



# Landowner Toolkit

*Show your Hoosier roots - stay native, not invasive.*

## Toolkit Contents

- SICIM promotional flier
- MIPN brochure – Landscape alternatives for Invasive Plants
- IPSAWG brochure – Landscaping with non-invasive plant species: Making the right choice
- 7 Invasive Plant Species Fact Sheets – glossy from IPSAWG (Periwinkle, Privet, Autumn Olive, Oriental Bittersweet, Japanese Honeysuckle, Crown Vetch, Asian Bush Honeysuckle)
- 2 “Keep a Lookout” fliers with color pictures of 16 new invasive species – one flier for aquatic plants and one for terrestrial
- Invasive plant species resource sheet – helpful websites, books and articles
- Where do I start?! – INPAWS newsletter article by Ellen Jacquart on prioritizing invasive plant control actions on a given piece of land
- Funding programs for invasive species control in Indiana – list and descriptions compiled by Ron Rathfon

## **Thank you for your interest in invasive species control!**

This package of resource material, compiled by the Southern Indiana Cooperative Invasives Management, is intended to help landowners and land managers:

- identify invasive species threats,
- determine what options are effective to control them, and
- find assistance for control efforts



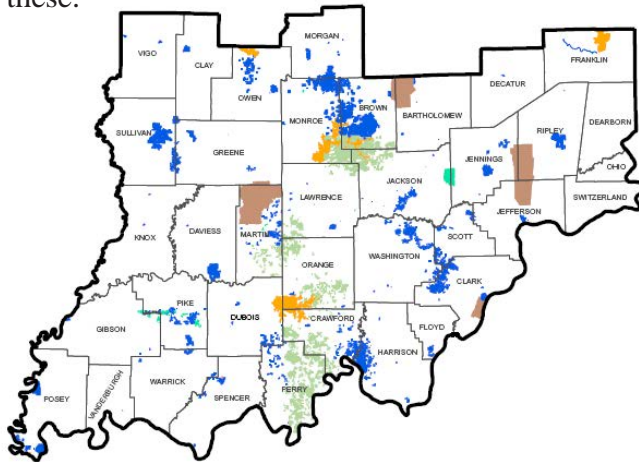
# Southern Indiana Cooperative Weed Management Area

## What is the Southern Indiana Cooperative Weed Management Area (CWMA)?

It is a partnership between several federal and state agencies, organizations, and universities aimed at coordinating efforts and programs to address the threat of invasive plants.

## Where is the CWMA?

The 37 counties in the southern 1/3 of the state of Indiana are within the CWMA area. This region includes the Interior Low Plateau Ecoregion and is unique for its karst, extensive forests, hills, and rivers, and lakes. Southern Indiana is known for its natural resources, recreational resources, and beauty. Invasive plants are a serious threat to all of these.



## Why are invasive plants a problem?

An invasive plant is one that is not native to the area, but has been introduced, is starting to spread, and is causing damage to the natural environment. Since these plants are in a new environment, free of natural predators, parasites, or competitors, they often spread quickly. These large populations can out-compete and displace native species, or can reduce wildlife food and habitat. Some species can also disrupt vital ecosystem functions like nutrient cycling or soil decomposition. Other invasive plants cause economic damage to agriculture. They can harm or kill crops, clog equipment, and contami-

nate produce. Some invasive plants can even cause direct harm to humans or domestic animals.

## Why is the CWMA important?

### Aren't invasive plants already being managed?

Yes, the agencies and organizations involved are actively managing invasive plants, but through the CWMA efforts can be coordinated. It allows us to improve the effectiveness and efficiency of management activities, manage across jurisdictional boundaries, pool available resources, and prioritize issues.

## How can I get involved?

The simplest thing anybody can do to get involved is to be aware of the issue and not plant or spread invasive species. Learn to identify the major invasive plants in your area. Check to see if a plant is invasive before purchasing or planting it. Do not empty aquariums or dump house plants into the wild. Be sure to clean your shoes, brush off your clothes, and remove any dirt from equipment after being in an area with invasive plants. Start a control program on your land. Talk to local groups, communities, or government officials about invasive plants.

### For More Information:

- Tom Tremain, CWMA President @ 812-342-9193 or [tтинogil@bcremc.net](mailto:tтинogil@bcremc.net)
- Teena Ligman, Secretary @ 812-277-3579 or [tligman@fs.fed.us](mailto:tligman@fs.fed.us)
- or go to - <http://www.fs.fed.us/r9/hoosier/docs/plants/sicwma.htm>

*Southern Indiana CWMA Mission: Protect, restore, and enhance southern Indiana's landscapes by coordinating efforts to identify, prevent, and control invasive species.*

Southern Indiana CWMA Partners: Bloomington Park Department, EcoLogic, INC, Four Rivers R&D, Historic Hoosier Hills RC&D, Indiana Department of Natural Resources Division of Forestry, Indiana Department of Natural Resources Division of Parks, Indiana Department of Transportation, Indiana University, Lincoln Hills RC&D, Natural Resource Conservation Service, Purdue University, Soil and Water Conservation Districts, Society of American Foresters, The Nature Conservancy, U.S. Fish & Wildlife Service, Hoosier National Forest, White River RC&D

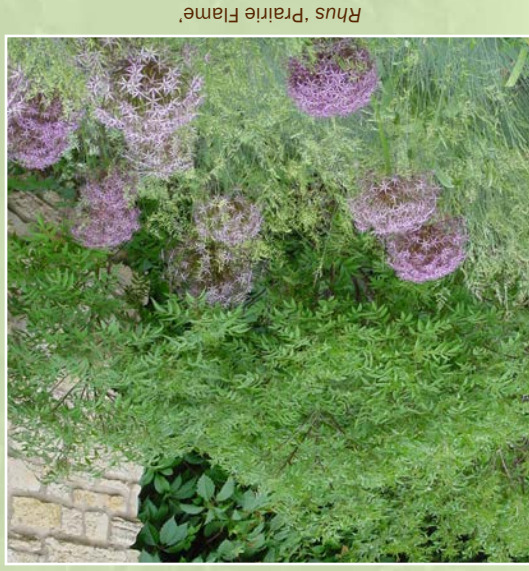
Invasive plants threaten our environment and economy. Invasive plant species pose an enormous threat to our native plants, animals and ecosystems; their toll on the environment is second only to habitat destruction. Invasive plants can also alter communities by changing hydrology or soil chemistry. Invasive plants cost the United States approximately \$35 billion per year ([www.invasivespecies.gov](http://www.invasivespecies.gov)).

Gardeners love plants that are adaptable, tough, and fast-growing. It's even better if that plant produces showy fruits that attract birds or is an annual that self-seeds so it doesn't need to be replanted every year. Unfortunately, many of these plant traits desirable to gardeners can also increase the likelihood that a plant jumps the garden fence and invades natural areas.

## Everybody loves a beautiful garden.



Knockout rose



Rhus 'Prairie Flame'

**Invasive**  
A species, usually non-native, that is able to establish itself within existing native plant communities and its posing a threat to the integrity of the community.

**Non-native (exotic, alien, introduced)**  
A species that was brought to North America by humans, either deliberately or accidentally.

**Native (indigenous)**  
A species that was present in North America prior to European settlement or has arrived since through natural means of dispersal.

Although invasive plants are almost always not native to a region, it is important to note that most non-native species are not invasive. In some rare cases, native species have become invasive. We use the following definitions:



Weigela 'Wine and Roses'



Itea 'Little Henry'



Vernonia fasciculata

**I Invasive**  
Species that are known to be invasive in our region per the definition above

**W Watch and Maintain**  
Species that need maintenance to prevent invasion

We provide several alternatives for each of the invasive species listed in this brochure, both native species and non-native species that currently show no signs of becoming invasive.

We divided our list into two categories:



People have introduced the vast majority of invasive species, either accidentally or deliberately. In this brochure, we focus on plant species that are used ornamentally and have become invasive in at least part of the Midwest. Cultivars or hybrids produced from these species are only guaranteed to be non-invasive if they are sterile. Even cultivars of invasive plants that produce fewer seeds than their parent species have the potential to be invasive.

## Alternatives



Lobelia cardinalis



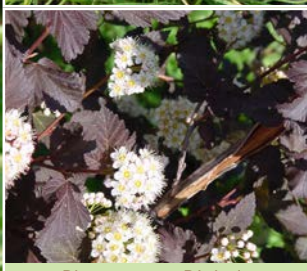
Aronia melanocarpa Elata



Sesleria autumnalis



Liatris spicata



Physocarpus Diabolo



Amelanchier Regent



Thuja Brabant



Cotinus cogg. Royal Purple



Phlox Volcano



Amelanchier canadensis

## Further reading

To find additional photos, full descriptions and cultural information for the suggested alternatives, please refer to the following references:

Armitage's Native Plants for North American Gardens  
Armitage, A.M. 2006.  
Timber Press, Portland, OR.

Native Alternatives to Invasive Plants  
Colston Burrell, C. 2006.  
Brooklyn Botanic Garden, Brooklyn, NY.

The New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada  
Cullina, W. 2000.  
Houghton Mifflin, Boston, MA.

Native Plants in the Home Landscape for the Upper Midwest  
Nowakowski, K.G. 2004.  
University of Illinois Press, Urbana, IL.

Landscaping with Native Trees  
Sternberg, G. and J. Wilson. 1995.  
Chapters Publishing, Ltd., Shelburne, VT.

Illinois' Best Plants  
<http://www.bestplants.org>

PlantFinder  
<http://www.mobot.org/gardeninghelp/plantfinder/Alpha.asp>

For information on invasive plants:

Invasive Plants of the Upper Midwest  
Czarapata, E.J. 2005.  
University of Wisconsin Press, Madison, WI.

Invasive Plants: Weeds of the Global Garden  
Randall, J.M. and J. Marinelli. 1996.  
Brooklyn Botanic Garden, Brooklyn, NY.

For information on the definition of invasive species:  
<http://www.invasivespeciesinfo.gov/docs/council/isacdef.pdf>



This brochure was created by the Midwest Invasive Plant Network's Green Industry Committee under agreements with the National Fish & Wildlife Foundation (funded by the U.S. Fish & Wildlife Service) and the U.S. Forest Service. Layout was done by The Holden Arboretum, and photos were provided by Midwest Groundcovers.

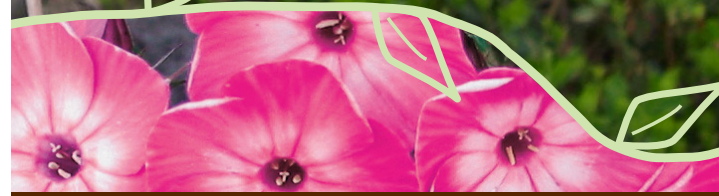
The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government or the National Fish & Wildlife Foundation. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government or the National Fish & Wildlife Foundation.

MIPN.org

Midwest Invasive Plant Network



# Landscape Alternatives for Invasive Plants of the Midwest



## Invasive species and alternatives

<i>Acer platanoides</i> (Norway maple); Shade tree; tolerant of urban environments		
<i>Acer miyabei</i> (Miyabei maple)	E	Small to medium tree; yellow fall color
<i>Ginkgo biloba</i> (Ginkgo)	E	Shade tree; tolerant of urban environments
<i>Acer freemanii</i> (Hybrid maple)	NS/E hybrid	Fast-growing; yellow to red fall color
<i>Tilia cordata</i> (Littleleaf linden)	E	Good street tree; tolerant of urban environments
<i>Ailanthus altissima</i> (Tree of heaven); Suitable for many soils		
<i>Gymnocladus dioica</i> (Kentucky coffeetree)	NS	Large compound leaves; waxy brown pods; tolerant of wide range of conditions
<i>Cladrastis lutea</i> (Yellowwood)	NS	White, fragrant, pendulous flowers; yellow fall color; brown pods; tolerant of urban environments
<i>Berberis thunbergii</i> (Japanese barberry); Red fall color; tolerant of urban conditions		
<i>Tilia cordata</i> (Littleleaf linden)	E	Good street tree; tolerant of urban environments
<i>Buxus</i> spp. (Boxwood 'Glencoe' or 'Green Velvet')	E	Dense, evergreen foliage; small round leaves; fragrant
<i>Ribes alpinum</i> 'Green Mound' (Alpine currant)	E	Dense foliage; lobed leaves; yellow fall color
<i>Fothergilla major</i> (Large fothergilla)	NS	White flower clusters; red to orange fall color
<i>Cotoneaster divaricatus</i> (Spreading cotoneaster)	E	Small, pale pink flowers; red to purple fall color
<i>Ilex verticillata</i> (Winterberry holly)	NS	Bright red berries in dense clusters; persist through winter; attracts birds
<i>Physocarpus opulifolius</i> 'Diablo' (Ninebark)	NC	Dark, reddish-purple leaves; pinkish-white flowers
<i>Rosa rubrifolia</i> (Redleaf rose)	E	Purplish-red foliage; pink flowers
<i>Rosa knockout</i> (Knockout roses)	E	Brilliant flower color; disease resistant
<i>Berberis thunbergii</i> , purple forms (Japanese barberry); Purple foliage; tolerant of urban conditions		
<i>Cotinus coggygria</i> (Smoke bush)	E	Airy pink flowers; purple fall foliage
<i>Physocarpus opulifolius</i> 'Diablo', 'Summer Wine', 'Coppertina', and 'Center glow' (Ninebark)	NC	Dark, reddish-purple leaves; pinkish-white flowers
<i>Weigela florida</i> 'Wine and Roses' (Weigela 'Wine and Roses')	E	Dark burgundy-purple foliage and rosy pink flowers
<i>Butomus umbellatus</i> (Flowering rush); Water gardens		
<i>Juncus effusus</i> (Common rush, soft rush)	NS	Stiff, pale green stems; grows in clumps; good for water gardens
<i>Schoenoplectus pungens</i> (Common threesquare)	NS	Stiff, triangular stems; good for water gardens
<i>Schoenoplectus acutus</i> (Hardstem bulrush)	NS	Stiff, round stems; good for water gardens
<i>Celastrus orbiculatus</i> * (Oriental bittersweet); Attractive red and orange fruit		
<i>Celastrus scandens</i> (American bittersweet)	NS	Leaves, fruit, and growth habit similar to <i>Celastrus orbiculatus</i>
<i>Elaeagnus angustifolia</i> (Russian olive); Small tree, silver foliage <i>Elaeagnus umbellatus</i> (Autumn olive); Large shrub, silver foliage		
<i>Shepherdia argentea</i> (Buffaloberry)	NS	Silver-green leaves; silver stems; red to yellow fruit good for wildlife
<i>Salix sericea</i> (Silky willow)	NS	Silver, lance-shaped leaves
<i>Salix elaeagnos</i> (Rosemary willow)	E	Stems and undersides of leaves silver-gray; leaves look like long rosemary leaves
<i>Cornus sericea</i> (Redosier dogwood)	NS	Bright red stems; small white flowers; good for hedges or mass plantings
<i>Elaeagnus commutata</i> (Silverberry)	NS	Silver foliage; very tolerant of dry conditions
<i>Euonymus alatus</i> (Burning bush); Red fall color; red fruit		
<i>Aronia arbutifolia</i> (Red chokeberry)	NS	Brilliant red fall color; red berries
<i>Aronia melanocarpa</i> (Black chokeberry)	NS	Brilliant red fall color; black berries
<i>Fothergilla major</i> (Large fothergilla)	NS	White flower clusters; red to orange fall color
<i>Fothergilla</i> 'Mt. Airy' and 'Blue Shadow' (Fothergilla cultivars)	NC	Abundant white flowers; red to purple fall color
<i>Itea virginica</i> (Virginia sweetpire)	NS	Bright red fall color; green or red winter twigs; arched branches; fragrant white flower clusters
<i>Viburnum prunifolium</i> (Blackhaw)	NS	Small white flowers in dense clusters; dark blue berries persist into winter
<i>Rhus copallinum</i> (Shining sumac)	NS	Brilliant red autumn color; drooping red berry clusters; glossy leaves
<i>Euonymus americanus</i> (Strawberry bush)	NS	Red capsules open to reveal orange-red berries; green stems in winter
<i>Euonymus atropurpureus</i> (Eastern wahoo)	NS	Dark purple fall foliage; red fruits are attractive to wildlife
<i>Acer palmatum</i> 'Osakazuki' (Japanese maple)	E	Brilliant red fall color; small tree
<i>Hesperis matronalis</i> (Dame's rocket); Bright pink and white flowers		
<i>Phlox paniculata</i> 'Katherine', 'Shortwood', 'David' (Summer phlox)	NC	Narrow, pointed leaves; forms dense clumps; variety of flower colors
<i>Phlox carolina</i> 'Reine du Jour' (Summer phlox)	NC	Bright pink flowers; mildew-resistant
<i>Ligustrum vulgare</i> , <i>L. obtusifolium</i> (Privet); Hedge or border plantings		
<i>Viburnum prunifolium</i> (Black haw)	NS	Small white flowers in dense clusters; dark blue berries persist into winter
<i>Lonicera japonica</i> (Japanese honeysuckle); Fragrant flowers, climbing vine red or black berries; attractive to birds (more serious problem in southern part of region)		
<i>Lonicera sempervirens</i> (Scarlet honeysuckle or trumpet honey suckle)	NS	Coral, red, or yellow trumpet-shaped flowers
<i>Lonicera x heckrottii</i> (Everblooming honeysuckle)	NS/E hybrid	Pink flowers buds open to show yellow center; fragrant flowers
<i>Lonicera dioica</i> (Red honeysuckle or Northern bush honeysuckle)	NS	Yellow flowers; red fruit
<i>Lonicera morrowii</i> , <i>L. tatarica</i> , <i>L. x bella</i> (Bush honeysuckles); Fast growth; red fruit for birds and wildlife		
<i>Amelanchier</i> spp. (Serviceberry)	NS/E	White flowers; edible fruit; fall color
<i>Calycanthus floridus</i> (Carolina allspice)	NS	Fragrant, red flowers; aromatic leaves
<i>Kolkwitzia amabilis</i> (Beautybush)	E	Pale, pink flowers; yellow to red fall color; grows quickly
<i>Sambucus canadensis</i> (American elderberry)	NS	White flowers; purple-black fruit; attracts birds and butterflies
<i>Sambucus pubens</i> (American red elderberry)	NS	Yellowish white flowers; red fruit
<i>Lonicera dioica</i> (Red honeysuckle)	NS	Yellow flowers; red fruit; bluish foliage; attracts birds, bees, and butterflies
<i>Lonicera involucrata</i> (Twinberry)	NS	Pale yellow flowers; deep green foliage; small shrub; erosion control
<i>Stephanandra incisa</i> (Cultleaf stephanandra)	E	Arching stems; purple-red to orange fall color

