

1  **Invasive Exotics and their Native Substitutes**

*Presentation to Earthcare*

2  **We will cover**

- What are invasive exotic aka "pest plants" and why are they a problem
- What are classified as pest plants in Tennessee
- Which pest plants are commonly found in our area
- What can we do about it?
- What native plants can we use to substitute pest plants (and exotic ornamentals) in our landscapes
- Where can we buy native plants

3  **Native versus Exotic Plants**4  **Exotic Plant Categories**

- An *exotic* plant is a plant that has been introduced to an area from outside its native range, either purposefully or accidentally.
- A *naturalized exotic* plant is one that can sustain itself outside of cultivation, outside its native range. It is still exotic; it has not "become" native. Also called "adaptive" or "adapted."
- An *invasive exotic* plant is a naturalized exotic plant that is expanding its range into natural areas and disrupting naturally occurring native plant communities.
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5  **Exotics Commonly Mistaken for Native plants**

- Daffodils, Tulips, Crocus
- Day Lilies
- Queen Anne's Lace
- Bachelor's Buttons
- Chickory
- Lilies of the Valley
- Hosta
- Shasta Daisies
- Cosmos

*And so on...*

➤

6  **Don't Plant Those "Bee-Friendly" Wildflowers Cheerios Is Giving Away – *Lifehacker.com*  
3/17/2017**7 8 9  **Exotics come from similar climatic regions**10 11

8 9 10 11  **Why should we care?**

- Many native plants, including those that only grow in Tennessee, are threatened or endangered because exotics
  - outcompete with natives for food, sunlight, territory
  - often don't support local wildlife (food and shelter)
  - Can create "monocultures" and therefore reduce biodiversity

12  **Why Should we care?**

- High cost to control or fight invasive plants - \$35 BILLION each year nation-wide
- Controls like pesticides put extra burden on beneficial plants and animals and may have unintended consequences
- Exotic plant takeovers destroy aesthetics

BOTTOM LINE: DON'T PLANT IT IN THE FIRST PLACE

13 14  **Ecological Effects**

- Change in animal-dispersed seeds of native plants
- Alter stream biodiversity
- Increase susceptibility to fire and storm disturbances
- Alter distribution and connectivity of habitats
- Change nutrient cycling and soil chemistry
- Exclude native perennials and tree seedlings
- <https://www.youtube.com/watch?v=mUssO68D2eM>

15 16  **And they are UGLY!**17  **Invasive Exotic Pest Plant Definition**

**source: Tennessee Invasive Plant Council (TNIPC)**

1. Plant is established outside of cultivation and is non-native to some portion of North America
2. Species has potential for rapid growth, high seed or propagule production (i.e., spreading by rhizomes and other non-seed ways) and dispersal
3. Species occurs in Tennessee
4. Species is known to out-compete other species in native plant communities within Tennessee

18  **Severe Threat Definition**

- Species meets criteria 1-2 and is listed as a noxious weed in Tennessee or by the federal government (USDA), OR
- Species meets criteria 1-4 and occurs in at least 30 counties (30% of the state) and presents substantial management problems

19

presents substantial management problems

19  **Significant Threat**

- Species meets criteria 1-4 and either
  - Occurs within at least 30 counties and management does not present substantial management difficulties
  - Occurs in 10 to 29 counties and does present substantial management difficulties

20  **Lesser Threat**

- Species meets criteria 1-4 AND the species occurs in 10-29 counties and does not present substantial management difficulties

21  **Alert**

- Species meets criteria 1-2 and shows invasiveness in similar habitats to those in Tennessee OR
- Species meets criteria 1-4, occurs in fewer than 10 counties, and is considered a severe threat in adjacent states or poses substantial management difficulties.

