

INVASIVE WEEDS IN GEORGIA

You can help stop their spread!



**Georgia Invasive Species Task Force
March 2005**

What is an invasive species? An invasive species is any species (including its seeds, eggs, spores, or other biological material capable of propagation) that is not native to a given ecosystem; and whose presence causes economic or environmental harm or harm to human health. Some of the invasive species in this brochure are already serious pests in Georgia while some are currently just threats and not yet widespread. Twenty of Georgia's many invasive weeds are highlighted here.

How do invasive species get here? Invasive species are introduced into a new environment, either intentionally or accidentally. Intentional introductions have often been for agricultural or ornamental purposes. Once introduced, they escape from cultivation, or from their aquariums or cages in the case of animals, and become established as viable, self-reproducing populations. Accidental introductions are usually the result of contaminated freight, where individuals or the seeds from invasive species are mixed within normal freight.

Are all exotic species invasive? No, actually only a small percent of the introduced species ever become invasive. However, it is nearly impossible to predict which species will become invasive and new species are being introduced every day. Some species have been introduced for many years before becoming invasive. These are thought to go through a "lag phase" in which their populations grow slowly until they reach a size large enough for the population to explode and become invasive. Chinese privet is a good example of this in the Southeast. Chinese privet has been in the Southeast for many years but until recently its population remained at low numbers. Now it is a serious invasive species, found throughout nearly all of the Southeast.

What type of harm do invasive species cause? Since invasive species are in a new environment, free from the natural predators, parasites, or competitors of their native habitats, they often have very high population sizes. These large populations can out-compete and displace native species, or can reduce wildlife food and habitat. Some also have the potential to disrupt vital ecosystem functions, such as water flow, nutrient cycling, or soil decomposition. Other invasive species cause massive amounts of economic damage to the agricultural industry. They can harm or kill crops, clog equipment, or contaminate produce. Some invasive species can cause direct harm to humans or domestic animals.

What can I do to fight invasive species? The simplest thing anybody can do to help fight invasive species is to *Not plant or transmit an invasive species*. Check to see if a plant is invasive before planting it. Do not empty aquariums or dump houseplants into the wild. Be sure to clean your shoes and brush off your clothes after being in an area with invasive species. Report any occurrence of invasive species, especially federal noxious weeds, to your local county extension agent. Volunteer with natural resource agencies to control invasive species. Eradicate or control populations of invasive species on your own land. *Spread the word*, tell your neighbors if you see invasive species on their land. *Don't hesitate!* Begin control efforts as soon as you find invasives on your land. Controlling small infestations is more effective and economical than trying to control a well-established, rapidly spreading infestation.

Control recommendations

Several different methods to control invasive species are available. Control methods fall into three main categories: mechanical, chemical, and biological. In many cases a combination of mechanical plus chemical control may be the most effective option.

Mechanical. Mechanical control involves physical removal or destruction of the invasive species.

Common techniques include hand pulling, digging, cutting, mowing, and burning. Prescribed fire has been used in a variety of situations to control invasive species. (Before attempting to use prescribed fire check with your local Georgia Forestry Commission office to obtain a permit and weather information.) Repeated mechanical treatments are often necessary to totally eradicate a population. Many invasive species resprout vigorously after being cut and often a viable seed bank is present. Be sure to visit the infestation site every year and remove all new sprouts and seedlings. Continue this until no more individuals have been sighted for several years in a row. This type of control is usually best done early in the year, before seeds are produced. Mechanical control alone may not be practical for large infestations.

Chemical. Chemical control is the use of herbicides to kill individuals of a population. It can be used to effectively control both large and small infestations. Use herbicides carefully. Many herbicides are not selective and will kill all surrounding vegetation or may harm aquatic systems. Before buying, mixing, and use of herbicides, be sure to read and follow label information and wear the appropriate safety gear. Contact your county extension agent for specific recommendations on herbicide use. Trade names do not imply endorsement by the cooperators. Detailed information about chemical control options can be found at www.invasive.org.

