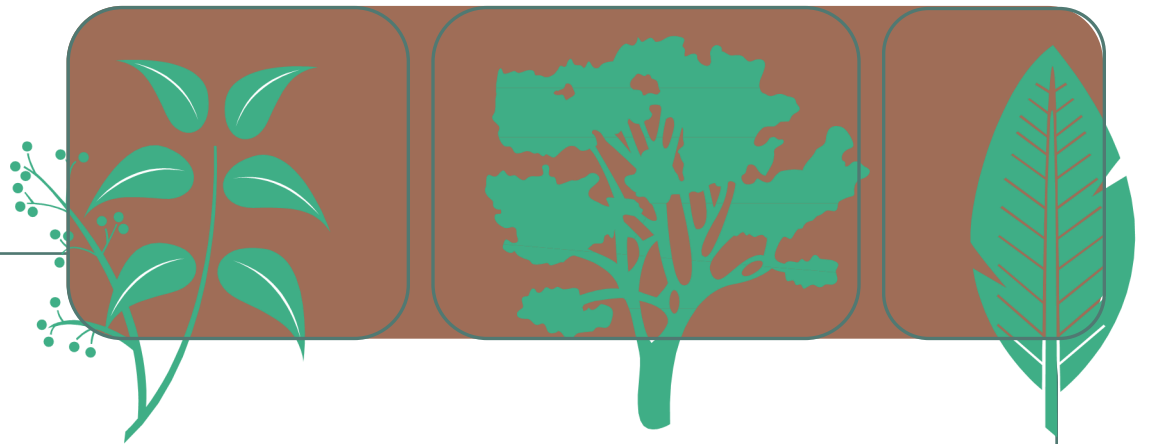


INVASIVE SPECIES



**DEARBORN COUNTY
SOIL & WATER
CONSERVATION DISTRICT**

10729 RANDALL AVE

AURORA, IN 47001

812-926-2406 EXT 3

www.dearbornswcd.org

<https://www.facebook.com/dearborncountyswcd>

NOTES



Indiana General Chemical Control Recommendations

Invasive Species Calendar of Control

Always Refer to Label for Proper Use, Rates, Application, Timing, etc.

March 2019



USE PESTICIDES WISELY: The percentages listed are percent solutions of products, not active ingredients. Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

Shrubs:	INVASIVE SPECIES	GENERAL TREATMENT	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
	Autumn olive	These six shrub species have similar control methods, rate of herbicide and timing of application.		Foliar Spray											
	Asian bush honeysuckles				Cut Surface Treatment is extremely effective										
	Japanese barberry							Basal bark treatment is very effective, but can be difficult on multiple stemmed shrubs.							
	Multiflora rose														
	Privet														
	Winged burning bush														
Vines:	INVASIVE SPECIES		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Evergreen	Periwinkle	These three species have very waxy leaves. A higher percentage of surfactant or methylated seed oil is important.							Treatment after first frost through the dormant season is very effective. Temperature above 50 degrees F.						
	English ivy														
	Winter creeper									Foliar Spray					
Deciduous	Japanese honeysuckle	Evergreen, but less-waxy leaf.							Foliar Spray						
	Wisteria	The invasive Wisteria, flowers earlier in the spring and has larger, hairy seedpods.					Cut Surface Treatment on larger vines								
					Foliar Spray										
	Autumn clematis	Easy to kill if treated.			Anytime during growing season.										
						Cut surface treatment on larger vines									
	Oriental bittersweet	Ensure not treating native bittersweet.			Anytime during growing season.										
	Kudzu	Treat this species when the plant is flowering. Contact IDNR if you have this species.					Cut surface treatment on larger vines								
							Foliar Spray								

Color Key and Herbicide Treatment Recommendations

Foliar spray with 3% Glyphosate and 1/4% non-ionic surfactant.	Foliar spray with 1% Glyphosate and 1/4% non-ionic surfactant	Hand pulling and other non-chemical control methods are applicable for some species. Hand pulling should be done when the soil is moist and care should be taken to remove all of the root system. Mowing is an option for some species but care needs to be taken to time mowing to limit seed production and follow-up mowing will typically be necessary.
Basal bark treatment with 20-30% Tricolpyr and 70-80% horticultural oil or basal oil.	Foliar spray with 1% Imazapyr, 1/2% Glyphosate and 1/4% non-ionic surfactant	
Cut surfactant treatment with 50% Glyphosate and 50% water.	Foliar Spray with 3% Glyphosate approved for aquatic areas and 1/2% surfactant.	
Foliar spray with 1/2% grass specific herbicide such as Sethoxydim or Clethodim with 1/4% surfactant.		
	Foliar spray with 3% Glyphosate and 1/2% non-ionic surfactant.	
Foliar Spray with 3% Triclopyr and 1/2% non-ionic surfactant, due to waxy leaf.	Foliar spray with 1% Clopyralid and 1/2% non-ionic surfactant	

Herbaceous:	INVASIVE SPECIES	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Canada thistle	Noxious weed, treatment required.	Foliar Spray												
Chinese lespedeza	Timing is very important for good control.				Foliar Spray									
Crown vetch	Okay to treat during growing season.	Foliar Spray					Foliar Spray							
Dame's rocket	Treat basal rosettes in fall.							Foliar Spray						
Garlic mustard	Treat basal rosettes in fall and late winter, when temperatures are above 40°F	Foliar Spray										Foliar Spray		
Japanese knotweed	Very difficult to control in riparian areas.				Foliar Spray									
Purple loosestrife	Noxious weed, treatment required.				Foliar Spray									
Grasses:	INVASIVE SPECIES	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Japanese stiltgrass	Very aggressive. Treat as soon as discovered.			Grass specific herbicide										
				Foliar Spray 1% Glyphosate plus 1/4% non-ionic Surfactant										
Maiden grass or Miscanthus	Ornamental grass that will seed into natural areas.	Cut clumps back to 6 inches to treat.				Cut clumps back to 6 inches to treat.								
Reed canary grass	Similar to Fescue. Will green up early in spring and stay green later in fall.		Treat in the spring before flowering				Mid Sept until consistent frosts.							
Trees:	INVASIVE SPECIES	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Princess tree	Will resprout from stump.			Foliar spray on small trees only										
				Basal Bark Treatment Helps Reduce Sprouting. Do not treat when snow on the ground.										
				Cut Surface Treatment - Only treat 1" ring around stump on large trees.										
Tree-of-heaven	Root sprouts prolifically. Do not cut if possible.			Foliar spray on small trees only										
				Basal Bark Treatment Helps Reduce Sprouting. Do not treat when snow on ground.										

Color Key and Herbicide Treatment Recommendations

Foliar spray with 3% Glyphosate product and 1/4% non-ionic surfactant.	Foliar spray with 1% Glyphosate product and 1/4% non-ionic surfactant
Basal bark treatment with 20-30% Tricolpyr product and 70-80% horticultural oil or basal oil.	Foliar spray with 1% Imazapyr product , 1/2% Glyphosate product and 1/4% non-ionic surfactant
Cut surfactant treatment with 50% Glyphosate product and 50% water.	Foliar Spray with 3% Glyphosate product approved for aquatic areas and 1/2% surfactant.
Foliar spray with 1/2% grass specific herbicide such as Sethoxydim or Clethodim with 1/4% surfactant.	Foliar spray with 3% Glyphosate product and 1/2% non-ionic surfactant.
Foliar Spray with 3% Triclopyr product and 1/2% non-ionic surfactant, due to waxy leaf.	Foliar spray with 1% Clopyralid product and 1/2% non-ionic surfactant

Glyphosate = Round-up, Accord, Ranger, Gly Star, etc.	Sethoxydim = Post	Surfactant (non-ionic surfactant) = Invade 90, NuFilm IR, Cide Kick II	Basal Oil = Ax-it, Brush & Basal Oil, Bas-Oil, Forestry Oil, MSO, crop oil, bean oil	USE PESTICIDES WISELY: The percentages listed are percent solutions of products, not active ingredients. Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing.
Glyphosate (aquatic label) = Rodeo, Pondmaster, Aqua Neat, Catt Plex	Triclopyr= Garlon, Turflon, Access, Redeem, Tahoe, Remedy Ultra			
Clethodim= Clethodim 2E	Imazapyr = Habitat (aquatic label), Arsena, Polaris, etc.			

Indiana Terrestrial Plant Rule FAQ Sheet

THE RULE

Beginning April 18, 2020, no one may sell, gift, exchange, distribute, transport or introduce any of the 44 species (see list on back side) without a permit from the IN Department of Natural Resources - Division of Entomology and Plant Pathology (DEPP). DEPP is the regulatory authority of the rule. The full text of the rule is posted at this link: https://www.in.gov/nrc/files/l5a18316_proposed.pdf

FREQUENTLY ASKED QUESTIONS

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

How were the 44 species determined to be invasive? Species included in the terrestrial plant rule were assessed through a scientific and transparent system by a team of experts that included representatives from horticulture, landscape, nursery, research, conservation, and Purdue Agriculture. Links to assessments are available from the Official Indiana Invasive Plant list at: <https://www.entm.purdue.edu/iisc/invasiveplants.html>

Why aren't all the invasive plants on the Official Indiana Invasive Plant list in this rule? The rule includes plants ranked high on the official list, except for Callery pear and Norway maple. These two species were not included in the rule because the State determined that including them would cause too great of an impact to growers of those species.

Are all 44 species sold for landscaping? No, DEPP reported about 22 of the 44 regulated species are sold in trade; however, this rule also prohibits the sharing, transport, and exchange of all species listed.

May I purchase a species online? Not legally.

May I share a species with friend or family? Not legally.

What if I have one of the 44 species growing on my property – is it illegal? No, but you cannot share it, transport it, exchange it, etc.

What is the punishment for violating the rule? DEPP has authority to issue a \$500 fine per incident per day.

Will other species be added to the rule? As plant species are assessed, those ranked high will proceed through the rule amendment process for potential inclusion in the future.

