



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2004MS23B

**Title:** Evaluation of Wetland Floristic Quality Indices as Indicators of Ecological Integrity in North Mississippi Wetlands

**Project Type:** Research

**Focus Categories:** Wetlands, Invasive Species, Management and Planning

**Keywords:** aquatic plants, bioindicators, biomonitoring, ecological integrity, exotic species, native species, wetlands

**Start Date:** 03/01/2004

**End Date:** 02/28/2005

**Federal Funds:** \$14,851

**Non-Federal Matching Funds:** \$29,856

**Congressional District:** Third

**Principal Investigator:**

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**Abstract**

The proposed research will provide an efficient means by which the overall ecological status of a set of wetlands may be compared with one another and/or with known "reference" wetlands, based on the wetland indicator status of native and exotic herbaceous vascular plants present at each site. The proposed Wetlands Floristic Quality Indices (WLFQI) are based on general Floristic Quality Assessment Indices (FQAI) that have been developed and used extensively in other regions of the United States. The best index, from a set of four proposed methodologies, will be selected by comparison of WLFQI values with hierarchical rankings of study sites, based on immediate and landscape-scale impacts from anthropogenic habitat modification and use (e.g., agricultural use, urbanization, transportation routes, intense recreational use), the principal causes of habitat degradation in any ecosystem worldwide. The proposed indices range from very simple, incorporating only mean wetland indicator status and species richness, to a relatively complex index incorporating the effects of exotic species dilution of native richness.

The resulting index should prove useful in evaluating the success of wetland mitigation, monitoring and assessing restoration efforts, and in determining the impacts of other wetland management practices, such as wildlife management or incorporation of natural wetlands into wastewater treatment programs. The WLFQI is an attractive management and assessment tool because 1) herbaceous plants respond rapidly to both improvement and degradation of wetland health, integrating disturbance at numerous biological scales (from pollutant discharge to urbanization and siltation), 2) numerous regional keys exist for relatively efficient species-level identification of wetland plants (vs. identification of aquatic invertebrates, which is difficult even to the level of Family in some cases), 3) databases of wetland indicator status have been developed for each major region of the US, and 4) an index that incorporates the effects of both native and exotic species will be sensitive to varying degrees of ecological modification in natural and created wetland systems.