

## NATURAL AREA WEEDS: Chinese Tallow (*Sapium sebiferum* L.)<sup>1</sup>

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### Introduction

Florida's natural areas--a great source of pride and enjoyment to its citizens--provide recreation, protect biodiversity and fresh water supplies, buffer the harmful effects of storms, and significantly contribute to the economic well-being of the state (Jue et al. 2001). Natural areas are protected in almost nine million acres (nonsubmerged) of state, federal, local and private managed conservation lands in Florida (Jue et al. 2001). Unfortunately, many of these natural areas can be adversely affected when they are invaded by nonnative invasive plant species. An estimated 25,000 plant species have been brought into Florida for use as agricultural crops or landscape plants. While only a small number of these have become invasive, those that do can adversely affect native plant communities by competing for space and resources, disrupting hydrologic and fire regimes, or hybridizing with native species. They must be managed for the protection of native communities in natural areas. Chinese tallow (*Sapium sebiferum* L.) is one of these invasive plant species.



**Figure 1.** Chinese tallow tree (*Sapium sebiferum* L.) can be identified by its simple, alternate leaves with broadly rounded bases that taper to a slender point and dull white seeds that remain attached after leaves have fallen.

### How to Recognize Chinese Tallow

Chinese tallow is a deciduous tree with a milky sap that commonly grows to 30 ft tall. Leaves are simple, alternate, 1-2.5 inches wide, with broadly rounded bases and tapering to a slender point (Figure 1). Leaf stalks are 1-2 inches long. Small yellow flowers that are borne on spikes to 8 inches long occur in spring (Figure 2). The fruit is a 0.5 inch

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wide, 3-lobed capsule that turns brown at maturity to reveal 3 dull white seeds (Figure 1). The seeds, which often remain attached to the tree through the winter, resemble popcorn, suggesting the other common name of popcorn tree.



**Figure 2.** In Spring, Chinese tallow tree displays spikes to 8 inches of small yellow flowers.

## Distribution

The first record of Chinese tallow introduction into the United States is found in a letter from Benjamin Franklin written in 1772 to Dr. Noble Wimberly Jones of the Georgia colony. Franklin wrote: "I send also a few seeds of the Chinese Tallow Tree, which will I believe grow & thrive with you. 'Tis a most useful plant" (Bell 1966). As early as 1803, Chinese tallow was spreading into coastal forests according to the noted French botanist Andre Michaux. Since Franklin's time, Chinese tallow has been introduced repeatedly to the United States as an ornamental and potential oil crop species. It is now naturalized from Richmond County North Carolina south through Central Florida, extending west into Texas and northwest Arkansas (McCormick 2005). Within Florida, Chinese tallow was naturalized in 57% of the counties in 1993 (Jubinsky and Anderson 1996) and found as far south as Dade County (Wunderlin et al. 2003).

## Invasiveness

Chinese tallow has been recognized as a pest plant in the Carolinas since the 1970s (Langeland and Burks 1998). Within Florida, it has been reported from 46 natural areas (Florida Exotic Pest Plant Council Occurrence Database (<http://www.fleppc.org>)), and it is a target for

removal from 12 natural areas in the Florida Department of Environmental Protection's Upland Invasive Exotic Plant Management Program (DEP Uplands Plant Control Summary, unpublished). Payne's Prairie State Preserve, south of Gainesville, Florida, once contained over 10,000 Chinese tallow trees (Jubinsky and Anderson 1996). Chinese tallow has been extensively used for ornamental planting and is a common plant on landscaped property. These trees present a constant source of seed for infestation of natural areas because the seeds are transported by birds such as pileated woodpeckers, cardinals, yellow-rumped warblers, American robins, and grackles, as well as by water (Jubinsky and Anderson 1996). While the length of time needed to deplete the seedbank is unknown, indications are that seeds remain viable for many years (Jubinsky and Anderson 1966). Zhang and Lin (1994) speculate that seeds may remain dormant for up to 100 years with little or no loss in viability.

The Florida Exotic Pest Plant Council included Chinese tallow on its 1993 List of Florida's Most Invasive Species. **Chinese tallow was added to the Florida Department of Agriculture and Consumer Services Noxious Weed List (5b-57.007 FAC) in 1998. Plants on the Florida Noxious Weed List may not be introduced, possessed, moved, or released without a permit.**

## Remove and Replace

Homeowners can help mitigate the problem of Chinese tallow trees in Florida's natural areas by removing them from their property. Mature trees should be felled with a chain saw by the property owner or a professional tree service. The final cut should be made as close to the ground as possible and as level as possible to facilitate application of a herbicide to prevent sprouting. Stumps that are not treated with a herbicide will sprout to form multiple-trunked trees (Figure 3).