## Invasive species and alternatives

<i>Lonicera maackii</i> (Amur honeysuckle); Larger size than above <i>Lonicera</i> spp.		
<i>Amelanchier</i> spp. (Serviceberry)	NS/E	White flowers; edible fruit; fall color
<i>Heptacodium miconioides</i> (Seven son flower)	E	Clusters of fragrant white flowers, purplish-red fruits persist through winter
<i>Kolkwitzia amabilis</i> (Beautybush)	E	Pale, pink flowers; yellow to red fall color; grows quickly
<i>Lythrum salicaria</i> (Purple loosestrife, including all cultivars); Bright pink-purple flowers		
<i>Liatris spicata</i> 'Kobold', <i>Liatris pycnostachya</i> (Blazing stars)	NC	Showy spikes of purple flowers
<i>Vernonia fasciculata</i> (Prairie ironweed)	NC	Dense purple flowers; stiff stems
<i>Lobelia cardinalis</i> , incl. hybrid cultivars (Cardinal flower)	NC	Tubular red flowers; attracts hummingbirds
<i>Asclepias incarnata</i> (Swamp milkweed)	NS	Flat clusters of pink-red flowers; grows well in wet areas
<i>Phalaris arundinacea</i> (Ribbon grass); Tufted growth form; easy to grow		
<i>Spartina pectinata</i> 'Aureomarginata' (Variegated prairie cord grass)	NC	Golden edged foliage; purple flowers
<i>Carex morrowii</i> 'Ice Dance' (Ice dance sedge)	NC	Stiff, dark green leaves; drought tolerant
<i>Sesleria autumnalis</i> (Autumn moor grass)	E	Forms tufted mound; drought tolerant
<i>Polygonum cuspidatum</i> (Japanese knotweed); Rapid growth; plumes of white flowers		
<i>Aruncus dioicus</i> (Goat's beard)	NS/E	Showy plumes of white flowers; grows 3 to 5 feet tall
<i>Cornus sericea</i> (Red stemmed dogwood)	NS	Bright red stems; small white flowers; good for hedges or mass plantings
<i>Persicaria polymorpha</i> (Giant fleeceflower)	E	Showy plumes of white flowers; grows 3 to 5 feet tall
<i>Rhamnus cathartica</i> , <i>R. frangula</i> (Common and glossy buckthorns); Hedge or border plantings		
<i>Carpinus caroliniana</i> (American hornbeam)	NS	Small tree; orange to red fall color
<i>Corylus americana</i> (American hazelnut)	NS	Shade-tolerant; edible nut
<i>Rhamnus alnifolia</i> (Dwarf alder)	NS	Shiny, ovate leaves; red to black berries
<i>Thuja occidentalis</i> (American arborvitae)	NS	Dense, evergreen foliage; good as a screen or hedge plant
<i>Thuja plicata</i> (Western arborvitae)	NS	Dense, evergreen foliage; good as a screen or hedge plant
<i>Ulmus pumila</i> (Siberian elm); Fast-growing, tolerant of wide range of conditions		
<i>Ginkgo biloba</i> (Ginkgo)	E	Shade tree; tolerant of urban environments
<i>Ulmus americana</i> (American elm)	NC	Spreading, arching branches; good street or shade tree (disease resistant cultivars, including 'Princeton' 'Valley Forge' and 'New Harmony')
<i>Ulmus</i> hybrids (Hybrid elm)	E	Arching branches; good street or shade tree (disease resistant cultivars, including 'Princeton' 'Valley Forge' and 'New Harmony')

## Watch & Maintain species and alternatives

<i>W</i> <i>Euonymus fortunei</i> , trailing types* (Wintercreeper); Groundcover		
<i>Arctostaphylos uva-ursi</i> (Bearberry)	NS	Evergreen groundcover; large red berries
<i>Asarum canadensis</i> (Wild ginger)	NS	Herbaceous groundcover; heart-shaped leaves
<i>Asarum europaeum</i> (Wild ginger)	E	Herbaceous groundcover; glossy, heart-shaped leaves
<i>Helleborus</i> spp. (Hellebore)	E	Evergreen; shiny, dark green foliage
<i>W</i> <i>Vinca minor</i> * (Periwinkle); Groundcover		
<i>Arctostaphylos uva-ursi</i> (Bearberry)	NS	Evergreen groundcover; large red berries
<i>Waldsteinia fragarioides</i> (Barren strawberry)	NS	Evergreen groundcover; butter-yellow flowers in spring



*Aronia Brilliantissima*



*Asarum canadense*



*Itea 'Henry's Garnet'*



*Asclepias incarnata*



*Carex 'Ice Dance'*



*Helleborus 'Royal Heritage'*

### \*Notes

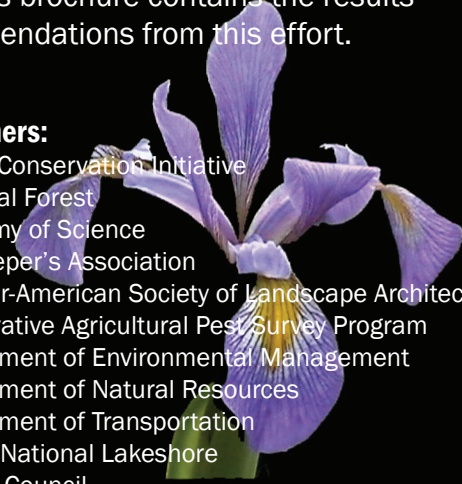
- Alternatives are identified as: native species (NS), native cultivar (NC) or exotic (not native to U.S.) species (E).
- Celastrus orbiculatus* (Oriental bittersweet): Can be difficult to tell apart from the native American bittersweet (*Celastrus scandens*). The native bears its orange fruits at the end of branches in large terminal clusters and the invasive species bears fruit in smaller clusters at nodes along the stem.
- For several of the invasive species listed in this brochure, there are cultivars available that produce fewer fruit and may be marketed as less invasive. Research by Knight et al. (2011) demonstrates that these cultivars may still be invasive and that the only safe cultivars are sterile cultivars that cannot produce viable seed or reproduce asexually. Research by Brand et al. (2012) also demonstrated that nine *Euonymus alatus* cultivars had a high rate of seed germination and seedling survival, regardless of the number of seeds they produced, and therefore none could be considered non-invasive. (See Brand, M. et al. 2012. Fecundity of winged euonymus cultivars and their ability to invade various natural environments. HortScience 47(8): 1029-1033; and Knight et al. 2011. Will the use of less fecund cultivars reduce the invasiveness of perennial plants? BioScience 61:816-822.)
- Euonymus fortunei* (Wintercreeper) This species can spread both vegetatively and by seed when allowed to climb. It must climb approximately four feet before it produces flowers and fruits. If it is contained (by concrete or mowed lawns) and kept trimmed, it is not a threat. It should not be planted adjacent to natural, or minimally managed, areas.
- Vinca minor* (Periwinkle) This species can spread vegetatively into natural areas but does not spread by seed. If it is contained (by concrete or mowed lawns) and kept trimmed, it is not a threat. It should not be planted adjacent to natural, or minimally managed, areas.

## What is IPSAWG?

To identify which gardening plants are invasive in Indiana, a partnership called the **Invasive Plant Species Assessment Working Group (IPSAWG)** was formed in 2001. The many agencies and organizations listed below worked together to assess dozens of species used in landscaping to determine which were invasive or potentially invasive, and to develop recommendations for the use of each of the species. This brochure contains the results and recommendations from this effort.

### IPSAWG Partners:

Grazing Lands Conservation Initiative  
 Hoosier National Forest  
 Indiana Academy of Science  
 Indiana Beekeeper's Association  
 Indiana Chapter-American Society of Landscape Architects  
 Indiana Cooperative Agricultural Pest Survey Program  
 Indiana Department of Environmental Management  
 Indiana Department of Natural Resources  
 Indiana Department of Transportation  
 Indiana Dunes National Lakeshore  
 Indiana Forage Council  
 Indiana Native Plant and Wildflower Society  
 Indiana Nursery and Landscape Association  
 Indiana Seed Trade Association  
 Indiana State Beekeepers Association  
 Indiana Wildlife Federation  
 Natural Resource Conservation Service  
 Purdue Cooperative Extension Service  
 Seed Administrator, Office of the Indiana State Chemist  
 The Nature Conservancy  
 The Wildlife Society, Indiana Chapter  
 U.S. Fish and Wildlife Service



## For More Information

[www.invasivespecies.in.gov](http://www.invasivespecies.in.gov)

IPSAWG assessment for each species and fact sheets containing identification and control information

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

Information on identification and control of invasive species

<http://inpaws.org/>

More non-invasive alternatives and suppliers

<http://extension.entm.purdue.edu/CAPS/>

Information on the range and status of invasive plants throughout Indiana



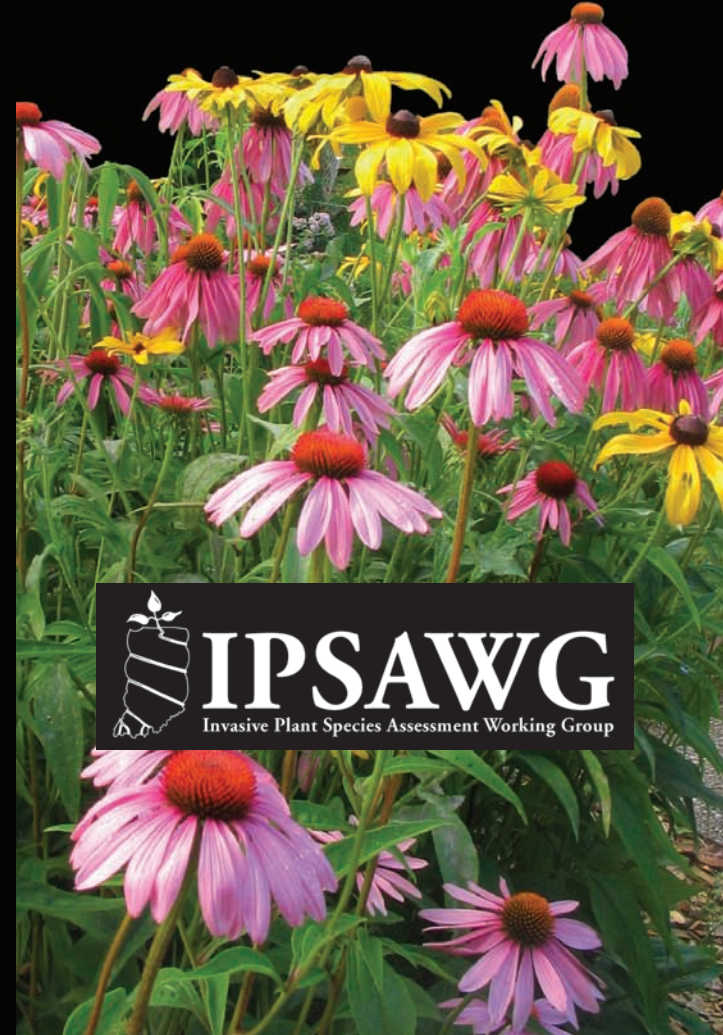
Tiger eyes sumac (*Rhus typhina* cv. 'Tiger Eyes', cv.) is a dwarf, slow spreading sumac with lacy, luminous leaves. (A. Bracalente photo)

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 IDNR Urban Forest Conservation Fund  
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 The Nature Conservancy



September 2007

# Landscaping with Non-Invasive Plant Species: Making the RIGHT Choice



## Landscaping with Non-Invasive Plant Species: Making the RIGHT Choice

Gardening is a fun and relaxing hobby enjoyed by many. Unfortunately, some of the plant species available to gardeners are invasive; that is, these plant species can move from the garden into our forests, prairies, and wetlands, causing a great deal of damage to our native plants and wildlife. Private landowners, agencies, and land trusts in Indiana spend hundreds of thousands of dollars each year trying to control the spread of invasive species.

**You Can Help! Make the right landscaping choice - don't plant invasives! There are thousands of non-invasive alternatives. Several alternatives are featured in this brochure; those species native to Indiana are identified by **N****



Queen of the prairie (*Filipendula rubra*) is 5' tall with frothy pink flowers in early summer. (S. Goehl photo)



Purple coneflower (*Echinacea purpurea*) has long-lasting purple flowers in June and July. (E. Jacquart photo)



Skullcap (*Scutellaria incana*) has blue flowers in July and is shade tolerant. (F. Solkowski photo)

### INVASIVE GARDEN SPECIES IN INDIANA AND IPSAWG RECOMMENDATIONS:

FLOWERS	DO NOT BUY, SELL OR PLANT IN INDIANA		
	COMMON NAME	LATIN NAME	INVASIVENESS
	Crownvetch	<i>Coronilla varia</i>	MEDIUM
	Dame's rocket	<i>Hesperis matronalis</i>	HIGH
	Japanese knotweed	<i>Polygonum cuspidatum</i>	MEDIUM
	Multiflora rose <sup>1</sup>	<i>Rosa multiflora</i>	HIGH
	Purple loosestrife <sup>1</sup>	<i>Lythrum salicaria</i>	HIGH
	<sup>1</sup> Illegal in Indiana.		

Results based upon the IPSAWG assessments of Ecological Impact, Potential for Expansion, and Difficulty of Control for each species. Visit [www.invasivespecies.in.gov](http://www.invasivespecies.in.gov) for more specifics on each species.

**HIGH**, **MEDIUM**, and **LOW** rankings are used for those invasive species already in Indiana and currently having a documented impact on native plant communities in the state.



