

**A Guidebook to
Invasive Plants in Southern Forests
Second Installment**



Only the new 19 species are included in this edition.

Lewis Zimmerman adapted this guidebook from the Field Guide
by
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FOR INTERNAL USE ONLY!

This handbook was created specifically for use by the U.S. Forest Service Southern Research Station (SRS), Forest Inventory and Analysis (FIA) field survey crews. This second installment contains the 19 additional species added to our inventory beginning with SRS-FIA manual version 6.0.

Front cover: Kudzu infestation, aerial photo by John D. Byrd, Mississippi State University, Bugwood.org

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June 2013

Southern Research Station
Forest Inventory and Analysis
Lewis Zimmerman
865-862-2092

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Common names: five-leaf akebia, chocolate vine

Plant. Woody, semi-evergreen or evergreen vine to 40 feet (12 m) long, climbing by twining to dangle and sprawl in tree and shrub crowns and/or forming solid ground cover, up to 1 foot (30 cm) deep.

Stem. Woody, round, to 4 inches (10 cm) in diameter at the base, with numerous branching stems twining for support on plants or natural trellises or forming ground cover and rooting where nodes contact soil. Lime green and smooth, becoming dotted with many brownish dots (lenticels), then light and dark gray striated and finally light gray speckled with raised gray dots. Leaf scars circular and cleft, protruding alternately or in clusters along the stem.

Leaves. Alternate, palmately compound, usually 5 leaflets, obovate to elliptic or oblong, 1 to 3 inches (2.5 to 8 cm) long and 0.4 to 1.5 inches (1 to 4 cm) wide, terminal leaflet usually the largest. New leaves purple tinged turning dull blue green, midvein and 2 lateral veins lighter above and leaflet whitish beneath. Margins entire, tip notched or blunt with tiny hair. Rachis (leaf stem) to 4 inches (10 cm) long, while leaflet stems (petiolules) shorter to only 1 inch (2.5 cm) long. Where deciduous, leaves appear early in spring with no color change before dropping in winter at the first frost.

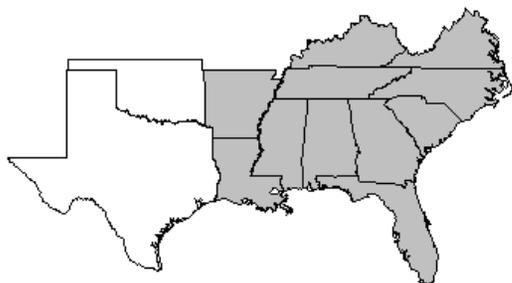
Flowers. March to April. Small purple-to-violet flowers of 3 sepals (no true petals) in long-stalked clusters of 2 to 5 that appear with leaves and can be unnoticed within the foliage. Fragrance likened to chocolate. Male flowers terminal in clusters, smaller, 0.5 to 0.75 inch (1.2 to 1.6 cm) wide and female flowers, 1 to 1.5 inches (2.5 to 4 cm) wide, extend outward on long stalks.

Fruit and seeds. May to ripening in October. Rarely fruiting. Dangling clusters of 1 to 5 sausage-shaped, fleshy pods, 2 to 4 inches (5 to 10 cm) long, tipped like a banana and having a lengthwise suture along one side. Light green, turning pink to purplish with lighter speckles and a waxy coating. When ripe the skin splits to reveal a pulpy, edible inner core that splits further to expose many (100+) imbedded black seeds.

Ecology. Occurs on a wide range of sites, somewhat drought tolerant but prefers moist soils, full sun to partial shade. The dense ground cover displaces native plants and wildlife while vigorous climbing vines cover and kill small trees and shrubs.

Resembles bottlebrush buckeye (*Aesculus parviflora*) when young due to similar palmately compound leaves with 5 leaflets, but buckeye leaves have pointed tips and pronounced lateral veins.

States with suspected infestations are shown in gray.



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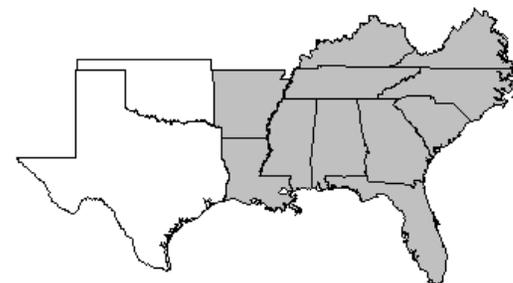
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Akebia quinata

AKQU

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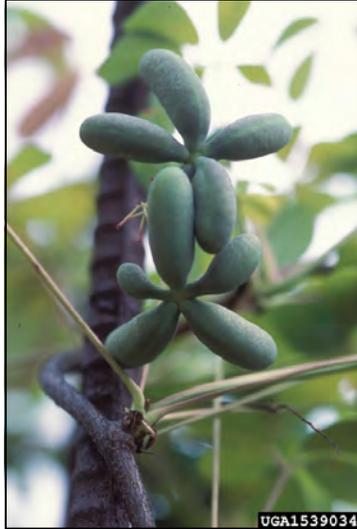
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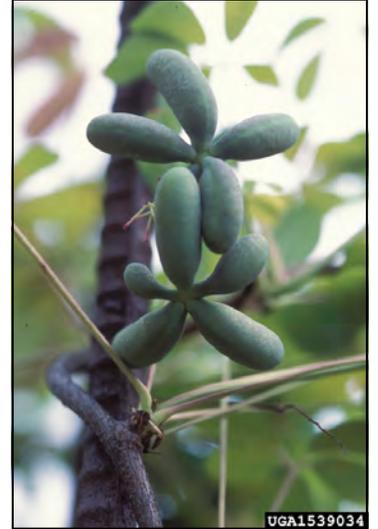
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Ampelopsis brevipedunculata

AMBR7

Common names: amur peppervine, porcelain berry

Plant. Deciduous, woody vine of the grape family to 20 feet (5 m) long, running and climbing over shrub and tree crowns and rock faces by clinging tendrils, forming thicket and arbor infestations.

Stem. Woody vine to 4 inches (10 cm) diameter, climbing by tendrils with forked ends and fine hairs. Tendrils occur on new growth, opposite leaves. New stems are whitish green, smooth to lightly hairy, slightly square with regularly spaced swollen nodes, increasingly with raised dots (lenticels) that become corky and reddish, eventually forming linear gray-reddish bark patches. Bark glossy light gray becoming gray and rough with persistent swollen nodes.

Leaves. Alternate, simple and heart shaped in outline but variable in form from entire with 1 to 3 tips to those with multiple incised, rounded to scalloped lobes between 3 to 5 prominent whitish veins radiating from the base. Margins coarsely toothed with distinctive fine whitish hair tips. Dark green to blue green, shiny above and fine hairy beneath, becoming yellow in fall. New leaves tiny at branch tips, progressively increasing up to 6 inches (15 cm) long and 4 inches (10 cm) wide. Petioles 2.5 inches (6 cm) long, light green and hairless, with greatly swollen bases.

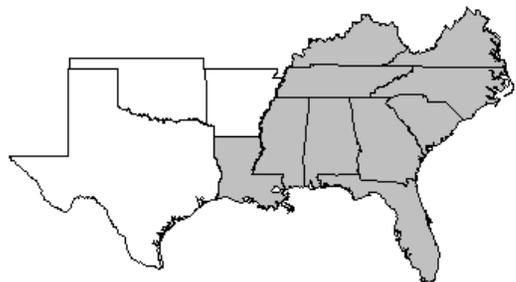
Flowers. June to August. Numerous tiny-branched clusters (cymes), with up to 40 flowers, opposite new leaves and fruit in midsummer. Flowers tiny with 5 spreading white petals (grape petals touch at tips) and 5 yellow erect stamens.

Fruit and seeds. July to January. Drupes in clusters, shiny, spherical, to 0.5 inch (1.2 cm) wide, green tipped with a persistent pistil and turning whitish, yellow, purple, turquoise, and porcelain blue (thus the common name), with all colors sometimes present. Each drupe contains 2 to 4 seeds. Persist in winter at most leaf axils.

Ecology. Grows rapidly to form exclusive infestations along forest edges. Found as scattered plants to extensive infestations in forest openings, margins, and roadsides as well as along stream margins and riverbanks. Areas from full sun to partial shade. Colonizes by prolific vine growth that roots at nodes.

Resembles grape vines (*Vitis* spp.) but can be distinguished by the whitish pith versus grape's darker pith, and forked tendrils versus muscadine's linear tendrils. **Also resembles** the native heartleaf peppervine (*A.cordata*) with unlobed leaves and hairless stems.

States with suspected infestations are shown in gray.



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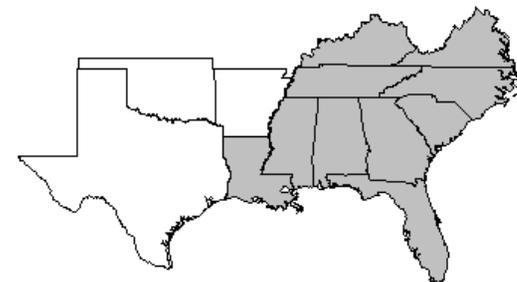
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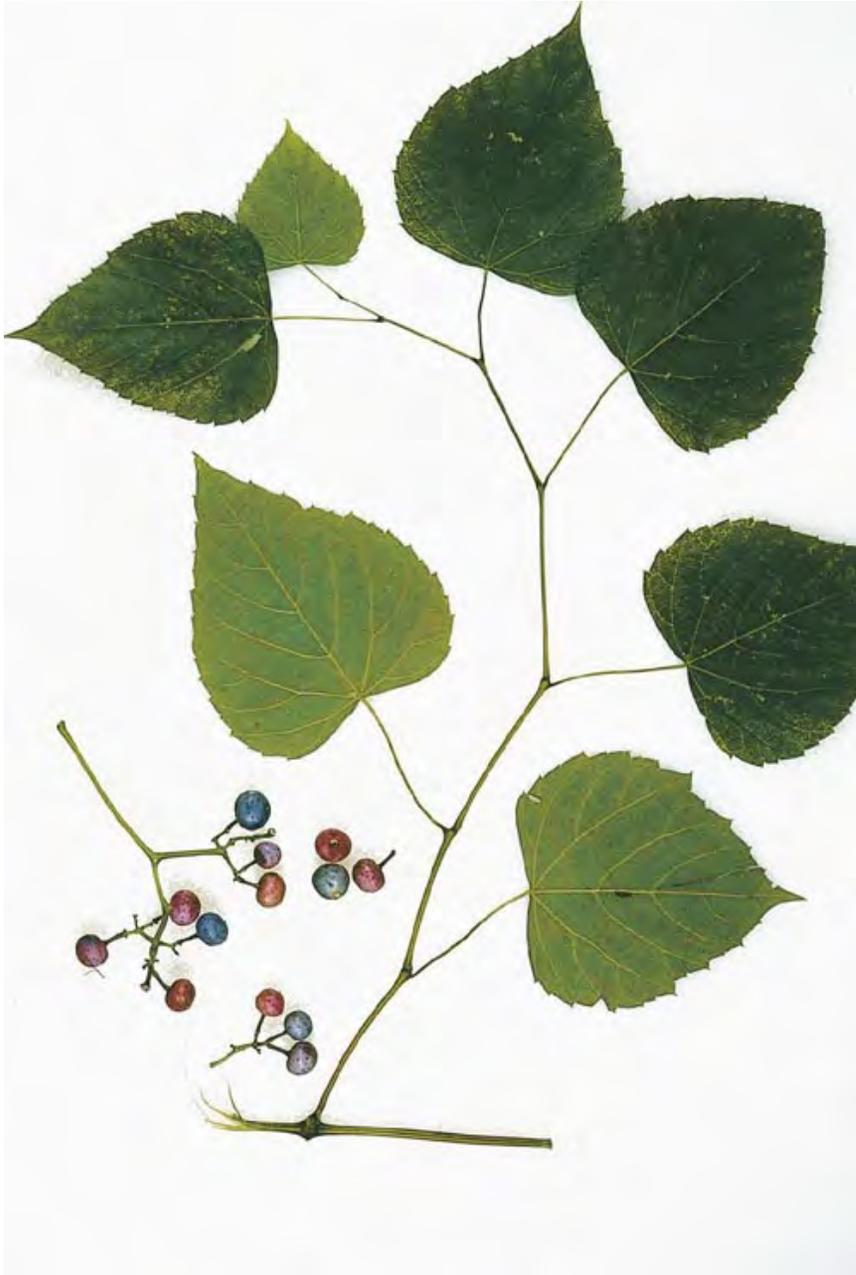
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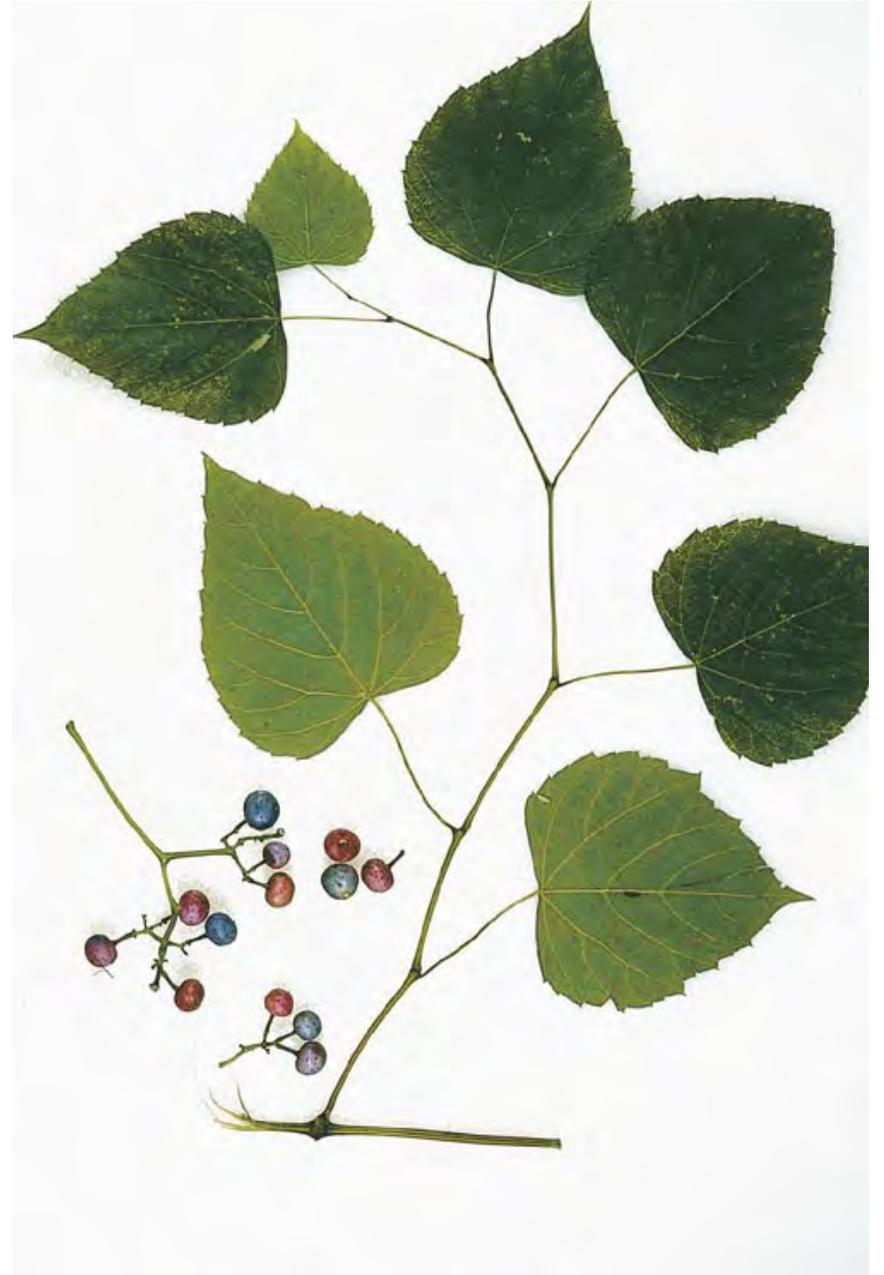
LOOK-A-LIKE

