Southeastern Section–56th Annual Meeting (29–30 March 2007)

Paper No. 30-5

Presentation Time: 8:00 AM-12:00 PM

HYDROGEOLOGIC CHARACTERIZATION OF THE BUNCHED ARROWHEAD, *SAGITTARIA FASCICULATA*

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The Bunched Arrowhead is an endangered plant species known only to exist in Greenville County, South Carolina and Henderson County, North Carolina. The plant requires a very specific set of hydrogeologic conditions in order to survive. Increased development across the Piedmont region has already begun to encroach on the plant's native habitat and has the potential to alter local hydrology, thereby threatening the plant's distribution. Consequently, characterizing and understanding the specific hydrogeologic environments and conditions that the Bunched Arrowhead requires are essential to protect the plant and ensure its continued survival.

The intent of this study was to conduct a comparison and analysis of the hydrogeologic, physical, and chemical characteristics of fourteen Bunched Arrowhead sites across Greenville County. Each site was characterized through (1) visual assessment of the plant's habitat that included a sketch of the site and a description of the surrounding land cover, the topography, and the hydrologic setting, (2) physical measurements of the pH, dissolved oxygen, conductivity, and temperature and chemical analysis of the water in which the plants reside, and (3) grain size and organic content analyses of the plant's substrate. In addition, more detailed study, including continuous water level monitoring, topographic surveying, and repeated physical and water chemistry analyses, was conducted at the site on Furman University's campus.

Based on the compilation of data from the fourteen sites, the Bunched Arrowhead appears to require a very specific habitat, growing only in well shaded, hydrated soils fed by a constant flow of freshwater (from a stream or seep). Although saturation is a requirement, the plant appears to grow only in environments free from substantial hydrologic disturbances and fluctuations (e.g., flooding, drought). The plants like to grow in organic rich, sandy mucks in shallow (<5 cm deep), acidic (pH 4 – 5), mixed cation - bicarbonate waters with moderate levels of dissolved oxygen (4 – 7 mg/L) and relatively low conductivities (25 – 50 µS). The plant's distinct and sensitive habitat requirements will make it particularly vulnerable to changes in the hydrogeology and/or land cover from encroaching development.

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General Information for this Meeting

Session No. 30--Booth# 9
Undergraduate Research (Posters)
Hyatt Regency Savannah on the Historic Riverfront: Harborside West
8:00 AM-12:00 PM, Friday, 30 March 2007

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