Chinese Tallow: A Threat to Texas' Forests
Fourth of the "Dirty Dozen"

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Editor's Note: An introductory article discussing exotic invasive pests that could threaten forest resources in Texas was included in the June 2005 issue of *Texas Forestry*. Following that, a series of 12 short articles about specific exotic pests that are either present in Texas or are at our doorstep began. The authors (Joe Pase, Ron Billings, and Kim Camilli) are calling this series the "Dirty Dozen." The emerald ash borer (EAB), the first invasive pest in the series, was followed by the Asian longhorned beetle (ALB) and sudden oak death (SOD). Chinese tallow is the fourth exotic pest to be featured. Next in the series: Japanese climbing fern.

It is estimated that 100 million acres in the United States are already affected by invasive exotic plants. This acreage increases annually by an area twice the size of Delaware. Although the acreage of exotic plants in Texas is not known, foreign invasive species are having an increasingly negative impact on native plants and animals in the Lone Star State. The exotic pests discussed in the previous three articles currently are not known to be present or established in Texas; but this month's pest, Chinese tallow, is well-known and has become widely distributed in the state. Interestingly, Chinese tallow was reportedly introduced to the United States by Benjamin Franklin in 1772. A few years later it was taken to South Carolina and has since spread to every coastal state from North Carolina to Texas, inland to Arkansas and Oklahoma, and now is reported in California. One statistic shows that since 1970, woodlands containing monocultures of the highly invasive Chinese tallow have increased in area from 5 to 30,000 acres in Galveston County. Chinese tallow has been cultivated as a seed-oil crop in China for at least 14 centuries where candles, soap, cloth dressing, and fuel are made from the tallow. On an historical note, oil from Chinese tallow trees was used successfully as an emergency source of fuel for diesel equipment operated by Allied forces during World War II.

Chinese tallow (*Triadica sebifera*, formerly known as *Sapium sebiferum*) represents a significant invasive species problem in many areas of Texas and across the South. It adversely affects the diversity of native plants by invading and eventually dominating habitats ranging from marshes, to coastal prairies, to river bottoms, to upland forests, as well as disturbed sites and abandoned agricultural fields. The tree prefers wet soils, but is very adaptable. It has become a serious problem on private lands and federal lands like the Big Thicket National Preserve and the National Forests in Texas. Chinese tallow can turn areas into a single-species forest. It has been widely planted as an ornamental tree in many parts of Texas, but this practice should be discouraged. The rapid forestation of Chinese tallow has contributed significantly to the degradation of wetlands along the Gulf Coast. It is believed that Chinese tallow may alter soil chemistry, allowing the species to self-perpetuate once established. It is easy to see why this tree is sometimes called "Terrible Tallow." The accompanying map shows counties where Chinese tallow has been reported. Undoubtedly, it is present in more counties.

Chinese tallow is a fast-growing weedy tree with milky sap (the sap has been known to cause skin irritation and diarrhea in humans) and may reach heights of 50 feet or more. It

spreads by root sprouts and seeds, with birds and water commonly disbursing the seeds. The leaves are heart-shaped, have smooth margins, and turn brilliant red, orange, and yellow in the fall. The flowers, which form in early summer, are drooping spikes 4-8 inches long and are attractive to honey bees and other insects. Green berries begin forming by mid summer and, when mature in the fall, consist of a cluster of white, wax-coated seeds which may remain on the tree through the winter. In time, the white seeds will be covered with a black fungus. Seeds may develop on trees as young as three years old. The photo collage shows leaves, flowers, and seeds.

Insects, diseases, and other natural enemies have little if any impact on Chinese tallow. Cattle and horses will not graze on it. However, it is subject to freeze damage, but it is rare that cold kills the roots. Cold temperatures will prevent this tree from becoming a significant problem in northern portions of its range in the United States.