Ampelopsis cordata



LOOK-A-LIKE

Ampelopsis cordata



LOOK-A-LIKE

Ampelopsis arborea



LOOK-A-LIKE

Ampelopsis arborea



Stem Comparison with Vitis sp. (Grape)

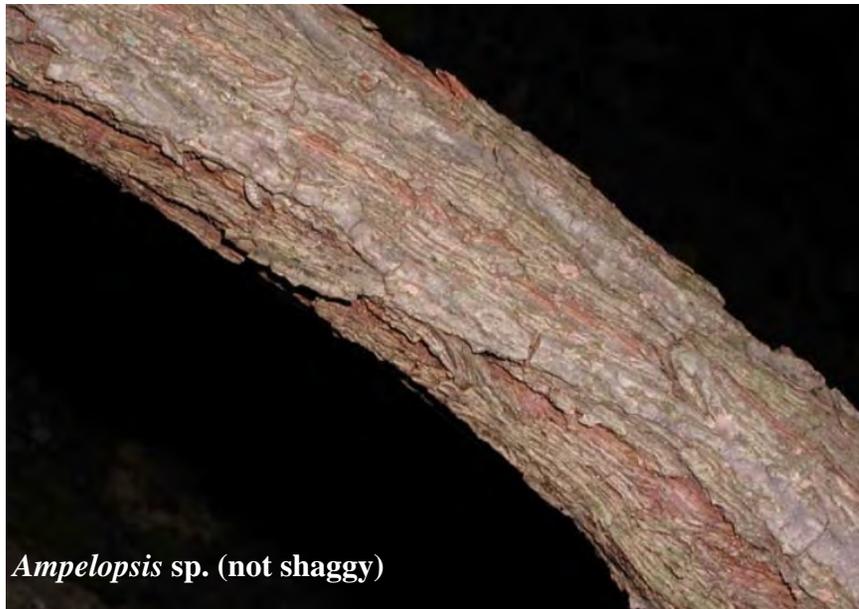


Vitis sp. (shaggy)

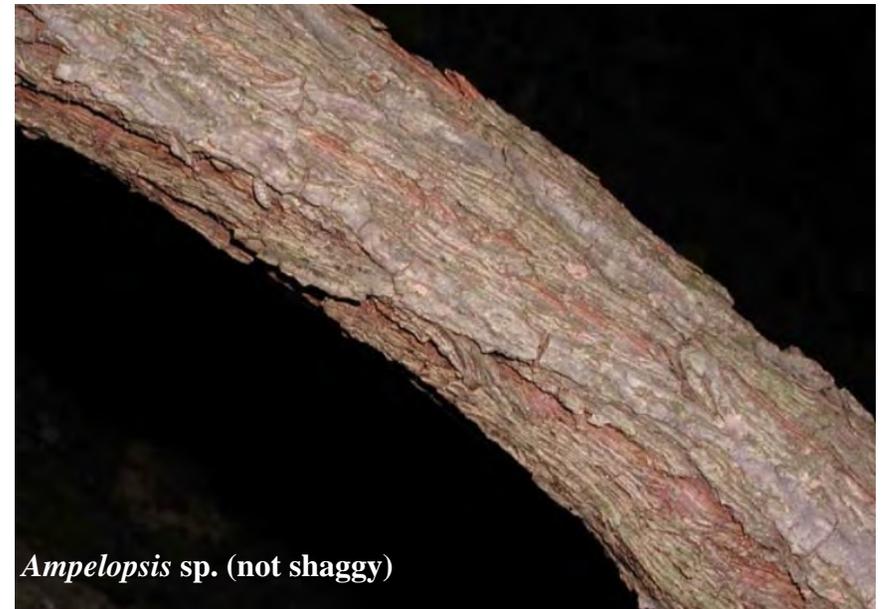
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Vitis sp. (shaggy)



Ampelopsis sp. (not shaggy)



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Ardisia crenata

ARCR80

Common names: hen's eyes, coral ardisia, spiceberry, coralberry, Christmas berry

Plant. Evergreen, erect shrub, 2 to 6 feet (0.6 to 1.8 m) in height with short stems or multi-stemmed bushy clumps. Shiny green leaves with distinct thickened, wavy margins, drooping white to pink axillary flowers, and dangling, bright red berries in fall and through winter. No rhizomes.

Stem. Twigs light green and shiny, projecting alternately outward from light brown, erect stems, becoming increasingly rough, with grayish bark. Leaf and stem scars broadly V-shaped with a raised bud at top.

Leaves. Alternate, 4 to 8 inches (10 to 20 cm) long, elliptic to narrowly lanceolate or oblanceolate with a pointed tip, leathery with scalloped crenate margins (thus the scientific name, *crenata*) and raised callused notches. Shiny and dark green above with a paler midvein and pale green beneath, tapering to a short winged petiole.

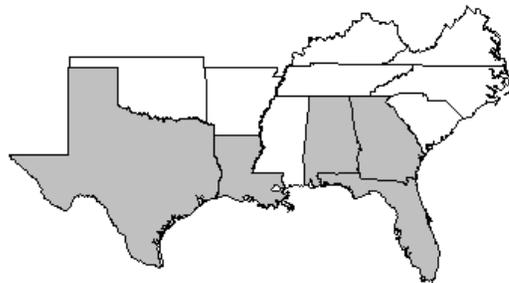
Flowers. April to October. Axillary clusters dangling below the leaves, with green to red stems, conical buds mixed with flowers having 4 to 5 white to pink petals, yellow centers and eventually an extending style.

Fruit and seeds. November to March. Abundant, spherical 1-seeded drupes, 0.2 to 0.3 inch (6 to 8 mm) wide, hanging down in fanned clusters often jutting outward on lower branch ends, green then ripening through shades of coral to finally bright scarlet.

Ecology. Forms infestations in partial shade or full shade and grows best in moist, well-drained soils. Forms dense infestations to shade out ground flora. Spreads by animal-dispersed seed and produces fruit within 2 years.

Resembles only the related shoebutt (*A. elliptica*), which does not have wavy margins and has fruit ripening to black, and only invasive in FL wetlands at present.

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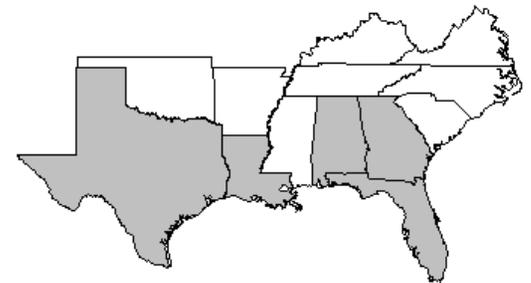
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LOOK-A-LIKE

Ardisia elliptica - shoebuttan ardisia



Tony Pemas

LOOK-A-LIKE

Ardisia elliptica - shoebuttan ardisia



Tony Pemas

Ardisia elliptica - shoebuttan ardisia



seedlings

UGA5275033

Tony Pemas

Ardisia elliptica - shoebuttan ardisia



seedlings

UGA5275033

Tony Pemas

Berberis thunbergii**BETH**

Synonym: *B. thunbergii* var. *atropurpurea*

Common name: Japanese barberry

Plant. Tardily deciduous, compact and spreading shrub, 2 to 4 feet (60 to 120 cm) in height and slightly wider, occasionally 6 to 8 feet (1.8 to 3 m) in height. Roots shallow, yellow inside as are stems.

Stem. Twigs slender, reddish brown to gray, ridged to varying degrees, a single sharp spine to 0.6 inch (1.5 cm) long at each node, below a stubby, conelike stacked bud (evident in winter). Stems sometimes wavy in appearance owing to numerous alternate nodes. Alternate branching with bark becoming irregularly furrowed, light gray to tan, with scattered, stacked buds remaining.

Leaves. Alternate in tight clusters, spatulate (paddle shaped) with entire margins and bases narrowing to the stem, with rounded or faintly pointed tips, variable due to cultivars, 0.5 to 1.5 inches (1.2 to 3.7 cm) long. Blue green to green to reddish above and pale to whitish below, turning orange and golden to red and crimson in winter. Appear early and remain late.

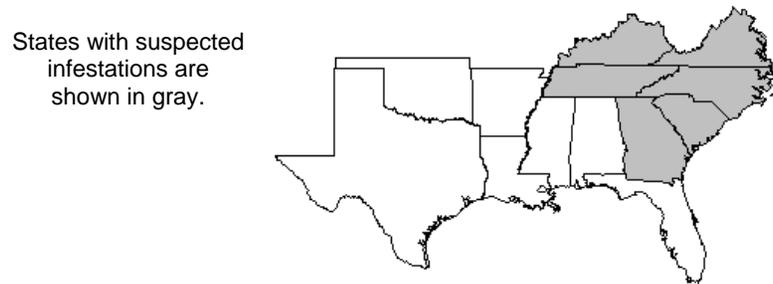
Flowers. April to May. Dangling singly or in small clusters from most nodes, 6 white to yellowish-white to yellow petals, 0.2 to 0.3 inch (5 to 6 mm) wide with yellow centers.

