INVASIVE PLANTS
OF NORTHWEST ARKANSAS

A FIELD MANAGEMENT GUIDE

Watershed Conservation Resource Center

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2021

A practical, educational guide for land managers, stewards, homeowners, and volunteers for the removal and replacement of invasive plants in natural spaces

Funding for the first draft of this guide was through a 2016 USDA Natural Resource Conservation Service grant awarded to the Watershed Conservation Resource Center. The 2021 updated version was funded through a US Environmental Protection Agency 2019 Wetland Program Development Grant #01F67901 awarded to the City of Fayetteville. The guide was developed through a cooperative effort of the Watershed Conservation Resource Center (watershedconservation.org) working with the City of Fayetteville, Parks and Recreation (fayetteville-ar.gov) and the University of Arkansas System, Division of Agriculture (uaex.edu) - *The University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services without regard to race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.*

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WATERSHED CONSERVATION RESOURCE CENTER

USDA United States Department of Agriculture Natural Resources Conservation Service

UofA DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

CITY OF FAYETTEVILLE ARKANSAS

Beaver Water District

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ABOUT THIS GUIDE

This field guide was created to assist land owners or land managers who are concerned with invasive plant species (1) spread in urban and rural areas, (2) threat to natural areas and ecological function of forest, soils, and waterways, and (3) threat to property and wildlife habitat. The guide is designed to help land stewards identify and slow the spread of invasive plants in natural spaces, raise awareness, and promote native plants in Northwest Arkansas.

Many public and private organizations nationwide and internationally have been addressing the rapid spread and ecological threats of invasive plant species through education, research publications, and reference resources. This guide is anchored on institutional knowledge from many sources, but specifically represents local experience of invasive plant infestations, emerging issues, successful control options, and tools for identification and management. While not intended to be a true botanical guide, readers will be introduced to basic characteristics of each plant with more emphasis on ecological impact and management.

This guide is a work in progress and certainly does not encompass the entire scope of invasive plants. As such, this publication may be subject to revision or supplemental versions to include secondary or emerging species, additional control techniques, detailed ecological impacts, and future findings within this field.

The 20 species of focus in this field guide are included for the following reasons:

- They may be federally designated noxious weeds, or recognized by state or local governments as undesirable invasive species
- Land managers, residents, and local experts report them as significant problems
- Science-based organizations including land-grant research universities have documented their negative ecological impacts on plant and wildlife habitat

A list of plants native to the local ecoregions that can be established in areas where invasive vegetation has been removed is provided on page 8.

To receive new inserts, updates and modifications, register your guide at wcrc@watershedconservation.org

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Outdoor, Environmentally Friendly Guide

The guide was designed to be easy to use in the field and to have a positive impact on the environment. The paper is water resistant, but created with environmentally responsible materials. The binding was designed so that pages can be added as more invasive plant species' summaries are developed and other information becomes available. The guide was designed for the field, so users can take the booklet with them and take notes when working outside. Note pages were included so the user can document the removal mechanism used, application rates, success level, repeat applications, and other information that might be helpful.

INVASIVE SPECIES LIST

TREES

SHRUBS

VINES

FORBS

GRASSES

Problem invasive plants not addressed in this version:

Vinca minor | Dwarf Periwinkle
Vinca major | Large Periwinkle
Hedera helix | English Ivy
Phyllostachys spp. | Bamboo
Wisteria sinensis/floribunda | Asian Wisteria
Vitis riparia | Wild Grape (native, aggressive)
Smilax rotundifolia | Greenbrier (native, aggressive)
Centaurea stoebe | Spotted Knapweed
Pueraria montana | Kudzu
Euonymus alatus | Burning Bush
Nandina domestica | Heavenly Bamboo
Cirsium arvense/vulgare | Thistles
Melia azedarach | Chinaberry
Populus alba | White Mulberry
Paulownia tomentosa | Princess Tree
Rubus serissimus | Everbearing Blackberry
Phalaris arundinacea | Reed Canary Grass
Rumex crispus | Curly Dock

PLANNING A MANAGEMENT STRATEGY

Prevent Invasive Plants From Establishing

- Don't introduce invasive plants; consider native alternatives
- Younger invasive plants are easier to remove than well-established plants

Identify Plant Species & Area To Be Managed

- Take an inventory of your area and properly identify invasive and native plants
- Use caution on streamside areas or heavily sloped areas
- Seek assistance and consultation in sensitive areas
- Determine where and how removed brush will be handled. If composting, heat must be maintained above 145° F to denature seeds

Practice Safety *(see page 4)*

Divide Area

- Work in phases
- Large acreage may require
    - focusing on one species at a time
    - dividing into smaller manageable areas
- Plant densities can be overwhelming; distribute workload

