** Woodlands, forest edges, fields, hedgerows, coastal areas, salt marsh edges, and other upland areas, especially where some soil moisture is present. Does not grow well in extremely wet conditions and is often associated with some form of land disturbance.

## **Notes**

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# ***Hedera helix***

## English ivy



Flower.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Fruit.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



3-lobed leaves.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Unlobed leaves.  
Chris Evans, University of Georgia,  
Bugwood.org

# ***Hedera helix***

English ivy



Vine.

Chuck Barger, University of Georgia,  
Bugwood.org



Leaves.

Jan Samanek, State Phytosanitary  
Administration, Czechia, used with  
permission.



Variegated leaves.

Forest and Kim Starr,  
U.S. Geological Survey

# *Lonicera japonica*

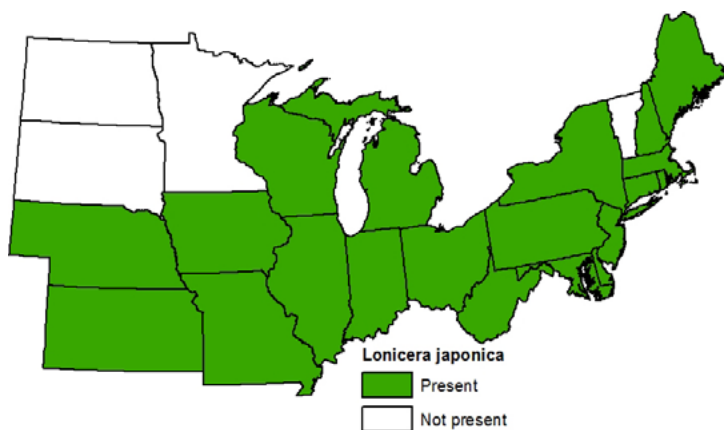
Japanese honeysuckle

LOJA



Infestation.

Jil Swearingen, USDI National Park Service, Bugwood.org



## ***Lonicera japonica***

Japanese honeysuckle

LOJA

**Form:** Trailing or climbing vine up to 80 ft (25 m) long. Young stems finely pubescent; older stems reddish-brown and the bark sometimes shredding.

**Leaves:** Opposite, mostly ovate, apex with an abrupt tooth or cusp; margins entire, but can be lobed in early spring; undersides appear whitish. Semi-evergreen.

**Flowers/fruit:** Axillary pairs on a bracted stalk. Flowers white to pale cream. Corolla tube approximately equals the lobes. Blooms in springtime. Fruit a black berry.

**Habitat:** Disturbed woods, fields, thickets, and forest edges.

**Other distinguishing features/notes:** This looks similar to the native vine *Lonicera hirsuta* (hairy honeysuckle) when not in flower. However hairy honeysuckle has much broader leaves and once *L. hirsuta* begins flowering, it forms distinctive connate terminal leaves and has yellow flowers. If not in flower yet, check the site condition. *L. japonica* will be found on disturbed sites. If berries are present, *L. hirsuta* has red ones.

### **Notes**

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# *Lonicera japonica*

Japanese honeysuckle



Flowers.  
Chuck Bargeron, University of Georgia,  
Bugwood.org



Fruit.  
Chuck Bargeron, University of Georgia,  
Bugwood.org



Pairs of flowers.  
Elizabeth J. Czarapata, used with  
permission.



Flowers.  
Chuck Bargeron, University of Georgia, Bugwood.org

# ***Lonicera japonica***

Japanese honeysuckle



Leaves and fall fruit.

Ted Bodner, Southern Weed Science Society, Bugwood.org



Spring leaves with wavy margins.

Ted Bodner, Southern Weed Science Society, Bugwood.org



Stem - shredding bark.

James H. Miller, U.S. Forest Service, Bugwood.org



Trailing vine.

James H. Miller, U.S. Forest Service, Bugwood.org

# *Alliaria petiolata*

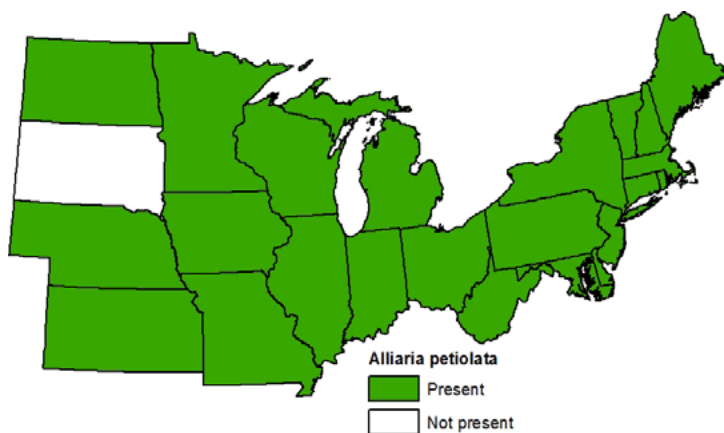
Garlic mustard

ALPE4



Infestation.

Victoria Nuzzo, Natural Area Consultants, Bugwood.org



## ***Alliaria petiolata***

Garlic mustard

ALPE4

**Form:** Herbaceous biennial plant 1½ -6½ ft (0.5-2 m) tall; glabrous or with a few simple hairs. First-year plants appear as a rosette of green leaves close to the ground, which remain throughout the winter developing into mature plants the following spring.

**Leaves:** Deltoid or cordate (lower leaves often rounded or reniform); margins coarsely toothed.

**Flowers/fruit:** Flowers white. Fruit a silique (pod), 1½-2½ inches (4-6 cm) long, 4-angled, narrowly linear with a conspicuous midnerve.

**Habitat:** Moist, shaded soil on river flood plains, forests, roadsides, forest edge, along trails, and in forest openings.

**Other distinguishing features/notes:** Smells of garlic when crushed.

### **Notes**

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# ***Alliaria petiolata***

Garlic mustard



First-year plant.  
Elizabeth J. Czarapata, used with permission.



Second-year plant.  
Elizabeth J. Czarapata, used with permission.



Flowers.  
Elizabeth J. Czarapata, used with permission.

# ***Alliaria petiolata***

Garlic mustard



Infestation.

Steven Katovich, U.S. Forest Service, Bugwood.org



Fruit.

Chris Evans, University of Georgia, Bugwood.org



Flowers in May.

Jody Shimp, Illinois DNR, Bugwood.org



## ***Centaurea biebersteinii***

(Syn.: ***Centaurea stoebe subsp. micranthos***)

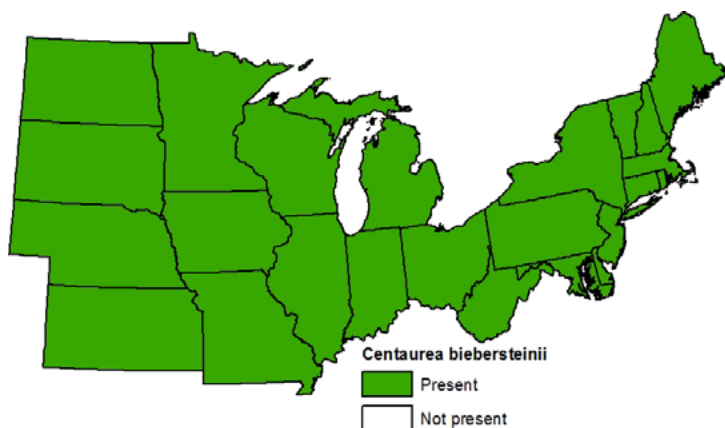
Spotted knapweed

CEBI2



Infestation.

Elizabeth J. Czarapata, used with permission.



## ***Centaurea biebersteinii***

(Syn.: ***Centaurea stoebe subsp. micranthos***)

Spotted knapweed

CEBI2

**Form:** Herbaceous plant 1½ -5 ft (0.5-1.5 m) tall.

**Leaves:** Pinnatifid with narrow lobes (wormwood-like), sparsely pubescent.

**Flowers/fruit:** Pink-purple flowers in thistle-like heads. Heads discoid but marginal flowers enlarged and with irregular corollas. Involucral bracts overlapping in several layers, upper margins darkly fringed, often pinkish. Fruits achenes <¼ inch (2.5-3.5 mm) long, pale brown to blackish.

**Habitat:** Fields, roadsides, wasteplaces, prairies, oak and pine barrens, dunes, and sandy ridges.

**Similar species:** Other species of invasive *Centaurea* are beginning to be found in forested areas: *C. jacea* (brownray knapweed) and *C. <sup>x</sup>moncktonii* (meadow knapweed).