Fruit and seeds. May and maturing by October, remaining until March. Dangling, egg-shaped berries, red and shiny, fleshy, 0.3 to 0.4 inch (8 to 11 mm) long. Each containing 1 brown, pitted seed, oblong, 0.08 to 0.20 inch (2 to 5 mm) long.

Ecology. Forms dense infestations under forest canopies, but prefers partial shade of edges, to exclude other plants. Infestations intensify by root sprouts and rooting of drooping stems.

Resembles both the nonnative invasive common or European barberry (*B. vulgaris*) and the native American barberry (*B. Canadensis*), while both have finely bristled leaf margins. **Also resembles** a rare escaped wintergreen barberry (*B. julianae*) in the mountains that has leathery, evergreen leaves.

Distribution. Found as scattered plants and a range of infestation densities in GA, SC, NC, TN, KY, and VA.

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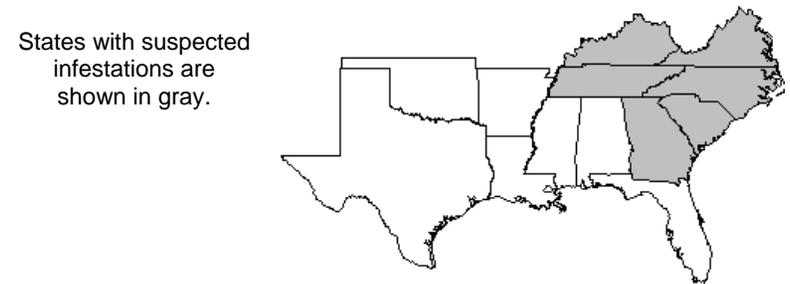
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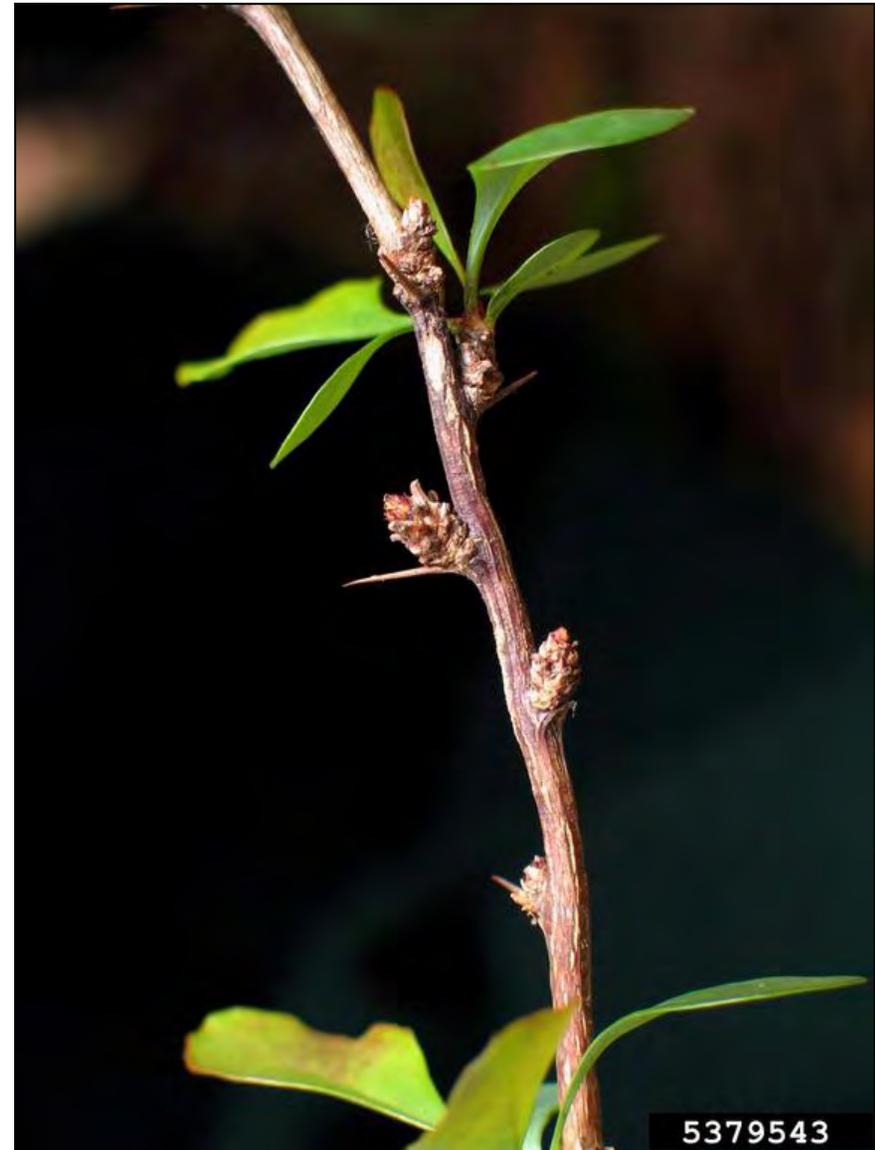
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UGA5270035



UGA5270035

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LOOK-A-LIKE



Berberis canadensis - native

LOOK-A-LIKE



Berberis canadensis - native



Berberis canadensis



Berberis canadensis

Broussonetia papyrifera

BRPA4

Synonym: *Morus papyrifera*

Common name: paper mulberry

Plant. Deciduous, large shrub or tree to 50 feet (15 m) in height and boles to 2 feet (0.6 m) in diameter with a round crown. Often appears as a shrub, forming thickets from root sprouts. Shallow rooted and prone to windthrow. Separate male and female plants (dioecious).

Stem. Twigs moderately stout, zigzagging, dark to light gray, sometimes greenish to reddish brown, covered with silvery down with distinct orange dots (lenticels) when young. Oval leaf scars have protruding rims with stipular scars of light lines on both sides and a hairy, domed flower bud in winter. Branches smooth and mottled gray increasingly with protruding orange-tan lenticels, leaf and stipular scars. Pith white with woody diaphragms at nodes. Bark light gray, braided with pale orange to light tan stripes, becoming yellowish with age.

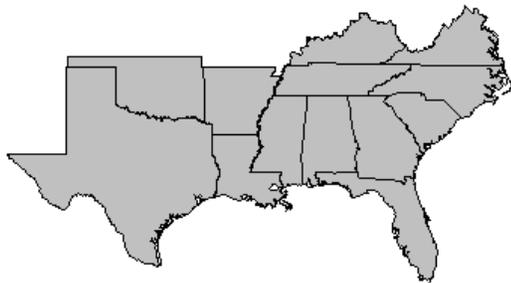
Leaves. Alternate, sometimes opposite or whorled, oval to heart shaped, 3 to 10 inches (7.5 to 25 cm) long, sometimes with 1 to 6 deeply rounded sinuses. Dark green and sandpapery above, whitish and velvety below. Margins finely serrate to sharply toothed except near the base. Petioles 2 to 5 inches (5.0 to 12.5 cm) long, light green, and hairy. Stipules quickly shed.

Flowers. April to May. Clusters of tiny male flowers are elongate, woolly, and drooping, 2.5 to 3 inches (6 to 8 cm) long. Female flowers globular, 1 inch (2.5 cm) wide. Both pale green turning purple.

Fruit and seeds. July to August on female plants (rare in Southeast). Globular and compound, orange turning reddish purple, 0.7 to 1 inch (1.8 to 2.5 cm) wide, with many embedded or protruding tiny, red seeds.

Ecology. Rapid growing, forming thickets and dense stands in fencerows, disturbed sites, and forest edges. Colonizes by root sprouts and spreads by rarely produced animal-dispersed seeds.

Resembles both the native red mulberry (*Morus rubra*) and the nonnative white mulberry (*M.alba*), which also have a mixture of lobed and unlobed shaped leaves but are not velvety hairy beneath and do not have rounded fruit (theirs are elongated).



Broussonetia papyrifera

BRPA4

Synonym: *Morus papyrifera*

Common name: paper mulberry

Plant. Deciduous, large shrub or tree to 50 feet (15 m) in height and boles to 2 feet (0.6 m) in diameter with a round crown. Often appears as a shrub, forming thickets from root sprouts. Shallow rooted and prone to windthrow. Separate male and female plants (dioecious).

Stem. Twigs moderately stout, zigzagging, dark to light gray, sometimes greenish to reddish brown, covered with silvery down with distinct orange dots (lenticels) when young. Oval leaf scars have protruding rims with stipular scars of light lines on both sides and a hairy, domed flower bud in winter. Branches smooth and mottled gray increasingly with protruding orange-tan lenticels, leaf and stipular scars. Pith white with woody diaphragms at nodes. Bark light gray, braided with pale orange to light tan stripes, becoming yellowish with age.

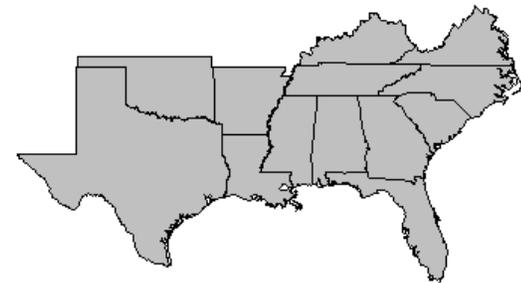
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Flowers. April to May. Clusters of tiny male flowers are elongate, woolly, and drooping, 2.5 to 3 inches (6 to 8 cm) long. Female flowers globular, 1 inch (2.5 cm) wide. Both pale green turning purple.

Fruit and seeds. July to August on female plants (rare in Southeast). Globular and compound, orange turning reddish purple, 0.7 to 1 inch (1.8 to 2.5 cm) wide, with many embedded or protruding tiny, red seeds.

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Broussonetia papyrifera

BRPA4

Synonym: *Morus papyrifera*
Common name: paper mulberry



Broussonetia papyrifera

BRPA4

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Common name: paper mulberry



Broussonetia papyrifera

BRPA4

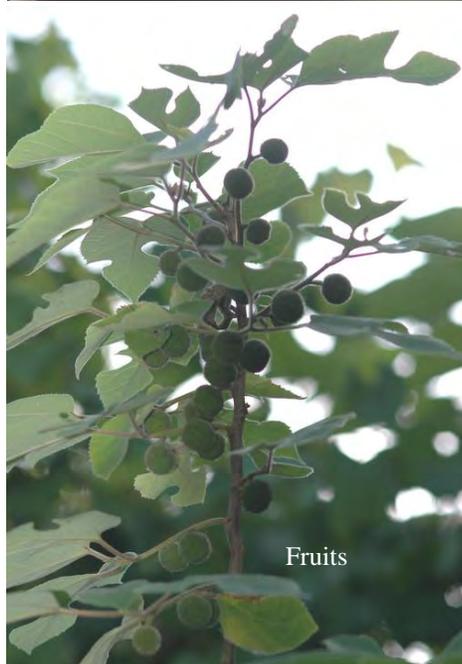
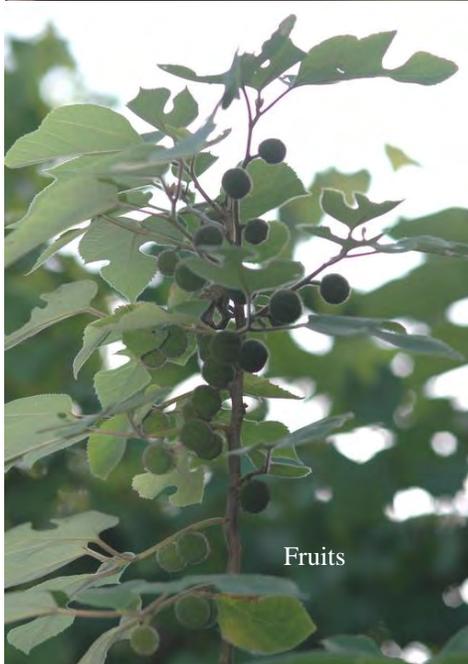
Synonym: *Morus papyrifera*
Common name: paper mulberry



Broussonetia papyrifera

BRPA4

Synonym: *Morus papyrifera*
Common name: paper mulberry



LOOK-A-LIKE

Morus alba - white mulberry



LOOK-A-LIKE

Morus alba - white mulberry



Cinnamomum camphora

CICA

Common names: Camphortree, camphor laurel, shiu leaf, gum camphor, laurel camphor

Plant. Evergreen tree 60 to 100 feet (18 to 30 m) in height and boles up to 5 feet (1.5 m) in diameter. Rapid growing, forming thickets and dense stands in fencerows, disturbed sites, and adjacent upland forests. Grows in well-drained, acid to basic soils and can withstand partial shade. Cannot tolerate extended cold temperatures below 20 °F (-6 °C).