Biological. Biological control programs have been initiated for several invasive species in Georgia. Biological control involves using a predator, parasite, or disease that affects the invasive species, either killing it or reducing its competitive advantage.

References

Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control. James H. Miller. 2003. USDA Forest Service, Southern Research Station

Plant Invaders of Mid-Atlantic Natural Areas. Swearingen, J., K. Reshetiloff, B. Slattery, and S. Zwicker. 2002. National Park Service and U.S. Fish & Wildlife Service.

Southeast Exotic Pest Plant Council Invasive Plant Manual
<http://www.invasive.org/eastern/eppc/index.html>

Invasive Plants of the Eastern United States: Identification and Control
<http://www.invasive.org/eastern/>





Photo by Chuck Barger, UGA



Photo by Chris Evans, UGA



Photo by Chuck Barger, UGA

Tree of heaven

Ailanthus altissima (P. Mill.) Swingle

Tree of heaven is a rapidly growing small tree that usually grows to 40 feet but can reach up to 80 feet in height and 6 feet in diameter. It has pinnately compound leaves that are 1-4 feet in length with 10-41 leaflets. Tree of heaven resembles the sumacs and hickories, but is easily recognized by the glandular, notched base on each leaflet. The thick twigs are light brown in color and have large, heart-shaped leaf scars.

Tree of heaven is native to Asia and was first introduced into America in 1748 by a Pennsylvania gardener. It was widely planted in cities because of its ability to grow in poor conditions. Quickly escaping cultivation, tree of heaven has spread throughout the United States. In Georgia it occurs primarily in the northern half of the state.

The ability to reproduce both by seeds and by sprouts allows tree of heaven to spread and quickly dominate disturbed areas. It is extremely tolerant of poor soil conditions and has been known to grow even in cement cracks. It cannot grow in shaded conditions but thrives in disturbed forests or edges. Dense clonal thickets displace native species and can rapidly take over fields and meadows.

Recommended herbicides for control:

Trees: injection and cut stump – Garlon 3A, Pathway, PathFinder II, or Arsenal AC

Saplings: basal spray – Garlon 4 in oil and penetrant

Resprouts and seedlings: foliar spray – Arsenal AC, Krenite S, or Garlon 4



Photo by Jim Miller, USFS



Photo by Dave Moorhead, UGA



Photo by Chris Evans, UGA

Mimosa - *Albizia julibrissin* Durazz.

Mimosa, also known as silk tree, is a small tree that is 10 to 50 feet in height, often having multiple trunks. It has delicate-looking, bipinnately compound leaves that resemble ferns. The bark is smooth and light tan to greenish in color. Mimosa has very showy, fragrant, pink flowers. The flowers give way to small, flat pod-like fruits.

Mimosa is native to Asia and was first introduced into the U.S. in 1745. It has been widely used as an ornamental. Mimosa currently is found throughout the eastern and southwestern United States. It is widespread and common throughout Georgia.

Mimosa invades any type of disturbed habitat. It is commonly found in old fields, stream banks, and roadsides. The seeds, which are produced in abundance, are dispersed by animals and water, allowing this plant to quickly spread and invade new areas. Once established, mimosa is difficult to remove due to the long-lived seeds and its ability to re-sprout vigorously.

Recommended herbicides for control:

Trees: injection and cut stump – Arsenal AC or Garlon 3A

Saplings: basal spray – Garlon 4

Resprouts and seedlings: foliar spray – Garlon 3A, Garlon 4, glyphosate, or Transline



Photo by Dave Moorhead, UGA



Photo by Dave Moorhead, UGA



Photo by Jim Miller, USFS

Giant reed - *Arundo donax* L.

Giant reed is a tall plant up to 20 feet in height, with stems that resemble corn stalks. The stem is hollow and jointed every 1 to 8 inches. The long, lance-shaped leaves are alternately arranged and resemble corn leaves. Giant reed is most easily recognized by its large, dense flower or seed plume, which is up to 3 feet in length. Giant reed grows in distinct, very dense clumps.