**Online identification resources:** <http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist.aspx>

### **Notes**

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## ***Centaurea biebersteinii***

(Syn.: ***Centaurea stoebe subsp. micranthos***)

Spotted knapweed



Pink-purple flowers.  
Elizabeth J. Czarapata, used with permission.



Thistle-like flower head.  
Cindy Roche, Bugwood.org



Pinnatifid leaves.  
Elizabeth J. Czarapata, used with permission.



Flower.  
Kelly Kearns, Wisconsin DNR, used with permission.

***Centaurea biebersteinii***  
(Syn.: ***Centaurea stoebe subsp. micranthos***)

Spotted knapweed



Plants.  
Cindy Roche, Bugwood.org



Seeds.  
Barry Rice, sarracenia.com, Bugwood.org

# *Cirsium arvense*

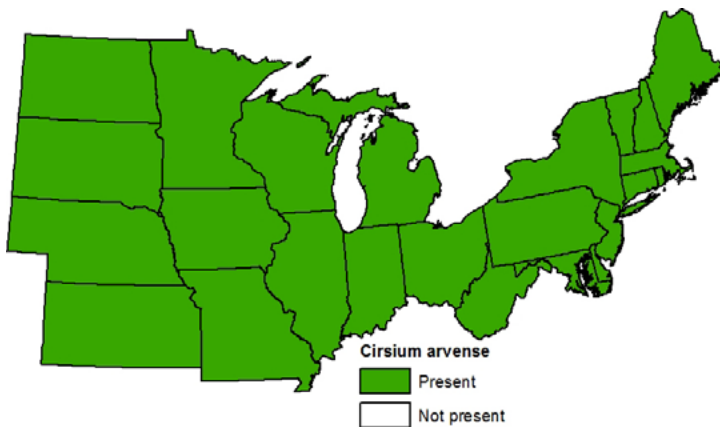
Canada thistle

CIAR4



Infestation.

UAF Cooperative Extension Archives, University of Alaska -  
Fairbanks, Bugwood.org



## ***Cirsium arvense***

Canada thistle

CIAR4

**Form:** Dioecious perennial 1-4 ft (0.3-1.2 m) tall; plant nearly glabrous to sparsely hairy. Deep-seated creeping roots.

**Leaves:** Alternate with a basal rosette, oblong, and irregularly lobed with very prickly margins. Green on both sides, glabrous to pubescent underneath. Stems ridged and hairy.

**Flowers/fruit:** Purple to occasionally white; heads up to ½ inch (1.3 cm) in diameter, discoid, and 1 inch (2.5 cm) or less high. Fruit is an achene ⅛-½ inch (2.5-4 mm) long with a feathery pappus attached to the apex (which lets it float through the air).

**Habitat:** Open habitats including prairies, savannas, fields, pastures, wet meadows, and open forests.

### **Notes**

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# ***Cirsium arvense***

Canada thistle



Flower.  
Chris Evans, University of Georgia,  
Bugwood.org



Prickly leaf margins.  
Mary Ellen (Mel) Harte, Bugwood.org



Flowers.  
Chris Evans, University of Georgia,  
Bugwood.org



Flowers.  
Chris Evans, University of Georgia,  
Bugwood.org

# ***Cirsium arvense***

## **Canada thistle**



Foliage.

Mary Ellen (Mel) Harte, Bugwood.org



White flowers.

Mary Ellen (Mel) Harte, Bugwood.org



Purple and white flowers.

Steve Dewey, Utah State University,  
Bugwood.org



Basal rosette.

Ohio State Weed Lab, The Ohio State  
University, Bugwood.org



Plant.

Steve Dewey, Utah State University,  
Bugwood.org

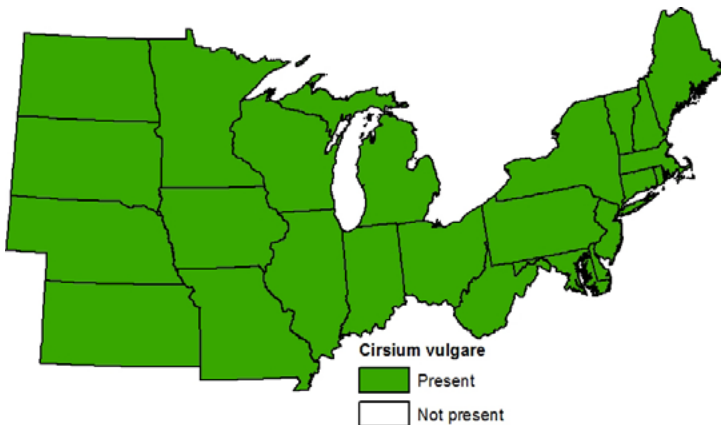
# *Cirsium vulgare*

Bull thistle

CIVU



Infestation.  
Eric Coombs, Oregon Department of  
Agriculture, Bugwood.org



# ***Cirsium vulgare***

Bull thistle

CIVU

**Form:** Biennial herb up to 6½ ft (2 m) tall. Erect and bushy; stem stout, often branched, and hairy; conspicuously spiny; winged by the decurrent leaf bases.

**Leaves:** Oblong to lanceolate; green with coarse hairs on upper side, grayish-green with woolly gray hairs on underside. Long, pointed, yellow spines extend from the leaf blade at midrib and at each lobe. Leaf bases extend downward on stem forming long prickly wings.

**Flowers/fruit:** Purple, 1-2 inches (2.5-5 cm) in diameter, densely discoid borne singly at the tip of a stem. Fruits are achenes, light brown, usually with darker streaks, <¼ inch (3-4.5 mm) long, with a feathery pappus at the apex.

**Habitat:** Capable of invading fields, pastures, wastelands, and along roadsides, but will not survive in cultivated fields. Not typically found on sand or soils with high humus content and is absent from pure clay soils. Does not grow well in shade and drought conditions.

**Similar species:** Bull thistle differs from Canada thistle, (*Cirsium arvense*), in that leaves are pubescent on both sides, while those of Canada thistle are pubescent only on the lower side. Flower bracts of bull thistle have spines, in contrast to those of Canada thistle, which are merely prickly.

## **Notes**

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# *Cirsium vulgare*

## Bull thistle



Seedling.  
Utah State University Archives,  
Bugwood.org



Basal rosette.  
Michael Shephard, U.S. Forest Service,  
Bugwood.org



Conspicuous spines.  
Steve Dewey, Utah State University,  
Bugwood.org



Coarse hairs.  
Steve Dewey, Utah State University,  
Bugwood.org



Flower. Note spiny bract.  
Loke T. Kok, Virginia Polytechnic  
Institute and University, Bugwood.org



# ***Cirsium vulgare***

Bull thistle



Seed head.

Ohio State Weed Lab Archive, The Ohio State University



Flower.

Forest and Kim Starr,  
U.S. Geological Survey



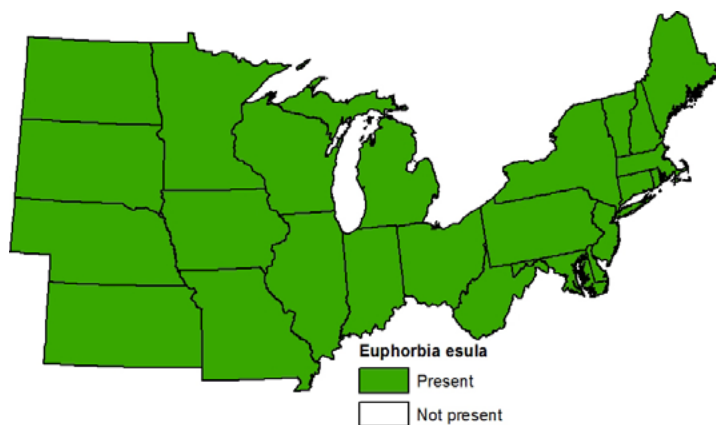
***Euphorbia esula***  
(Syn.: *Euphorbia virgata*)

Leafy spurge

EUES



Infestation.  
William M. Ciesla, Forest Health  
Management International, Bugwood.org



***Euphorbia esula***  
(Syn.: ***Euphorbia virgata***)

Leafy spurge

EUES

**Form:** Herbaceous plant up to 3½ ft (1 m) tall; vigorously colonial.

**Leaves:** Linear to very narrowly elliptical, <½ inch (<1 cm) wide, essentially 1-veined, mostly alternate but those in and near the inflorescence opposite or whorled.