Stem. Twigs slender, smooth, and green to yellowish green sometimes tinged with red, with scattered light dots (lenticels). Corky ridges encircle junctures of new growth with jutting leaf scars on prior year's growth. Buds 0.5 inch (1.2 cm) long, sharp-pointed, with overlapping scales. Branches green eventually reddish, smooth and glossy, increasingly covered with gray corky ridges and plates that fissure with age. Bark light grayish brown and widely fissured, developing vertical plates with age.

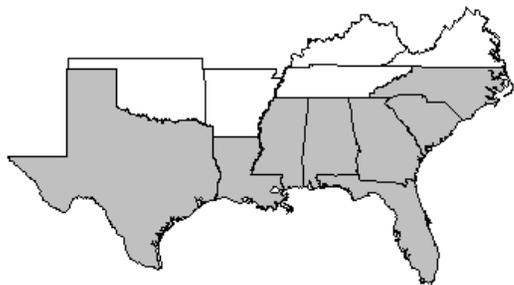
Leaves. Alternate but more clustered at twig tips, evergreen, leathery and glossy with a camphor odor when crushed, lanceolate, ovate to obovate, 2 to 4 inches (5 to 10 cm) long and 0.8 to 2 inches (2 to 5 cm) wide. Burgundy when young turning dark green with light-green veins above, whitish green beneath with tiny, brownish glands in axils of main veins, also evident as light dots on the upper surface. Margins entire, yellowish green, and wavy. Petioles slender to 1 inch (2.5 cm) long.

Flowers. May. Slender, stalked, axillary panicles, 2 to 3 inches (5 to 7 cm) long with perfect tiny, greenish-white, fragrant flowers, with both male and female parts.

Fruit and seeds. July to February. Many fleshy, rounded drupes, 0.3 inch (0.7 cm) wide, dangling, green turning black with a funnel-shaped, green base.

Resembles another nonnative invasive, Chinese tallowtree (*Triadica sebifera*) which is deciduous and emits no camphor odor. **Also resembles** Carolina laurelcherry *Prunus caroliniana*, considered an invasive native evergreen tree that has smooth, dark gray bark and leaves that emit an almond scent when crushed.

States with suspected infestations are shown in gray.



Cinnamomum camphora

CICA

Common names: Camphortree, camphor laurel, shiu leaf, gum camphor, laurel camphor

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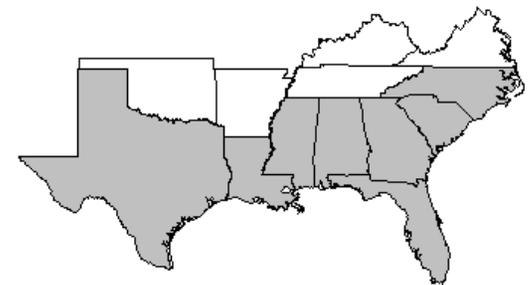
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Cinnamomum camphora

CICA

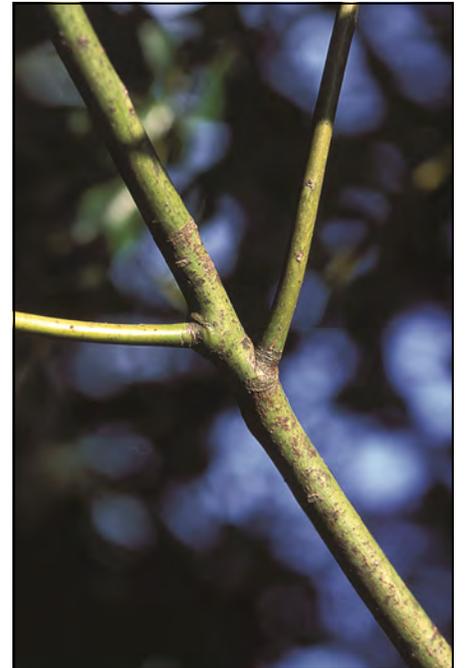
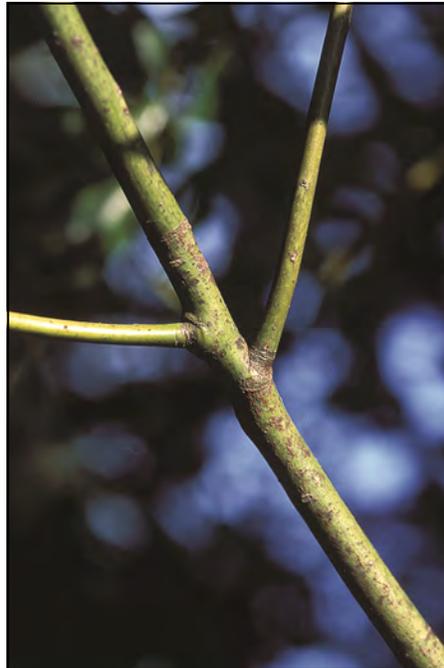
Common names: Camphortree, camphor laurel, shiu leaf,
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Cinnamomum camphora

CICA

Common names: Camphortree, camphor laurel, shiu leaf,
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Cinnamomum camphora

CICA

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Cinnamomum camphora

CICA

Common names: Camphortree, camphor laurel, shiu leaf,
gum camphor, laurel camphor



LOOK-A-LIKES

Triadica sebifera - tallowtree, popcorn tree



LOOK-A-LIKES

Triadica sebifera - tallowtree, popcorn tree



Prunus caroliniana - Carolina laurelcherry



Prunus caroliniana - Carolina laurelcherry



Eragrostis curvula

ERCU2

Common names: weeping lovegrass, African lovegrass

Plant. Densely clumping to up to 2.5 feet (75 cm) tall, perennial, warm-season grass formed from flattened, basally interconnected sprays of long, thin and wiry basal leaves that arch and droop in all directions almost touching the ground (thus the common name “weeping”). Evergreen or semi-evergreen in the southern Coastal Plain, while dormant whitish, wispy clumps are highly recognizable further north.

Stem (culm). Not apparent except for the flower/seed stalks. Leaves arise from a tightly packed, short, flattened group of stems hidden in hairy basal sheaths that persist over winter.

Leaves. Thin, less than a quarter of an inch (1 to 4 mm) wide, with margins often rolled inward, to several feet (1 m) long and arching over at mid-leaf to almost touch the ground. Originating from tightly packed, dense, flattened bundles of leaves, 6 to 12 inches (15 to 30 cm) long encased by persistent sheaths, having scattered to dense hairs.

Flowers. June to July. Open spreading panicles, lavender-gray color, 8 to 10 inches (20 to 25 cm) long, on stalks to 6 feet (1.9 m) tall, with numerous projecting or erect lateral branches, being shorter in the upper portion with numerous secondary branchlets that bear stacks of tiny, grayish-green, husked flowers.

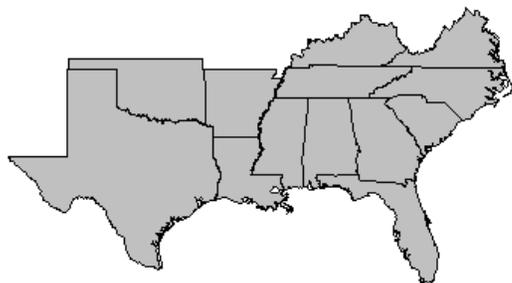
Seeds. July to November. Husks light tan and the grain reddish brown, 0.15 to 0.22 inch (4 to 5.5 mm) long, released within the husks.

Ecology. Still widely seeded for soil stabilization along highways, on surface mines, and around businesses and homes. Adapted to a wide range of habitats from moist to dry, hot to cold, and soils that are acid to basic. Prefers well-drained sandy loam soils and will not tolerate standing water. Clumps increase by basal shoots and infestations increase in density by seedfall. Occurs as dense colonies in old fields and along field margins and right-of-ways, where it invades new forest plantations, open forests, and forest openings.

Resembles no other grasses due to its unique growth habit of tight clumps of “weeping” long and narrow leaves. Many other species of native and nonnative lovegrasses produce similar seedstalks.

Distribution. Found throughout the region with frequent and dense infestations in KY, VA, TN, and NC and the northern portions of AL, GA, and SC.

States with suspected infestations are shown in gray.



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ERCU2

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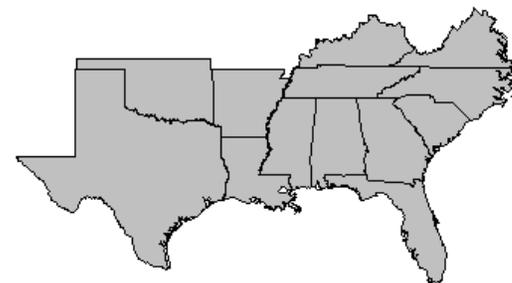
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ERCU2

Common names: weeping lovegrass, African lovegrass



Eragrostis curvula

ERCU2

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Eragrostis curvula

ERCU2

Common names: weeping lovegrass, African lovegrass



Eragrostis curvula

ERCU2

Common names: weeping lovegrass, African lovegrass



Common names: weeping lovegrass, African lovegrass



Tuft of hairs at base of inflorescence

Common names: weeping lovegrass, African lovegrass



Tuft of hairs at base of inflorescence

LOOK-A-LIKE



Eragrostis spectabilis - purple lovegrass

LOOK-A-LIKE



Eragrostis spectabilis - purple lovegrass

LOOK-A-LIKE

Hairy Auricle Comparison



Eragrostis spectabilis -
purple lovegrass



Eragrostis curvula -
weeping lovegrass

LOOK-A-LIKE

Hairy Auricle Comparison



Eragrostis spectabilis -
purple lovegrass



Eragrostis curvula -
weeping lovegrass

Firmiana simplex

FISI2

Synonym: *F. platanifolia*, *Sterculia platanifolia*

Common names: Chinese parasoltree phoenix tree, varnish-tree

Plant. Deciduous upright tree to 50 feet (16 m) in height and 2 feet (60 cm) in trunk diameter with stout alternate branches. Yields unusual pods and branched showy fruit stalks remain during winter. Leaves turning yellow in the fall.

Stem. Twigs and branches stout, glossy green when rapidly growing or dull green becoming grayish green from a wax coating. Buds large and round with numerous overlapping fuzzy scales. Large leaf scars, raised rimmed and circular to oblong, topped by small linear stipule scars on both sides and a fuzzy rounded bud in winter. Pronounced rings of raised bud scars encircle twigs. Pith white, spongy, and continuous. Bark grayish tan, tight, with vertical green to orange shallow stripes in late winter becoming roughened with age. Pronounced eye-shaped branch scars occur along the trunk.

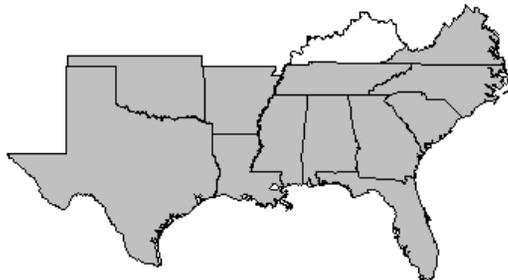
Leaves. Alternate, 8 to 12 inches (20 to 30 cm) long and somewhat wider and larger on vigorous young shoots, 3 to 5 shallow to deep lobes, cordate base. Dark green with light-green palmate veins above a whitish patch where they join with the petiole and softly hairy beneath. Margins entire. Petioles almost as long as the leaf, slightly rough, 12 to 20 inches (20 to 50 cm) long.

Flowers. May to July. Large, branched panicles over 2 feet (60 cm) across of tan and yellow flowers, from the base of new growth. Branches green to pale green. Separate male and female flowers occur in each cluster and open at varying times. Slightly fragrant. Male flowers turn reddish pink before petals fall.

Fruit and seeds. June to April. Quickly after flowering, 1 to 5 pea-size dry fruit attached to 2.5 to 3 inches (6 to 8 cm) long pods and 4 to 5 in a flower-like group, initially light green turning tan, thin and wafery. Panicle branches with fruit drop throughout winter leaving star-shaped woody flower bases at branch ends.