Seek Assistance From Local Professionals

- Trees professionals may be required. Use a certified arborist
- Consult your local extension office for herbicide recommendations

Revegetate/Encourage Native Plants

- Minimize damage to native vegetation during removal
- Consult native plant resources and research
- Choose correct native plant for growing conditions, ecoregion, and space

Do Maintenance Seasonally

- Many plants sprout or sucker from cut points; revisit managed areas
- Opening canopy may activate invasive seed bank and viney plants

SAFETY

Dress Appropriately

- Sleeves, pants, gloves, sturdy shoes or boots
- Safety glasses, sunscreen, and/or insect repellant may be appropriate

If Using Chemical Herbicide Treatment, Personal Protective Equipment (PPE) Is Needed

- Safety glasses
- Latex or nitrile gloves
- Prevent spills and use extreme caution near water sources
- Read herbicide labels and Safety Data Sheets (SDS) for additional PPE measures and application guidelines
- The herbicide label is the law

Use Extreme Caution With Sharp or Heavy Tools

- Acquire safety training for chainsaw use

Be Aware of Surroundings

- Swinging tools or falling limbs could injure you or others nearby

Contact Arkansas One-Call at 811

- Call 811 to locate underground utility lines prior to disturbing a substantial area and/or using heavy equipment.

Use Caution When Working Around Overhead Utility Lines

Work Areas May Not Be Easily Accessible

- Be aware of steep slopes, banks, and slippery areas

Be Aware of Wildlife

- Work areas may harbor animals, snakes, or insects
- Use caution with plants such as Poison Ivy, Poison Hemlock, or thorns (Greenbrier and Multiflora Rose)

Rest Often

Stay Hydrated

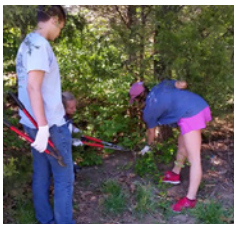
CONTROL AND REMOVAL METHODS

Several methods are used to control or remove invasive plants each with varying degrees of effectiveness, advantages, and disadvantages. Listing here is not an endorsement for any one method. The area of infestation often dictates removal techniques, such as sensitive riparian areas along waterways, wetlands, or sloped areas. Use of herbicide trade names does not indicate endorsement of any one product.

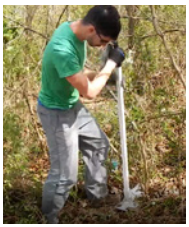
MECHANICAL

- Hand Pulling
- Cutting (chainsaw, hand saw, pruners)
- Stump pulling (weed wrench, shrub pullers, chains, mattock, shovel, large machinery)
- Machinery (mowing, brush hog)

"Hand removal" is very effective, but does require manual labor and may not be practical across large areas. Cutting alone is rarely effective, *unless* used in conjunction with cut-stump treatments. The most effective way to kill invasive plants is by removing the entire plant including root systems. Stump pulling is useful for small to medium shrubs and trees and is easier in moist soil.



Volunteers use loppers to cut bush honeysuckle



A Pullerbear removes stem and roots

Volunteers use shovels to loosen a root ball

CULTURAL PRACTICES

Prescribed fire has been used throughout history to control vegetation, but burning is often unavailable in urban settings. Fire can control the spread of some invasive plants, but must often be used in tandem with mechanical and/or chemical measures. It can risk harming native vegetation, activate invasive seed banks, or even stimulate some undesirable plants. Refer to local laws and ordinances to ensure compliance.

Applying mulch helps to control invasive populations by preventing sprouting. It also holds moisture for native plants, and covers bare soil to help prevent erosion.

CHEMICAL (HERBICIDE)

- Foliar spray
- Cut-stump treatments
- Basal bark treatment
- Frill (hack-and-squirt)

The Label Is The Law. Always Read and Follow Herbicide Label Instructions and Precautions

Chinese Privet stumps treated with glyphosate dye mixture

Great care should be taken when conducting chemical treatment and it is important to consult your local cooperative extension office for herbicides effective for weed and brush control (see the MP44 guide for specific information on herbicides.) A brief description of herbicide treatments follows:

Foliar sprays are not always a viable option in the urban landscape or public setting. This technique can be used to target young plants, but it tends to be ineffective on many resilient, mature, invasive plants in Northwest Arkansas. Foliar spray can damage or kill non-target native plants from drift and contaminate water resources.

Cut-stump treatments minimizes chemical use and contamination of native vegetation and water resources. Most effective in the fall, stumps are cut 3 to 4 inches from the ground and are treated with an herbicide-marking mixture within a few minutes using a squirt bottle or sponge applicator. The marking dye helps land managers or volunteers to see where the chemical has been applied. Stump treatments also help to prevent suckering or secondary growth. Resilient stumps may need cutting and chemical application again the following season.