Are these Noxious Weeds? No. Noxious Weeds are a different regulatory category and include Canada thistle, bur cucumber, Johnson grass, shattercane, and Columbus grass.

How Can You Help?

If you see these invasive plants for sale, being exchanged or transported after April 18, 2020 contact your nursery inspector. Contact information is found here:

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

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

You can remove invasive species from your landscape and plant native species.

You can avoid using Callery pear, Norway maple, and other invasive plants on the official list that did not get included in the rule.

FOR ADDITIONAL INFORMATION

For information about invasive species please see the following links:

Indiana Invasive Species Council:
<https://www.entm.purdue.edu/iisc/>

Southern IN Cooperative Invasives Management:
<http://www.sicim.info/>

Midwest Invasive Plant Network:
<https://www.mipn.org/>

For information about native species: Indiana Native Plant Society:
<https://indiananativeplants.org/>



Invasive Plant
Advisory Committee

Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]

Latin Name	Common Name
<i>Achyranthes japonica</i>	Japanese chaff flower
<i>Ailanthus altissima</i>	Tree of heaven
<i>Alliaria petiolate</i>	Garlic mustard
<i>Alnus glutinosa</i>	Black alder
<i>Artemisia vulgaris</i>	Mugwort
<i>Arthraxon hispidus</i>	Small carpgrass
<i>Berberis thunbergii</i>	Japanese barberry
<i>Carduus acanthoides</i>	Spiny plumeless thistle
<i>Carduus nutans</i>	Musk thistle
<i>Celastrus orbiculatus</i>	Asian bittersweet
<i>Centaurea stoebe</i>	Spotted knapweed
<i>Cirsium vulgare</i>	Bull thistle
<i>Conium maculatum</i>	Poison hemlock
<i>Convolvulus arvensis</i>	Field bindweed
<i>Coronilla varia</i>	Crown vetch
<i>Dioscorea polystachya (oppositifolia)</i>	Chinese yam
<i>Dipsacus fullonum</i>	Common teasel
<i>Dipsacus laciniatus</i>	Cut-leaved teasel
<i>Elaeagnus umbellata</i>	Autumn olive
<i>Euonymus fortunei</i>	Wintercreeper
<i>Euphorbia virgata</i>	Leafy spurge
<i>Frangula alnus</i>	Glossy buckthorn
<i>Humulus japonica</i>	Japanese hops
<i>Hesperis matronalis</i>	Dame's rocket
<i>Lespedeza cuneata</i>	Sericea lespedeza
<i>Lepidium latifolium</i>	Pepperweed
<i>Ligustrum obtusifolium</i>	Blunt leaved privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lonicera maackii</i>	Amur honeysuckle
<i>Lonicera morrowii</i>	Morrow's honeysuckle
<i>Lonicera tatarica</i>	Tatarian honeysuckle
<i>Lonicera x bella</i>	Bell's honeysuckle
<i>Microstegium vimineum</i>	Japanese stiltgrass
<i>Morus alba</i>	White mulberry
<i>Phalaris arundinacea</i>	Reed canarygrass
<i>Phellodendron amurense</i>	Amur cork tree
<i>Phragmites australis subspecies australis</i>	Common reed
<i>Polygonum perfoliatum</i>	Mile-a-minute vine
<i>Reynoutria japonica (syn. Fallopia japonica)</i>	Japanese knotweed
<i>Reynoutria sachalinensis</i>	Giant knotweed
<i>Reynoutria x bohemica</i>	Bohemian knotweed
<i>Rhamnus cathartica</i>	Common buckthorn
<i>Vincetoxicum nigrum</i>	Black swallow-wort
<i>Vincetoxicum rossicum</i>	Pale swallow-wort

Indiana Invasive Plant List

Created by the Invasive Plant Advisory Committee to the Indiana Invasive Species Council
Established 9-26-2012; updated 12-17-2019

List is organized by growth form and common name
For more information, go to: Indianainvasivespecies.org

Ranks: H=High, M=Medium, L=Low, C=Caution, FN= Federal Noxious

All species listed are invasive per the Federal Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species (definitions are below). Species are ranked based on their invasiveness in Indiana. Species ranked high are either regulated and prohibited from trade or will be evaluated for potential inclusion as a state regulated species in the future. The Invasive Plant Advisory Committee (IPAC) is appointed by the Indiana Invasive Species Council to assess plants and update this official list. Assessments for regulated species are available here: www.indianainvasivespecies.org

Invasive Species: with regard to a particular ecosystem, a non-native organism whose introduction causes or is likely to cause economic, or environmental harm, or harm to human, animal
Non-native Species or **Alien Species**: with regard to a particular ecosystem, an organism, including its eggs, seeds, spores, or other biological material capable of propagating that species
Native Species: with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

Common Name	Latin Name	Growth Form	Indiana Invasive Rank	Current IN Legal Status
Aquatic Plants				
Anchored water hyacinth	<i>Eichhornia azurea</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Arrowhead	<i>Sagittaria sagittifolia</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Asian marshweed	<i>Limnophila sessiliflora</i>	aquatic	High	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Brazilian elodea	<i>Egeria densa</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Brittle naiad	<i>Najas minor</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Caulerpa	<i>Caulerpa taxifolia</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Chinese waterspinach	<i>Ipomoea aquatica</i>	aquatic	High	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Curly-leaved pondweed	<i>Potamogeton crispus</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Duck lettuce	<i>Ottelia alismoides</i>	aquatic	High	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
European frogbit	<i>Hydrocharis morsus-ranae</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Exotic bur-reed	<i>Sparganium erectum</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Flowering rush	<i>Butomus umbellatus</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Giant salvinia	<i>Salvinia auriculata</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Giant salvinia	<i>Salvinia biloba</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Giant salvinia	<i>Salvinia herzogii</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Giant salvinia	<i>Salvinia molesta</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Heartshape	<i>Monochoria vaginalis</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Hydrilla	<i>Hydrilla verticillata</i>	aquatic	High	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Miramar weed	<i>Hygrophilia polysperma</i>	aquatic	High	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Monochoria	<i>Monochoria hastata</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Mosquito fern	<i>Azolla pinnata</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Narrow-leaved cattail	<i>Typha angustifolia</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Oxygen weed	<i>Lagarosiphon major</i>	aquatic	FN	Federal noxious weed, prohibited invasive aquatic plant per 312 IAC 18-2-23
Parrotfeather	<i>Myriophyllum aquaticum</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Purple loosestrife	<i>Lythrum salicaria</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Starry stonewort	<i>Nitellopsis obtusa</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Water chestnut	<i>Trapa natans</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Water soldier	<i>Stratiotes aloides</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Yellow floating hearts	<i>Nymphoides peltata</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Yellow iris	<i>Iris pseudacorus</i>	aquatic	High	Prohibited invasive aquatic plant per 312 IAC 18-2-23
Terrestrial Plants				
Grass				
Chinese maiden grass	<i>Miscanthus sinensis</i>	grass	High	None
Common reed	<i>Phragmites australis</i>	grass	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Giant reed	<i>Arundo donax</i>	grass	Caution	None
Giant miscanthus	<i>Miscanthus x gigantea</i>	grass	Caution	None
Japanese stiltgrass	<i>Microstegium vimineum</i>	grass	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Johnson grass	<i>Sorghum halepense</i>	grass	High	Noxious weed per IC 15-3-4.6; detrimental plant per IC 15-3-4 and IC 15-3-5
Lyme grass	<i>Leymus arenarius</i>	grass	Caution	None
Ravenna grass	<i>Saccharum ravennae</i>	grass	Medium	None
Reed canarygrass	<i>Phalaris arundinacea</i>	grass	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Small carpgrass	<i>Arthraxon hispidus</i>	grass	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Tall fescue	<i>Schedonorus arundinaceus</i>	grass	Medium	None
Herbaceous				
Beafsteak plant	<i>Perilla frutescens</i>	Herbaceous	Medium	None
Bohemian knotweed	<i>Reynoutria x Bohemica</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Bouncing bet	<i>Saponaria officinalis</i>	Herbaceous	Medium	None
Bull thistle	<i>Cirsium vulgare</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Canada thistle	<i>Cirsium arvense</i>	Herbaceous	High	Noxious weed per IC 15-3-4.6; detrimental plant per IC 15-3-4
Common teasel	<i>Dipsacus fullanum</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Crown vetch	<i>Coronilla varia</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Cut-leaved teasel	<i>Dipsacus laciniatus</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Dame's rocket	<i>Hesperis matronalis</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Garlic mustard	<i>Alliaria petiolata</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Giant hogweed	<i>Heracleum mantegazzianum</i>	Herbaceous	Medium	Federal noxious weed