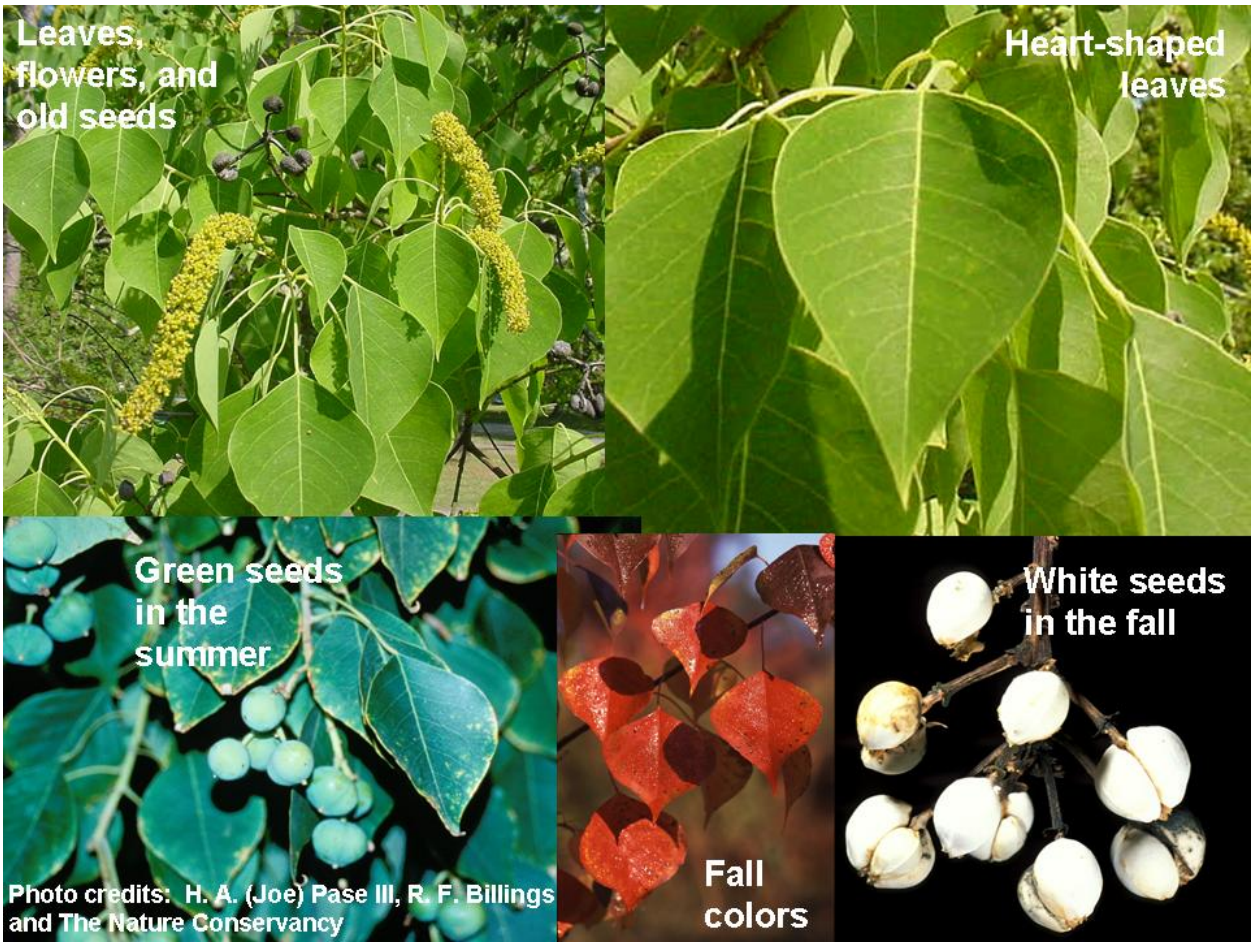
Research is being conducted to find ways to effectively control tallow trees without causing environmental harm. Knocking down the trees with a bulldozer or other equipment is not effective because it results in prolific sprouting from roots. Fire has been used to successfully eliminate small trees, but large trees tend to resprout. For fire to be effective, there must be sufficient fuel and it must be used repeatedly. Herbicides will provide temporary control, but, like fire, repeated applications are necessary. It has been estimated that it costs about $250 per acre to control an exotic plant species.

Texas has no single authority that addresses invasive species policy. The Texas Parks and Wildlife Department (TPWD) and the Texas Department of Agriculture (TDA) are the primary state agencies working with invasive species. The Texas Forest Service (TFS) has a great interest and is becoming more involved in the problem, as well. Recently, TFS, in cooperation with various partners, has developed an Internet web page (http://www.texasinvasives.org) devoted to invasive pests in Texas, primarily non-native plants. This new web page contains distribution maps, publications, links to related web pages, and other information on nonnative invasive plants found in the state. TPWD is responsible for restricting importation and possession of potentially harmful fish, shellfish, and aquatic plants. TDA regulates the movement of agricultural seed and plant material and enforces quarantine regulations to control the spread of the worst agricultural invaders. To my knowledge, Chinese tallow is not regulated in Texas.

