

The Invasive Brazilian Pepper-tree Threatens Texas' Coastal Habitats

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Texas has benefited from many products imported from Brazil: sugar, coffee, the samba, and soccer to name a few. However, one Brazilian import we now wish never arrived on our shores is the Brazilian pepper-tree, *Schinus terebinthifolius*. A native of Brazil, Argentina, and Paraguay, it was first introduced into Florida in the mid-1800s for use as an ornamental. With its bright green foliage and clumps of attractive red berries (Figure 1), it is easy to see why the plant, promoted as "Florida holly," was once favored for landscape plantings. In recent decades, however, this plant has escaped cultivation, becoming one of the most aggressive and wide-spread invasive, non-native plants in the State of Florida. Over 700,000 acres in Florida, ranging from mangrove habitats to pine forests, have been invaded.

Brazilian pepper-tree has become a more recent plant pest problem in coastal habitats of Texas. It was first found on Galveston Island in 2003. More recently, the plant has been reported by Citizen Scientists (see www.texasinvasives.org) from Texas City south to Brownsville. Coastal habitats around Port Aransas and Corpus Christi have become infested and are beginning to cause concern among landowners and city officials. Birds and mammals attracted to the red fruits (drupes) are primarily responsible for dispersal and rapid spread of this invasive plant. Seeds are viable for up to two months and germination is improved by scarification. Typically, acids in the animal's digestive tract serve to scarify the seeds, rendering them ready for germination wherever they may fall. Although Brazilian pepper-tree was once commonly sold as an ornamental in the state, this species is now on Texas Department of Agriculture's noxious plant list. Accordingly, the importation, sale, and distribution of Brazilian pepper-tree are prohibited.

Brazilian pepper-tree is a shrub or small tree that may attain over 30 feet in height, typically with a short trunk hidden in a mass of branches. The leaves are alternately arranged with 1-2 inch long, elliptical, serrated leaflets having distinct yellow or reddish veins (Figure 1). It is especially suited to colonizing disturbed sites and can grow in both wet and dry conditions. Its growth habit allows it to climb over understory trees and invade mature canopies forming thickets that choke out most other plants.

Schinus terebinthifolius belongs to the family Anacardiaceae, which includes poison ivy, poison oak, and poison sumac. Indeed, people sensitive to these native poisonous plants also may be allergic to Brazilian pepper-tree. The pollen generated during the bloom period has caused respiratory problems in certain individuals as well. On the positive side, herbal extracts from Brazilian pepper-tree leaves or wood are used in many countries as a broad-spectrum antimicrobial and antiseptic against bacterial, viral, and fungal infections and as treatment for various human ailments (rheumatism, bronchitis,

constipation, cough, depression, diarrhea, etc.). The dried fruits may be used like pepper to season foods, although they are toxic in large quantities.

Brazilian pepper tree has been recognized as a major invasive plant pest on Galveston Island and efforts are underway to address the problem. The Galveston Bay Estuary Program's Invasive Species Work Group, in conjunction with the Texas Parks and Wildlife Department and other stakeholders initiated a project in 2005 to increase public awareness and begin an eradication project (http://galvbay.org/conservation_invasive.html). Unfortunately, although much progress has been made, it is likely that Hurricane Ike (September 2008) facilitated the spread of the species on Galveston and the mainland of the upper Texas coast.

With regard to management of this invasive species, the public is encouraged to avoid cultivating or transplanting this invasive plant or promoting its proliferation. Maintaining a well-established native plant cover is a good way to suppress Brazilian pepper-tree, since this plant prefers disturbed or open areas. For eradication or treatment programs, mechanical or chemical methods are recommended, since there are no biological control agents known to occur in the U.S. Mechanical removal of plants is successful if the root systems are extracted in the process. Otherwise, the plant can easily resprout from roots larger than ¼ inch in diameter.

Herbicides provide the most effective method for treatment, if properly applied. These may consist of foliar spray applications using Roundup® (glyphosate), Arsenal® (imazapyr), or Garlon® (triclopyr) for seedlings or basal bark/cut stump treatments of Garlon 4® or Roundup® with a penetrating oil for mature plants. Basal treatments are most effective in the fall when the Brazilian pepper-trees are in flower. Fall-treated trees may retain their fruit, so post-treatment checks for seedlings are recommended. Some of these products are sold in retail garden centers in small quantities if only one or a few trees are to be treated.

Although Brazilian pepper-tree is known to invade pine sites in Florida, it is unlikely that the Pineywoods of East Texas will be threatened. Fortunately, this species is intolerant of freezing temperatures, which should restrict its occurrence and impact to coastal areas of Texas. This limitation, however, is of little consolation to coastal towns such as Galveston, Corpus Christi, Port Aransas, and Brownsville, where freezes seldom occur and invasions of Brazilian pepper-tree are becoming a major concern. In turn, the Pineywoods Region has its own share of invasive plants – Chinese tallow, Japanese climbing fern, Chinese privet, and Japanese honeysuckle to name a few. Without doubt, invasive species - be they plants, insects, diseases, or animals - are demanding more and more attention in all ecological regions of Texas.



Figure 1: Foliage and fruit of Brazilian pepper-tree, *Schinus terebinthifolius* (photo from www.bugwood.org).