22  **Examples of Severe Threats**

- Princess Tree (*Paulownia tomentosa*)
- Tree of Heaven (*Ailanthus altissima*)
- Privet (Common, European, Chinese)
- Kudzu (*Pueraria montana*)
- Autumn Olive (*Elaeagnus umbellata*)
- Multiflora rose (*Rosa multiflora*)
- Shrubby bushclover (*Lespedeza bicolor*)
- St. John's-wort (*Hypericum perforatum*)
- Asian bittersweet (*Celastrus orbiculatum*)

23  **Examples of Significant Threats**

- Japanese barberry (*Berberis thunbergii*)
- Amur Bush Honeysuckle (*Lonicera mackii*)
- Japanese Spiraea (*Spiraea japonica*)
- Paper mulberry (*Broussonetia papyrifera*)
- Osage Orange (*Maclura pomifera*)
- Peppermint (*Mentha x piperita*)
- Zebra grass (*Miscanthus sinensis*)
- Watercress (*Nasturtium officinale*)

24  **Lesser Threat**

- Japanese wisteria (*Wisteria floridunda*)
- English Ivy (*Hedera helix*)
- Burning Bush (*Euonymus alatus*)
- Rose of Sharon (*Hibiscus syriacus*)
- Grape hyacinth (*Muscari neglectum*)
- Poison hemlock (*Conium maculatum*)

- Grape hyacinth (*Muscari neglectum*)
- Poison hemlock (*Conium maculatum*)
- Bachelor's button (*Centaurea cyanus*)
- Star of Bethlehem (*Ornithogalum umbellatum*)

25  **Alert**

- Butterfly bush (*Buddleja davidii*)
- Goldenrain tree (*Koelreuteria paniculata*)
- Queen Anne's Lace (*Daucus carota*)
- Nandina (*Nandina domestica*)
- Oregon grape (*Mahonia bealei*)
- Chinese wisteria (*Wisteria sinensis*)
- Bradford pear (*Pyrus calleryana*)
- Ox-eye daisy (*Leucanthernum vulgare*)
- Japanese holly (*Ilex crenata*)

26  **Why Do we use invasive exotic plants?**

- What makes them invasive makes them easy to grow
  - Stabilize tough places like slopes
  - Relatively disease-free
  - Fewer insect and animal pests
  - Easy/cheap to propagate
- May be showier than native plants
- Some university extension services still recommend
- Widely available in nurseries and garden centers

27  **What is being done about this?!?**

- TN Department of Agriculture Pest Plant List:
  - Privets (Chinese, Common and European)
  - Non-native Bush Honeysuckles (but not Japanese honeysuckle vine)
  - Purple Loosestrife
  - Multiflora Rose
  - Autumn & Thorny Olive (*Elaeagnus* ssp)

This is a start . . . Many states ban hundreds of exotic pest plants from sale

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28  **Common Invasives in this Area**

- 1 ➤ Tree of Heaven
- Mimosa
- Autumn Olive
- Privet
- Bush Honeysuckle
- Japanese Spirea
- Mahonia (Oregon Grape)
- 2 ➤ English Ivy

- Mahonia (Oregon Grape)

2

- English Ivy
- Japanese Honeysuckle
- Winter Creeper
- Japanese Knotweed
- Burning Bush
- Nandina
- Miscanthus
- Callery (Bradford) Pear

29 30  **Tree of Heaven**

- Grows quickly on disturbed hillsides, crowding out all other growth by forming a dense canopy that does not allow sunlight to filter down
- Resembles the sumacs and hickories, but is easily distinguished by the glandular, notched base on each leaflet (buttons) and large leaf scars on the twigs
- Extremely tolerant of poor soil conditions and can even grow in cement cracks
- Not shade tolerant, but thrive in disturbed forests or edges
- Native to Asia, was first introduced into North America in 1748 by a Pennsylvania gardener. It was widely planted in cities because of its ability to grow in poor conditions.

31 32  **Mimosa**

- Small tree 10 to 50' in height, often having multiple trunks with delicate looking fernlike compound leaves
- Flowers in early summer with showy, feathery, fragrant, pink flowers that develop in groups at the ends of the branches. Fruit are flat, 6" seed pods that develop in the late summer
- Quickly invades any type of disturbed habitat.
- Commonly found in old fields, stream banks, and roadsides.
- Once established, difficult to remove due to the long lived seeds and its ability to re-sprout vigorously
- Asia and was first introduced into the U.S. in 1745 and was used widely used as an ornamental.