**Flowers/fruit:** Floral bracts (often mistaken for petals) broadly oval, greenish-yellow; carpels apparently stalked, but actually these are individual flowers.

**Habitat:** Roadsides and wasteplaces, stream valleys, open woodlands, and fields.

**Similar species:** Resembles butter-and-eggs (*Linaria vulgaris*). Leafy spurge (*E. esula*) exudes a milky sap when leaves or stem are broken while *L. vulgaris* does not.

**Notes**

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***Euphorbia esula***  
(Syn.: ***Euphorbia virgata***)

Leafy spurge



Greenish-yellow flowers.  
Elizabeth J. Czarapata, used with permission.



Floral bracts.  
Elizabeth J. Czarapata, used with permission.



Plant.  
© John M. Randall, The Nature Conservancy, used with permission.

***Euphorbia esula***  
(Syn.: ***Euphorbia virgata***)

Leafy spurge



Plant.  
William M. Ciesla, Forest Health  
Management International, Bugwood.org



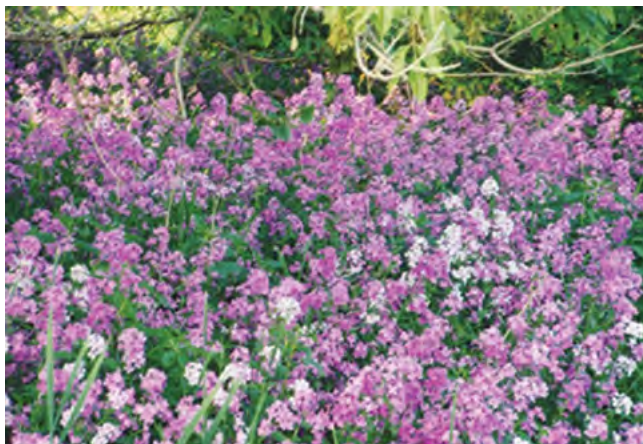
Young plant.  
Norman E. Rees, USDA Agricultural  
Research Service, Bugwood.org

## *Hesperis matronalis*

Dame's rocket

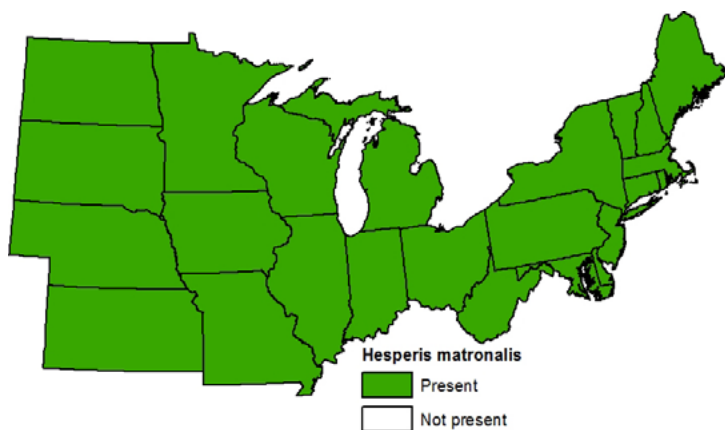
HEMA3

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Infestation.

Elizabeth J. Czarapata, used with permission.



## ***Hesperis matronalis***

Dame's rocket

HEMA3

**Form:** Herbaceous biennial or perennial plant 2-3 ft (0.6-1 m) tall.

**Leaves:** Pubescent with both simple (especially on upper surface) and branched (especially on lower surfaces) hairs; margins dentate.

**Flowers/fruit:** Purplish, fragrant flowers with 4 sepals, petals and stamens. Fruit a silique, 2-5 inches (5-12 cm) long, somewhat angular, lumpy from underlying seeds; seeds in 1 row.

**Habitat:** Along roads, open woods, and moist bottom lands.

### **Notes**

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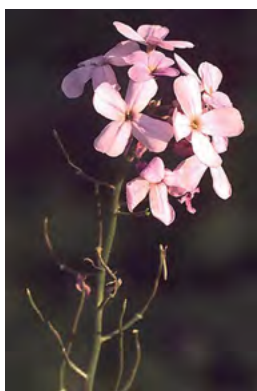


# ***Hesperis matronalis***

Dame's rocket



Flowers.  
Kelly Kearns, Wisconsin DNR, used with permission.



Flowers.  
Elizabeth J. Czarapata, used with permission.



Plant.  
Kelly Kearns, Wisconsin DNR, used with permission.



Rosette leaves.  
Elizabeth J. Czarapata, used with permission.

## ***Hesperis matronalis***

Dame's rocket



Foliage.

Mark Frey, The Presidio Trust,  
Bugwood.org



Foliage.

Mark Frey, The Presidio Trust,  
Bugwood.org

## ***Lysimachia nummularia***

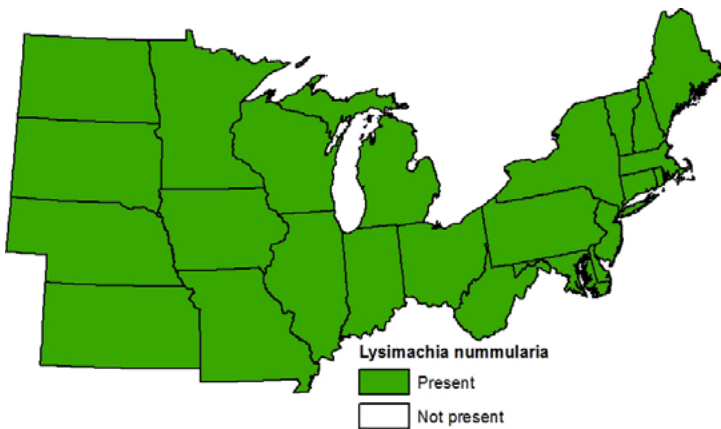
Creeping jenny  
moneywort

LYNU



Infestation.

Richard Old, XID Services, Inc., Bugwood.org



## ***Lysimachia nummularia***

Creeping jenny  
moneywort

LYNU

**Form:** Creeping perennial plant 6-24 inches (15-60 cm) long, rooting at nodes. Often forms mats.

**Leaves:** Opposite or whorled, oval,  $\frac{1}{2}$ -1 inch (1-2.5 cm) long. Glabrous, fleshy, and somewhat cordate at the base.

**Flowers/fruit:** Flowers May-August. Yellow flowers about 1 inch (2.5 cm) wide, long stalked, solitary in the axils. Fruit a capsule.

**Habitat:** Streambanks, river bottoms, ditches, and roadsides.

### **Notes**

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## ***Lysimachia nummularia***

Creeping jenny  
moneywort



Flowers.  
Richard Old, XID Services, Inc.,  
Bugwood.org



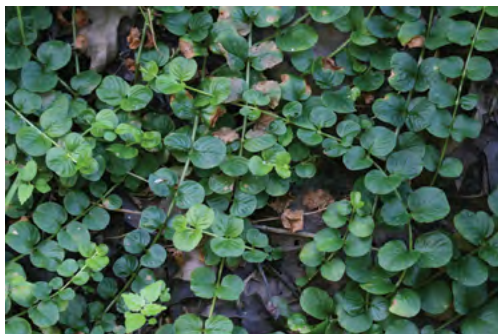
Leaves.  
Richard Old, XID Services, Inc.,  
Bugwood.org



Plants.  
Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

## ***Lysimachia nummularia***

Creeping jenny  
moneywort



Plants.

Chris Evans, University of Georgia, Bugwood.org



Plants.

© Mandy Tu, The Nature Conservancy, used with permission.



Plants.

© Mandy Tu, The Nature Conservancy, used with permission.



# *Lythrum salicaria*

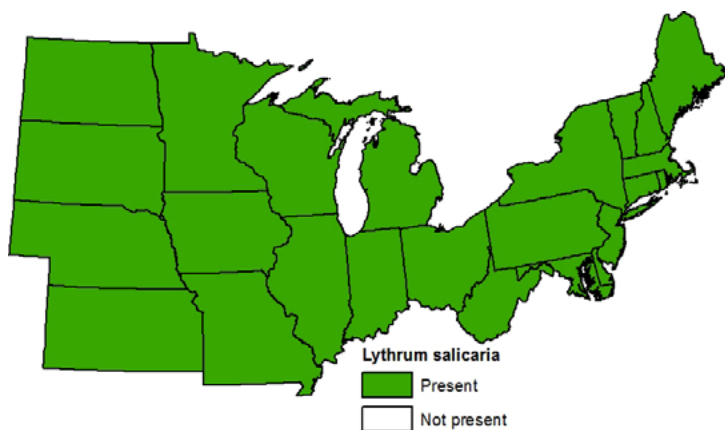
Purple loosestrife

LYSA2



Infestation.