Basal Bark herbicide treatment is effective on most invasive woody plants including vines. An oil soluble herbicide is mixed with an oil carrier. For woody plants with a 6 inch diameter or less, spray the bark of the plant from ground level to 15 inches. Plants should not be cut for 6 months. This method can be used anytime of the year except early spring.

Frill or Hack and Squirt is used to target invasive trees and introduces the herbicide into the stem using spaced cuts below the last live branch and around the trunk. A hatchet is used to make downward angled incisions through the bark (2 inches long) evenly spaced (one inch) around the tree. Each cut is carefully filled (do not allow spillage) with herbicide-marking mixture using a spray bottle or gunjet.

RE-ESTABLISHING NATIVE VEGETATION

Once you remove invasive vegetation from your property, it is important to establish a healthy stand of plants native to the local ecoregions of Northwest Arkansas. Native vegetation provides shelter and food for wildlife and it contributes to the reproduction and survival of insects, birds, fish, reptiles, and mammals. Native vegetation also supports migrating species, such as, monarch butterflies and wood thrushes. Having adapted to the Ozark Mountain region, native species of plants generally are easy to establish and are drought resistant. Many are beautiful with showy flowers, berries, and leaves, and they can easily be incorporated into a landscaped setting. The following table is a list of plants native to both the Boston Mountains and Ozark Highlands Ecoregion. There are many more, but this list is a good start and can be used as a guide for the revegetation of your area where invasive plants have been removed. Just because you removed a shrub doesn't mean you need to replace it with a shrub. As an example, there may be a preference to establish native grasses and woodland wildflowers in a forested area where bush honey suckle has been removed. As part of your invasive removal process, create a plan for native plant establishment.

The flower of a False Indigobush

Cardinal Flower

Native plants can be established by dispersing seed or by planting potted plants or bare roots. Native seed can be collected locally or purchased and is generally used for large areas where grasses and wildflowers are desired. If you purchase native seed, try to find a local source or at a minimum, a source that was cultivated in or near the Ozark Mountain region. When dispersing native seed on bare soils, mix a nursery crop of winter wheat or oats with a variety of native grass and wildflower species. Following the application of the seed mix, cover with straw. Trees and shrubs are generally established by planting potted plants or bare roots. Again, if possible, find a local source for these plants.

Once you have replaced your treated area with native plants, it is important to inspect for and remove new invasive plants that will try to reestablish on your property. Once a healthy stand of native vegetation is established, less invasive vegetation will arise.

Photos courtesy WCRC

NATIVE PLANT SPECIES

	Common Name *Latin Name*	Planting Zone*			Light			Soil		
		1	2	3	Sun	Part Shade	Shade	Dry	Med	Wet
TREES	**Oaks** *Quercus*	●	●		●			●	●	
	Redbud *Cercis canadensis*		●		●	●			●	
	River Birch *Betula nigra*	●			●	●			●	●
	Shumard Oak *Quercus shumardii*	●	●		●			●	●	
SHRUBS	**Buttonbush** *Cephalanthus occidentalis*	●			●	●			●	●
	Dogwoods *Cornus*	●			●	●			●	●
	False Indigo *Amorpha fruticosa*	●	●		●				●	●
	Fragrant Sumac *Rhus aromatica*		●	●	●	●		●	●	
	Hazel/Smooth Alder *Alnus serrulata*		●	●	●	●		●	●	
	Ninebark *Physocarpus intermedius*	●			●	●		●	●	
	Ohio Buckeye *Aesculus glabra*		●	●		●	●	●	●	
	Ozark Witchhazel *Hamamelis vernalis*	●	●		●	●			●	
	Serviceberry *Amelanchier arborea*		●	●	●	●		●		
	Spicebush *Lindera benzoin*		●		●	●			●	
FORBS	**Bee Balm** *Monarda*			●	●			●	●	
	Black-eyed Susan *Rudbeckia*			●	●				●	
	Cardinal Flower *Lobelia*	●	●		●	●			●	●
	Coneflowers *Echinacea*		●	●	●	●		●	●	
	Goldenrod *Solidago*			●	●			●	●	
	Milkweeds *Asclepias*		●	●	●	●		●	●	
GRASSES	**Big Bluestem** *Andropogon gerardii*			●	●			●	●	
	Indiangrass *Sorghastrum nutans*		●	●	●			●	●	
	Inland Sea Oats *Chasmanthium latifolium*		●	●	●	●	●	●	●	
	MacGregor's Wild Rye *Elymus macgregorii*			●	●			●	●	
	Little Bluestem *Schizachyrium scoparium*		●	●		●	●		●	
	Prairie Dropseed *Sporobolus heterolepis*		●	●	●			●	●	
	Switchgrass *Panicum virgatum*	●	●		●	●			●	●
	Virginia Wild Rye *Elymus virginicus*		●	●		●	●		●	