33 34  **Autumn Olive**

- Deciduous shrub from 3-20' easily recognized by the silvery, dotted underside of the leaves
- Leaves are alternate and 1" wide. The small, yellowish flowers are abundant and occur in clusters near the stems become red, juicy, and edible fruit in late summer and fall
- Invades old fields, woodland edges, and other disturbed areas forming a dense shrub layer which displaces native species and closes open areas
- Native to China and Japan and was introduced into US in 1830. Widely planted for wildlife habitat, mine reclamation, and shelterbelts.

35 36 37

35 36 37  **Privets**

- Group of shrubs native to Asia, Europe and North Africa
- All privets are thick, evergreen shrubs that grow up to 20' with trunks usually multiple stemmed with many long, leafy branches, making dense thickets.
- Leaves are opposite, oval, up to 2 " long, are leathery and contain high levels of phenolic compounds that make them resistant to insects, herbivores and pesticide control
- Flowers in spring to summer with abundant, white flowers clusters at the end of branches. Fruits are small dark purple to black berries that persist into winter
- Thickets shade and out-compete many native species, and once established is very difficult to remove
- Introduced into the United States in the early 1800s.

38 39  **Bush Honeysuckles**

- Exotic honeysuckles which include Morrow's, January Jasmine, Bell's Bush and Tartarian
- Can rapidly invade and overtake a site, forming a dense shrub layer that crowds and shades out native plant species
- Alter habitats by decreasing light availability, by depleting soil moisture and nutrients, and possibly by releasing toxic chemicals that prevent other plant species from growing in the vicinity
- May compete with native bush honeysuckles for pollinators, resulting in reduced seed set for native species
- Fruits do not offer migrating birds the high-fat, nutrient-rich food sources needed for long flights that are supplied by native plant species.

40 41  **Japanese Spirea**

- Perennial, deciduous shrub that grows to 4 to 6' in height and about the same in width and can be found in many forms and varieties at nurseries
- Leaves are generally egg-shaped, 1" to 3" long, have toothed margins and alternate along the stem. Clusters of attractive, rosy-pink flowers are borne at the tips of branches. Seeds, measuring about 1/10 inch in length, are contained in small lustrous capsules
- Can rapidly take over disturbed areas, creep into meadows, forest openings, and other sites.
- Seeds last for many years in the soil, making its control and the restoration of native vegetation especially difficult.

42 43  **Wintercreeper**

- Evergreen, woody vine or small shrub, growing in mats along the forest floor to 3' high or a vine climbing trees to heights of 40-70'
- Opposite leaves are dark green, oval, slightly toothed, glossy, thick, less than 1" long and often with silvery-white veins
- Young stems are green, becoming light gray and corky with age. Flowers are

often with silvery-white veins

- Young stems are green, becoming light gray and corky with age. Flowers are inconspicuous, yellow-green, five petaled and develop in mid-summer
- Usually only flower when climbing and almost never when trailing along the ground. Fruit are pinkish-red capsules that open to show orange seeds
- Aggressively invades open forests, forest margins, and openings creating a dense ground cover that can displace native understory species and restrict tree seedling establishment
- Native to Asia first introduced in the US in 1907 as an ornamental ground cover plant

44 45  **English Ivy**

- Evergreen vine that can grow to 100' in length (or height); leaves are dark-green and waxy with palmate veins. Leaf shape is variable, but commonly occurs as a 3-5 lobed leaf with a heart-shaped base
- Flowering triggered by sunlight, such as when the vines climb into taller vegetation
- Can invade woodlands, fields and other upland areas and is spread by runners. Seeds can also be spread by birds
- Can grow both along the ground, where it can displace native understory species, and in the tree canopy, often covering branches and slowly killing trees. Ivy vines can also strangle or girdle trees, stressing the tree and making it vulnerable to boring insects and disease.
- Native to Europe and was introduced into North America by early settlers for ornamental purposes. It continues to be widely planted as an ornamental and is stocked by many gardening centers.

