# Science Roundup

by I. Jack Stout

*(Dr. Stout, Professor of Botany at the University of Central Florida and Science Committee Chairman for FNPS, will be presenting this regular column.)*

The purpose of this column is to inform readers of *The Palmetto* about literature that they should be aware of that is published in the various journals, monographs, books, and, on occasion, the gray literature of our field of study. My initial focus will be on recent papers that report on new species of plants described for the state, revisions of thinking about old species, and on important findings with respect to native plant communities. Naturally I will have a certain bias toward ecological literature, but I hope there will be "equal opportunity" for other material on native plants to be reported here.

• Most of us have been comfortable with our knowledge of a rather ubiquitous grass known throughout Florida and the southeast as "wiregrass". The scientific name *Aristida stricta* Michaux has been applied to this grass in books about the flora of Florida and elsewhere. Robert Peet, Department of Biology, University of North Carolina, Chapel Hill, NC, has recently published a paper (Peet, 1993a) that suggests we need a name change. Based on characteristics of the blade and sheath pubescence, wiregrasses may be separated into individuals lacking a tuft of hairs on the ligule, referred to as *A. stricta*, and individuals with a conspicuous tuft of hairs on the ligule, referred to as *A. beyrichiana*. Peet provides a distribution map which clearly shows that the two wiregrasses are geographically isolated with *A. stricta* confined to North Carolina and the most northern counties of South Carolina, whereas *A. beyrichiana* is found in southern South Carolina, Georgia, Florida, and the most southern counties of Alabama and Louisiana. Some additional records of *A. beyrichiana* are provided in another paper (Peet, 1993b). It remains to be seen how Peet's findings will be handled in new and revised floras of our state.

• Land managers, naturalists, and academic types continue to be fascinated with and puzzled by Florida plant communities and the adaptations of plant species to fire.

One approach to understanding change in plant communities is to establish permanent sample locations, sometimes studied as plots with sides of equal length, say 10 x 10 meters, and properly referred to as quadrants. Oddly, observations on plant communities protected from recurrent fires are badly needed to understand if our communities follow the rules of plant successional change as understood from other parts of the world. A significant contribution to this question has been provided by a team of ecologists associated with the Archbold Biological Station near Lake Placid (Menges et. al., 1993). The authors report on changes in southern ridge sandhill, sand pine scrub, scrubby flatwoods, flatwoods, and bayhead communities that have not been subjected to fire since about 1927. Measurements of the shrub and tree layers were carried out in 1969, 1979, and 1989, and provide a detailed story of plant species' behavior over 20 years, ending 60 years after the last fire.

Changes were evident among the communities and between sampling periods. The flatwoods and bayhead exhibited changes in species composition with *Persea borbonia* (swamp bay) increasing in density and basal area. Species of oaks were more common in the tree layer of the scrubby flatwoods and southern ridge sandhill sites. Mortality among *Pinus clausa* (sand pine) on the sand pine scrub site increased between 1979 and 1989. Both *Quercus laevis* (turkey oak) and *Carya floridana* (scrub hickory) declined over the study period in the sandhill site, whereas *Quercus geminata* (sand live oak) continued to increase.

Taken collectively, the five communities continued to exhibit alterations in species composition and shifts in structure after more than 60 years without fire. Significantly, the changes were not consistent with successional theory, which predicted greater basal area of woody stems, increased average size, and reduced densities from self-thinning. Even the species composition changes did not reflect losses or additions of species, but rather shifts in dominance among the previously observed ensemble.

Surely the most important conclusion reached by the authors has to do with the role of periodic fire in the landscapes that support the communities under study. After 20 years of study, the prediction of future trends in the study plots was difficult at best. On the xeric (dry) sites, no species appeared to be specifically adapted to long fire-free intervals. Stands of fire-adapted vegetation in a highly fragmented landscape will likely diverge in composition and structure in relatively unpredictable patterns, and ultimately exhibit little or no similarity to natural communities of historic Florida.

This paper provides a compelling argument for the use of fire as a management tool in natural area maintenance.

### Literature Cited

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