

## North Carolina's Changing Rare Flora

By Alan Weakley, Curator, UNC Herbarium

For those working to conserve our native flora, a fundamental challenge is to document it well enough to know what native species occur in the state, which ones are rare and require special attention, and what factors are contributing to their imperilment.

Until recent decades, botanists who understood the flora best were most often associated with regional herbaria. These individuals spent countless hours conducting inventory work. They scoured the countryside, finding and collecting plant specimens, and sometimes publishing the results of their work. The accumulated specimens left in the state's herbarium collections represents an unparalleled record of our flora.

To help guide and focus conservation activities, a group of these botanists began to develop the first formal Rare Plant List for North Carolina in 1975, based on their extensive knowledge of the flora. The resulting list was published in 1977 by a committee consisting of Jim Massey and Al Radford (UNC–Chapel Hill), Jim Matthews (UNC–Charlotte), Dan Pittillo (Western Carolina University), Rusty Kologiski (N.C. State Univ.), and Jim Hardin (N.C. State Univ.).

Soon thereafter, with the advent of federal and state laws to conserve endangered and threatened flora, the N.C. Natural Heritage Program and N.C. Plant Conservation Program were established. These agencies set about to catalog all herbarium specimens of rare plants, conduct field surveys to determine the current condition of these species, set conservation priorities based on imperilment and viability, and maintain and modify the Rare Plant List to reflect our best current knowledge.

Nearly thirty years later, what have we learned?

### The effort to understand our flora continues

The task of defining the components of North Carolina's flora is ongoing. New species (many of very limited distribution) are still being described; on the other hand, some species once considered rare have proven not to warrant taxonomic recognition. Since the first rare plant list, 35 new species have been described and are monitored; 44 species have been "split" or newly recognized as valid species and added to the list. In the other direction, 14 species from that first list are no longer regarded as valid.

Among the new species are:

**Sandhills lily** (*Lilium pyrophilum*), limited to fire-maintained Sandhills bogs;

**Golden sedge** (*Carex lutea*), of wet pine savannas in Pender and Onslow Counties; and

**Appalachian oak fern** (*Gymnocarpium appalachianum*), an ancient central Appalachian species with a single southernmost occurrence on a cliff in Ashe County.

### Field work is critical

Field inventory and collection remain the foundations of botany. Today, 103 species that were once on the rare list are now considered so secure that they no longer warrant monitoring. Some of these are more secure now because conservation effort has made them so. But most were simply poorly known and additional targeted inventory of populations revealed that they were more common than initially believed. During the same time, 112 plants were added to the list because they were newly discovered to be a part of the North Carolina flora, including

**Cain's reedgrass** (*Calamagrostis cainii*), once thought to be limited to Mount LeConte in Tennessee but now known also from two mountains in North Carolina;

**Goldthread** (*Coptis trifolia* var. *groenlandica*), disjunct in mountain bogs

from the northeastern United States;

**Box huckleberry** (*Gaylussacia brachycera*) on a bluff near Durham, disjunct from the Cumberland Plateau of Virginia, Tennessee, Kentucky, and West Virginia; and

**Florida atamasco-lily** (*Zephyranthes simpsonii*), disjunct from southern Georgia and Florida.

### The imperilment of our flora is increasing

Overall, the list has grown from 414 vascular plants in 1975 to 622 in 2005. While this reflects in part new knowledge leading to recognition of the imperilment of additional species, it also reflects the fact that species that seemed common in the 1960s and early 1970s are on a downward trajectory. For instance, many species of the longleaf pine savannas of southeastern North Carolina, including celebrated orchids, lilies, and insectivorous plants, have dramatically declined as more habitat is converted to pine tree farms and retirement resorts.

The most effective (and cost-effective) conservation of our native flora is based on careful planning, which depends on accurate information about that flora. Today's herbaria and conservation agencies serve the plants and the people by developing the best information possible on the flora, its distribution and rarity, and conservation challenges and opportunities.

The current North Carolina rare plant list can be viewed at the N. C. Natural Heritage Program's website:

<http://www.ncnhp.org/>.

You may also visit the N. C. Plant Conservation Program website for information on that program's activities related to North Carolina's Endangered and Threatened plants: <http://www.agr.state.nc.us/plantind/plant/conserv/cons.htm>.



Golden sedge (*Carex lutea*). Photo by James Henderson, Gulf South Research.