

# Invasive Plants

## Common Characteristics

- Non-native
- High production of viable seeds
- Long term viability of seeds – 20 years or more
- Dispersed by birds and other seed consuming animals
- Absence of natural controls, e.g., controlling predators
- Difficult to eradicate
- Some manifest allelopathic properties – produce chemicals toxic to other plants

## Examples

### Morrow's Bush Honeysuckle – *Lonicera morrowii*

- Asia – introduced as ornamental
- White “honeysuckle” flowers - spring – early summer
- “Gorgeous” red fruits late summer – but poor food source – not considered toxic
- Bark – gray – long longitudinal striations
- Wood brittle – twigs hollow
- Allelopathic plant

**Native Alternatives:** - American Beauty Berry (*Callicarpa americana*), Possum Haw (*Ilex decidua*), Winterberry (*Ilex verticillate*)

### Japanese Honeysuckle – *Lonicera japonica*

- Eastern Asia
- Introduced in early 19<sup>th</sup> century – ornamental, wildlife food source – erosion control

#### Medicinal value promoted on internet

- Grows as *rapidly spreading vines*
- Leaves opposite – evergreen to semi-evergreen
- Fragrant white “honeysuckle” flowers spring – dark black seeds late in summer
- Berries toxic
- Vines spread across ground – climb and infiltrate scrubs and trees
- Vines enlarge – choke and girdle plants
- Really difficult to eradicate

**Native Alternatives:** Coral Honeysuckle (*Lonicera sempervirens*), Virgin's Bower (*Clematis virginiana*)

### Asian Bittersweet – *Celastrus orbiculata*

- China mid-19<sup>th</sup> Century
- Woody vine grows to 60 feet
- Inconspicuous white flowers May to early June
- Alternate elliptical light green leaves
- Fruits begin as green – yellow – split to reveal red berries persist into winter
- Flowers and fruits along axils of leaves -berries toxic
- Shade and out-compete natives – girdle large trees
- Seeds dispersed by seed-eating animals
- Found eastern Tennessee, western Virginia, West Virginia, New England states
- American bittersweet (*Celastrus scandens*) fruits at ends of branches

**Native Alternative:** Coral Honey Suckle, Possum Haw

**Kudzu** – *Pueraria montana* var. *lobata*

Japan – introduced in Japanese pavilion 1876 Exposition in Philadelphia  
Promoted for erosion control in 1930s and 40s -planted over million acres  
Now disturbed from southeastern United States to a far north as southwestern Illinois  
Plant that ate the South  
Vegetation so thick smothers other trees and plants  
Attractive pink flowers in late summer (August)  
Does not grow well on Plateau  
Use herbicide on roots or dig roots up

**Chinese Privet** –*Ligustrum sinense*

Introduced in 1852 as evergreen ornamental shrub and hedge  
Still widely sold in nurseries and nursery magazines  
Widespread in eastern and southeastern U.S.  
Blue fruit toxic to humans  
Nine species – all invasive-  
Reproduces by seed dispersal and vegetatively  
Root system shallow but extensive- can resprout  
Short shrub – can grow to 30 feet

**Native Alternatives:** Mountain Laurel (*Kalmia latifolia*)

**Multiflora Rose** – *Rosa multiflora*

Eastern Asia – China, Japan, Korea -  
Introduced 1860s - erosion control and living fence, habitat for small game animals  
Climbing shrub – curved thorns – some varieties thornless  
White flowers in spring – short blooming  
Varieties widely available online  
Crowds out natives

**Native Alternatives:** Carolina Rose (*Rosa Carolina*), Mountain Laurel (*Kalmia latifolia*)

**Tree of Heaven** – *Ailanthus altissima*

Temperate China and Taiwan  
Green pinnately compound leaves – distinguishing little bump at base of leaflet  
Easily confused with sumac, walnut, ash – leaves of latter do not show bumps  
Introduced in late 18<sup>th</sup> century as ornamental shade tree – absence of insect problems  
Pale gray bark  
Grows rapidly  
Prolific producer of seeds (wind dispersed) – rapidly spreads – establishes readily  
Greatest seed production 12 - 20 year old trees – target young shrubs for control  
Allelopathic  
Aggressive roots system – damage drains sewers, pavements  
Strong offensive pungent odor – mid June – July