***Planting Zones:** Zone 1 stream side plants, Zone 2 Area between stream side and terrace, Zone 3 terrace area and beyond

REFERENCES, PUBLICATIONS AND RESOURCES

REFERENCES

USDA Plants Database
plants.sc.egov.usda.gov

US Forest Service Invasive Species Program
fs.fed.us/invasivespecies

PUBLICATIONS

Hunter, C.G. 1995. Trees, Shrubs, & Vines of Arkansas. The Ozark Society Foundation, Little Rock.

Moore, D.M. 2014. Trees of Arkansas. Revised edition edited by Eric Sundell. Arkansas Forestry Commission. Little Rock, Arkansas.

Miller, James H.; Chambliss, Erwin B.; Loewenstein, Nancy J. 2010. A field guide for the identification of invasive plants in southern forests. (slightly revised 2012, 2013, and 2015). General Technical Report SRS–119. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 126 p.

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Gentry, J. L., G. P. Johnson, B. T. Baker, C. T. Witsell, and J. D. Ogle, eds. 2013. Atlas of the Vascular Plants of Arkansas. University of Arkansas Herbarium, Fayetteville. 724 pp.
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RESOURCES

Arkansas State Plant Board
(501) 225-1598
aad.arkansas.gov/arkansas-state-plant-board

National Invasive Species Information Center
invasivespeciesinfo.gov

Invasive Plant Atlas
invasiveplantatlas.org

University of Arkansas Division of Agriculture Cooperative Extension
(501) 671-2000
uaex.edu/yard-garden/in-the-garden/native-plants

City of Fayetteville Invasive Plants and Native Alternatives
fayetteville-ar.gov/3028/Invasive-Plants-and-Native-Alternatives

Arkansas Native Plant Society
anps.org/category/native-plants/Missouri Department of Conservation
mdc.mo.gov/trees-plants/problem-plant-control

MP44, "Recommended Chemicals for Weed and Brush Control," University of Arkansas Division of Agriculture, Research and Extension, Arkansas 2021.
See MP44 online at *www.uaex.edu*

Arkansas One-Call. Damage prevention information, local contacts and rules for safe digging in Arkansas.
811 or 1 (800) 482-8998

NOTES

INVASIVE PLANT SPECIES DESCRIPTIONS AND CONTROL METHODS

TREES

SHRUBS

VINES

FORBS

GRASSES

NEW ADDITIONS

TREE OF HEAVEN

Ailanthus altissima

STATUS Introduced ornamental c.1784 from Europe, originated in China. Highly invasive.

DISTRIBUTION Present in most lower 48 states, listed as noxious or banned in some areas. Well established in Northwest Arkansas. Can be found along forest edges, disturbed and undisturbed sites. Large groves are now reported along Hwy 71 in the Ozark National Forest.

IMPACT Rapidly growing tree that forms dense thickets and suckers from roots. Prolific seeder spread by wind. Leaf litter and roots also produce allelopaths or toxins that prevent germination of other plants.

IDENTIFICATION Tall deciduous tree with shallow roots. Mature trees often lack lower branches. Alternate, pinnately compound green leaves with reddish stems near new growth. Circular glands under leaf base. Brown to tan bark. Wing-shaped seed clusters resemble maple fruits. Unpleasant odor when crushed. Resembles hickory, walnut, sumac.

CONTROL Remove entire seedlings; basal bark method or frill application during mid-to-late summer for more mature plants. Do not use cut-stump as it will encourage suckering.

NOTES

SILKTREE, MIMOSA

Albizia julibrissin

STATUS Invasive ornamental introduced from Asia c.1745.

DISTRIBUTION Widely present in southern US and west. Commonly seen along streams, trails, and forest edges, rights-of-way.

IMPACT An adaptable tree that can establish dry or moist sites. Forms dense stands. Negatively displaces natives and is a poor food source for wildlife. Seeds can remain viable in seedbank for many years.

IDENTIFICATION Small to medium deciduous legume with showy pink flowers and large, flat, seed pods turning brown in fall. Alternate bi-pinnately-compound green leaves resemble locust trees.

CONTROL Cut stump and apply herbicide.

NOTES

CALLERY (BRADFORD) PEAR

Pyrus calleryana

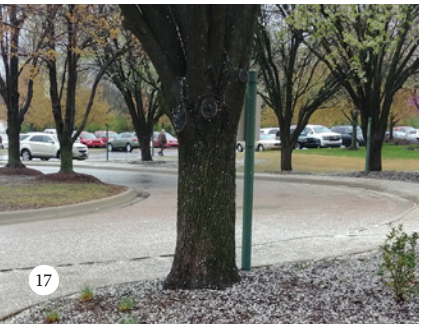
STATUS Invasive ornamental introduced from Asia. One of the most common and troublesome invasive trees escaped from rootstock.

