

Live Oak Trees Struggle for Survival in Growth Areas

September 28 2006

The majestic live oak is losing its battle for survival to suburban sprawl and the encroachment of taller trees, a new University of Florida study finds.

An icon in American history and literature, broad-crowned live oaks thrive in open savannas but are dying off as they are crowded and overshadowed by the encroachment of taller trees, said Francis Putz, a UF botanist and the study's co-author.

It is an irony of nature that the successes of reforestation and urban forestry threaten live oaks, which in the past maintained the elbow room they needed from logging, cattle grazing and frequent fires, said Putz, whose work is published in the June issue of *Forest Ecology and Management*. "We are confusing our natural savanna heritage with forested landscapes and the tragedy is that the forest is killing live oaks," he said. "If we allow other trees to grow up too close to the live oak, the live oak will die. Our research clearly establishes this fate in both rural and suburban landscapes."

The live oak's broad crown, with long arching limbs that spread horizontally rather than vertically, as most trees do, give it a distinctive architectural makeup, said Tova Spector, who did the study with Putz as part of her master's degree in ecology. "Trees that grow straight and tall crowd the live oaks, causing their crowns to die back," she said.

"Once their branches begin to grow horizontally, live oaks seem unable

to reverse this trend by growing upwards,” said Spector, who mapped and measured crown densities in both closed canopy and savanna-like tree stands in Alachua County, Florida.

Sweet gum, black cherry and magnolia are among the culprits, but the worst offender ironically is laurel oak, which resembles the live oak but is not nearly as sturdy, killing more people in the South than any other tree, Putz said. “I wouldn’t park my brand-new Saab underneath a laurel oak if I had one, whereas the live oak is a homeowner’s best friend,” he said.

The live oak’s deep roots, relatively short stature and strong wood help it to withstand the high winds and strong storm surges that topple other trees during hurricanes, Spector said.

Spector also measured changes in savannas and woodlands, live oak habitat, from 1955 to 1999, using aerial photos of rural parts of Alachua County. She found that these open habitats declined from 70 percent cover to less than 33 percent, mostly because of the establishment of pine plantations.

A 2003 published study of live oak trees in four suburban Gainesville neighborhoods that Putz did with another graduate student, Mark Templeton, found that more than 90 percent of these trees were crowded by other trees.

Based on these findings, Putz said he believes more than half of the live oaks in the city of Gainesville alone are in danger of being destroyed by encroaching trees, a process that can take anywhere from 10 to 30 years and is most rapid in the suburbs where lawns are fertilized.

The problem is widespread because suburban sprawl and forest expansion are threatening savannas and open-canopied woodlands in

many parts of the world, Putz said.

“The trees of these savannas, from the oaks of California and Europe to the acacias of Africa and the legumes of tropical America, are all likely to suffer when forest trees encroach on their crowns,” he said. “In the U.S. alone, savanna is the natural vegetation all across the coastal plain from Virginia to Texas.”

Saving live oaks sometimes means having to kill other trees, which can be expensive, but preserving a single live oak can add as much as \$30,000 to the value of a house, Putz said. Furthermore, having a live oak nearby is good protection against hurricane damage.

In Southern history, live oaks were landmarks where people met to socialize and conduct business. “When a lot of people think of the South, they immediately think of spreading live oaks festooned with Spanish moss,” Spector said. In the opening scene of “Gone with the Wind,” Scarlett O’Hara flirts with bachelors under live oaks at a barbecue. Similarly, Marjorie Kinnan Rawlings ends her book “The Yearling” with the hero saying goodbye to his childhood under the live oak trees.

The frigate, the USS Constitution got its name “Old Ironsides” for the strength of its live oak wood. In a War of 1812 battle, cannon balls bounced off the side of the boat, Spector said. “Naval captains at the time specified that ships were to be made of live oak because it was one of the most durable woods in the world,” she said.

Source: University of Florida

Citation: Live Oak Trees Struggle for Survival in Growth Areas (2006, September 28) retrieved 26 April 2024 from <https://phys.org/news/2006-09-oak-trees-struggle-survival-growth.html>

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