**Native Alternatives:** Black Walnut (*Juglans nigra*), Winged/Webbed or Shining Sumac (*Rhus copallinum*)

**Bradford Pear** – Callery Pear – *Pyrus calleryana*

Cultivar produced by grafting onto Callery Pear root stock

Originally from China and Vietnam

Cannot self-pollinate – pollinates with other cultivars

Offspring revert to Callery Pear – 4-inch thorns

Wood is brittle – branches weak – prone to breakage

Small fruit – eaten and spread by birds

Highly invasive

**Native Alternatives:** Serviceberry (*Amelanchier* spp.), American Plum (*Prunus americanus*)

**Burning Bush** – *Euonymus alatus*

Native to central and northern China, Japan and Korea

Tremendous seed production - berries toxic - purgative

Winged stems

Leaves opposite

Widely available

**Native Alternatives:** Maple Leaf Viburnum (*Viburnum acerifolium*), Winged Sumac

**Nandina** – *Nandina domestica*

China and Japan - 1804

Shade tolerant

White flowers in May – old stems - long furrows

Widely planted – bright red seeds very attractive to birds – often escape cultivation

Widely available

Berries contain cyanogenic glycosides – in digestive tract converted to hydrogen cyanide – toxic to humans, pets, wildlife

**Native Alternatives:** Possum Haw, Coralberry

**English Ivy** – *Hedera helix*

Native to Mediterranean Europe

Brought over in colonial times – low maintenance – evergreen ground cover

Climbing vine – covers and kills trees by shading sunshine

Spreads by runners and berry-like fruits dispersed by birds

Allelopathic

Widely available

To control must remove entire plant including runner and root

Tolerant to post emergent herbicides – Round Up effective on young plants – cut stems before application

**Native Alternatives:** Coral Honeysuckle, Virgin's Bower)

**Autumn Olive** – *Elaeagnus umbellata*

Introduced from Orient 1800s

Widely used for erosion control

Grayish green leaves – silvery scales

Stem speckled often with thorns

Small bell-shaped flowers – red berries in September

Rapid growth, marked seed producer- widely spread

Allelopathy – impedes growth of other plants

Difficult to eradicate – burning or cutting enhances spread

Pull out by roots, or cut with rapid herbicide application

**Japanese Knotwood** – *Reynoutria japonica*

Introduced mid-19<sup>th</sup> Century (ornamental, soil retainer, cattle feed)

Grows with great vigor – strong will to live (hard to get rid of)

Grow up to 10 inches/year – may cause damage to masonry, concrete foundations

Can regrow from tiny fragment of root

**Mimosa** – Persian Spice Tree – *Albizia julibrissin*

Southwestern and eastern Asia - China

Introduced to Europe - mid 18<sup>th</sup> Century

Charleston, South Carolina in 1785

Blooms in summer – beautiful pink flowers

Fast growing – very short lived

**Widely available**

Develops long – 6-inch seed pods – lots of seeds - sprout everywhere

Seed can be dormant for years

One of first to emerge in disturbed soils

Cut to ground level – cut new growth and use herbicide

**Native Alternatives:** Red Bud (*Cercis canadensis*), Flowering Dogwood (*Cornus florida*)

**Johnson Grass** – *Sorghum halepense*

Mediterranean Europe and Asia

Introduced as seed crop

Spreads by rhizomes and by vigorous seed production

Seeds viable up to 20 years

Very invasive – reduces agricultural grain yields

Forms thick stands – alters ecology of regions

If grown under stressful conditions (freezing weather) can develop toxic cyanide

1900 – first Federal grant issued for control

**Native Alternatives:** Switch grass (*Panicum virgatum*), Little Blue Stem (*Schizachyrium scoparium*)

**Princess Tree** (Empress Tree) – *Paulownia tomentosa*

Eastern and central China

World's fastest growing tree

Light to deep blue flowers in late spring

Large green leaves

**Easily find it for sale.**

**Native Alternatives:** Red Buckeye (*Aesculus pavia*), Serviceberry, American Plum

**Japanese Spirea** – *Spiraea japonica*

Eastern Asia – 1879

**Widely available commercially**

Slightly toothed (serrate) alternate, lanceolate leaves

Somewhat resembles silky dogwood and elderberry (leaves opposite)