DISTRIBUTION Widely present in southern US. Invades forest edges, hillsides, fencerows, open fields, and rights-of-way disturbed areas.

IMPACT Displaces native vegetation, prolific seeder dispersed by birds. Forms thickets and can sprout from roots. Prone to splitting in storms.

IDENTIFICATION Deciduous, medium-sized tree, abundant white flowers blossom in early spring before most natives. Alternate “fruit” leaves oval turning red or orange in fall. Small pears in clusters.

CONTROL Cut to stump in fall and apply 50% glyphosate immediately after cutting. Repeat seasonally.



NOTES

CHINESE PRIVET

Ligustrum sinense

STATUS Invasive ornamental hedge introduced from China and Europe c.1852. One of the most common and troublesome invasive plants.

DISTRIBUTION Widely present in southern US. Invades forest understory, fencerows, along streams, and rights-of-way.

IMPACT Aggressive, shade-tolerant shrub that forms dense thickets, often creating monoculture preventing forest regeneration, especially in urban forest near where plants escaped or were planted. Poor wildlife food source.

IDENTIFICATION Multi-stemmed shrub of the Olive family with opposite, glossy, oval, green leaves. Fragrant white flowers April to June produce abundant, green berry-like drupes turning dark purple. Propagates through seed spread by animals and is a prolific suckering plant.

CONTROL Remove entire plant if possible. Cut to stump in fall and apply 50% glyphosate immediately after cutting. Repeat seasonally.

NOTES

BUSH HONEYSUCKLE

Lonicera maackii

STATUS Invasive ornamental hedge introduced from China.

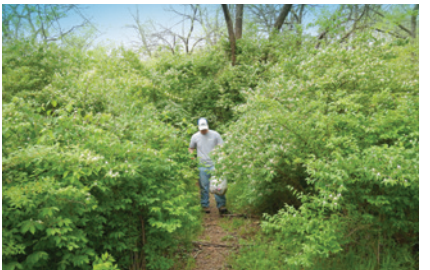
DISTRIBUTION Widely present in southern US. Invades forest understory, fencerows, along streams, and rights-of-way.

IMPACT Aggressive, shade-tolerant shrub that forms dense thickets, often creating monoculture preventing forest regeneration, especially in urban forest near where plants escaped or were planted. Poor wildlife food source. May contribute to increased tick populations.

IDENTIFICATION Multi-stemmed upright shrub, bark light brown with striations, sometimes hollow. Opposite leaves ovate to oblong. Distinct sweet smelling white and yellow flowers in spring and summer produce glossy red berries when ripe.

CONTROL Remove entire plant. Cut to stump in fall and apply 50% glyphosate immediately after cutting. Repeat seasonally until suckers are no longer present.

Photo courtesy Theo Witsell



NOTES

MULTIFLORA ROSE

Rosa multiflora

STATUS Invasive rose introduced from Japan in 1700s as ornamental or living fence.

DISTRIBUTION Prominent in most US states except mountainous western states. Invades forest understory, pasture, fencerows, woodland stream terraces, and rights-of-way.

IMPACT Adaptive plant that displaces native vegetation by forming monoculture of dense thickets.

IDENTIFICATION Multi-stemmed, finely-thorned shrub reaching 12 to 15 feet in height. Ovate or oblong leaves, pinnately compound, up to 7 leaves per leaflet. White flowers bloom in clusters in spring. Fruit are small red hips frequently consumed and spread by birds. Very thorny and difficult to remove.

CONTROL Remove entire plant if possible. Cut to stump in fall and apply 50% glyphosate immediately after cutting. Repeat seasonally.

Photo courtesy Theo Witsell

NOTES

ASIAN BITTERSWEET

Celastrus orbiculatus

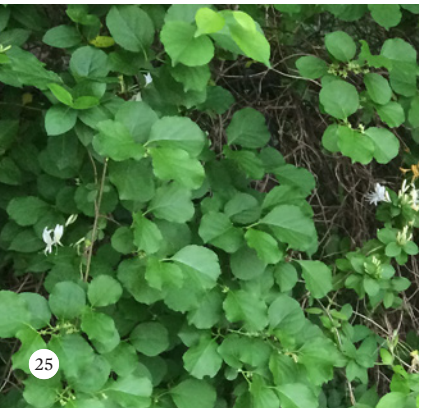
STATUS Invasive vine introduced from Asia c.1860 as ornamental or erosion control.

