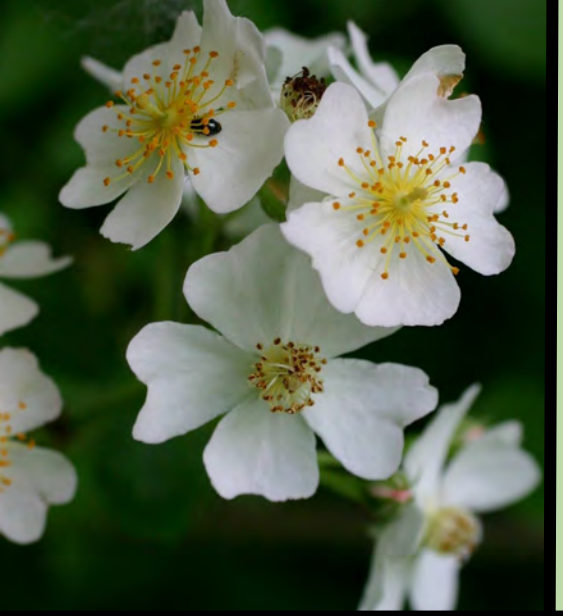


A Guide to the Regulated Terrestrial Invasive Plant Species of Indiana

INDIANA INVASIVE SPECIES COUNCIL

The Nature Conservancy

Indiana Native Plant Society

Cover Photo credits:
Multiflora rose flowers – P. Rothrock
Autumn olive fruit – P. Rothrock
Bull thistle – N. Pilla
Johnson grass – M. Lavin

Table of Contents

How To Use This Guide

Color-coded pages:

The pages of this booklet are color-coded by growth form.

- Green = trees and shrubs
- Brown = vines
- Purple = forbs (plants that are not grasses, vines, or woody)
- Blue = grasses

This booklet is intended to assist with the identification of regulated terrestrial invasive plant species of Indiana. Always confirm your identification before eradicating a suspected invasive plant. If you are not certain about its identity, please consult a professional botanist or invasive species biologist.

Often, your Purdue Extension office or your local National Resources Conservation Service (NRCS) office can assist you with identification of possible invasive species. See page 88 for online resources to assist in identification.

Terrestrial Invasive Plant Regulations in Indiana

What is an Invasive Species?

Executive Order 13112: "Invasive species" means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. "Alien species" means, with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

This guide has been developed to help identify some of the regulated plant species in Indiana. This guide does ***not*** include all regulated plant species in Indiana.

Why is this regulation necessary?

Impacts of invasive species include loss of biodiversity; degradation of natural habitats; negative effects on property values; decreased agricultural yields; and negative impacts on public utilities, recreation, and tourism. Indiana landowners and managers spend greater than $8.6 million annually to manage invasive plants in Indiana.

The Indiana Terrestrial Plant Rule 312 IAC 18-3-25

- The Terrestrial Plant Rule designates 44 species of plants as invasive pests all of which are included in this guide. It is illegal to sell, gift, barter, exchange, transport, or introduce these plants in the state of Indiana without a permit from the Indiana Department of Natural Resources (IDNR) - Division of Entomology and Plant Pathology (DEPP).

- This list of plants was created through a science-based assessment of each species by the Indiana Invasive Plant Advisory Committee which consists of representatives from horticulture, landscape, nursery, research, conservation, and Purdue Agriculture.

- Links to assessments are available from the Official Indiana Invasive Plant list which is on the Indiana Invasive Species Council website: https://www.entm.purdue.edu/iisc/invasiveplants.html

Terrestrial Invasive Plant Regulations in Indiana

Noxious Weed List (IC 15-16-7-2)

Three noxious weeds (Canada thistle, Johnson grass, and poison hemlock) are included in this guide. The remainder of the noxious weed species are either native or are uncommon invaders outside of agricultural production. All noxious weeds must be controlled by landowners no matter where they are growing. Work with your county extension agent to identify and develop a treatment and eradication plan for these species.

- Canada thistle (*Cirsium arvense*)
- Johnson grass (*Sorghum halepense*)
- Columbus grass (*Sorghum almum*)
- Bur cucumber (*Sicyos angulatus*)
- Shattercane (*Sorghum bicolor* spp*. drummondii*)
- Common waterhemp (*Amaranthus rudis*)
- Tall waterhemp (*Amaranthus tuberculatus*)
- Marestail or horseweed (*Conyza canadensis*)
- Palmer amaranth or carelessweed (*Amaranthus palmeri*)
- Poison hemlock (*Conium maculatum*)
- Powell amaranth (*Amaranthus powellii*)
- Rough pigweed (*Amaranthus retroflexus*)
- Smooth pigweed (*Amaranthus hybridus*)

Federal Noxious Weed List

Species listed as a Federal Noxious Weed are prohibited from interstate or foreign commerce. Giant hogweed is the only known terrestrial Federal Noxious Weed in Indiana and only a few populations are known in north central Indiana. These populations are nearly eradicated. The widespread poison hemlock (page 59) is often mistaken as giant hogweed. The full list of Federal Noxious Weeds can be found at:

https://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/weedlist.pdf

There are three other terrestrial invasive plants regulated through separate rules in Indiana. It is illegal to sell or move these species. All three species are included in this guide.
Purple Loosestrife: 312 IAC 18-3-18
Multiflora rose: 312 IAC 18-3-18
Kudzu: 312 IAC 18-3-16

You Can Make a Difference

Report Violations

If you see these invasive plants for sale or being exchanged or transported, please contact your IDNR local nursery inspector. Find yours at:

https://www.in.gov/dnr/entomolo/7416.htm

You can also call **1-866-NO-EXOTIC** or email **DEPP@dnr.IN.gov.**

Gather Data

You can help us gather data to assess invasive species by reporting on EDDMaps.org or via the GLEDN app.
Information about both applications is found here: https://www.eddmaps.org/indiana/

Remove Invasive Species from Your Property

You can remove invasive species from your landscape and plant native species. Additionally, you can avoid using Callery pear, Norway maple, Burning bush, and other invasive plants on the official list that are not currently regulated (see page 87 for more information).

Acknowledgements

Thank you to the following individuals for allowing the use of their photographs or for making their photography available to the public:

Marshall D'Arcy – Amateur naturalist
Christopher Evans - Coordinator, River to River Cooperative Weed Management Area
"Botany" Bill Harms - Amateur botanist and naturalist
Michael Huft – Botanist, Editor of *The Great Lakes Botanist*
Matt Lavin - Botanist, Montana State University
Paul Marcum - Botanist, Illinois Natural History Survey
Doug McGrady – Amateur botanist
Leslie Mehroff - Late Former Curator of George Safford Torrey Herbarium
David J. Moorhead - University of Georgia, Bugwood.org
Scott Namestnik - Botanist, Indiana DNR
Daniel Nickrent - Botanist, Southern Illinois University
Nathanael Pilla – Botanist, Orbis Environmental Consulting
Tom Potterfield - Amateur naturalist and botanist
Andreas Rockstein - Flickr
Paul Rothrock - Botanist, Associate Curator Emeritus, Deam Herbarium
Ryan Somma - Flickr

Tree-of-Heaven

Ailanthus altissima (Mill.) Swingle

Tree-of-heaven is a fast-growing tree reaching up to 85’ tall. It was introduced from Asia as a landscape plant in the late 18th century. Tree-of-heaven colonies can expand quickly via root-sprouts and through an abundance of seeds. It is also allelopathic secreting a toxin which inhibits the growth of other plants. Tree-of-heaven is typical of disturbed soils in urban environments but is also found in natural habitats such as canopy gaps in forests. Widespread throughout the state.

Flowers: late spring. Small, yellowish-green to whitish with 5-6 petals. Flowers are arranged on a branching panicle. Male flowers emit a foul odor.

Fruits: yellow to pinkish winged fruit (samara) similar to ash or maple but twisted and arranged in large clusters. Seeds are located near the middle of the samara. One tree can produce >350,000 seeds annually.

Photo credits:
Front – fls, D. McGrady; fr, M. Huft
Back – lvs, staghorn sumac, B. Harms; bark, leaf scar, N. Pilla

Tree-of-Heaven

Ailanthus altissima (Mill.) Swingle

Leaves: alternate, pinnately compound, 1-4’ long with 11 to 41 leaflets. Leaflets have 1 to 2 blunt teeth at their base. Extrafloral nectaries occur on the leaves excreting sugars that produce a foul odor when bruised.

Bark: smooth, pale gray with light chestnut-brown twigs. The leaf scars are large and heart- or shield-shaped.

Staghorn sumac leaves

Similar species:

Tree-of-heaven is often confused with staghorn sumac (*Rhus typhina*) and black walnut (*Juglans nigra*), both of which have regularly toothed leaves. In ash trees (*Fraxinus* spp.), seeds are located at the bottom of the samara instead of the middle as with tree-of-heaven.

Black Alder

Alnus glutinosa (L.) Gaertn.

Black alder is a short-lived, fast-growing, small to medium-sized tree that grows 10-65’ tall. Native to Europe, western Asia, and northern Africa, it was introduced to North America for wildlife habitat, soil restoration, and ornamental potential. Black alder can quickly exploit disturbed wet habitats through seed dispersal and layering. Scattered throughout the state.

Flowers: early spring before the leaves open. Male and female flowers occur apart, but on the same individual.

Fruits: male catkins droop in clusters of 3-5. Female cones are suborbicular.

Male catkin

Female cone

Photo credits:
Front – all, N. Pilla
Back – all, N. Pilla

Black Alder

Alnus glutinosa (L.) Gaertn.

Leaves: round, obovate, or suborbicular, nearly as wide as long and up to 4” in length. Alternate, toothed, hairless except tufts on underside veins. Top of leaf dark green, bottom paler color. The apex of the leaf is rounded or often notched.

Bark: thin. When young, the bark is relatively smooth with horizontal lenticels and purplish-brown, becoming gray and fissured with age. Stems are often sticky (*glutinosa* means “sticky”).

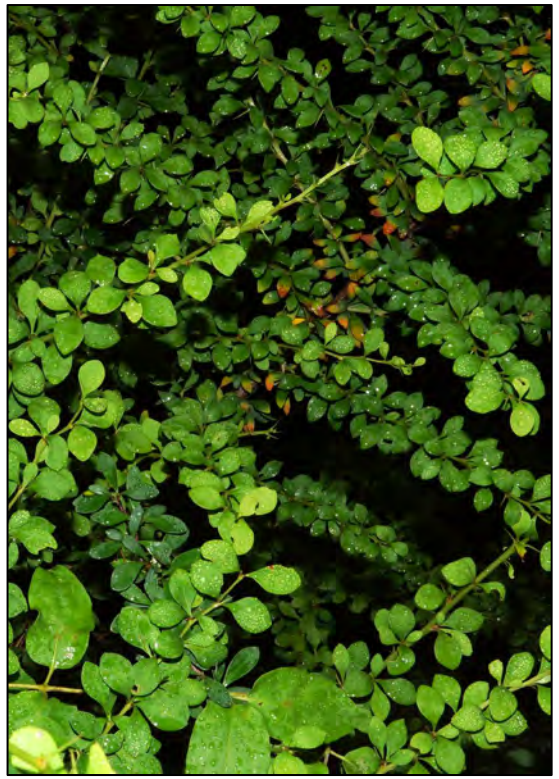
Speckled alder

Similar species:

A native lookalike is speckled alder (*Alnus incana* subsp. *rugosa*) which, unlike black alder, is not a tree but a multi-stemmed shrub. The leaves of speckled alder have a pointed tip and are wider below the middle.

