# Albizia julibrissin


- INTRODUCTORY
- DISTRIBUTION AND OCCURRENCE
- BOTANICAL AND ECOLOGICAL CHARACTERISTICS
- FIRE EFFECTS AND MANAGEMENT
- MANAGEMENT CONSIDERATIONS
- APPENDIX: FIRE REGIME TABLE
- REFERENCES


# INTRODUCTORY


- AUTHORSHIP AND CITATION
- FEIS ABBREVIATION
- NRCS PLANT CODE
- COMMON NAMES
- TAXONOMY
- SYNONYMS
- LIFE FORM
- FEDERAL LEGAL STATUS
- OTHER STATUS


Photo © John Scheper, Floridata.com

AUTHORSHIP AND CITATION:
Meyer, Rachelle. 2009. Albizia julibrissin. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [ 2010, January 11].

FEIS ABBREVIATION:
ALBJUL

NRCS PLANT CODE [109]:
ALJU

COMMON NAMES:
mimosa
silktree
silky acacia

TAXONOMY:
The scientific name of mimosa is *Albizia julibrissin* Durazz (Fabaceae) [35,36,56,113,118]. It is fairly common to find the genus spelled *Albizzia* [27,28,58,83,105]. Although not the original spelling [51,66], it is likely used because the

genus is named in honor of Fillippo delgi Albizzia, who introduced mimosa to Tuscany, Italy [18,66]. Some systematists include mimosa in the Mimosaceae family [6].

Infrataxa:
*Albizia julibrissin* var. *rosea* (Carr.) Mouillef, Hardy silk-tree albizia
*Albizia julibrissin* var. *mollis* Benth, Abyssinia silk-tree albizia [113]

These infrataxa are rarely distinguished in the literature and are not referred to in this review.

SYNONYMS:
*Albizzia julibrissin*

LIFE FORM:
Tree-shrub

FEDERAL LEGAL STATUS:
None

OTHER STATUS:
Information on state-level noxious weed status of plants in the United States is available at Plants Database.

---

# DISTRIBUTION AND OCCURRENCE

SPECIES: Albizia julibrissin

---


- GENERAL DISTRIBUTION
- HABITAT TYPES AND PLANT COMMUNITIES


Mimosa on a disturbed site near the Tallapoosa River, Alabama.

GENERAL DISTRIBUTION:
Mimosa is nonnative in North America. As of 2008, it occurred as far north as New York [35,56,101] and Massachusetts [56] in the Northeast [20], in southern portions of the Midwest [20,79], throughout the south-central [26,46,49,51,56,101,107] and southeastern United States, excluding tropical Florida [26,31,33,37,51,56,75,101,107,116], and in New Mexico, Arizona [52,56], Utah [52,56,118], and California [8,52,56,85,101]. Plants Database provides a distributional map of mimosa.

Mimosa is native to Asia [23,26,36,49,51,75,113,118,121], occurring from Iran to Japan [8,18,37,67,94]. It is often asserted that mimosa was introduced to the United States as an ornamental in 1745 [7,8,22,75,101,113]. However, according to Cothran [18], it was brought to North America about 1785 and was first offered for sale in 1807. By the 1950s mimosa was established locally in Georgia [25]. In 1972 it was a new record in Oconee County, South Carolina [34]. By 1992 mimosa was considered common in disturbed areas of the Chauga River Gorge in Oconee County [104]. It was first reported in the flora of Illinois from 1956 to 1978 [44]. Mimosa was described as "newly documented" in the Washington DC area in 1995 [29], and, according to Connelly [17], was first reported in the flora of Connecticut in 2008. A 1994 guide to plants of Butte County, California, lists mimosa as occurring in north-central Sacramento Valley and southern portions of the Cascade Range [85]. The distribution and impacts of mimosa are best documented in the southeastern United States (see Impacts).

HABITAT TYPES AND PLANT COMMUNITIES:
Plant community associations of nonnative species are often difficult to describe accurately because detailed survey information is lacking, there are gaps in understanding of nonnative species' ecological characteristics, and nonnative species may still be expanding their North American range. Therefore, mimosa may occur in plant communities other than those discussed here and listed in the Fire Regime Table. Due to a lack of literature addressing mimosa in the western and northern portions of its range, incomplete records of mimosa's plant associations are most likely for those regions.

Mimosa appears most common in disturbed communities. It is noted in oak-hickory (*Quercus-Carya* spp.), pine (*Pinus*), mixed pine-hardwood, and riparian forests, and may occur in grasslands.

Mimosa occurs in oak-hickory, pine, and mixed pine-hardwood communities in the Southeast. In Tennessee, it occurred infrequently in oak-hickory upland woods [54] and was present in mature, second-growth oak-hickory forest [100]. According to a review, the threat mimosa poses is potentially high in oak-hickory woodlands and unknown in pine habitats [99]. It was observed in a fire-suppressed, old-growth, longleaf pine (*P. palustris*) forest in Alabama [61,111] and in loblolly pine (*P. taeda*) forests in Georgia [27,77]. Mimosa was often associated with Virginia pine (*P. virginiana*) in Great Smoky Mountains National Park in Tennessee [7]. It occurred infrequently in a Florida forest dominated by sand post oak (*Q. margarettiae*), turkey oak (*Q. laevis*), and longleaf pine or slash pine (*P. elliottii*) [45], and was a minor component in mixed pine-hardwood forests near Macon, Georgia [115]. In the Piedmont region of South Carolina, mimosa occurred in the understory of a loblolly pine forest with honey-locust (*Gleditsia triacanthos*) and black cherry (*Prunus serotina*) [28]. It was reported near Virginia's Atlantic coast in a forest dominated by sweetgum (*Liquidambar styraciflua*), loblolly pine, and red maple (*Acer rubrum*) [81].

In north-central California, mimosa was listed as occupying foothill woodland communities [85]; given the location, the vegetation was likely dominated by oaks.

Mimosa often occurs in riparian areas and floodplain communities. It has been reported in these habitats in Maryland [92], Washington DC [29], Tennessee [5,7], and North Carolina. In North Carolina mimosa was reported in riparian areas with sycamore (*Platanus occidentalis*), sweetgum, yellow-poplar [82,112], red maple, and several oak and hickory species [112]. In a wetland created in Tuscaloosa, Alabama, it occurred with loblolly pine, willow (*Salix* sp.), and saplings of red maple and sweetgum [43]. Mimosa was found around springs and in sinkholes in upland woodlands of Florida [45] and occurred in riparian woodlands of north-central California [85]. In a constructed wetland in New Jersey, it occurred in an area dominated by marsh species such as marsh seedbox (*Ludwigia palustris*), purple loosestrife (*Lythrum salicaria*), yellowseed false pimpernel (*Lindernia dubia*), and common rush (*Juncus effusus*) [65]. Mimosa has been reported in riverbank communities in subtropical forests in the foothills of Garhwal Himalayas, India, part of mimosa's native range [59].

The extent to which mimosa can establish in grasslands is unclear. A review notes its occurrence in grasslands [20]. In Kentucky, mimosa occurred in the ecotone between an oak-hickory forest and a cool-season grassland that established following logging [103], but Stocker and Hupp [99] note that it is not invasive in grasslands.

Mimosa is frequent in disturbed communities such as those found along roadsides and in old fields. For information on disturbed sites where it occurs, see Successional Status. See the table below for species that occur with mimosa in study areas that have experienced light to severe disturbance.

| Species that are repeatedly reported with mimosa on disturbed sites | |
|---|---|
| Species | States |
| Loblolly pine | Georgia [27,77,86]<br>Alabama [43,76]<br>Florida [45] |
| Sweetgum | North Carolina [112]<br>Alabama [43]<br>Florida [45] |
| Black cherry | New York [95]<br>Washington DC [29]<br>Florida [45] |
| Black locust (*Robinia pseudoacacia*) | Washington DC [29]<br>Kentucky [103]<br>Georgia [86] |
| Flameleaf sumac (*Rhus copallinum*) | New York [95]<br>Washington DC [29]<br>Maryland [97]<br>Oklahoma [47]<br>Florida [45] |
| Smooth sumac (*Rhus glabra*) | New York [95]<br>Washington DC [29]<br>Oklahoma [47]<br>Tennessee [5] |
| Blackberries (*Rubus* spp.) | New York [95]<br>Washington DC [29]<br>Georgia [86] |
| Sericea lespedeza | Kentucky [103] |

| | |
|---|---|
| (*Lespedeza cuneata*) | Oklahoma [46]<br>Georgia [86] |
| Red clover<br>(*Trifolium pratense*) | Tennessee [5]<br>Kentucky [103] |

# BOTANICAL AND ECOLOGICAL CHARACTERISTICS

SPECIES: Albizia julibrissin


- GENERAL BOTANICAL CHARACTERISTICS
- SEASONAL DEVELOPMENT
- REGENERATION PROCESSES
- SITE CHARACTERISTICS
- SUCCESSIONAL STATUS


Mimosa flowerhead.
Photo by Dan Tenaglia, missouriplants.com

GENERAL BOTANICAL CHARACTERISTICS:


- **Botanical description**
- **Raunkiaer life form**


Mimosa leaves and fruit.
Photo by Chuck Bargeron, University of Georgia, Bugwood.org

**Botanical description:** This description provides characteristics that may be relevant to fire ecology and is not meant for identification. Keys for identification are available (e.g., [35,36,113,118]).

Mimosa is a deciduous [36], nitrogen-fixing [75,80,101,116] tree or shrub [56,116] with thin [8,75], nearly smooth

[8,67,75] bark.

Mimosa has a broad crown [26,35,36,49,67,113] and single or multiple [8,75], short [36,116] trunks. It ranges from 10 to 50 feet (3-15 m) tall [8,18,26,35,75,113,118]. The champion mimosa, last measured in 2006, is 64 feet (20 m) tall and has a 80.4-foot (24.5 m) spread. Its circumference at 3 feet (1 m) above ground is 103.2 inches (262 cm) [2]. Average circumference of mimosas in the subtropical forests in the foothills of Garhwal Himalayas was 76.9 inches (195.2 cm) [59].