Common Name	Latin Name	Growth Form	Indiana Invasive Rank	Current IN Legal Status
Giant knotweed	<i>Reynoutria sachalinensis</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Goatsrue	<i>Galega officinalis</i>	Herbaceous	Medium	Federal noxious weed
Hybrid cattail	<i>Typha x glauca</i>	Herbaceous	Caution	None
Japanese chaff flower	<i>Achyranthes japonica</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Japanese hedge parsley	<i>Torilis japonica</i>	Herbaceous	High	None
Japanese knotweed	<i>Reynoutria japonica</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Korean lespedeza	<i>Kummerowia stipulacea</i>	Herbaceous	Medium	None
Large-leaved periwinkle	<i>Vinca major</i>	Herbaceous	Caution	None
Leafy spurge	<i>Euphorbia esula</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Lesser celandine	<i>Ranunculus ficaria</i>	Herbaceous	High	None
Mugwort	<i>Artemisia vulgaris</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Musk thistle	<i>Carduus nutans</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Narrowleaf bittercress	<i>Cardamine impatiens</i>	Herbaceous	Medium	None
Pepperweed	<i>Lepidium latifolium</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Periwinkle	<i>Vinca minor</i>	Herbaceous	Medium	None
Poison hemlock	<i>Conium maculatum</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Queen Anne's lace	<i>Daucus carota</i>	Herbaceous	Medium	None
Spiny plumelless thistle	<i>Carduus acanthoides</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Spotted knapweed	<i>Centaurea stoebe</i>	Herbaceous	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Spreading hedge parsley	<i>Torilis arvensis</i>	Herbaceous	High	None
St. John's wort	<i>Hypericum perforatum</i>	Herbaceous	Low	None
Striate lespedeza	<i>Kummerowia striata</i>	Herbaceous	Medium	None
White sweet clover	<i>Melilotus alba</i>	Herbaceous	Medium	None
Wild parsnip	<i>Pastinaca sativa</i>	Herbaceous	High	None
Yellow sweet clover	<i>Melilotus officinalis</i>	Herbaceous	Medium	None
Shrub				
Amur honeysuckle	<i>Lonicera maackii</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Amur privet	<i>Ligustrum amurense</i>	shrub	Caution	None
Autumn olive	<i>Elaeagnus umbellata</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Bell's honeysuckle	<i>Lonicera x bella</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Bicolor lespedeza	<i>Lepedeza bicolor</i>	shrub	Medium	None
Blunt leaved privet	<i>Ligustrum obtusifolium</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Burning bush	<i>Euonymus alatus</i>	shrub	High	None
California privet	<i>Ligustrum ovalifolium</i>	shrub	Caution	None
Chinese privet	<i>Ligustrum sinense</i>	shrub	Caution	None
Common barberry	<i>Berberis vulgaris</i>	shrub	Caution	None
Common buckthorn	<i>Rhamnus cathartica</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Common privet	<i>Ligustrum vulgare</i>	shrub	Caution	None
Glossy buckthorn	<i>Frangula alnus</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Highbush cranberry	<i>Viburnum opulus v. opulus</i>	shrub	High	None
Japanese barberry	<i>Berberis thunbergii</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Japanese meadowsweet	<i>Spiraea japonica</i>	shrub	Medium	None
Jetbead	<i>Rhodotypos scandens</i>	shrub	Medium	None
Morrow's honeysuckle	<i>Lonicera marroii</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Multiflora rose	<i>Rosa multiflora</i>	shrub	High	Prohibited species per IC 14-24-12 and 312 IAC 18-3-13
Russian olive	<i>Elaeagnus angustifolia</i>	shrub	Medium	None
Sericea lespedeza	<i>Lepedeza cuneata</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Tatarian honeysuckle	<i>Lonicera tatarica</i>	shrub	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Wine raspberry	<i>Rubus phoenicolasius</i>	shrub	Caution	None
Tree				
Amur cork tree	<i>Phellodendron amurense</i>	tree	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Black alder	<i>Alnus glutinosa</i>	tree	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Callery pear	<i>Pyrus calleryana</i>	tree	High	None
Mimosa	<i>Albizia julibrissen</i>	tree	Medium	None
Norway maple	<i>Acer platanoides</i>	tree	High	None
Princess tree	<i>Paulownia tomentosa</i>	tree	Medium	None
Sawtooth oak	<i>Quercus acutissima</i>	tree	Caution	None
Siberian elm	<i>Ulmus pumila</i>	tree	Medium	None
Tree of heaven	<i>Ailanthus altissima</i>	tree	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
White mulberry	<i>Morus alba</i>	tree	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Vine				
Ampelopsis brevipedunculata	<i>porcelain berry</i>	vine	Caution	None
Asian bittersweet	<i>Celastrus orbiculatus</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Plack swallow-wort	<i>Vincetoxicum nigrum</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Chinese yam	<i>Dioscorea polystachya</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Creeping Charlie	<i>Glechoma hederacea</i>	vine	Medium	None
English ivy	<i>Hedera helix</i>	vine	Medium	None
Field bindweed	<i>Convolvulus arvensis</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Japanese honeysuckle	<i>Lonicera japonica</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Japanese hops	<i>Humulus japonicus</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Kudzu	<i>Pueraria montana</i>	vine	High	Pest species per 312 IAC 18-3-16
Mile-a-minute vine	<i>Polygonum perfoliatum</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Moneywort	<i>Lysimachia nummularia</i>	vine	High	None
Pale swallow-wort	<i>Vincetoxicum rossicum</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Sweet autumn clematis	<i>Clematis terniflora</i>	vine	High	None
Vetch	<i>Vicia cracca</i>	vine	Medium	None
Wintercreeper	<i>Euonymus fortunei</i>	vine	High	Prohibited Invasive Terrestrial Plants [312 IAC 18-3-25]
Wisteria	<i>Wisteria sinensis</i>	vine	Medium	None

Autumn Olive

Elaeagnus umbellata



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.



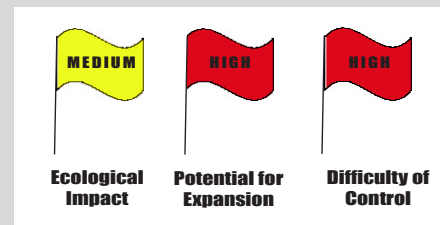
Picture By: J. Allison @ www.invasive.org

Pictures By: G. Fewless

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 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:

www.invasivespecies.IN.gov

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)

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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

On identification and control techniques:

The Nature Conservancy's Wildland Weeds
www.tncweeds.ucdavis.edu

On native plant alternatives and sources:

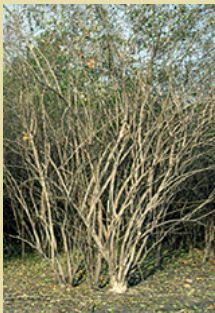
Indiana Native Plant and Wildflower Society
www.inpaws.org

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



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.

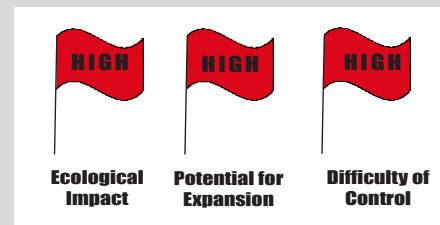


Picture By: J. H. Miller @
www.invasive.org

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.

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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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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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.
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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.

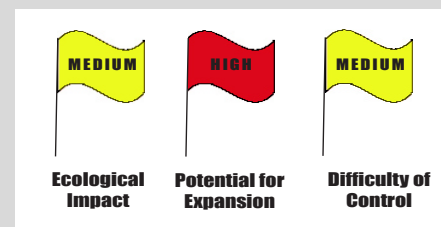
Origin:

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.

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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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Invasive Plant Series

FACT SHEETS

This is a high priority species.
Please report any sightings
immediately at www.SICWMA.org or
call 1-866 NO EXOTIC



Figure 1. Chaff flower's tall, dense growth habit easily shades out and displaces many native plant species
Ron Rathfon, Extension forester, Purdue University



Figure 2. Leaves are simple, opposite, and the "arching" venation is very similar to that of dogwood leaves
Ron Rathfon, Extension forester, Purdue University



Japanese Chaff Flower

Achyranthes japonica (Miq.) Nakai

EXPERT
REVIEWED

Other Common Names: Chaff flower

Authors: Ron Rathfon, Extension Forester, Purdue University;
Eric Eubank, former project director, SICWMA

Description: Japanese chaff flower is native to east Asia. How it was introduced to North America is unknown, but the earliest record of its occurrence here is from eastern Kentucky in the early 1980s. Japanese chaff flower, hereafter referred to as chaff flower, is a member of the Amaranth family. It is a perennial herb that can reach heights of 3-6 feet. It forms very dense stands (Fig. 1). Mature plants have extensive root systems supporting multiple stems. Chaff flower begins growing in late spring and flowers in late July. The leaves are simple, opposite, and the "arching" venation is very similar to that of dogwood leaves (Fig. 2). Stems and leaves are smooth to slightly pubescent (fuzzy). Seedlings have red stems. Some of this red tint persists in the stems as the plants grow, particularly at the branch nodes (Fig. 3). It is most readily identified by its erect "bottle-brush" flower spike on which fruits are formed (Fig. 4). Flowers lack petals and occur in a tight cluster at the end of the spike. As the spikes elongate in mid-August, the fruits develop, turn downward and eventually lie flat against the spike stem (Fig. 5). Each fruit has a pair of stiff bracts that readily attach to clothing or fur to aid in dispersal (Fig. 6). Floodwaters facilitate long distance dispersal of seed. Chaff flower leaves senesce in the fall and the bare opposite-branched stems turn straw to brown in color with the elongated fruit spikes intact (Fig. 7). Fruits remain on the dead stalks through most of the winter until animals or people brush against them or the stalks are broken down by snow or floodwaters. Chaff flower may be confused with white vervain (Fig. 8), lopseed (Fig. 9), or one of the pigweeds (Fig. 10). When in bloom, white vervain flowers have white petals, while chaff flower has no petals. W. vervain also has coarsely toothed leaf margins, while chaff flower leaf margins are smooth. Lopseed, like chaff flower, has an opposite leaf arrangement and small fruits closely appressed to the flower stalk that are similar in appearance to those of chaff flower. Lopseed differs in that it has coarsely toothed leaf margins and pale pinkish to purple flowers. Its fruits are arranged in an opposite pattern along the flower stalk, while those of chaff flower are in an alternate arrangement. Pigweed has alternate leaves, while those of chaff flower are opposite.



relatively new to Indiana, arriving on Ohio River floodwaters. At present its distribution is restricted to the counties highlighted in green along the Ohio River.

Invasive Plant Fact Sheet Series

FNR-477-W • Japanese Chaff Flower • *Achyranthes japonica* (Miq.) Nakai

Distribution: First reported in Indiana in 2002, chaff flower now occurs in every Indiana county bordering the Ohio River. It is mainly restricted to the Ohio River flood plain. Some populations have been found beyond the Ohio River flood plain.