46 47 48 49  **Japanese Honeysuckle**

- Evergreen to semi-evergreen vine that can be found either trailing or climbing to over 80' in length. Leaves are opposite, sessile, oval and 1 to 2.5 inches long
- Flowers from April to July - showy, fragrant, tubular, whitish-pink to yellow flowers develop in the axils of the leaves
- Fruits develop in the fall and are small, shiny black berries
- Invades a variety of habitats including forest floors, canopies, roadsides, wetlands, and disturbed areas.
- Can girdle small saplings by twining around them, and it can form dense mats in the canopies of trees, shading everything below
- Native of eastern Asia, it was first introduced in 1806 in Long Island, NY. Has been planted widely throughout the United States as an ornamental, for erosion control, and for wildlife habitat.

50 51  **Japanese Knotweed**

- Upright, shrub-like herbaceous perennial that can grow to over 10'
- Base of the stem above each joint is surrounded by a membranous sheath, stems are smooth, stout and swollen at joints where the leaf meets the stem

50 51 

- Base of the stem above each joint is surrounded by a membranous sheath, stems are smooth, stout and swollen at joints where the leaf meets the stem
- Leaf size may vary, they are normally about 6" by 3" to 4", broadly oval to somewhat triangular and pointed at the tip. Small greenish-white flowers occur in attractive, branched sprays in summer and are followed soon after by small winged fruits. Seeds are triangular, shiny, and very small, about 1/10"
- Can tolerate a variety of adverse conditions including full shade, high temperatures, high salinity, and drought. It is found near water sources, such as along streams and rivers, in low-lying areas, waste places, utility rights-of-way, and around old homesites
- Can quickly become an invasive pest in natural areas after escaping from cultivated gardens.

52 53 54  **Burning Bush**

- Appearance: deciduous shrub, up to 20 ft. (6.1 m) in height, which invades forests throughout the eastern United States. Two to four corky ridges often form along the length of young stems, though they may not appear in shaded areas or closed canopies.
- Foliage: The opposite, dark green leaves are < 2 in. (5 cm) long, smooth, rounded and taper at the tips. The leaves turn a bright crimson to purplish color in the fall.
- Flowers are inconspicuous, are greenish yellow and have four petals. Flowers develop from late April to June and lay flat against the leaves.
- Fruit which appears from September to October are reddish capsules that split to reveal orange fleshy seeds.
- Ecological Threat: Can invade not only a variety of disturbed habitats including forest edges, old fields, and roadsides but also in undisturbed forests. Birds and other wildlife eat and disperse the fruit. Once established, it can form dense thickets, displacing native vegetation. It is native to northeastern Asia and was first introduced into North America in the 1860s for ornamental purposes. This plant is still sold and planted as an ornamental.

55 56 57  **Heavenly Bamboo/Nandina**

- Appearance: invades forests throughout the Southeast United States. It is a small, erect shrub that grows up to 8 ft. (2.4 m) tall.
- Foliage: Leaves are alternate, large, bi- or tri-pinnately compound with small, 1-2 in. (2.5-5.1 cm) long leaflets. The older stems have bark with long, linear furrows. The overlapping leaf sheaths give the main stem the appearance of bamboo, hence the name.
- Flowers: occurs in the spring, when small, white flowers develop in large panicles at the ends of the stems. Flowers have 3-6 reflexed petals.
- Fruits are green berries that mature to a bright red and are very attractive to birds but are poisonous.
- All parts of the plant are toxic
- Ecological Threat: *Nandina domestica* is shade tolerant, which allows it to invade forest edges and interiors. It is native to eastern Asia and India and was first introduced to North America in the early 1800s. It has been planted widely as an ornamental and often escapes

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edges and interiors. It is native to eastern Asia and India and was first introduced to North America in the early 1800s. It has been planted widely as an ornamental and often escapes from old plantings.

58 59 60  **Chinese Silvergrass/Miscanthus**

- Appearance: tall, up to 12 ft. (3.7 m), densely-bunched grass that invades roadsides, forest edges, old fields, and other disturbed areas throughout the United States.
- Foliage: The leaves are long (up to 18 in. [45 cm]), slender, and upright-to-arching with sharp tips and rough margins. The midribs are silvery in color.
- Flowers: The terminal panicle is fan-shaped, long (2 ft. [0.6 m] in length), and silvery to pink in color. Flowering occurs in late summer.
- Fruit: Each fertile lemma in the panicle bears an awn that is 0.3-0.4 in. (8-10 mm) long and is spirally twisted at its base. It can also spread through rhizomes.
- Ecological Threat: *Miscanthus sinensis* escapes from ornamental plantings and can form large clumps along disturbed areas, displacing native vegetation. The grass is also extremely flammable and increases fire risks of invaded areas. It is native to Asia and was introduced into the United States for ornamental purposes during the late 1800s.