Japanese Barberry

Berberis thunbergii de Candolle



Japanese barberry is a low, compact, spiny shrub that typically grows to 2-3’ tall. It was introduced from Japan for hedge plantings and ornamental value. Japanese barberry prefers shaded or semi-shaded habitats on mesic, fertile soils. Birds disperse the seeds widely. Established individuals spread vegetatively through horizontal lower branches that take root when they touch the soil. Widespread throughout the state.

Flowers: spring. Yellow to cream, 6 petals. Flowers borne individually or in few-flowered clusters.

Fruits: bright red, oblong berries. Persist into winter.

Photo credits:
Front –habit, B. Harms; fr, N. Pilla, fl, M. Huft
Back – lvs, N. Pilla; fl & lvs, P. Rothrock

Japanese Barberry

Berberis thunbergii de Candolle

Leaves: alternate, entire, simple, and obovate to spatulate. Relatively small, often growing in clusters in the axils above single spines. Hairless, green upper surfaces and dull undersurfaces. Certain cultivars can have bluish-green to dark reddish-purple leaves. Prominently red to purple in the fall.

Stems: grooved, hairless, purplish-red turning reddish-brown with age. The inner bark is bright yellow.

Similar species:

The native American barberry (*Berberis canadensis*) was locally frequent historically in Indiana. Unlike Japanese barberry, American barberry has toothed leaves and up to 3 trifurcate spines in its leaf axils. American barberry was the target of an eradication program by the U. S. Department of Agriculture due to it being an alternate host for stem rust (*Puccinia graminea*), a serious pest of cereal crops. Only one surviving population is known from Indiana along the Tippecanoe River.

Autumn Olive

Elaeagnus umbellata Thunb.

Autumn olive is a medium to large, fast-growing, multi-stemmed, deciduous shrub. It is native to Asia and was introduced as wildlife forage and for landscaping and soil reclamation. Autumn olive produces copious fruits that attract wildlife. It grows in numerous habitats including open woodlands, old fields, and roadsides. Because it is nitrogen-fixing, it can alter soil chemistry and reduce its suitability for other plants. Widespread throughout the state.

Flowers: spring. White to yellowish-cream, tubular with no petals. Strong jasmine-like scent.

Fruits: bright red, fleshy, drupe-like achene

Photo credits:
Front – fr, fl, P. Rothrock; habit, B. Harms
Back – lvs, P. Rothrock; buffalo-berry, N. Pilla

Autumn Olive

Elaeagnus umbellata Thunb.

Leaves: alternate, simple, elliptic to obovate-oblong. Entire with often wavy edges. Upper surface is dull to bright green. Underside is silvery with brown and silvery scales. Leaves persist into winter.

Bark: ridged and deeply furrowed, dark gray. Inner bark is yellow. Twigs have corky lenticels and U-shaped leaf scars almost surrounding the buds.

Similar species:

Once growing in the Indiana Dunes, the native cousin to autumn olive, russet buffalo-berry (*Shepherdia canadensis*), is now extinct from Indiana. It differs from autumn olive by having an opposite leaf arrangement.

Glossy Buckthorn

Frangula alnus Mill.

Glossy buckthorn is a tall shrub or small tree that can grow up to 20’ tall. Native to Europe, Asia, and Africa, it was introduced as an ornamental and for wildlife habitat. Glossy buckthorn is tolerant of a wide range of conditions, occurring at greatest density in disturbed open to forested wetlands. It is also capable of invading drier habitats. It reproduces via bird-dispersed seeds and vegetatively through root-collar sprouts. Cultivars, specifically ‘Fine Line’, carry claims it is non-invasive; however, evidence suggests otherwise. Widespread in the northern portion of the state. Synonym: *Rhamnus frangula*.

Flowers: spring to early summer. Tiny yellow flowers with 5-petals arranged in umbels in the leaf axils.

Fruits: round drupe, yellowish-red when immature, becoming dark purple with age.

Photo credits:
Front – habit, N. Pilla; fl, M. Huft; fr, S. Namestnik
Back – fr & lvs, alder buckthorn, M. Huft; bark, N. Pilla

Glossy Buckthorn

Frangula alnus Mill.

Leaves: alternate to sub-opposite, toothless, oblong to obovate, often slightly wavy. Upper surface is glossy, shiny green, and hairless. Lower surface has hairs. Veins 8-9, prominent.

Bark: thin, reddish-brown to grayish-brown or gray with age. Pronounced vertical lenticels. Stems are hairy when young and become smooth with age.

Similar species:

The native alder buckthorn (*Rhamnus alnifolia*) is often mistaken for glossy buckthorn in part because of the latter's older, similar scientific name, *Rhamnus frangula.* Alder buckthorn is a small shrub to 3' tall, with toothed, dull green leaves.

Glossy buckthorn also can be confused for the non-native, invasive common buckthorn (*Rhamnus cathartica*), with the latter having opposite leaves and 4 sepals.

Blunt-leaved Privet

Ligustrum obtusifolium Siebold & Zucc.

Blunt-leaved privet is a shrub that can grow up to 12’ tall and frequently as wide. Native to eastern China and Japan, it was introduced in the early 1800s for its ornamental qualities and desirable characteristics as a hedgerow species. It spreads predominantly through seed but also resprouts from root and stem cuttings. Privet grows in disturbed habitats and is dispersed by birds into more intact habitats such as grasslands, forests, and riparian areas. Widespread throughout the state.

Flowers: spring. White to cream, corolla tube over twice as long as corolla lobes, 4-parted. Produced in profusion. Unpleasantly pungent.

Fruits: Ovoid, containing 1-4 seeds. Ripen in late summer to a dark purple-black and persist into winter. Poisonous to humans but are consumed by many birds which distribute seeds.

Photo credits:
Front – fl, habit, N. Pilla; fr, B. Harms
Back – lvs, N. Pilla; stm, blackhaw lvs, B. Harms; blackhaw fls, M. Huft

Blunt-leaved Privet

Ligustrum obtusifolium Siebold & Zucc.

Leaves: opposite, entire, elliptic to oblong-ovate, pubescent undersides (sometimes only on the midrib), upper surfaces darker green than lower surfaces.

Bark: smooth, gray, scattered lenticels.

Similar species:

There are no native *Ligustrum* species in the U.S. The native blackhaw (*Viburnum prunifolium*) can superficially be confused with privet. Blackhaw differs in having toothed leaves and 5-parted flowers in dense round clusters.

Asian Bush Honeysuckles

Lonicera maackii (Rupr.) Maxim.; *L. morrowii* A. Gray; *L. tatarica* L.; *L. × bella* Zabel

The most typically encountered Asian bush honeysuckles are Amur honeysuckle (*Lonicera maackii*), Morrow's honeysuckle (*L. morrowii*), Tartarian honeysuckle (*L. tatarica*), and Bell's honeysuckle (*L. × bella*). All of these shrubs were introduced from Asia as ornamentals, wildlife forage, and for erosion control. Asian bush honeysuckles have hollow stems and opposite leaves and grow in a variety of habitats from shaded to open sun including woodlands, floodplains, roadsides, oldfields, and prairies.

Amur honeysuckle:

Amur honeysuckle is the only species among the four that has sessile to subsessile flower stalks shorter than the leaf stalks and acuminate leaf tips. Veins on the lower leaf surfaces are hairy. Fruits (berries) are orange-red to purple-red.

Photo credits:
Front – fr, M. Huft; fl, P. Marcum
Back – Morrow's fl, M. D'Arcy; Morrow's fr, B. Harms; Tartarian fr, fl, M. Lavin;
Bell's, N. Pilla; Coralberry, M. Huft; American fly-honeysuckle, northern bush honeysuckle, N. Pilla

Asian Bush Honeysuckles

Lonicera maackii (Rupr.) Maxim.; *L. morrowii* A. Gray; *L. tatarica* L.; *L.* × *bella* Zabel

Morrow's honeysuckle:

Morrow's honeysuckle differs from the other four species in its dense, soft hair on leaf undersides and stems; white flowers turning yellow with age; flower stalks 0.2-0.6" long; and bracteoles more than half as long as ovaries at flowering time. Leaves are rounded at the base and tip.

Tartarian honeysuckle:

Tartarian honeysuckle differs from the other four species in its absence or near-absence of hairs on the stem and leaves and pinkish white to red flowers that do not turn yellow with age.

Asian Bush Honeysuckles

Lonicera maackii (Rupr.) Maxim.; *L. morrowii* A. Gray; *L. tatarica* L.; *L. × bella* Zabel

Bell's honeysuckle:

Bell's honeysuckle is a hybrid of Morrow's and Tartarian honeysuckles and can be difficult to distinguish from the parent species. Leaf undersides are typically hairy but less so than in Morrow's honeysuckle. Bracteoles are less than half as long as the ovary at flowering time. The pinkish flowers turn yellow with age.

Similar species:

The native coralberry (*Symphoricarpos orbiculatus*), is in the same family as honeysuckles with similar characteristics as the Asian bush honeysuckles. Coralberry has opposite leaves, berries in clusters along the stem. The flowers are much smaller in coralberry with their corollas under 1 cm in length and bell shaped.

Asian Bush Honeysuckles

Lonicera maackii (Rupr.) Maxim.; *L. morrowii* A. Gray; *L. tatarica* L.; *L. × bella* Zabel

Similar species continued:

The native and rare American fly-honeysuckle (*Lonicera canadensis*) differs from the Asian bush honeysuckles by its solid stems, hairless leaves and twigs, and the drooping flowers. Only known in one county in the state in Northwest Indiana, it becomes increasingly common northward into Michigan.

The native northern bush honeysuckle (*Diervilla lonicera*), used to be placed in the same family as honeysuckles as there are many similarities. Northern bush honeysuckle is uncommon in Indiana and differs from the Asian bush honeysuckles by having a solid stem pith, leaves that are toothed, and fruits that are capsules not berries.

Cultivars of northern bush honeysuckle are popular in the horticultural trade.

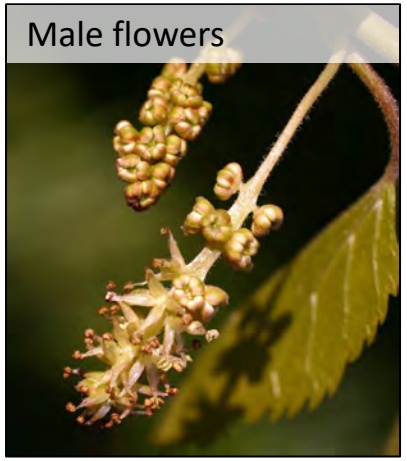
White Mulberry

Morus alba L.

White mulberry is a tree that typically grows 30-50’ tall. Native to China, it was introduced in North America in the 1600s and was planted throughout the eastern United States to feed mulberry silkworms. White mulberry grows almost anywhere that is not too wet or dry, including urban environs, old fields, forest margins, and floodplains. It spreads through copious production of fruits that are consumed and dispersed by wildlife. Widespread throughout the state.