Mimosa has alternate leaves 4 to 20 inches (15-38 cm) long [8,35,36,67,75,113,116] and up to 6 inches (15 cm) wide [36,116]. The leaves are bipinnately compound [8,18,26,36,75,113,118], with 3 to 12 pairs of pinnea/leaf [8,35,36,116,118] and 8 to 30 pairs of leaflets/pinnea [35,67,75,113,116,118]. The oblong leaflets [35,67,113,116] are 5 to 15 mm long [36,67,75,116,118] and 2 to 5 mm wide [26,116]. They are asymmetric [8,35,36,75,116], have entire margins [75], and may be puberulent, often along the margins and the underside of the midrib [36,113,116,118]. Mimosa leaves move in reaction to light [23,26] and touch [23].

The showy flowerheads [8,116] occur in clusters [23,75] at the ends of branches [8,35,75,116]. Each head has 15 to 25 sessile flowers [8,75] from 1 to 2 inches (2.5-6 cm) long [8,26,67,75].

Mimosa's fruits are flattened [23,67,116,118] legumes [75,113,118] from 3 to 8 inches (8-20 cm) long [18,23,35,75,113,118] and 0.6 to 1.2 inches (1.5-3 cm) wide [35,36,49,113,116,118]. They contain 5 to 16 seeds [37,75] and occur in clusters [8,49,75]. Seeds are about 6 to 12 mm long, half as wide [8,36,113], and have hard seed coats [116].

Mimosa is apparently short lived in the United States [8,23,36], with an average life span of around 30 years [7]. However, mimosa may live longer in Korea, with minimum ages ranging from 30 to 45 years or more [48].

**Raunkiaer [93] life form:**
Phanerophyte

SEASONAL DEVELOPMENT:
Mimosa typically begins flowering in May in southern portions of its range [8,23,37,49,75,86,113,120] and June in northerly portions of its range [35,79]. It generally continues flowering through August [8,18,26,35,37,49,79,86,113,119]. A flora of the southeastern United States notes flowering as early as April [26]. Flowering from late May to early June is reported in a flora of north-central Texas [23]. At southerly latitudes of mimosa's range in China, mimosa flowered significantly ($P$=0.045) earlier than mimosa at northerly latitudes. Warm temperatures also resulted in earlier ($P$<0.05) flowering dates than cool temperatures [68].

Fruits first appear in June [75] and mature from August [8,49] to November [86,88,119]. According to Parrotta and others [88], seeds disperse from September to November. A description of mimosa notes that the legumes split open in winter [75]. Fruits may remain on the tree into winter [8,18,75] or spring [49].

In a greenhouse experiment mimosa stopped growing when daylight hours were short and grew vigorously with daylight of 14 hours or longer [83].

REGENERATION PROCESSES:

- **Pollination and breeding system**
- **Seed production**
- **Seed dispersal**
- **Seed banking**
- **Germination**
- **Seedling establishment and plant growth**
- **Vegetative regeneration**

Mimosa reproduces by seeds and sprouting from the roots.

**Pollination and breeding system:** Mimosas are monoecious or andromonoecious and pollinated by insects [48]. Flowers are visited by bees, butterflies [37,56], and hummingbirds [37,49,56]. It is not clear whether mimosa flowers are perfect [37,113] or if the apical flower of each head is perfect and the rest are staminate [36]. Pardini and Hamrick [87] cite Elias (1980) as describing mimosa flowers as andromonoecious, but disagree based on observations of individual inflorescences commonly producing 3 to 9 fruits.

Mimosa is self-incompatible [37,48]. Inbreeding occurs occasionally [48]. For information on pollen donor variability see Irwin and others [50] and Pardini and Hamrick [87]. Pardini and Hamrick [86] provide information on spatial genetic structure of mimosa populations.

**Seed production:** Several authors assert that mimosa produces many seeds [7,8,22,75,94,116]. According to Wick and Walters (1974, cited in [80]) mimosa produces 8,000 seeds/year. An average of 11,000 to 11,500 mimosa seeds/pound is widely reported ([113,119], Wick and Walters (1974 cited in [80,88])).

**Seed dispersal:** Seeds disperse in several ways, although their relative importance is unknown. Several sources suggest that the thin, papery legumes are wind dispersed [37,81,86,95]. An experiment to determine the wind-dispersal capability of several species found that mimosa legumes could disperse from the parent tree in a 6 mile (10 km) per hour horizontal breeze [70]. Reviews [8,75] suggest that mimosa seeds are also transported by water. Miller [75] suggests that animals may disperse some mimosa seeds. Seeds in contaminated fill dirt could also lead to mimosa spread [8].

**Seed banking:** Mimosa seeds may remain viable for long periods, although seed bank studies were lacking as of 2008. Reviews cite early 1940s articles stating mimosa seeds kept in dry storage remained viable for 147 [84,105] or 149 years [19]. A Wick and Walters (1974) study mentioned in several articles [8,88,119] found 90% viability of mimosa seeds stored in loosely corked bottles for 5 years. A flora of the southeastern United States reports that mimosa seeds remain viable for "several years" in soil [26]. Mimosa seed longevity is likely due to its impermeable seed coat [27,119].

**Germination:** Exposure to heat [38,89] and fungi [38], soaking in water [80,88], or other damage to the seed coat can break mimosa seed dormancy. For more information on the effects of heat on germination rates, see Fire adaptations and plant response to fire. The presence of fungi in soil resulted in a 30.1% germination rate in mimosa seeds that had not been previously scarified, significantly ($P<0.05$) greater than the 11.4% germination rate of mimosa seeds that had not been previously scarified and were planted in sterilized soil [38]. Soaking in water resulted in 79.6% of mimosa seeds germinating over a 4-year period [80]. Manual snipping of part of the seed coat resulted in 93% germination after 7 days in one laboratory study [89] and 90% germination after an unspecified time in another [40]. Gogue and Emino [38] found mechanical scarification resulted in germination rates from 89.7% to 98.4%. Other methods for stimulating mimosa germination include hot water [89] and sulfuric acid [9,88,119]. Mimosa seed germination following 8 months at 54 °F (12 °C) was only 2.5% [80], suggesting that cool temperatures do not promote mimosa germination. According to a flora of Texas, generally one-quarter to one-third of mimosa seeds germinate [113].

According to the Woody Plant Seed Manual, planting seeds no more than 1 inch (2 cm) deep in loose moist soil in full sunlight "favors" mimosa germination [88].

**Seedling establishment and plant growth:** Under appropriate conditions mimosa seedlings have high survival rates. In a trial to determine mimosa's potential as domestic goat forage, 96.5% of mimosa seedlings planted in experimental plots in March survived their first year [1]. Mimosa survival on acid surface-mine spoils in Kentucky averaged 84% [90]. No mortality was observed in mimosas planted on a landfill in South Korea [58]. However, in a test to determine mimosa's usefulness as livestock forage in the Louisiana coastal plain, very few seedlings established during a period with 75% of the long-term average precipitation [89]. The rarity of mimosa saplings (>4 inches (11 cm) tall) in Great Smoky Mountains National Park suggested few seedlings survive their first year, mostly likely due

to mowing and perhaps shading as well [7].

Although available evidence is circumstantial, descriptions of the majority of mimosa sites suggest that mimosa establishment is aided by disturbance. Even the least disturbed habitats occupied by mimosa, such as virgin longleaf pine forests [61] and isolated islands [92], have likely experienced some form of disturbance. For instance, the virgin longleaf pine forest was located within the city limits of Flomaton, Alabama [61], suggesting the occurrence of some level of human activity. Flooding on an island in the Potomac River likely explained the relatively high light penetration compared to a mainland forest [92]. Soil disturbance by animals such as feral hogs could be another disturbance promoting mimosa establishment. Soil disturbance and/or other site characteristics in areas of Great Smoky Mountains National Park with mimosa saplings led Baron and others [7] to conclude that mimosa establishment seems disturbance dependant. However, disturbance in a mature, second-growth oak-hickory forest in Tennessee where mimosa occurred was not described. The site was on private property and had not burned in at least 30 years [100]. See Successional Status for more information on the association of mimosa with disturbed areas.

Mimosa grows quickly in good conditions [8,23,88,101,116]. Wilt-resistant clones planted at 1 year of age and 2 to 4 feet (0.6-1.2 m) tall grew up to 20 feet (6 m) in height and 6 inches (15 cm) in diameter in 6 growing seasons. Planted mimosa increased in height by 91% or 14 mm/day during the first growing season of an experiment in North Carolina pasture [1]. On a landfill in South Korea, mimosa reached an average height of 8.2 feet (2.49 m) after 3.6 years [58]. Mimosa in acid surface-mine spoils in Kentucky grew to an average height of 4.9 feet (1.5 m) over 4 years [90]. Mimosa seedling growth may be favored in loose, moist soil in full sunlight [88]. Mimosa grew well with long photoperiods in a greenhouse [83]. Experimental exposure to sassafras (*Sassafras albidum*) leachates reduced mimosa root growth [32].

**Vegetative regeneration:** Several reviews note mimosa's ability to reproduce vegetatively [94,101] by sprouting from the root [7,8]. A review notes that mimosa colonies form from root sprouts [75].

Sprouting after cutting or damage is common [8,22,101,116] and sprouts grow quickly. Sprouts may grow over 3 feet (1 m) in a season [8,22]. For more detail on mimosa response to cutting or other treatments, see Impacts and Control and Fire adaptations and plant response to fire.

