



United States Department of Agriculture  
Natural Resources Conservation Service

*Helping People Help the Land*

## CEAP-Wetlands Backgrounder

November 2008

### CEAP — Building the Science Base for Conservation

Science-based conservation is the key to managing agricultural landscapes for environmental quality.

The Conservation Effects Assessment Project (CEAP) is a multi-agency effort to quantify the environmental benefits of conservation practices and develop the science base for managing the agricultural landscape for environmental quality. Project findings will guide USDA conservation policy and program development and help farmers and ranchers make informed conservation choices.

The three principal components of CEAP—the national assessment, the watershed assessment studies, and the bibliographies and literature reviews—contribute to the building and evolution of the science base for conservation.

### Wetlands

The goal of CEAP-Wetlands is to develop a broad collaborative foundation that facilitates the production and delivery of scientific data, results, and information. Findings will routinely inform conservation decisions affecting wetland ecosystems and the services they provide, particularly focusing on the effects and effectiveness of USDA conservation practices and Farm Bill conservation programs on ecosystem services provided by wetlands in agricultural landscapes.

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# Conservation Effects Assessment Project Quantifying the Ecosystem Services Derived from Wetland Conservation Practice in the Glaciated Interior Plains: The Provision of Water Quality Benefits

The combination of extensive drainage and intensive row crop fertilization in the Glaciated Interior Plains (GIP) contributes some of the highest nitrogen yields per acre to downstream waters, particularly the Mississippi River. Agricultural sources, including fertilizer and leguminous crops, are responsible for an estimated 58 percent of the nitrogen (N) export in the Mississippi River basin. The environmental consequences of high levels of N export are well documented; for example, N export has led to the formation of the seasonal hypoxic zone in the Gulf of Mexico.

Wetland creation, restoration, and enhancement and establishment of riparian buffers are widely used to intercept nutrients, sediment, and other pollutants and maintain water quality of recipient aquatic ecosystems. Since 2000, more than 100,000 hectares of these wetland practices have been established under Farm Bill conservation programs. There is, however, little documentation of the extent to which these practices are increasing the provision of ecosystem services in agricultural landscapes.

### Research Proposal

The proposed research on the effects of wetlands conservation on ecosystem services in the GIP will address this uncertainty through a survey of up to 60 sites representing the four predominant riparian and wetland conservation practices and their associated land treatments. The survey will document N removal via denitrification as well as N and phosphorus (P) storage associated

with sediment trapping. The researchers will also employ geographic information systems—

- to determine whether wetland practices and land treatments implemented on lands enrolled in the U.S. Department of Agriculture Wetlands Reserve Program (WRP) and Conservation Reserve Program (CRP) are being sited in the most at-risk (high nutrient yielding) watersheds, and
- to develop tools to optimize the types (i.e. riparian buffers, wetland creation, restoration and enhancement) and placement of these wetlands within the GIP.

Results from this work will be used to identify—

- which practices are most effective for removing N, P, and sediment,
- whether WRP and CRP wetland practices are being sited in the most appropriate (i.e., high nutrient yielding) watersheds, and
- which combination of WRP and CRP wetland practices and placement within the watershed maximizes N, P, and sediment removal and minimizes export to aquatic ecosystem downstream.

Findings from this project will be applicable to other watersheds in the eastern and central United States where large numbers of WRP and CRP wetland practices have been established to maintain and protect water quality.

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