Impact: Chaff flower's tall growth habit and dense infestations easily shade out and displace many native plant species. It is typically found in flood plains, ditches, bottomland forests and on riverbanks, growing in rich, moist soil. It prefers partial shade. However, it tolerates full shade, drier upland soils and sunnier conditions on roadsides, field edges and vacant land in urban and industrial areas. It occurs less frequently in open, full-sun environments. Chaff flower spreads quickly along waterways and public areas such as



Figure 3. Red tint of seedlings persists in the stems as the plants grow, particularly at the branch nodes

Ron Rathfon, Extension forester, Purdue University



Figure 4. "Bottle-brush" flower spike

Ron Rathfon, Extension forester, Purdue University

trails. It does not tolerate annual flooding or prolonged periods of inundation. Thus, in bottomlands, it is most commonly found on the first terrace above, or on the edge of, the annually flooded zone.



Figure 5. As flower stalk elongates, developing fruits turn downward and lie flat against the stem

Ron Rathfon, Extension forester, Purdue University



Figure 6. Fruit with stiff bracts, which readily stick to fur and clothing

Chris Evans, River-to-River CWMA



Figure 7. In the fall the bare opposite-branched stems turn straw to brown in color with the elongated fruit spikes intact
Ron Rathfon, Extension forester, Purdue University

Management: Recommendations for chaff flower control are still in development. However, the methods below have shown some initial success. In all cases, control should be conducted before chaff flower produces seed in late August/early September. In the Ohio River floodplain, frequent flooding deposits new chaff flower seed, making management in these areas difficult and control less feasible. Efforts should focus on high priority floodplain habitat and infestations outside the immediate Ohio River floodplain.

Prevention: Chaff flower seed can inadvertently be spread by mowing, road maintenance or agricultural equipment. Mow infested areas along roadsides, ditch banks and field edges before seed matures. Chaff flower seed maturation may vary from year to year depending on weather patterns. In southern Indiana, mowing should occur from May through mid-August. Avoid working or recreating in or walking or driving through infested areas during seed dispersal periods. Clean clothing, shoes, ATVs or vehicles following activity in infested areas.

Control:

- Manual - control is feasible only for the occasional plant, small infestations or sensitive areas where herbicides cannot be used. The vigorous root system makes hand pulling difficult. Digging may be required to successfully remove the plant. The seed head may be removed to prevent further spread. All plant parts, especially seeds, should be bagged and disposed of.

Look-a-likes:



Figure 8. White vervain (*Verbena urticifolia* L.)
Ohio State Weed Lab Archive, The Ohio State University, Bugwood.org



Figure 9. Lopseed (*Phryma leptostachya* L.)
Paul Rothrock



Figure 10. Red pigweed (*Amaranthus retroflexus* L.)
Robert Vidéki, Doronicum Kft., Bugwood.org

- Mechanical — Mowing and cutting can be used to prevent flowering and seed head establishment but has not been shown to kill established plants.
- Chemical — Foliar applications of a 2 percent solution of triclopyr (at least a 44 percent active ingredient concentration) or glyphosate (at least a 41 percent active ingredient concentration) herbicide have been effective if applied before or during flowering around mid-August. A non-ionic surfactant should be used to increase herbicide uptake. Since chaff flower often grows in riparian areas and may occur on stream and riverbanks or near open water, caution must be used to follow label restrictions regarding overspray, drift or movement of herbicide into surface waters. Only herbicides and surfactants with an aquatic use label should be applied in these circumstances. Accord, Rodeo, Aquaneat (i.e., glyphosate products) and Garlon 3A and Element 3A (i.e., triclopyr products) are labeled for use in or near aquatic areas. Other herbicides having formulations with aquatic use labels such as 2,4-D and imazapyr (Habitat and others) may be effective on chaff flower, but have not been tested.

For vegetation management professionals: Labels for aminocyclopyrachlor, aminopyralid, chlorsulfuron, dicamba, imazapyr, metsulfuron-methyl, pendimethalin, sulfometuron-methyl, 2,4-D + triclopyr, 2,4-D + 2,4-DP all list pigweeds (*Amaranthus* sp.) as susceptible weed species. Pigweeds are annuals and, like the perennial chaff flower, are members of the Amaranth family. While the listed herbicides may prove effective alone or in combination with other listed herbicides for chaff flower post- and pre-emergence control, they have not been tested.

Additional Information

- iMap Invasives Element Stewardship Abstract: <http://www.imapinvasives.org/GIST/ESA/index.html>
- Indiana Cooperative Agricultural Pest Survey <http://extension.entm.purdue.edu/CAPS/>
- Invasive.org: <http://www.invasive.org/browse/subinfo.cfm?sub=14211>
- Midwest Invasive Plant Network (MIPN) Invasive Plant Control Database: <http://mipncontroldatabase.wisc.edu/Default.aspx>
- River to River Cooperative Weed Management Area: <http://www.rtrcwma.org/Japanesechafffloweralert.pdf>

The mention in this publication of a pesticide and any other commercial product, process, or service, or the use of any trade, firm, or corporation name is for information or illustrative purposes only and does not constitute an endorsement, recommendation, or certification of any kind by SICWMA, Purdue University or Purdue Extension. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. SICWMA and Purdue are not liable for damage caused by misapplication of pesticides.

Become a Weed Watcher and help us stop the spread of invasive weeds! Visit our website at www.SICWMA.org to find out more.

Jan. 2013

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GIANT HOGWEED

Heracleum mantegazzianum

Description: Giant hogweed is a large perennial herb that flowers once then dies. The first year it is a single leaf, then grows into a larger rosette each year until the fourth or fifth year when it produces a 7-15 foot flower stalk. Leaves are 3-part compound, 1-4 feet wide, and deeply incised and pointed. Flowers are white and in multiple broad domed umbels. The flower stalks are hollow with coarse hairs and reddish purple splotching. Plant sap causes severe photo-dermatitis.



Native range: Eurasia (<http://www.invasive.org/eastern/midatlantic/hema.html>)

Ecological threat: This plant threatens river corridors and woodland edges. It has naturalized in many of the places where it was first introduced and does particularly well where the soil has been disturbed. It prefers moist soils and can quickly dominate ravines and stream banks.

Current North American Range: Giant hogweed is currently observed throughout Michigan, in northern Wisconsin and Indiana, northeastern Illinois, eastern Ohio, and into southern Ontario.



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

Early Detection and Rapid Response Can Help Stop the Spread!

GIANT HOGWEED, *Heracleum mantegazzianum*

MANAGEMENT OPTIONS: (<http://www.invasive.org/eastern/other/hogweed.html>)

Manual and Mechanical control

Mowing does not appear to be effective. The Pennsylvania Department of Agriculture has used a ro-totiller and planted a lawn seed mix to return areas to a natural state.

Chemical control

The Pennsylvania Department of Agriculture recommends utilizing both pre and post emergent herbicides, plus competitive vegetation. PDA applies Pre-M at 1-1.5 oz./1000 s.f. in late-March. When germination of hogweed seed was noticed, Transline was incorporated at .5 oz./1000 s.f. along with Pre-M at the 1.5 oz/1000 s.f. rate. This continued until other vegetation started to grow. Later in the season, they used Drive at 1 oz./A. Post-emergent applications of 91% Thinvert, 7% Garlon 3A and 2% Transline are initiated in mid-April. These herbicide applications continue until snowfall covers the hogweed.

Previously, glyphosate has been considered the most effective herbicide, but it should be used with caution around desirable plants. The herbicides 2,4-D, TBA, MCPA, and dicamba are not effective on GHW roots. Rodeo (glyphosate) has been recommended in wet areas. Herbicides should be applied to large plants with protective clothing.

Biological control

In Switzerland 12 phytophagous insect species found on native hogweed have been identified as possible candidates as biological control. Cattle and pigs are cited as possible biocontrol agents.

For more information on control and management of this species, please visit the following Web sites: www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/comtrol.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

Early Detection and Rapid Response Can Help Stop the Spread!



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.

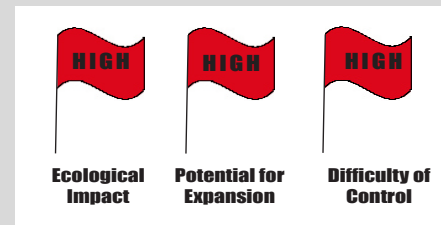
Origin:

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

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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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

On identification and control techniques:

The Nature Conservancy's Wildland Weeds
www.tncweeds.ucdavis.edu

On native plant alternatives and sources:

Indiana Native Plant and Wildflower Society
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



UGA1150068



UGA0016110



UGA0016121

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).

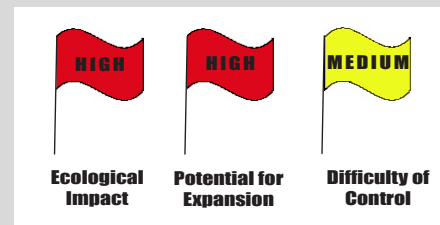


Picture By: The Nature Conservancy.

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.

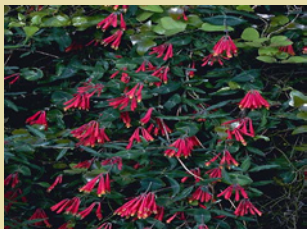
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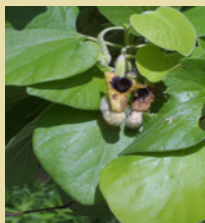
ALTERNATIVES to Japanese Honeysuckle:



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)

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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.
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8. Support public policies and programs to control invasive plants.

For More Information:

On this assessment and IPSAWG:

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.

Japanese Knotweed

Polygonum cuspidatum (Fallopia japonica)



Pictures By (From Top to Bottom):
J. M. Randall, J. Swearingen @
www.invasives.org and B. Rice.

