MORE AUSTRALIANS *BARGE* IN

Edward Freeman, Environmental Specialist III
Sarasota County Natural Resources Department

Crow consuming carrotwood fruit and seed in Largo (coastal Pinellas County, FL) shopping center. Photo by Ken Langeland.

The two events in 1959 were surely never connected. The first was widely heralded and covered by national media. The second went unnoticed except by a small circle of businessmen. The first event was the construction of a barge canal, the Gulf Intracoastal Waterway, from Clearwater to Ft. Myers. This waterway was dug and blasted through shallow bays and uplands to provide safe and easy passage for boaters. In the process, it disturbed much of West Florida's coastal areas. The second event was the importation into the Sarasota area of several seedlings and seeds of the Australian plant, carrotwood (*Cupaniopsis anacardiodes*), by Reasoner's Nursery. At least one of these trees was planted on Siesta Key adjacent to areas recently disturbed by work on the waterway.

By the late 1980s, residents began noticing carrotwood seedlings on the spoil islands created by the dredging of the waterway. Local land managers and environmental regulators began to notice too, and started monitoring carrotwood's spread. By 1996 the problem had become so apparent that Sarasota County banned the planting, transportation, and further propagation of carrotwood.

Dense populations of this tree (up to 50 per square meter) have been found in most habitats on both coasts of South Florida. The greatest concentrations of wild carrotwood have been found in areas disturbed by the construction of waterways and other large, land moving operations. However, carrotwood is not restricted to disturbed sites; it has also been found growing in otherwise pristine freshwater hardwood swamps, mangrove swamps, pine flatwoods, hammocks, dunes, scrub and marshes (Lockhart, 1997).

Each ripe yellow fruit contains three black seeds that are covered by a red aril when open. Fruits typically mature in early summer.
Photo by Patrick Lynch, SFWMD.

Carrotwood thrives in conditions ranging from wet to dry and from sunny to deep shade. This, along with its rapid and heavy seed production has made carrotwood a popular landscape tree. Carrotwood's primary dispersal vectors - fish crows and other cosmopolitan birds such as mocking birds, blue jays and grackles - forage in suburban lawns during the day and often roost in nearby natural areas at night.

One of the plants' most alarming characteristics is its tendency to invade and disrupt imperiled habits along Florida's rapidly urbanizing coast, such as mangrove swamps, scrub, and tropical hammocks. Mangrove trees grow in salt water and are therefore highly adapted to saline conditions. However, because few native species can tolerate such conditions, mangrove species are not highly competitive. In 1995, the Florida Legislature passed the "Mangrove Trimming and Preservation Act," which allows private landowners and developers to cut down mangroves on public land. This has resulted in the widespread destruction of valuable mangrove habitat along our coasts. Under normal conditions, the mangrove community would slowly recover without any further disturbance, but carrotwood may have changed the rules.

Carrotwood is highly competitive and has adapted to the saline conditions. This may result in the conversion of our highly productive mangrove swamps to carrotwood forests. (Carrotwood is not as salt tolerant as some mangrove species, and tends to be found along the higher portions of the mangrove swamps.)

It is clear that many of our actions have unforeseen consequences. In the 30 years between the first importation of carrotwood and its spread to natural areas, local governments have acted quickly to prohibit further planting, and removal has already begun on public lands. Even this rapid response will likely prove to be too little, too late. Obviously, the landscape and nursery industries need to become sensitive to this issue, and help prevent similar invasive introductions in the future.

To Kill A Carrotwood

Little work has been conducted on the management of carrotwood. Limited field tests have shown that carrotwood is killed using a basal bark or cut stump application of 10-20% GARLON 4 (triclopyr) and oil. This method is impractical for treating areas with high densities of stems. Unsatisfactory results were observed with foliar applications of both GARLON 3A and RODEO (glyphosate). Both foliar treatments resulted in significant die back, but most individuals resprouted.

Ed Freeman chairs Florida EPPC's Carrotwood Task Force. For More information about this group, contact Ed at (941) 378-6142, or efreema@co.sarasota.fl.us

Reference

Lockhart, Christine, S., D.F. Austin, W.E. Jones, and L.A. Downey. 1997. "The Invasion of Carrotwood (*Cupaniopsis anacardiodes*) in Natural Areas." A report submitted to the Florida Department of Environmental Protection, Bureau of Aquatic Plant Management. Tallahassee, FL