Giant reed is native to India and was introduced into the United States in the early 1800s. It has been planted throughout the warmer areas of the United States for ornamental purposes and erosion control. It has also been used for a variety of products including music reeds, fishing rods, livestock fodder and medicinal purposes. It occurs throughout the southern United States and is widespread in Georgia.

Giant reed invades wet areas such as ditches, stream banks and lakeshores. Reproduction occurs mainly by sprouting. Giant reed can easily suppress and eliminate native vegetation completely. In addition to displacing native vegetation, giant reed also reduces wildlife habitat, increases fire risks, and interferes with flood control.

Recommended herbicides for control:

Foliar spray – glyphosate, Arsenal AC, or combination of both



Tropical spiderwort - *Commelina benghalensis* L.

Tropical spiderwort, also called Benghal dayflower, is an annual or perennial creeping herb that has both above and underground flowers. Leaves are alternate, lily-like and often have reddish hairs towards the tip. Aboveground flowers are lilac to blue in color and very small, usually with larger petals. Below ground flowers, which grow on burrowing rhizomes, are white and very small. Fruits are capsules containing two seeds.

Tropical spiderwort is widespread throughout the world and has been found in the warmer regions of the Southeast and California. It is sparse but locally common in southern Georgia.

Tropical spiderwort invades areas with moist soil, especially crop fields and pastures, but can also invade roadsides, grasslands and other disturbed areas. Tropical spiderwort reproduces by stolons, rooting at the nodes of stems, and by seeds. One plant can produce as much as 1600 seeds. It forms dense pure stands which can smother other plants, especially low-growing crops, leading to its inclusion on the federal noxious weed list. It can tolerate flooding, often rooting in saturated soils; but also can be found on drier upland sites.

Tropical spiderwort is a federal noxious weed, any occurrence should be promptly reported.

Recommended herbicides for control:

Foliar spray – Command, Spartan, or combination of both



Photo by Dave Moorhead, UGA



Photo by Chris Evans, UGA



Photo by Jim Miller, USFS

Autumn olive - *Elaeagnus umbellata* Thunb.

Autumn olive is a deciduous shrub reaching from 3 to 20 feet in height. Bark is gray-brown and smooth with small white dots (lenticels). Scattered thorns occur on many plants but may be absent. Leaves are alternate, elliptical and 2-3 inches in length. Autumn olive is easily recognized by the silvery, dotted underside of the leaves. Red, juicy fruits are abundant and occur on clusters near the stems.

Autumn olive is native to China and Japan and was introduced into America in 1830. Since then it has been widely planted for wildlife habitat, mine reclamation, and windbreaks. It is found throughout the eastern United States. In Georgia, autumn olive is a problem primarily in the northern half of the state.

Autumn olive invades old fields, open woods, woodland edges, and other disturbed areas. However, it cannot tolerate wet conditions. Because the fruits are readily eaten by birds and small mammals, this plant has the ability to spread rapidly. Autumn olive can form a dense shrub layer which displaces native species and closes open areas.

Recommended herbicides for control:

Cut stump – Arsenal AC

Basal spray – Garlon 4 with oil and penetrant

Foliar spray – Arsenal AC or Vanquish



Hydrilla - *Hydrilla verticillata* (L. f.) Royle

Hydrilla is a submersed, rooted aquatic plant that can grow from depths of 20 feet. Leaves are whorled in bunches of 3-8. The midribs of the leaves are reddish in color and the margins are slightly toothed. Tiny, translucent to white flowers can be found on the upper branches. Winter buds (called turions) are produced in the leaf axils. Hydrilla can be recognized by the dense mats it can form at the surface of the water.

Hydrilla is believed to be native to Asia or Africa, although it is widely spread across the globe. It was first introduced into America as an aquarium plant in the 1950s. The first reported instance of hydrilla escaping cultivation was in Florida in 1960. Since then it has spread throughout the southeastern United States and can also be found in both the Atlantic and Pacific coastal states. Several infestations have been found in Georgia.