Resembles tungoil tree (*Vernicia fordii*), which has similar shaped leaves but has pairs of conspicuous dark glands where the petiole joins the leaf blade and white milky sap.

States with suspected infestations are shown in gray.



Firmiana simplex

FISI2

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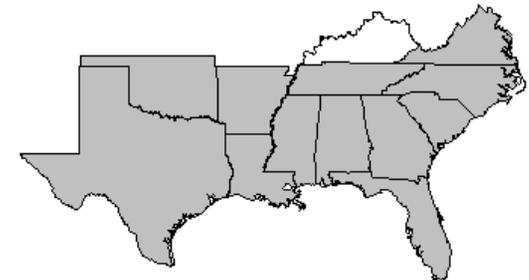
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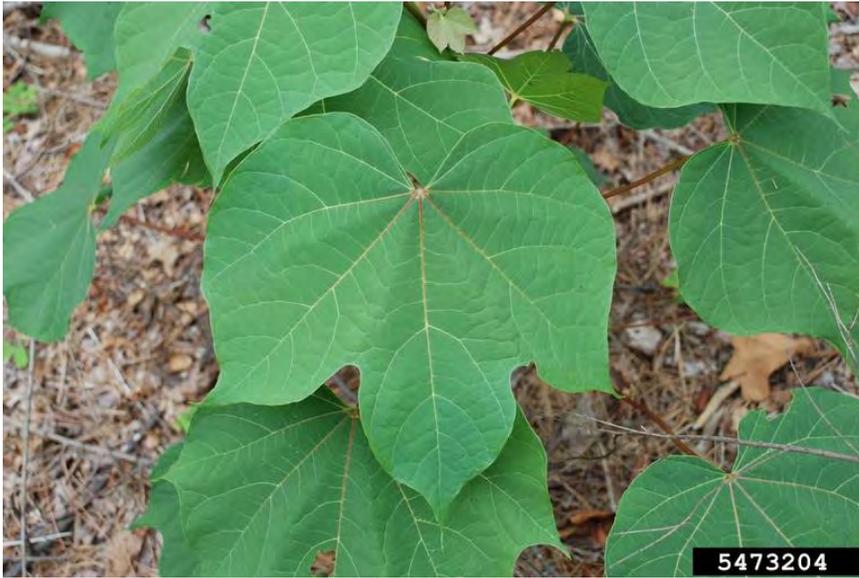


Firmiana simplex

FIS12

Synonym: *F. platanifolia*, *Sterculia platanifolia*

Common names: Chinese parasoltree phoenix tree, varnish-tree



Firmiana simplex

FIS12

Synonym: *F. platanifolia*, *Sterculia platanifolia*

Common names: Chinese parasoltree phoenix tree, varnish-tree



Firmiana simplex

FISI2

Synonym: *F. platanifolia*, *Sterculia platanifolia*
Common names: Chinese parasoltree phoenix tree, varnish-tree



Firmiana simplex

FISI2

Synonym: *F. platanifolia*, *Sterculia platanifolia*
Common names: Chinese parasoltree phoenix tree, varnish-tree



Firmiana simplex

FISI2

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Firmiana simplex

FISI2

Synonym: *F. platanifolia*, *Sterculia platanifolia*

Common names: Chinese parasoltree phoenix tree, varnish-tree



Frangula alnus

FRAL4

Synonym: *Rhamnus frangula*

Common names: alder buckthorn, glossy false buckthorn, columnar buckthorn, glossy buckthorn

Plant. Deciduous shrub with many sprouts from the base, or small tree, 6 to 24 feet (12 m) in height, up to 10 inches (25 cm) in diameter with glossy bark, thornless stems and an oval, much-branched crown.

Stem. Twigs alternate, initially reddish, and slightly gray fuzzy with scattered white dots (lenticels), becoming hairless and gray to brownish gray with light dots in lengthwise bands that become raised and eventually turn into lengthwise, shallow fissures on larger stems. Buds pointed and fuzzy. Leaf scars raised with 3 bundle scars. Cut twigs have yellow sapwood and pinkish to orange centers.

Leaves. Alternate, tardily deciduous, narrowly elliptic to oblong to obovate, 2 to 4 inches (5 to 10 cm) long and one-half as wide with 8 to 9 pairs of parallel lateral veins curving upward at the ends to follow the margin. Margins entire and somewhat wavy. Shiny green above, paler and slightly hairy beneath, turning greenish yellow in the fall. Petioles reddish and hairy, 0.25 to 0.5 inch (6 to 12 mm) long.

Flowers. May to September. Axillary, stemmed clusters of tiny flowers with 5 whitish petals barely jutting from a bell-shaped green calyx, appearing on new growth after the leaves.

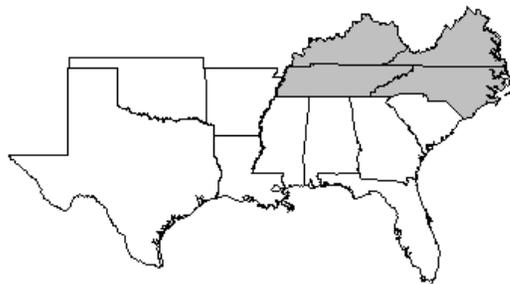
Fruit and seeds. May to November. Berrylike, spherical drupes, 0.3 to 0.4 inch (8 to 12 mm) wide, light green ripening to red then black in late summer, fleshy, containing 2 to 3 ovoid seeds.

Ecology. Tolerant of a wide variety of growing conditions from wet to dry and basic to acidic soils. Wide spreading with many sprouts, leafing out early in spring and retaining foliage late in fall leading to the exclusion of other forest plants. Invades forest edges and understories.

Resembles the native Carolina buckthorn (*Frangula caroliniana*), but its leaf margins are finely serrated (serrulate) and leaves are 3 times as long as wide.

Also resembles common buckthorn (*Rhamnus cathartica*), another invasive that has finely serrated leaf margins but with 3 to 5 pairs of curved lateral veins, thorn-tipped twigs, only 4 petals, and 3 to 4 seeds.

States with suspected infestations are shown in gray.



Frangula alnus

FRAL4

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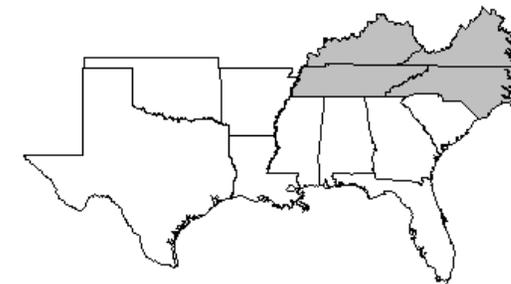
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FRAL4

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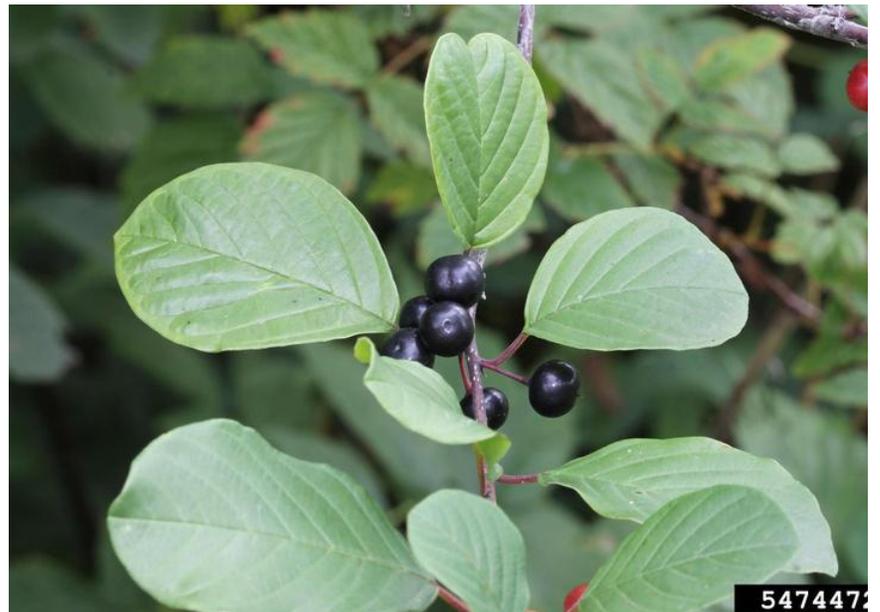


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FRAL4

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Common names: alder buckthorn, glossy false buckthorn,
columnar buckthorn, glossy buckthorn



Frangula alnus

FRAL4

Common names: alder buckthorn, glossy false buckthorn,
columnar buckthorn, glossy buckthorn



Frangula alnus

FRAL4

Common names: alder buckthorn, glossy false buckthorn,
columnar buckthorn, glossy buckthorn



LOOK-A-LIKE

Other Rhamnus species have more “thorn-tipped” twigs:



LOOK-A-LIKE

Other Rhamnus species have more “thorn-tipped” twigs:



Other Rhamnus species have serrated leaf margins:



Other Rhamnus species have serrated leaf margins:



Liriope spp.

LIRIO2

Includes: *Ophiopogon muscari*, *L. spicata*

Common names: creeping liriope, big blue lilyturf, creeping lilyturf, monkey grass

Plant. Dense, evergreen ground cover of crowded tufts of grass-like but thicker leaves, 6 to 18 inches (15 to 45 cm) high and increasing with plant age. Stalked spike-like racemes of small purple flowers jut upward in early summer to yield stalks of small, green-to-black berrylike fruit in summer through winter.

Stem. Grass-like tufts of initially interconnected plants lacking a central stem, except for the flower/fruit stalks.

Leaves. Grass-like but fleshier, radiating from the soil surface in expanding tufted groups, 2.5 to 7 inches (6 to 18 cm) long and 0.1 inch (2 mm) wide on new plants, up to 18 inches (45 cm) long and 0.4 inch (1 cm) wide on mature plants, widest at the middle and tapering to a blunt tip. Multiple lengthwise, parallel veins with a distinctly indented midvein and slightly thickened, very finely serrated margins. Glossy green being somewhat lighter beneath with whitish bases. Variegated varieties appear less aggressive. Leaf tips turn brown and die back in winter. New leaves grow from the base in spring.

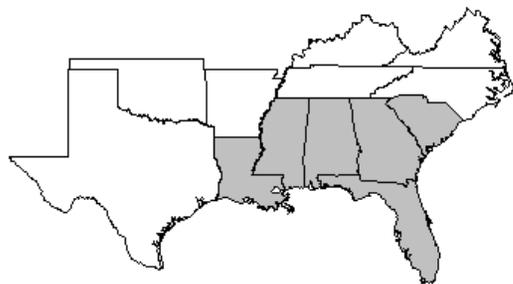
Flowers. June to August. Multiple slender flower stalks, 15 to 14 inches (6 to 36 cm) tall, with the terminal 1.5 to 4.5 inches (4 to 12 cm) having spaced clusters of tiny lavender or violet (to white) flowers, with yellow centers, opening at different times.

Fruit and seeds. August to February. Spherical, green, berrylike drupes turn blue ripening to black purple, 0.2 to 0.3 inch (6 to 8 mm) wide. Have grapelike skin and little to no pulp, contain a single spherical dark seed.

Ecology. Many cultivars are widely planted as ornamental ground cover and can escape to nearby forests by seeds. Displace forest plants to form ground-layer monocultures. Pollinated by insects. Spread by bird-and animal-dispersed seeds and soil movement with rhizomes and corms.

Resembles mondo grass (*Ophiopogon* spp.), a much smaller-leaved common ornamental. Can resemble tall nut-rush (*Scleria triglomerata*), a forest nut sedge that has similar clumps of leaves from the soil that are 16 to 24 inches (40 to 60 cm) long, angular flower/seed stalks tipped by brownish leafy bracts that yield tiny, smooth nutlets, white to gray.

States with suspected infestations are shown in gray.



Liriope spp.

LIRIO2

Includes: *Ophiopogon muscari*, *L. spicata*

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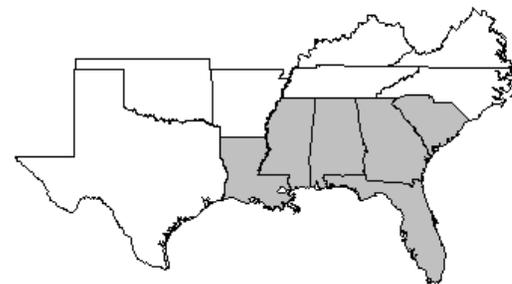
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Liriope spp.