Blue-eyed grass (*Sisyrinchium angustifolium*) is a delicate 6" plant with grass-like leaves and purple flowers blooming in June. (F. Solkowski photo)



Firepink (*Silene virginica*) is a spring wildflower with dazzling red flowers that grows well in dry conditions. (A. Bracalente photo)



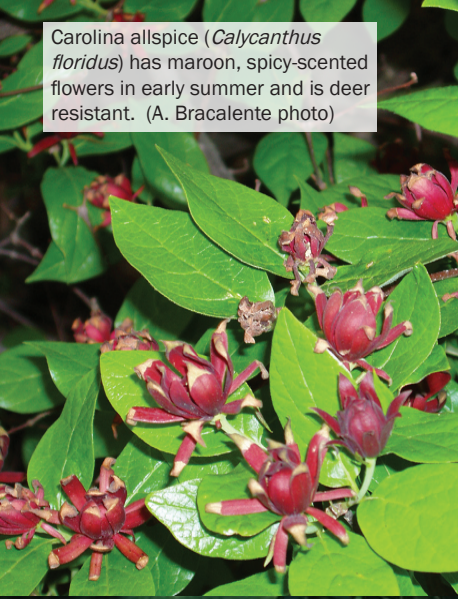
Yellow coneflower (*Ratibida pinnata*) and wild bergamot (*Monarda fistulosa*) need full sun but do well in a wide variety of soil conditions. (R. Ciasto photo)



Swamp rose (*Rosa palustris*) up to 6' tall with mid-summer pink, fragrant blooms. (R. Ciasto photo)



Red maple (*Acer rubrum*) reaches 40' - 60' tall, with brilliant red or yellow fall color. (A. Bracalente photo)



Carolina allspice (*Calycanthus floridus*) has maroon, spicy-scented flowers in early summer and is deer resistant. (A. Bracalente photo)



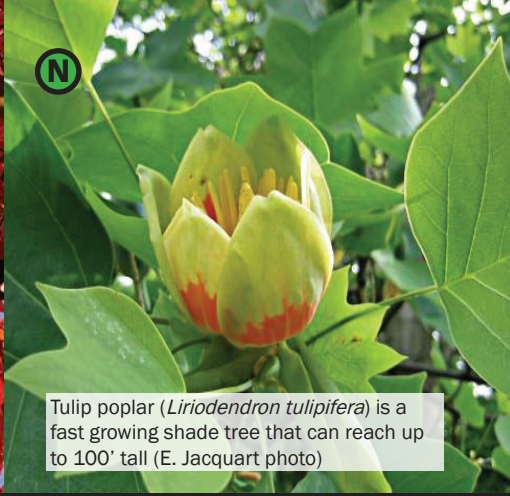
Virginia sweetspire (*Itea virginica*) is a medium-sized, highly adaptable shrub with long narrow flower spikes. (H. Cox photo)



Indiangrass (*Sorghastrum nutans*) is a 4' - 5' grass with bronze seed heads in the fall. (H. Cox photo)



Little bluestem (*Schizachyrium scoparium*) is a short, tuft-forming grass which turns bronze in the fall and does well on dry sites. (A. Bracalente photo)



Tulip poplar (*Liriodendron tulipifera*) is a fast growing shade tree that can reach up to 100' tall. (E. Jacquart photo)



Red buckeye (*Aesculus pavia*) is a small tree covered with red showy flowers in spring; grows best in moist soils. (A. Bracalente photo)

**INVASIVE GARDEN SPECIES IN INDIANA AND IPSAWG RECOMMENDATIONS:**

TREES

**DO NOT BUY, SELL OR PLANT IN INDIANA**

COMMON NAME	LATIN NAME	INVASIVENESS
Norway maple	<i>Acer platanoides</i>	MEDIUM
<b>PLANT WITH CAUTION: Do not plant these species near open natural areas like prairies, savannas, or glades. The portions of Indiana where these vulnerable communities are found are shown in red on the Indiana map.</b>		
Sawtooth oak	<i>Quercus acutissima</i>	MEDIUM POTENTIAL
Siberian elm	<i>Ulmus pumila</i>	MEDIUM POTENTIAL



SHRUBS

**DO NOT BUY, SELL OR PLANT IN INDIANA**

COMMON NAME	LATIN NAME	INVASIVENESS
Asian bush honeysuckle	<i>Lonicera maackii</i> , <i>L. tatarica</i> , <i>L. morrowii</i> , <i>L. x bella</i>	HIGH
Autumn olive	<i>Eleagnus umbellata</i>	MEDIUM
Blunt-leaved privet	<i>Ligustrum obtusifolium</i>	HIGH
Common buckthorn	<i>Rhamnus cathartica</i>	HIGH POTENTIAL
Glossy buckthorn	<i>Frangula alnus</i>	HIGH
Japanese barberry	<i>Berberis thunbergii</i>	MEDIUM
Privet	<i>Ligustrum vulgare</i> , <i>L. amurense</i> , <i>L. sinense</i> , <i>L. ovalifolium</i>	HIGH POTENTIAL
Russian olive	<i>Eleagnus angustifolia</i>	HIGH POTENTIAL

**PLANT WITH CAUTION: Do not plant parent species (*Euonymus alatus*) or cultivars which produce large amounts of fruits. Cultivar 'Rudy Haag' may be a less invasive cultivar.**

Burning bush	<i>Euonymus alatus</i>	HIGH POTENTIAL
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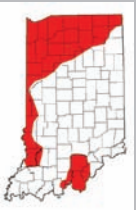
GRASSES

**DO NOT BUY, SELL OR PLANT IN INDIANA**

COMMON NAME	LATIN NAME	INVASIVENESS
Phragmites	<i>Phragmites australis</i>	MEDIUM
Ribbon grass, Reed canarygrass	<i>Phalaris arundinacea</i> var. <i>picta</i>	HIGH

**PLANT WITH CAUTION: Do not plant this species near open natural areas like prairies, savannas, or glades. The portions of Indiana where these vulnerable communities are found are shown in red on the Indiana map.**

Chinese maiden grass	<i>Miscanthus sinensis</i>	MEDIUM POTENTIAL
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VINES

**DO NOT BUY, SELL OR PLANT IN INDIANA**

COMMON NAME	LATIN NAME	INVASIVENESS
Kudzu <sup>1</sup>	<i>Pueraria montana</i>	HIGH
Japanese honeysuckle	<i>Lonicera japonica</i>	HIGH
Japanese hops	<i>Humulus japonicus</i>	MEDIUM
Oriental bittersweet	<i>Celastrus orbiculatus</i>	HIGH

<sup>1</sup> Illegal in Indiana.

**PLANT WITH CAUTION: Plant these species only next to concrete or lawns, and do not allow to climb (this will prevent production and spread of seeds).**

English ivy	<i>Hedera helix</i>	HIGH POTENTIAL
Periwinkle	<i>Vinca minor</i>	MEDIUM
Winter creeper	<i>Euonymus fortunei</i>	HIGH

Results based upon the IPSAWG assessments of Ecological Impact, Potential for Expansion, and Difficulty of Control for each species. Visit [www.invasivespecies.in.gov](http://www.invasivespecies.in.gov) for more specifics on each species.

HIGH, MEDIUM, and LOW rankings are used for those invasive species already in Indiana and currently having a documented impact on native plant communities in the state. HIGH POTENTIAL, MEDIUM POTENTIAL, and LOW POTENTIAL rankings are used for species that are not currently documented as causing significant impacts to native plant communities, but have the potential to become invasive based on the Potential for Expansion measure and similarity in climate to other areas of the country where the species is already invasive.



White cedar (*Thuja occidentalis*) is a small-sized evergreen that grows in all but very wet or very dry soils. (A. Bracalente photo)



New Jersey tea (*Ceanothus americana*) is a small shrub (under 3') with white balls of flowers in summer; does well on dry sites. (H. Cox photo)



Leatherflower (*Clematis viorna*) is a climbing vine with dangling pink, leathery flowers. (H. Cox photo)



Wild ginger (*Asarum canadense*) is a groundcover with heart-shaped leaves. (H. Cox photo)



Dutchman's pipe (*Aristolochia tomentosa*) is a climbing vine with golden fall foliage and unusual pipe-shaped flowers. (A. Bracalente photo)

# Periwinkle

## *Vinca minor*



Pictures By (From top to bottom):  
K. Yatskievych, D. Tenaglia @  
www.invasive.org and D. Tenaglia  
@ www.invasive.org.

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human health**
- **Farmland**

### Description:

*Vinca minor* is a perennial, evergreen herb that matures at about 6" tall and stems that continue to elongate each year to many yards in length. It exhibits a trailing mat, prostrate mat or mounding mat growth habit and has a medium growth rate. Its leaves are evergreen, elliptic and dark green above with a subtle white mid-vein. The flowers are predominantly blue-purple, originate from the leaf axils, composed of five fused pinwheel-like petals and a short tubular throat. They bloom in late March and April and sporadically throughout the growing season.

### Distribution:

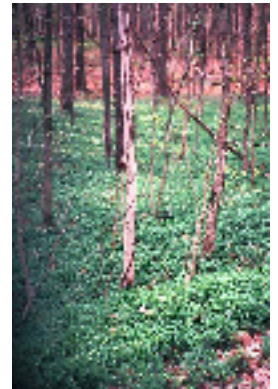
Periwinkle is frequently found in well-drained, open, disturbed ground of shaded woods, edges and roadsides. It is escaped throughout the eastern US, and can become a dominant and sometimes monotypic understory in the northeastern US. In Indiana, it has been found as an escaped species in all counties. It grows more aggressively in the south part of the state, covering hundreds of acres in southern Indiana forests.

### Problem:

Once established, *Vinca minor* forms a dense carpet to the exclusion of other plants. This creates a problem where it is competing with native flora. In ideal growth conditions, *Vinca minor* can spread with great rapidity by means of its arching stolons, which root at the tips. Dry or cold weather may temporarily set growth back, but it quickly resprouts and regains lost ground coverage. It grows most vigorously in moist soil with only partial sun, but it can grow in the deepest shade and even in poor soil.

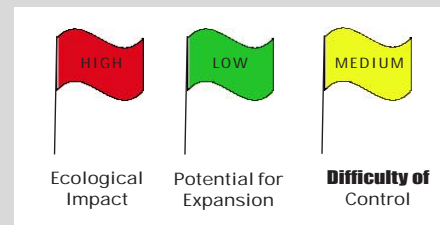
### Origin:

*Vinca minor* is a native from southern Switzerland southward around much of the Mediterranean basin, from Portugal to Turkey, and across much of north Africa. It has been introduced in the United States as a medicinal herb and as an ornamental ground cover.



Picture By: Ellen Jacquart

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Plant periwinkle only next to concrete or lawns; do not plant next to natural areas.
- Help by eradicating any periwinkle adjacent to or in natural areas on your property.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

## ALTERNATIVES to Periwinkle:



Dwarf Crested Iris  
(*Iris cristata*)



Palm Sedge  
(*Carex muskingumensis*)



Wild Ginger  
(*Asarum canadense*)



Creeping Phlox  
(*Phlox subulata*)

Pictures By (Top to Bottom): Kay Yatskievych, R. H. Mohlenbrock @ USDA-NRCS Plants Database, Dennis W. Woodland and Thomas Barnes @ USDA-NRCS Plants Database.

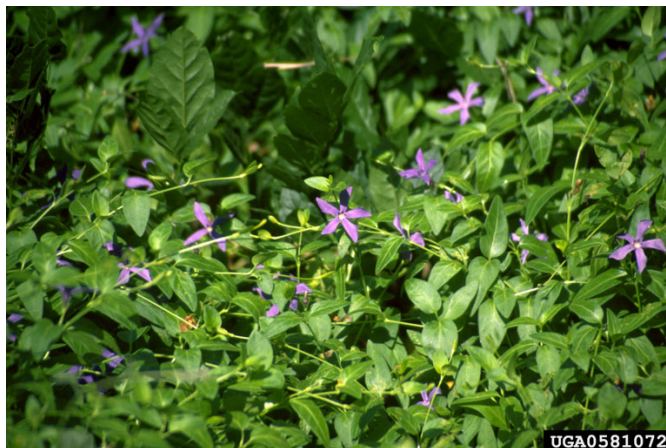
## Control Methods:

Periwinkle can be pulled, raked, or dug up, though resprouting will occur. It can also be cut or mowed in spring during its rapid growth stage followed by a foliar application of glyphosate on the resprouts. Herbicide alone can be used as a control method. Thoroughly wet all leaves with triclopyr (Garlon 3A) or glyphosate (Roundup) mixed according to label directions at the highest allowed rate plus a non-ionic surfactant. This should be done between July to October for successive years.

In winter, herbicide treatments should be limited to days when the high temperature exceeds 50° F. No biological

controls are known.

**Always read and follow pesticide label directions.**



Picture By: J. Swearingen @ www.invasive.org.

## Eight Easy Ways to Combat Invasive Plants

You can **help stop** the spread of **invasive plants** by following these **8 easy guidelines**:

1. Ask for only non-invasive species when you acquire plants. Request that nurseries and garden centers sell only non-invasive plants.
2. Seek information on invasive plants. Sources include botanical gardens, horticulturists, conservationists, and government agencies.
3. Scout your property for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
4. Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
5. Don't release aquarium plants into the wild.
6. Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

On this assessment and IPSAWG:

IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

On identification and control techniques:

**The Nature Conservancy's Wildland Weeds**  
[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

On native plant alternatives and sources:

**Indiana Native Plant and Wildflower Society**  
[www.inpaws.org](http://www.inpaws.org)

*This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.*



# Blunt-leaved Privet

## *Ligustrum obtusifolium*



Pictures By (From top to bottom):  
Dendrology at Virginia Tech.

### **Invasive Plants are a Threat to:**

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

### Description:

*Ligustrum obtusifolium* is a semi-evergreen to deciduous, large foliage shrub in the olive family. Its leaves are opposite, simple, oblong, 1 to 2 inches long, dark green above and lighter below with a rounded or blunt tip and base. Blunt-leaved privet has short panicles of white flowers that are often dense, very fragrant and appear in late spring. The fruit is shiny and blue-black with a white waxy bloom, smaller than ¼ inch in diameter that ripens in the fall and persists into the following Spring. The bark is smooth and grayish brown with short, light colored horizontal lenticels.

### Distribution:

In United States, *Ligustrum obtusifolium* can be found throughout the eastern and south-central states. It can be seen along roadsides, in old fields and in other disturbed habitats and in a variety of undisturbed natural areas, including bogs, wetlands, floodplains, old fields, calcareous glades and barrens, and mesic hardwood forests. In Indiana, privet is locally abundant throughout the state in riparian forests.

### Problem:

*Ligustrum obtusifolium* grows readily from seed or from root and stump sprouts. It can escape from cultivation when the fruits are consumed by wildlife, particularly birds, which often excrete the seeds at distant locations where they may germinate. It invades natural areas such as floodplain forests and woodlands. It also displaces shrubs in regenerating communities and remains persistent in these areas. It forms dense thickets that out compete many kinds of native vegetation.

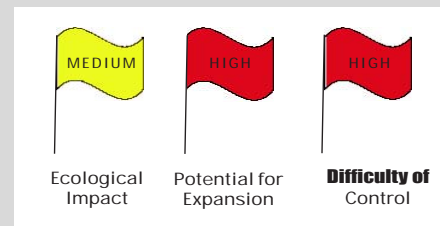
### Origin:

There are approximately 50 *Ligustrum* species that are native to Europe, North Africa, and Asia. *Ligustrum* spp. have been cultivated and developed into several horticultural varieties, and were introduced to North America as a common hedge in landscaping. *Ligustrum obtusifolium* is native to Japan.



Picture By: Katherine Howe

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant blunt-leaved privet in Indiana.
- Help by eradicating blunt-leaved privet on your property.
- Also, avoid other species of privet (*Ligustrum* spp.); these species are considered invasive in many parts of the Midwest.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group** (IPSAWG), which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

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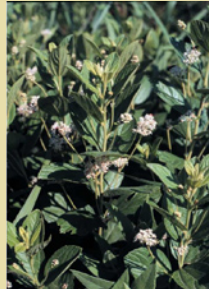
## ALTERNATIVES to Blunt-leaved Privet:



Gray Dogwood  
(*Cornus racemosa*)



Fragrant Sumac  
(*Rhus aromatica*)



New Jersey Tea  
(*Ceanothus americanus*)



Ninebark  
(*Physocarpus opulifolius*)

Pictures By (Top to Bottom): Dendrology at Virginia Tech and D.E. Herman, Larry Allain and William S. Justice @ USDA - NRCS Plants Database.

### Control Methods:

Manual, mechanical and chemical methods are all useful in varying degrees in controlling *Ligustrum obtusifolium*. Mowing and cutting are appropriate for small populations or environmentally sensitive areas where herbicides cannot be used. It can also be effectively controlled by the manual removal of young seedlings. Plants should be pulled as soon as they are large enough to grasp but before they produce seeds. There are no known biological controls. However, herbicide treatments can

be very effective. One method is to cut stems at or near ground level and apply a 25% solution of glyphosate and water or triclopyr and water to the cut stump. The second method is to apply a 25% triclopyr

and 75% horticultural oil to the basal parts of the shrub to a height of 12-15 inches from the ground. Both methods are effective throughout the year.

**Always read and follow pesticide labels.**



A stand of privet. Picture By: The Nature Conservancy.

## Eight Easy Ways to Combat Invasive Plants

You can **help stop** the spread of **invasive plants** by following these **8 easy guidelines**:

1. Ask for only non-invasive species when you acquire plants. Request that nurseries and garden centers sell only non-invasive plants.
2. Seek information on invasive plants. Sources include botanical gardens, horticulturists, conservationists, and government agencies.
3. Scout your property for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
4. Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
5. Don't release aquarium plants into the wild.
6. Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

On this assessment and IPSAWG:

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On identification and control techniques:

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*This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.*

# Autumn Olive

## *Elaeagnus umbellata*



©2003, Gary Fewless



©2003, Gary Fewless



(C) 2002, Gary Fewless

Pictures By: G. Fewless

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

### Description:

Autumn olive is a medium to large deciduous shrub. Its leaves are alternate, oval to lanceolate, untoothed and grow to 1-3 inches in length. The upper surface of the leaves is dark green to grayish-green in color, while the lower surface is covered with silvery white scales. The small, light yellow flowers are borne along twigs after the leaves have appeared early in the growing season. The fruits are small, round, juicy, reddish to pink, dotted with scales and are produced in great quantity.

### Distribution:

Autumn olive is found in disturbed areas, along roadsides, in pastures, fields and sparse woodlands. It is often found in poor soils due to its nitrogen-fixing root nodules that allow it to tolerate poor conditions. It can also survive the effects of salt, drought and pHs as low as 4.0. However, it does not grow well in wet habitats or in dense forests. Autumn olive is now found over the eastern half of the United States and in all counties of Indiana.

### Problem:

Autumn olive exhibits prolific fruiting, rapid growth, is widely dispersed by birds and can thrive in poor soil. It has the ability to produce up to 80 pounds of fruit in a single season. Due to its nitrogen fixing capabilities, it has the capacity to adversely affect the nitrogen cycle of the native communities that may depend on infertile soils. It is vigorous and competitive against native species in open communities like prairies and savannas and resprouts after cutting or burning. It also creates heavy shade which suppresses plants that require direct sunlight.

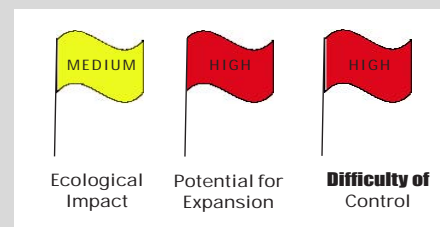
### Origin:

Autumn olive is native to China, Korea and Japan. It was first introduced to United States from Japan in 1830. In Indiana, as in the rest of the country, autumn olive was often used for the revegetation of disturbed habitats. It has also been sold commercially for roadsides, landscaping and gardens.