**Native Alternatives:** Pink Azalea (*Rhododendron periclymenoides*) Elderberry (*Sambucus nigra*), Silky Dogwood (*Cornus amomum*)

## More information on native alternatives.

- a. Obedwatershed.org
- b. Click on Other Information and Resources
- c. Scroll down to Tennessee Alternatives to Invasive Plants

Obedwatershed Contact Information: –[obedwatershed1@gmail.com](mailto:obedwatershed1@gmail.com)  
Phone 931-484-9033; OWCA, PO Box 533, Crossville TN 38557

OWCA– application at Obedwatershed.org

## Eradication or Control

Positive identification

Don't deliberately purchase

Mechanical removal – pull, dig, mow, cut

Pullbear – pull out by roots

Use of domestic browsers – sheep, goats

Brush or wand application of herbicides (Roundup or Rodeo)  
preferably in July, August, September, October  
best after fresh cutting

## Reference:

Smith et al., 2013. The value of native and invasive fruit-bearing shrubs for migrating songbirds.  
*Northeastern Naturalist* 20(1); 171-184.

## PVC Herbicide Wand

### Parts Required

Unless otherwise specified, all the parts are 1 inch diameter PVC fittings.

2—threaded female caps

1—3/4-inch unthreaded female cap

2—male couplings, threaded on the male end

1—45-degree elbow coupling, unthreaded

1—ball valve, un-threaded

1—pipe piece 15 to 18 inches long

2—pipe pieces 3 inches long

1—heavy duty (“cellulose”) sponge 1.5 x 4 x 1.5 inches

Teflon plumber's tape

### Tools/Materials Required

PVC purple primer and cement

PVC pipe cutters or hacksaw

Coarse file for PVC

Drill with 1/16 inch and 3/4-inch bits

Ruler

Scissors or knife (to cut sponge)

### Assembly Instructions

Construction hints: When buying parts for the wand, remember that the wand has two threaded joints which are hand-tightened with slip-lock pliers.

**A. Making the main reservoir:** Cement a male threaded coupling on one each end of the 15—18” pipe. Wrap the threads with Teflon tape and tighten one of the female caps on loosely. Glue the end without the coupling into one end of the ball valve.

**B. Making the sponge reservoir:** Read this section completely before proceeding! First, cut the end of the 3/4-inch PVC cap just behind where the curved portion of the cap meets the straight walls, and drill two holes (1/16 inch) in it. The cap when completed should look like a large shirt-button. The cap should slide snugly into the unthreaded end of a threaded male coupling with the curved edge facing the threaded end (you may need to file it a little). Using a 3” length of pipe, cement one end to the male coupling (including the curved “button”) and the other end to the 45-degree elbow coupling. Cement the other 3” length of pipe to the other end of the 45-degree elbow. Now glue this assembly to the ball valve, lining it up so that the handle of the valve is up and the 45-degree elbow points in the opposite direction.

**C. Making the sponge tip:** Drill a 3/4-inch diameter hole into a threaded female cap. After putting on Teflon tape, screw the female cap onto the male thread at the end of the wand. Make a sponge tip by cutting a columnar chunk out of a heavy-duty sponge. A tip 1 inch in diameter and 2 inches long should fit snugly in the hole. If it is damp, it will compress enough to fit into the whole while still being relaxed enough for the herbicide to soak through.

### **How To Use the Wand**

With ball valve in the closed position, pour the herbicide mix into the main reservoir and replace the fill-cap on the wand. Open the ball valve slightly to let herbicide enter the sponge reservoir. Once the sponge tip is saturated, put the wand in a vertical position and let the herbicide flow back to the reservoir. Then close the ball valve. Only a light touch of the saturated sponge tip is needed to apply herbicide to a cut-stump. Open the ball valve when more herbicide is needed in the sponge tip.

### **Helpful Hints**

- 1)When the sponge becomes worn, replace it (recommended after every workday at a minimum if a full day).
- 2)Use an herbicide dye to check for leaks, monitor applications, and identify any exposure to the person using the applicator.
- 3)Always wear gloves when using the applicator as the concentration are high enough that skin absorption can be an issue.
- 4)For small stumps (<4”), you can paint the whole stump. For larger stumps, you can conserve herbicide by painting the outer 2” around the stump where active transport occurs.