LIRIO2

Common names: creeping liriope, lilyturf, monkey grass



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Liriope spp.

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LOOK-A-LIKE



Ophiopogon japonicus - dwarf lilyturf

LOOK-A-LIKE



Ophiopogon japonicus - dwarf lilyturf

Mahonia bealei**MABE2**

Synonym: *Berberis bealei*

Common names: leatherleaf mahonia, Beale's barberry,
Beale's Oregon-grape

Plant. Evergreen shrub up to 10 feet (3 m) in height and branching to 4 to 8 feet (1.2 to 2.4 m) wide, erect and gangly or multi-stemmed from a pronounced root crown (with shallow roots).

Stem. Terminal stem growth comprised of crowded and overlapping broad leaf bases, light green or purple on seedlings, soon developing thin, tan to gray, fissured bark. The clasping leaf bases remain greenish and spaced at intervals along stout stems.

Leaves. Odd-pinnately compound, over 1 foot (30 cm) long on purplish stalks, stiff and spiraling out at intervals from the main stem with 9 to 13 leathery leaflets, 1 to 4 inches (2.5 to 10 cm) long. Leaflets with 5 to 7 extremely sharp marginal spines, holly-like, with no petioles and the terminal leaflet being largest. Lustrous green above with a lighter midvein and pale green beneath. Seedlings initially have simple heart-shaped leaflets on long petioles with many spines around the margins and often very white waxy beneath.

Flowers. January to April. Plants are topped with 6 to 12 unbranched, bluish to purplish stems with lateral dangling yellow fragrant flowers, opening base to tip.

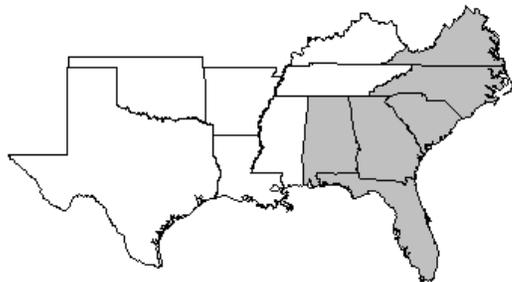
Fruit and seeds. March to August. Many fleshy-skinned, egg-shaped berries, 0.4 to 0.7 inch (1 to 1.8 cm) long, dangle from bracts on a purplish stalk. Berries white waxy coated, light green turning robin's egg blue and ripening purplish black, each with 2 to 3 seeds.

Ecology. Colonizes by basal sprouts and spreads by many bird-dispersed seeds from ornamental and escaped plants.

Resembles native subshrubs hollyleaved barberry (*M. aquifolium*) and Cascade barberry (*M. nervosa*), which are small, low growing, and have 6 to 13 spiny teeth around their leaf margins.

Distribution. Found as scattered plants and new infestations in AL, GA, FL, SC, NC, and VA.

States with suspected infestations are shown in gray.

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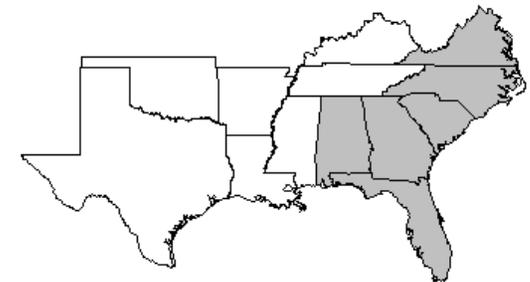
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Mahonia bealei

MABE2

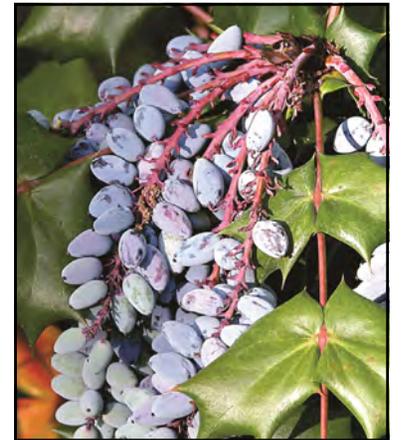
Common name: leatherleaf mahonia



Mahonia bealei

MABE2

Common name: leatherleaf mahonia



Mahonia bealei

MABE2

Common name: leatherleaf mahonia



Nancy Loewenstein

Mahonia bealei

MABE2

Common name: leatherleaf mahonia



Nancy Loewenstein

LOOK-A-LIKES



LOOK-A-LIKES



Polygonum cuspidatum

POCU6

Synonyms: *Fallopia japonica*, *Reynoutria japonica*

Common names: Japanese knotweed, fleecflower, Mexican bamboo

Plant. Tall perennial, herbaceous shrub 3 to 12 feet (1 to 3.5 m) high, freely branching in dense, often clonal, infestations. Stems survive only 1 season while rhizomes up to 65 feet (20 m) long survive decades. Dead plants remain upright or leaning during winter and burn hot to pose a severe fire hazard.

Stem. Round, reddish brown to mottled with green, to about 1 inch (2.5 cm) in diameter, resembling bamboo although not woody, smooth with scattered to many tiny dots (scales), often ridged, having hollow internodes and swollen solid nodes with membranous sheaths clinging to the base of the nodes. Profuse red to green, slender branches grow upward and outward, and some drooping to form dense entanglements.

Leaves. Alternate and broadly ovate to oblong ovate, 4 to 6 inches (10 to 15 cm) long and 3 to 4 inches (8 to 10 cm) wide with distinctly pointed tips and straight wedge bases. Smooth and bright green above with whitish indented veins and dull green beneath with protruding veins. Petioles reddish, 0.5 to 1 inch (1.2 to 2.5 cm) long. Leaves turn bright yellow in fall.

Flowers. May to September. Terminal and axillary, branched sprays (racemes) 3 to 6 inches (8 to 15 cm) long, covered with tiny 5-petaled (sepaled) white to greenish flowers all having 3 styles and 8 to 10 stamens. Functionally male or female flowers can occur on different plants or within a raceme.

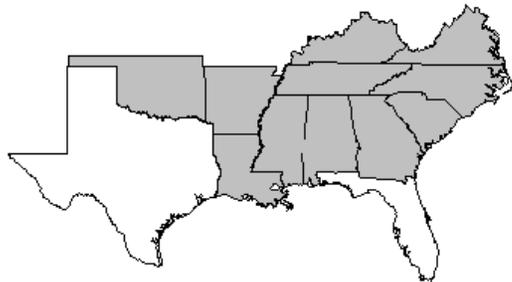
Fruit and seeds. August to November. Many dangling, winged fruit that can contain 1 triangular, shiny nutlet. Viability apparently variable but can be quite high in some stands.

Ecology. Tolerates a wide range of growing conditions from full sun to shade, to high salinity and drought, while it prefers wet soils in low places or along streams and rivers. Spreads along streams by stem and rhizome fragments and seeds to dominate extensive riparian habitat.

Resembles the nonnative invasive giant knotweed (*P. sachalinense*) a larger plant with greenish flowers and cordate leaves with tapering points, currently found in KY, VA, TN, NC, and LA.

Distribution. Found in VA, KY, TN, and NC with scattered occurrences elsewhere except in TX and FL.

States with suspected infestations are shown in gray.



Polygonum cuspidatum

POCU6

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Common names: Japanese knotweed, fleecflower, Mexican bamboo

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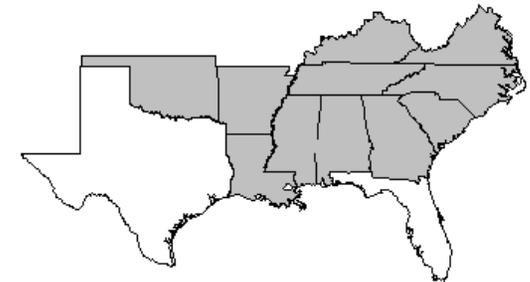
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Polygonum cuspidatum

POCU6

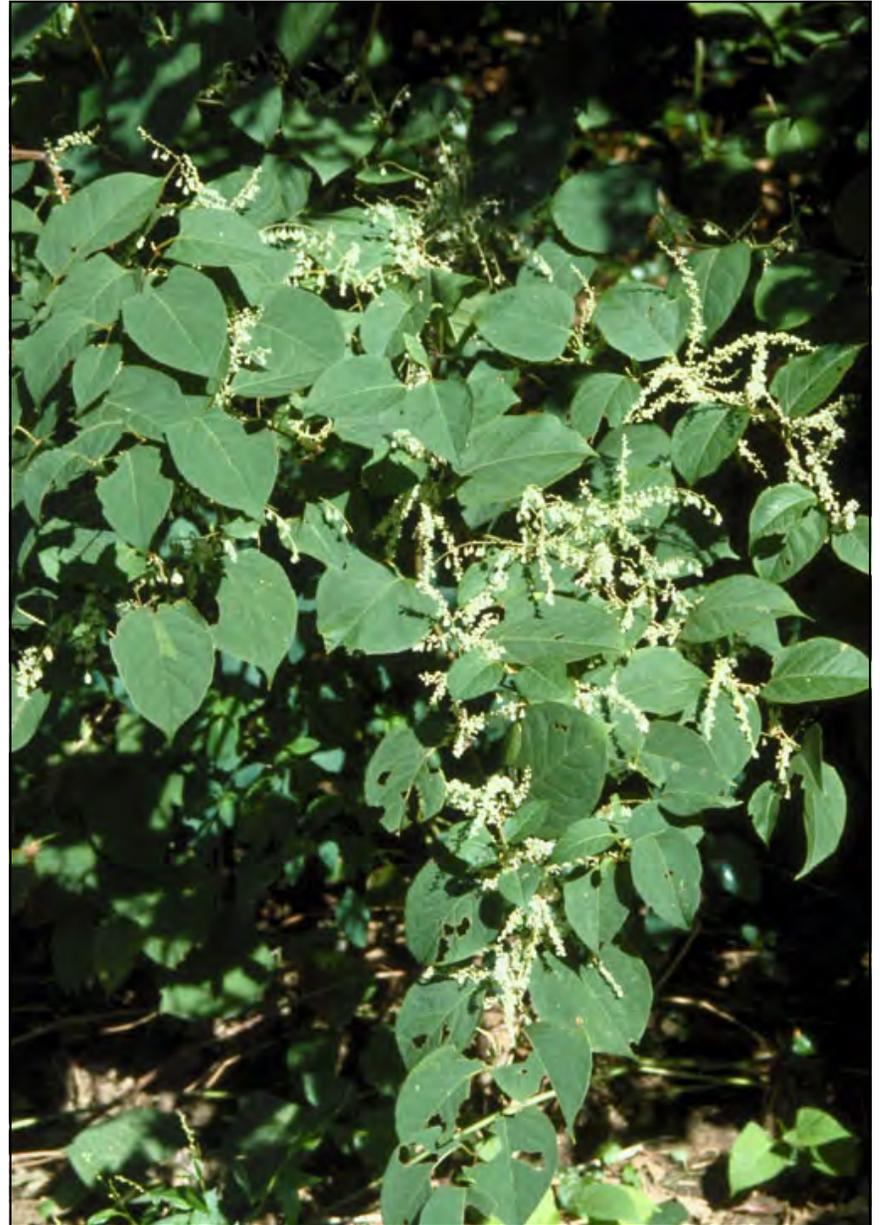
Common name: Japanese knotweed



Polygonum cuspidatum

POCU6

Common name: Japanese knotweed



Polygonum cuspidatum

POCU6

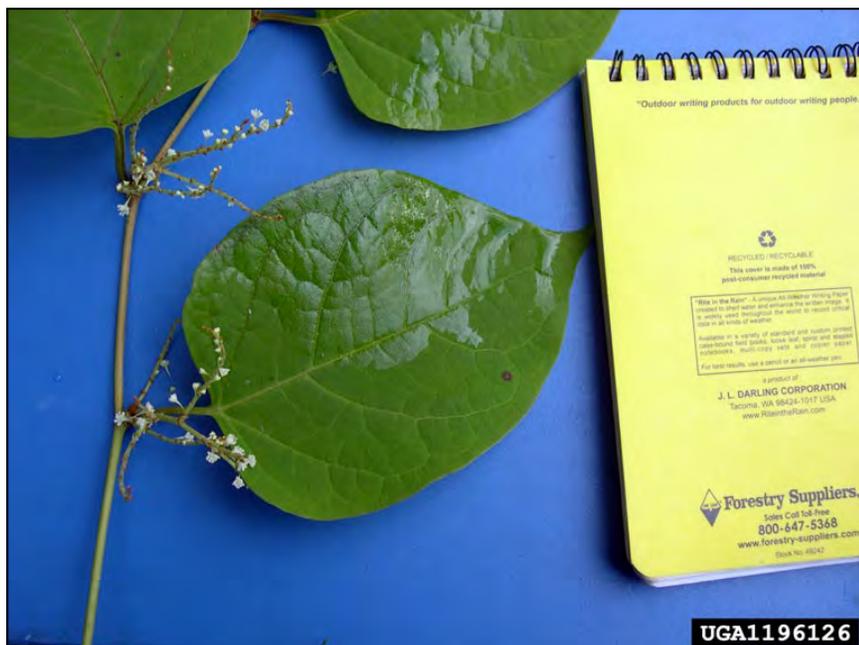
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POCU6

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Polygonum cuspidatum

POCU6

Common name: Japanese knotweed



Polygonum cuspidatum

POCU6

Common name: Japanese knotweed



UGA5271083

Polygonum cuspidatum

POCU6

Common name: Japanese knotweed



UGA5271083



UGA2137

Giant knotweed (*Polygonum sachalinense*)- left;

Bohemian knotweed (*Polygonum x bohemicum*) - center;

Japanese knotweed (*Polygonum cuspidatum*)- right



UGA2137

Giant knotweed (*Polygonum sachalinense*)- left;

Bohemian knotweed (*Polygonum x bohemicum*) - center;

Japanese knotweed (*Polygonum cuspidatum*)- right

Poncirus trifoliata

POTR4

Synonym: *Citrus trifoliata*

Common names: trifoliolate orange, hardy orange

Plant. Deciduous, small tree or shrub to 30 feet (9 m) in height with tufts of trifoliolate (3-leaflet) leaves and sharp axillary thorns. Root sprouts abundant around stems.