Eric Coombs, Oregon Department of Agriculture, Bugwood.org



## ***Lythrum salicaria***

Purple loosestrife

LYSA2

**Form:** Perennial plant 3-10 ft (1-3 m) tall, numerous 5- or 6-sided woody, square stems arising from a single rootstock.

**Leaves:** Opposite or whorled, lance-shaped, sessile, heart-shaped or rounded at the base.

**Flowers/fruit:** Magenta, dense flower spikes. Individual flowers have 5-7 petals. Fruit a capsule.

**Habitat:** Easily reproduces vegetatively. Capable of invading many wetland types, including freshwater wet meadows, tidal and nontidal marshes, river and stream banks, pond edges, reservoirs, and ditches.

**Similar species:** Winged loosestrife (*Lythrum alatum*) is a rarer plant, usually shorter, 6-24 inches (0.2-0.7 m) tall, with alternate leaves (except for the very lowest). Winged loosestrife flowers are solitary in the upper axils, while purple loosestrife flowers are in dense spikes. The square stems will aid in distinguishing purple loosestrife from other plants with purple flowers, such as vervain.

### **Notes**

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# ***Lythrum salicaria***

Purple loosestrife



Foliage.  
Steve Dewey, Utah State University,  
Bugwood.org



Flowers.  
Linda Wilson, University of Idaho,  
Bugwood.org



Infestation.  
Britt Slattery,  
U.S. Fish and Wildlife Service



Flowers.  
David Cappaert, Bugwood.org

# ***Lythrum salicaria***

Purple loosestrife



Flowers.

© John M. Randall, The Nature Conservancy,  
used with permission.



Plant.

Richard Old, XID Services, Inc.,  
Bugwood.org



Seedling.

Ohio State Weed Lab Archive, The Ohio  
State University, used with permission.

# ***Polygonum cuspidatum***

(Syn.: ***Fallopia japonica* var. *japonica***)

Japanese knotweed

POCU6

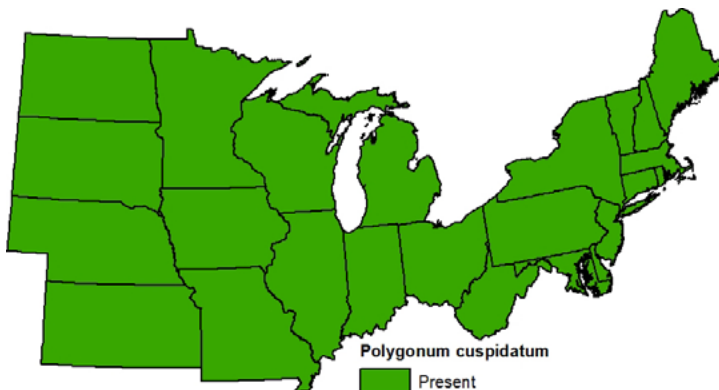
Mexican bamboo

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Infestation.

Jack Ranney, University of Tennessee, Bugwood.org



## ***Polygonum cuspidatum***

(Syn.: ***Fallopia japonica* var. *japonica***)

Japanese knotweed

POCU6

Mexican bamboo

**Form:** Stout rhizomatous plant up to 10 ft (3 m) tall; stems become ridged or lined; solid; profusely branched.

**Leaves:** Alternate, petiolate  $\sim\frac{1}{2}$ -1½ inches (1-4 cm long); blade 2-6 inches (5-15 cm) long and  $\frac{3}{4}$ -4 inches (2-10 cm) wide, broadly ovate, with a rounded apex with abruptly-pointed tip and usually truncate (to somewhat tapering) base. Lower surface minutely roughened with short  $<\frac{1}{8}$  inch ( $<0.1$  mm), blunt-tipped hairs along veins.

**Flowers/fruit:** Often erect branched clusters (panicles) arise from leaf axils; flowers bisexual or carpellate (female only) and then on separate plants; perianth white or greenish-white to pinkish. Fruits 3-sided, dark brown achenes.

**Habitat:** Upland forests and riparian areas as well as wastelands and roadsides.

**Other distinguishing features/notes:** Herbaceous perennial, but stems often very stout and almost woody. See appendix 6 for further information about *Polygonum* spp.

### **Notes**

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# ***Polygonum cuspidatum***

(Syn.: ***Fallopia japonica* var. *japonica***)

Japanese knotweed

Mexican bamboo



Young plant.  
Elizabeth J. Czarapata, used with permission.



Leaf - lower surface.  
Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



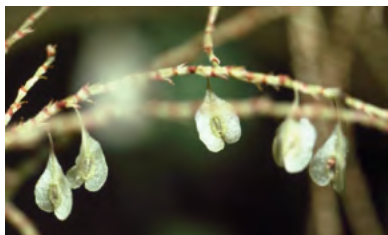
Fruit.  
Jill M. Swearingen, USDI National Park Service, Bugwood.org



Flower panicles.  
Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

***Polygonum cuspidatum***  
(Syn.: ***Fallopia japonica* var. *japonica***)

Japanese knotweed  
Mexican bamboo



Fruit.  
Jil M. Swearingen, USDI National Park  
Service, Bugwood.org



Foliage.  
Jack Ranney, University of Tennessee,  
Bugwood.org



Plant.  
Ben Legler, The Burke Museum of  
Natural History and Culture, used with  
permission.



# ***Polygonum sachalinense***

(Syn.: ***Fallopia sachalienensis***)

Giant knotweed

POSA4

**Form:** Stout perennial plant 3-16 ft (1-5 m) tall.

**Leaves:** Alternate, petiolate, petioles  $\frac{1}{2}$ -1 $\frac{1}{2}$  inches (1-4 cm) long; blade 6-12 inches (15-30 cm) long and 3-10 inches (7-25 cm) wide, ovate-oblong, with an obtuse to acute apex and cordate base, lower surface with short  $<\frac{1}{16}$  inch (0.2-0.6 mm) pointed, often twisted, hairs along veins. Leaf strongly heart-shaped (cordate).

**Flowers/fruit:** Erect or spreading branched clusters (panicles) arise from leaf axils; flowers bisexual or carpellate (female only) and then on separate plants; perianth generally greenish. Fruits 3-sided, brown achenes.

**Habitat:** Upland forests and riparian areas as well as wasteplaces and roadsides.

**Other distinguishing features/notes:** Undersides of the leaf have longer hairs than Japanese (*P. cuspidatum*) and bohemian knotweed (*P. ×bohemicum*). See appendix 6 for further information about *Polygonum* spp.

## **Notes**

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***Polygonum sachalinense***  
(Syn.: ***Fallopia sachalinensis***)

Giant knotweed



Flowers.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Leaf - lower surface.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Leaf - lower surface.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Plant.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.

***Polygonum sachalinense***  
(Syn.: ***Fallopia sachalinensis***)

Giant knotweed



Infestation.

Ben Legler, The Burke Museum of Natural History  
and Culture, used with permission.



Large plants.

Tom Heutte, U.S. Forest Service, Bugwood.org



# ***Polygonum ×bohemicum***

(Syn.: *Fallopia ×bohemica*)

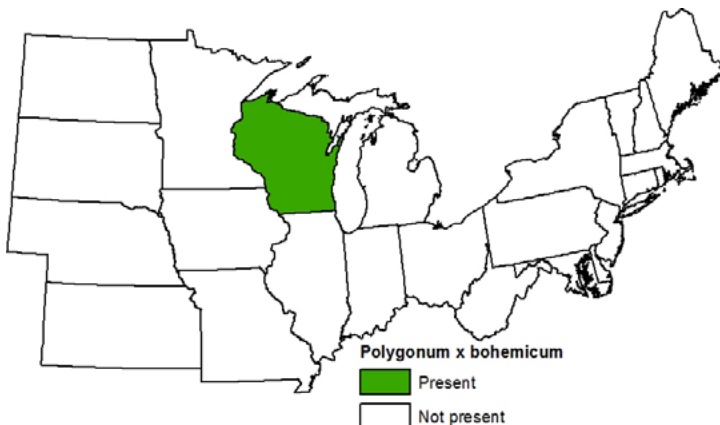
Bohemian knotweed

POBO10



Infestation.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



## ***Polygonum ×bohemicum***

(Syn.: ***Fallopia ×bohemica***)

Bohemian knotweed

POBO10

**Form:** Stout perennial up to 8 ft (2.5 m) tall. Hybrid of *Polygonum cuspidatum* and *P. sachalinense*.

**Leaves:** Similar to parents. Blades ovate, 2-10 inches (5-25 cm) long and  $\frac{3}{4}$ -4 inches (2-10 cm) wide, with rounded apex with abruptly pointed tip and truncate to cordate base; lower veins with short  $<\frac{1}{8}$  inch ( $<0.1$  mm), pointed hairs.