DISTRIBUTION An invasive, noxious weed in many US states. Reported in *An Atlas and Annotated List of the Vascular Plants of Arkansas* (1988) to have been introduced in Arkansas near Lake Wedington. Prefers forests, woodlands, field edges, and lowland areas.

IMPACT Aggressive vine that can choke even large forest trees. Can tolerate shade and outcompete native vegetation. Quickly displaces native vegetation.

IDENTIFICATION Woody perennial vine with alternate, round, finely-toothed leaves. Vine can root at the nodes. Inconspicuous flowers produce attractive orange capsules, splitting to reveal showy red berries widely spread by birds.

CONTROL Try to remove entire plant including roots before fruit produces seeds. Use caution as fallen seeds may contaminate site (bag if seeds present). Consistent mowing may starve roots. Glyphosate or triclopyr are effective if applied immediately after cutting.



Photos courtesy Kristina Jones

NOTES

SWEET AUTUMN VIRGIN'S-BOWER

Clematis terniflora

STATUS Established invasive ornamental often referred to as Sweet Autumn Clematis.

DISTRIBUTION US southeast. Appears along forest edges, roadsides, rights-of-way, streams, and trails.

IMPACT Displaces native vegetation. Local extension reports that some people may experience skin and eye irritation if mowed over.

IDENTIFICATION Semi-evergreen climbing vine, opposite, compound leaves, elongated, heart-shaped. White, fragrant, four-petaled flowers appear in the late summer through the fall. Seeds have wispy, feather-like hairs.

CONTROL Cut stems low and treat with herbicide. Foliar sprays may be effective but care must be taken to avoid harming non-target plants.

NOTES

WINTERCREEPER

Euonymus fortunei

STATUS Introduced from Asia as ornamental ground cover in early 1900s. Resembles periwinkle (Vinca). Highly invasive in Northwest Arkansas' urban forests, along trails, streams, forest edges and understories.

DISTRIBUTION Eastern and southern US.

IMPACT Adaptable, aggressive, vine that forms dense groundcover or climbs structures including trees, which may be choked. The vine will completely cover large areas of forest floor and out-compete native plants. Fruit spread by birds. Weight can eventually topple trees and fences.

IDENTIFICATION Evergreen woody vine forming numerous clinging stems. Opposite, oval, glossy green leaves with prominent veins. Inconspicuous flowers produce small red capsules at the end of y-shaped stems that split, exposing seeds.

CONTROL Cut stump and apply appropriate herbicide. Late winter treatment will avoid non-target damage. Repeated treatments likely. Hand pull small infestations.

Caution: wintercreeper attached to a tree may transfer herbicide to the tree.

Photo courtesy WCRC

NOTES

JAPANESE HONEYSUCKLE

Lonicera japonica

STATUS Invasive, even prohibited or banned in some northern states. Reportedly introduced as ornamental in early 1800s.

DISTRIBUTION Invasive across Southeast US. Invades forest edges, floors, glades, wetlands, and rights-of-way.

IMPACT Shades and chokes native vegetation. Can form dense groundcover or climb and choke other vegetation up especially where light penetrates canopy.

IDENTIFICATION Semi-evergreen climbing vine, leaves opposite, oval or oblong. Young leaves may show lobed margins. Showy white and yellow flowers produce sweet smell. Small berries start green and darken into fall.

CONTROL Mechanical removal must be accompanied by chemical stump treatment. Foliar spray effective when other vegetation is dormant. Burning could significantly reduce populations.

Photo courtesy Theo Witsell

NOTES

GARLIC MUSTARD

Alliaria petiolata

STATUS Introduced from Europe in 1800s and escaped Long Island, NY in 1868.

DISTRIBUTION Midwest to Northeastern US. Not found in deep south. Invades forest edges and open woodlands, floodplains, and occasionally roadsides.

IMPACT Aggressive, cool-season biennial that forms dense thickets, often creating monoculture preventing forest regeneration, especially in urban forest near where plants escaped or were planted. Poor wildlife food source causing overbrowsing of natives. Produces large numbers of seeds, explosive seed dispersal.

IDENTIFICATION Biennial herb reaching 8 feet in height, hollow-stemmed Allelopathic. Triangular, toothed leaves with long seed stalk forming second year. The foliage smells like garlic when crushed.

CONTROL Remove entire plant by hand-pulling before seeding (bag if seeds present). Foliar applications effective before spring plants break dormancy. Burning may reduce plant populations.

Photos courtesy Jennifer Ogle

NOTES

POISON HEMLOCK

Conium maculatum

STATUS Invasive ornamental introduced from Europe in 1800s.

DISTRIBUTION Widely present across US.