Invasive Plants are a Threat to:

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

Description:

Japanese knotweed is an herbaceous perennial. This stout, shrub-like plant forms large dense clumps that measure between 3-9 feet high. It reproduces by seed and by large rhizomes which may reach a length of 15-18 feet. The stems are reddish in color, ridged, jointed and hollow. The leaves are alternate on the stem, broadly truncate at the base and 2-3 inches wide. The leaf veins are often reddish and the petioles are 1 inch long and ridged. The flowers bloom in late summer and are small and greenish white.

Distribution:

Japanese knotweed is found in moist, open to partially shaded habitats. It has been reported from riverbanks and islands, wetlands, along roadways, hillsides, and disturbed areas in a variety of soil types and pH's. Japanese knotweed can also tolerate adverse conditions such as high temperatures, high salinity, drought and floods. It has spread across the United States, from the Northeastern states to California. It is found in most counties in Indiana, though most populations are small (<1/4 acre).

Problem:

Japanese knotweed emerges in early spring and grows quickly and aggressively. It forms dense, nearly pure stands which crowd out native plants. By eliminating grasses and other native plants along creeks, the banks are less stable and more likely to shear off during flooding. This greatly increases sediment in the creek. It spreads rapidly through rhizomes and seeds. Fragments are transported to new sites by water and by human interactions. Once established, Japanese knotweed is very difficult to eradicate.

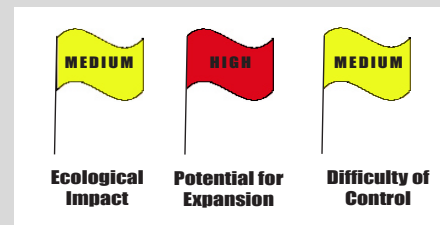
Origin:

Japanese knotweed is native to Japan, China, and parts of Korea and Taiwan. It was introduced from Japan to the United Kingdom as an ornamental plant in 1825, and from there to North America in the late nineteenth century.



Picture By: J. Randall

IPSAWG Ranking:



IPSAWG Recommendation:

- Do not buy, sell or plant Japanese knotweed in Indiana.
- Help by eradicating Japanese knotweed 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.

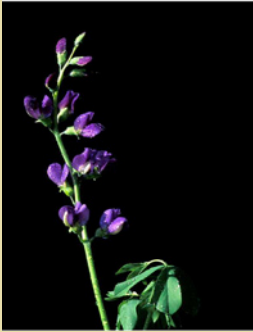
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ALTERNATIVES to Japanese knotweed:



New England Aster
(*Aster novae-angliae*)



Blue False Indigo
(*Baptisia australis*)



Sweet Joe-Pye-Weed
(*Eupatorium purpureum*)



Queen-of-the-Prairie
(*Filipendula rubra*)

Pictures By (Top to Bottom): J. Anderson, T. Barnes, R. Mohlenbrock and T. Barnes © USDA-NRCS Plants Database.

Control Methods:

Manual control consists of digging out the rhizomes or cutting the stalks. However, digging is very labor intensive and tends to spread the rhizome fragments and promote disturbance and is not recommended. If cutting is used, at least three cuts are needed in a growing season just to offset rhizome production. Successful eradication is not likely with cutting alone. Glyphosate and triclopyr has been found to be effective against Japanese knotweed. Application

Japanese knotweed invading a riverbank. (Picture By: J. M. Randall)

is more effective in the fall when leaves are translocating to rhizomes. It is recommended to apply 2.0% glyphosate or triclopyr to the leaves in August with a prior cut in late spring or early summer. A 0.5% nonionic surfactant is

recommended in order to penetrate the leaf cuticle. Regardless of which control is used, if some rhizomes remain in the soil Japanese knotweed will return once management is relaxed. **Always read and follow pesticide label directions.**



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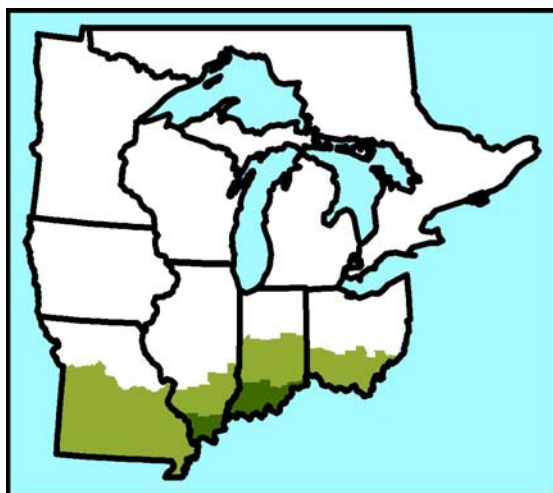
JAPANESE STILT GRASS

Microstegium vimineum

Description: Japanese Stilt Grass is an annual sprawling grass that grows to around 12-24 inches tall and resembles miniature bamboo. The leaves are wide, alternate, pale green, lance-shaped and 2-3 inches long. There is a pale silvery stripe of reflective hairs along the midrib of the upper surface. Flowers are spikes of 1-3 inches long and bloom in late summer to early fall with prolific seed production.



Native range: Japan, Korea, China, Malaysia, India (<http://www.nps.gov/plants/alien/fact/mivi1.htm>)



Ecological threat: This plant threatens river and stream corridors, floodplains, moist woodlands and forested wetlands. Japanese stilt grass is especially well adapted to low light conditions. Stilt grass spreads to form extensive patches, displacing native species that are not able to compete with it. Where white-tail deer are over-abundant, they may facilitate its invasion by feeding on native plant species and avoiding stilt grass.

Current North American Range: Stilt Grass is currently reported in central and southern Missouri and Indiana, and southern Illinois and Ohio.

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

Early Detection and Rapid Response Can Help Stop the Spread!

JAPANESE STILT GRASS, *Microstegium vimineum*

MANAGEMENT OPTIONS (<http://www.nps.gov/plants/alien/fact/mivi1.htm>)

A variety of control methods are available for stilt grass, depending on the extent of the infestation, the type of habitat, and the availability of labor and other resources. Preventing the introduction of stilt grass into non-infested areas and out of infested areas should be a priority. Early control of new infestations will also reduce the likelihood of establishment.

Manual

Stilt grass is a shallow-rooted annual that can be pulled by hand throughout the growing season, especially when the soil is moist and entire plants with roots can be removed. Pulling is easier and probably more effective in mid-to-late summer when the plants are much taller and more branched. At this stage, entire plants can be easily removed by grabbing the basal portion of a plant and pulling firmly. In short time, a fair amount of stilt grass can be pulled and piled up to dehydrate on site. If plants are already in the fruiting stage, they should be bagged and disposed of offsite to prevent dispersal of seed. Also, try to avoid pulling native grasses like Virginia cutgrass (*Leersia virginia*) that often grow intermingled with stilt grass and may be difficult to distinguish from it. Because hand pulling plants disturbs the soil and may expose stilt grass seed from previous seasons, late season pulling will avoid the likelihood of seed germination. Hand pulling of plants will need to be repeated and continued for many seasons until the seed bank is exhausted.

Mechanical

Stilt grass can be mowed in late summer (i.e., August through September) when the plants are flowering but preferably before seed is produced. This can be done using a lawn mower or "Weed Whacker" type machine or a scythe. Because stilt grass is primarily an annual plant, cutting late in the season before the plants would die back naturally avoids the possibility of regrowth. Recent information suggests that stilt grass plants cut early in the summer respond by regrowing and flowering soon after cutting, much earlier than they would normally flower. Another reason to cut late in late summer to fall.

Chemical

For extensive stilt grass infestations, use of a systemic herbicide such as glyphosate (e.g., Roundup®) is a more practical and effective method. If applying glyphosate to stilt grass in wetland sites, use the formulation labeled for wetland areas (e.g., Rodeo®). Apply a 2% solution mixed with water (8 oz. per 3 gals. mix) and a surfactant in late summer. Be careful to avoid application to non-target plants because glyphosate is a non-specific herbicide that will kill or damage most plant species it contacts.

Biological

No biological controls are currently available for this plant.

For more information on control and management of this species, please visit the following Web sites: www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/control.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

Early Detection and Rapid Response Can Help Stop the Spread!



JAPANESE KNOTWEED

Polygonum cuspidatum



Description: Japanese knotweed is a perennial herb with a shrub-like form grows 3-9 feet. Stems are hollow and bamboo-like with swollen leaf joints. Leaves are 6 inches long and 3-4 inches wide with a leaf base straight across to bluntly right angled. Flowers are white to pink and densely crowded on erect stalks.



Native range: Eastern Asia (<http://www.nps.gov/plants/alien/fact/pocu1.htm>)



Ecological threat: This plant threatens riparian corridors, fens, springs, ravines, forests and streamsides. It spreads quickly to form dense thickets that exclude native vegetation and greatly alter natural ecosystems. It poses a significant threat to riparian areas because of its ability to survive severe floods and rapidly colonize scoured shores and islands.

Current North American Range: Japanese knotweed is currently observed throughout all of the Midwest except for western Iowa.

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

Early Detection and Rapid Response Can Help Stop the Spread!

JAPANESE KNOTWEED, *Polygonum cuspidatum*

MANAGEMENT OPTIONS: (<http://www.nps.gov/plants/alien/fact/pocu1.htm>)

Manual or Mechanical methods

Grubbing is effective for small initial populations or environmentally sensitive areas where herbicides cannot be used. Using a pulaski or similar digging tool, remove the entire plant including all roots and runners. Juvenile plants can be hand pulled depending on soil conditions and root development. Any portions of the root system not removed will potentially resprout. All plant parts (including mature fruit) should be bagged and disposed of in a trash dumpster to prevent reestablishment.

Chemical methods

Cut stem application

Use this method in areas where plants are established within or around non-target plants or where vines have grown into the canopy. This treatment remains effective at low temperatures as long as the ground is not frozen. Cut the stem about 2 inches above ground level. Immediately apply a 25% solution of glyphosate (e.g., Roundup®, or use Rodeo® if applying in or near wetland areas) or triclopyr (e.g., Garlon) and water to the cross-section of the stem. A subsequent foliar application of glyphosate may be required to control new seedlings and resprouts.