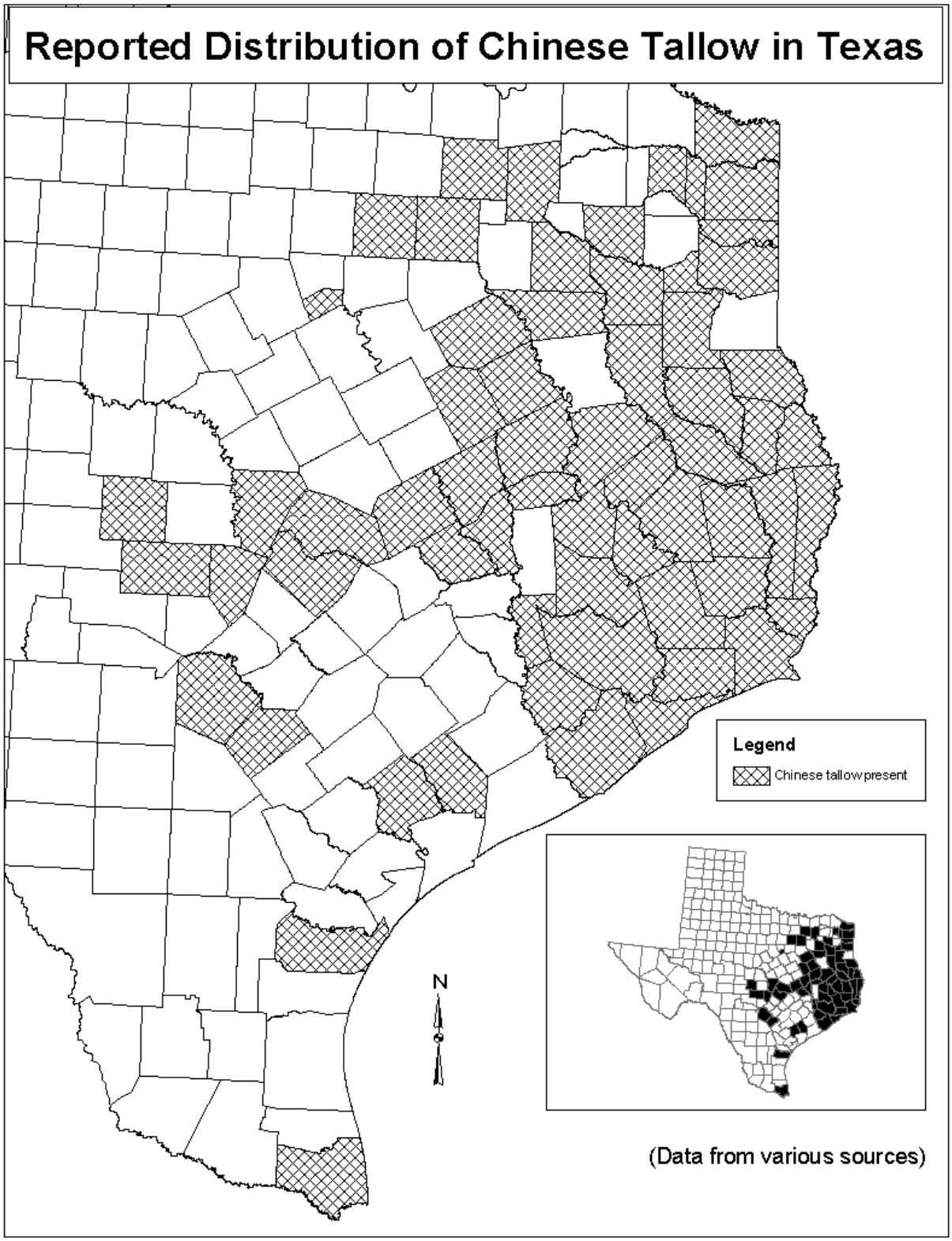
The Natural Resource Conservation Service (under the United Stated Department of Agriculture) has established a program called Environmental Quality Incentives Program (EQIP) to provide financial cost-share assistance in fields where Chinese tallow invasion has changed or has the potential to change the land use and significantly reduce the diversity of native plants. Cost-share rates can be as high as 90%, and most East Texas counties as far north as Shelby County qualify for assistance. Additional information can be found at the following web site: http://www.programs.tx.nrcs.usda.gov/eqip2005/stateconcerns/Chinese%20Tallow.html.

If you detect Chinese tallow in a county not shown on the distribution map or another plant or insect in Texas that you think might be an invasive exotic pest, contact the Texas Forest Service Forest Pest Management office in Lufkin (Phone: 936-639-8170) or e-mail Joe Pase at

jpase@tfs.tamu.edu, Ron Billings at rbillings@tfs.tamu.edu, or Kim Camilli at kcamilli@tfs.tamu.edu. Together, we should say “No to tallow” in the Texas landscape!



Reported Distribution of Chinese Tallow in Texas



(Data from various sources)