IMPACT Poison hemlock can quickly overwhelm disturbed sites, including forest edges, rights-of-way, riparian areas, and upland stream terraces. Displaces native plants and can produce thousands of seeds per plant. **All plant parts are extremely toxic if ingested, causing death**. Skin contact can cause mild to severe irritation, and toxins may be absorbed through skin after prolonged contact. If ingested, call poison control at 1-800-222-1222.

IDENTIFICATION Biennial herb reaching 8 feet in height, hollow, purple-mottled stems. Closely resembles other plants in parsley family such as wild carrot or Queen Anne's Lace, which lacks purpling on stem. Small white flowers form in a cluster resembling an umbrella.

CONTROL Foliar herbicides are effective, especially when plants are small in late winter or early spring. Contact your local extension office for herbicide ratings for brush control. **Do not hand pull or touch this plant**.

NOTES

SERICEA LESPEDEZA

Lespedeza cuneata

STATUS Introduced from Asia in 1800s. Aggressive invader and seed producer.

DISTRIBUTION Widely present in southern US. Invades pastures, fencerows, open areas, roadsides, disturbed sites, rights-of-way.

IMPACT Outcompetes native vegetation. Major pasture weed issue. Seeds remain viable for many years.

IDENTIFICATION Upright, slender forb with many alternate leaves. Small white flower clusters in summer. Resembles alfalfa from distance.

CONTROL Consistent mowing across years; burning. Foliar chemical applications effective before seed set.

NOTES

PERILLA MINT

Perilla frutescens

STATUS Native to Asia, introduced ornamental invasive across US in 1800s.

DISTRIBUTION Very adaptable, prominent in AR, LA, MO, OK, and TX.

IMPACT Invades shady streambanks, pasture margins, roadsides, ditches, and forest edges outcompeting native plants. It is very toxic to cattle, especially if dried in hay. Avoidance by grazing animals also allows perilla mint to flourish and seed is easily spread by wind.

IDENTIFICATION Annual herb 1 to 3 feet in height, squared-stemmed, opposite leaves up to 5 inches long by 4 inches wide. Also known as beefsteak plant, often displays purple coloring and is fragrant when crushed. Dried flower spikes persist through winter.

CONTROL Control early when plants are small before flowering. Consistent mowing or hand pulling may control populations. Several foliar chemical options.

NOTES

PIGWEED

Amaranthus spp.

STATUS A genus of many difficult-to-identify weedy forbs, at least five of which are known from Northwest Arkansas.

DISTRIBUTION Present in most of the lower 48 states, excluding some of the most northern states. Although studies show that it has been migrating north for several years and has become an aggressive invasive on many farms, as well as native areas. Adapts quickly and often found where other vegetation is present. It is particularly good at invading disturbed soils before any other plants begin to grow.

IMPACT Pigweed grows very fast in open conditions and disturbed soils and along newly formed point bars in river channels. Once established it can crowd out any natives and outcompete the hardiest plants. A single plant can produce up to 250,000 seeds than can be transported through wind.

IDENTIFICATION This summer annual has smooth oval shaped leaves. Some species have leaves that are capped with a small sharp spine. The top of the plant will have a long seed head that can produce a large amount of seed each year.

CONTROL Manual control is best if plants are small; be sure to bag and dispose of them properly. Pigweed can reroot and continue to grow if pulled and left on the surface. Glyphosate is another option for removal, although some biotypes have become herbicide resistant and show no effect when sprayed. These types will need to be manually removed.

Photos courtesy WCRC

NOTES

YELLOW ROCKET

Barbarea vulgaris

STATUS Originally native to Europe and Asia, it has become naturalized in many parts of North America as an invasive.

DISTRIBUTION Present in majority of the lower 48 states excluding southernmost dry humid states. It prefers cropland and fields, disturbed areas, meadows, and roadside ditches.

IMPACT Has potential to grow large in early season, and outcompete any surrounding natives.

IDENTIFICATION This biennial plant will form a cluster of leaves close to ground level in its first year, but bolts up during its second year to a height of 1-2.5 feet tall. During the second year it will have smooth stalks with green to reddish purple color and larger 6-inch laterally lobbed leaves stemming from the stalks. The tops of the stems will have small yellow flowers growing vertically.

CONTROL Remove entire plant by hand pulling before seeding (bag if seeds are present). Herbicide application of 2-4-D can easily control the plant as well.

NOTES

QUEEN ANNE'S LACE

Daucus carota

STATUS Originated in Afghanistan and adjacent areas, then spread to Europe and finally introduced to North America as a medicinal herb.

DISTRIBUTION Also known as wild carrot, Queen Anne's Lace is present in the lower 48 states, including some areas where it is considered a noxious weed. It appears most frequently on roadsides, open fields, woodland edges, and any disturbed areas.