Flowers: spring. Male and female flowers are usually on different plants. Male flowers are arranged in a long catkin. Female flowers are arranged in a short spike.

Fruits: an aggregate of fruits that vary from white to red to nearly black.



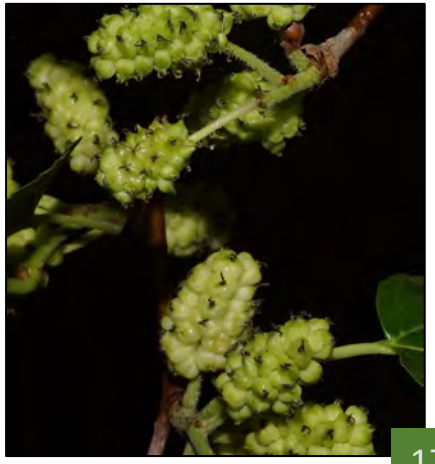


Photo credits:
Front – tree, A. Rockstein; pink fr, M. Huft; fl, P. Rothrock; green fr, B. Harms
Back – terminal bud, P. Marcum; lvs, D. Moorhead

White Mulberry

Morus alba L.

Leaves: alternate, lobed to unlobed, bluntly toothed, shiny upper surface and dull lower surface occasionally with hairs on the veins, to approximately 4” long. Leaf stalk, when broken, exudes milky sap.

Bark: gray when young, turning brown with age. Older bark furrowed with areas of exposed orange inner bark.

Similar species:

White mulberry is often confused with the native red mulberry (*Morus rubra*) which is a relatively uncommon species found in the understory of rich forest. Red mulberry tends to have larger leaves (6-12” long), with dull upper surfaces and hairs both on the veins and between the veins on lower surfaces. Both species can produce red to nearly black fruits. White and red mulberries produce hybrids that can be difficult to place.

Amur Cork Tree

Phellodendron amurense Rupr.

Amur cork tree is a deciduous tree that can grow up to 50’ tall. Native to Asia, it was introduced to North America as a landscape tree and has since escaped cultivation. Amur cork tree grows on moist soils in a variety of habitats and is particularly frequent at forest margins. It can, however, persist in a closed-canopy forest within the understory. Currently, only known in a few scattered counties within the state.

Flowers: spring – summer. Yellowish-green flowers in clusters at the tips of the stems. Male and female flowers on different plants.

Fruits: cluster of drupes starting green then turning nearly black.

Female flowers

Photo credits:
Front – tree, R. Somma; fls, D. Nickrent; fr, P. Marcum;
Back – lvs, bark, bud, D. Nickrent; green ash lvs, M. Lavin; green ash fr, M. Huft

Amur Cork Tree

Phellodendron amurense Rupr.

Leaves: opposite, pinnately compound, 5-11 leaflets, and toothed. Dark green and shiny on top with a paler underside. Turns yellow in the fall.

Bark: ridged and deeply furrowed, dark gray. Inner bark is yellow. Twigs have corky lenticels and U-shaped leaf scars almost surrounding the buds.


Leaf scar


Green ash

Similar species:

Ash trees (*Fraxinus* spp.) also have opposite, pinnately compound leaflets which turn yellow in the fall. Ash tree fruits are flat, winged samaras whereas the fruits of amur cork tree are round drupes.


Green ash fruit

Common Buckthorn

Rhamnus cathartica L.

Common buckthorn is a tall, fast-growing and short-lived shrub or small tree that can grow up to 25’ tall. Native to Europe and Asia, it was introduced as an ornamental. It can tolerate high levels of disturbance and often occurs in urban environments (e.g., alleyways, ditches, brownfields, and homesites). It also occurs in more natural settings in a variety of open to shaded, dry to wet habitats, where it can form dense thickets. Birds disperse the seeds. Scattered throughout the state.

Flowers: spring. Tiny fragrant, yellow flowers with 4 sepals and petals arranged in umbels in the leaf axils.

Fruits: round, shiny, black drupe.

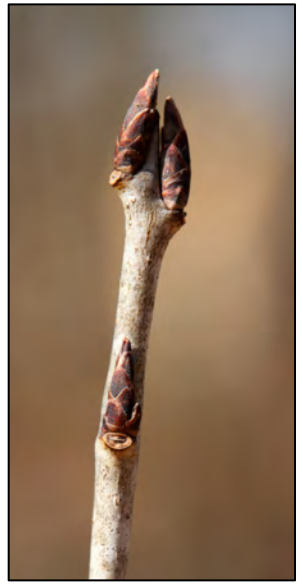
Photo credits:
Front – fl, N. Pilla; form, fr, M. Lavin
Back – buds, P. Marcum; lvs, Carolina buckthorn, N. Pilla

Common Buckthorn

Rhamnus cathartica L.

Leaves: opposite to sub-opposite (rarely alternate), upper surface dull green and hairless, toothed to entire. Base cordate or rounded. 3-4 pairs of veins with secondary veins arching (not parallel). Leaves persist into winter.

Bark: thin, grayish-brown to dark brown with age. Shiny and smooth when young, becoming cracked and roughened with age. Pronounced vertical lenticels. Tips of the stems are often equipped with spines.

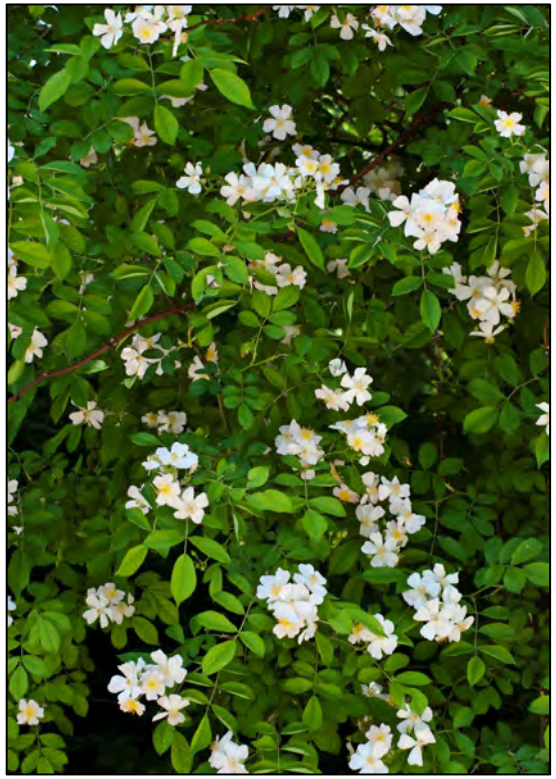


Similar species:

The native Carolina buckthorn (*Frangula caroliniana*), which is rare in Indiana, can be mistaken for common buckthorn. Its flowers have 5 petals and its leaves have nearly straight, parallel secondary veins. See also the treatment for glossy buckthorn (*Frangula alnus*).

Multiflora Rose

Rosa multiflora Murray



Multiflora rose is a pernicious, fast-growing, multi-stemmed shrub that can grow up to 10’ tall. It was introduced for a variety of purposes, including ornamental value, erosion control, wildlife habitat, and as a “living fence” for livestock. It occurs in most habitats that are not too wet or dry and can form dense thickets in favorable conditions. It reproduces by seed, spreading locally from seeds that fall to the ground and broadly through dispersal of its seeds by birds and mammals. Widespread throughout the state.

Flowers: spring. 5-petaled, white, often with a pink blush, bisexual. Each inflorescence has many flowers (=*multiflora*).

Fruits: an achene surrounded by a glossy, red hip which is ellipsoid to obovate

Photo credits:
Front – habit, fl, M. Huft; fr, P. Rothrock
Back – lvs, prickles, M. D’Arcy; stipules, N. Pilla; marsh rose fr, P. Rothrock

Multiflora Rose

Rosa multiflora Murray

Comb-like stipule

Leaves: Alternate, pinnately compound with 5-9 (-11) leaflets which are elliptic to egg-shaped and sharply toothed, deciduous, sessile to short-stalked, glabrous above, and hairy below. Comb-like stipules with glandular hairs occur at leaf bases.

Stems: reddish-green to grey with age; stout, hairless, prickles recurved

Similar species:

There are six native rose species in Indiana, all of which have pink flowers and lack the comb-like frills on the stipules. The two most similar native species are marsh rose (*Rosa palustris*) and climbing rose (*Rosa setigera*).
The hips of both marsh and climbing rose are more-or-less globose. Climbing rose can also be distinguished by its leaves with 5 or fewer leaflets.

Climbing rose stipule

Marsh rose fruit

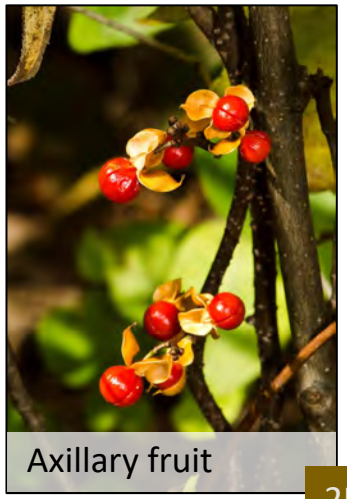
Oriental Bittersweet

Celastrus orbiculatus Thunb.

Oriental bittersweet is a twining vine native to East Asia and introduced in the late 19th century as an ornamental plant. It can damage trees by girdling trunks, shading leaves, and weighing down crowns, making trees susceptible to damage from wind or heavy snowfall. It spreads locally through rhizomes and its seeds are dispersed by birds. An uncommon but noteworthy vector is Christmas wreaths decorated with its fruits, which can germinate following disposal of the wreath. Oriental bittersweet exhibits broad ecological amplitude, occurring in a variety of wooded and open habitats. Widespread throughout the state.

Flowers: spring – summer. Inconspicuous, 5-petaled, greenish-yellow flowers in clusters of 3-7 at leaf axils. Most plants have either male or female flowers.

Fruits: round drupe, yellowish-red when immature, becoming orangish-red with age surrounded by a yellow husk that splits open.



Axillary fruit

Photo credits:
Front – bark, N. Pilla; fl, B. Harms; fr. M. Huft
Back – lvs, P. Rothrock; stm, American bittersweet, N. Pilla

Oriental Bittersweet

Celastrus orbiculatus Thunb.

Leaves: alternate, glossy, and round to narrow with shallow-toothed margins and an abruptly pointed tip, growing to 2-5” long. In the fall, leaves turn a brilliant yellow.

Stems: young bark is brown to dark brown with distinct lenticels becoming more cracked and grayer with age.

Similar species:

The native American bittersweet (*Celastrus scandens*) has fewer, larger, terminal (vs. axillary) clusters of flowers and fruits; its fruit’s husk is more of an orange color; and its leaves are typically less rounded and longer than wide. Hybrids of the two occur, which may make identification difficult. Oriental bittersweet is often labeled and sold as the native American bittersweet.

Field Bindweed

Convolvulus arvensis L.

Field bindweed is a prostrate, perennial, herbaceous vine that can grow over 5’ long. Native to Africa, Asia, and Europe, it was likely introduced in garden and crop seed as well as deliberate introduction for ornamental use. It reproduces by seed and expands vegetatively through rhizomes. Widespread throughout the state.