Foliar application

Use this method to control large populations. It may be necessary to precede foliar applications with stump treatments to reduce the risk of damaging non-target species. Apply a 2% solution of glyphosate or triclopyr and water to thoroughly wet all foliage. Do not apply so heavily that herbicide will drip off leaves. A 0.5% non-ionic surfactant is recommended in order to penetrate the leaf cuticle, and ambient air temperature should be above 65 °F.

For more information on control and management of this species, please visit the following Web sites: www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/control.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

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MILE-A-MINUTE WEED

Polygonum perfoliatum



Description: Mile-a-Minute weed is an annual herbaceous vine that climbs to 15 feet tall. It has a stem with hooked barbs and circular, cup-shaped, leafy structures around the stem at nodes. Leaves are alternate and shaped like an equilateral triangle with barbs on undersides, with leaf bases arrow to heart-shaped. Flowers are small, white and inconspicuous. The fruit is a fleshy, blue, pea-sized berry.



Native range: India to Eastern Asia, China and the Islands from Japan to the Phillipines, including Nepal, Burma, Manchuria, Korea, Taiwan and the Malay Peninsula (<http://www.nps.gov/plants/alien/fact/pope1.htm>).



Ecological threat: This plant grows rapidly over shrubs and other vegetation blocking them from available light and reducing their ability to photosynthesize. This lack of photosynthetic ability weakens the plant and can kill it. It has been known to have a negative effect on Christmas tree farms, forestry operations on pine plantations and reforestation of natural areas because it can easily smother tree seedlings.

Current North American Range: Refer to USDA and more detailed distribution in the Midwest.

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

Early Detection and Rapid Response Can Help Stop the Spread!

MILE-A-MINUTE WEED, *Polygonum perfoliatum*

Management options: (http://na.fs.fed.us/spfo/pubs/pest_al/mm/pa_mam.pdf)

Mechanical Methods

Handpulling, weeding and cultivation are useful for small infestations. Hand pulling of seedlings should be done before the sharp recurved barbs harden. Plant removal can continue throughout the summer, but is more effective when done before seeds are produced. Repeated mowing and trimming will prevent flowering and reduce or eliminate seed production. However, seeds that remain in the ground may germinate for up to four years.

Cultural Methods

Maintain vegetation continuity and avoid creating gaps in existing vegetation. Maintain vegetative buffers along streams and forest edges to prevent establishment of and seed dispersal.

Herbicides

Glyphosate applied at a low rate will probably be effective in killing mile-a-minute weed. Prior approval and recommendations should be obtained from the department of agriculture in the state where the application will take place.

Biological Control

From 1997 to 2002, weed populations were surveyed in China and 111 insect species were collected and identified. Among the insect species, a weevil, *Rhinoncomimus latipes* Korotyaev (Coleoptera: Curculionidae) proved to be the most promising biological control agent. The larva of the weevil causes damage to mile-a-minute weed by boring into the plant's stem. In 2000-2004 *R. latipes* was shipped to a Delaware quarantine facility for host range testing. In 2004, *R. latipes* was reared at the University of Delaware and released in New Jersey and Delaware based on recommendations of Technical Advisory Group (TAG), which functions under APHIS Plant Protection and Quarantine (APHIS-PPQ).

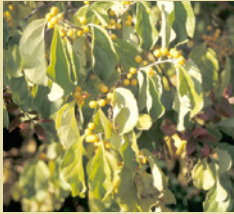
For more information on control and management of this species, please visit the following Web sites: www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/control.html, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

Early Detection and Rapid Response Can Help Stop the Spread!



Oriental Bittersweet

Celastrus orbiculatus



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

Invasive Plants are a Threat to:

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

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.

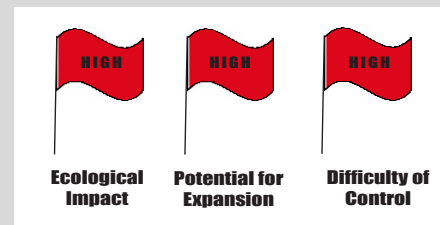
Origin:

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.

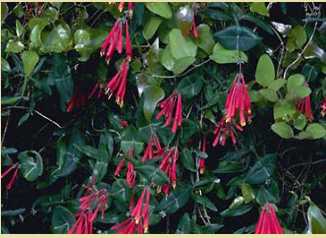
For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

www.invasivespecies.IN.gov

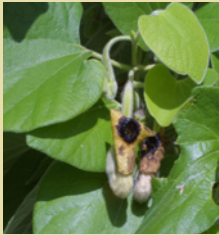
ALTERNATIVES to Oriental Bittersweet:



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:

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:

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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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

On identification and control techniques:

The Nature Conservancy's Wildland Weeds
www.tncweeds.ucdavis.edu

On native plant alternatives and sources:

Indiana Native Plant and Wildflower Society
www.inpaws.org

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

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**

Date Prepared: 05/07

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:

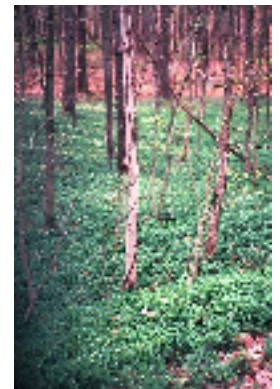
Periwinkle is frequently found in well-drained, open, disturbed ground of shaded woods, edges and roadsides. It is escaped throughout the eastern US, and can become a dominant and sometimes monotypic understory in the northeastern US. In Indiana, it has been found as an escaped species in all counties. 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.

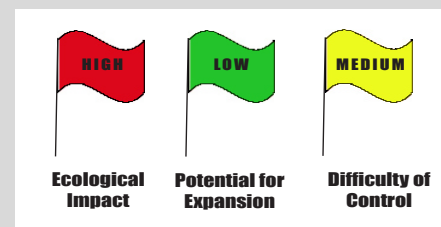
Origin:

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.

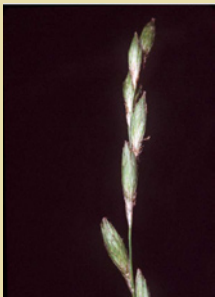
For more information about IPSAWG and the assessment tool used to rank invasive species, visit their website:

www.invasivespecies.IN.gov

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.

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8. Support public policies and programs to control invasive plants.

For More Information:

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

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

Date Prepared: 08/07

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.

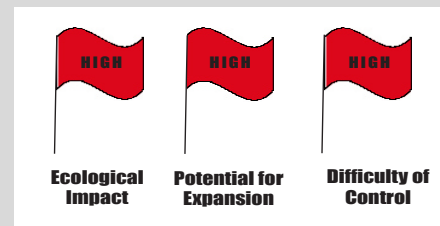
Problem:

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.

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

www.invasivespecies.IN.gov

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, 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.**

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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.

On this assessment and IPSAWG:

IPSAWG
www.invasivespecies.IN.gov

On identification and control techniques:

The Nature Conservancy's Wildland Weeds
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.

Invasive Plant Series

FACT SHEETS

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



Figure 1. First-year rosette
Ron Rathfon, Extension forester, Purdue University



Figure 2a. Purple spotting on stems
Jan Samanek, State Phytosanitary Administration, Bugwood.org



Poison Hemlock

Conium maculatum L.

Other Common Names: Deadly hemlock, poison parsley

Authors: Eric Eubank, former project director, SICWMA;
Ron Rathfon, Extension forester, Purdue University

EXPERT
REVIEWED

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. It has a biennial growth pattern, being a low-lying rosette (Fig. 1) the first year and bolting to 3-10 feet the second year. The stems are stout, smooth, with distinctive purple spotting (Fig. 2a and 2b). Flowers are small, white and found in umbrella-shaped clusters (Fig. 3) in early summer (June/July). The fern-like leaves are pinnately compound and arranged alternately on the stem (Fig. 4). The plant reproduces prolifically via seeds that are flattened and ribbed. Seeds mature in August/September and are easily spread via mowing/agriculture equipment. It may be confused with wild carrot (Queen Anne's lace Fig. 6) or wild cow parsnip (Fig. 7), both of which have white umbrella-shape flower clusters. Wild carrot has a hairy stem, while cow parsnip has a ribbed stem. Neither have purple spotting.

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 (Fig. 5).

Management: Poison hemlock spreads via seed, so effective management must prevent new seed production, prevent spread of existing seed, and exhaust the existing seed supply in the soil seed bank.

Prevention: Poison hemlock seed often is inadvertently spread by mowing, road maintenance or agricultural equipment. Mow infested areas along roadsides, ditch banks and field edges before seed



Poison Hemlock is well established and widely distributed throughout Indiana. Counties highlighted in green have established populations of poison hemlock.



Figure 2b. Base of first-year rosette stem showing purple spotting
Ron Rathfon, Extension forester, Purdue University



Figure 3. Umbrella-shaped flower clusters
Pedro Tenorio-Lezama, Bugwood.org

matures. Poison hemlock seed maturation may vary from year-to-year depending on weather patterns. In southern Indiana, mowing should occur from April through early to mid-July. Avoid working, recreating in or walking or driving through infested areas during seed dispersal periods. Also, clean clothing, shoes, ATVs or vehicles following activity in infested areas.

Control: The most effective control may be mowing to prevent seed production, followed with herbicide applications to rosettes and resprouts.

- 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 regular trash. Always wear protective clothing, including gloves and eye protection, to prevent the plant from contacting skin.
- Mechanical - Mowing or cutting may be effective control but 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.