Homeowners with only one or a few trees should use Brush-B-Gon or Brush Killer herbicide. These diluted herbicide products (8.0% and 8.8% triclopyr amine, respectively) are available in quart-size containers from retail nursery supply stores. Property owners with large numbers of trees can use the more



**Figure 3.** Stumps of felled Chinese tallow trees that are not treated with a herbicide will sprout to form multiple-trunked trees.

concentrated Garlon 3A or Garlon 4 (44.4% triclopyr amine and 61.6% triclopyr ester, respectively), which are available only in 2.5-gallon or larger containers from farm supply stores. Renovate 3 is available in 1-quart containers and can be applied to trees that are standing in water. These products must be diluted before use. If it is not objectionable for dead trees to be left standing, Garlon 4 can be diluted at a rate of 1 part herbicide to 5 parts oil and applied to the bark at the base of trees with stems less than 6 inches in diameter. Oil manufactured for this purpose is available from farm supply stores. Pathfinder II (13.6% triclopyr ester) is a pre-diluted, ready to use product that can be used for basal bark application. The herbicide container will have a label with instructions for applying the herbicide. See Table 1.

If trees are cut at a time when seeds are attached, make sure that the material is disposed of in such a way the seeds will not be dispersed to new areas where they can germinate and produce new trees. Seedlings should be continually pulled by hand before they reach seed-bearing maturity.

Space in a landscape left after removal of Chinese tallow can be used to plant a new native or noninvasive non-native tree for shade, or some other landscape purpose. Tree species recommended in Table 2 are similar in size to Chinese tallow. Blackgum, maples, dogwood, and crepe myrtles provide fall color similar to Chinese tallow. Fact sheets that provide additional information on landscape plants can be viewed at <http://hort.ifas.ufl.edu/trees/index.htm>. For

information on the availability of native landscape plant species contact the Association of Florida Native Nurseries (877/352-2366 or <http://www.afnn.org>). The Cooperative Extension Service Office in your county can help you identify plants appropriate to your property conditions, the ecosystems on and near your site, and your aesthetic preferences.

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**Table 1.** Herbicides for cut stump or basal bark application to control Chinese tallow trees.

<b>Herbicide</b>	<b>Application method</b>	<b>Dilution</b>	<b>Availability</b>
Brush-B-Gon	Cut stump	Undiluted	Retail garden suppliers
Brush Killer	Cut stump	Undiluted	Retail garden suppliers
Garlon 3A	Cut stump	1 herbicide:5-10 water	Agriculture suppliers
Renovate	Cut stump	1 herbicide:5-10 water	SeaPro Corporation
Garlon 4	Cut stump	1 herbicide:5-10 oil	Agriculture suppliers
Garlon 4	Basal bark	1 herbicide:5 oil	Agriculture suppliers
Pathfinder II	Basal bark	Undiluted	Agriculture suppliers

**Table 2.** Some suggested tree species for replacing Chinese tallow.

<b>Native</b>	<b>Florida Hardiness Zones</b>
American Hornbeam ( <i>Carpinus caroliniana</i> )	North, Central
Blackgum ( <i>Nyssa sylvatica</i> var. <i>sylvatica</i> )	North, Central
Cedar Elm ( <i>Ulmus crassifolia</i> )	North, Central
Eastern Hophornbeam ( <i>Ostrya virginiana</i> )	North, Central
Eastern Redbud ( <i>Cercis canadensis</i> )	North, Central
Flatwoods Plum ( <i>Prunus umbellata</i> )	North, Central
Florida Maple ( <i>Acer saccharum</i> ssp. <i>floridanum</i> )	North, Central
Flowering Dogwood ( <i>Cornus florida</i> )	North, Central
Fringe Tree ( <i>Chionanthus virginicus</i> )	North, Central
Geiger Tree ( <i>Cordia sebestena</i> )	South
Paradise Tree ( <i>Simarouba glauca</i> )	South
Red Bay ( <i>Persea barbonia</i> )	Throughout
Red Maple ( <i>Acer rubrum</i> )	Throughout
Red Stopper ( <i>Eugenia confusa</i> )	South
River Birch ( <i>Betula nigra</i> )	North, Central
Satin Leaf ( <i>Chrysophyllum oliviforme</i> )	South
Silverbell ( <i>Halesia diptera</i> )	North, Central
Swamp Bay ( <i>Persea palustris</i> )	Throughout
Turkey Oak ( <i>Quercus laevis</i> )	North, Central
White Ash ( <i>Fraxinus americana</i> )	North
Winged Elm ( <i>Ulmus alata</i> )	North, Central
<b>Non-native</b>	
Crepe Myrtle ( <i>Lagerstroemia indica</i> )	Throughout
Queens Crepe Myrtle ( <i>Lagerstroemia speciosa</i> )	South
Trumpet Tree ( <i>Tabebuia argentea</i> )	South