Flowers: summer. White to pale pink funnel-shaped flowers approximately 1” in diameter. Flowers occur individually or in small clusters in leaf axils.

Fruits: seed capsule is round, light brown, and hairless.

Field bindweed calyx

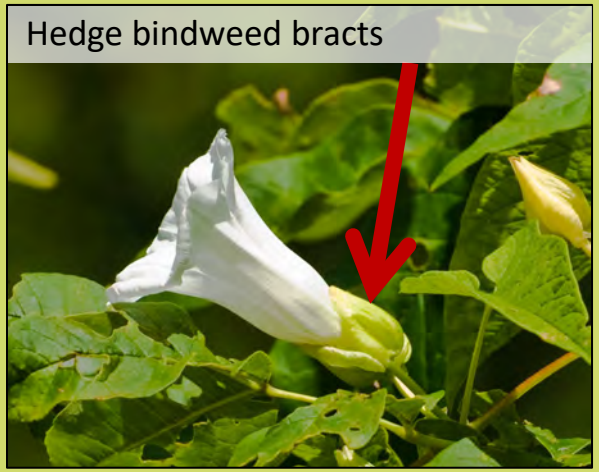
Photo credits:
Front – all, M. Huft
Back – hedge bindweed, M. Huft; lvs, M. Lavin

Field Bindweed

Convolvulus arvensis L.

Leaves: alternate, variably shaped from round to arrow shaped, entire, usually with two slightly angled basal lobes.

Stems: branched, prostrate, twining, usually hairless, exuding milky sap when cut.



Similar species:

Field bindweed can be confused with hedge bindweed (*Calystegia sepium*) and large bindweed (*C. silvatica*). These native bindweeds have larger flowers and leaves, and their calices are covered in two large bracts vs. the exposed bracts of field bindweed.

Chinese Yam

Dioscorea polystachya Turcz.

Chinese yam is an herbaceous, perennial, twining vine that can grow up to 16.5’ in length. Native to eastern Asia, it was introduced as an ornamental. It is not known to reproduce sexually in North America but is able to spread vegetatively by the proliferation of bulb-like structures called bulbils that drop from the plant and subsequent dispersal by animals. Chinese yam typically grows in shady, moist, disturbed habitats such as streambanks, bottomland forests, and fencerows. Scattered throughout the state but more widespread in the southern portion.

Flowers: late summer - fall. Male plants may produce small, white flowers annually. Flowers can have a cinnamon-like fragrance.

Roots: one to many large, deeply buried tubers.

Bulbils

Photo credits:
Front – habit, P. Marcum; bulbils, M. Huft
Back – lvs front and back, B. Harms; wild yam, M. Huft

Chinese Yam

Dioscorea polystachya Turcz.

Leaves: alternate but can become opposite up the stem, heart- to fiddle-shaped, shallowly three-lobed, with prominent and parallel venation.

Stems: twining clockwise, terete, producing small bulbils in leaf axils.

Similar species:

The native wild yam (*Dioscorea villosa*) looks similar to Chinese yam. Wild yam lacks bulbils in the leaf axils, its leaves are entire (not shallowly lobed), and it lacks large underground tubers.

Winter-creeper

Euonymus fortunei (Turcz.) Hand.-Mazz.

Winter-creeper is a creeping to climbing, evergreen, perennial woody vine that can grow up to 20'. Native to China, it was introduced in North America in the early 20th century as a groundcover plant, and many cultivars have since been developed. Winter-creeper is often found at old homesites, along woodland edges, and more generally in disturbed, ± shaded habitats. Once established, it can displace seedlings and native vegetation with its mat-like lateral spread and climbing ability. Widespread throughout the state.

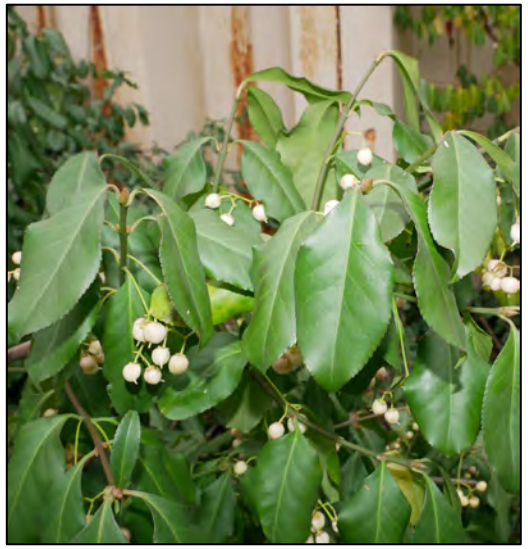
Flowers: summer. 4- parted, green to white.

Fruits: smooth cream to pink capsules that open to expose fleshy reddish orange arils that surround the seeds.

Photo credits:
Front – habit, fl, closed fr, N. Pilla; fr, D. Nickrent
Back – trailing lvs, B. Harms; fr & lvs, running strawberry, N. Pilla

Winter-creeper

Euonymus fortunei (Turcz.) Hand.-Mazz.



Leaves: opposite, glossy, dark-medium green, leathery, toothed, often variegated with light-colored veins. Leaf shape, color, and variegation is highly variable due to numerous cultivars.

Bark: woody, rough, warty

Running strawberry

Similar species:

The native running strawberry (*Euonymus obovatus*) is similar in its creeping habit, opposite leaves, and somewhat similar fruits. It can be distinguished from winter-creeper by its warty-surfaced fruits, leaves lacking white veins, and its exclusively creeping habit.

Japanese Hops

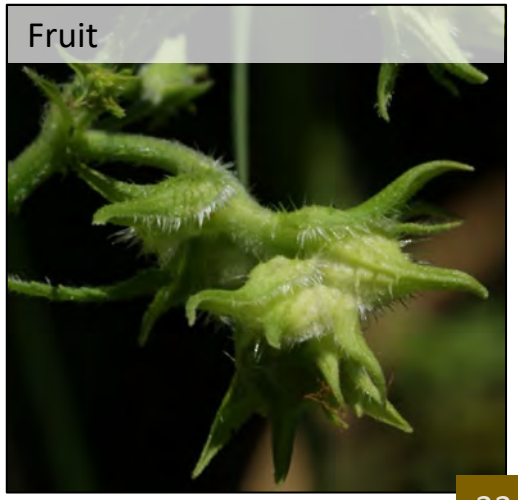
Humulus japonicus Siebold & Zucc.

Japanese hops is an annual, herbaceous vine that can grow over 20’ in one growing season. Native to eastern Asia, it was introduced as an ornamental in the late 19th century. Japanese hops grows in semi-shaded moist areas such as bottomlands, old fields, forest edges, and ditches. Its fast growth enables it to outcompete and displace native species. Japanese hops is not used in the production of beer. Scattered throughout the state.

Flowers: summer. Cream to green color, 5 sepals, no petals. Male and female flowers are borne on different plants.

Fruits: yellowish-brown achene enclosed by the calyx and bracts.

Female flowers



Fruit

Photo credits:
Front – all B. Harms
Back – lvs, B. Harms; common hops, N. Pilla

Japanese Hops

Humulus japonicus Siebold & Zucc.

Leaves: opposite, toothed, usually (3-) 5-7—lobed, hooked hairs like those on the stem, v-shaped sinuses at base. Leaf stalks are as long or longer than the leaf blade. Whitish glands are usually present on the underside.

Stems: often twining or sprawling; hooked, downward-pointing hairs.

Similar species:

Common hops (*Humulus lupulus*) is variable but can be differentiated from Japanese hops by its short leaf stalks (shorter than the blade), perennial root base, soft leaf hairs, and fruits with appressed bracts. The leaves of common hops can be unlobed. Leaves on both species can have 5-7 lobes especially on younger leaves.

Japanese Honeysuckle

Lonicera japonica Thunb.

A woody, semi-evergreen, twining vine native to Eastern Asia. It was introduced as an ornamental, for erosion control, and for wildlife usage. It now occurs in all 92 counties in Indiana. It spreads from bird-dispersed seeds and vegetatively through both underground rhizomes and trailing stolons. It grows in a variety of habitats including forest openings, thickets, fencerows, and riparian areas. Widespread throughout the state.

Flowers: spring – summer. Flowers white to pink (yellowing with age), arranged in pairs at leaf axils. Petals fused to form two lips.

Fruits: Purple to black berries produced in fall.

Photo credits:
Front – habit, fls, N. Pilla; fr, B. Harms
Back – entire lvs, B. Harms; lobed lvs, P. Marcum; Red honeysuckle, N. Pilla

Japanese Honeysuckle

Lonicera japonica Thunb.

Leaves: Simple, opposite, oblong to oval, 1.5-3” long. Young leaves may be lobed and may be covered with soft hairs. Persist on vine until midwinter.

Stems: Young stems brown or red and usually pubescent. Older stems woody and hollow, with bark that peels in long strips.

Connate leaves of red honeysuckle

Similar species:

Native honeysuckles have red or orange berries, flowers at tips of stems, and connate leaves (fused to form a single leaf with stem growing through it) below the flowers. Native vining honeysuckles include red (*Lonicera dioica*), grape (*L. reticulata*), and trumpet honeysuckle (*L. sempervirens*). The latter is treated as adventive in Indiana and native further south.

Mile-a-Minute Vine

Polygonum perfoliatum L.

Mile-a-minute vine is an annual, trailing herbaceous vine that can grow over 20’ in one season. Native to eastern Asia, it was accidently introduced to the United States in the early 20th century. Mile-a-minute vine usually occurs at forest margins, on streambanks, and in and along roadside ditches. It can quickly form dense mats that eliminate other plant species. As of April 2020, there is only one known record within the state in Monroe County. Synonymous to *Persicaria perfoliata*.

Flowers: summer. Greenish-white with no petals, 5 fused tepals.

Fruits: blue, berry-like, and fleshy. Fruits appear in August and lasts until the plant withers for the season.

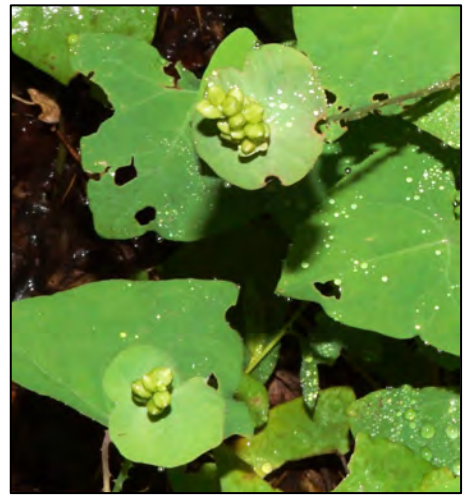


Photo credits:
Front – infestation, D. McGrady; fls, B. Harms; fr, T. Potterfield
Back – petiole, *P. arifolia*, M. Huft; ocrea, B. Harms

Mile-a-Minute Vine

Polygonum perfoliatum L.

Leaves: alternate, triangular or shield-shaped (peltate), light green, entire, hairless, usually with glaucous undersides. Swollen, leaf-like appendages called ocrea clasp around the stem forming a saucer-like structure.