IMPACT Queen Anne's Lace is a fast growing early season plant that invades open areas where it competes with natives for space. It can grow to maturity quickly and put off seeds that are transported through wind.

IDENTIFICATION Queen Anne's Lace is a biennial that in its first year will grow several small hairy stems at the base that branch to many fernlike leaflets towards the top. The dark green color will be noticeable in winter, and will be one of the first species to start growing in the spring. The second year plants will grow stalks 2-4 feet in height and produce an umbrella cluster of flowers. The small 5-petaled white flowers will curl inward into the summer and turn a brown color.

CONTROL Manual pulling or cutting of the plant will give natives a chance to outcompete it, but a chemical application of 2-4-D or triclopyr will easily control the plant.

Photos courtesy WCRC

NOTES

SMALL CARPET GRASS

Arthraxon hispidus

STATUS First appeared in the southern US, and through transportation can now be found in many tropical and subtropical areas.

DISTRIBUTION Mostly concentrated in the southern United States with warm humid temperatures, and acidic soils. Favors full sun areas with sandy, low fertility soils. Often found along river banks with large deposits of sand, or in old unmanaged fields.

IMPACT Has the potential to take over areas with poor sandy soils and create a monoculture. It can create a large quantity of biomass that creates mats on top of the ground, completely shading the ground below.

IDENTIFICATION This annual grass grows from the nodes and shoots stems that produce small semi-folded leaves with small hairs on the lower parts. Over time the small stems grow to a height that it can no longer support, at which point it falls over on top of itself creating large dense mats. The tan colored seed grows from the tops of the stems.

CONTROL Repeated manual removal is effective since it has a very shallow root system. Also Glyphosate herbicide is effective in killing the grass.

Photos courtesy WCRC

NOTES

JOHNSON GRASS

Sorghum halepense

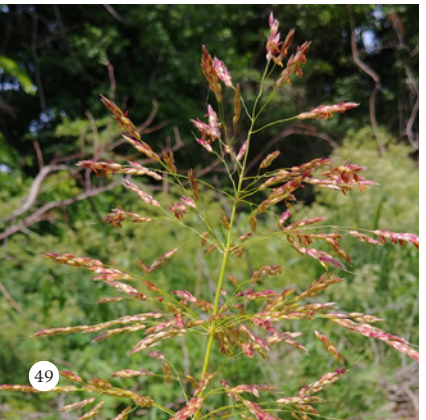
STATUS Native to Africa, introduced in the 1800s as drought-tolerant forage.

DISTRIBUTION Johnson grass has become widely naturalized throughout the south but is present nationwide in pasture, greenspace, and along fencerows and rights-of-way.

IMPACT Forms dense colonies in fields and forest edges. Height allows this plant to outcompete native seedlings. Seeds and rhizomes remain viable in soil for many years. Nitrate accumulation under certain environmental conditions can cause toxicity in grazing animals.

IDENTIFICATION Erect, perennial, tall, warm-weather grass with wide leaf blades up to 1.5 inches and prominent pale midvein. Flowers and seedheads form prominent panicle.

CONTROL Can be sprayed in summer at height of 18 inches with Outrider. Rhizomes and colonies make pulling difficult. Repeated mowing and management can reduce populations.



NOTES

JAPANESE STILT GRASS

Microstegium vimineum

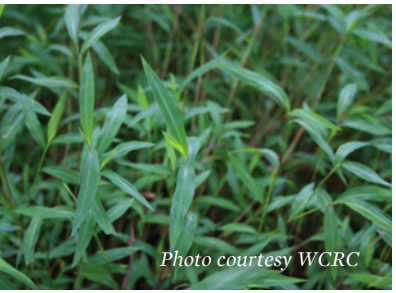
STATUS Native to Japan, China, and Asia, it was originally documented in Tennessee in 1919 and was believed to have been accidently transported through its use in packing material.

DISTRIBUTION Currently present in 16 eastern states and favors moist, rich soils. Although it can be found in almost any environment, from full sun, to complete shade. It prefers the banks of rivers, floodplains, wetlands, and roadside ditches.

IMPACT Since it grows well in most environments, it threatens understory vegetation by shading out valuable natives. It is very easily transported to newly disturbed areas where it will form a patch, then grows outward, displacing native vegetation.

IDENTIFICATION Annual grass that grows 2-3 feet in height with small bamboo-like stalks. It produces leaves 3 inches in length that are lanced on the outer rim with a lighter colored rib running the length of the leaves. Its main seed dispersal mechanism is wind, but can also move with flood or runoff water.

CONTROL Manual pulling or hand hoeing can be efficient for small, concentrated patches. Although larger areas are more easily controlled using Glyphosate herbicide.



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