Picture By: J. Allison @ www.invasive.org.

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant autumn olive in Indiana.
- Help by eradicating autumn olive on your property.
- Also avoid Russian olive (*Elaeagnus angustifolia* L.); this species is considered invasive in many parts of the Midwest though not yet in Indiana.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

## ALTERNATIVES to Autumn olive:



Dogwoods  
(*Cornus sericea*,  
*C. amomum*, and  
*C. racemosa*)



Chokeberry  
(*Aronia melanocarpa*)



Winterberry  
(*Ilex verticillata*)



Northern arrowwood  
(*Viburnum dentatum*)

Pictures By (Top to Bottom): D. E. Herman, U Conn, Indy Parks and D. E. Herman.

### Other Alternatives:

- Blackhaw  
(*Viburnum prunifolium*)
- Serviceberry  
(*Amelanchier arborea*)

### Control Methods:

Hand pulling autumn olive seedlings can be effective. However, mowing or cutting autumn olive plants can cause vigorous resprouting. Even repeated cutting is usually ineffective without treating stumps and/or resprouts with herbicide. Several herbicides have been used alone or in combination to control autumn olive, including glyphosate and triclopyr. Foliar applications of triclopyr (1-2%) or glyphosate (1-2%) are effective on resprouts

following cutting during the growing season. Glyphosate (20%) can also be effective when applied directly to cut stumps. Applying 2% triclopyr mixed with a basal oil directly to the

bark on the lower portion of the woody plant is also an effective control. Multiple treatments may be required. **Always read and follow pesticide label directions.**



An autumn olive plant. (Picture By: J. Miller @ www.invasive.org)

## Eight Easy Ways to Combat Invasive Plants

You can **help stop** the spread of **invasive plants** by following these **8 easy guidelines**:

- 1.** Ask for only non-invasive species when you acquire plants. Request that nurseries and garden centers sell only non-invasive plants.
- 2.** Seek information on invasive plants. Sources include botanical gardens, horticulturists, conservationists, and government agencies.
- 3.** Scout your property for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
- 4.** Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
- 5.** Don't release aquarium plants into the wild.
- 6.** Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
- 7.** Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
- 8.** Support public policies and programs to control invasive plants.

### For More Information:

On this assessment and IPSAWG:

IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

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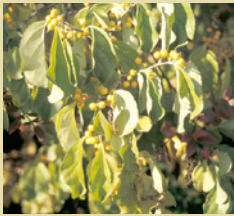
On native plant alternatives and sources:

**Indiana Native Plant and Wildflower Society**  
[www.inpaws.org](http://www.inpaws.org)

*This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.*

# Oriental Bittersweet

## *Celastrus orbiculatus*



Pictures By (From top to bottom):  
L. J. Mehrhoff, J. Randall and J. H. Miller @ [www.invasive.org](http://www.invasive.org).

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

Date Updated: 10/06

### Description:

Oriental bittersweet is a rapidly spreading deciduous, twining vine with alternate round, glossy leaves. The outer surface of its roots are characteristically bright orange. The branches are round, glabrous, light to dark brown, usually with noticeable lenticels. Small greenish flowers occur in clusters in the leaf axils. At maturity, globular, green to yellow fruits split open to reveal three red-orange, fleshy arils that contain the seeds. This species may be distinguished from the native *Celastrus scandens* by the location of its fruit. *C. orbiculatus* has small clusters in the leaf axils while *C. scandens* has clusters only at its branch tips.

### Distribution:

Oriental bittersweet was brought to the United States for cultivation during the middle of the nineteenth century. It is now naturalized in 21 of the 33 states where it was introduced, a region extending from Maine south to Georgia and west to Iowa. In Indiana, it is locally abundant in the southern third of the state and in several counties in northwest Indiana.

### Problem:

Oriental bittersweet can overrun natural vegetation, forming nearly pure stands in forests. It can strangle shrubs and small trees, and weaken mature trees by girdling the trunk and weighting the crown making the tree more susceptible to damage. There is also a concern that this species is hybridizing with American bittersweet and threatening to genetically eliminate the native species.

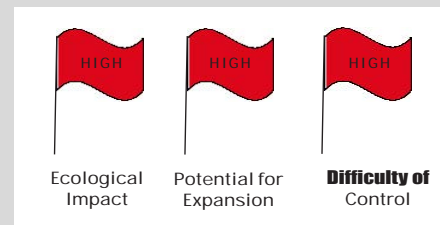
### Origin:

Oriental bittersweet's habitat on its native continent of Asia is said to be lowland slopes or thickets at altitudes from 100 to 1,400 meters. The vine is widely distributed in northern and central Japan and Korea. In China it is found primarily in provinces north of the Yangtze River.



Picture By: The Nature Conservancy.

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant Oriental bittersweet in Indiana.
- Help by eradicating Oriental bittersweet on your property.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

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## ALTERNATIVES

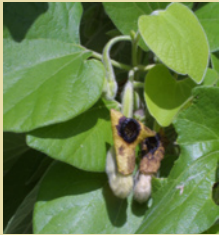
to Oriental Bittersweet:



Virgin's bower  
(*Clematis virginiana*)



Trumpet Honeysuckle  
(*Lonicera sempervirens*)



Woolly Dutchman's Pipe  
(*Aristolochia tomentosa*)

Pictures By (Top to Bottom): D. Liebman, J. Lepore and S. Baskauf.

### Other Alternatives:

Virgina Creeper  
(*Parthenocissus quinquefolia*)  
Crossvine  
(*Bignonia capreolata*)

### Not Recommended:

American bittersweet  
(*Celastrus scandens*)  
While American bittersweet is native and non-invasive, unfortunately, nurseries often mislabel Oriental bittersweet as American bittersweet. It is very difficult to find true American bittersweet for sale.

### Control Methods:

Vines can be pulled out by the root and removed from the site. If fruits are present, they should be bagged and disposed of. Certain systemic herbicides, such as glyphosate or triclopyr, that are taken into the roots and kill the entire plant, have been used successfully.

When using glyphosate or triclopyr, cut the stem 5 cm. above ground level. Immediately apply a 25% solution of glyphosate or triclopyr to the cross-section of the stem. This procedure is effective at temperatures as low as 40°F. A subsequent foliar application may be

necessary to control new seedlings. **Always read and follow pesticide label directions.**



Oriental bittersweet smothering native plants. (Picture by: The Nature Conservancy.)

## Eight Easy Ways to Combat Invasive Plants

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1. Ask for only non-invasive species when you acquire plants. Request that nurseries and garden centers sell only non-invasive plants.
2. Seek information on invasive plants. Sources include botanical gardens, horticulturists, conservationists, and government agencies.
3. Scout your property for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
4. Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
5. Don't release aquarium plants into the wild.
6. Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

On this assessment and IPSAWG:

IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

On identification and control techniques:

**The Nature Conservancy's Wildland Weeds**  
[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

On native plant alternatives and sources:

**Indiana Native Plant and Wildflower Society**  
[www.inpaws.org](http://www.inpaws.org)

*This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.*

# Japanese Honeysuckle

## *Lonicera japonica*



Pictures By (From Top to Bottom):  
C. Barger, T. Bodner and J. H. Miller @ www.invasive.org.

### Description:

Japanese honeysuckle is a perennial woody vine of the honeysuckle family that spreads by seeds, underground rhizomes, and above ground runners. It has opposite oval leaves, 4-8 cm. long, that are semi-evergreen to evergreen. Older stems are hollow with brownish bark that peels in long strips. The flowers are fragrant, two-lipped, and are borne in pairs. The berries are black. It creates dense tangled thickets by a combination of stem branching, nodal rooting, and vegetative spread from rhizomes.

### Distribution:

The species was introduced into the United States in 1806 on Long Island, NY. It now occurs throughout the eastern half of the United States, an area encompassing 26 states. Japanese honeysuckle's range is limited to the north by severe winter temperatures and to the west by insufficient precipitation and prolonged droughts. It is in all 92 Indiana counties, but is much more aggressive in Southern Indiana.

### Problem:

Japanese honeysuckle damages forest communities by out competing native vegetation for light, below-ground resources, and by changing forest structure. The vines overtop adjacent vegetation by twining about, and completely covering, small trees and shrubs. As it becomes established it forms a dense blanket that endangers most shrubs, herbs, and trees.

### Origin:

Japanese honeysuckle is native to East Asia, including Japan and Korea. It was introduced to the United States as an ornamental plant, for erosion control, and for wildlife forage and cover. However, there are many better plant choices for those uses (see back for good alternatives).

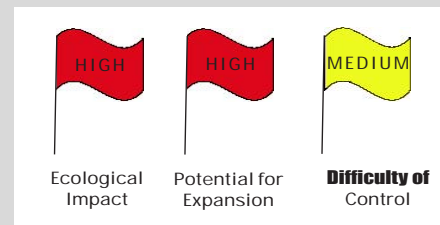


Picture By: The Nature Conservancy.

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant Japanese honeysuckle in Indiana.
- Help by eradicating Japanese honeysuckle on your property.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

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## ALTERNATIVES

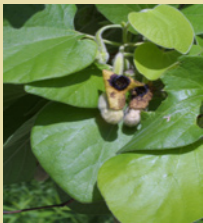
to Japanese  
Honeysuckle:



Virgin's bower  
(*Clematis virginiana*)



Trumpet Honeysuckle  
(*Lonicera sempervirens*)



Woolly Dutchman's Pipe  
(*Aristolochia tomentosa*)

Pictures By (Top to Bottom): D. Liebman, J. Lepore and S. Baskauf.

### Other Alternatives:

Virginia Creeper  
(*Parthenocissus  
quinquefolia*)

Crossvine  
(*Bignonia capreolata*)

### Not Recommended:

American bittersweet  
(*Celastrus scandens*)  
While American bittersweet is native and non-invasive, unfortunately, nurseries often mislabel Oriental bittersweet as American bittersweet. It is very difficult to find true American bittersweet for sale.

### Control Methods:

Small populations of Japanese honeysuckle can be controlled by careful hand-pulling and removal of vines. Mowing twice a year along fields and roadsides can slow the vegetative spread but stem density may increase. Prescribed burning can greatly decrease the abundance within a habitat and limit its spread for one to two growing seasons. Where other options are difficult, Japanese

honeysuckle may be treated with a glyphosate herbicide. This is best applied at 5-8% with a spray applicator in late autumn when other vegetation is dormant but Japanese honeysuckle is still physiologically active.

Be careful to follow label guidelines when using herbicide. Reapplication may be necessary to treat plants missed during the initial treatment. **Always read and follow pesticide label directions.**

Japanese honeysuckle completely covering adjacent vegetation. (Picture By: J. M. Swearingen @ www.invasive.org)



## Eight Easy Ways to Combat Invasive Plants

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- for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
4. Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
5. Don't release aquarium plants into the wild.
6. Volunteer at local parks

- and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

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IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

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[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

On native plant alternatives and sources:

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[www.inpaws.org](http://www.inpaws.org)

This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.



# Crown Vetch

## *Coronilla varia*



Pictures By (From top to bottom):  
D. Tenaglia, D. Tenaglia and D.  
Powell @ www.invasive.org.

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

Date Updated: 10/06

### Description:

Crown vetch is a perennial herb in the pea/legume family. It has spreading to diffuse, creeping stems that can reach two to six feet in length. The leaves are dark green, compound and bear fifteen to twenty-five leaflets. The seed pods are narrow, segmented, pointed, borne in crown-like clusters and may be two to three inches long. The pea-like, pinkish-white to deep pink flowers occur in clusters at the end of extended stalks and appear from late spring through summer. Crown vetch has a multi-branched root system and can spread by its strong rhizomes.

### Distribution:

Crown vetch prefers sunny, open areas. However, it is tolerant of temperatures down to -33° C, periods of drought and periods of heavy precipitation. Since crown vetch was originally planted for erosion control, it is now located mostly along roadsides, rights-of-way, open fields, waste grounds and on gravel bars along streams. It is documented as naturalized in all but four U.S. states and is found in every county in Indiana.

### Problem:

Crown vetch becomes a problem when it invades natural areas, such as native grassland prairies and dunes, where it works to exclude native vegetation by fully covering and shading those native plants. It can climb over small trees and shrubs, and eventually form large monocultures. It seeds prolifically, but can also rapidly spread by rhizome growth. Due to its nitrogen fixing capabilities, it has the capacity to adversely affect the nitrogen cycle of the native communities that may depend on infertile soils. It can also alter available fuel loads in fire-adapted ecosystems, changing fire intensity.

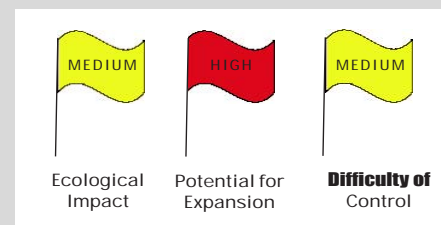
### Origin:

Crown vetch is from the Mediterranean region of Europe, northern Africa and southwest Asia. It was introduced to the United States in the 1950's and was primarily used for erosion control. Its use for erosion control has greatly decreased in Indiana, given both its invasiveness and the availability of species that are much better at controlling erosion.



Picture By: D. Powell @  
www.invasive.org.

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant crown vetch in Indiana.
- Help by eradicating crown vetch on your property.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

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[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

## ALTERNATIVES to crown vetch:



Roundheaded bushclover  
(*Lespedeza capitata*)



Purple vetch  
(*Vicia americana*)



Goat's-rue  
(*Tephrosia virginiana*)



Creeping Phlox  
(*Phlox subulata*)

Pictures By (Top to Bottom): K. Yatskievych, G. Monroe @ USDA-NRCS Plants Database, D. Reed @ www.2bnthewild.com and T. Barnes @ USDA-NRCS Plants Database.

## Control Methods:

Herbicides are currently the most effective means to control large infestations of crown vetch. Higher rates of effectiveness can be obtained if the herbicide treatment follows the removal of the accumulated plant litter by burning, mowing or grazing. In early spring, 2, 4-D amine can be foliar-applied for good control. Glyphosate can also be foliarly applied in early spring at 1 or 2% solution. Triclopyr applied at a 2% solution reportedly kills 99% of crown vetch in large infestations. Clopyralid is an even more target-specific herbicide. A 0.25% solution of clopyralid

with 0.5% surfactant can reportedly kill 100% of crown vetch cover. Manual or mechanical methods can be used to control crown vetch. However, these methods are often time consuming and labor-intensive, as all pieces of the stems, roots, and rhizomes must be carefully removed.

Mowing can eventually control crown vetch if it is repeated several times a year for several years. Prescribed burning may also be effective in late spring but should also be repeated for several years. **Always read and follow pesticide label directions.**



Dense growth of crown vetch.  
Picture By: C. Evans @ www.invasive.

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6. Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

On this assessment and IPSAWG:

IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

On identification and control techniques:

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# Asian Bush Honeysuckle

*Lonicera maackii*, *L. tatarica*, *L. morrowii*, *L. X bella*  
**Amur, Tartarian, Morrow's, Belle's honeysuckle**



Pictures By (From Top to Bottom):  
 J. M. Randall, T. Ransburg and  
 Indy Parks.

## Description:

These upright shrubs with arching branches are 6-15 feet tall. Each of these species has opposite leaves with paired berries and hollow branchlets. They stand out in the understory of forests as the first shrubs to leaf out in the spring and the last to lose their leaves in the fall. The paired, tubular flowers are white on Amur and Morrow honeysuckle, pink on Tartarian honeysuckle, and vary from white to deep rose on Belle's honeysuckle. The red to orange berries are dispersed by birds. Commonly sold cultivars include Arnold's Red, Zabelli and Rem Red.

## Distribution:

These invasive bush honeysuckles generally range from the central Great Plains to southern New England and south to Tennessee and North Carolina. In Indiana they are particularly invasive in central and northern parts of the state, but are starting to move into the southern portion. Asian bush honeysuckles are relatively shade-intolerant and most often occur in forest edge, abandoned fields, roadsides and open wetlands. However, they will move into forest understories and dominate wherever there has been disturbance.

## Problem:

Asian bush honeysuckles grow so densely they shade out everything on the forest floor, often leaving nothing but bare soil. This means a great reduction in the food and cover available for birds and other animals. Serious infestations can inhibit tree regeneration, essentially stopping forest succession. Higher rates of nest predation have been found in Amur honeysuckle than in native shrubs due to nests being more exposed to predators. Some bush honeysuckle species also release chemicals into the soil to inhibit other plant growth, effectively poisoning the soil.

## Origin:

The Asian bush honeysuckles originate in Eurasia (Japan, China, Korea, Manchuria, Turkey and southern Russia). They were introduced as ornamentals, for wildlife cover and for soil erosion control. However, their aggressive domination of native communities make them a bad choice for these purposes. See back for alternative species.

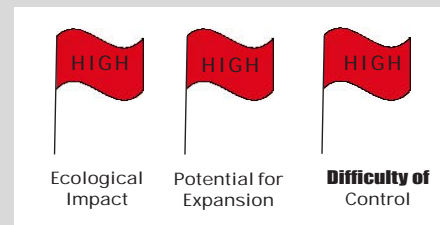


Picture By: J. H. Miller @  
[www.invasive.org](http://www.invasive.org)

## Invasive Plants are a Threat to:

- Forests and wetlands
- Native plants
- Perennial gardens
- Wildlife
- Lakes and rivers
- Human Health
- Farmland

## IPSAWG Ranking:



## IPSAWG Recommendation:

- Do not buy, sell or plant Asian bush honeysuckle in Indiana
- Help by eradicating Asian bush honeysuckle on your property.