Stems: trailing, ribbed, with recurved prickles.

Ocrea

Halberd tearthumb

Similar species:

Halberd tearthumb (*Persicaria arifolia*) and arrowleaf tearthumb (*Persicaria sagittata*) are similar in that they have recurved prickles on their stems and grow as trailing vines. They are different in that they do not have leaf-like ocrea and their fruits are not blue.

Kudzu

Pueraria montana var. *lobata* (Willd.) Ohwi

Kudzu is a twining, sprawling, semi-woody vine that can climb up to 100'. It was introduced from Japan in the late 19th century as an ornamental plant and was later promoted for forage. In the 1930s, kudzu was promoted by the United States Soil Conservation Service for erosion control, and it was subsequently planted on over 1,000,000 acres in the Southeast. It spreads primarily through runners and rhizomes and can grow in a variety of habitats, including old fields, roadsides, and edges of forests. Widespread in the southern half of the state, scattered in the northern half.

Flowers: summer. Cream to green color, 5 sepals, no petals. Male and female flowers are borne on different plants.

Fruits: yellowish-brown achene enclosed by the calyx and bracts.

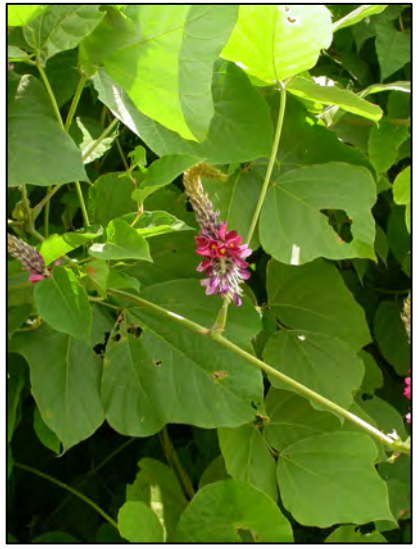
Photo credits:
Front – all, M. Lavin
Back – lvs, fl, M. Lavin; poison ivy, N. Pilla

Kudzu

Pueraria montana var. *lobata* (Willd.) Ohwi

Leaves: opposite, toothed, usually (3-) 5-7—lobed, hooked hairs like those on the stem, v-shaped sinuses at base. Leaf stalks are as long or longer than the leaf blade. Whitish glands are usually present on the underside.

Stems: often twining or sprawling; hooked, downward-pointing hairs



Similar species:

Eastern poison ivy (*Toxicodendron radicans*) is vegetatively similar to kudzu but can be differentiated by its aerial roots that attach to the host and its small, creamy white flowers that are arranged in clusters.

Black and Pale Swallow-worts

Vincetoxicum nigrum (L.) Moench & *V. rossicum* (Kleopow) Barbar.

Pale swallow-wort fruits

Black swallow-wort

Black swallow-wort (*Vincetoxicum nigrum*) and **pale** swallow-wort (*V. rossicum*) are perennial, twining, herbaceous vines growing up to 10'. Native to Europe, swallow-worts were introduced for horticultural purposes. Both can tolerate shaded or open habitats spreading through seed and rhizomes. In addition to sprawling over and shading out other plants, swallow-worts are allelopathic, exuding phytochemicals that inhibit the growth of native species. Because they are in the milkweed family, they attract monarchs as a larvae host; however, they produce a toxin that kills the caterpillar. **Black** is scattered throughout the northern half of Indiana and **pale** is yet to be discovered in the state. Synonyms: *Cynanchum louiseae* & *C. rossicum*.

Flowers: spring – summer. **Black** blooms before **pale**. Flowers are 5-parted, star-shaped. Dark purple to blackish (BLACK), yellow to pink to maroon (PALE).

Fruits: milkweed-like follicles. **Black** to 0.35" diameter; **pale** to 0.2" diameter.

Pale swallow-wort

Photo credits:
Front – fr, Cornell Photo Stream; black fl, P. Rothrock; pale fl, B. Harms
Back – black sw, P. Rothrock; pale sw, B. Harms; honeyvine, P. Marcum

Black and Pale Swallow-worts

Vincetoxicum nigrum (L.) Moench & *V. rossicum* (Kleopow) Barbar.

Black swallow-wort

Leaves: opposite, entire, lance-ovate to ovate with rounded bases, and hairless. **Black** leaves are 2-5” long and up to 2.5” wide whereas **pale** leaves are 3-5” long and up to 3” wide.

Stems: erect or twining, hairy. Exude a milky latex when broken.

Pale swallow-wort

Similar species:

The native honeyvine (*Ampelamus albidus*, syn. *Cynanchum laeve*) is a vine in the milkweed family that produces follicles but differs in having white flowers and an indented triangular-cordate leaf base.

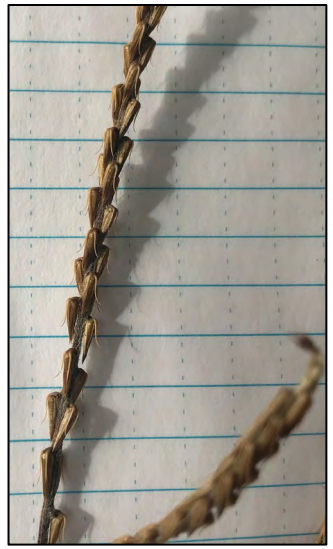
Japanese Chaff Flower

Achyranthes japonica (Miq.) Nakai

Japanese chaff flower is an herbaceous perennial that can grow up to 6’ tall. It is native to Asia and was first collected in North America from Kentucky in the 1980s. Japanese chaff flower prefers shaded habitats such as forested bottomlands, floodplains, and riverbanks, but it can also occur in open disturbed areas such as old fields and ditches. Its seeds readily attach to animals, people, equipment, etc. and are also dispersed by flowing water. Japanese chaff flower grows in dense stands that crowd out native vegetation. Primarily known in counties along the Ohio River.

Flowers: summer. Small flowers are arranged in a spike and have no petals.

Fruits: surrounded by two stiff bracts that attach to animals as a dispersal mechanism. Alternately arranged and reflexed to the stem.



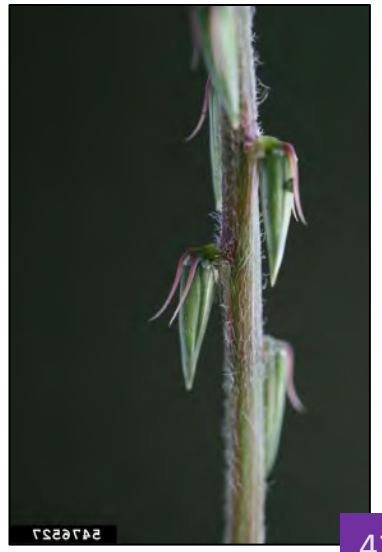


Photo credits:
Front – habit, fr, P. Marcum; fl, C. Evans
Back – lvs, P. Marcum; lopseed, N. Pilla

Japanese Chaff Flower

Achyranthes japonica (Miq.) Nakai

Leaves: opposite, simple, hairless to soft-pubescent, smooth margins, and pointed tips. The leaf base tapers to the leaf stalk.

Stem: hairless to soft-pubescent. Often branched.

Similar species:

The native lopseed (*Phryma leptostachya*) can be confused for Japanese chaff flower. Lopseed's fruits are oppositely arranged and its leaves are toothed.

Garlic Mustard

Alliaria petiolata (M. Bieb.) Cavara & Grande

Garlic mustard is a cool-season, biennial, herbaceous plant that typically grows up to 3’ tall. It was introduced from Europe for culinary and medicinal uses. It quickly spreads in disturbed habitats, preferring moist, shaded woodlands but tolerant of all but the wettest, driest, and most acidic habitats. Garlic mustard is thought to be successful at least in part due to its allelopathy and the absence of co-evolved predators and pests in North America. It also produces an alkaloid which gives the leaves a distinct garlic odor and peppery taste. Widespread throughout the state.

Flowers: spring and sometimes all the way into late summer. Small 4 white petals arranged in a clustered raceme.

Fruits: an elongated, slender pod (silique) that can be as long as 2.5” and contain 10-20 black seeds in each. Seeds can be viable in the soil for over 10 years.

Photo credits:
Front – habit, fl, M. Huft; fr, B. Harms
Back – basal lvs, P. Rothrock; purple cress, N. Pilla

Garlic Mustard

Alliaria petiolata (M. Bieb.) Cavara & Grande

First-year basal leaves

Leaves: alternate, dark green to yellowish-green, coarsely toothed. First-year leaves are kidney-shaped and arranged in a basal rosette of 4-8 leaves. Second-year leaves are more triangular and are alternately arranged along the stem.

Stem: single or multiple from base, often only hairy on the base.

Purple Cress

Similar species:

The native spring cress (*Cardamine bulbosa*) and purple cress (*C. douglassii*) may be confused with garlic mustard in that they both have 4-parted, white flowers. That is mostly where the similarities end. Both spring cresses have leaves that are irregularly toothed and usually longer than wide. Also they have no garlic-like odor or taste.

Purple Cress Basal leaves

Mugwort

Artemisia vulgaris L.

Mugwort, also called common wormwood, is an herbaceous, rhizomatous perennial that can grow up to 5’ tall. It was introduced as a medicinal herb. Even though an individual plant can produce as many as 200,000 seeds, its spread is primarily vegetative, with the additional ability to establish from root fragments. Mugwort grows in moist to dry, predominantly open habitats, especially in disturbed areas such as roadsides and rail corridors. Scattered throughout the state.

Flowers: late summer. Small, indistinct yellowish-brown flowers arranged in rayless heads.

Fruits: small achenes lacking the plumes of hair found on many other species in the aster family.

Photo credits:
Front – all, N. Pilla
Back – basal lvs, A. Rockstein; lvs, N. Pilla; common ragweed, B. Harms

Mugwort

Artemisia vulgaris L.

Basal leaves

Leaves: lower leaves are stalked and deeply divided, whereas middle and upper leaves are sessile and lobed (or entire near the inflorescence). Alternately arranged. Upper leaf surface is green and hairless; bottom surface is green or bicolored and hairless to densely pubescent. Crushed leaves produce an unpleasant odor.

Stem: hairless to hairy, angled, turning somewhat woody with age.

Similar species:

The leaves of the native common ragweed (*Ambrosia artemisiifolia*) are easily confused with mugwort. Ragweed leaves are oppositely arranged (sometimes alternate near the apex), whereas they are always alternate on mugwort.

Spiny Plumeless Thistle

Carduus acanthoides L.

Spiny plumeless thistle is a biennial, herbaceous plant in the aster family growing to 4+' tall. Native to Europe, it was first found in the United States in the late 19th century on the East Coast. It spreads by wind-dispersed seeds which germinate readily in disturbed habitats such as roadsides and pastures. Spiny plumeless thistle often hybridizes with the closely related and invasive musk thistle (*Carduus nutans*). Both species are avoided by grazing animals which gives them a competitive advantage over native plants in grasslands. Only known in a few northeastern counties.

Flowers: summer – fall. Composite flowerhead with pink to purple disk flowers. Flowerheads single or many on branches. Narrow, spine-tipped bracts.

Fruits: a small achene with a hair-like pappus dispersed by wind.