61 62 63  **How to Control Invasive Plants**

- Know your pest – type (annual, perennial, biennial), reproduction, when it flowers, root system, control, et al
- Learn about conditions that contribute to presence, persistence and spread
- Practice prevention
- Look at all the control methods available – don't jump to chemical control first
- Be persistent!

64  **Control**

- Prevention is the best strategy – don't plant it!
- Mechanical removing – hoeing, cutting, pulling, burning, tilling, digging
- Chemical – organic or commercial preparations
  - Always read the labeled directions first!
  - Get a copy of the Material Safety Data Sheets (MSDS)
  - Wear protective equipment
- Planting/restoring after control – choose native plants (or non-invasive exotics to taste if necessary)

65  **There's an app for that!**

- <http://www.ipcwebsolutions.org/>
- 

66  **Control Resources**

- Tennessee Invasive Plant Council [www.tnipc.org](http://www.tnipc.org)
- Southeast Exotic Pest Plant Council [www.se-eppc.org](http://www.se-eppc.org)

66 

- Tennessee Invasive Plant Council [www.tnipc.org](http://www.tnipc.org)
- Southeast Exotic Pest Plant Council [www.se-eppc.org](http://www.se-eppc.org)
- Tennessee Department of Environment & Conservation [www.state.tn.us/environment/#](http://www.state.tn.us/environment/#)
- Controlling Invasive Plants, NC Botanical Garden  
<http://ncbg.unc.edu/uploads/files/ControllingBooklet.pdf>

67  **Native Plant Alternatives**

To commonly plant invasives

68  **First, do no harm**

- Don't plant exotic plants with invasive qualities
- If you have exotic invasives, remove them
  - Trying to control invasive characteristics is self-deluding
  - Use mechanical instead of chemical removal methods whenever possible

69  **Second, Replace**

- Consider the ecological value of plants you are using as substitutes or replacements

70 71  **What???**72  **What???**73 74 75 76  **Instead of these exotic shrubs:**

- Burning Bush
- Nandina
- Barberry

77  **Plant these Deciduous Native Shrubs with Outstanding Color**

- Fothergilla (Fothergilla major)
- Virginia Sweetspire (Itea virginica)
- Red or Black Chokeberry (Aronia arbutifolia/melanocarpa)
- Eastern Ninebark (Physocarpus opalifolius)
- Aromatic Sumac (Rhus aromatic)
- Viburnums (Arrowwood, Mapleleaf, Blackhaw, Possumhaw, Cranberry)
- Blueberries

78  **Fothergilla/Witch Alder**79  ***Fothergilla majorii***

- Available in dwarf size "Mt. Airy"
- Sun or part shade; needs moisture
- Excellent spring and fall color; attractive foliage

80 81

- Excellent spring and fall color; attractive foliage

80  **Virginia Sweetspire**81  ***Itea virginica***

- Low growing, draping habit
- Relatively pest-free
- Prefers moist soil
- Full sun or part shade
- Available in many selections
  - Henry's Garnet
  - Merlot
  - Little Henry

82  **Red or Black Chokeberry**83  ***Aronia arbutifolia or melanocarpa/Photinia pyrifolia or melanocarpa***

- Easy to grow
- Prefers sun and well-drained soil but can tolerate moisture (rain gardens)
- "Aronia" is a superfood and high in phytonutrients
- Available in a selection "Brilliantissima"

84  **Eastern Ninebark**85  ***Physocarpus opulifolius***

- Multi-stemmed, fast-growing, low maintenance with 4-seasons of interest
- Draping form
- Grows best in moist sites, will tolerate some shade
- Incredible selection of cultivars with striking leaf color
  - Diablo
  - Coppertina
  - Dart's Gold
  - Snowfall
  - Summerwine
  -

86  **Fragrant Sumac**87  ***Rhus aromatica***

- Low-growing, spreading: good for erosion control
- Drought tolerant
- Berries are highly nutritious for birds and other wild-life
- Related to Poison ivy, but not this plant is not poisonous
- Popular cultivar is "Gro-low"