Hydrilla can cause significant amounts of ecological and economic damage, which led to its inclusion on the federal noxious weed list in 1979. It forms thick mats of vegetation in waterways, restricting native vegetation growth, irrigation practices, recreation, hydroelectric production, and water flow. Hydrilla can reproduce via turions and root tubers as well as by plant fragments. This trait allows it to spread between waterways on boating equipment, in live wells, and by waterfowl.

Hydrilla is a federal noxious weed; any occurrence should be promptly reported.

Control:

A variety of control measures, such as biological, chemical, and mechanical, has been attempted with varying results.

Recommended herbicides for control:

Fluridone



Photo by Wilson H. Faircloth, Auburn University



Photo by Chris Evans, UGA

Cogongrass - *Imperata cylindrica* (L.) Beauv.

Cogongrass is a perennial colony-forming grass that grows up to 3 feet tall. Leaves have an off-center and whitish midrib and rough edges. Sharp, branched, white rhizomes help identify this plant. Cogongrass is best identified by the large fuzzy panicle of flowers and seeds, giving the plant a cottony or silky look. Flowering occurs in late spring.

Cogongrass is native to Southeast Asia and was first introduced into the southeast United States in the early 1900s. It was initially planted for forage and erosion control; however it is unpalatable for livestock and not well suited for erosion control due to its aggressive behavior. Currently cogongrass is found in the southeastern United States and is sparse in South Georgia.

Cogongrass is an extremely aggressive invader with the capability to invade a range of sites. It forms dense mats that exclude all other vegetation, leading to its inclusion on the federal noxious weed list. It spreads both by rhizomes and wind-dispersed seeds. Infestations often occur in circular patterns. Cogongrass is very flammable and creates fire hazards, especially in winter.

Cogongrass is a federal noxious weed; any occurrence should be promptly reported.

Recommended herbicides for control:

Foliar spray – Arsenal AC, glyphosate, or combination of both



Exotic lespedezas

Lespedeza cuneata (Dum.-Cours.) G. Don

Lespedeza bicolor Turcz.

Two species of lespedeza are serious invasive species in Georgia: Chinese or sericea lespedeza (*L. cuneata*) and shrubby lespedeza (*L. bicolor*). Chinese lespedeza is an upright semi-woody forb, 3 to 6 feet in height, with one to many slender stems. Shrubby lespedeza is very similar but usually displays more branching and is 3 to 10 feet in height. Both species have alternate, abundant, three-parted leaves. Chinese lespedeza leaflets are slender and 1/2 to 1 inches long; shrubby lespedeza leaflets are more elliptical to oval and 1-2 inches long. Flowers are small and whitish-yellow (Chinese) or purple (shrubby).

Native to Asia and introduced into the United States in the late 1800s, lespedezas have been widely planted for wildlife habitat, erosion control, and mine reclamation. They currently are found throughout the eastern United States. In Georgia, Chinese lespedeza is found throughout the state and shrubby lespedeza is a problem primarily in the upper coastal plain and in the piedmont area.

Lespedezas are extremely aggressive invaders of open areas. Dense monocultural thickets are formed due to their ability to sprout from root crowns. They out-compete native vegetation and once established are very difficult to remove due to the seed bank, which can remain viable for decades.

Recommended herbicides for control:

Foliar spray – Garlon 4, Escort, Transline, glyphosate, or Velpar



Chinese privet and European privet *Ligustrum sinense* Lour./*Ligustrum vulgare* L.

Privet is a thick, semi-evergreen shrub that grows up to 30 feet in height. Trunks usually occur as multiple stems with many long, leafy branches attached at nearly right angles. Leaves are opposite, oval and 1/2 to 1 1/2 inches long. Bark is light gray to tan in color and very smooth. White flowers are very abundant and occur in clusters at the ends of the branches. Fruit ripen to a dark purple to black color and persist into winter. Although there are several species of privet, they are hard to distinguish and have similar effects.

Privet was introduced into the United States in the early 1800s. It is commonly used as an ornamental shrub and for hedgerows. Privet quickly escaped cultivation and currently is found throughout the southeast and scattered elsewhere in the U.S. It is widespread and common throughout all of Georgia.