Photo credits:
Front – all, A. Rockstein
Back – lvs, stm, M. Lavin; basal lvs, A. Rockstein; field thistle, N. Pilla

Spiny Plumeless Thistle

Carduus acanthoides L.

Leaves: dark green with a light green midrib, alternate, deeply lobed, with spine-tipped teeth. Lower surfaces sparsely hairy. First year basal rosette leaves are large, growing up to 8” long.

Stem: branched, covered in spine-tipped leafy wings. Often covered in bristly hair.

Basal leaves

Similar species:

The native, field thistle (*Cirsium discolor*) can superficially look like spiny plumeless thistle with its long spiny bracts; however, field thistle lacks the spine-tipped leafy wings. The non-native musk thistle is similar but has larger, nodding flowerheads with wide showy bracts.

Musk Thistle

Carduus nutans L.

Musk thistle, also called nodding plumeless thistle, is a biennial, herbaceous plant in the aster family growing 1-7’ tall. Native to Europe, musk thistle was first observed in the United States during the mid-19th century and is now widespread. Musk thistle grows in dry to moist open habitats, particularly along roadsides and in old fields and pastures. It hybridizes with the closely related spiny plumeless thistle (*Carduus acanthoides*). Both species are avoided by grazing animals, giving them a competitive advantage over native plants in grasslands. Widespread throughout the state.

Flowers: spring – fall. Composite flowerhead with pink to purple disk flowers. Flowerheads nodding up to 90° at maturity. Large, showy spine-tipped bracts at base of flowerhead. Bloom in plant’s second year.

Fruits: small, light brown with a hair-like pappus for wind dispersal.

Large Showy bracts

Photo credits:
Front – all, M. D’Arcy
Back – all, M. D’Arcy

Musk Thistle

Carduus nutans L.

Leaves: dark green with a light green midrib, alternate, coarsely lobed, with a smooth, waxy surface and spine-tipped teeth. First year rosette leaves are large, growing up to 10-12” long.

Stem: branched, covered in spine-tipped leafy wings. Often covered with bristly hairs.

Similar species:

There are no native thistles in Indiana that have the spine-tipped leafy wings on its stem and large showy bracts. The non-native spiny plumeless thistle (*Carduus acanthoides*) is similar but has much smaller, erect flowerheads. Its leaves are deeply lobed to feathery with hairy undersides. The non-native bull thistle (*Cirsium vulgare*) has the spine-tipped leafy wings on its stem but lacks the wide, showy bracts.

Spotted Knapweed

Centaurea stoebe L.

Spotted knapweed is a branched, biennial or perennial herb growing to 4’ tall. Native to eastern Europe, it is thought to have arrived on ship ballast in the late 19th century. It occurs in a variety of open, disturbed habitats, especially in old fields but invading oak savannas, prairies, and dunes. It spreads through prolific seed production. Spotted knapweed’s roots exude allelopathic chemicals that inhibit the growth of native plants. Livestock and native grazers find spotted knapweed unpalatable. Widespread throughout the state.

Flowers: summer – fall. Pink to purple (rarely white) flowerheads. Flowerheads have stiff bracts tipped with black, fringed hairs. Ray flowers are branched.

Fruits: Hundreds to thousands of small seeds produced per plant. Wind-dispersed for short distances but carried long distances by humans, livestock, and rodents. Viable in soil for up to 7 years.

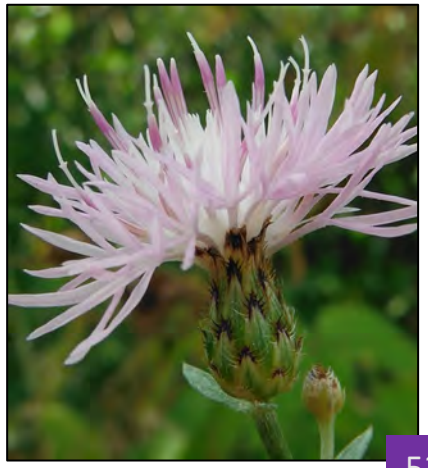


Photo credits:
Front – habit, P. Marcum; fl, N. Pilla
Back – basal lvs, rough blazingstar, N. Pilla; lvs, M. D’Arcy

Spotted Knapweed

Centaurea stoebe L.

Basal leaves

Leaves: gray-green, covered in rough hairs and deeply divided. Rosette leaves grow up to 6” long. Stem leaves alternate, with lower stem leaves resembling rosette leaves.

Stem: branched on the upper half of the plant, hairy.

Rough blazingstar

Similar species:

Blazingstars (*Liatris* spp.) can be mistaken for spotted knapweed; however, they lack ray flowers and have simple, not dissected or lobed, leaves. The native rough blazingstar (*L. aspera*) is pictured here.

Canada Thistle

Cirsium arvense (L.) Scop.

Canada thistle is a widespread perennial herb growing up to 6.5’ tall. Native to Eurasia, not Canada, it was introduced in the 1600s and has since spread extensively in open, disturbed, dry to moist (even wet) habitats. It spreads through wind-dispersed seed and clonally by lateral roots that spread horizontally up to 10-12’ per year. Canada thistle also regenerates from root fragments. Widespread throughout the state.

Flowers: spring – fall. Composite flowerheads with pink to purple (rarely white) disk flowers. Bracts are purplish-green and appressed with tiny spines up to 0.06” long.

Fruits: small, light brown with a hair-like pappus for wind dispersal.

Tiny spine-tipped bracts

Photo credits:
Front – all, M. D’Arcy
Back – stm, M. D’Arcy; lvs, P. Marcum; swamp thistle, N. Pilla

Canada Thistle

Cirsium arvense (L.) Scop.

Leaves: sessile, alternate, irregularly lobed, with spine-tipped teeth. Hairiness is variable.

Stem: grooved stems branched near the top. Covered in appressed hairs or hairless. No spines on the stem.

Swamp thistle

Similar species:

The thistle most often confused with Canada thistle is the native swamp thistle (*Cirsium muticum*). The bracts of swamp thistle lack spines (minute spines are occasionally present). Swamp thistle also lacks rhizomes.

Canada thistle differs from other thistles by having (1) no spiny wings on the stem, (2) green leaf undersides, (3) small spines (0.04-0.06”) on bracts, and (4) rhizomes.

Bull Thistle

Cirsium vulgare (Savi.) Ten.

Bull thistle is a widespread annual, biennial, or monocarpic (flowers once and dies), perennial herb growing up to 6’ tall. Native to Europe, it is thought to have been introduced as early as the 1600s. It is typically found along roadsides and in old fields and other open, disturbed sites. It spreads only through seeds. Widespread throughout the state.

Flowers: spring – fall. Composite flowerhead with pink to purple (rarely white) disk flowers. Bracts have long upcurved spines.

Fruits: small, light brown with long hair-like pappus for wind dispersal that gives the seed heads a messy hair appearance.

Long spine-tipped bracts

Photo credits:
Front – infl, fl, M. D’Arcy; fr tuft, A. Rockstein
Back – all, M. D’Arcy

Bull Thistle

Cirsium vulgare (Savi.) Ten.

Leaves: alternate, irregularly lobed, very hairy, with spine-tipped teeth. Up to 12” long. Basal leaves and young leaves often tomentose. Undersides are gray-hairy.

Stem: spiny wings along the length of the stem. Often branched.

Similar species:

Bull thistle differs from other thistles including native thistles by these collective traits: (1) spiny winged stem; (2) narrow, long, spine-tipped bracts; (3) flowerheads mostly solitary on branches; and (4) flowerheads over 0.5” wide. See treatments for Canada thistle (*Cirsium arvense*), spiny plumeless thistle (*Carduus acanthoides*), and musk thistle (*Carduus nutans*).

Poison Hemlock

Conium maculatum L.

Poison hemlock is an herbaceous biennial (sometimes perennial) that can grow 3-9’ tall. It is native to Eurasia and was introduced in the horticultural trade in the early- to mid-19th century. Poison hemlock spreads prolifically through seed. It is known for its toxicity to humans, as ingestion can be fatal. Legendarily (but disputably) it is the plant that killed Socrates. It grows in moist, disturbed areas displacing native vegetation by its rapid growth.

Flowers: spring – summer. Compound umbels of small, white flowers. Umbels range from 2-5” across and consist of 8-16 umbellets, each containing 12-25 flowers.

Fruits: Broadly ovate and somewhat flattened schizocarp (a dry fruit that splits into single-seeded parts) with wavy, longitudinal ribs.

Photo credits:
Front – all, M. D’Arcy
Back – lvs, stm, M. D’Arcy; marsh hemlock, N. Pilla

Poison Hemlock

Conium maculatum L.

Leaves: alternate, up to 18” long and 12” across, smaller near the apex of the stem. Leaves are bi- or tripinnately compound, triangular-ovate in outline, and hairless. The base of each leaf stalk is partially covered by a sheath. Terminal leaflets are lanceolate to ovate in shape, pinnately cleft or dentate, and hairless.

Stems: light green and purple-spotted, hairless, glaucous, and hollow

Marsh hemlock

Similar species:

The native marsh hemlock (*Cicuta maculata*) is easily mistaken for poison hemlock. Marsh hemlock is usually a smaller plant that blooms in mid- to late summer in wetter habitats. Marsh hemlock has leaflet veins terminating in the notches between the teeth and not the tips of the teeth as in poison hemlock.

Common and Cutleaf Teasel

Dipsacus fullonum L. and *D. laciniatus* L.

Common teasel

Cutleaf teasel

Both common and cutleaf teasel are monocarpic (flowers once and dies), herbaceous perennials which grow as a basal rosette for at least one year before sending up a flowering stalk to 6-7’ tall in the second or third year. Both were introduced from Eurasia and grow in open, usually predominantly disturbed habitats. They can, however, invade prairies, savannas, and wet meadows. Both can form extensive monospecific stands through. Seeds are dispersed by gravity and by attaching to animals, people, and equipment. Cutleaf teasel is more common in the northern half of the state. Common teasel is widespread throughout the state.

Photo credits:
Front – fls, P. Rothrock
Back – common teasel fl, lvs, M. D’Arcy; cutleaf teasel lvs, habit, P. Rothrock

Common and Cutleaf Teasel

Dipsacus fullonum L. and *D. laciniatus* L.

Common teasel flowers

Flowers: summer. Typically from 200 to 1,000 small flowers clustered in dense, egg-shaped heads. Stiff, spiny, leaf-like bracts extend from bases of flower heads.

Fruits: hairy achenes that measure up up to 0.3” long. Each plant can produce as many as 2,000 seeds which can remain viable for 2 years.

Leaves: oblong and prickly. Leaves of flowering plants clasp around the stem, forming a cup.

Stem: branched, robust, angled, and prickly.

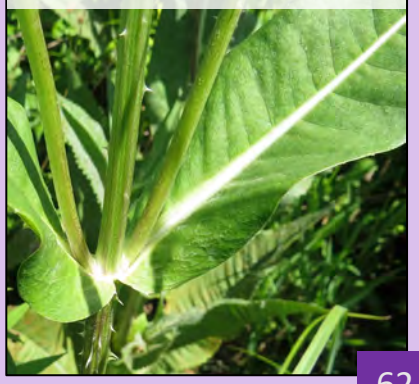
Cutleaf teasel

Cutleaf teasel leaves

Comparison:

Common teasel leaves are unlobed, flowers are purple to purplish-pink, and bracts are linear and often longer than the flowerheads. Cutleaf teasel leaves are deeply lobed, flowers are white, and the bracts have a wider base, tapering to the tip and not exceeding the flowerheads.