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## ALTERNATIVES to Asian bush honeysuckles:



Dogwoods  
(*Cornus sericea*,  
*C. amomum*, and  
*C. racemosa*)



Chokeberry  
(*Aronia melanocarpa*)



Winterberry  
(*Ilex verticillata*)



Northern arrowwood  
(*Viburnum dentatum*)

Pictures By (Top to Bottom): D. E. Herman, U Conn, Indy Parks and D. E. Herman.

### Other Alternatives:

Blackhaw  
(*Viburnum prunifolium*)  
Serviceberry  
(*Amelanchier arborea*)

### Control Methods:

Mechanical and chemical methods are the primary means of control of Asian bush honeysuckles. No biological control agents are currently available for these plants. Hand removal of seedlings or small plants may be useful for light infestations, but care should be taken not to disturb the soil any more than necessary.

Asian bush honeysuckles can also be controlled by application of a systemic herbicide, like glyphosate (e.g. Roundup), at a 1% solution, sprayed onto the foliage or applied by sponge. This should be done in fall when native species are dormant and bush honeysuckle is still green. Well-established stands of Asian bush

honeysuckles are probably best managed by cutting the stems to ground level and painting or spraying the stumps with a 20-30% solution of glyphosate or 8% solution of triclopyr (e.g. Ortho Brush B-Gon concentrate). Always read and follow pesticide label directions.

Dark green dense thicket of Asian bush honeysuckle under the forest canopy. (Picture By: Indy Parks)



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# INVASIVE PLANTS OF OHIO

Fact Sheet 4

## Purple Loosestrife

*Lythrum salicaria*

### DESCRIPTION:

Purple loosestrife is a dense, herbaceous, non-native perennial that grows up to 7 feet tall. With attractive purple to magenta flowers, purple loosestrife cultivars are a popular ornamental. The flowers bloom in long spikes with 1-50 square stems per plant. One plant can produce over 100,000 seeds. The linear green leaves are opposite along the stem. This plant has a woody taproot and fibrous rhizomes that form a thick mat. Purple loosestrife is similar to the native loosestrife *Lythrum alatum*, however, *L. alatum* has alternate leaves on the upper stem, wider spaced flowers and is smaller in size. Looking closely at both flowers *L. salicaria* has 12 stamens and *L. alatum* has 4-6 stamens. Currently in Ohio, *Lythrum salicaria* is illegal to sell. However, commercially available cultivars like *L. virgatum* can cross pollinate with wild populations of purple loosestrife and produce viable seed.

### HABITAT:

Purple loosestrife occurs mostly in wetland environments, but when well established, it can survive drier conditions. Wetlands impacted by this plant include marshes, fens, wet meadows, stream and river banks, and lake shores.

### DISTRIBUTION:

Purple loosestrife was introduced to North America from Europe and Asia in the early 1800s as a contaminant in ship ballast, as well as a medicinal herb and garden plant. It escaped and became a pioneer species of newly constructed waterways and canals. Purple loosestrife occurs throughout the United States with its heaviest concentrations in the northeast. Although *Lythrum salicaria* is currently no longer available to purchase, cultivars continue to be distributed. In Ohio, this plant can be found throughout the state, although it is more established in the northern half.



Division Photo



Division Photo

### PROBLEM:

Purple loosestrife adapts readily to natural and disturbed wetlands. As it establishes and expands, it out-competes and replaces native grasses, sedges, and other flowering plants that provide a higher quality source of nutrition for wildlife. Purple loosestrife forms dense, homogeneous stands that restrict native wetland plant species and reduces habitat for waterfowl. Seed production is as prolific as the vegetative growth. Seeds are widely distributed by animals, machinery and people and in waterways.

## CONTROL:

**Mechanical:** Small infestations of purple loosestrife can be removed by hand. The entire root system must be removed from the ground. All plant material should be bagged and removed from the area to eliminate re-sprouting. Larger populations are harder to control using mechanical means. Mowing should not be used because it can increase the spread of the population by dispersing seeds and exposing the seed bank.

**Chemical:** Herbicides can be used effectively to control small populations of purple loosestrife. Only herbicides permitted for wetland use, such as Accord® or Glypro®, may be used. By eliminating all the plants in an area, the soil is exposed for the immense purple loosestrife seed bank to germinate. Spot application of herbicide can help limit this problem. The most species specific way to apply herbicide is by cutting and treating the stems. Foliar spray can be used by applying herbicide after the period of peak bloom, in late August. Any control method should be followed up on a yearly basis to catch any missed plants or new sprouts. Certain broadleaf specific herbicides, such as Garlon 3A®, which do not harm monocot species (grasses and sedges) that typically occur in wetlands, can also be used.

**Biological:** Several species of insects are being studied for their effectiveness in the control of purple loosestrife. A species of weevil (*Hylobius transversovittatus*) lays eggs in the stem and upper root system of the plant and as the larvae develop, they feed on root tissue. Two species of leaf-eating beetles (*Galerucella calmeriensis* and *G. pusilla*) and a weevil (*Nanophyes marmoratus*) that feeds on flowers and stresses the plant are being released into areas of high purple loosestrife density and are being monitored. Since 1994, the Ohio Division of Wildlife has introduced these insects into 13 areas. Although this method will not eradicate the species, it may create a more tolerable population level that will stabilize over time.

## ADDITIONAL INFORMATION SOURCES:

Bartlow, J., K. Johnson, M. Kertis, T. Remaley, S. Ross, E. Simet, T. Smith, D. Soehn and G. Taylor. 1996. Tennessee Exotic Plant Management Manual. Tennessee Exotic Pest Plant Council.

Bender, J. and J. Rendall. 1988. Element Stewardship Abstract for *Lythrum salicaria*, Purple loosestrife. The Nature Conservancy.

Hoffman, R. and K. Kearns, eds. 1997. Wisconsin Manual of Control Recommendations for Ecologically Invasive Plants. Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

March 2001

## FOR MORE INFORMATION:



**Ohio Division of Natural Areas and Preserves**  
1889 Fountain Square Dr., Bldg. F-1  
Columbus, Ohio 43224  
(614) 265-6453 [www.dnr.state.oh.us/odnr/dnap/dnap.html](http://www.dnr.state.oh.us/odnr/dnap/dnap.html)



**The Nature Conservancy, The Ohio Chapter**  
6375 Riverside Drive, Suite 50  
Dublin, Ohio 43017  
(614) 717-2770 [www.tnc.org](http://www.tnc.org)



**Columbus and Franklin County Metro Parks**  
1069 W. Main Street  
Westerville, Ohio 43081  
(614) 891-0700 [www.metroparks.net](http://www.metroparks.net)

Funding Provided by an Ohio EPA Environmental Education Grant

FS4CM

# Common Reed

## *Phragmites australis*



Pictures By (From top to bottom):  
J. Allison, J. McCauley and J.  
Swearingen @www.invasive.org.

### **Invasive Plants are a Threat to:**

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

### Description:

Common reed is a tall, warm-season, perennial grass. The stems are erect, rigid, smooth, hollow and can grow up to six meters in height. The leaves are stiff, lanceolate and 20-40 cm long and 1-4 cm wide. Flowers occur between July and October and are arranged in tawny spikelets with tufts of silky hair. The silky hairs are purplish at first and become tawny to dark brown at maturity. The seeds are thin, brown and delicate with a long, narrow bristle. While there is a native subspecies of common reed, *Phragmites australis ssp. americanus*, it is not invasive and can be distinguished from the introduced common reed by several leaf, stem and flower characteristics. For more information, see references on back.

### Distribution:

Common reed is especially common in alkaline and brackish environments, and can also thrive in highly acidic wetlands. It is common along railroad tracks, roadside ditches, piles of dredge soil and wherever even slight depressions hold water. In Indiana, it is common in wetlands in the north and in the brackish water of oil/gas production areas in the southwest.

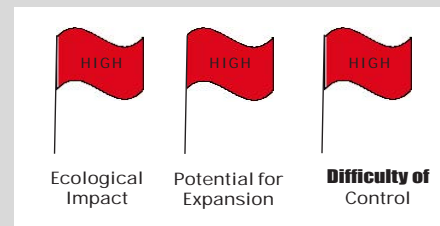
### Problem:

Common reed is typically the dominant species in the areas that it occupies. It is capable of vigorous reproduction and often forms dense, monospecific stands. The rhizomes and roots form dense mats that discourage competitors from becoming established. These monotypic stands alter the wetlands that they colonize, eliminating habitat for native plant and animal species including waterfowl.

### Origin:

Common reed is widely distributed, ranging all over Europe, Asia, Africa, America and Australia. Recent work by Saltonstall et al 2004 recognizes a native subspecies of common reed distinct from the introduced, invasive lineage. The native subspecies has been identified at several sites in northern Indiana. Due to habitat destruction and being out competed by the European common reed, these native populations are under threat.

### IPSAWG Ranking:



### IPSAWG Recommendation:

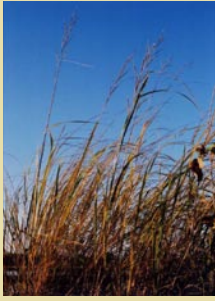
- Do not buy, sell or plant phragmites in Indiana.
- Help by eradicating phragmites on your property.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group (IPSAWG)**, which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

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## ALTERNATIVES to common reed:



Prairie cord grass  
(*Spartina pectinata*)



Blue joint grass  
(*Calamagrostis canadensis*)



Tussock sedge  
(*Carex stricta*)



Switch grass  
(*Panicum virgatum*)

Pictures By (Top to Bottom): J. Anderson, [www.nps.gov](http://www.nps.gov), G. Fewless and T. Bodner @ USDA - NRCS Plants Database.

## Control Methods:

Before any control work, be sure that the common reed is the invasive non-native species rather than the native subspecies. Prescribed burning can be used but it does not reduce the growing ability unless root burn occurs. However, it does remove accumulated leaf litter, giving the seeds of other species space to

germinate. It can also be a dangerous option because of the potential for spot fires. Cutting can also be a successful control when done at the correct time. Colonies may be eliminated by annually cutting before the end of July. If cut at the wrong time, stand density may increase. Glyphosate is commonly

used for common reed control. It is not selective and will kill grasses and broadleaf plants alike. Application of glyphosate must take place after the tasseling stage when the plant is supplying nutrients to the rhizome. **Always read and follow pesticide label directions.**

## Eight Easy Ways to Combat Invasive Plants

You can **help stop** the spread of **invasive plants** by following these **8 easy guidelines**:

1. Ask for only non-invasive species when you acquire plants. Request that nurseries and garden centers sell only non-invasive plants.
2. Seek information on invasive plants. Sources include botanical gardens, horticulturists, conservationists, and government agencies.
3. Scout your property for invasive species, and remove invasives before they become a problem. If plants can't be removed, at least prevent them from going to seed.
4. Clean your boots before and after visiting a natural area to prevent the spread of invasive plant seeds.
5. Don't release aquarium plants into the wild.
6. Volunteer at local parks and natural areas to assist ongoing efforts to diminish the threat of invasive plants.
7. Help educate your community through personal contacts and in such settings as garden clubs and civic groups.
8. Support public policies and programs to control invasive plants.

### For More Information:

On distinguishing native and non-native genotypes of Phragmites:

- RECOGNITION OF PHRAGMITES AUSTRALIS SUBSP. AMERICANUS (POACEAE: ARUNDINOIDEAE) IN NORTH AMERICA: EVIDENCE FROM MORPHOLOGICAL AND GENETIC ANALYSES; Kristin Saltonstall, Paul M. Peterson and Robert J. Soreng; SIDA 21 (2): 683-692. 2004.
- MORPHOLOGICAL DIFFERENCES BETWEEN NATIVE AND INTRODUCED GENOTYPES OF PHRAGMITES AUSTRALIS, [www.invasiveplants.net/Phragmites/morphology.htm](http://www.invasiveplants.net/Phragmites/morphology.htm).

On this assessment and IPSAWG:

IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

On identification and control techniques:

**The Nature Conservancy's Wildland Weeds**  
[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

On native plant alternatives and sources:

**Indiana Native Plant and Wildflower Society**

This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.



# Glossy Buckthorn

## *Rhamnus frangula*



Pictures By (From Top to Bottom): J. M. Randall, P. Mill @ www.invasive.org and J. M. Randall.

### ***Invasive Plants are a Threat to:***

- **Forests and wetlands**
- **Native plants**
- **Perennial gardens**
- **Wildlife**
- **Lakes and rivers**
- **Human Health**
- **Farmland**

### Description:

Glossy buckthorn is a shrub or small tree growing to seven meters. Brown-green branches have elongate lenticels, and may be slightly pubescent. Cutting the stem reveals a distinctive yellow sapwood and pink to orange heartwood. The leaves are 1-3 inches long, shiny on the upper surface, oval in shape and slightly wavy. Flowers are greenish-white and 5 petaled. Fruits undergo a color transition from green to red to black in later summer, maturing in September. Commonly sold cultivars include *Asplenifolia* and *Columnaris* (also listed as *Tallhedge*).

### Distribution:

Glossy buckthorn occurs from Nova Scotia to Manitoba, south to Minnesota, Illinois, New Jersey and Tennessee. It was probably introduced to North America before 1800, but did not become widespread and naturalized until the early 1900's. Fens, sedge meadows, wet and mesic prairie, shrub swamps, and upland forests frequently have glossy buckthorn in the understory. In Indiana, it is found primarily in the northern third of the state.

### Problem:

Glossy buckthorn has a wide habitat tolerance, a rapid growth rate and an extensive root system. It produces abundant flowers and fruits throughout the growing season. Seeds are widely dispersed by birds. They aggressively invade natural areas and form dense thickets eliminating native species. They leaf out very early in the growing season and keep their leaves late into the fall helping to shade out native trees, shrubs and wildflowers.

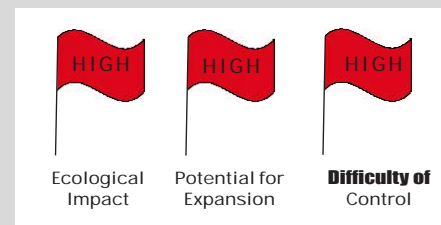
### Origin:

Glossy buckthorn is native to North Africa, Asia and Europe. It was introduced to North America as ornamental shrubs for fence rows and wildlife habitat and is still used in landscaping.



Seedling picture by: J. M. Randall

### IPSAWG Ranking:



### IPSAWG Recommendation:

- Do not buy, sell or plant glossy buckthorn in Indiana.
- Help by eradicating glossy buckthorn on your property.
- Also avoid common buckthorn (*Rhamnus cathartica*); this species is considered invasive in many parts of the Midwest.

This ranking illustrates the results of an assessment conducted by the **Invasive Plant Species Assessment Working Group** (IPSAWG), which is made up of many organizations and agencies concerned about invasive plant species. IPSAWG's goal is to assess which plant species may threaten natural areas in Indiana and develop recommendations to reduce their use in the state.

For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

## ALTERNATIVES to Glossy buckthorn:



Redosier Dogwood  
(*Cornus sericea*)



Silky Dogwood  
(*Cornus amomum*)



Carolina buckthorn  
(*Rhamnus caroliniana*)



Serviceberry  
(*Amelanchier arborea*)

Pictures By (Top to Bottom): D. E. Herman, U. Conn, T A&M U, W. S. Justice.

### Other Alternatives:

Lance-leaved buckthorn  
(*Rhamnus lanceolata*)

Grey Dogwood  
(*Cornus racemosa*)

### Control Methods:

Fire will top kill stems, however re-sprouting will occur and seed germination may increase. Seedlings or small plants may be hand pulled or removed with a grubbing hoe or larger plants may be pulled out with heavy equipment. However, this often disturbs roots of adjacent plants, or creates open soil readily colonized

by new seedlings. Repeated mowing has been reported effective in maintaining open areas and preventing seedling establishment. Chemical treatments include: stump application of

30% glyphosate in August/September or spray application of 5% glyphosate in May/July.

Always read and follow pesticide label directions.



A dense thicket of glossy buckthorn has eliminated other species along this roadside. (Picture By: G. Fewless)

(C) 2002, Gary Fewless

## Eight Easy Ways to Combat Invasive Plants

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IPSAWG  
[www.invasivespecies.IN.gov](http://www.invasivespecies.IN.gov)

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[www.inpaws.org](http://www.inpaws.org)

*This grant project made possible with United States Forest Service funds administered by the IDNR, Division of Forestry.*



# Poison Hemlock

*Conium maculatum*

***\*Warning: All parts of this plant are poisonous to both animals and humans. Use caution when managing this plant.***

**Description:** A native of Europe, poison hemlock was introduced to North America as a garden/ornamental plant. Poison hemlock is a member of the Apiaceae (parsley) family and may be confused with Queen Anne's Lace, or Giant Hogweed. It has a biennial growth pattern being a low lying rosette the first year and bolting to 3-10 feet the second year. The stems are very stout with distinctive purple spotting. Flowers are small, white, and found in umbrella-shaped clusters in early summer (June/July). The fern-like leaves are pinnately compound and arranged alternately on the stem. Reproduces prolifically via seeds that are flattened and ribbed. Seeds mature in August/September and are easily spread via mowing/agriculture equipment.