Privet can invade a wide variety of habitats. It prefers moist open lands but can be found in highly shaded or dry areas. It commonly forms dense thickets in fields or in the forest understory. Privet reproduces both by sprouts and by seeds, which are dispersed by birds and mammals. It shades and-out competes many native species and, once established, is very difficult to remove.

Recommended herbicides for control:

Cut stumps – Arsenal AC, Velpar L, Garlon 3A, or glyphosate

Basal spray – Garlon 4 with oil and penetrant

Foliar spray – glyphosate or Arsenal AC



Photo by Chuck Barger, UGA

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Photo by Chris Evans, UGA

Japanese honeysuckle

Lonicera japonica Thunb.

Japanese honeysuckle is an evergreen to semi-evergreen vine that can be found either trailing or climbing to heights of over 80 feet. It has opposite, oval-shaped leaves that are 1 to 2 1/2 inches long. This plant is easily identifiable by its showy, fragrant, tubular flowers that are whitish-pink to yellow in color and the small green berries that turn black when ripened.

A native of eastern Asia, it was first introduced into America in 1806 in Long Island, New York. Japanese honeysuckle has been planted widely throughout the United States as an ornamental, for erosion control, and for wildlife habitat. It currently occurs in at least 38 states and is found throughout Georgia.

Japanese honeysuckle invades a variety of habitats including forest floors and canopies, roadsides, wetlands, and disturbed areas. The long growing season, due to its evergreen tendencies, helps this plant out-compete many native species. It can girdle small saplings by twining around them and can form dense mats in the canopies of trees, shading out everything below.

Recommended herbicides for control:

Cut stem – glyphosate or Garlon 3A

Foliar spray – Escort, glyphosate, Garlon 3A, or Garlon 4



Photo by Dave Moorhead, UGA



Photo by Ted Bodner, Southern Weed Science Society



Photo by Chris Evans, UGA

Japanese climbing fern

Lygodium japonicum (Thunb. ex Murr.) Sw.

Japanese climbing fern is a perennial climbing fern with fronds that can reach lengths of 90 feet. Vines (rachises) are thin and wiry, usually dying back in winter. The leaflets (pinnae) are opposite, compound and finely dissected. The overall leaflet has a triangular shape and is 3 to 6 inches in length. Spores occur on the fertile leaflets as a double row of dots under the margins.

Japanese climbing fern is native to eastern Asia and was first introduced into America during the 1930s for ornamental purposes. Currently, it can be found throughout the southeastern United States and in the coastal plain region of Georgia.

Japanese climbing fern often invades disturbed areas such as roadsides and ditches, but can also invade natural areas. It forms dense tangled mats, which cover the ground and shrubs, shading and killing understory vegetation and tree seedlings. Japanese climbing fern can also form "walls" which block any available sunlight and create fire hazards. It is becoming a problem in pine plantations, leading to the threat of the spores being spread in pine straw bales.

Recommended herbicides for control:

Foliar spray – Arsenal AC, Garlon 3A, Garlon 4, glyphosate, or Escort



Photo by Ted Bodner, Southern Weed Science Society



Photo by Chuck Barger, UGA



Photo by Emily Earp - FloridaNature.org

Chinaberry tree - *Melia azedarach* L.

Chinaberry is a deciduous tree growing to 50 feet in height and 2 feet in diameter. Alternate leaves are bi-pinnately compound, 1 to 2 feet in length. Leaflets are lance-shaped and toothed. Leaves turn golden yellow in fall. Lavender flowers are showy and 5-petaled. Fruits are berry-like, yellowish-green to yellowish-tan, and poisonous. Twigs are thick, greenish-brown with light dots (lenticels). Bark is dark brown, becoming fissured with age.

Chinaberry is native to Southeast Asia and northern Australia. It was introduced into the United States in the mid-1800s. It has been used as an ornamental tree and has some medicinal purposes. It is found throughout the southern United States and is widespread in Georgia.