Figure 4. Pinnately compound leaves
Pedro Tenorio-Lezama, Bugwood.org



Figure 5. Poison hemlock invading a disturbed roadside
Richard Old, XID Services, Inc., Bugwood.org

- Chemical - Effective for large infestations and for spot spray applications to individuals and clumps. Herbicide application should be performed while the plant is actively growing and before flowering. First-year basal rosettes may be sprayed from midsummer through fall. Second-year plants begin bolting flower stalks in April and begin flowering in mid-May. Follow-up treatments will be required, as seeds already present in the soil sprout. Follow label directions and use a surfactant to increase effectiveness.
 - Glyphosate: Use herbicides containing at least a 41 percent concentration of glyphosate and follow label directions to mix a 2 percent spray solution. Thoroughly wet all surfaces of the plant but not to the point of runoff.
Use caution: Glyphosate is nonselective 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 second-year plants.

Look-a-likes:



Figure 6. Wild carrot (Queen Anne's lace), *Daucus carota* L.
Wendy VanDyk Evans, Bugwood.org

For vegetation management professionals:

Aminopyralid, chlorsulfuron, clopyralid, dicamba, imazapic, imazapyr, metsulfuron-methyl, sulfometuron-methyl plus metsulfuron-methyl, and 2,4-D plus picloram may prove effective alone or in combination with other listed herbicides for plant control and pre-emergence control.

Additional Information

- iMap Invasives Element Stewardship Abstract:
<http://www.imapinvasives.org/GIST/ESA/esapages/conimacu.html>
- Indiana Cooperative Agricultural Pest Survey
<http://extension.entm.purdue.edu/CAPS/>
- Invasive.org:
<http://www.invasive.org/browse/subinfo.cfm?sub=4365>
- Midwest Invasive Plant Network (MIPN) Invasive Plant Control Database:
<http://mipncontroldatabase.wisc.edu/Default.aspx>
- Purdue University Weed Science Department:
<http://www.btny.purdue.edu/weedscience/2003/articles/PHemlock03.pdf>
- What's Invasive! Android or iPhone app:
<http://whatsinvasive.com/>



Figure 7. Cow parsnip, *Heracleum maximum* Bartr
Dave Powell, USDA Forest Service, Bugwood.org

The mention in this publication of a pesticide and any other commercial product, process, or service, or the use of any trade, firm, or corporation name is for information or illustrative purposes only and does not constitute an endorsement, recommendation, or certification of any kind by SICWMA, Purdue University or Purdue Extension. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. SICWMA and Purdue are not liable for damage caused by misapplication of pesticides.

Become a Weed Watcher and help us stop the spread of invasive weeds! Visit our website at www.SICWMA.org to find out more.

Glenn Nice

Bill Johnson

Tom Bauman

Thomas Jordan

Purdue Extension Weed Science

Poison Hemlock – The Toxic Parsnip

We often get questions about wild carrot (*Daucus carota* L.) only to find out that the question is actually about poison hemlock (*Conium maculatum* L.). Although these two plants may look similar, poison hemlock is toxic to cattle, horses, swine, sheep, goats, dogs, and people when ingested. The plant produces volatile alkaloids coniine (an alkaloid similar in effect to nicotine) and gamma-coniine. The easiest way to tell the two plants apart is that poison hemlock will have purple spots or blotches on its smooth (hairless) ridged stems. Wild carrot will usually have a covering of hairs.



Figure 1. Poison hemlock flowers

Description: Poison hemlock can often be found along roadsides, edges of cultivated fields, railroad tracks, stream banks, waste areas, and sometimes along the fence rows of pastures. Like wild carrot, poison hemlock is a biennial. This means that it lives its life over two years. In the first year, poison hemlock goes through vegetative growth. In the second year, it will produce small white flowers arranged in umbrella-like cluster (figure 1), similar to wild carrot. It is in the second year, when it bolts and flowers, that it tends to catch the eye. The flower stalks can grow 3 to 8 feet tall. The leaves are finely divided having a triangular shape (figure 2). When comparing both poison hemlock and wild carrot leaves, wild carrot has a more rounded lobe in the leaf. Where as Poison hemlock's leaf reminds me of a sharp arrow head. For more information and pictures of poison hemlock's description go to http://www.ppws.vt.edu/scott/weed_id/coima.htm and <http://www.vet.purdue.edu/depts/addl/toxic/plant28.htm>.



Figure 1. Poison hemlock leaf

Symptoms of Poisoning: All parts of the plant can be toxic. Young leaves in the spring are the most toxic and the root the least toxic. The fruit is most dangerous in the fall. Lethal doses can be small, so it is important not to let animals graze or feed on poison hemlock. In the case of horses, 4 to 5 pounds of the leaves may be lethal. One to 2 pounds can be lethal for cattle and 4 to 8 oz for sheep. Young animals are more susceptible. Symptoms may appear within 1 hour of ingestion. This starts with a nervous stimulation and can progress in 2 to 3 hours later into respiratory paralysis. In rare cases the animal may have convulsions. In many cases symptoms include, bloating, incoordination, intestinal irritation, dilation of pupils, rapid and weak pulse, loss of appetite, salivation, and blue coloration about the mouth. Ingestion of poison hemlock in days 55 to 75 of gestation may result in birth defects.

Treatment: If an animal becomes poisoned by poison hemlock, a veterinarian may administer nerve and heart stimulants as soon as possible. Large doses of mineral oil and purgatives are also prescribed to empty the digestive tract. For more information about poison hemlock's toxic characteristics please see <http://www.vet.purdue.edu/depts/addl/toxic/plant28.htm>.

Purdue Extension

Knowledge to Go

1-888-EXT-INFO

Control: Control of poison hemlock in grass pastures is more effective in the first year of its life cycle. In a grass pasture, 2,4-D, Banvel/Clarity (dicamba), or Crossbow (2,4-D and triclopyr) provide control. Crossbow is slightly better than both 2,4-D and Banvel/Clarity. However, be aware that these herbicides will damage any legumes. Spot treatments of glyphosate products (Glyphomax Plus, Roundup WeatherMax, Touchdown, etc) will also control poison hemlock, but be aware that this will also damage any desired vegetation. Always read and follow labels when using herbicides.

We have also noted that poison hemlock is beginning to invade no-till corn and soybean fields. Herbicides that have activity on this weed and that can be used before planting soybeans are 2,4-D, dicamba, and glyphosate. Dicamba and glyphosate have shown slightly better efficacy than 2,4-D. The best overall control would likely be attained with a mixture of glyphosate and dicamba.

Considerations Using Dicamba in Soybean: Use 1/2 pt/A on coarse soils and 1 pt/A on medium or fine soils with at least 2% organic mater. Not all dicamba products have PRE-plant labels in soybean: consult the label before buying for this purpose. Clarity can be applied 14 days before planting if 8 fl oz/A or less is used and at least 1 inch of rainfall or over head irrigation occurs; however, if 16 fl oz/A is used there is a 28 days waiting period before planting soybean.

Considerations Using 2,4-D in Soybean: Use 1 to 2 pt/A of a LVE (Low Volatile Ester formulation). Before planting soybean, using 2,4-D at 1 pt/A requires a 7 day waiting period before planting and if more than 1 pt/A is used, a 30 day waiting period must be observed. These restrictions may be slightly different depending on the product, please read the specific products label before buying for this purpose.

Considerations Using Glyphosate: Use 0.75 lb ae/A. Ae stands for acid equivalent. This is the glyphosate weight in its acid form. Most labels will give ae per gallon to calculate amount to be used. Glyphosate is a non-selective herbicide and can damage desirable vegetation if it comes in contact with desirable vegetation.

For more information on toxic plants of Indiana to livestock and pets see <http://www.vet.purdue.edu/depts/addl/toxic/cover1.htm>.



Poison hemlock growing along a creek.

Information listed here is based on research and outreach extension programming at Purdue University and elsewhere.

The use of trade names is for clarity to readers of this site, does not imply endorsement of a particular brand nor does exclusion imply non-approval. Always consult the herbicide label for the most current and update precautions and restrictions. Copies, reproductions, or transcriptions of this document or its information must bear the statement 'Produced and prepared by Purdue University Extension Weed Science' unless approval is given by the author.

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28. POISON HEMLOCK

Conium maculatum

(parsnip family)

TOXICITY RATINGS: Moderate to high.

ANIMALS AFFECTED: All animals may be affected. Grazing animals, swine and animals that may eat the seeds (especially poultry) are more at risk than pets.

DANGEROUS PARTS OF PLANT: All parts, especially young leaves and seeds.

CLASS OF SIGNS: Nervousness, trembling, incoordination, depression, coma, death, birth defects.

PLANT DESCRIPTION: This biennial herb (fig. 28) grows 3 to 8 feet tall and has a smooth purple-spotted stem and triangular, finely divided leaves with bases that sheathe the stem. Fresh leaves and roots have a rank, disagreeable, parsnip-like odor. The small but attractive white flowers, arranged in umbrella-like clusters, open in early summer. The fruit is tiny, flattened, and ridged. Underground is a fleshy, unbranched white taproot (fig. 28A). Unlike wild carrot (*Daucus carota*, parsnip family), there are no hairs on the stems or leaves of poison-hemlock and no branching, feathery bracts beneath the flower clusters. These plants are commonly found along roadsides, edges of cultivated fields, railroad tracks, irrigation ditches, stream banks, and in waste areas.

SIGNS: The toxic components include the volatile alkaloids coniine and gamma-coniine. A lethal dose for a horse is 4 to 5 pounds of leaves, cattle may be poisoned with 1 to 2 pounds, and sheep with a half pound or less. Humans are often poisoned, mistaking the roots for parsnips, the leaves for parsley, or the seeds for anise.

Affected animals show signs within 2 hours of eating the plant, and tend to become nervous, and will tremble and become uncoordinated. After the excitement phase, the animal becomes depressed. The heart and respiratory rates slow down, the legs, ears and other extremities become cold, colic and/or bloating may occur. Even at this stage, the animal may not die, but may remain like this for several hours to days, and then recover. In lethal cases, the animals tend to die within 5 to 10 hours after the onset of the clinical signs, typically from respiratory failure (in which case the mucus membranes will appear blue). A mousy odor has been reported to emanate from affected animals.