Stem. Twigs flattened, glossy green and hairless, turning yellowish in drought and winter, becoming stout, chestnut brown to reddish tan, smooth to velvety with light dots (lenticels), heart-shaped leaf scars and sharp thorns jutting outward to 2 inches (5 cm). Buds finely hairy, dome-shaped, and partially hidden by the leaf bases. Branches dark gray with lengthwise lighter stripes and intervening green stripes that become an intricate braided network on the bark. Basal sprouts vine-like and green, climbing up through the crown into surrounding trees.

Leaves. Alternate or tufts of trifoliolate (3-leaflet) leaves in the axils of thorns, appearing at or just after the time of flowering in the spring. Leaflets unequal in size with the terminal 1 to 2.5 inches (2.5 to 6.4 cm) long and 0.5 to 1 inch (1.2 to 2.5 cm) wide, obovate to elliptic, while the lateral leaflets are similar but smaller. Dark green and hairless, becoming yellowish in the fall. Blades merge into the winged leaf stalk (sometimes not winged).

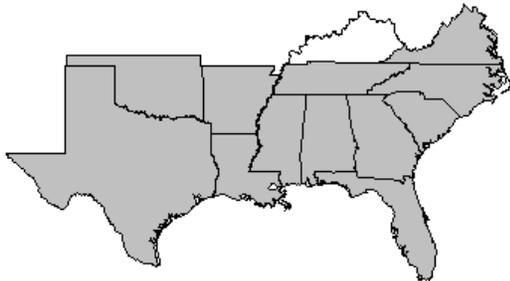
Flowers. March to early May. Showy clusters of white, 5-petaled flowers, 1.5 to 2 inches (3.8 to 5 cm) across that cover trees early on previous year's branches. In the center of the flower are 8 to 10 projecting stamens that enclose a yellow, hairy stigma.

Fruit and seeds. July to October and rarely persisting into winter. A hairy, bitter orange, green turning yellow to golden when ripe, up to 1.5 inches (3.8 cm) wide. Pulp is minimal and the multiple seeds are viable.

Ecology. Forms dense, impenetrable thickets and stands. Prefers open areas or edges and acid, well-drained soils. Colonizes by basal sprouts and spreads by prolific animal-dispersed seeds.

Resembles osage-orange (*Maclura pomifera*), which has similar thorny stems, but larger, spherical yellowish fruit that are not hairy and leaves that are not trifoliolate.

Distribution. Found in scattered dense infestations in TX, OK, AR, LA, and GA with occasional occurrences elsewhere throughout the region except KY.



Poncirus trifoliata

POTR4

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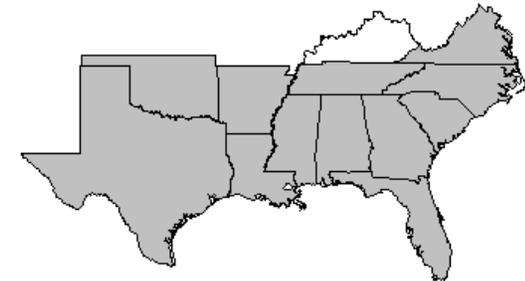
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Pyrus calleryana

PYCA80

Common names: Bradford pear, callery pear

Plant. Deciduous tree to 60 feet (18 m) in height and boles 2 feet (0.6 m) in diameter, widely planted as an ornamental tree. Rapid growing, forms thickets and dense stands by root sprouts. Tolerates partial shade and a variety of soils from wet to droughty. Hybridizes with other callery pear varieties and Asian pear (*P. betulifolia*).

Stem. Twigs initially hairy, stubby, and tipped by a sharp thorn in escaped plants, being longer branched with few thorns in cultured, planted varieties. Terminal and lateral bud scales loose, gray-hairy and elongated to 0.5 inch (1.2 cm). Twigs reddish brown to gray with scattered or many light dots (lenticels) that elongate with age to form horizontal light lines on branches and boles. Bark of trunk increasingly vertically fissured, becoming cross-checked with age.

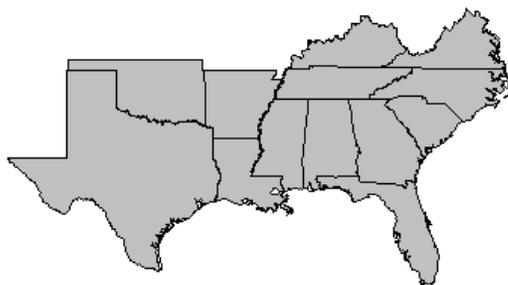
Leaves. Alternate, often tufted on short branchlets. Initially circular and hairy, maturing to glossy and ovate or slightly cordate with a tapering tip, 1.5 to 3.5 inches (4 to 9 cm) long and wide, leathery with finely crenate and wavy margins sometimes having a pronounced tip. Dark green above and light green below. Thin petioles 1 to 2 inches (2.5 to 5 cm) long with thin stipules that shed early.

Flowers. March to May. Large clusters of brilliantly white, 5-petaled flowers, 1 inch (2.5 cm) across with many jutting, maroon-tipped anthers, appearing before leaves, covering trees to make conspicuous invaders in early spring. Emit an unpleasant odor and can cause allergic sinus reactions.

Fruit and seeds. June to February. Persistent clusters of small pears (pomes), 0.3 to 0.5 inch (8 to 12 mm) long and wide, green ripening to tan then maroon with numerous surface speckles, dangling on thin, 1-inch (2.5 cm) long stems. Fleshy, tart but edible, containing 2 to 6 maroon seeds and numerous stone cells.

Resembles leaves of both common pear (*Pyrus* spp.) that has larger fruit and Chinese tallowtree (*Triadica sebifera*) that has dangling spring flowers and clusters of white fruit in fall and winter. **Also resembles** flowers of another invasive, common pearlbrush (*Exochorda racemosa*) that blooms in early spring with similar bright white flowers that occur in racemes and leaves are elliptic and serrated above the middle.

States with suspected infestations are shown in gray.



Pyrus calleryana

PYCA80

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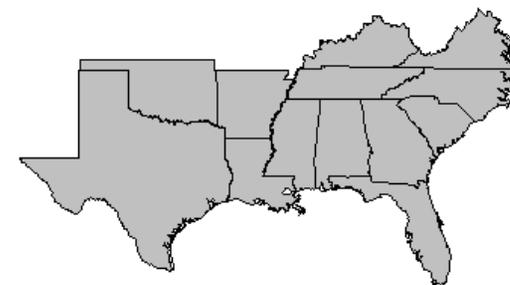
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PYCA80

Common names: Bradford pear, callery pear



Pyrus calleryana

PYCA80

Common names: Bradford pear, callery pear



Pyrus calleryana

PYCA80

Common names: Bradford pear, callery pear



Pyrus calleryana

PYCA80

Common names: Bradford pear, callery pear



LOOK-A-LIKES

Pyrus sp.



UC



LOOK-A-LIKES

Pyrus sp.



UC



Schinus terebinthifolius

SCTE

Common names: Brazilian peppertree, Florida holly, Christmas berry

Plant. Evergreen shrub or small tree to 40 feet (12 m) in height. Widely sold and planted as an ornamental until recently. Often in dense infestations with many short trunks or arching stems of contorted branches. Female plants have many multi-branched clusters of small, whitish flowers in summer and fall that yield clusters of spherical, red and pepper-smelling fruit in winter. **Caution: All parts of the plant can cause skin rash or airway irritation.**

Stem. Twigs and root sprouts yellow green with V-shaped leaf scars, becoming smooth gray-brownish branches that become entangled and tend to droop. Older bark braided with grayish ridges and reddish-brown fissures.

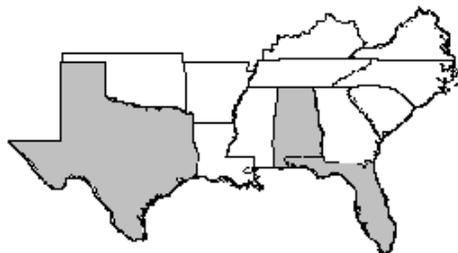
Leaves. Evergreen and thick, alternate, 3 to 12 inches (8 to 30 cm) long having reddish, sometimes winged midribs, odd-pinnately compound with 3 to 13 sessile, ovate to elliptic leaflets, finely toothed, each 1 to 2 inches (2.5 to 5 cm) long, shiny and green above with light-green midveins and lateral veins and blade paler beneath. Often drooping and emit an aroma of pepper or turpentine when crushed.

Flowers. September to November and other times. Axillary and terminal on new growth. Multi-branched clusters of many tiny flowers with 5 white petals and yellow centers. Male and female flowers on separate plants (dioecious).

Fruit and seeds. December to August. Berrylike, spherical drupes, 0.2 to 0.3 inch (6 to 8 mm) wide, in profuse clusters, light green ripening quickly to bright red and then dark red, fleshy and juicy becoming papery, containing 1 dark brown 0.1-inch (0.3 mm) long seed.

Resembles the nonnative peppertree (*S. molle*) escaped in FL, TX, and CA, but its 19 to 40 leaflets are narrowly lance-shaped. **Also might resemble** another rash causing shrub, poison sumac (*Toxicodendron vernix*) that frequents similar wet habitats and has jutting, odd-pinnately compound leaves with sharp-tipped leaflets and reddish petioles and stalks.

States with suspected infestations are shown in gray.



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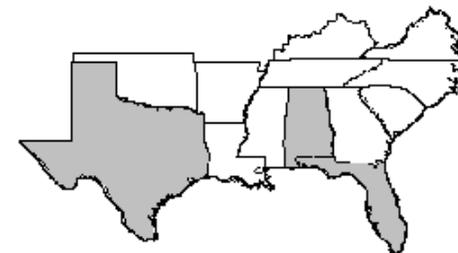
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LOOK-A-LIKE

Schinus molle - Peruvian peppertree



LOOK-A-LIKE

Schinus molle - Peruvian peppertree



Securigera varia

SEVA4

Synonym: *Coronilla varia*

Common names: crown vetch, trailing crown vetch

Plant. Deciduous, perennial forb sprawling to form tangled mats to 3 feet (92 cm) high or scrambling over rocks, shrubs, and small trees. Forms brown, “earth hugging” patches in winter that resprout quickly in spring or remain green in southern areas. **Caution: All parts are poisonous to some degree.**

Stem. Ascending to sprawling, green, slender and succulent but wiry, slightly angled, 20 to 80 inches (50 to 200 cm) long, with leaves and flower/seed stalks arising along the stem at regular intervals.

Leaves. Alternate, odd-pinnately compound, 2 to 4 inches (5 to 10 cm) long, arising immediately from the stem with 2 tiny stipules. Leaflets 11 to 25, dark green, oblong to obovate, 0.3 to 0.8 inch (0.8 to 2 cm) long with minute hair-like tips.