**Flowers/fruit:** Clusters of flowers often with fewer branches, otherwise similar to Japanese knotweed (*P. cuspidatum*).

**Habitat:** Generally found on disturbed sites, wasteplaces, and roadsides.

**Other distinguishing features/notes:** Compare to Japanese (*P. cuspidatum*) and giant knotweed (*P. sachalinense*). Bohemian knotweed has only recently been noticed; it is easily mistaken for and more closely resembles Japanese knotweed. Fruits partially or fully fertile, but reproduction mostly vegetative. See appendix 6 for further information about *Polygonum* spp.

### **Notes**

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# ***Polygonum ×bohemicum***

(Syn.: *Fallopia ×bohemica*)

Bohemian knotweed



Stem.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Leaves.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Flowers.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.



Leaf - lower surface.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.

***Polygonum ×bohemicum***

(Syn.: ***Fallopia ×bohemica***)

Bohemian knotweed



Flower cluster.

Ben Legler, The Burke Museum of Natural History and Culture, used with permission.

## *Microstegium vimineum*

Nepalese browntop

MIVI

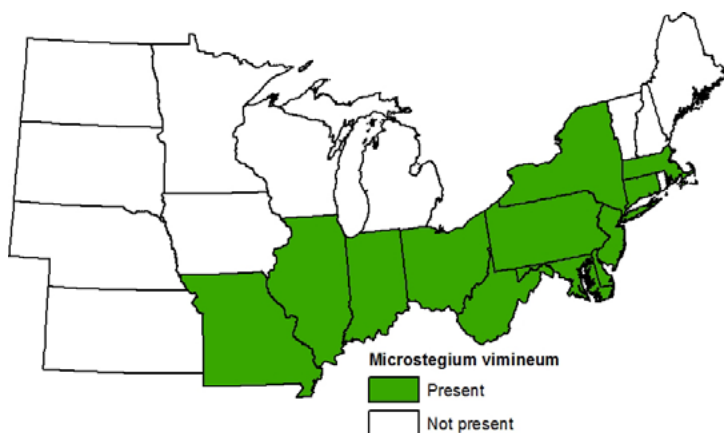
Japanese stiltgrass

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Infestation.

Chris Evans, University of Georgia, Bugwood.org



## ***Microstegium vimineum***

Nepalese browntop

MIVI

Japanese stiltgrass

**Form:** Sprawling annual grass, ½-3 ft (0.2-1 m) tall.

**Leaves:** Alternate; narrowly lanceolate 2-4 inches (5-10 cm) long; blades flat and sparsely hairy on both surfaces, as well as along the margins, or sometimes glabrous.

**Flowers/fruit:** Inflorescence a digitate cluster of 2-4 narrow spike-like branches; pubescent; awns usually present on at least some lemmas. Spikelets paired (one sessile, one pedicellate); lower glume keeled, upper flat.

**Habitat:** Flood plains, streamsides, forest edge, roadsides, swamps, wet fields, and trailsides.

**Other distinguishing features/notes:** Although annual, the sprawling stems easily root from the nodes, forming dense colonies. Sometimes confused with *Leersia*, browntop can be distinguished vegetatively by glabrous nodes and hairs on the leaf sheaths near the collar.

### **Notes**

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# ***Microstegium vimineum***

Nepalese browntop  
Japanese stiltgrass



Lanceolate leaves.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Plants.  
Ted Bodner, Southern Weed Science  
Society, Bugwood.org



Digitate inflorescence.  
Elizabeth J. Czarapata, used with  
permission.



Stems.  
Ted Bodner, Southern Weed Science  
Society, Bugwood.org

## ***Microstegium vimineum***

Nepalese browntop  
Japanese stiltgrass



Plants.  
Elizabeth J. Czarapata, used with  
permission.



Sprawling growth.  
Chuck Barger, University of Georgia,  
Bugwood.org



Dormant winter foliage.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Fall foliage.  
Jil M. Swearingen, USDI National Park  
Service, Bugwood.org

# *Phalaris arundinacea*

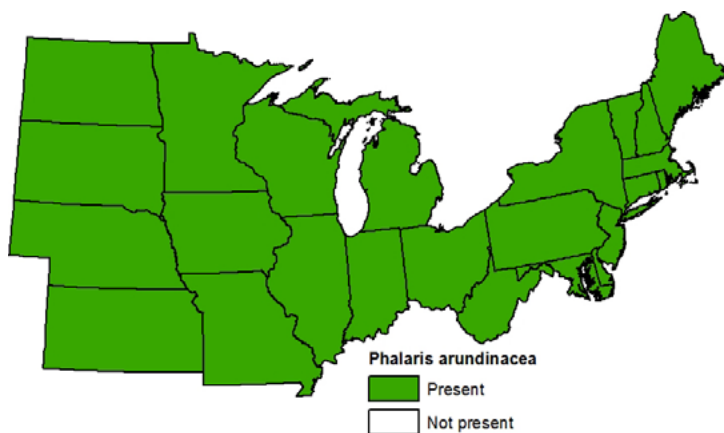
Reed canarygrass

PHAR3



Infestation.

Elizabeth J. Czarapata, used with permission.



## ***Phalaris arundinacea***

Reed canarygrass

PHAR3

**Form:** Moderately tall, erect grass up to 5 ft (1.5 m); perennial.

**Leaves:** Leaves  $\frac{1}{4}$ - $\frac{3}{4}$  inch (0.5-2 cm) wide, ligules membranous and large up to  $\frac{1}{2}$  inch (10 mm) long; upper surface of blades usually scabrous.

**Flowers/fruit:** Inflorescence often purplish to gray-green; spikelets seemingly 1-flowered (actually 2 membranous flaps represent sterile florets), glumes compressed and keeled, lemmas awnless.

**Habitat:** Wetland forests, streambanks, lakeshores, marshes, along ditches and moist ground.

**Other distinguishing features/notes:** Native and introduced forms are found in North America but are not distinguishable.

### **Notes**

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# ***Phalaris arundinacea***

Reed canarygrass



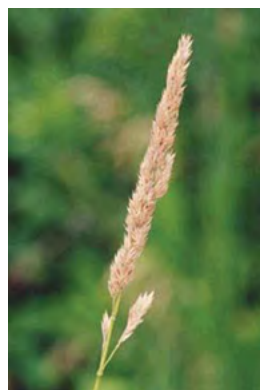
Emergent plants.  
Elizabeth J. Czarapata, used with permission.



Inflorescence - early summer.  
Elizabeth J. Czarapata, used with permission.



In bloom.  
Elizabeth J. Czarapata, used with permission.



Inflorescence - midsummer.  
Elizabeth J. Czarapata, used with permission.



# ***Phalaris arundinacea***

## Reed canarygrass



Fall foliage.  
Cassandra Olson, U.S. Forest Service



Plants.  
Kelly Kearns, Wisconsin DNR, used with permission.



Mike Haddock, Kansas State University,  
used with permission.

This is the ligule on a stalk of reed canarygrass.

“The highly transparent ligule of reed canarygrass is helpful on distinguishing it from other species.” Invasive Plants of the Upper Midwest. Elizabeth J. Czarapata. The University of Wisconsin Press. 2005.