*Purple Spotting on stems.*



*Umbrella shaped flower clusters.*



*Pinnately compound leaves.*



# Poison Hemlock

*Conium maculatum*

**Impact/ Distribution:** Poison Hemlock contains highly poisonous alkaloid compounds that can be fatal to humans and livestock. Poison hemlock easily invades disturbed/early successional sites and is typically found along roads, streams, trails, ditches, forest edges, and waste areas.

**Control Methods:** Poison Hemlock spreads via seed so effective control must prevent or exhaust the seed supply. The most effective control may be mowing to prevent seed production followed up with herbicide applications to rosettes and re-sprouts.

**Manual:** Can be effective for single plants or very small infestations. Pull or dig up all plants, place in trash bag, and dispose of with your regular trash. Always wear protective clothing including gloves and eye protection to prevent the plant from contacting your skin.

**Mechanical:** Mowing or cutting may be effective control but it must be repeated often because the taproot can send up new shoots after a single mowing. Tilling or grubbing can kill hemlock and prevent seed production but is generally not recommended because of soil disturbance.

**Chemical:** Herbicide application should be performed while the plant is actively growing and before flowering. Follow-up treatments will be required as seeds already present in the soil sprout. Effective for large infestations.

- **Glyphosate:** Use herbicides containing a 41% concentration of glyphosate and follow label directions to mix a 2% spray solution. Thoroughly wet all surfaces of the plant but not to the point of run-off. Use caution, glyphosate is non-selective and will damage or kill any plant it contacts.
- **2,4-D or Triclopyr:** Broadleaf specific herbicides that will not harm grasses. Most effective on first year rosettes or very small 2nd year plants. Follow label directions and consider using a surfactant to increase effectiveness.



*Poison Hemlock invading a disturbed woodland edge.*

# KEEP A LOOK OUT

for **NEW AQUATIC INVASIVE PLANTS** in the Midwest!

These species could be spreading in your area. **Early detection and eradication** can prevent an invasion!

To report a sighting, please contact: <http://www.mipn.org/EDRRContacts.html>



**FLOWERING RUSH**

**POND WATER-STARWORT**

**SWAMP STONECROP**

**BRAZILIAN WATERWEED**

**WATER HYACINTH**

**REED MANNA GRASS**

**HYDRILLA**

**EUROPEAN FROGBIT**

**INDIAN SWAMPWEED**

**EUROPEAN WATER CLOVER**

**PARROT FEATHER**

**EURASIAN WATERMILFOIL**

**BRITTLE WATER NYMPH**

**YELLOW FLOATING HEART**

**WATER LETTUCE**

**WATER CHESTNUT**

The maps show current reported distribution in the Midwest, including Ontario.

□ Not known    ■ Isolated ( → = single county reports)    ■ Locally abundant    ■ Widespread

Last updated July 2008

Ⓢ = Also sold in the aquatic plant trade

See reverse side for species descriptions

**FLOWERING RUSH** (*Butomus umbellatus*) **Emergent, perennial herb** (can be submersed in deep water). Emergent **leaves** 3 feet tall, stiff, narrow, and triangular in cross-section. **Flowers** with 3 petals and 3 sepals, white or pink, in a distinctive flat-topped spray atop a tall stalk. **Spreads** by rhizomes and root pieces.

**POND WATER-STARWORT** (*Callitriche stagnalis*) **Perennial herb** with stems from 4 - 12 inches long. **Leaves** opposite, floating or submersed. **Floating leaves** oval or spoon-shaped with 5 - 7 veins, 0.1 - 0.3 inches wide and up to 0.8 inches long. **Submersed leaves** linear, with 1 vein, 0.2 - 0.4 inches long (can resemble floating leaves). **Flowers** tiny, located in the leaf axils. **Fruits** nearly round, 0.06 - 0.08 inches thick with a thin winged margin. **Spreads** by plant fragments and seed.

**SWAMP STONE CROP** (*Crassula helmsii*) **Perennial aquatic or semi-terrestrial, succulent herb** with round stems 4 - 12 inches long, floating or creeping with roots forming at the nodes. **Leaves** opposite and succulent, 0.2 - 0.8 inches long, 0.03 - 0.06 inches wide, linear-lanceolate to ovate-lanceolate, acute. **Flowers** white or pinkish, with 4 petals born singly, 0.12 - 0.14 inches wide. **Fruits** follicles, with 2 - 5 round, tiny, smooth seeds. **Spreads** by fragments and buds (turions).

**BRAZILIAN WATERWEED** (*Egeria densa*) **Submersed, perennial herb**. Very bushy, rooted in water up to 20 feet or drifting. Lacks specialized storage organs, such as tubers. **Stem** single or branching. **Leaves** bright green, 0.8 - 1.2 inches long, up to 0.2 inches wide, usually in whorls of 4 - 6 in short intervals along stem (bushy appearance). **Leaf edges** minutely serrated. **Flowers** white, 0.7 - 1 inch across, with 3 petals. **Spreads** by plant fragments.

**WATER HYACINTH** (*Eichhornia crassipes*) **Free-floating, perennial herb**. **Leaves** entire, round, waxy, up to 6 inches wide, with floating, air-filled petioles, and growing in rosettes. **Inflorescence** a showy spike of 8 - 15 light purple, six-petaled flowers. **Roots** dark purple to black, feathery, and hanging beneath submersed leaves. **Fruit** three-celled capsule, rarely observed. **Spreads** vegetatively by new rosettes formed on floating stolons.

**REED MANNA GRASS** (*Glyceria maxima*) **Emergent, perennial grass** 1.5 - 8 feet tall. **Stem** unbranched. **Leaves** flat, 9 - 12 inches long and 0.3 - 0.8 inches wide with prominent mid-ribs. **Leaf sheath** closed for most of length. Leaf edges with short, stiff hairs, rough to the touch. **Inflorescence** open with many branches (panicle), strongly drooping at maturity with 50+ flattened, egg-shaped spikelets, each with 4 - 10 minute flowers. **Spreads** by rhizomes and seed.

**HYDRILLA** (*Hydrilla verticillata*) **Submersed, perennial herb** rooted in saturated soil, in water up to 20 feet deep. **Stem** slender, branching, up to 25 feet long. **Leaves** green, 0.6 inches long with pointed tips, in whorls of 3 - 10, 0.13 - 2 inches apart on stem. **Leaf edges** saw-toothed, rough to touch. Male and female **flowers** on separate plants. **Spreads** by plant fragments, buds (turions) and tubers.

**EUROPEAN FROGBIT** (*Hydrocharis morsus-ranae*) **Free-floating herb**, similar to a miniature water lily. **Leaves** leathery, heart-shaped, 1 - 2 inches wide, smooth-edged with spongy, purplish-red undersides. **Flowers** 0.5 inches across appear singly with 3 white petals and yellow centers. **Roots** 3 - 8 inches long, unbranched, dangle from the underside of each rosette. **Spreads** by fragments and buds (turions).

**INDIAN SWAMPWEED** (*Hygrophila polysperma*) **Submersed** (partly emersed), **perennial herb**. **Stems** creeping to 6 feet in length, brittle. **Leaves** opposite, round, hairy, with pointed tips, light green to brown or red, up to 3 inches long. **Flowers** small, white with 2 lobes on upper lip and 3 lobes on lower lip, solitary in leaf axils. **Roots** numerous on stem. **Spreads** by plant fragments.

**EUROPEAN WATERCLOVER** (*Marsilea quadrifolia*) **Herbaceous, perennial fern** with floating or emersed leaves when rooted underwater. **Leaves** composed of 2 double leaflets that give it a four-leaf clover appearance; leaves not hairy. New leaves emerge as fiddleheads. **Spreads** by rhizomes and spores, producing sporocarps that are thick, oval, and hairy.

**PARROT FEATHER** (*Myriophyllum aquaticum*) **Emergent, perennial herb** with leaves trailing on water surface. **Stems** up to 5 feet long, become erect at the tips and can emerge up to a foot above the water surface. **Leaves** oblong, feathery, 0.5 - 2 inches long, in whorls of 4 - 6 around the stem. **Flowers** inconspicuous, white. **Spreads** by plant fragments.

**EURASIAN WATERMILFOIL** (*Myriophyllum spicatum*) **Submersed, perennial herb**. Like native milfoils, **stems** slender, whorled by submersed, feathery leaves and tiny flowers produced above the water surface. **Stem** thickens below the inflorescence and doubles its width further down. **Leaves** threadlike, 9 - 21 pairs of leaflets per leaf, typically uniform in diameter. **Flowers** four-petaled or without petals. **Fruits** nut-like bodies, four-jointed. **Spreads** by plant fragments.

**BRITTLE WATERNYMPH** (*Najas minor*) **Submersed, annual herb** up to 4 feet long. **Stems** slender with many branches. **Leaves** opposite, linear, toothed, stiff, curled, 1 - 2 inches long. **Flowers** small, inconspicuous, and born singly in the leaf axils. **Spreads** by seed and plant fragments.

**YELLOW FLOATING HEART** (*Nymphoides peltata*) **Rooted, perennial herb** up to 3 feet long with floating leaves. **Leaves** arise from long stalks attached to creeping rhizomes on bottom. **Leaves** heart-shaped to round with wavy margins, purplish underneath. **Flowers** bright yellow, with 5 fringed petals, arranged on stalks of 2 - 5 flowers. **Fruit** a small capsule. **Spreads** by seeds, rhizomes, stolons and plant fragments.

**WATER LETTUCE** (*Pistia stratiotes*) **Floating, perennial herb**. Resembles a head of lettuce. **Leaves** thick, dull, light green, up to 6 inches long, covered in soft hairs with ridged parallel veins. **Flowers** inconspicuous, clustered on small, fleshy stalk in leaf axils. **Roots** feathery. **Spreads** by producing many secondary rosettes.

**WATER CHESTNUT** (*Trapa natans*) **Rooted, annual herb** with a leafy rosette that floats on the surface. **Stems** up to 16 feet long, with 2 types of leaves. **Submersed leaves** feathery, whorled along the stem and up to 6 inches long. **Emergent leaves** triangular, 1 - 2 inches long, waxy with toothed edges. **Leaf stems** with bladder-like swelling. **Flowers** small, white with 4 petals. **Fruit** 1 inch wide, hard nut with 4 stout barbs. **Spreads** by seeds and plant fragments.

**HELP STOP THE SPREAD OF AQUATIC INVASIVE PLANTS!**  
AQUATIC INVASIVE PLANTS SPREAD AS WATER GARDEN PLANTS, AS CONTAMINANTS ON NON-INVASIVE WATER GARDEN PLANTS, AS HITCHHIKERS ON BOATS AND OTHER WATER VEHICLES, AND THROUGH DUMPING OF UNWANTED PLANTS OR PLANT PARTS FROM AQUARIUMS.

**To stop the spread of aquatic invasive plants, follow these rules: 1) Do not release aquatic invasive plants into any waters; 2) Rinse your aquatic garden plants before planting; 3) Keep aquatic plants contained in your water gardens; and 4) Clean all recreational vehicles and trailers before leaving any lake or river.**

# KEEP A LOOKOUT!

## for NEW INVASIVE PLANTS in the Midwest!



Early detection and eradication can prevent an invasion. *The maps show current reported distribution in the Midwest, including Ontario.\**

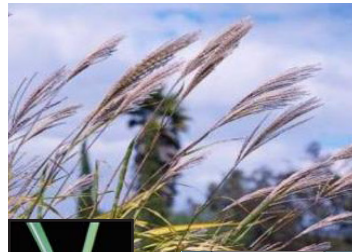
Not known     
  Isolated ( → = single county reports)     
  Locally abundant     
  Widespread



ASIAN BITTERSWEET



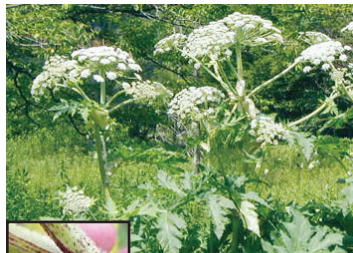
BLACK SWALLOW-WORT



CHINESE SILVERGRASS\*\*



CHINESE YAM



GIANT HOGWEED



JAPANESE CHAFF FLOWER



JAPANESE HEDGEPARSLEY



JAPANESE HOP



JAPANESE STILTGRASS



JAPANESE WINEBERRY



KUDZU



LESSER CELANDINE



MILE-A-MINUTE WEED



NARROWLEAF BITTERCRESS



PALE SWALLOW-WORT



PORCELAINBERRY

To report a sighting, please contact: [www.GLEDN.org](http://www.GLEDN.org)

\*\*For Chinese silvergrass, please report escaped populations only, not intentional plantings.

\*Updated May 2012

See reverse side for species descriptions

# New INVASIVE PLANTS in the Midwest

## ASIAN BITTERSWEET (*Celastrus orbiculatus*)

**Woody, perennial vine.** Leaves alternate, toothed, shape variable; teardrop-shaped to round with a pointed tip. **Flowers** small and greenish-yellow; male and female flowers on separate plants. **Blooms** in early summer, fruits in fall. **Fruit** greenish to yellow, grows in clusters of 3 - 7 along stem at leaf axils. Fruit splits open to reveal a bright red inner-fruit. Threatens woodlands, forests, savannas and floodplains.

## BLACK SWALLOW-WORT (*Cynanchum louiseae*)

**Herbaceous, perennial vine** reaches lengths of 3 - 8 feet high. **Leaves** opposite, 2 - 5 inches long, toothless, narrowly to broadly oval with pointed tips, dark green and shiny. **Flowers** tiny, dark purple with 5 pointed, downy, triangular petals that are as long as wide. **Seed pods** milkweed-like, slender and tapered, 1.5 - 3 inches long. **Seed** on silky filaments. Threatens woodlands, forests, grasslands and savannas.

## CHINESE SILVERGRASS (*Miscanthus sinensis*)

**Perennial grass**, grows in large clumps 5 - 10 feet high. **Leaves** elongate, up to 3 feet long and 1 inch wide with a silver white midrib, **leaf edges** rough, **leaf tips** are sharp and recurving. **Inflorescence** showy at the end of a stalk, fan-shaped, 6 - 24 inches long, silvery to pale pink. **Seeds** 0.1 inch long, with a twisted bristle tip. Threatens forest margins and disturbed areas.

## CHINESE YAM (*Dioscorea oppositifolia*)

**Herbaceous, perennial vine** twines clockwise, climbs to 15 feet. **Leaves** opposite (upper nodes alternate) reddish where leafstem joins leaf, shape is variable, but often shield- or heart-shaped. **Flowers** small and white with a cinnamon odor, arranged in spikes. **Reproductive bulbils** (small potato-like tubers in leaf axils) present June to September. Threatens streamsides, floodplains and ravines.

## GIANT HOGWEED (*Heracleum mantegazzianum*)

Large **perennial herb**, flowers once then dies. A single basal leaf grows the first year, then grows a larger rosette each year. In 4th or 5th year plant produces a 7 - 15 foot tall flower stalk. **Leaves** 3-part compound, 1 - 4 feet wide, deeply incised and pointed. **Flowers** white in multiple broad-domed umbels. **Flower stalk** hollow with coarse hairs and reddish purple splotching. Threatens river corridors and woodland edges.

**Caution! Plant sap causes severe phytophotodermatitis.**

## JAPANESE CHAFF FLOWER (*Achyranthes japonica*)

**Perennial, herb** grows up to 6 feet tall. **Stems of seedlings** are reddish, larger plants have red nodes. **Leaves** opposite, simple, and smooth-edged with deeply incised leaf veins. **Flowers** in small spikes, lack petals, and have a bottle-brush appearance. **Fruits** lay flat against the spike with a pair of stiff bracts and remain on stalks during winter. Threatens wet forests and riparian areas.

## JAPANESE HEDGEPARSLEY (*Torilis japonica*)

**Biennial herb** grows 2 - 4 feet tall when flowering in second year. **First year rosette** leaves are parsley-like and stay green into fall, **second year** alternate, fern-like, 2 - 5 inches long and slightly hairy. **Flowers** tiny and white, clustered in small flat-topped umbels. **Fruit** small and covered with hooked hairs. Threatens woodlands and savannas.

## JAPANESE HOP (*Humulus japonicus*)

**Herbaceous annual vine** twines counter-clockwise. **Leaves** opposite, 2 - 5 inches long, toothed, and palmately divided, usually with 5 lobes. **Leaf stem** as long or longer than leaf length. **Leaves and stem** with hooked climbing hairs. **Flowers** mid to late summer (male and female flowers on separate plants). Threatens floodplains, wet forests, stream banks and lakeshores.

## JAPANESE STILT GRASS (*Microstegium vimineum*)

**Annual, sprawling grass**, 12 - 24 inches tall, resembling miniature bamboo. **Leaves** wide, alternate, pale green, lance-shaped, 2 - 3 inches long with a pale silvery stripe of reflective hairs along midrib of upper surface. **Flower** spikes 1 - 3 inches long. **Blooms** late summer into early fall. Prolific seed production. Threatens river and stream corridors, floodplains, moist woodlands and forested wetlands.

## JAPANESE WINEBERRY (*Rubus phoenicolasius*)

**Deciduous, perennial shrub.** **Stems** upright, arching, up to 9 feet long with glandular red hairs and small spines. **Leaves** divided into 3 sharply toothed leaflets with dense silvery-white hairs on the underside. **Flowers** small with white petals and hairy sepals arranged in clusters. **Fruit** bright red and raspberry-like. Threatens forests, savannas, prairies, wetland edges, and open woodlands.