Chinaberry invades disturbed areas and is commonly found along roads and forest edges. It has the potential to grow in dense thickets, restricting the growth of native vegetation. Seeds are dispersed by birds, although they are toxic to humans and livestock.

Recommended herbicides for control:

Trees: injection and cut stump – Arsenal Ac, Pathway, Pathfinder II, or Garlon 3A

Saplings: basal spray – Garlon 4

Resprouts and seedlings: foliar spray – Garlon 3A, Garlon 4, or Arsenal AC



Nepalese browntop

Microstegium vimineum (Trin.) A. Camus

Nepalese browntop, also called Japanese stiltgrass, is a delicate, sprawling, annual grass that is 1/2 to 3 feet in height. Alternate leaves are short, flat, and lance-shaped and are pale green with off-center veins. Stems often have multiple branches. Flowers grow in delicate spikes that emerge from slender tips. Seeds are prolific and can remain on the plant into winter.

Nepalese browntop is native to Asia and was accidentally introduced into America sometime around 1920. It has historically been used as packing material for porcelain, which may explain its accidental introduction. It has little current use and is not intentionally planted. It is found throughout the eastern United States and in north and middle Georgia.

Most commonly an invader of forested floodplains, Nepalese browntop is also found in ditches, forest edges, fields, and trails. It is dispersed chiefly by flood waters, but the seeds can be dispersed on the fur of animals and the clothes of hikers. It is a prolific seeder, producing 100-1000 seeds per plant. It is very shade-tolerant and can displace vegetation native to floodplains.

Recommended herbicides for control:

Foliar spray – glyphosate or Vantage



Photo by Richard Carter, Valdosta State University

Small broomrape - *Orobanche minor* Sm.

Small broomrape is a parasitic, herbaceous, annual plant, growing up to 22 inches tall. It attaches to the roots of broadleaf hosts. The fleshy stem is yellow to straw-colored. The alternate leaves are small, triangular flaps. Flowers, borne on terminal clusters, are snapdragon-like with ½-inch petals. The flowers are whitish to yellow with violet markings. Seeds are abundant, long-lived, and minute. Roots are short, unbranched and scaly, attached to the roots of the host plant.

Small broomrape is native to the Middle East and was probably introduced with contaminated seed. It occurs sporadically in the Southeast as well as Washington State. It is found in portions of southwestern Georgia.

There is some concern that small broomrape may spread to infest crops such as legume forages and leafy green vegetables. Heavy infestations can cause crop failure, causing this plant to be listed as a federal noxious weed. It can be spread through contaminated seeds, soil, equipment, and shoes. The seeds are very long-lived, remaining viable for over 10 years.

Small broomrape is a federal noxious weed; any occurrence should be promptly reported.

Recommended herbicides for control:

Glyphosate, amine, amine with dicamba

Containment:

The best method of control is containment of current populations. Do not remove soil or vegetation from the infested site. Do not mow before contacting appropriate personnel. Thoroughly clean equipment and brush shoes after visiting infested site.



Photo by Dave Moorhead, UGA



Photo by Jim Miller, USFS



Photo by Chuck Barger, UGA

Golden bamboo

Phyllostachys aurea Carr. ex A. & C. Rivière

Golden bamboo and other invasive bamboos are perennial reed-like plants that can reach heights of 16 to 40 feet. The canes (stems) are hollow with solid joints and can be 1 to 6 inches in diameter. Leaves are alternate and grass-like, often occurring in fan clusters, and are often golden in color. Golden bamboo rarely flowers or produces seeds, usually once every 7 to 12 years, but readily reproduces by rhizomes.

Golden bamboo is native to China and was first introduced into America in 1882 in Alabama. It is a popular ornamental and has also been used for fishing poles and privacy fences. It occurs in the southeastern United States and in Washington State. Golden bamboo is common in Georgia.

Golden bamboo spreads mainly via rhizomes, rarely by seed. Infestations are commonly found around old homesites and can rapidly expand in size. It thrives in full sun and can tolerate moderate shade. Deep, moist soils are preferred. Golden bamboo can form dense, monocultural thickets that displace native species. Once bamboo is established, it is difficult to remove.