The primary time of year for poison hemlock is spring, often when there is insufficient forage available. At this time, the plant may also be more palatable. The toxicity increases throughout the growing season, and the roots become toxic only later in the year. Once dried, the toxicity is considered to be reduced but not eliminated.

Poison hemlock can also cause birth defects in ruminants and swine, with cattle and swine more susceptible than sheep and goats. The most often reported birth defects are cleft palate and spinal abnormalities. The gestational ages that

28. POISON HEMLOCK

have been associated with birth defects are: for goats, days 30 through 60; for cattle, days 40 through 70; for pigs, days 30 through 60. The birth defects resemble those seen with lupine, with lupine being the more dangerous plant.

FIRST AID: If animals are seen ingesting poison hemlock, call a veterinarian immediately. Treatment consists of eliminating the toxin from the gastrointestinal tract and providing supportive care. If the animals become comatose but do not die, they will require intense nursing care until they recover.

SAFETY IN PREPARED FEEDS: Reportedly, poison hemlock has a decreased toxicity when dry, but hay that contains a large proportion of poison hemlock may still cause problems (besides, it would have a low nutritional value). Recommendations are to feed little or no hay that contains poison hemlock. Seeds may contaminate grain-type feeds, making these feeds unsafe for consumption.

PREVENTION: Most animals will avoid poison hemlock if other forages are available. Tiny amounts may be consumed with little problems resulting, but significant consumption, especially of the seeds, will produce clinical signs and possibly death. Eliminating the plant from the pasture is the best solution; treatment with herbicides may be tried. Be sure all plants are dead prior to re-introduction of animals, since treated plants may be more palatable. Poison hemlock may be difficult to eradicate.

NOTES

Reed Canarygrass

Phalaris arundinacea



Pictures By (From top to bottom):
C. Evans, M Shephard and M.
Shephard @ www.invasive.org.

Invasive Plants are a Threat to:

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

Description:

Reed canarygrass is a cool-season, sod-forming perennial grass that produces stems from creeping rhizomes. The stems grow between 2 to 6 ft. tall. The leaf blades are flat and up to 0.75 in. wide and 1.5 ft. long. The flowers are in dense, branched panicles that can exceed 8 in. in length. Immature panicles are compact and resemble spikes, but open at anthesis. Most contain three florets, two of which are infertile. The lemma in the infertile florets is approx. 0.04 in. long and in the fertile floret is approx. 0.12-0.18 in. long. The glumes are compressed and wingless.

Distribution:

Reed canarygrass is found in wet meadows, wetlands, marshes, fens, old fields, floodplains, wet prairies, roadsides, ditchbanks, streambanks, lake-shores and shore swales. Any moist, fertile, semi-open to open habitat provides good conditions for this species. Reed canarygrass is found in every county in Indiana and invades most wetland community types in the state.

Problem:

Reed canarygrass forms dense, persistent, monotypic stands in wetlands, moist meadows, and riparian areas. These stands exclude and displace desirable native plants and animals. It constricts waterways and irrigation canals by promoting silt deposition. Conversely, it promotes further erosion of soil when located on edges of incised watercourses by causing cut-aways beneath the dense mats of rhizomes. For humans, it can aggravate allergies by producing abundant pollen.

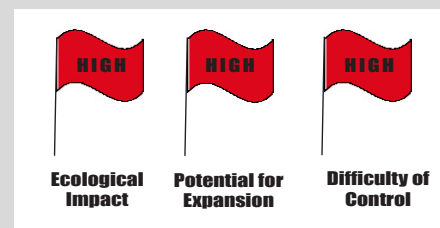
Origin:

Reed canarygrass is believed to be native to Europe. However, some authors believe it to be native to Asia and North America as well. The present day range of reed canarygrass extends throughout the Old and New Worlds, where it is found primarily in northern latitudes.



Picture By: Michael Shephard @
www.invasive.org.

IPSAWG Ranking:



IPSAWG Recommendation:

- Do not buy, sell or plant reed canarygrass for erosion control, wildlife habitat or landscaping in Indiana.
- Only use for forage in cases where extended flooding precludes using other species; do not allow seed to form on plants.

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

ALTERNATIVES to reed canarygrass:



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, G. Fewless and T. Bodner @ USDA - NRCS Plants Database.

Control Methods:

Many practices can be used to control reed canarygrass (RCG). Most work best when used together. Burning can be used to reduce RCG in late spring after it is active but before natives break dormancy. Before burning, mowing or herbicide application is often used to prepare the site. Herbicide can also be used after a burn when active growth resumes (when RCG is 6-12" tall). Use glyphosate on sites without native plants prior to reseeding. Ensure that any herbicide

products are labeled for use in wetlands to avoid potential adverse impacts to aquatic life, such as frogs and salamanders. Use a grass specific herbicide like sethoxydim or fluazifop on sites with desirable native, non-grass species. If herbicide is used alone, it should be used in late summer for maximum translocation to roots. Mowing or tilling is often used before herbicide. Mowing can be used to stress RCG. Mowing should occur before seed

heads appear and works best in combination with other practices. Altering a site's hydrology is another effective control if the new water depth is greater than 12" and high water level can be maintained through the growing season. This prevents seed germination and kills the rhizomes. Special permits may be required for this treatment and effects vary.

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 this assessment and IPSAWG:

IPSAWG
www.invasivespecies.IN.gov

On identification and control techniques:

The Nature Conservancy's Wildland Weeds
www.tncweeds.ucdavis.edu

On native plant alternatives and sources:

Indiana Native Plant and Wildflower Society
www.inpaws.org

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

TREE OF HEAVEN

Ailanthus altissima



Description: Tree of heaven is a deciduous tree that grows to 80 feet. The stems are smooth with pale gray bark. Leaves are alternate, 1-4 feet long, and compound with 11-25 leaflets with 1 or more glandular teeth near the leaf base. Flowers are yellow-green and located near the branch tips with male and female flowers on separate trees. Its seeds are in twisted flat 'wings' borne in clusters. All parts of this tree have a very strong odor.



Native range: Central China (<http://www.nps.gov/plants/alien/fact/aial1.htm>)



Ecological threat: This plant threatens woodland edges and forest openings. Tree-of-heaven is a prolific seed producer, grows rapidly, and can overrun native vegetation. Once established, it can quickly take over a site and form an impenetrable thicket. Ailanthus trees also produce toxins that prevent the establishment of other plant species. The root system is aggressive enough to cause damage to sewers and foundations.

Current North American Range: Tree of heaven is currently very common throughout Iowa, Missouri, Illinois, Indiana, Ohio, and Michigan. It is also known to be in eastern Wisconsin and southern Ontario.

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

Early Detection and Rapid Response Can Help Stop the Spread!

TREE OF HEAVEN, *Ailanthus altissima*

MANAGEMENT OPTIONS: (<http://www.nps.gov/plants/alien/fact/aial1.htm>)

Elimination of *Ailanthus* requires diligence, due to its abundant seed production, high seed germination rate, and vegetative reproduction. Followup monitoring and treatment when needed should be an integral part of any serious *ailanthus* management program. Regardless of method selected, treated areas should be rechecked one or more times a year and any new suckers or seedlings treated (cut, sprayed or pulled) as soon as possible, especially before they are able to rebuild root reserves. Establishing a thick cover of trees (preferably native, and non-invasive) or grass sod will help shade out and discourage establishment of *ailanthus* seedlings. Targeting large female trees for control will help reduce spread of *ailanthus* by seed.

Mechanical methods

Young seedlings may be pulled or dug up, preferably when soil is moist. Care must be taken to remove the entire plant including all roots and fragments, as these will almost certainly regrow. Root suckers appear similar to seedlings, but would be connected to a pre-existing lateral root, and would be nearly impossible to remove effectively. Cutting alone is usually counter-productive because *ailanthus* responds by producing large numbers of stump sprouts and root suckers. However, for small infestations, repeated cutting of sprouts over time can exhaust the plants reserves and may be successful if continued for many years or where heavy shade exists. If possible, the initial cutting should be in early summer in order to impact the tree when its root reserves are lowest. Cutting large seed producing female trees would at least temporarily reduce spread by this method.

Chemical methods

Foliar sprays applied when trees are in full leaf are very effective, and should be the method of choice where *ailanthus* size and distribution allow effective spray coverage of all foliage without unacceptable contact with nearby desirable vegetation or applicator. Where *ailanthus* is in association with other exotic weed species, as is often the case, foliar spray allows treatment of the entire area at one time. Limitations of the method are the seasonal time frame, the need to transport a larger, more diluted volume of spray material, and the fact that rapid growing *ailanthus* are often out of effective reach.

Basal bark application is one of the easiest methods and does not require any cutting. It works best during late winter/early spring and in summer. The base of the tree stem must be free of snow, ice, or water on the bark from recent rainfall, though precipitation following application is inconsequential. Late winter/early spring (February 15-April 15, Mid-Atlantic) is generally the most productive time, since vegetation near the base of the trees is usually absent or leafless. Late spring and early summer applications (April 15-June 1, Mid-Atlantic), when plant fluids are moving upwards to support new growth, are questionable. Application during the summer (June 1-September 15, Mid-Atlantic) works very well as long as vegetation is not a hindrance, and allows lower concentrations of herbicide to be used. Fall to mid-winter applications (October-January) have given poor results.

The hack-and-squirt or injection method is very effective and minimizes sprouting and suckering when applied during the summer. Root suckering will be an increasing problem in the fall, winter and spring.

The cut stump method is useful in areas where the trees need to be removed from the site and will be cut as part of the process. While situations exist that dictate this method over the others given above, felling trees is usually less effective in killing the root system, slower, more labor intensive, and more hazardous to personnel than other methods. This method is likely to be most successful during the growing season, with diminishing success through the early fall.

For more information on control and management of this species, please visit the following Web sites:

www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/comtrol.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

Early Detection and Rapid Response Can Help Stop the Spread!