# *Phragmites australis*

Common reed

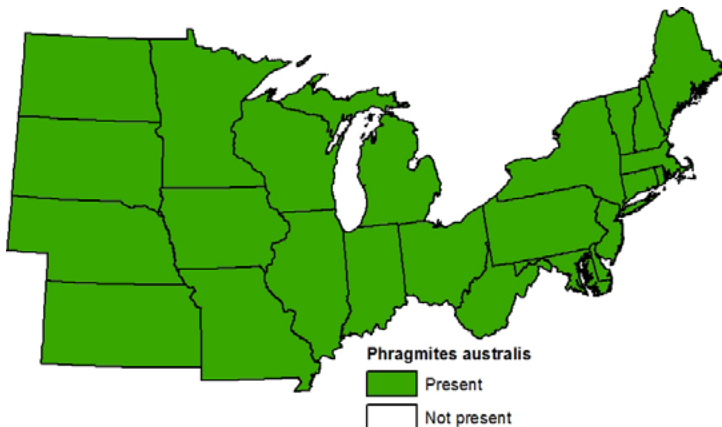
PHAU7

Phragmites

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Infestation.  
James H. Miller, U.S. Forest Service,  
[Bugwood.org](http://Bugwood.org)



## ***Phragmites australis***

Common reed

PHAU7

Phragmites

**Form:** Large grass up to 13 ft (4 m) tall with stout rhizomes; stems hollow.

**Leaves:** Leaves  $\frac{3}{4}$ -1½ inches (2-4 cm) wide, ligules short about  $\frac{1}{16}$  inch (1 mm), truncate and fringed.

**Flowers/fruit:** Inflorescence densely pubescent, often purplish when young; glumes unequal, lemmas narrow and long-tapering.

**Habitat:** Wetland forests, swamps, and wet shores.

**Other distinguishing features/notes:** Both native (subsp. *americanus*) and nonnative (subsp. *australis*) *Phragmites* occur in the United States. It is this nonnative genotype that has become invasive. Invasive populations can be distinguished from probable native populations by the density of the population and the fruiting heads. If it is the nonnative genotype, the population will be very dense (could be a monoculture) and the fruiting heads are much larger, fluffier, and denser. Native populations tend to be sparser and intermixed with other plants and the nonnative genotype generally holds fruit later into autumn. Online resources to aid in identification: <http://www.nps.gov/plants/alien/fact/pdf/phau1-powerpoint.pdf> and <http://bellatlas.umn.edu/imagelib/index.php>

### **Notes**

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# ***Phragmites australis***

Common reed  
Phragmites



Inflorescence.  
Elizabeth J. Czarapata, used with permission.



Autumn inflorescence.  
Elizabeth J. Czarapata, used with permission.



Dormant plant.  
James H. Miller, U.S. Forest Service,  
Bugwood.org



Flowers.  
James Allison, Georgia DNR,  
Bugwood.org

# *Phragmites australis*

Common reed  
Phragmites



Large seed head.

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directed to the curator.



Large colony.  
Kelly Kearns, Wisconsin DNR, used  
with permission.



Large colony.  
Elizabeth J. Czarapata, used with  
permission.

## References

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**Flora of North America, north of Mexico. Vols. 3, 5, 6, 7, 8, 9, 12, 19, 24, 25.** New York, NY: Oxford University Press.
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Additional resources for individual species distribution shown on maps:

*Alliaria petiolata*, *Cynanchum rossicum* in Rhode Island:  
[http://www.crmc.ri.gov/invasives/RI\\_Invasives.pdf](http://www.crmc.ri.gov/invasives/RI_Invasives.pdf)

*Polygonum cuspidatum* and *P. sachalinense* in North Dakota: <http://www.agdepartment.com/noxiousweeds/searchweeds.asp>

*Alliaria petiolata* in South Dakota. Tatina, Robert. 1998.  
**Garlic mustard: an addition to the flora of South Dakota.** *Prairie Naturalist*. March 30(1): 52.

*Polygonum ×bohemicum* in New York: <http://www.springerlink.com/content/7680722675q1777u/>

*Polygonum ×bohemicum* in Wisconsin: <http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=POLxBOH>

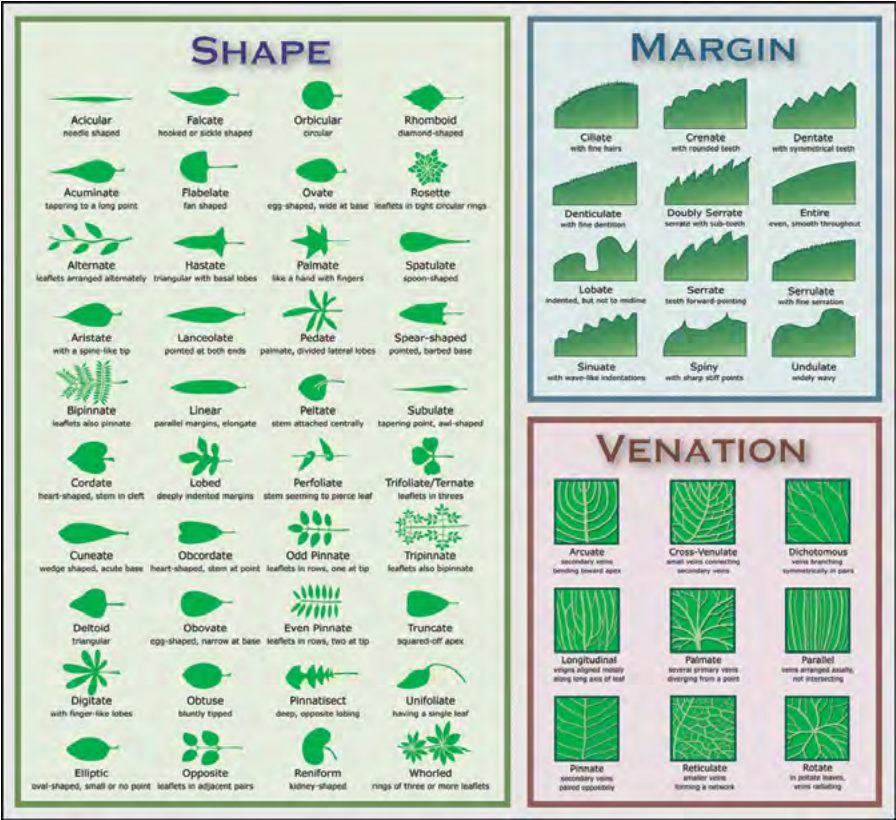
*Polygonum ×bohemicum* in Minnesota: <https://www.bellmuseum.umn.edu/research/plants/minnesota-flora>



# Appendix 1









## Leaf and inflorescence morphology

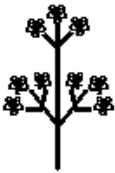

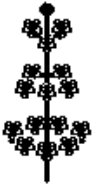

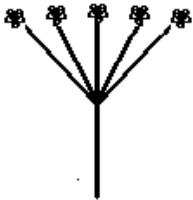



### Leaf Morphology

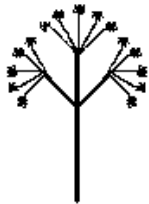





Source: [http://en.wikipedia.org/wiki/File:Leaf\\_morphology\\_no\\_title.png](http://en.wikipedia.org/wiki/File:Leaf_morphology_no_title.png)

## Descriptive Inflorescence Terms







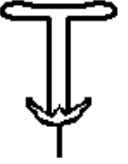

Shape	Name and Description	Example
	<p><b>Single</b> Sometimes, there is only one flower on each stem, or the flowers are borne so far apart that they cannot be described as being part of the same flowering cluster. They are often large flowers, so do not need the support of other flowers to attract pollinators.</p> <p>The example is <i>Papaver orientale</i>.</p>	
	<p><b>Spike</b> A Spike is a group of flowers arising from the main stem, without individual flower stalks (sessile).</p> <p>The example is <i>Agastache foeniculum</i>.</p>	
	<p><b>Raceme</b> A Raceme is a flower spike where the flowers have stalks of equal length, and the tip of the stem continues to grow and produce more flowers. Flowers open from the bottom up.</p> <p>The example is <i>Linaria vulgaris</i>.</p>	
	<p><b>Panicle</b> A Panicle is a branched raceme, each branch having a smaller raceme of flowers. The terminal bud of each branch continues to grow, producing more side shoots and more flowers.</p> <p>The example is <i>Lagerstroemia indica</i>.</p>	

Shape	Name and Description	Example
	<p><b>Cyme</b> A Cyme is a group of flowers in which the end of each growing point produces a flower, so new growth comes from side shoots and the oldest flowers are at the top.</p> <p>The example is <i>Geranium pratense</i>.</p>	
	<p><b>Verticillaster</b> A Verticillaster is a whorled inflorescence, where the flowers are borne in rings at intervals up the stem. The tip continues to grow, producing more whorls. This type of inflorescence is common in members of the Deadnettle/Mint Family (Lamiaceae).</p> <p>The example is <i>Phlomis russelliana</i>.</p>	
	<p><b>Corymb</b> A Corymb is a flower cluster where all the flowers are at the same level, with flower stalks of different lengths, forming a flat-topped flower cluster.</p> <p>The example is <i>Achillea millefolium</i>.</p>	
	<p><b>Umbel</b> An Umbel is a flower head in which all the flower stalks are of the same length, so that the flower head is rounded like an umbrella. Many bulbs have this type of flower head.</p> <p>The example is <i>Nerine bowdenii</i>.</p>	