SITE CHARACTERISTICS:

**Elevation**: Although mimosa tolerates moderate frosts [67,116], cold temperatures restrict mimosa to low elevations [26,118]. In the Southeast, mimosa does not typically occur above 3,000 [8,75] to 3,300 feet (900-1,000 m) [26]. In Great Smoky Mountain National Park, mimosa was common from 1,200 to 2,000 feet (370-610 m) and did not occur above 2,420 feet (740 m) [7]. In Connecticut, cold typically kills seedlings in their first winter. However, mimosa has established near the Connecticut coast where the weather is relatively mild [17]. In Utah mimosa is cultivated at low elevations [118] and in Butte County, California, mimosa occurs on sites from 200 to 300 feet (60-90 m) in elevation [85].

**Moisture**: Since it occurs on wet to dry sites [75], mimosa does not appear sensitive to moisture conditions [101]. It occurred in a constructed wetland in New Jersey that was dominated by several marsh species [65] and occurs near rivers that are frequently flooded [5,92]. In mimosa's native range it occurs in moist scrub and woodland areas [116]. Moist soil may favor mimosa seedling establishment [88]. Mimosa has been reported in mesic sites [114]. Establishment of mimosa was rare on the Louisiana coastal plain during a period with 75% of the long-term average precipitation [89]. However, Vines [113] and Weber [116] note that mimosa is resistant to drought, and mimosa has been observed in xeric areas [5,7].

**Soil**: Although descriptions in the literature are limited, reviews state that mimosa occurs in a wide range of soil conditions [8,101]. Weber [116] states that mimosa is "adapted to poor soil", and Moore [80] notes that mimosa's nitrogen-fixing capability enables it to "grow well on infertile soil".

Mimosa occurs on sites with acidic to moderately alkaline soil pH and grows on acid surface-mine spoils. At a landfill in south Korea, mimosa grew on sites with pH ranging from 5.67 to 7.94 [58]. Mimosa grew on surface-mine spoils in Kentucky where pH ranged from 4.0 to 7.1. Soluble salt concentrations on these sites ranged from 0.205 to 0.243

mmhos/cm, and phosphorus concentrations ranged from 1.6 to 8.1 ppm. Mimosa's growth and survival were generally better on sites with high phosphorus concentrations. In areas with low phosphorus concentrations, greater growth occurred on sites with neutral pH [90].

Soil textures reported from sites with mimosa are generally coarse. In the South Carolina Piedmont, mimosa occurred in loamy sand [28], and at a landfill in South Korea mimosa occurred in sandy loam [58]. Mimosa has been reported in coarse soil at a constructed marsh in New Jersey [65] and in mixtures of sand, gravel, and boulders next to a river in northern Tennessee [5].

**Topography**: Mimosa has been reported in flat areas [7,28] and on steep slopes [7]. It was reported "on a level area" in the South Carolina Piedmont [28] and on slopes ranging from <10° to 90° in Great Smoky Mountains National Park [7].

SUCCESSIONAL STATUS:
Mimosa is an early-successional species that does best in full sunlight on disturbed sites.

Mimosa is generally an early-successional species, although it does occur in some old stands. Best and others [10] state that mimosa is a "pioneer invader" that dominated stripmine overburden soils in experimental plots in Florida by the second growing season. Pardini and Hamrick [86] found mimosa quickly established even-aged stands in disturbed areas of northern Georgia. In central Georgia, mimosa occurred in 11-year-old loblolly pine plantations that established following herbicide application and burning or burning alone [77]. Mimosa has also been observed in a recently thinned 30-year-old loblolly pine stand in the South Carolina Piedmont [28] and a fire-suppressed virgin old-growth longleaf pine forest in Alabama [61,111].

Mimosa prefers sun. It tolerates partial shade [8,75,114] but is generally considered shade intolerant [7,72,80]. Full sunlight may promote flowering [37], germination, and seedling establishment [88]. Mimosa often occurs in open areas [26,65,94,101,104] and rarely occurs under a full canopy [8]. None of the mimosa trees near a yellow-popular successional forest in Great Smoky Mountains National Park were growing under a closed canopy [7]. In South Carolina, mimosa was reported in a loblolly pine stand that had been recently thinned [28]. It occurred on an island in the Potomac River that averaged 16% full sunlight intensity at 3 feet (1 m) above the ground [92].

Throughout its range mimosa occurs on disturbed sites such as roadsides [7,8,17,36,47,51,73,78,86,120], old fields [7,47,54,73], thinned [28] or clearcut [81] sites, and edges [29,36,37,74,101,116]. Mimosa has been documented near roads in Connecticut [17], Washington DC [29], southern Illinois [78], Oklahoma [46,47], northern Florida [36,45], and California [85]. Mimosa has been reported in old fields in Oklahoma [47], North Carolina [73] and Tennessee [54]. In Missouri, mimosa occurred in "abandoned pasture" [102], and in California it occurred in "agricultural" areas [85]. Mimosa was reported in a recently thinned loblolly pine stand in South Carolina [28] and open areas resulting from logging in Virginia [81] and Kentucky [103]. Mimosa presence in a fire-suppressed virgin old-growth longleaf pine stand may be explained by the forest's location inside Flomaton, Alabama, city limits [61], which suggests some level of disturbance due to human proximity and likely nearby seed sources. Mimosa is often found in forest edges [29,37,81,101,103,116]. However, an analysis of edges in North Carolina forest did not list mimosa among the species that were considered good edge indicators [72].

---

# FIRE EFFECTS AND MANAGEMENT

SPECIES: Albizia julibrissin

---


- FIRE EFFECTS
- FUELS AND FIRE REGIMES
- FIRE MANAGEMENT CONSIDERATIONS


FIRE EFFECTS:

- **Immediate fire effect on plant**
- **Postfire regeneration strategy**
- **Fire adaptations and plant response to fire**

**Immediate fire effect on plant:** As of 2008, no information on the direct impacts of fire on mimosa was available. Given mimosa's response to other types of damage (see Vegetative regeneration and Impacts and Control) and its thin bark, it is likely top-killed by fire.

**Postfire regeneration strategy** [98]:
Tree with sprouting root suckers
Ground residual colonizer (on site, initial community)
Initial off-site colonizer (off site, initial community)
Secondary colonizer (on- or off-site seed sources)

**Fire adaptations and plant response to fire:** There were few data available on the response of mimosa to fire as of 2008, and those data were predominantly anecdotal or circumstantial. Most articles cited below provided some information on the fire histories of sites with mimosa. The only study with prefire and postfire information on mimosa recorded coverage of mimosa in 1 of 5 classes and did not include statistical analysis. This study and laboratory studies demonstrating increased mimosa germination following exposure to heat [38,89] suggest that mimosa germination may increase following fire.

Occurrence in burned areas: Although limited, available data suggest that mimosa establishment may increase following fire. Mimosa coverage increased following spring thin-and-burn and burn-only treatments, and did not increase on control plots in previously fire-suppressed, mature, second-growth oak-hickory forest in Tennessee. The fire consumed all surface fuel on about 2.5 acres (1 ha) in 2 hours and had a maximum flame length of 1.6 feet (0.5 m). The table below shows increases in mimosa on plots that were burned and thinned then burned, while coverage on control plots remained low [100].

Mimosa coverage before and after restoration treatments in oak-hickory forest in Tennessee [100]

| Site | Before treatment | After treatment |
|---|---|---|
| Ridge control | <1% | <1% |
| Slope control | <1% | <1% |
| Ridge thin-and-burn | <1% | 1-20% |
| Slope thin-and-burn | 0% | 1-20% |
| Ridge burn | <1% | 21-50% |
| Slope burn | 1-20% | 21-50% |

Mimosa's presence on burned sites suggests it is not sensitive to fire. Mimosa was not eliminated on a fire-suppressed, old-growth pine site in Alabama approximately 4 months following the last of 3 yearly burns—1 in winter, 1 in spring, and 1 in summer—and about a year and a half after midstory removal [62,111]. Whether mimosa responded positively or negatively to the restoration treatment was not stated. Mimosa occurred on a site 11 years after herbicide application and burning in preparation for planting loblolly pine [77]. In the Piedmont National Wildlife Refuge near Macon, Georgia, mimosa was a minor species on mixed pine-hardwood sites that were burned repeatedly every 4th or 5th winter and on sites that were not burned. The frequency of mimosa on unburned transects was less than 2%, and frequency on burned transects was less than 1% [115].

Seedling establishment and sprouting of individuals that were on sites before fire may increase mimosa coverage following fire (see Regeneration Processes). Many, if not all, sites where mimosa establishes have experienced some level of disturbance. The change in site characteristics following fire, including disturbed ground layers and more open

canopies, could increase establishment of seedlings (see Successional Status). This would be of greatest concern in areas near seed sources, since wind or water could transport seeds into the burned area (see Seed dispersal). Given growth rates of mimosa following cutting [1] (see Impacts and control) and the possibility of mimosa forming colonies by root sprouting [75], sprouting from the roots following fire may also increase mimosa coverage on burned sites.

Postfire germination: Laboratory evidence of heat stimulating mimosa germination and circumstantial evidence from the field suggests that fire may result in increased mimosa germination. In the laboratory, brief exposure to open flame [38] and dry, 176 °F (80 °C) heat [89] stimulated mimosa germination. The table below shows increased germination in mimosa seeds exposed to open flame for 1 to 3 seconds [38].

Germination rate of mimosa seeds exposed to open flame for varying periods [38]

| Length of fire exposure (seconds) | Percent germination |
|---|---|
| 0 | 1.7d* |
| 1 | 40.0a |
| 3 | 37.8a |
| 5 | 32.4b |
| 10 | 7.1c |

*Percents followed by different letters are statistically different ($P$<0.05).

Another germination study found hand-scarified mimosa seeds germinated faster than heat-scarified mimosa seeds, but after 240 days mimosa seeds exposed to 176 °F (80 °C) heat for 5 to 60 minutes had similar germination rates as hand-scarified seeds. Mimosa seeds exposed to 176 °F heat for 4 hours had higher germination rates than those exposed to 176 °F heat for 1 minute [89].

