

## New England Botanical Club – Minutes of the 952<sup>nd</sup> Meeting

5 November 1999 Prepared by Dr. Paul Somers, Recording Secretary

The 725th meeting of the New England Botanical Club, being the 952nd since its original organization, met on Friday, November 5, 1999 at the Biological Laboratories of Harvard University in Cambridge, Massachusetts with 83 members and guests present.

President David Conant, who chaired the meeting, presented the names of five new members and invited announcements. George Newman announced the schedule for the Club's Millennium field trip (July 2000) to the Gaspé Peninsula in Quebec. Jennifer Forman sought member support for a Massachusetts' bill aimed at controlling the spread of invasive aquatic plants in Massachusetts. Karen Lombard invited participation in a "plant keying group" that she wishes to organize. It would meet periodically in the Boston area. A letter from Joan Nickerson, past Managing Editor of *Rhodora*, was read that expressed her pleasure at being associated with NEBC. Her husband, Norton, a past *Rhodora* editor, passed away recently. Dave Conant then introduced the evening's speaker.

**Bruce A. Sorrie**, former botanist for the Massachusetts Natural Heritage & Endangered Species Program and now a botanical consultant in the southeastern United States, spoke on the topic, "Diversity and endemism in the Coastal Plain Flora." Sorrie defined the coastal plain as the exposed portion of the continental shelf that extends from Cape Cod, Massachusetts to a portion of eastern Mexico and northward into the area known as the Mississippi embayment. It is an area composed of Cretaceous age and younger deposits, which are mostly oceanic, but augmented by materials derived from the older adjacent physiographic provinces. Its inland boundary is defined by "the Fall Line," where one encounters rocks of Paleozoic age. "The coastal plain occupies about 8% of the North American landmass," he said. The geologic boundaries of the coastal plain match the boundaries of what Sorrie considers to be the Coastal Plain Floristic Province. To put the coastal plain flora in perspective, Sorrie compared it to the Appalachian Floristic Province, a much older area geologically and one regarded as a refuge for plants during periods of widespread inland seas and global climate change. While it has long been considered a major center of evolution from which most eastern North American species evolved, the Appalachian Floristic Province, Sorrie pointed out, has only seven endemic genera: *Cymophyllus*, *Galax*, *Rugelia*, *Diamorpha*, *Amphianthus*, *Jamesianthus*, *Nestronia*, and *Rugelia*. Many other genera that are often thought of as endemic to the Appalachian Province, e.g., *Astilbe*, *Disporum*, *Jeffersonia*, and *Menziesia*, are actually Arcto-Tertiary disjuncts with species also occurring in eastern Asia or elsewhere. Sorrie also mentioned a number of genera centered in the Appalachians that have spread well beyond the borders of the Province, e.g., *Chamaelirium*, *Clintonia*, *Epigaea*, and *Liriodendron*. He estimated that there might be about 200-300 endemic species in the Province, but he has not seen a figure on this.

Using a quote from the late Alwyn Gentry, Sorrie explained that the southeastern coastal plain is "a conspicuous but often overlooked center of endemism in temperate North America." Gentry said, "It is remarkable that Florida, only 152,000 sq. km and with virtually no topographic relief, should rank second only to California in number of endemic species; it is even more remarkable when we consider that the endemic plant species are concentrated in northern and central

Florida, not in the subtropical southern part." According to Sorrie, there are 215 species wholly confined to Florida, and another hundred or so that extend but a short distance from its borders into Alabama and/or Georgia. For the coastal plain as a whole, there are two endemic plant families, 48 endemic genera, 35 of which are monotypic, and about 1400 endemic species, he said. Endemism occurs in many other coastal plain plant genera, 98 of which have five or more endemic species, he added. He felt that 60 million years of partial exposure of the coastal plain had allowed for considerable in situ plant colonization and evolution of new taxa. Sorrie's slides illustrated many of the endemic genera. Among them were *Balduina*, *Ceratiola*, *Dicerandra*, *Franklinia*, *Harperocallis*, *Lachnanthes*, *Macranthera*, *Pinckneya*, *Pyxidantha*, *Schwalbea*, *Sclerolepis*, *Stokesia*, *Warea*, and *Zenobia*.

Sorrie joked about the seemingly monotonous, pine-dominated landscape of the coastal plain. He quoted Roland Harper, a pioneering botanist in the southeastern coastal plain, who described a 700-mile train trip from Augusta, Georgia to Richmond, Virginia, where he did "not remember seeing any rocks, bluffs, escarpments, hills, ravines, gullies, springs, or hammocks, or passing through any railroad cuts deep enough to obstruct the view." Sorrie commented that some topographic maps for eastern North Carolina even lack topographic contour lines! Why then, he rhetorically asked, does the coastal plain support such botanical diversity? Answering his own question, he gave seven possible reasons: 1) subtle shifts in soil composition and chemistry with eight of ten global soil orders represented, 2) subtle shifts in soil moisture, 3) subtle elevational differences that have profound effects on plant communities, 4) high humidity and percentage of sunshine, 5) the highest frequency of lightning strikes in the U.S., which results in many fire-adapted communities with high herb diversity, 6) up to 60 million years of vegetational history that has provided, at least, some localized refuges for temperate species during times of maximum glacial advance, and 7) the derivation of the flora from multiple source areas, including the tropics, subtropics, prairies and deserts, as well as from in situ speciation. A summary of ten different geographic patterns of floristic endemism in the coastal plain, followed by some questions from the audience, ended the meeting.