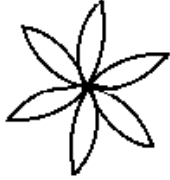

Shape	Name and Description	Example
	<p><b>Compound Umbel</b> A Compound Umbel is an umbel where each stalk of the umbel produces a smaller umbel of flowers. This type of inflorescence is typical of members of the Celery Family (Apiaceae).</p> <p>The example is <i>Crithmum maritimum</i>.</p>	
	<p><b>Capitulum</b> A Capitulum is a flower head composed of many separate unstalked flowers close together. This type of inflorescence is typical of the Daisy Family (Asteraceae), where the outer flowers have one conspicuous large petal and the central disk is formed of flowers with smaller petals.</p> <p>The example is a <i>Senecio</i> species.</p>	

Source: <http://theseedsite.co.uk/inflorescences.html>






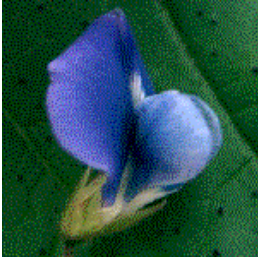


## Descriptive Flower Shapes

Shape	Name and Description	Example
	<p><b>Campanulate</b> (Bell-shaped) A flower with a wide tube and flared lobes (petal tips), typical of the Bellflower family (Campanulaceae). The length of the tube is variable, and the open-ness of the flower, but campanulate is generally shorter and fatter than tubular, and more closed than stellate.</p> <p>The example is <i>Campanula cochlearifolia</i>.</p>	
	<p><b>Funnelform</b> (Funnel-shaped) A flower that widens gradually from the base, ending in an open or flared shape.</p> <p>The example is <i>Cyrtanthus elatus</i>.</p>	
	<p><b>Trumpet-shaped</b> A flower that starts as a narrow tube, but widens into a flared mouth, where the petals often turn back.</p> <p>The example is <i>Petunia grandiflora</i>.</p>	
	<p><b>Salverform</b> A flower with a long, thin tube, that widens suddenly into a flat-faced flower.</p> <p>The example is <i>Plumbago auriculata</i>.</p>	



Shape	Name and Description	Example
	<p><b>Tubular</b> A flower with a long, thin, straight-sided tube formed of united petals, often separating at the mouth into a flared shape.</p> <p>The example is a <i>Kniphofia</i> hybrid.</p>	
	<p><b>Urceolate</b> (Urn-shaped) A flower in which the petals are fused into an almost enclosed globe shape, separating at the mouth into individual flared petals.</p> <p>The example is <i>Erica tetralix</i>.</p>	
	<p><b>Bowl-shaped</b> A flower with a deep dish shape, roughly hemispherical, with straight sides or with a very slight flare at the tips. Much the same as cup-shaped.</p> <p>The example is <i>Argemone mexicana</i>.</p>	
	<p><b>Saucer-shaped</b> A flower that is almost flat, with slightly upturned petal tips.</p> <p>The example is <i>Geranium wallichianum</i>.</p>	
	<p><b>Stellate</b> (Star-shaped) A flower with many narrow petals arising separately from a central point.</p> <p>The example is <i>Sisyrinchium bermudianum</i> album.</p>	



Shape	Name and Description	Example
	<p><b>Cruciform</b> (Cross-shaped) A flower with four petals at right angles to one another. Typical of members of the Cabbage Family (Brassicaceae).</p> <p>The example is an unknown tropical species.</p>	
	<p><b>Labiate</b> (Lipped) A flower divided into an upper 'hood' and a lower flat or pouched lip, typical of members of the Deadnettle/Mint Family (Lamiaceae).</p> <p>The example is <i>Salvia texensis</i>.</p>	
	<p><b>Papilionaceous</b> (Pea-shaped) The flower shape typical of members of the Papilionaceae, having a large upper petal called the standard, two large side petals called wings, and two lower petals, often fused together, called the keel, which encloses the stamens and stigma.</p> <p>The example is <i>Parochetus communis</i>.</p>	
	<p><b>Ligulate</b> (Strap-shaped) A flower with one large, long, thin petal, typical of ray-florets of the Aster/Daisy Family (Asteraceae). These look like single petals but are all individual flowers, each one capable of producing its own seed.</p> <p>The example is <i>Cosmos bipinnatus</i>.</p>	

Source: <http://theseedsite.co.uk/flowershapes.html>

## Appendix 2

### Comparison of nonnative shrubby *Lonicera*

	<i>L. maackii</i>	<i>L. morrowii</i>	<i>L. tatarica</i>	<i>L. xbella</i>
Shrub height	to 5 m	to 3 m	to 3 m	to 6 m
Twigs	pubescent	pubescent	<b>glabrous</b>	pubescent
Leaf blade shape	elliptic to ovate to lanceolate	oval to elliptic to ovate	ovate to oblong	generally ovate
Leaf blade length	3.5-8.5 cm	2.5-4 cm	3-6 cm	1.8-6 cm
Leaf apex	<b>acuminate</b>	obtuse to acute	acute to obtuse	acute
Leaf surface (lower)	<b>densely pubescent at least along lower veins</b>	<b>densely pubescent</b>	<b>glabrous</b>	<b>scattered pubescence to nearly glabrous</b>
Peduncles	<b>2-4 mm, shorter than petioles</b>	5-15 mm, longer than petioles	15-25 mm, longer than petioles	5-15 mm, longer than petioles
Corolla color	white, fading to yellow	creamy white fading to yellow	<b>white to pink, not fading to yellow</b>	<b>pink (or white) fading to yellow</b>
Corolla surface (exterior)	usually glabrous	<b>pubescent</b>	glabrous	usually glabrous
Berry color	dark red to blackish	deep red	red (occ. Yellow)	reddish

## Appendix 3

### Key to the species *Lonicera*

1. Woody vines...2
1. Shrubs...4
2. Flowers and fruits sessile; all leaves petiolate...*Lonicera japonica*
2. Flowers and fruits stalked; upper leaves connate...3
3. Corolla strongly bilabiate, less than 2.7 cm long; all leaves connate...*Lonicera dioica*
3. Corolla scarcely bilabiate, more than 2.7 cm long; some lower leaves petiolate...*Lonicera sempervirens*
4. Flowers and fruits sessile...*Lonicera maackii*
4. Flowers and fruits stalked...5
5. Flowers appearing before the leaves expand...*Lonicera fragrantissima*
5. Flowers appearing after the leaves expand...6
6. Style glabrous...*Lonicera canadensis*
6. Style hirsute...7
7. Corolla strongly bilabiate...*Lonicera xylosteum*
7. Corolla scarcely bilabiate...8
8. Leaves glabrous beneath; peduncles 1.5-2.5 cm...*Lonicera tatarica*
8. Leaves hairy beneath; peduncles 0.5-1.5 cm...*Lonicera morrowii*  
(Note: *Lonicera ×bella*, the hybrid between *L. tatarica* and *L. morrowii*, combines characters of both species and is very difficult to separate from its parents.)

Definitions:

**Sessile** - attached directly to the base, without a stalk.

**Glabrous** - smooth, without hairs or glands.

**Bilabiate** - two-lipped.

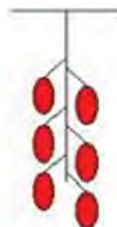
**Peduncle** - stalk of an inflorescence or of a solitary flower.