Germination rate of mimosa seeds after hand scarification or exposure to 80 °C for varying lengths of time [89]

| Treatment | Percent germination | | |
|---|---|---|---|
| | after 7 days | after 21 days | after 240 days |
| Hand scarified | 93a* | 93a | 93ab |
| 1 minute | 8d | 21c | 63d |
| 5 minutes | 9d | 26c | 86bc |
| 10 minutes | 24c | 51b | 96ab |
| 30 minutes | 23c | 52b | 94ab |
| 60 minutes | 18cd | 53b | 96ab |
| 240 minutes | 20cd | 46b | 78c |

*Percents followed by different letters within columns are statistically different ($P$<0.05).

Given that spring thin-and-burn and burn-only treatments in oak-hickory forest in Tennessee did not reduce canopy cover below 86% on any site (a reduction of no more than 7%), it was speculated that increases in mimosa coverage were a result of the fire stimulating mimosa germination [100]. Potential increases in germination could be due to seed scarification, improving ground-level site characteristics, or both.

FUELS AND FIRE REGIMES:

- **Fuels**
- **Fire regimes**

**Fuels:** As of 2008, no information was available on differences between fuel beds on sites with and without mimosa. Available information suggests that in the Southeast, available fuels under mimosa decompose by fall [100] or winter [76]. A fall prescribed fire in a fire-suppressed, mature, second-growth oak-hickory forest in Tennessee with <1% mimosa coverage could not be performed because fuels on the site decomposed by September [100]. In Alabama, Miller [76] observed little fuel under mimosa in winter. However, a website on California garden plants notes that mimosa produces "a tremendous amount of debris" in late spring and fall due to flower and leaf drop, respectively [30].

Mimosa occurred in a loblolly pine stand in the South Carolina Piedmont where pine needles averaged 1 inch (2.5 cm) deep [28].

**Fire regimes:** Mimosa occurs on recently burned sites [100,111], in communities that are managed with repeated fire [45,115], and in areas that have not burned in several decades [82,100,111]. Mimosa occurred in an alluvial forest in an area of North Carolina where fires had been suppressed for 60 years [82]. It was found on fire-suppressed longleaf pine forest in Alabama [111] and fire-suppressed mature, second-growth oak-hickory forest in Tennessee [100]. Mimosa remained on these sites following burning to restore the longleaf pine forest [111] and experimental burns in the oak-hickory forest [100]. Mimosa occurred in a pine-hardwood stand in Georgia that was burned every 4th or 5th winter [115]. It was documented in sandhill pine communities in Florida, which are dependent on repeated fires every 2 to 5 years [45]. In the western portion of Great Smoky Mountains National Park, which is comprised primarily of pines and oaks, the fire-return interval between 1856 and 1940 was from 10 to 40 years. Implementation of active fire suppression in this area resulted in an increase in the estimated fire-return interval to over 2,000 years [42]. According to a review, estimated return intervals for surface fires in oak-hickory communities are from 2 to 35 years. Typically these low-severity fires occur in spring or fall, burn small areas, and are human-caused [99]. The response of mimosa to repeated fires or season of burning is unknown.

The Fire Regime Table summarizes characteristics of fire regimes for vegetation communities in which mimosa has been documented.

FIRE MANAGEMENT CONSIDERATIONS:
Available evidence suggests that a single spring fire will not assist in controlling mimosa and is likely to promote mimosa's spread.

**Potential for postfire establishment and spread:** Mimosa is likely to increase following fire, since its seeds may be scarified by heat (see Fire adaptations and plant response to fire), it performs best on sites with open canopies (see Successional Status), and its establishment is often enhanced by disturbance (see Seedling establishment and plant growth and Successional Status).

**Preventing postfire establishment and spread:** Preventing invasive plants from establishing in weed-free burned areas is the most effective and least costly management method. This may be accomplished through early detection and eradication, careful monitoring and follow-up, and limiting dispersal of invasive plant seed into burned areas. Specific recommendations include:

- incorporate cost of weed prevention and management into fire rehabilitation plans
- acquire restoration funding
- include weed prevention education in fire training
- minimize soil disturbance and vegetation removal during fire suppression and rehabilitation activities
- minimize the use of retardants containing nitrogen and phosphorus
- avoid areas dominated by high priority invasive plants when locating firelines, monitoring camps, staging areas,

and helibases
- clean equipment and vehicles prior to entering burned areas
- regulate or prevent human and livestock entry into burned areas until desirable site vegetation has recovered sufficiently to resist invasion by undesirable vegetation
- monitor burned areas and areas of significant disturbance or traffic from management activity
- detect weeds early and eradicate before vegetative spread and/or seed dispersal
- eradicate small patches and contain or control large infestations within or adjacent to the burned area
- reestablish vegetation on bare ground as soon as possible
- avoid use of fertilizers in postfire rehabilitation and restoration
- use only certified weed-free seed mixes when revegetation is necessary

For more detailed information on these topics see the following publications: [4,15,39,108].

**Use of prescribed fire as a control agent:** Limited evidence suggests that fire may not be useful for controlling mimosa. However, more information is needed, including the response of mimosa to fire in various seasons and at varying frequencies and severities. Given the role of repeated mechanical treatments in controlling mimosa and the occurrence of mimosa in fire-suppressed forests [100,111], repeated burning may be more useful in controlling mimosa than data available as of 2008 would suggest.

---

# MANAGEMENT CONSIDERATIONS

SPECIES: Albizia julibrissin

---


- IMPORTANCE TO WILDLIFE AND LIVESTOCK
- OTHER USES
- IMPACTS AND CONTROL


IMPORTANCE TO WILDLIFE AND LIVESTOCK:
Mimosa may be a minor food source for some wildlife and has some potential as livestock feed.

**Palatability and/or nutritional value:** Mimosa seed may provide some food for birds and squirrels [49,113], while butterflies and hummingbirds likely consume mimosa nectar [49,56]. Mimosa leaves may provide browse for deer and other wildlife [1,49,88]. According to Kartesz [56], mimosa has been reported as toxic.

Mimosa's nutritional value and growth rate give it potential as a summer browse species for livestock in the southeastern United States [16,89]. In a test of mimosa as a forage species in the Louisiana coastal plain, mimosa had consistently high leaf crude protein level [89]. In an analysis of mimosa as forage in Arkansas, nitrogen levels met the requirements of growing cattle and domestic goats, and the presence of secondary metabolites were below detectable levels [16]. In a study of mimosa's potential as domestic goat feed, digestibility and chemical composition were similar to alfalfa (*Medicago sativa*) [11]. In a domestic sheep feeding trial, mimosa digestibility was 61%, and there were no signs of toxicity [12]. In an experiment on mimosa as domestic goat forage, herbage mass production was adequate [1]. Other experiments suggest that mimosa tolerates 2 complete defoliations during the grazing season [3], and that yield was maximized when 6 to 8 weeks of regrowth occurred between harvests [12,13]. Despite mimosa's tolerance, requirements for managing defoliation are likely greater than required of currently used forage species [89]. Although domestic goats [3] and domestic sheep [3,12] eat mimosa, mimosa has been shown to have relatively low palatability compared to some available foods [1,3]. Mimosa's other limitations include the potential to become invasive [89] (see Impacts), and a lack of evidence, as of 2008, that mimosa significantly improves animal performance measures such as weight gain [3].

**Cover value:** Wick and Walters (1974) state that mimosa provides valuable cover for wildlife (cited in [88]).

OTHER USES:

**Ornamental**: As of 2009, Mimosa was a popular ornamental throughout its US range [20,22,26,37,94,110], including Ohio [14], Connecticut [17], Florida [36], Texas [23,113], and Utah [118]. Around 2005, 75% of nurseries in the Tidewater area of Virginia carried mimosa [24]. Information on mimosa seed collection, nursery practice, and planting is provided by Parrotta and others [88] and Williams and Hanks [119].

**Rehabilitation planting**: Mimosa has been recommended as a soil builder [90] and is used in rehabilitation planting on landfills [58,95] and mine sites [10,90].

**Other**: Mimosa may be used for timber [56,113] and as an alleycrop species, in which legumes are grown between rows of a commercial species to improve soil properties through nitrogen-fixation and creation of an on-site mulch source [55,71]. Although mentioned as a timber plant by Kartesz [56] and apparently used in cabinetmaking in Asia [113], mimosa's weak and brittle wood was noted in a review [8]. There have been some successes with experimental trials that used mimosa as an alleycrop species to maintain or improve soil fertility while growing commercial crops. Mimosa fixed an estimated 245 pounds of nitrogen/acre over one growing season in an experimental planting in Alabama [12]. However, its use on broad scales is not recommended [55,71]. Kartesz [56] notes that mimosa is edible and useful in erosion control. Use as a biofuel [75] has also been reported.

IMPACTS AND CONTROL:

**Impacts:** Several assertions have been made regarding mimosa ability to invade native plant communities [23], displace natives [74,101], and prevent regeneration of natives [74,116]. According to Weber [116] and Demers and Long [22], dense mimosa stands reduce light levels and available nutrients, which reduces establishment of native species [116]. However, a 2005 review notes that the potential impacts of mimosa establishment and spread are unknown [20].