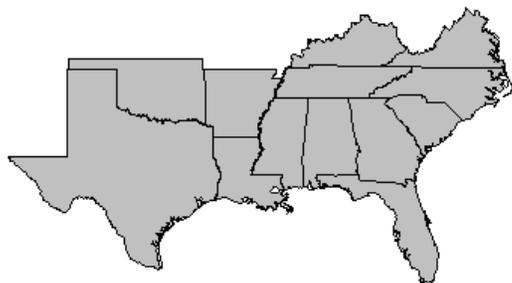
Flowers. May to September. Small, multicolored pea-type flowers with pink and purple or rose upper petals and white to pinkish-white lower keel petals, 5 to 25 flowers clustered in clover-like “crowns” about 1 inch (2.5 cm) wide, jutting upward on thin axillary stalks, 2 to 6 inches (5 to 15 cm) long, above entangled plants.

Fruit and seeds. Present May to July and maturing in October. Radiating clusters of slender, pointed seedpods (loment), 2 to 4 inches (5 to 10 cm) long, light green maturing to brown. Segmented to divide and release 3 to 12 flattened brown seeds.

Ecology. Nitrogen fixer and pollinated by insects. Grows in full sun to light shade and the range of conditions common to the South. Tolerates drought, heavy precipitation and cold temperatures. Planted on roadsides, surface mines and in gardens, escaping into forest edges, openings, stream sides and special habitats like rock outcroppings.

Resembles the growth habit and leaves of vetches (*Vicia* spp.) that have tendrils at their leaf ends and scattered flowers, not in clusters like crown vetch.

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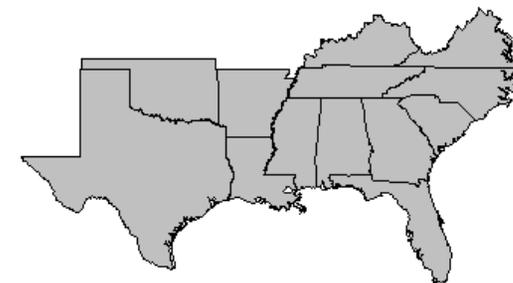
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LOOK-A-LIKE



Vicia villosa hairy vetch

LOOK-A-LIKE



Vicia villosa hairy vetch

Spiraea japonica

SPJA

Common names: Japanese meadowsweet, Japanese spiraea

Plant. Deciduous, erect shrub to 6 feet (1.8 m) high with multiple stems and alternate branches.

Stem. Twigs initially whitish green, slender and wiry, usually quite hairy, jutting upward, often terminated in flower or fruit clusters. Stems becoming brown to reddish brown, round in cross section, with increasing grayish to whitish lengthwise stripes of dotted cork and protruding circular leaf and branch scars surrounded by corky deposits. Multiple basal sprouts on older plants intertwine for support.

Leaves. Alternate, thin, elliptic to lanceolate, 1 to 3 inches (2.5 to 7.6 cm) long and less than half as wide, tips are pointed and bases wedge shaped, margins irregularly and sharply serrated but less so towards the base. Blue green to green above and lighter beneath. A short petiole connects to a pronounced whitish-green midvein with about 10 lateral, curved veins that end at serrate tips and are hairy beneath.

Flowers. June to September. Terminal on new growth, multi-branched, flat-topped clusters (corymbs) of many red to rosy, domed flower buds that open into tiny, whitish-pink to rose (rarely white) flowers, 0.2 inch (5 mm) wide with 5 petals and an extended mist of anthers. Sepals and stalks hairy.

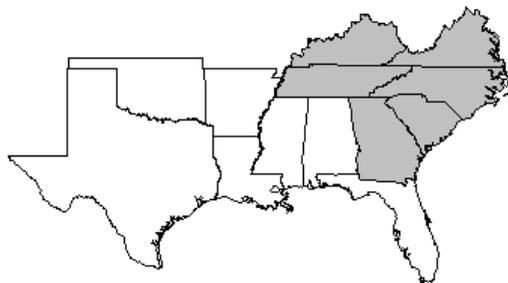
Fruit and seeds. July to November. Flat-topped heads of tiny star-shaped clusters of 5 smooth and lustrous, tan to brown capsules that split on top at varying times to release 1 minute golden seed, 0.09 to 0.1 inch (2 to 2.4 mm) long.

Ecology. Forms dense infestations of entangled stems and branches. Populations occur along streams, roads, and adjacent disturbed sites and move into forest gaps and understory. Infestations intensify by abundant basal sprouting.

Resembles several native and nonnative spiraeas, but is unique in the flat-topped, pink to pink-rose flower clusters and brown fruit clusters, the hairy branchlets and flowers, and lanceolate leaves. It is the species most often found growing in dense infestations.

Distribution. Found as scattered dense infestations in VA, KY, TN, NC, SC, and north GA.

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Spiraea japonica

SPJA

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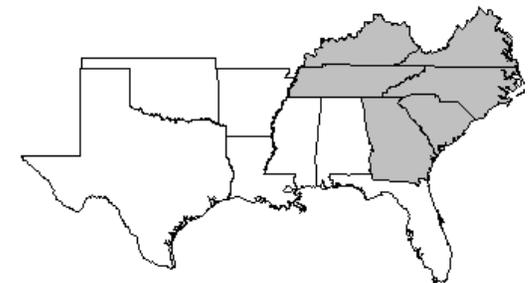
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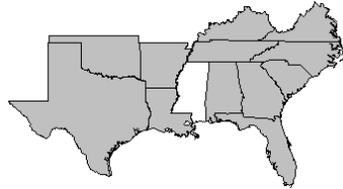
Common name: Japanese meadowsweet



TAMAR2

Tamarix spp.

Includes: *Tamarix aphylla*, *T. chinensis*, *T. gallica*, *T. parviflora* and *T. ramosissima*



Common names: salt cedar, tamarisk

Plant: Mostly deciduous shrubs or small trees growing to 12-30 feet in height and forming dense thickets. *Tamarix aphylla* is an evergreen tree that can grow to 50 feet tall and tends to flower during the winter.

Flowers: From March to September, large numbers of pink to white flowers appear in dense masses on 2-inch long spikes at branch tips.

Stem: The bark of young branches is smooth and reddish-brown. As the plants age, the bark becomes brownish-purple, ridged and furrowed.

Leaves: Scale-like, about 1/16 inch long and overlap each other along the stem. They are often encrusted with salt secretions.

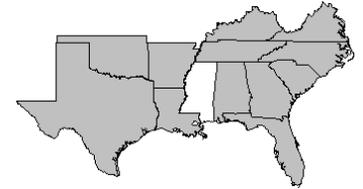
Fruit: Capsule very small, 1/12 - 1/8 inch long, dehiscent into 3 parts; seeds numerous, minute, tufted with hairs at apex.



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TAMAR2



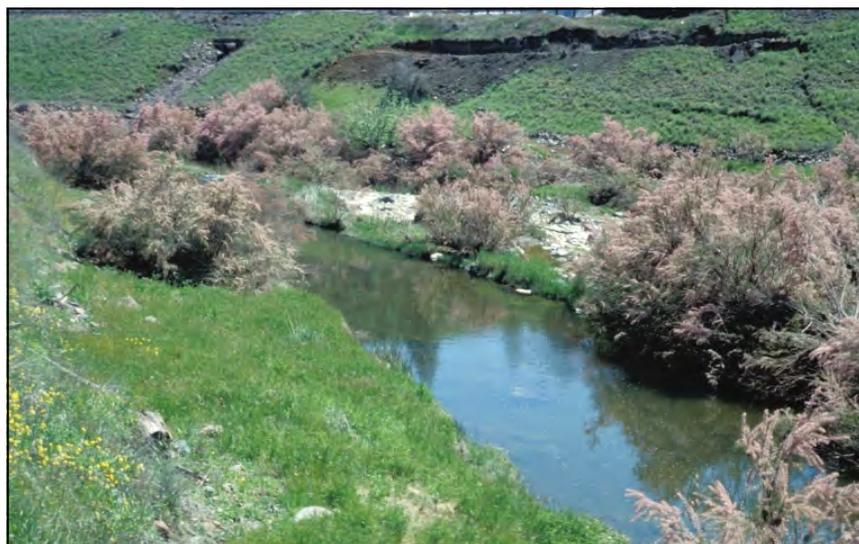
TAMAR2



TAMAR2



TAMAR2



TAMAR2



Tamarix aphylla

UGA5163068

TAMAR2



Tamarix aphylla

UGA5163068



Tamarix aphylla



Tamarix aphylla

Vernicia fordii

VEFO

Synonym: Aleurites fordiiCommon names: Chinese wood-oil tree, tungoil tree

Plant. Deciduous tree (leaves fall with frost) to 40 feet (12 m) in height having a rounded crown with many alternate branches and basal sprouts. **Sap is milky white.** Caution: Leaves and fruits are poisonous.

Stem. Twigs moderately stout, light green, becoming mottled with a silvery-gray film and turning grayish to gray tan with whitish dots (lenticels) that turn to faint lengthwise stripes that increase with age. Buds overlapping, maroon, with multiple, leafy scales. Pith white and spongy. Leaf scars circular when whorled or oval when stacked together. Larger scars reveal 8 vascular bundle scars. Bark light tan to light gray, tight, covered with corky dots.

Leaves. Alternate, heart shaped, 3 to 14 inches (7.5 to 35 cm) long with 1 tip, or lobed with deep sinuses and 3 to 5 pointed tips and a cordate base. Two rounded, dark reddish-maroon glands occur where the petiole joins the blade. Glossy and dark green above with 5 prominent light-green veins radiating from the base, whitish silvery beneath. Petioles 3 to 6 inches (8 to 15 cm) long, green with a maroon tinge.

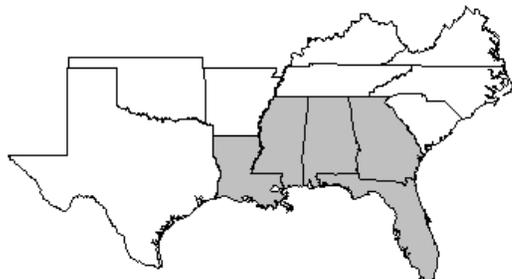
Flowers. March to April. Large, terminal branched clusters of separate male and female flowers appearing before leaves to cover the tree. Widely flared flowers about 1 inch (2.5 cm) wide having 5 to 7 brilliant white petal lobes splashed with red to maroon within the throat radiating outward in lines, and protruding yellow floral parts. Stalks to 6 inches long, smooth, red to orange, same color as the sepals.

Fruit and seeds. September to November. Spherical, woody drupes, 2 to 3 inches (5 to 8 cm) wide, dropping whole to the ground to split into 3 to 7 sections.

Ecology. Rapid growing in moist and well-drained soils, forming dense stands. Colonizes by stump sprouts and spreads by animal-and water-dispersed seeds.

Resembles paper mulberry (*Broussonetia papyrifera*), southern catalpa (*Catalpa bignonioides*), northern catalpa (*C. speciosa*), and princess tree (*Paulownia tomentosa*), which have similar shaped leaves but are velvety or rough hairy and have no petiole glands. **Also resembles** Chinese parasol tree (*Firmiana simplex*), which has similar shaped leaves with sinuses but has no glands and no milky sap.

States with suspected infestations are shown in gray.

**Vernicia fordii**

VEFO

Synonym: Aleurites fordiiCommon names: Chinese wood-oil tree, tungoil tree

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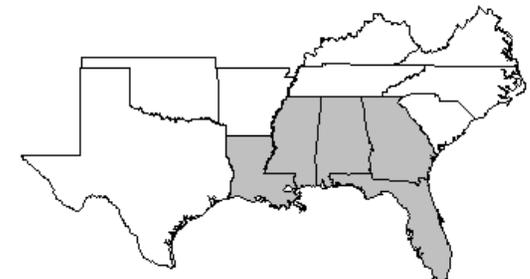
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Fruit and seeds. September to November. Spherical, woody drupes, 2 to 3 inches (5 to 8 cm) wide, dropping whole to the ground to split into 3 to 7 sections.

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Vernicia fordii

VEFO



Vernicia fordii

VEFO



Vernicia fordii

0995

VEFO

Synonym: Aleurites fordii

Common names: Chinese wood-oil tree, tungoil tree



Vernicia fordii

0995

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LOOK-A-LIKE

Broussonetia papyrifera - paper mulberry



LOOK-A-LIKE

Broussonetia papyrifera - paper mulberry



UGA5078080



UGA5078080

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