## Appendix 4

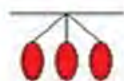
### Comparison of nonnative *Berberis* species

Comparison of inflorescences of *B. vulgaris* and *B. thunbergii*

Character	<i>Berberis vulgaris</i>	<i>Berberis thunbergii</i>
Branch spines	3 (can be 1)	1 (can have up to 3)
Inflorescence	Raceme	Sessile umbel
Leaf margin	Serrate	Entire
Berry consistency	Juicy	Dry



*Berberis vulgaris*



*Berberis thunbergii*

## Appendix 5

### Key to the species *Berberis*

1. Leaves evergreen...*Berberis julianae*

1. Leaves deciduous...2

2. Leaf margins spinulose-toothed; leaves 1.5-9 cm; twigs gray; thorns often with 2 side branches as long as the center spine; flowers racemose...*Berberis vulgaris*

2. Leaf margins smooth; leaves 1-4 cm; twigs brown; thorns often solitary, or with 2 small side branches; flowers in small clusters or solitary...*Berberis thunbergii*

## Appendix 6

### Notes about the *Polygonum (Fallopia)* species

Japanese knotweed (*Polygonum cuspidatum*) grows to 10 ft (3 m), profusely branched. Hairs along the lower leaf veins are short, less than 1/16 inch (<0.1 mm) and blunt tipped. Leaf bases usually truncate (to somewhat tapering).

Giant knotweed (*Polygonum sachalinense*) can grow as tall as 16 ft (5 m), is more sparingly branched than Japanese knotweed. It has hairs along the lower leaf veins that are less than 1/16 inch (0.2-0.6 mm) long and the leaf bases are always cordate.

Bohemian knotweed (*Polygonum ×bohemicum*) is a hybrid between the preceding two species. Resembles Japanese knotweed in stature, growing to 8 ft (2.5 m). Hairs along the lower leaf veins are less than 1/16 inch (<0.1 mm) long but pointed instead of blunt-tipped. Leaf bases truncate to cordate.

Note about scientific name: The genus was switched to *Fallopia*. However, for FIA purposes, we are still using the genus *Polygonum* because that is the standardized code from the NRCS PLANTS database January 2017 version maintained by the FIA IM group.



## Appendix 7

### Key to the species *Elaeagnus*

1. Leaves silvery on both sides; twigs often with thorns...2
1. Leaves silvery beneath, soon greenish above; twigs lacking thorns...3
2. Branches silvery; fruit yellow...*Elaeagnus angustifolia*
2. Branches brown; fruit silvery...*Elaeagnus commutata*
3. Bracts silvery; fruit subglobose to ovoid on stalks 0.8-1.2 cm long...*Elaeagnus umbellata*
3. Bracts brown; fruit ovoid to oblong on stalks 1.2-2.5 cm long...*Elaeagnus multiflora*



# GLOSSARY

**Achene** - Type of dry, indehiscent fruit, small and one-seeded, lacking any specialized features.

**Acute** - Sharp-pointed (as to shape, but not necessarily as to texture).

**Adnate** - Grown together, or attached; applied only to unlike parts, as stipules adnate to the petiole, or stamens adnate to the corolla.

**Allelopathic** - Suppression of growth of a plant by a toxin released from a nearby plant of the same or other species.

**Aril** - Specialized, usually fleshy outgrowth from the funiculus that covers or is attached to the mature seed; more loosely, any appendage or thickening of the seed coat.

**Awn** - Slender, usually terminal bristle.

**Axil** - Upper angle formed between the leaf and the stem.

**Axillary** - Point where the leaf base or leaf petiole meets the stem.

**Basal** - Situated at the base.

**Berry** - Fleshy fruit with multiple seeds.

**Biennial** - Plant that completes its life cycle in 2 years and then dies. The first year is often just a basal rosette of leaves and flowering stalks appear in the second year.

**Bract** - Very small or modified leaf, usually growing at the base of a flower or flower cluster.

**Carpel** - Reproductive organ of an angiosperm, which bears the ovules.

**Calyx** - Collective term for all the sepals of a flower.

**Ciliate** - Fringed with hairs.

**Cordate** - Shaped like a stylized heart, with the notch at the base.

**Corolla** - Collective term for all the petals of a flower.

**Deciduous** - Losing its leaves at the end of the growing season; nonevergreen.

**Decurrent** - With an adnate wing or margin extending down the stem or axis below the point of insertion.

**Deltoid** - Shaped like an equilateral triangle.

**Dentate** - Spreading, pointed teeth.

**Digitate** - Arranged like fingers on a hand—cluster at one point.

**Dioecious** - Producing male and female flowers on different plants.

**Discoid** - In the Asteraceae, with all the flowers of a head bisexual and fertile, usually also tubular.

**Emergent** - Rising out of standing water.

**Foliaceous** - Leaf-like in flatness, color, and texture.

**Funiculus** - Stalk connecting an ovule or seed with the placenta.

**Glabrous** - Smooth, without hairs or glands.

**Globose** - Spherical.

**Glume** - One of a pair of bracts, found at the base of a grass spikelet.

**Herbaceous** - Non-woody.

**Hip** - Fruit type of roses in which the hypanthium becomes fleshy and surrounds the matured carpels.

**Hypanthium** - Cup-like base of a flower to which the stamens, sepals, and petals are attached.

**Indehiscent** - Remaining closed at maturity, or not opening along regular lines, as in the acorn or coconut.

**Inflorescence** - Cluster of flowers and their stalks.

**Internode** - Part of the stem between two successive nodes.

**Involucre** - Set of bracts beneath dense capitate inflorescences.

**Keel** - Sharp or conspicuous longitudinal ridge.

**Lanceolate** - Lance-shaped; broader toward one end (usually the base) and tapering to the other.

**Leaflet** - Division of a compound leaf.

**Lemma** - Lower bract that, with the palea, encloses the flower in grasses.

**Lenticel** - Raised, often lighter colored, area on the bark.

**Ligule** - Thin, often membranous appendage found at the junction of a grass leaf and its sheath.

**Node** - Place on a stem where a leaf is (or has been) attached.

**Ocrea, ochrea** - Sheath around the stem at the base of the leaf, derived from stipules, as in many Polygonaceae.

**Pappus** - Modified perianth forming a crown on an achene.

**Palea** - Upper bract that, with the lemma, encloses the flower in grasses.

**Panicle** - Branched flower cluster, usually multibranched.

**Pectinate** - Arranged like the teeth on a comb.

**Pedicel** - Stalk of a single flower in an inflorescence.

**Perennial** - Plant that lives for more than 2 years.

**Perianth** - All of the sepals and petals (or tepals) of a flower, collectively.

**Petiole** - The stalk of a leaf.

**Pinnate** - With 2 rows of lateral branches or appendages, or parts along an axis, like barbs on a feather.

**Pinnatifid** - More or less deeply cut in a pinnate fashion.

**Reniform** - Kidney shaped.

**Rhizome** - Creeping underground stem.

**Rosette** - Cluster of basal leaves (often flattened against the ground).

**Scabrous** - Rough to the touch due to the presence of short, stiff hairs.

**Scarious** - Thin, dry, membranous, and not green.

**Sepal** - Member of the outermost set of floral leaves, typically green or greenish and leafy in texture.

**Sessile** - Attached directly to the base, without a stalk.

**Silique** - Elongate, dry, dehiscent fruit with a septum separating the two valves.

**Spikelet** - Literally, a small spike; in grasses and many sedges, one of the ultimate flower clusters, each consisting of 1 to many flowers plus their subtending bracts.

**Stamen** - Pollen-producing structure of a flower; consisting of a slender stalk (filament) and a knoblike, pollen-bearing tip (anther).

**Stellate** - Star-shaped.

**Stigma** - Pollen-receiving tip of the carpel.

**Stipule** - Small leaflike growth at the base of a leaf stalk.

**Style** - Stalklike structure, connecting the ovary and the stigma of a carpel.

**Tomentose** - Covered with tangled or matted, woolly hairs.

**Trigonus** - With 3 angles (applied to solid bodies)

**Truncate** - With the apex (or base) transversely straight or nearly so, as if cut off.





Olson Cassandra; Cholewa, Anita F. 2009. Revised October 2017. **A guide to nonnative invasive plants inventoried in the north by Forest Inventory and Analysis**. Gen. Tech. Rep. NRS-52. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 191 p. <https://doi.org/10.2737/NRS-GTR-52>.

The Forest Inventory and Analysis (FIA) program of the U.S. Forest Service is an ongoing endeavor mandated by Congress to determine the extent, condition, volume, growth, and depletions of timber on the Nation's forest land. FIA has responded to a growing demand for other information about our forests including, but not limited to, soils, vegetation, down woody material, and invasive plants. The intent of this guide is to aid FIA field staff in identifying 44 invasive plant species in the 24-state Northern Research Station region (Maine south to Delaware west to Kansas and north to North Dakota). However, this guide can be used by anyone interested in learning about these invasive plants. It contains distribution maps, short descriptions, space for notes, and numerous pictures of each plant.

**KEY WORDS:** nonnative, invasive, vegetation monitoring

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