Despite a lack of data on the impacts of mimosa on native habitats, mimosa is commonly considered a weed of concern in the south-central and southeastern United States. Miller [74] states that mimosa is 1 of the 16 most prevalent nonnative species in subtropical forests of the southeastern United States. Managers in Alabama, Arkansas, and Kentucky consider mimosa a problem weed [69]. In Texas mimosa is widespread and "can aggressively invade native habitats" [23]. According to a 2008 review [86], mimosa is listed as invasive in 8 southern and mid-Atlantic states. Mimosa was 1 of 12 species commonly reported as a problem by federal, state, and nongovernmental land managers of the southern Appalachians [60]. In the mid-1970s, the small size, scattered spatial arrangement, and occurrence of mimosa populations only on disturbed sites in Great Smoky Mountains National Park led to the conclusion that mimosa had very little impact on native flora of that area, despite occurrence in riparian plant communities [7]. From 1994 to 2005, mimosa was 1 of the 9 most common weeds in the Great Smoky Mountains National Park [117]. However, the impact of mimosa establishment in this area had not been determined as of 2008. Mimosa is classified as a weed that easily spreads into native communities and displaces native species in several southeastern states including Tennessee [96], Georgia [33], and Florida [31]. It frequently occurs in the central peninsula and northern regions of Florida [121]. In 2005, mimosa was classified as a "significant threat" instead of a "severe threat" in Kentucky due to fewer impacts on native plant communities and fewer invasive characteristics than weeds that pose more severe threats [57]. As of 2003, mimosa was considered "moderately invasive" in Virginia due to slow spread and negligible impact on ecosystem processes [114]. It had low management priority in another Virginia study area due to comparative ease of control [24].

Riparian habitats may be at greater risk of mimosa invasion than other communities, likely due to regularly disturbed soils in riparian areas as well as the potential for mimosa seeds to disperse in water [8]. Mimosa is reportedly a "serious problem" along some streams in Tennessee [8], where it has been documented in cobble bars of the New River [5] and streambanks in Great Smoky Mountains National Park [7]. A review of southeastern weeds notes that mimosa invades riparian habitats, spreads along stream networks, and can reduce native species and hardwood regeneration in riparian habitats [74]. Mimosa was described as a "common pest" of the floodplain in Rock Creek Park in Washington DC [29]. It was reported on an island in the Potomac River, Maryland, that had experienced little human disturbance but had greater light penetration than mainland forests, likely due to higher velocities of previous floods on the island compared to the mainland [92]. Mimosa has also been reported in riverbank communities in subtropical forests within its native range [59].

**Control:** Prevention has been recommended to minimize further spread of mimosa, while control of established populations is generally accomplished with some combination of mechanical and chemical treatments.

Fire: The ability of prescribed fire to control mimosa is likely limited and is discussed in Fire Management Considerations.

Prevention: Reducing seed sources and disturbance have been suggested to control the spread of mimosa. The Southern Region of the US Forest Service prohibits planting mimosa on National Forest lands [107]. Using natives instead of mimosa for ornamental planting has been recommend [24,101], and Swearingen and others [101] provide a list of alternate native species for planting. For an example of selecting and implementing a weed risk assessment, see Jefferson and others [53]. In Great Smoky Mountains National Park, reducing anthropogenic disturbance was suggested to limit mimosa establishment [7].

Cultural: No information is available on this topic.

Physical and/or mechanical: Effective mechanical treatments typically involve repeated girdling or cutting of mimosa close to the ground before seed production. Repeated cutting or cutting in combination with herbicide application is necessary to control sprouting [8,101,116]. For example, in experimental plots in North Carolina mimosa coppiced in February grew to an average height of 54 inches (137.7 cm) by the end of June. A cutting height of 10 inches (25 cm) significantly ($P$=0.013) decreased herbage mass production compared to a cutting height of 20 inches (50 cm) [1]. Results of another experiment suggest that mimosas cut to 4 inches (10 cm) 2 or 3 times per growing season had shorter life spans than those that were cut at or above 20 inches (50 cm). Despite the difference, mimosas cut to 4 inches survived an average of 641 days [89]. Swearingen and others [101] recommend cutting mimosa at ground level. Several reviews [8,101,116] recommend cutting before seed production to prevent seed dispersal.

Seedlings up to 4 inches (10 cm) have been controlled by regular mowing [7], and seedlings up to 10 inches (25 cm) can be pulled by hand [22]. Effective hand-pulling of mimosa requires removal of the entire root [8,116,116].

Biological: Research into appropriate biological control agents was lacking as of 2008. A root fungus [8], a bruchid beetle (Bruchidae) [21,80], and a psyllid [110] apparently impact mimosa to some extent, but there were no data on their potential as biological control agents.

Mimosa is susceptible to a *Fusarium* root fungus, which causes vascular wilting and typically results in rapid mortality [8,26,36,86,113]. Mimosa strains that are resistant to the fungus are available [67,106]. The use of this root fungus to control mimosa could be limited, depending on the extent to which these strains have established in native plant communities.

Bruchid beetles infested 21% of mimosa seeds in a germination study [80], and DeLoach [21] suggests bruchid beetles may be a useful biological control for mimosa.

The introduced psyllid *Acizzia jamatonica* is apparently an obligate feeder of *Albizia* and was documented in Clarke County, Georgia, in 2006 [110].

Chemical: Herbicide application is often used to control sprouting following mechanical treatment [22]. Recommended herbicides and applications for mimosa saplings and large trees are described in several reviews [8,22,75,116]. See the Weed control methods handbook for considerations on the use of herbicides in natural areas and detailed information on specific chemicals.

Integrated management: Information on integrated management of woody eastern weeds is reviewed by Webster and others [117]. Miller [74] recommends integrated control for several southeastern weeds, including mimosa. It is apparently common to combine mechanical and chemical treatments to control existing mimosa trees and prevent sprouting [8,101,116]. Use in conjunction with preventative measures would reduce the risk of mimosa spreading into

new sites [7,101,107].

# APPENDIX: FIRE REGIME TABLE

SPECIES: Albizia julibrissin

The following table contains very little plant community information for the western, south-central, and northeastern portions of mimosa's range due to a lack of information on the nondisturbance plant communities (see Habitat Types and Plant Communities and Successional Status) occupied by mimosa in these areas. If you are interested in the fire regime of a plant community that is not listed here, see the Expanded Fire Regime Table.

Fire regime information on vegetation communities in which mimosa is likely to occur. This information is taken from the LANDFIRE Rapid Assessment Vegetation Models [64], which were developed by local experts using available literature, local data, and/or expert opinion. This table summarizes fire regime characteristics for each plant community listed. The PDF file linked from each plant community name describes the model and synthesizes the knowledge available on vegetation composition, structure, and dynamics in that community. Cells are blank where information is not available in the Rapid Assessment Vegetation Model.

California Southern Appalachians Southeast

**California**

- California Woodland

| Vegetation Community Potential Natural Vegetation Group) | Fire severity* | Fire regime characteristics | | | |
|---|---|---|---|---|---|
| | | Percent of fires | Mean interval (years) | Minimum interval (years) | Maximum interval (years) |
| California Woodland | | | | | |
| California oak woodlands | Replacement | 8% | 120 | | |
| | Mixed | 2% | 500 | | |
| | Surface or low | 91% | 10 | | |

**Southern Appalachians**

- Southern Appalachians Forested

| Vegetation Community Potential Natural Vegetation Group) | Fire severity* | Fire regime characteristics | | | |
|---|---|---|---|---|---|
| | | Percent of fires | Mean interval (years) | Minimum interval (years) | Maximum interval (years) |
| Southern Appalachians Forested | | | | | |
| Bottomland hardwood forest | Replacement | 25% | 435 | 200 | ≥1,000 |
| | Mixed | 24% | 455 | 150 | 500 |
| | Surface or low | 51% | 210 | 50 | 250 |
| | Replacement | 11% | 665 | | |

| | | | | | |
|---|---|---|---|---|---|
| Mixed mesophytic hardwood | Mixed | 10% | 715 | | |
| | Surface or low | 79% | 90 | | |
| Appalachian oak-hickory-pine | Replacement | 3% | 180 | 30 | 500 |
| | Mixed | 8% | 65 | 15 | 150 |
| | Surface or low | 89% | 6 | 3 | 10 |
| Oak (eastern dry-xeric) | Replacement | 6% | 128 | 50 | 100 |
| | Mixed | 16% | 50 | 20 | 30 |
| | Surface or low | 78% | 10 | 1 | 10 |
| Appalachian Virginia pine | Replacement | 20% | 110 | 25 | 125 |
| | Mixed | 15% | 145 | | |
| | Surface or low | 64% | 35 | 10 | 40 |
| Appalachian oak forest (dry-mesic) | Replacement | 6% | 220 | | |
| | Mixed | 15% | 90 | | |
| | Surface or low | 79% | 17 | | |

**Southeast**

- Southeast Woodland
- Southeast Forested

| Vegetation Community Potential Natural Vegetation Group) | Fire severity* | Fire regime characteristics | | | |
|---|---|---|---|---|---|
| | | Percent of fires | Mean interval (years) | Minimum interval (years) | Maximum interval (years) |
| Southeast Woodland | | | | | |
| Longleaf pine/bluestem | Replacement | 3% | 130 | | |
| | Surface or low | 97% | 4 | 1 | 5 |
| Longleaf pine (mesic uplands) | Replacement | 3% | 110 | 40 | 200 |
| | Surface or low | 97% | 3 | 1 | 5 |
| Longleaf pine-Sandhills prairie | Replacement | 3% | 130 | 25 | 500 |
| | Surface or low | 97% | 4 | 1 | 10 |
| Southeast Forested | | | | | |
| Coastal Plain pine-oak-hickory | Replacement | 4% | 200 | | |
| | Mixed | 7% | 100 | | |
| | Surface or low | 89% | 8 | | |
| Mesic-dry flatwoods | Replacement | 3% | 65 | 5 | 150 |
| | Surface or low | 97% | 2 | 1 | 8 |
| Loess bluff and plain forest | Replacement | 7% | 476 | | |
| | Mixed | 9% | 385 | | |

| | | | | | |
|---|---|---|---|---|---|
| | Surface or low | 85% | 39 | | |
| Southern floodplain | Replacement | 7% | 900 | | |
| | Surface or low | 93% | 63 | | |

*Fire Severities—
**Replacement:** Any fire that causes greater than 75% top removal of a vegetation-fuel type, resulting in general replacement of existing vegetation; may or may not cause a lethal effect on the plants.
**Mixed:** Any fire burning more than 5% of an area that does not qualify as a replacement, surface, or low-severity fire; includes mosaic and other fires that are intermediate in effects.
**Surface or low:** Any fire that causes less than 25% upper layer replacement and/or removal in a vegetation-fuel class but burns 5% or more of the area [41,63].