Common teasel leaves



Leafy Spurge

Euphorbia esula L.

Leafy spurge is an herbaceous perennial that can grow up to 3.5’ tall. Native to Eurasia, it was introduced in the early to mid-19th century. It is tolerant of a wide range of habitats, favoring open, disturbed environments such as roadsides and old fields but also invading prairies and savannas, where it displaces native plants. Damaged stems, flowers, and leaves emit a white milky sap that is toxic to some animals. Scattered throughout western half of state. Synonym: *Euphorbia virgata*.

Flowers: spring – summer. Tiny, yellow-green, surrounded by yellow-green bracts. Arranged in umbrella-shaped clusters.

Fruit: Seed capsules open explosively, dispersing seed up to 15’. High germination rate; seeds remain viable in the soil for 7 years.

Photo credits:
Front – all, M. Lavin
Back – lvs, plant, A. Rockstein; tinted spurge, S. Namestnik

Leafy Spurge

Euphorbia esula L.

Leaves: alternate, bluish-green, and small. They are oblong to lance-shaped usually over 6 times as long as wide. Leaves are denser near the inflorescence and more reduced near the stem base.

Stems: hairy, erect or ascending, woody near the base

Similar species:

The native tinted or wood spurge (*Euphorbia commuta*) can be mistaken for leafy spurge. It differs in having leaves less than 3 times as long as wide and has its flowers surrounded by green bracts.

Dame's Rocket

Hesperis matronalis L.

Dame's rocket is an herbaceous, short-lived perennial or biennial that grows up to 4' tall. Native to Europe, it was introduced in the 1600s as an ornamental. Since that time, it has spread into a variety of moist open to wooded habitats, particularly along roadsides, forest margins, and in open floodplains. Dame's rocket spreads by seed. It is sometimes included in wildflower seed mixes. Widespread throughout the state.

Flowers: spring – summer. Large, loose, rounded inflorescences of spicy, sweet smelling white, pink, or purple 4-petaled flowers.

Fruits: an elongated, slender pod (silique) that can be as long as 5" and contain many seeds

Photo credits:
Front – fls, M. D'Arcy; fr, M. Lavin
Back – lvs, M. D'Arcy; Fall phlox, M. Huft

Dame's Rocket

Hesperis matronalis L.

Leaves: alternate, lance-shaped, toothed, sessile or with a very short petiole. Short hairs. Distinct light green midrib. First year leaves are in basal rosettes.

Stems: erect, branched at base and top, and hairy.

Similar species:

The native fall phlox (*Phlox paniculata*) is often confused for Dame's rocket. Fall phlox typically blooms much later in the season, has opposite, untoothed leaves, and its flowers have 5 (not 4) petals.

Perennial Pepperweed

Lepidium latifolium L.

Perennial pepperweed is an herbaceous perennial that can grow up to 6’ tall. Native to Eurasia, it was accidently introduced to North America. Perennial pepperweed can grow in a variety of conditions, preferring riparian and wetland habitats but also occurring along roadsides and in old fields and other open areas. It spreads through seed dispersal, root buds, and translocation of root fragments, allowing it to form dense colonies that restrict the growth of other plants. It is only known in two northwest Indiana counties (Lake and Starke).

Flowers: summer. Inflorescences clustered at the tips of the branched stems. Small flowers with four white petals.

Fruit: orbicular seed pod (silicle), flat, wingless, and unnotched at the apex.

Photo credits:
Front – all, M. Lavin
Back – all, M. Lavin

Perennial Pepperweed

Lepidium latifolium L.

Leaves: alternate, waxy, oblong to lance-shaped, sessile or on a short petiole, entire or toothed. Leaf size decreases near the stem apex. Basal leaves are larger and long-petioled.

Stems: branched distally, erect

Similar species:

Perennial pepperweed is easily confused with native and non-native *Lepidium* species. All other *Lepidium* species have a notch at the apex of its (suborbicular) fruit except for perennial pepperweed and the non-native, whitetop hoary-cress (*Lepidium draba*). Whitetop hoary-cress differs in that it is shorter than perennial pepperweed and has clasping leaves.

Sericea Lespedeza

Lespedeza cuneata (Dum. Cours.) G. Don

Sericea lespedeza, also called Chinese bush-clover, is a multi-stemmed herb growing to approximately 3’ tall. Native to central and eastern Asia, it was used in the early 20th century for mine reclamation, erosion control, and later in pastures and lands enrolled in grassland sericea lespedeza is unpalatable to domesticated animals. It spreads from root crowns and seeds into a wide variety of mostly open habitats. Widespread throughout the state.

Flowers: early summer – early autumn. Creamy to pale white with a purple spot at the base. Arranged singly or in clusters of 2-3 along upper leaf axils. Some remain closed and self-pollinate.

Fruit: subglobose, appressed-hairy legumes.

Photo credits:
Front – habit, P. Marcum; fl, M. Huft; fr & lvs P. Rothrock
Back – all photos, N. Pilla

Sericea Lespedeza

Lespedeza cuneata (Dum. Cours.) G. Don

Leaves: alternate, compound leaf with three entire, wedge-shaped, bristle-tipped leaflets, densely hairy on the underside and sparsely hairy on the upper surface

Stems: hairy, erect or ascending, woody near the base

Roundheaded bushclover

Similar species:

There are many native bush-clovers (*Lespedeza* spp.) in Indiana that could be mistaken for sericea lespedeza. Sericea lespedeza can be distinguished from the other bush-clovers by its combination of (1) few, short-stalked axillary flowers, (2) flowers white with purple spots, and (3) bristled leaflet tips. The native roundheaded bushclover (*L. capitata*) pictured here.

Purple Loosestrife

Lythrum salicaria L.

Purple loosestrife is an herbaceous perennial that grows to 7’ tall. Native to Eurasia, it was introduced as a landscape plant suitable for wet soils and is still available in the nursery trade. It invades moist to wet habitats, especially open wetlands, gaps within wooded wetlands, and along shores and ditches. It seeds prolifically and spreads vegetatively through root shoots forming dense monospecific stands that exclude other plants and have other deleterious impacts such as reducing water flow. Widespread throughout the state.

Flowers: summer. Magenta-colored with 5 or 6 petals and purple-tipped stamens. Clustered in spikes.

Fruits: small capsules that burst at maturity (mid-late summer). A single plant can produce 2 million or more seeds per year. Seeds remain viable in soil for up to 20 years.

Photo credits:
Front – fls, P. Marcum; fr, N. Pilla
Back – infestation, P. Marcum; lvs, winged loosestrife, N. Pilla

Purple Loosestrife

Lythrum salicaria L.

Leaves: opposite, pairs (sometimes appearing in groups of three) alternating at 90° angles, 1-4” long, lance-shaped, entire, and sessile. Often slightly hairy.

Stem: 4-, 5-, or 6-sided, somewhat woody stems usually covered with downy hair. Mature plants have multiple stems (30-50) originating from a woody crown.

Similar species:

The native winged loosestrife (*Lythrum alatum*) can be confused for purple loosestrife. Winged loosestrife has smaller, usually lighter-colored flowers arranged singly in leaf axils. As the name suggests, winged loosestrife also has slightly winged stems.

Giant/Japanese Knotweeds

Reynoutria japonica Houtt.; *R. sachalinensis* (F. Schmidt ex Maxim.) Nakai; *R. ×bohemica* Chrtek & Chrtková

Bohemian knotweed

Japanese knotweed (*Reynoutria japonica*), **giant** knotweed (*R. sachalinensis*), and **Bohemian** knotweed (*R. ×bohemica*) are all large herbaceous perennials with bamboo-like stems that grow to 8-10' tall. They are native to eastern Asia and were introduced as ornamentals in North America. Knotweeds commonly invade streambanks, roadsides, dumps, and a variety of other moist, disturbed habitats. All three grow from seed but, once established, expand rapidly through rhizomes. Synonym: *Fallopia* spp.; *Polygonum* spp.

Flowers: summer. Clustered inflorescence in axillary or terminal panicles, flowers cream to green.

Fruits: a smooth, brown achene with flat to undulate (wavy) wings

Japanese knotweed fruit

Japanese knotweed flowers

Photo credits:
Front – habit, N. Pilla; fr, P. Rothrock; fl, M. Lavin
Back – Japanese lvs, M. Lavin; Bohemian lvs, ocrea, S. Namestnik; giant lvs, B. Harms

Giant/Japanese Knotweeds

Reynoutria japonica Houtt.; *R. sachalinensis* (F. Schmidt ex Maxim.) Nakai; *R. ×bohemica* Chrtek & Chrtková

Japanese knotweed emerging from chaff

Bohemian knotweed ocrea

Leaves: alternate.

- **Japanese** has smaller, hairless leaves up to 6” long with sub-truncate bases and deciduous ocreae.
- **Bohemian** has larger leaves to 10” long with subcordate (slightly heart-shaped) bases, short hairs on the veins on the lower leaf surfaces, and deciduous ocreae.
- **Giant** has even larger leaves to 12” or greater with cordate (heart-shaped) bases, short hairs on veins and often on the lower leaf surfaces, and persistent ocreae.

Stems: profusely (**Japanese** and **Bohemian**) or sparsely branched (**Giant**). Usually clustered, stiff, hairless, glaucous, and hollow.

Japanese knotweed

Bohemian knotweed

Giant knotweed

Crown Vetch

Securigera varia (L.) Lassen

Crown vetch is an herbaceous, multi-branched perennial native to the Mediterranean region. It was introduced for erosion control and as a groundcover for mining sites, a cover crop for agricultural fields, and a "green-fertilizer" plant. It spreads through seeds and vegetatively through rhizomes, creating dense colonies that shade out other plants. Crown vetch exploits open, disturbed habitats, and can exploit disturbances in higher quality habitats such as prairies and savannas. Widespread throughout the state. Synonym: *Coronilla varia*.

Flowers: spring – summer. Inflorescence is an umbel with 10-25 pink to white flowers.

Fruits: legume is angular, slender, and linear. Constricted into several single-seeded joints.

Photo credits:
Front – fl, habit, M. Huft; fr M. Lavin
Back – lvs, B. Harms; infestation, P. Marcum; American vetch, M. Lavin

Crown Vetch

Securigera varia (L.) Lassen

Leaves: alternate, compound, odd-pinnate with 11-25 leaflets. Leaflets are sessile, oblong, hairless, and often have a small tip at the apex. No tendrils.

Stems: hairless, ascending, sometimes branching.

Similar species:

Crown vetch can be confused for native and non-native vetches (*Vicia* spp.). However, vetches have tendrils and their flowers are borne singly or arranged in elongated racemes. The native American vetch (*Vicia americana*) is pictured here.