Recommended herbicides for control:

Cut stem – Arsenal AC, glyphosate, or combination of both

Foliar spray - Arsenal AC, glyphosate, or combination of both



Photo by Chris Evans, UGA



Photo by Jim Miller, USFS



Photo by Dave Moorhead, UGA

Kudzu - *Pueraria montana* (Lour.) Merr.

Kudzu is a climbing deciduous vine capable of reaching lengths of over 100 feet. The stems can grow to 4 inches in diameter and the large semi-woody roots can reach depths of 3 to 16 feet. Kudzu is easily identified by its usual growth form, a large dense mat of vines, often totally covering other vegetation, structures, or land. Kudzu has three-parted leaves with large broad leaflets, up to 4 inches wide. Purple flowers with yellow centers occur in small clusters. Flowering occurs in June and July.

Kudzu is native to Asia and was first introduced into America in 1876 at the Philadelphia Centennial Exposition. It was widely planted throughout the eastern United States in an attempt to control erosion. Currently it is found throughout most of the southeastern states and is widespread throughout Georgia.

Kudzu's preferred habitat is open, disturbed areas such as roads, rights-of-way, forest edges, and old fields. It is an aggressive invader capable of growing over 1 foot a day in prime conditions. Kudzu often grows over, smothers, and kills all other vegetation including trees.

Recommended herbicides for control:

Cut stems – Garlon 4 or glyphosate

Basal spray – Garlon 4 with oil and penetrant

Foliar spray – Tordon 101, Tordon K, Escort, or Transline



Giant salvinia - *Salvinia molesta* D. S. Mitchell

Giant salvinia is an aquatic fern with floating leaves. The $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, oblong leaves vary in color from green to gold to brown. The surface of the leaves have rows of arching hairs that look like little egg-beaters. Giant salvinia forms chains of leaves that run together to form thick mats.

Giant salvinia is native to South America and was first introduced into America as an ornamental aquatic plant. It currently occurs across the warmer parts of the southern United States. It is sparse within Georgia but has the potential to infest large areas of the state.

Giant salvinia invades almost any type of water system, from lakes and ponds to rivers, streams, and even rice fields. It forms dense thick mats on the surface of the water which restrict oxygen and light availability, causing death of the primary producers and disrupting the aquatic food chain. It also interferes with recreation, hydroelectric operations, drinking water supplies, and aquaculture facilities.

Giant salvinia is a federal noxious weed; any occurrence should be promptly reported

Control:

A variety of controls measures, such as biological, chemical, and mechanical have been attempted with varying success.

Recommended herbicides for control:

diquat or Sonar



Photo by J. Jeffery Mullin, University of Florida



Photo by Charles T. Bryson, USDA ARS



Photo by Charles T. Bryson, USDA ARS

Tropical soda apple - *Solanum viarum* Dunal

Tropical soda apple is a perennial shrubby forb, growing to 6 feet in height and width. Leaves are broad and somewhat resemble fig or oak leaves. The entire plant is armed with $\frac{3}{4}$ inch long, straight prickles. Flowers have five, white, recurved petals. The most distinguishing feature of tropical soda apple is its round fruit, which is a mottled mixture of whitish and dark greens that resembles a watermelon. Mature fruit are yellow in color and $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches in diameter.

Tropical soda apple is native to South America and was introduced accidentally into America, being found in Florida in 1988. It is currently found throughout Florida and sporadically elsewhere in the Southeast. Tropical soda apple is sparsely located in Georgia, but has the potential to become widespread and very problematic.

Tropical soda apple invades primarily pastures, fields, and parks, but also has the potential to invade open forest and other natural areas. It was included on the federal noxious weed list in 1995. The seeds are readily eaten by livestock and wildlife and dispersal occurs both by the animals as well as in contaminated manure, hay, seed and sod. Tropical soda apple forms thick stands that can be impenetrable to livestock, large wildlife, and humans. Once established, dispersal to others areas can be rapid.