# Albizia julibrissin: REFERENCES


1. Addlestone, B. J.; Mueller, J. P.; Luginbuhl, J.-M. 1999. The establishment and early growth of three leguminous tree species for use in silvopastoral systems of the southeastern USA. Agroforestry Systems. 44(2/3): 253-265. [71949]

2. American Forests. 2009. Mimosa, silktree: Albizia julibrissin, [Online]. In: National register of big trees: 2008-2009. American Forests (Producer). Available: http://www.americanforests.org/resources/bigtrees/register.php?details=3669 [2009, April 3]. [73546]

3. Animut, G.; Goetsch, A. L.; Aiken, G. E.; Puchala, R.; Detweiler, G.; Krehbiel, C. R.; Merkel, R. C.; Sahlu, T.; Dawson, L. J. 2007. Effects of pasture inclusion of mimosa on growth by sheep and goats co-grazing grass/forb pastures. Journal of Applied Animal Research. 31(1): 1-10. [71976]

4. Asher, Jerry; Dewey, Steven; Olivarez, Jim; Johnson, Curt. 1998. Minimizing weed spread following wildland fires. Proceedings, Western Society of Weed Science. 51: 49. [40409]

5. Bailey, Claude J., Jr.; Coe, Felix G. 2001. The vascular flora of the riparian zones of the Clear Fork River and the New River in the Big South Fork National River and Recreation Area (BSFNRRA). Castanea. 66(3): 252-274. [71778]

6. Barneby, Rupert C. 1989. Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Vol. 3, Part B: Fabales. Bronx, NY: The New York Botanical Garden. 279 p. [18596]

7. Baron, Jill; Dombrowski, Christine; Bratton, Susan Power. 1975. The status of five exotic woody plants in the Tennessee District, Great Smoky Mountains National Park. NPS-SER Research/Resources Management Report No. 2. Gatlinburg, TN: Great Smoky Mountains National Park, Uplands Field Resarch Laboratory, Twin Creeks Area; Atlanta, GA: U.S. Department of the Interior, National Park Service, Southeast Region. 26 p. [72010]

8. Bean, Ellen; McClellan, Linnea, tech. eds. 1996. Tennessee exotic plant management manual, [Online]. Southeast Exotic Pest Plant Council (Producer). Available: http://www.tneppc.org/Manual/manual.pdf [2009, March 23]. [46442]

9. Belcher, Earl W., Jr.; Hitt, Robert G. 1965. Eastern Tree Seed Laboratory: 12th annual report--fiscal year 1965. Macon, GA: Eastern Tree Seed Laboratory. 66 p. Unpublished report on file with: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT; FEIS files. [6522]

10. Best, G. Ronnie; Wallace, Peter M.; Dunn, William J.; Feiertag, James A. 1983. Enhancing ecological succession: 4. Growth, density, and species richness of forest communities established from seed on amended overburden soils. In: Proceedings, 1983 symposium on surface mining, hydrology, sedimentology, and reclamation; 1983 November 27 - December 2; Lexington, KY. Lexington, KY: University of Kentucky, College of Engineering, Office of Engineering Services: 377-383. [71952]

11. Bing, J. Q.; Corley, R. N., III. 2004. Evaluation of mimosa (Albizia julibrissin) and leucaena (Leucaena leucocephala) as feeds for goats. Journal of Animal Science. 82(Suppl): 355-355. Abstract. [71980]

12. Bransby, D. I.; Sladden, S. E.; Aiken, G. E. 1992. Mimosa as a forage plant: a preliminary evaluation. Proceedings, Forage and Grassland Conference. 1(1): 28-31. [71954]

13. Bransby, D. I.; Sladden, S. E.; Kee, D. D. 1996. Forage yield response of mimosa (Albizia julibrissin) to harvest frequency. In: West, N. E., ed. Rangelands in a sustainable biosphere: Proceedings, 5th international rangeland congress; 1995 July 23-28; Salt Lake City, UT. Denver, CO: Society for Range Management: 64-65. [71953]

14. Braun, E. Lucy. 1989. The woody plants of Ohio. Columbus, OH: Ohio State University Press. 362 p. [12914]

15. Brooks, Matthew L. 2008. Effects of fire suppression and postfire management activities on plant invasions. In: Zouhar, Kristin; Smith, Jane Kapler; Sutherland, Steve; Brooks, Matthew L., eds. Wildland fire in ecosystems: Fire and nonnative invasive plants. Gen. Tech. Rep. RMRS-GTR-42-vol. 6. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 269-280. [70909]

16. Burner, David M.; Carrier, Danielle J.; Belesky, David P.; Pote, Daniel H.; Ares, Adrian; Clausen, E. C. 2008. Yield components and nutritive value of Robinia pseudoacacia and Albizia julibrissin in Arkansas, USA. Agroforestry Systems. 72(1): 51-62. [71955]

17. Connolly, Bryan A. 2008. Six new vascular plant taxa for Connecticut. Rhodora. 110(943): 354-358. [72477]

18. Cothran, James R. 2004. Treasured ornamentals of southern gardens--Michaux's lasting legacy. Castanea. Occassional Papers 2: 149-157. [71956]

19. Crocker, William. 1945. Longevity of seeds. Journal of the New York Botanical Garden. 46: 48. [71957]

20. Czarapata, Elizabeth J. 2005. Invasive plants of the Upper Midwest: An illustrated guide to their identification and control. Madison, WI: The University of Wisconsin Press. 215 p. [71442]

21. DeLoach, C. Jack. 1997. Biological control of weeds in the United States and Canada. In: Luken, James O.; Thieret, John W., eds. Assessment and management of plant invasions. New York: Springer-Verlag: 172-194. [38164]

22. Demers, Chris; Long, Alan. 2002. Controlling invasive exotic plants in north Florida forests. SS-FOR19. Gainesville, FL: University of Florida, Institute of Food and Agricultural Sciences, Florida Cooperative Extension Service. 9 p. Available online: http://edis.ifas.ufl.edu/pdffiles/FR/FR13300.pdf [2005, March 28]. [23950]

23. Diggs, George M., Jr.; Lipscomb, Barney L.; O'Kennon, Robert J. 1999. Illustrated flora of north-central Texas. Sida Botanical Miscellany, No. 16. Fort Worth, TX: Botanical Research Institute of Texas. 1626 p. [35698]

24. Douglas-Smith, Angela. 2006. Control of Ailanthus altissima (Mill.) Swingle, Albizia julibrissin Durazzini, Hedera helix L. and Paulowina tomentosa (Thunb.) Seib & Zucc. Ex Steud. in three Tidewater Virginia area parks. Newport News, VA: Christopher Newport University. 60 p. Thesis. [72016]

25. Duncan, Wilbur H. 1950. Preliminary reports on the flora of Georgia. 2. Distribution of 87 trees. The American Midland Naturalist. 43(3): 742-761. [71994]

26. Duncan, Wilbur H.; Duncan, Marion B. 1988. Trees of the southeastern United States. Athens, GA: The University of Georgia Press. 322 p. [12764]

27. Duncan, Wilbur; Gunn, Willie. 1971. Colonization of an isolated pine plantation by woody plants. Bulletin of the Georgia Academy of Science. 29: 191-199. [72011]

28. DuRant, John A.; Fox, Richard C. 1966. Some arthropods of the forest floor in pine and hardwood forests in the South Carolina piedmont region. Annals of the Entomological Society of America. 59(1): 202-207. [34378]

29. Fleming, Peggy; Kanal, Raclare. 1995. Annotated list of vascular plants of Rock Creek Park, National Park Service, Washington, DC. Castanea. 60(4): 283-316. [71991]

30. Fletcher, Martin. 2007. Albizia julibrissin--mimosa or silk tree, [Online]. In: California Gardens.com. California Gardens (Producer). Available: http://www.californiagardens.com/Plant_Pages/albizia_julibrissin.htm [2009, March 13]. [73342]

31. Florida Exotic Pest Plant Council. 2005. List of Florida's invasive species, [Online]. Florida Exotic Pest Plant Council (Producer) Available: http://www.fleppc.org/list/05List.htm [2005, November 1]. [54964]

32. Gant, Robert E.; Clebsch, E. C. 1975. The allelopathic influences of Sassafras albidum in old-field succession in Tennessee. Ecology. 56: 604-615. [21919]

33. Georgia Exotic Pest Plant Council. 2002. Proposed exotic pest plant species for Georgia, [Online]. Southeast Exotic Pest Plant Council (Producer). Available: http://www.gaeppc.org/exotalk1.html [2003, August 25]. [44947]

34. Gettman, Robert W. 1976. Plants new to South Carolina and Oconee County, from the Andrew Pickens Division of Sumter National Forest. Castanea. 41(4): 356-360. [72004]

35. Gleason, Henry A.; Cronquist, Arthur. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. 2nd ed. New York: New York Botanical Garden. 910 p. [20329]

36. Godfrey, Robert K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. Athens, GA: The University of Georgia Press. 734 p. [10239]

37. Godt, Mary Jo W.; Hamrick, J. L. 1997. Estimation of mating system parameters of Albizia julibrissin (Fabaceae). Forest Genetics. 4(4): 217-221. [71959]

38. Gogue, G. J.; Emino, E. R. 1979. Seed coat scarification of Albizia julibrissin Durazz. by natural mechanisms. Journal of the American Society for Horticultural Science. 104(3): 421-423. [71960]

39. Goodwin, Kim; Sheley, Roger; Clark, Janet. 2002. Integrated noxious weed management after wildfires. EB-160. Bozeman, MT: Montana State University, Extension Service. 46 p. Available online: http://www.montana.edu/wwwpb/pubs/eb160.html [2003, October 1]. [45303]

