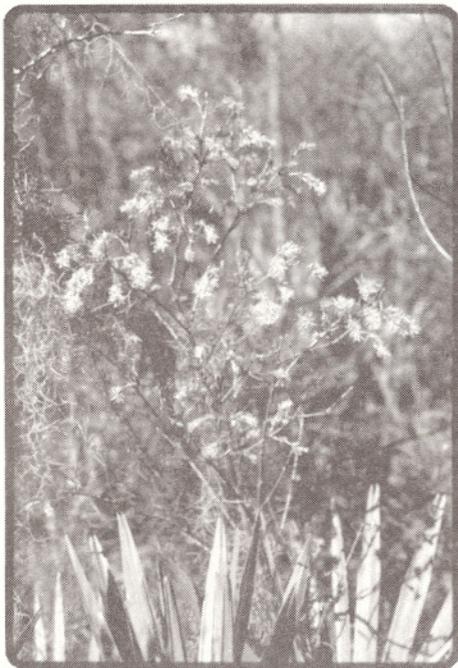


# Pigmy Fringe Tree Under Fire

by I. Jack Stout



Pigmy fringe tree in bloom.

Early in March of 1990, a wildfire started on the eastern boundary of The Nature Conservancy's (TNC) Tiger Creek Preserve in Polk County. The seasonal timing of the fire was consistent with current thinking that in the pre-Columbian period fires were most frequent in spring and early summer. Additionally, the spread of the fire was generally westward in the preserve toward forested wetlands that would act as a natural firebreak. Geoff Babb, a fire ecologist with TNC, followed the progress of the fire with the knowledge that the vegetation was fire adapted and dependent upon recurring fires for its very existence.

Eventually, the fire stopped where a sand road traversed the northwest section of the preserve. Somewhat by chance, the fire had reached a small population of pigmy fringe trees (*Chionanthus pygmaea*).

The pigmy fringe tree is endemic to Florida and largely restricted to the Lake Wales Ridge in Polk and Highlands counties. It is listed as endangered by the State of Florida and the U.S. Fish and Wildlife Service (Wood, 1990). Thesis research by Ms. Susan Elfers, formerly of the University of Central Florida, has established the validity of its treatment as a separate species from *C. virginicus* and *C. henryae*.

Pigmy fringe trees occupy white and yellow surface sands of xeric pinelands. The extent of its historic distribution will never be known because of the extensive

conversion of its habitat to agricultural uses, particularly citrus. The plant's present distribution in the Lake Wales Ridge physiographic region has been documented by the work of Steve Christman (Christman and Judd, 1990).

Since 1985, I have been studying three populations of the pigmy fringe tree at the Tiger Creek Preserve. Individual plants are uniquely tagged, measured, mapped relative to other individuals, and revisited two or more times per year. The purpose of the work is to clarify the way the plant maintains itself. We hope these efforts will lead to an understanding of how to manage the species and perhaps eliminate the need to regard it as endangered.

A central question about the pigmy fringe tree is how it reacts to fire. The fire at Tiger Creek Preserve was a natural experiment that anticipated what had been planned as a controlled burn. Only one of the three marked populations was burned by the wildfire.

The results proved to be very interesting. Effects of the fire on the pigmy fringe trees were evaluated after the growing season. Of 44 tagged plants known to be alive before the fire, 41 were still present in November. Two new plants were discovered. Five of the original 44 tagged plants were not burned. The remaining plants were killed—that is, the above-ground stems were killed.

Recovery was rapid, however. Regrowth of the burned individuals may be compared with a nearby control population of 15 plants. Height of the regrowth of tagged fringe trees averaged 40.7 cm., whereas the control plants averaged 71.9 cm. The average height of the burned plants had been 70.8 cm. at the end of the growing season in 1989. Stems per individual after regrowth averaged 3.9 (an individual here



Detail of bloom and leaf.



New sprouts appear at the base of burned stems.

is a discrete root system with one or more aerial stems). Control plants averaged two stems per individual.

These results suggest that the pigmy fringe tree responds to fire by re-sprouting from a root structure. This "re-sprout strategy" is typical of many woody plants in Florida's xeric pinelands (Abrahamson, 1984). Individual plants may be very old; however, the above ground structure does not reflect this long history of regrowth following periodic fire events.

Although not quantified, the leaves of burned individuals had sustained considerable damage from an unknown lepidopteran. The damage was isolated to the population of pigmy fringe trees that were burned.

The response of other plants to the fire was an added dividend. For example, *Warea carteri* had never been observed on the study plot. Following the fire, 15 individuals were discovered! Procession flower (*Polygala incarnata*) had been observed once (one individual) in the previous five years. It was so abundant that no effort was made to count individuals. Numerous seedlings of tough bumelia (*Bumelia tenax*) were also apparent.

Spring of the coming year will provide an opportunity to document flowering of these pigmy fringe trees following the burn. Or perhaps the flowering response will be delayed another year? Regardless, we are in a position to learn more about the pigmy fringe tree in the near future.

*Jack Stout is a professor at University of Central Florida. His work on the pigmy fringe tree is supported by The Nature Conservancy. He appreciates the help of Jora Young and Geoff Babb of TNC.*

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