## KUDZU (*Pueraria montana* var. *lobata*)

**Semi-woody, perennial vine** climbs 30 - 90 feet. **Leaves** alternate and compound with 3 unlobed to deeply lobed leaflets, hairy beneath and up to 4 inches wide. **Flowers** purple, pea-like and grow from leaf axils in long hanging clusters; blooming in late summer. **Seed pods** brown, flattened and hairy. Threatens forest edges, woodlands and savannas.

## LESSER CELANDINE (*Ranunculus ficaria*)

**Perennial herb**, forms a dense carpet. **Leaves** in rosette, shiny, dark green, kidney- to heart-shaped. **Flower** one inch wide, 8 - 12 petals, bright yellow with slightly darker center on single stalk above leaves. **Roots** with finger-like tubers, cream-colored bulblets in stem axils. **Fruit** hairy seeds held in round heads. Threatens floodplain forests, low open woods, and meadows.

## MILE-A-MINUTE WEED (*Polygonum perfoliatum*)

**Annual, herbaceous vine** that climbs to 15 feet tall. **Stem** with hooked barbs; circular, cup-shaped, leafy structures around the stem at nodes. **Leaves** alternate, shaped like an equilateral triangle with barbs on undersides, leaf bases arrow- to heart-shaped. **Flowers** small, white and inconspicuous. **Fruit** a fleshy, blue, pea-sized berry. Threatens woodland edges, wetlands and riparian corridors.

## NARROWLEAF BITTERCRESS (*Cardamine impatiens*)

**Annual or biennial forb**, 6 - 31 inches tall. **First year rosette**, leaves pinnately divided with 3 - 11 round-lobed leaflets. **Second year (bolted) leaves** have 6 - 20 lance-shaped leaflets with asymmetrical bases, edges may be smooth to sharply-toothed. Base of second year leaves clasps stem (auricles). **Flowers** white, 0.1 inch long. **Fruit** erect, slender silique, many per plant, 0.6 - 0.8 inches long. **Seeds** orange to brown, 10 - 24 in each fruit. Threatens wet woods and floodplains.

## PALE SWALLOW-WORT (*Cynanchum rossicum*)

**Herbaceous, perennial vine** twines 3 - 6 feet high. **Leaves** opposite (similar to black swallow-wort). **Flowers** maroon to pink with 5 pointed, hairless, triangular petals that are twice as long as wide. **Seed pods** milkweed-like (similar to black swallow-wort). **Seed** on silky filaments. Threatens woodlands, forests grasslands and savannas.

## PORCELAINBERRY (*Ampelopsis brevipedunculata*)

**Perennial, deciduous, woody vine.** **Stem pith** is white and continuous across nodes. **Bark** does not peel. **Leaves** alternate with a heart-shaped base, 3 - 5 lobed, hairy with rounded teeth on edges. **Flowers** greenish-white, occur opposite the leaves. **Fruit** colorful, lavender to green or bright blue. Native grape, *Vitis riparia*, has brown pith and peeling bark. Threatens forest edges, pond edges and stream banks.

**For control and management of these species, please visit the following Internet links:**

<http://mipncontroldatabase.wisc.edu>, <http://www.nps.gov/plants/alien/>, and <http://www.invasive.org/eastern/>



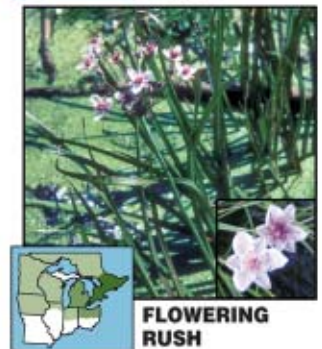
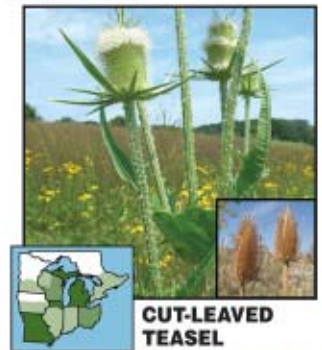
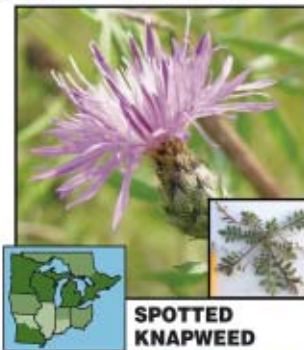
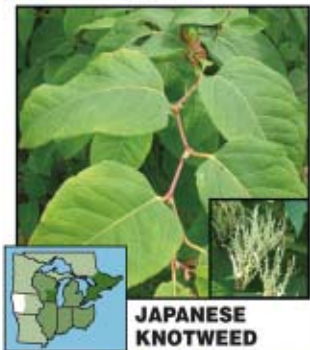
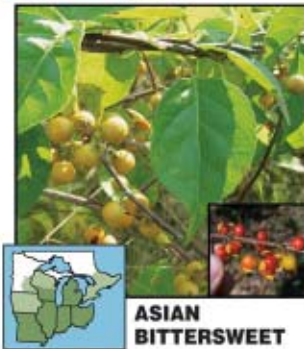
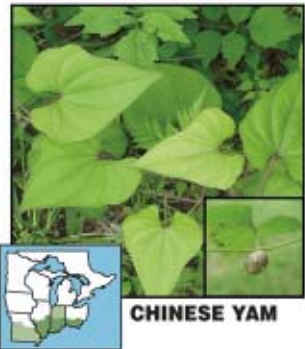
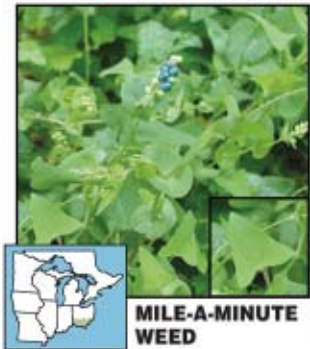
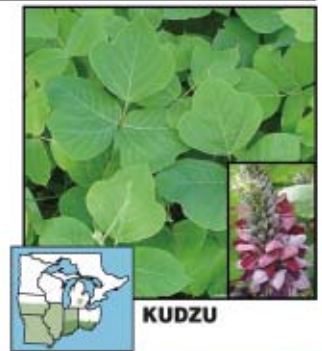
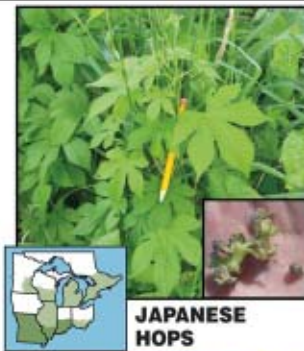
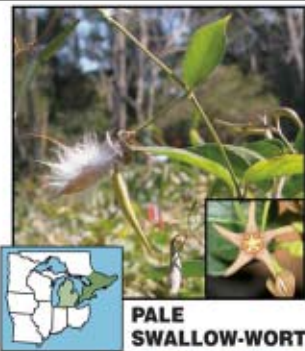
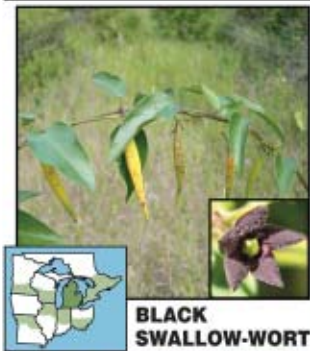
# KEEP A LOOKOUT

## for New **INVASIVE PLANTS** in the Midwest!



These species could be spreading in your area; **early detection and eradication** can prevent an invasion.

Current Midwest general distribution, including southern Ontario  Not Known  Isolated  Locally Abundant  Widespread



To report a sighting, please contact: [www.mipn.org/EDRRContacts.html](http://www.mipn.org/EDRRContacts.html)

# New INVASIVE PLANTS in the Midwest



**BLACK SWALLOW-WORT** (*Cynanchum louiseae*) Herbaceous, perennial **vine** twines 3 – 8 feet high. **Leaves** opposite, 2 – 5 inches long, toothless, narrowly to broadly oval, pointed tips, dark green and shiny. **Flowers** tiny, dark purple with 5 pointed, downy, triangular petals that are as long as wide. **Seedpods** milkweed-like, slender and tapered, 1.5 – 3 inches long. **Seed** on silky filaments. Threatens woodlands, forests, grasslands and savannas.

**PALE SWALLOW-WORT** (*Cynanchum rossicum*) Herbaceous, perennial **vine** twines 3 – 6 feet high. **Leaves** opposite (similar to black swallow-wort). **Flowers** maroon to pink with 5 pointed, hairless, triangular petals that are twice as long as wide. **Seedpods** milkweed-like (similar to black swallow-wort). **Seed** on silky filaments. Threatens woodlands, forests, grasslands and savannas.

**JAPANESE HOPS** (*Humulus japonicus*) Herbaceous annual **vine** twines counter-clockwise. **Leaves** opposite, 2 – 5 inches long, toothed, palmately divided usually with 5 lobes. **Leaf stem** as long or longer than leaf length. **Leaves** and **stem** with hooked climbing hairs. **Flowers** mid to late summer, male and female flowers on separate plants. Threatens floodplains, wet forests, stream banks and lakeshores in sun or shade.

**KUDZU** (*Pueraria montana var. lobata*) Semiwoody, perennial **vine** climbs 30 – 90 feet. **Leaves** alternate, compound with 3 unlobed to deeply lobed leaflets, hairy beneath and up to 4 inches wide. **Flowers** purple, pea-like, grow from leaf axils in long hanging clusters, bloom in late summer. **Seedpods** brown, flattened and hairy. Threatens forest edges, woodlands and savannas.

**MILE-A-MINUTE WEED** (*Polygonum perfoliatum*) Annual, herbaceous **vine** that climbs to 15 feet tall. **Stem** with hooked barbs and circular, cup-shaped, leafy structures around the stem at nodes. **Leaves** alternate, shaped like an equilateral triangle with barbs on undersides, leaf bases arrow- to heart-shaped. **Flowers** small, white and inconspicuous. **Fruit** a fleshy, blue, pea-sized berry. Threatens woodland edges, wetlands and riparian corridors.

**CHINESE YAM** (*Dioscorea oppositifolia*) Herbaceous, perennial **vine** twines clockwise, climbs to 15 feet. **Leaves** opposite, upper nodes alternate, reddish where leaf stem joins leaf, variable shape often shield- or heart-shaped. **Flowers** small and white, cinnamon odor, arranged in spikes. Reproductive **bulbils** (small potato-like tubers in leaf axils) present June – September. Threatens stream sides, floodplains and ravines.

**ASIAN BITTERSWEET** (*Celastrus orbiculatus*) Woody, perennial **vine**. **Leaves** alternate, toothed, teardrop-shaped to round with a pointed tip. **Flowers** small and greenish yellow, male and female flowers on separate plants, bloom early summer, fruit in fall. **Fruit** greenish to yellow, grows in clusters of 3 – 7 along stem at leaf axils, splits open to reveal bright red inner-fruit. Threatens woodlands, forests, floodplains, savannas and riparian corridors.

**TREE OF HEAVEN** (*Ailanthus altissima*) Deciduous **tree** grows to 80 feet. **Stems** smooth, pale gray bark. **Leaves** alternate, 1 – 4 feet long, compound with 11 – 25 leaflets with 1 or more glandular teeth near the leaf base. **Flowers** yellow-green, near branch tips, male and female flowers on separate trees. **Seeds** in twisted flat "wings" borne in clusters. All parts of the tree have a strong odor. Threatens woodland edges and forest openings.

**JAPANESE KNOTWEED** (*Polygonum cuspidatum*) Perennial herb with **shrub-like** form grows 3 – 9 feet. **Stem** hollow, bamboo-like with swollen leaf joints. **Leaves** 6 inches long, 3 – 4 inches wide, leaf base straight across to bluntly right angled. **Flowers** white to pink and densely crowded on erect stalks. Threatens riparian corridors, fens, springs, ravines, forests and streamsides.

**JAPANESE STILT GRASS** (*Microstegium vimineum*) Annual, sprawling **grass**, 12 – 24 inches tall, resembling miniature bamboo. **Leaves** wide, alternate, pale green, lance-shaped, 2 – 3 inches long, pale silvery stripe of reflective hairs along midrib of upper surface. **Flower spikes** 1 – 3 inches long, bloom late summer into early fall, prolific seed production. Threatens river and stream corridors, floodplains, moist woodlands and forested wetlands.

**SPOTTED KNAPWEED** (*Centaurea biebersteinii*) Short-lived, perennial **herb**. First-year plants form low-growing rosettes. Flowering **stems** leafy, 1 – 2 feet tall with wiry, hoary branches. **Leaves** grayish, hairy, deeply cut with narrow lobes. **Flowers** thistle-like, pink to purple. Flower base covered by black-tipped bracts. Threatens savannas, grasslands, sand dunes and prairies.

**CUT-LEAVED TEASEL** (*Dipsacus laciniatus*) Perennial **herb**, flowers once then dies. First year forms a low-growing rosette; second or third year produces a 2 – 6 foot stem. **Leaves** on stem opposite, long, deeply cut, prickly, joined into a cup around stalk. **Stem** ridged and spiny. **Flowers** small and white in oval-shaped heads atop stems, bloom summer into fall. Threatens prairies and sedge meadows. **Common teasel** (*D. fullonum*) similar and invasive but with purple flowers, leaves not deeply cut.

**GIANT HOGWEED** (*Heracleum mantegazzianum*) Large perennial **herb**, flowers once then dies. First year is a single leaf, then grows a larger rosette each year. In fourth or fifth year produces a 7 – 15 foot flower stalk. **Leaves** 3-part compound, 1 – 4 feet wide, deeply incised and pointed. **Flowers** white in multiple broad domed umbels. **Flower stalk** hollow with coarse hairs and reddish purple splotching. Threatens river corridors and woodland edges. **Caution! Plant sap causes severe photodermatitis.**

**JAPANESE HEDGE PARSLEY** (*Torilis japonica*) Biennial **herb** grows 2 – 4 feet tall when flowering in second year. First-year rosettes are low, parsley-like and green into fall. **Leaves** alternate, fern-like, 2 – 5 inches long, slightly hairy. **Flowers** tiny and white, clustered in small flat-topped umbels. **Fruit** small and covered with hooked hairs. Threatens woodlands and savannas. **Spreading hedge parsley** (*T. arvensis*) is very similar and invasive.

**LEAFY SPURGE** (*Euphorbia esula*) Perennial **herb** grows 2 – 3 feet. Milky sap in stem and leaves. **Leaves** alternate, narrow with pointed tips, smooth and hairless. **Flowers** on paired, yellowish green cup-shaped bracts. Bracts in clusters of 7 – 10 at top of stem, bloom late spring to mid summer. **Seedpods** attach to center of paired bracts. Threatens prairies, grasslands, savannas, sand dunes and open woodlands.

**FLOWERING RUSH** (*Butomus umbellatus*) Perennial, emergent **aquatic herb** (can be submerged in deep water). Emergent **leaves** 3 feet tall, stiff, narrow and triangular in cross-section. **Flowers** 3 petals and 3 sepals, white or pink, distinctive flat-topped spray atop a tall stalk, bloom late summer through early fall. Prefers shallow or slow-moving water. Threatens marshes, backwaters and shorelines.