40. Halliday, Jake; Nakao, Patricia. 1984. Technical notes on the germination of leguminous tree seeds.

Pesquisa Agropecuaria Brasileira. 19(Special Issue): 231-234. [71961]

41. Hann, Wendel; Havlina, Doug; Shlisky, Ayn; [and others]. 2008. Interagency fire regime condition class guidebook. Version 1.3, [Online]. In: Interagency fire regime condition class website. U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior; The Nature Conservancy; Systems for Environmental Management (Producer). 119 p. Available: http://frames.nbii.gov/frcc/documents/FRCC_Guidebook_2008.07.10.pdf [2008, September 03]. [70966]

42. Harmon, Mark. 1982. Fire history of the westernmost portion of Great Smoky Mountains National Park. Bulletin of the Torrey Botanical Club. 109(1): 74-79. [9754]

43. Heaven, Jennifer B.; Gross, Francesca E.; Gannon, Andrew T. 2003. Vegetation comparison of a natural and a created emergent marsh wetland. Southeastern Naturalist. 2(2): 195-206. [71996]

44. Henry, R. D.; Scott, A. R. 1981. Time of introduction of the alien component of the spontaneous Illinois vascular flora. The American Midland Naturalist. 106(2): 318-324. [71750]

45. Herring, Brenda J.; Judd, Walter S. 1995. A floristic study of Ichetucknee Springs State Park, Suwannee and Columbia Counties, Florida. Castanea. 60(4): 318-369. [71988]

46. Hoagland, Bruce W.; Johnson, Forrest L. 2001. Vascular flora of the Chickasaw National Recreation Area, Murray County, Oklahoma. Castanea. 66(4): 383-400. [71992]

47. Hoagland, Bruce W.; Johnson, Forrest. 2004. The vascular flora of Red Slough and Grassy Slough Wildlife Management Areas, Gulf Coastal Plain, McCurtain County, Oklahoma. Castanea. 69(4): 284-296. [71761]

48. Huh, Man Kyu; Huh, Hong Wook. 2000. Genetic diversity and population structure of silk tree (Albizia julibrissin Durazz.) in Korea. Forest Genetics. 7(1): 1-9. [71963]

49. Hunter, Carl G. 1989. Trees, shrubs, and vines of Arkansas. Little Rock, AR: The Ozark Society Foundation. 207 p. [21266]

50. Irwin, A. J.; Hamrick, J. L.; Godt, M. J. W.; Smouse, P. E. 2003. A multiyear estimate of the effective pollen donor pool for Albizia julibrissin. Heredity. 90(2): 187-194. [71964]

51. Isely, Duane. 1970. Legumes of the United States. V. Albizia, Lysiloma, Leucaena, Adenathera; and rejected genera of the Mimosoideae. Castanea. 35(4): 244-260. [72007]

52. Isely, Duane. 1973. Albizia Durazzini. In: Mimosoideae: Leguminosae. Memoirs of the New York Botanical Garden. 25: 74-77. [73027]

53. Jefferson, Laura; Havens, Kayri; Ault, James. 2004. Implementing invasive screening procedures: The Chicago Botanic Garden model. Weed Technology. 18: 1434-1440. [71997]

54. Jones, Ronald L. 1983. Woody flora of Shiloh National Military Park, Hardin County, Tennessee. Castanea. 48(4): 289-299. [71737]

55. Jordan, C. F. 2004. Organic farming and agroforestry: alleycropping for mulch production for organic farms of southeastern United States. Agroforestry Systems. 61(61-62): 79-90. [71965]

56. Kartesz, John T. 1999. A synonymized checklist and atlas with biological attributes for the vascular flora of the United States, Canada, and Greenland. 1st ed. In: Kartesz, John T.; Meacham, Christopher A. Synthesis of the North American flora (Windows Version 1.0), [CD-ROM]. Chapel Hill, NC: North Carolina Botanical Garden (Producer). In cooperation with: The Nature Conservancy; U.S. Department of

Agriculture, Natural Resources Conservation Service; U.S. Department of the Interior, Fish and Wildlife Service. [36715]

57. Kentucky Exotic Pest Plant Council. 2001. Invasive exotic plant list, [Online]. Southeast Exotic Pest Plant Council (Producer). Available: http://www.se-eppc.org/states/KY/KYlists.html [2005, April 13]. [44948]

58. Kim, Kee Dae; Lee, Eun Ju. 2005. Potential tree species for use in the restoration of unsanitary landfills. Environmental Management. 36(1): 1-14. [71966]

59. Kumar, Aravind; Singh, Bhim; Prabha, Shashi. 2008. Distribution of tree and shrub vegetation in some foothills forests of Garhwal Himalayas. Indian Forester. 134(4): 515-524. [71950]

60. Kuppinger, Dane. 2000. Management of plant invasions in the southern Appalachians. Chinquapin. 8(3): 21. [51456]

61. Kush, John S.; Meldahl, Ralph S. 2000. Composition of a virgin stand of longleaf pine in south Alabama. Castenea. 65(1): 56-63. [38811]

62. Kush, John S.; Meldahl, Ralph S.; Varner, J. Morgan, III. 1998. Restoration of an old-growth longleaf pine stand in south Alabama. In: Kush, John S., comp. Ecological restoration and regional conservation strategies: The longleaf pine ecosystem restoration symposium at the 9th annual international conference of the Society for Ecological Restoration: Proceedings; 1997 November 12-15: Fort Lauderdale, FL. Longleaf Alliance Report No. 3. Auburn, AL: The Longleaf Alliance: 76-80. [49279]

63. LANDFIRE Rapid Assessment. 2005. Reference condition modeling manual (Version 2.1), [Online]. In: LANDFIRE. Cooperative Agreement 04-CA-11132543-189. Boulder, CO: The Nature Conservancy; U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior (Producers). 72 p. Available: http://www.landfire.gov/downloadfile.php?file=RA_Modeling_Manual_v2_1.pdf [2007, May 24]. [66741]

64. LANDFIRE Rapid Assessment. 2007. Rapid assessment reference condition models, [Online]. In: LANDFIRE. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Lab; U.S. Geological Survey; The Nature Conservancy (Producers). Available: http://www.landfire.gov/models_EW.php [2008, April 18] [66533]

65. Leck, Mary Allessio; Leck, Charles F. 2005. Vascular plants of a Delaware River tidal freshwater wetland and adjacent terrestrial areas: seed bank and vegetation comparisons of reference and constructed marshes and annotated species list. Journal of the Torrey Botanical Society. 132(2): 323-354. [60627]

66. Little, Elbert L., Jr. 1945. Miscellaneous notes on nomenclature of United States trees. The American Midland Naturalist. 33(2): 495-513. [64812]

67. Little, Elbert L. 1961. Sixty trees from foreign lands. Agricultural Handbook No. 212. Washington, DC: U.S. Department of Agriculture. 30 p. [53217]

68. Lu, Pei-Ling; Yu, Qiang; Liu, Jian-Dong; He, Qing-Tang. 2006. Effects of changes in spring temperature on flowering dates of woody plants across China. Botanical Studies. 47(2): 153-161. [71968]

69. Marler, Marilyn. 2000. A survey of exotic plants in federal wilderness areas. In: Cole, David N.; McCool, Stephen F.; Borrie, William T.; O'Loughlin, Jennifer, comps. Wilderness science in a time of change conference--Volume 5: wilderness ecosystems, threats, and management; 1999 May 23-27; Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 318-327. [40580]

70. Matlack, Glenn R. 1987. Diaspore size, shape, and fall behavior in wind-dispersed plant species. American Journal of Botany. 74(8): 1150-1160. [28]

71. Matta-Machado, R. P.; Jordan, C. F. 1995. Nutrient dynamics during the first three years of an alleycropping agroecosystem in southern USA. Agroforestry Systems. 30(3): 351-362. [71969]

72. McDonald, Robert I.; Urban, Dean L. 2006. Edge effects on species composition and exotic species abundance in the North Carolina Piedmont. Biological Invasions. 8: 1049-1060. [68821]

73. McLeod, Donald Evans. 1988. Vegetation patterns, floristics, and environmental relationships in the Black and Craggy Mountains of North Carolina. Chapel Hill, NC: University of North Carolina. 222 p. Dissertation. [60570]

74. Miller, J. H. 1995. Exotic plants in southern forests: their nature and control. In: Street, J. E., ed. Herbicide-resistant crops: a bitter or better harvest; 1995 January 16-18; Memphis, TN. In: Proceedings, Southern Weed Science Society 48th annual meeting. Champaign, IL: Southern Weed Science Society; 48: 120-126. [51347]

75. Miller, James H. 2003. Nonnative invasive plants of southern forests: A field guide for identification and control. Gen. Tech. Rep. SRS-62. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 93 p. Available online: http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs062/ [2004, December 10]. [50788]

76. Miller, James H. 2009. [Email to Rachelle Meyer]. February 10. Albizia julibrissin information. Auburn, AL: U.S. Department of Agriculture, Forest Service, Southern Research Station, Insect, Disease, and Invasive Plant Research. On file with: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT; RWU 4403 files. [73149]

77. Miller, James H.; Boyd, Robert S.; Edwards, M. Boyd. 1999. Floristic diversity, stand structure, and composition 11 years after herbicide site preparation. Canadian Journal of Forest Research. 29: 1073-1083. [38475]

78. Mohlenbrock, Robert H. 1982. Woody plants of the Shawnee National Forest (Illinois). Castanea. 47(4): 347-359. [71743]

79. Mohlenbrock, Robert H. 1986. [Revised edition]. Guide to the vascular flora of Illinois. Carbondale, IL: Southern Illinois University Press. 507 p. [17383]

80. Moore, James E. 2006. Effects of soil type and soil moisture on the germination and establishment of exotic and native trees of the North Carolina Piedmont. Greensboro, NC: The University of North Carolina. 48 p. Thesis. [72014]