88  **Viburnums**89

88  **Viburnums**89  **Native Viburnums**

- Acerifolia, Bractaeum, Dentatum, Nudum, Prunifolium, Rudifolium, Trilobum
- Grow in many different conditions from full sun to full shade (*V. acerifolium*)
- Showy flowers become nutritious berries
- Many selections offering landscaping shapes and sizes

90  **Blueberries**91  **Vaccinium corymbosum**

- Yes! Blueberries are an outstanding landscaping plant!
- Grow in sunny locations for best fruit production, but will grow well in part shade
- Great for bumble bees and other native bees
- Share the berries with the birds
- Many cultivars for different conditions

92  **Instead of these evergreen exotic invasives**

- Privet
- Japanese holly (*Ilex crenata*)
- Barberry
- Or even non-invasive exotics evergreens like Boxwood, Leyland Cypress, non-native Azaleas
- 

93  **Plant these Evergreen Native Shrubs**

- Arborvitae (*Thuja occidentalis*)
- Inkberry Holly (*Ilex nigra*)
- American Holly (*Ilex opaca*)
- Catawba, Rosebay Rhododendron (*Rhododendron catawbiense*, maximum, et al)
- Southern Waxmyrtle (*Morella cerifera*)
- Coastal Doghobble (*Leucothoe axillaris*)

94  **Arborvitae**95  ***Thuja occidentalis***

- Grows best in full sun, well-drained soil
- Useful for screening
- Excellent shrub for wildlife – provides shelter
- Available in different forms and sizes
  - Small tree (Hetz's Wintergreen)
  - Narrow Spire (Brabant)
  - Small globe (Anna's Magic Ball)
  - Color (Rheingold, Nigra)
- 

96  **Inkberry Holly**97  ***Ilex nigra***

- Grows best in full sun, moist soil

96 97  ***Ilex nigra***

- Grows best in full sun, moist soil
- Excellent rain garden plant
- Need male pollinator for berry production
- Cultivar options for size and color
  - Dwarf (Shamrock)
  - Compact (Compacta)
  - Foliage color (Emerald, Nigra)
  - Berry color – “Ivory Queen” (white)

98  **Southern Waxmyrtle**99  ***Myrica cerifera***

- Semi-evergreen, suckering shrub
- Screen or Hedge
- Moist soils
- Profuse berry production a favorite of birds; need male and female plants
- Available in cultivars
  - Little Bull (dwarf)
  - Hiwassee\* (cold tolerant)
  - Wolf Bay (taller and thicker)

100  **Coastal Doghobble**101  ***Leucothoe axillaris***

- Low, broadleaf evergreen with spreading, vase-like shape (3' height, 6' spread)
- Prefers moist, acidic soil, and part-shade
- Fragrant, white blooms in April-May
- Available in several cultivars
  - Margie Jenkins (thicker leaves)
  - Curly Red
  - Girard's Rainbow (variegated leaf)
  -

102  **Instead of these exotic flowering shrubs**

- Rose of Sharon
- Butterflybush (Buddleia)
- Japanese Spirea
- 

103  **Buddleia: The plant that dominates Britain's railways**104  **Plant these Native Flowering Shrubs**

- Summersweet (Clethra alnifolia)
- Bottlebrush Buckeye (Aesculus parviflora)
- Virginia Sweetspire (Itea virginica)
- Steeplebush (Spirea tomentosa)
- Elderberry (Sambucus nigra-canadensis)

105 106

- Steeplebush (*Spirea tomentosa*)
- Elderberry (*Sambucus nigra-canadensis*)
- Carolina Allspice (*Calycanthus florida*)

105  **Summersweet/Pepperbush**

106  ***Clethra alnifolia***

- Glossy green leaves, multi-twig, spreading
- blooms in late spring with fragrant white or pink clusters of flowers
- Prefers moist soil and part shade but will grow in shady locations
- Several cultivars available
  - Hummingbird (smaller, compact)
  - Ruby Spice (pink flowers)
  - Sixteen Candles (smaller, upright)