Tropical soda apple is a federal noxious weed; any occurrence should promptly reported.

Recommended herbicides for control:

Foliar spray – Garlon 4, Remedy (for pastures), or Arsenal AC with glyphosate



Photo by Chuck Barger, UGA



Photo by Dave Moorhead, UGA



Photo by Jim Miller, USFS

Tallow tree - *Triadica sebifera* (L.) Small

Tallow tree, also called popcorn tree, is a deciduous tree reaching 60 feet in height and 3 feet in diameter. Leaves are heart-shaped with a long pointed tip. The noticeable male flowers are yellowish and occur on long, dangling spikes. The three-lobed fruits are found in clusters at the end of branches. The fruits turn from green to black and split to reveal three waxy popcorn-like seeds.

Tallow tree is native to China and was first introduced into America in South Carolina during the 1700s. The USDA recommended planting this tree for seed oil from 1920 to 1940. It is currently still being sold as an ornamental. It occurs throughout the southeastern United States and is common in South Georgia.

Tallow tree invades wet areas such as stream banks and ditches but can also invade drier upland sites. It can tolerate salty soils, flooding, and shady environments. Tallow tree is a serious threat because of its ability to invade high quality, undisturbed forests. Seed is dispersed both by birds and by water. Tallow tree can displace native vegetation as well as alter soil conditions due to the high amount of tannins present in the leaf litter.

Recommended herbicides for control:

Extensive infestations: soil treatment – Velpar L

Trees: injection and cut stump – Arsenal AC, Garlon 3A, Pathfinder II, or Ortho Brush-B-Gone & Enforcer Brush Killer (cut stump)

Saplings: basal spray – Garlon 4 with oil and penetrant



Photo by James Allison, GaDNR



UGA0001077

Non-native Wisterias

Wisteria sinensis (Sims) DC.

Wisteria floribunda (Willd.) DC.

Non-native wisterias are deciduous woody vines capable of growing to 70 feet long. Stems can be large (10 inches in diameter) with smooth, tight gray to white bark. Alternate leaves are pinnately compound. Leaflets are tapered at the tip with wavy edges. Lavender, pink or white flowers are fragrant, very showy, and abundant and occur as dangling clusters. Seed are in a flattened bean-like pod.

The non-native wisterias are native to China and Japanese. They were first introduced into America around 1830. They have been planted widely as ornamentals. Currently, the non-native wisterias are found throughout the eastern United States and are widespread in Georgia.

Non-native wisteria invasions often occur around previous plantings. They can occur on a variety of soil conditions, from wet to dry. Non-native wisterias can displace native vegetation and kill trees and shrubs by girdling them. They have the ability to change the structure of a forest by killing trees and altering the light availability to the forest floor. Reproduction occurs both by runners and water dispersed seeds.

Recommended herbicide for control:

Foliar spray – Tordon 101, Tordon K, Transline, or glyphosate



GEORGIA INVASIVE SPECIES TASK FORCE

A cooperative approach, to help minimize the impacts of invasive species to Georgia's agricultural and natural resources, between:

The University of Georgia

- Bugwood Network
- College of Agricultural and Environmental Sciences
- Warnell School of Forest Resources

The Georgia Department of Agriculture

USDA APHIS Plant Protection and Quarantine

Georgia Forestry Commission

USDA Forest Service



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Cooperative Agricultural Pest Survey Program.

Evans, C.W., C.T. Barger, D.J. Moorhead & G.K. Douce.
2005. The Bugwood Network, The University of Georgia.
BW-2005-01.

www.invasive.org

**Images and Information on
Invasive/Exotic Plants, Insects,
Diseases and Biocontrol Agents**

**For information and to report Federal Noxious Weeds,
please contact your local county Extension agent or e-mail
the task force at bugwood@uga.edu.**



GA-EPPC
www.gaeppc.org

**To get involved and learn more about invasive exotic
plants in Georgia, please join the Georgia Exotic Pest
Plant Council at www.gaeppc.org**

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