81. Naumann, Julie C.; Young, Donald R. 2007. Relationship between community structure and seed bank to describe successional dynamics of an Atlantic Coast maritime forest. Journal of the Torrey Botanical Society. 134(1): 89-98. [68945]

82. Newell, Claire L.; Peet, Robert K. 1998. Vegetation of Linville Gorge Wilderness, North Carolina. Castanea. 63(3): 275-322. [71985]

83. Nitsch, J. P. 1957. Growth responses of woody plants to photoperiodic stimuli. Proceedings, American Society for Horticultural Science. 70: 512-525. [49494]

84. Odum, Soren. 1965. Germination of ancient seeds: Floristical observations and experiments with archaeologically dated soil samples. Dansk Botanisk Arkiv. 24(2): 1-70. [70326]

85. Oswald, Vernon H. 1994. Manual of the vascular plants of Butte County, California. Sacramento, CA: California Native Plant Society. 348 p. [In cooperation with Lowell Ahart]. [73028]

86. Pardini, E. A.; Hamrick, J. L. 2008. Inferring recruitment history from spatial genetic structure within populations of the colonizing tree Albizia julibrissin (Fabaceae). Molecular Ecology. 17(12): 2865-2879. [71971]

87. Pardini, Eleanor A.; Hamrick, J. L. 2007. Hierarchical patterns of paternity within crowns of Albizia julibrissin (Fabaceae). American Journal of Botany. 94(1): 111-118. [71972]

88. Parrotta, John A.; Wick, Herbert L.; Walters, Gerald A. 2008. Albizia Durazz.--albizia. In: Bonner, Franklin T.; Karrfait, Robert P.; Nisley, Rebecca G., eds. The woody plant seed manual. Agric. Handb. 727. Washington, DC: U.S. Department of Agriculture, Forest Service: 227-229. Available online: http://nsl.fs.fed.us/wpsm/Albizia.pdf [2009, January 26]. [72813]

89. Pitman, W. D. 2008. Establishment and regrowth of Albizia julibrissin on Louisiana USA coastal plain soils. Agroforestry Systems. 74(3): 259-266. [71982]

90. Plass, William T. 1975. An evaluation of trees and shrubs for planting surface-mine spoils. Res. Pap. NE-317. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 8 p. [46129]

91. Porchezhian, E.; Ali, Asif; Ansari, S. H. 2001. Studies on some medicinally important species of Albizia. Hamdard Medicus. 44(2): 74-81. [71973]

92. Pyle, Laura L. 1995. Effects of disturbance on herbaceous exotic plant species on the floodplain of the Potomac River. The American Midland Naturalist. 134: 244-253. [26182]

93. Raunkiaer, C. 1934. The life forms of plants and statistical plant geography. Oxford: Clarendon Press. 632 p. [2843]

94. Remaley, Tom. 2005. Fact sheet: Silk tree--Albizia julibrissin Durz., [Online]. In: Weeds gone wild: Alien plant invaders of natural areas. Plant Conservation Alliance, Alien Plant Working Group (Producer). Available: http://www.nps.gov/plants/alien/fact/alju1.htm [2009, April 15]. [71984]

95. Robinson, George R.; Handel, Steven N. 1993. Forest restoration on a closed landfill: rapid addition of new species by bird dispersal. Conservation Biology. 7(2): 271-278. [22062]

96. Southeast Exotic Pest Plant Council, Tennessee Chapter. 2001. Invasive exotic pest plants in Tennessee, [Online]. Athens, GA: University of Georgia; Southeast Exotic Pest Plant Council (Producer). Available: http://www.se-eppc.org/states/TN/TNIList.html [2004, February 12]. [46747]

97. Steury, Brent W. 1999. Annotated list of vascular plants from a nontidal barrier wetland along the Chesapeake Bay in Calvert County, Maryland. Castanea. 64(2): 187-200. [71990]

98. Stickney, Peter F. 1989. Seral origin of species comprising secondary plant succession in Northern Rocky Mountain forests. FEIS workshop: Postfire regeneration. Unpublished draft on file at: U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Fire Sciences Laboratory, Missoula, MT. 10 p. [20090]

99. Stocker, Randall; Hupp, Karen V. S. 2008. Fire and nonnative invasive plants in the Southeast bioregion. In: Zouhar, Kristin; Smith, Jane Kapler; Sutherland, Steve; Brooks, Matthew L., eds. Wildland fire in ecosystems: fire and nonnative invasive plants. Gen. Tech. Rem. RMRS-GTR-42-vol. 6. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 91-112. [70903]

100. Surrette, Sherry Bell. 2006. Environmental conditions promoting plant diversity in some upland hardwood and hardwood-pine forests of the interior coastal plain ecoregion. University, MS: The University of Mississippi. 137 p. Dissertation. [72015]

101. Swearingen, J.; Reshetiloff, K.; Slattery, B.; Zwicker, S. 2002. Plant invaders of mid-Atlantic natural areas. [Washington, DC]: U.S. Department of the Interior, National Park Service; Fish and Wildlife Service. 82 p. Available online: http://www.invasive.org/eastern/midatlantic/index.html [2005, September 9]. [54192]

102. Thompson, Ralph L. 1980. Woody vegetation and floristic affinities of Mingo Wilderness Area, a northern terminus of southern floodplain forest, Missouri. Castanea. 45(3): 194-212. [71732]

103. Thompson, Ralph L.; Poindexter, Derick B. 2006. Vascular flora of the Elk and Bison Prairie, Land Between the Lakes National Recreation Area, Trigg County, Kentucky. Castanea. 71(2): 105-123. [71986]

104. Tobe, John D.; Fairey, John E., III; Gaddy, L. L. 1992. Flora of the Chauga River gorge, Oconee County, South Carolina. Castanea. 57(2): 77-109. [72019]

105. Toole, E. H.; Brown, E. 1946. Final results of the Duvel buried seed experiment. Journal of Agricultural Research. 72: 201-210. [70349]

106. Toole, E. Richard. 1955. Performance of wilt-resistant mimosa trees in high-hazard areas. Plant Disease Reporter. 39(11): 874. [71974]

107. U.S. Department of Agriculture, Forest Service, Southern Region. 2001. Regional invasive exotic plant species list, [Online]. In: Regional Forester's list and ranking structure: invasive exotic plant species of management concern. In: Invasive plants of southern states list. Southeast Exotic Pest Plant Council (Producer). Available: http://www.se-eppc.org/fslist.cfm [2003, August 25]. [44944]

108. U.S. Department of Agriculture, Forest Service. 2001. Guide to noxious weed prevention practices. Washington, DC: U.S. Department of Agriculture, Forest Service. 25 p. Available online: http://www.fs.fed.us/rangelands/ftp/invasives/documents/GuidetoNoxWeedPrevPractices_07052001.pdf [2005, October 25]. [37889]

109. U.S. Department of Agriculture, Natural Resources Conservation Service. 2009. PLANTS Database, [Online]. Available: http://plants.usda.gov/. [34262]

110. Ulyshen, Michael D.; Miller, Douglass R. 2007. First record of Acizzia jamatonica (Hemiptera: Psyllidae) in North America: friend or foe? Florida Entomologist. 90(3): 573. [71975]

111. Varner, J. Morgan, III; Kush, John S.; Meldahl, Ralph S. 2000. Ecological restoration of an old-growth longleaf pine stand utilizing prescribed fire. In: Moser, W. Keith; Moser, Cynthia F., eds. Fire and forest ecology: innovative silviculture and vegetation management: Proceedings of the 21st Tall Timbers fire ecology conference: an international symposium; 1998 April 14-16; Tallahassee, FL. No. 21. Tallahassee, FL: Tall Timbers Research, Inc: 216-219. [37671]

112. Vidra, Rebecca L.; Shear, Theodore H.; Wentworth, Thomas R. 2006. Testing the paradigms of exotic species invasion in urban riparian forests. Natural Areas Journal. 26(4): 339-350. [65080]

113. Vines, Robert A. 1960. Trees, shrubs, and woody vines of the Southwest. Austin, TX: University of Texas Press. 1104 p. [7707]

114. Virginia Department of Conservation and Recreation, Division of Natural Heritage. 2003. Invasive alien plant species of Virginia, [Online]. Virginia Native Plant Society (Producer). Available: http://www.dcr.virginia.gov/natural_heritage/documents/invlist.pdf [2009, March 23]. [44942]

115. Wade, Dale D.; Weise, David R.; Shell, Ronnie. 1989. Some effects of periodic winter fire on plant communities on the Georgia piedmont. In: Miller, J. H., compiler. Proceedings, 5th biennial southern silvicultural research conference; 1988 November 1-3; Memphis, TN. Gen. Tech. Rep. SO-74. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station: 603-611. [24541]

116. Weber, Ewald. 2003. Invasive plant species of the world: a reference guide to environmental weeds. Cambridge, MA: CABI Publishing. 548 p. [71904]

117. Webster, Christopher R.; Jenkins, Michael A.; Jose, Shibu. 2006. Woody invaders and the challenges they pose to forest ecosystems in the eastern United States. Journal of Forestry. 104(7): 366-374. [65270]

118. Welsh, Stanley L.; Atwood, N. Duane; Goodrich, Sherel; Higgins, Larry C., eds. 1987. A Utah flora. The Great Basin Naturalist Memoir No. 9. Provo, UT: Brigham Young University. 894 p. [2944]

119. Williams, Robert D.; Hanks, Sidney H. 1976. Hardwood nurseryman's guide. Agric. Handb. 473. Washington, DC: U.S. Department of Agriculture, Forest Service. 78 p. [4182]

120. Wofford, B. Eugene. 1989. Guide to the vascular plants of the Blue Ridge. Athens, GA: The University of Georgia Press. 384 p. [12908]

121. Wunderlin, Richard P.; Hansen, Bruce F. 2003. Guide to the vascular plants of Florida. 2nd edition. Gainesville, FL: The University of Florida Press. 787 p. [69433]

---

FEIS Home Page