107  **Bottlebrush Buckeye**

108  ***Aesculus parviflora***

- Showy flowers in late spring – early summer
- Dense, mounded suckering shrub
- Grows best in part shade to full shade
- Requires moist soil

109  **Steeplebush**

110  ***Spiraea tomentosa***

- Smaller, spreading shrub that blooms in late summer
- Tiny pink to rose-purple flowers on steeple-shaped, terminal spikes
- Tolerates a wide range of soils, but needs moist acidic soils to grow well
- Grows best in full sun

111  **Carolina Allspice/Sweetshrub**

112  ***Calycanthus floridus***

- Low maintenance, suckering shrub that grows 6 -9'
- Very fragrant flowers bloom in mid-spring
- Shade tolerant, grows in heavy soils
- One cultivar available "Athens" that has yellow flowers

113  **Instead of these exotic invasive groundcovers**

- English Ivy
- Periwinkle
- Japanese Honeysuckle
- Wintercreeper

114  **Plant these Native Groundcovers**

- Allegheny Spurge (*Pachysandra procumbens*)
- Wild Ginger (*Asarum canadense*)
- Native Ferns

114 

- ▶ Wild Ginger (*Asarum canadense*)
- ▶ Native Ferns
- ▶ Pussytoes (*Antennaria plantaginifolia*)
- ▶ Stonecrop (*Sedum ternatum*)
- ▶ Creeping Phlox (*Phlox subulata*, *Phlox stolonifera*)
- ▶ Foamflower (*Tiarella cordifolia*)

115  **Groundcovers-Evergreen**116  **Allegheny Spurge**  
*Pachysandra procumbens*117  **Wild Ginger (semi-evergreen)**  
*Asarum canadense*118  **Native Ferns**119 120  **Pussytoes & Stonecrop Sedum**121  **Native Phlox**  
*Phlox stolonifera*, *Phlox subulata*, etc122  **Exotic ornamental grasses**  
*instead of this . . .*

- ▶ Chinese Silvergrass, Zebra Grass (*Miscanthus sinensis*)
- ▶ Pampas Grass
- ▶ Japanese Bloodgrass (*Imperata cylindrical*) – a cultivar of a highly invasive exotic
- ▶

123  **Alternative native grasses**  
*. . . plant this!*

- Ornamental Grasses
- ▶ River Oats
  - ▶ Bottlebrush Grass
  - ▶ Little Bluestem
  - ▶ Switchgrass
  - ▶ Sideoats Grama
  - ▶ Prairie Dropseed
  - ▶

All these native plants support wildlife by providing food and shelter

124  **River Oats**  
*Chasmanthium latifolium*125  **Bottlebrush Grass**  
*Elymus hystrix*126  **Little Bluestem**  
*Schizachyrium scoparium*127 128

125 

126  **Little Bluestem**  
*Schizachyrium scoparium*

127  **Pink Muhly Grass**  
*Muhlenbergia capillaris*

128  **Switchgrass**  
*Panicum virgatum*

129  **Sideoats Grama**  
*Bouteloua curtipendula*

130  **Purple Love Grass**  
*Eragrostis spectabilis*

131  **Prairie Dropseed**  
*Sporobolus heterolepis*

132 

133  **Where to buy Native Plants**

- ▶ Trailhead Nursery, Signal Mountain, TN
- ▶ Reflection Riding spring and fall plant sale
- ▶ Overhill Gardens, Vonore, TN
- ▶ Georgia Native Plant Society spring and fall plant sales
- ▶ For more nurseries in this region: [www.tennesseevalley.wildones.org/learn/resources](http://www.tennesseevalley.wildones.org/learn/resources)
- ▶ Join the Tennessee Valley Chapter of Wild Ones

134  **Credits**

- ▶ Photographic montages of Tree of Heaven, Mimosa, Autumn Olive, Privet, Bush Honeysuckle, Japanese Honeysuckle, Wintercreeper, English Ivy, and Cogongrass from "Nonnative Invasive Plants of Southern Forests" by James H. Miller, USDA Forest Service Research Station General Technical Report SRS-XX
- ▶ Landscape photographs from Rick Darke, John MaGee Designs, W. Gary Smith, Doug Tallamy
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