Small Carpetgrass

Arthraxon hispidus (Thunb.) Makino

Small carpetgrass is an aggressive, creeping annual grass to 1.5’ tall that was accidently introduced from eastern Asia. It forms dense patches in mesic to wet habitats such as moist forests, floodplains, and shorelines. Small carpetgrass roots at its nodes as it sprawls over wet landscapes. Its seeds are dispersed by moving water or by attaching to animals, people, and tires. As of April 2020, it is only known from a few counties in southern Indiana.

Flowers: summer – fall. Arranged in 1 to 3 finger-like spikes up to 3” in length.

Fruits: a slender grain or caryopsis approximately 0.07” long.

Photo credits:
Front – habit, S. Namestnik; fr, fl, B. Harms
Back – lvs, S. Namestnik; deertongue grass, N. Pilla

Small Carpetgrass

Arthraxon hispidus (Thunb.) Makino

Clasping leaf base

Leaves: clasping completely around the stem, broader at the heart-shaped base and tapering to a point at the apex. Long hairs on the margins. Leaves become smaller up the stem.

Stems: prostrate or erect, branched, roots at the nodes, and hairless.

Similar species:

Vegetatively, small carpetgrass is often confused for the native deer tongue grass (*Dichanthelium clandestinum*) which also has broad, clasping leaves. Deer tongue grass differs by its non-rooting nodes, flowers are arranged in panicles, and leaves lack long marginal hairs.

Japanese Stiltgrass

Microstegium vimineum (Trin.) A. Camus

Japanese stiltgrass is an annual grass typically 1-3’ tall that grows in a branching, sprawling, mat-like manner. Native to Asia, it was accidentally introduced in the early 20th century in Tennessee. It is shade-tolerant and typically colonizes ditches, trails, or streambanks in moist, mostly wooded habitats, subsequently spreading to and eventually dominating forest interiors. It is widespread throughout the state, more so in the southern half.

Flowers: summer. Tiny flowers arranged on slender stalks 1-3” long.

Fruits: each plant produces 100-1,000 seeds which can remain viable in the soil for 5 or more years.

Photo credits:
Front – habit, C. Evans; infl, P. Marcum;
Back – lvs, B. Harms; whitegrass, N. Pilla

Japanese Stiltgrass

Microstegium vimineum (Trin.) A. Camus

Leaves: alternate, narrow, lance-shaped, pale green, up to 3” long and lightly hairy. Pale, silvery stripe of reflective hairs along midrib of upper leaf surface. Midrib is off-centered. Turns yellow to orange in fall.

Stems: prostrate, branched, rooting at the nodes.

Off-centered midrib

Whitegrass

Similar species:

The native perennial whitegrass (*Leersia virginica*) is similar in its habit and off-centered midrib but lacks the stripe of reflective hairs on the upper leaf surface, flowers earlier, and does not turn orange in fall. Further, whitegrass has hairy nodes; the nodes are smooth in Japanese stiltgrass.

Reed Canarygrass

Phalaris arundinacea L.

Reed canarygrass is a cool season perennial that grows up to 6’ tall. Although the species is native to North America, a vast majority of populations present today are of Eurasian origin. Reed canarygrass is a rapid invader of disturbed moist soil and now forms dense, monospecific stands in open to forested wetlands, riparian habitats, and even upland habitats where moisture is adequate. It reproduces by seed and aggressive vegetative (rhizomatous) expansion.

Flowers: Spring. Flower heads 3-6” long, green to purple, turning beige with age. Branches of inflorescence spreading when in bloom but held close to stem at maturity.

Fruits: shiny, brown, smooth. Seeds can germinate immediately upon maturation.

Photo credits:
Front – cream infl, florets and glumes, M. Lavin; purplish infl, P. Marcum
Back – ligules, M. Lavin; habit, P. Marcum

Reed Canarygrass

Phalaris arundinacea L.

Clasping leaf base

Leaves: alternate, flat, hairless, gradually tapering, 0.25-0.75” wide, 3.5-10” long, coarse-textured. Ligule is thin and papery.

Stems: hairless and erect.

Bluejoint grass ligule

Similar species:

The native bluejoint grass (*Calamagrostis canadensis*) grows in the same habitat and is often confused for reed canarygrass. Bluejoint grass leaves do not exceed 0.4” wide and are generally smaller than those of reed canarygrass. Bluejoint grass also has a smoother texture and a less translucent ligule.

Common or Giant Reed

Phragmites australis subsp. *australis* (Cav.) Trin. Ex Steud.

Common reed is a warm-season perennial grass that typically grows to 3-16'. Native to Eurasia, this subspecies has proliferated throughout North America. It spreads by seed and clonally through rhizomes. It is found in tidal and nontidal brackish and freshwater marshes, riverbanks, shores, ditches, roadsides, and disturbed areas on moist soils generally. Once it establishes, it can quickly form monospecific stands that exclude (or sharply reduce) native plants, degrade wildlife habitat, alter hydrology, and increase fire potential.
Widespread across the state.

Flowers: summer. Large, feathery panicles, 5-16" long, purple-brown, turning golden-brown to yellow with age.

Fruits: may produce thousands of seeds a year but these typically with have low viability

Photo credits:
Front – habit, plant, P. Marcum; winter infl, N.Pilla
Back – infl, P. Marcum; ligules, M. Lavin

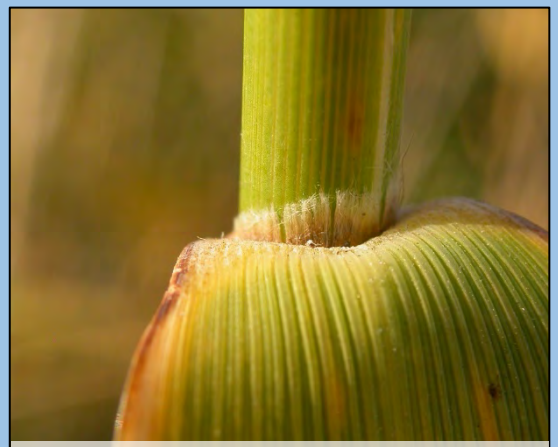
Common or Giant Reed

Phragmites australis subsp. *australis* (Cav.) Trin. Ex Steud.

Common reed ligule

Leaves: blades are long and tapering, 1-1.5” wide at base and 10-20” long. Blade surface smooth but margins rough. Ligules typically under 0.02”. Leaves persist through fall.

Stems: hollow, bamboo-like, turning yellow to tan in the fall.



American common reed ligule

Similar species:

The native subspecies, American common reed (*Phragmites australis* subsp. *americanus*) has 0.04-0.08” ligules comprised of short hairs. Its leaves and sheaths usually shed in late summer, exposing a reddish stem. The stems of the non-native subspecies are typically straw-colored, although stolons and lower portions may exhibit some red coloration.

Johnson Grass

Sorghum halepense (L.) Pers.

Johnson grass is a warm-season perennial that can grow up to 12’ tall (stems with inflorescences). Native to the Mediterranean region, it was introduced in the early 19th century as a forage crop. Johnson grass spreads through seed and spreading rhizomes, exploiting roadsides, old fields, and a variety of other open, mostly disturbed habitats. Widespread throughout the state.

Flowers: summer – fall. Spikelets paired with one sessile and one pedicellate floret. At least one of the glumes is longer than the florets. Flowers are arranged in a large, spreading, loose, panicle.

Fruits: a slender grain develops from the sessile spikelet.

Photo credits:
Front – all, M. Lavin
Back – ligules, florets, M. Lavin; lvs, M. Huft

Johnson Grass

Sorghum halepense (L.) Pers.

Johnson grass ligule

Leaves: alternate along smooth, thick stem (culm). Prominent white midrib, hairless. Ligule is a band of hairs.

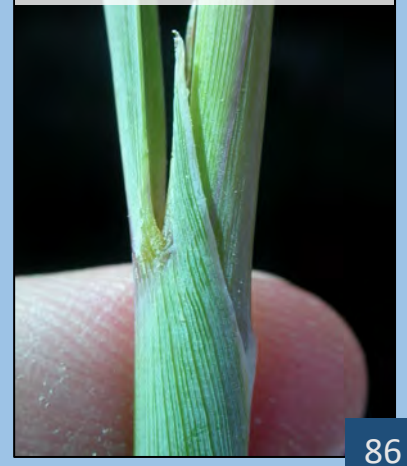
Stems: hairless, often purplish at the base.

Indian grass (left) vs.
Johnson grass (right)

Similar species:

There are many large grasses that can be confused with Johnson grass. The native Indian grass (*Sorghastrum nutans*) is similar, differing in its highly reduced pedicellate spikelet that lacks lemmas and glumes. The ligule is stiff and protrudes from the sheath unlike Johnson grass' ligule which is just a band of hairs.

Indian grass ligule



Other Species to Report

These plant species are not yet regulated in Indiana but are aggressive enough to warrant concern and action. Many are currently under consideration.

If you observe these plants, please report the location on EDDMaps:

http://www.eddmaps.org/indiana

Burning bush (*Euonymus alatus*)
Callery pear (*Pyrus calleryana*)
Chinese maiden grass (*Miscanthus sinensis*)
English ivy (*Hedera helix*)
Highbush cranberry (*Viburnum opulus* v. *opulus*)
Hybrid cattail (*Typha* x *glauca*)
Japanese meadowsweet (*Spiraea japonica*)
Jetbead (*Rhodotypos scandens*)
Korean lespedeza (*Kummerowia stipulacea*)
Lesser celandine (*Ficaria verna*)
Lyme grass (*Leymus arenarius*)
Moneywort (*Lysimachia nummularia*)
Norway maple (*Acer platanoides*)
Periwinkle (*Vinca minor*)
Porcelain berry (*Ampelopsis brevipedunculata*)
Princess tree (*Paulownia tomentosa*)
Striate lespedeza (*Kummerowia striata*)
Sweet autumn clematis (*Clematis terniflora*)
Vetch (*Vicia cracca*)
Wild parsnip (*Pastinaca sativa*)
Wine raspberry (*Rubus phoenicolasius*)
Wisteria (*Wisteria sinensis*)

References and Other Resources

PLANT TERMINOLOGY:

Plant Information Center's Botanical Dictionary

- https://www.ibiblio.org/pic/botanical_dictionary.htm

REPORTING INVASIVE SPECIES:

Early Detection and Distribution Mapping System

- https://www.eddmaps.org/indiana

INVASIVE SPECIES ACTIVITIES IN INDIANA:

Indiana Invasive Species Council

- Indianainvasivespecies.org

Indiana Native Plant Society

- Indiananativeplants.org

Southern Indiana Cooperative Invasives Management

- http:// www.sicim.info/cisma-project?

The Nature Conservancy - Indiana

- https://www.nature.org/en-us/about-us/where-we-work/united-states/indiana

INVASIVE SPECIES ACTIVITIES IN MIDWEST:

Midwest Invasive Plant Network

- https://www.mipn.org

IDENTIFICATION ASSISTANCE FOR INVASIVE SPECIES

Consortium of Midwest Herbaria

- midwestherbaria.org

Indiana Plant Atlas

- http://www.indiana.plantatlas.usf.edu

Michigan Flora Online

- michiganflora.net

Go Botany: New England Native Plant Trust

- http:// gobotany.nativeplanttrust.org

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environmental consulting

www.orbisec.com