**For control and management of these species, please visit the following Web sites:**

[www.nps.gov/plants/alien/factmain.htm](http://www.nps.gov/plants/alien/factmain.htm), [tncweeds.ucdavis.edu/control.html](http://tncweeds.ucdavis.edu/control.html), [dnr.wi.gov/invasives/plants.htm](http://dnr.wi.gov/invasives/plants.htm) and [www.invasivespeciesinfo.gov/plants/main.shtml](http://www.invasivespeciesinfo.gov/plants/main.shtml)

Photos: Elizabeth Czarapata; Antonio DiTommaso, Cornell Univ.; David Eagan, Univ. of WI; Kate Howe, MIPN; Emmet Judzewicz, Univ. of WI-Stevens Point; Kelly Kearns, WI-DNR; Larissa L. Smith, Cornell Univ.; Debbie Maurer, IL-LCFPD; Jody Shimp, IL-IDNR; Bill Smith, WI-DNR. Taxonomy: based on USDA PLANTS Database, [www.plants.usda.gov](http://www.plants.usda.gov)

Last updated 12/06

# Invasive Plant Species Information

## Invasive species – national

[www.invasivespeciesinfo.gov](http://www.invasivespeciesinfo.gov) – this is the national website for all invasives information  
[http://enature.com/native\\_invasive/natives.asp](http://enature.com/native_invasive/natives.asp) – invasives and landscaping alternatives (not as specific as IN websites below, but still useful)  
<http://plants.usda.gov/> - national database for all plant species (distribution information is very inaccurate for IN invasives but likely to be updated in the next year)  
<http://www.weedcenter.org/> - Center for Invasive Plant Management

## Invasive species – regional

[www.mipn.org](http://www.mipn.org) – Midwest Invasive Plant Network covers MN, IA, MO, WI, IL, MI, IN and OH; has summary of what's happening in the Midwest, links to state groups, photos, etc.  
[www.rtrcwma.org](http://www.rtrcwma.org) – River to River CWMA in Illinois  
<http://www.northwoodscwma.org/> - North Woods CWMA in Wisconsin.  
<http://www.fs.fed.us/r9/wildlife/nnis/invasive-species-field-guide.pdf> - Field and reference guide to invasive species in the east

## Invasive species -Indiana

[www.invasivespecies.in.gov](http://www.invasivespecies.in.gov) – has information on what's happening in IN  
[www.inpaws.org](http://www.inpaws.org) – INPAWS website; has brochures on invasive plants in IN and landscaping alternatives  
<http://www.ppd.l.purdue.edu/ppdl/> - Virtual Plant and Pest Diagnostic Lab – help in identifying weeds (for a fee)  
<http://www.btny.purdue.edu/weedscience/> - Purdue Weed Science website  
<http://www.fs.fed.us/r9/hoosier/docs/plants/sicwma.htm> - Southern Indiana Cooperative Weed Management Area

## Invasive plant control - general

<http://tncinvasives.ucdavis.edu/> - TNC Wildland Weeds website with information on all control methods, specific information on invasive plants

## Invasive plant control – tools and herbicides

*(Note – these are examples and do not constitute endorsement of these particular brands or companies)*

**Forestry Suppliers:** - wide range of tools, herbicides (e.g. Garlon 3a, Garlon 4, Roundup, dye, and supplies) 1-800-647-5368, <http://www.forestry-suppliers.com/>

**Townsend Chemical:** extensive inventory of herbicides and basal bark carriers (like Ax-it) 1-800-616-4221, <http://www.townsendchemical.com/>

**Gamma Seal Lid** - lock tops for 5 gal. buckets, 1-800-842-6543,  
[http://freckleface.com/shopsite\\_sc/store/html/gammaseals.html](http://freckleface.com/shopsite_sc/store/html/gammaseals.html)

## Controlling invasive plants with fire:

[www.weedcenter.org/management/burning\\_weeds.pdf](http://www.weedcenter.org/management/burning_weeds.pdf) - great review  
[www.ceinfo.unh.edu/Pubs/ForPubs/WPUFCI03.pdf](http://www.ceinfo.unh.edu/Pubs/ForPubs/WPUFCI03.pdf)

## Controlling aquatic invasive plants:

[www.ces.purdue.edu/extmedia/WS/WS\\_21.pdf](http://www.ces.purdue.edu/extmedia/WS/WS_21.pdf) – Aquatic Plant Management by Carole Lembi; good summary with photos, identification information, control options

## Where Do I Start?! Prioritizing Invasive Plant Control

Ellen Jacquart for INPAWS newsletter, 4/05/2009

It's important to think through a plan for managing invasive plants on your land **before** you start the attack. Without a plan, it's easy to underestimate the time and resources it will take to control a species and end up overwhelmed, giving up in frustration. An important part of planning is to prioritize the work ahead of you, deciding what species you should start on first, and where you should attack first. That way, at least you'll know that what you *have* accomplished was more important than what you didn't have time or resources to complete. Here are some helpful hints for prioritizing invasive plant control.

### *Prioritizing by species....*

You walk through your woodlot and wince when you see the garlic mustard, which looks like it's spread considerably since last year. Then you notice the burning bush shrubs in the understory, and realize your neighbor's landscaping has made itself at home in your woods. And that vine....those orange berries...geez, where did the Oriental bittersweet come from?!

Like potato chips, it seems nobody can have just one invasive plant species. There are usually multiple species invading a given area, which can make the job of managing a site much more difficult. Where do you start when you have more than one species to deal with? A lot of us have struggled with this, and fortunately there are a few easy rules of thumb to help sort out which species to go after first. What follows is a simplified version of a prioritization template by The Nature Conservancy which can be found at <http://www.invasive.org/gist/products.html> by clicking on the Weed Management Plan Template. Many other resources on the identification and control of invasive plants can be found on that site.

Before you start prioritizing, though, you need to know three things:

**First, know what you have.** Use a good field guide or a knowledgeable botanist friend to double-check that you've identified a real invasive plant, rather than an innocent look-a-like.

**Second, know how much you have.** The priority you place on 50 plants of garlic mustard will be very different from 5 acres, as you'll see in a moment. Map the invasive plants, circling each area of infestation and estimating what percent within the circled area is invasive species versus native. A handy way to do this is to use Google Earth to zoom in on your property and print out an aerial photo. Draw your property boundary on the aerial, and then walk through your property in a grid-like fashion and mark what you see. Those of you with GPS units and GIS software on your computers are welcome to do it the high-tech way.

**Third, know what you want.** This may be very easy for you, or very difficult. What do you most want to protect on your land? Is it the ovenbirds that nest there? The bluebells that bloom each spring by the creek? The deer habitat? The ability to walk through the

woods without having to fight thorny shrubs? Deciding what you want to manage your land **for** is important. Think this through, and even map the areas you most want to protect against invasive plant species.

Now you're ready. The following four questions will tell you which species should be your top priority. You should already know the answers to number one and two from figuring out above how much you have and what you want to protect. Numbers three and four are answered by reading information about each invasive species or talking to professionals who work with invasive species in your area.

For each species, answer these questions and add the points:

**1. How much do you have?**

- 1 pt – I don't have any, but it's near my land
- 2 pts – Just a small amount, but it's spreading
- 3 pts – A fair amount, and it's still spreading
- 4 pts – A LOT! It's covering the whole area completely

**2. What's the value of the habitat being invaded?**

- 1 pt – it's invading my favorite area that has the stuff I want to protect
- 2 pt – it's invading the disturbed edge or areas that I don't care as much about

**3. What impacts is it causing?**

- 1 pt – all is lost; it changes the area so much that few species survive
- 2 pts – it invades undisturbed areas and outcompetes native species
- 3 pts – it doesn't outcompete native species, but natives don't regenerate
- 4 pts - it invades disturbed areas like edges

**4. How hard is it to control?**

- 1 pt – not too bad, one treatment and it's pretty much gone
- 2 pts – takes multiple treatments, but eventually it's gone and natives replace it
- 3 pts – takes multiple treatments and natives don't come back in readily
- 4 pts - no effective treatment has been found

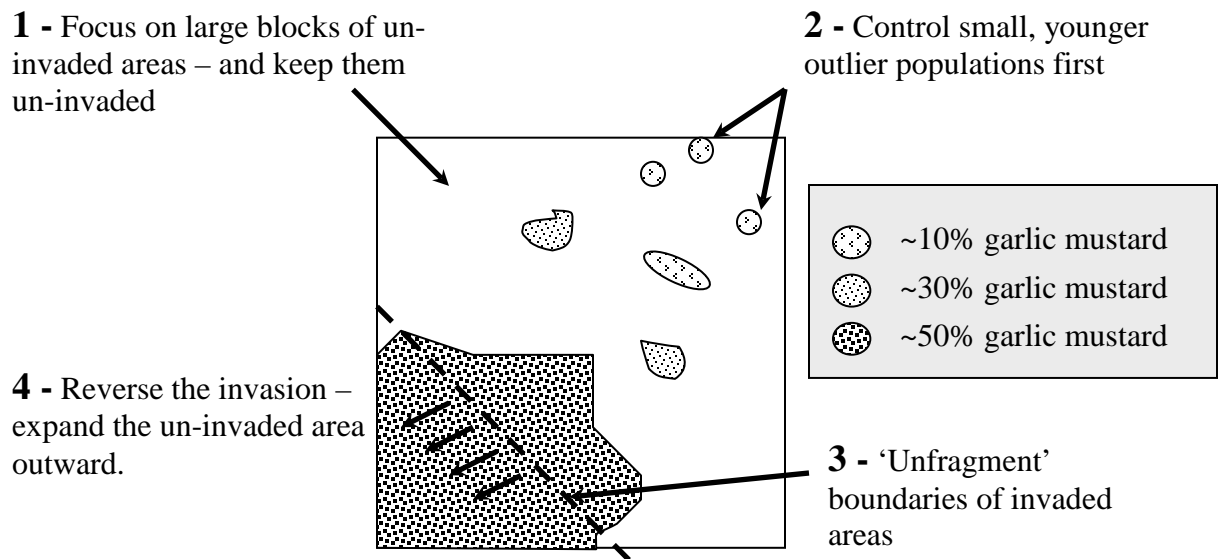
Now add the total points for each species. ***The lower the score, the higher the priority.***

To summarize it another way – **cheap and easy is very often your top priority!** It is very common to be mesmerized by the acres of garlic mustard in bloom and completely miss the one Oriental bittersweet vine that snuck in while you weren't looking. If you have unlimited time and money, congratulations! Hire a big crew and go after them both. If, like most of us, you have limited time and money, turn your back on the garlic mustard and kill the Oriental bittersweet. Nipping it in the bud, so to speak, means you can spend a very small amount of time and money and keep it from becoming a huge infestation a few years from now. When it's dead, then go work on the garlic mustard.

**Prioritizing where to start at a site....**

Alright, you say bravely, the Oriental bittersweet vine is dead and I'm ready to tackle this huge area of garlic mustard. But it's a big project, and I'm not sure where to start. Here are a few more rules of thumb to help prioritize where to work first at a site.

First, identify and map invaded and un-invaded areas as shown in Figure 1. Then follow steps 1 through 4 –



**Figure 1.** A map of the garlic mustard in my woods

A few last things to keep in mind –

- If the invasive plant produces bird-dispersed fruits like berries, control the large seed source populations first (which in a forest will usually be along the edge where there is more light), then follow the above rules.
- All roads, trails, and watercourses are invasive corridors; survey them regularly to detect new invaders quickly
- If the invasive species is coming from adjacent land (like, for instance, the garlic mustard in Figure 1 appears to be coming from the land to the southwest), it's time to have a conversation with your neighbors to see if they will also work to control their infestation. I suggest bringing chocolate chip cookies as incentive.
- Keep your focus on what you are managing *for*, not against – just removing invasive plants may not be enough. The unfortunate reality is that invasive plants aren't the only threat to your land. If you love the bluebells that bloom at the creek each year and have worked hard to control the garlic mustard to protect them, keep in mind it's still possible an overpopulation of deer may browse them

all away. Don't lose sight of the big picture and other things that impact your land.

Controlling invasive plants can be challenging, but prioritizing your battles before you begin will make your success much more likely. Go get 'em!

# **Funding Programs for Invasive Species Control in Indiana**

**Southern Indiana Cooperative Weed Management Area (SICWMA)**

**Date: May 2009**

## **Indiana Department of Natural Resources, Division of Forestry**

### **Urban Forest Conservation Grants**

The Urban Forest Conservation (UFC) Grants are intended to help communities develop long term programs to manage their urban forests. Grantees may conduct any project that helps to improve and protect trees and other associated natural resources in urban areas. Community projects that target program development, planning and education are emphasized. Projects funded in the past include activities such as conducting tree inventories, developing tree maintenance and planting plans, writing tree ordinances, conducting programs to train municipal employees and the public, purchase or development of publications, books and videos, hiring consultants or city foresters, etc. Certified Tree Cities may spend up to 20% of the grant funds on demonstration tree planting projects. Local municipalities, not-for-profit organizations and state agencies are eligible to apply for \$2,000 to \$20,000.

For more information about any urban forestry grants contact:

Division of Forestry

Urban Forestry Program

6515 E. 82nd St., Suite 204

Indianapolis, IN 46250

E-mail: [urbanforestry@dnr.IN.gov](mailto:urbanforestry@dnr.IN.gov)

Read about it on the Internet at <http://www.in.gov/dnr/forestry/6774.htm>

### **Forestland Enhancement Program**

Forestland Enhancement Program (FLEP) provides incentive funds for the enhancement and/or establishment of conservation practices such as tree planting, follow-up weed control, and timber stand improvement. Maximum refund rates range up to 50% of your cost as approved by a district forester. All programs require that you follow a plan approved by a district forester and that you participate for at least 10 years.

To inquire about this program, contact your district forester.

Read about it on the Internet at <http://www.in.gov/dnr/forestry/6770.htm>



## **USDA Natural Resources Conservation Service (NRCS)**

### **Wildlife Habitat Incentives Program (WHIP)**

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through WHIP USDA's Natural Resources Conservation Service provides both technical assistance and payment assistance to establish and improve fish and wildlife habitat. Payment schedule rates have replaced cost sharing by a percentage. Payments are based on the statewide documented cost of installation of a specific practice. The payment is offered as a payment per unit of the practice installed. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed.

In 2009, WHIP will provide funding for controlling the following species:

- Glossy Buckthorn
- Asian Bush Honeysuckle
- Japanese Honeysuckle
- Kudzu
- Autumn Olive
- Multiflora rose
- Common Periwinkle
- Tree of Heaven

Read about it on the Internet <http://www.nrcs.usda.gov/programs/whip/>

For detailed information on WHIP, contact the NRCS District Conservationist in your county.

### **Environmental Quality Incentives Program (EQIP)**

EQIP is a voluntary conservation program that promotes agricultural production, forest management, and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants to install or implement conservation practices on eligible agricultural and forest land. Payment schedule rates for conservation practices were developed to promote positive conservation outcomes tailored to the environmental needs of Indiana. Cost sharing by a percentage and incentive payments are no longer available. Practice schedule payments are payments for the installation of a specific practice. Payments are based on the statewide documented cost of installation and offered as a payment per unit of the practice installed.

Read about it on the Internet <http://www.in.nrcs.usda.gov/programs/eqip/eqiphompage.html>

For detailed information on WHIP, contact the NRCS District Conservationist in your county.

## **Conservation Innovation Grants (CIG)**

Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-Federal governmental or non-governmental organizations, Tribes, or individuals. CIG enables NRCS to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the nation's most pressing natural resource concerns, including invasive plants/weeds, plant pathogens/diseases, insects, animals, animal pathogens, diseases, aquatic species. Selected applicants may receive grants up to 50 percent of the total project cost. Applicants must provide nonfederal matching funds for at least 50 percent of the project cost. An exception allows for beginning and limited resource farmers and ranchers, Tribes and community-based organizations representing these groups to obtain a higher percentage of project matching funds from in-kind contributions. The Federal contribution may not exceed \$1 million for a single project.

Read about it on the Internet <http://www.nrcs.usda.gov/programs/cig/>

## **U.S. Fish and Wildlife Service**

### **Partners for Fish and Wildlife**

Partner with nonprofit organizations, corporations, local, state and federal agencies to restore and enhance fish and wildlife habitat on private lands. Technical assistance and funding are provided for projects that restore habitat for migratory birds, threatened and endangered species, interjurisdictional fish and other wildlife or restore habitat within the watersheds of our national wildlife refuges. Types of projects include:

- Wetland restoration
- Native prairie restoration
- Stream restoration
- Migratory bird habitat
- Endangered species habitat
- **Invasive species control**

Read about it on the Internet at <http://www.fws.gov/midwest/partners/Indiana.html>

### **Small Grants Program**

The Small Grants Program is a competitive, matching grants program that supports public-private partnerships carrying out projects in the United States that further the goals of the North American Wetlands Conservation Act. These projects must involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitats for the benefit of all wetlands-associated migratory birds.

This program supports the same type of projects and adheres to the same selection criteria and administrative guidelines as the U.S. Standard Grants Program. However, project activities are usually smaller in scope and involve fewer project dollars. Grant requests may not exceed \$75,000, and funding priority is given to grantees or partners new to the Act's Grants Program.

Read about it on the Internet at

<http://www.fws.gov/birdhabitat/Grants/NAWCA/Small/index.shtm>

## **Landowner Incentive Program**

The Landowner Incentive Program (LIP) provides federal grant funds to grant funds to the states, the District of Columbia and insular areas to protect and restore habitats on private lands, to benefit Federally listed, proposed or candidate species or other species determined to be at-risk.

Grant funds must be used to establish or supplement State landowner incentive programs to benefit species identified in the State's Comprehensive Wildlife Conservation Strategy (State Wildlife Action Plan) or classified as Special Concern by the State, or Federally listed, proposed, or candidate species or other species determined to be at-risk. These grant funds may also be used to provide technical and financial assistance to private landowners for habitat protection and restoration.

The LIP Program includes two funding tiers, Tier One (non-competitive) and Tier Two (nationally competitive). Under Tier One each state may receive funding for eligible projects up to \$200,000 annually and the District of Columbia and insular areas up to \$75,000 annually. If there is adequate funding in the appropriation, WSFR will rank Tier Two grants and award grants through a national competition. The competition will be announced separately.

Read about it on the Internet at

<http://wsfrprograms.fws.gov/Subpages/GrantPrograms/LIP/LIP.htm>

## **Wildlife Forever Challenge Grants**

Grants from Wildlife Forever are targeted for habitat restoration and acquisition, research and management, and educational projects. Special emphasis is placed upon grassroots programs that involve local conservation, sportsmen's or outdoor recreation groups. Wildlife Forever grants are challenge grants, and funds must be matched on at least a one-to-one basis from a third-party donor and sent through Wildlife Forever.

Read about it on the Internet at <http://www.wildlifeforever.org/grants/overview.aspx>

### **Program Name: Conservation on Private Lands Program**

**Agency:** USDA NRCS

**Funding Method:** Competitive grants administered by the National Fish and Wildlife Foundation

**Match:** At least 50 percent match required

**Authority:** Soil Conservation and Domestic Allotment Act, 16 U.S.C. 590a-590f; Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act

**Eligible Entities:** Private landowners, primarily farmers and ranchers

**Taxa:** Invasive plants/weeds, plant pathogens/diseases, insects, animals, animal pathogens, diseases, aquatic species

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**Purpose:** Conservation and enhancement of wildlife and natural resources on private lands.