



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 Assessment of Ecological Services Derived from USDA Conservation Programs in the Mississippi Alluvial Valley

### Goal

The overall goal of this project is to quantify existing ecological services derived from U.S. Department of Agriculture restoration programs in the Mississippi Alluvial Valley (MAV), and to develop indicators of wetland functions that can be used to quantify ecological services in the future.

### Study Area

The initial study area was located within the MAV, with the majority of data collected from sample wetlands distributed in the lower White/Cache River Basins of Arkansas and the Tensas River Basin in Louisiana. Using spatially explicit geographic information system (GIS) data documenting the location of WRP and CRP projects supplied by NRCS and FSA, 16 study sites were randomly selected in each of three habitat types: agricultural cropland, former cropland reforested under the Natural Resources Conservation Service (NRCS) Wetlands Reserve Program (WRP), and mature bottomland hardwood forest.

Eight sites of at least 100 acres and located on CRP lands within the Tensas River basin were also sampled to collect data on and test mobile radar technology to capture migratory bird use of CRP lands. In addition, an analysis was conducted for the entire Lower MAV to determine effectiveness of locating sites on lands enrolled in WRP relative to flood compatibility. Data collected as part of this analysis was used with other data to interpret effects on overwintering waterfowl foraging habitat as a result of implementing conservation practices to restore wetlands on WRP lands. Some specific details of the study design include the following factors:

- Agricultural sites were in crop production during the study period.

Crops grown included soybeans, corn, milo, and cotton.

- In order to analyze the effects of landscape attributes on restored ecosystem services, WRP plots were selected to maintain at least 4 kilometers between plots to avoid confounding landscape attributes. All WRP sites had undergone some form of hydrologic restoration.
- The bottomland hardwood forest sites were selected where existing records and on-site evaluations indicated that the overstory vegetation was at least 70 years old and naturally regenerated. Half of the study sites occurred in the Tensas River Basin (n=24), and the other half occurred in the lower White/Cache River Basins (n=24). Each study site was more than 40 hectares in size, and the plots within each study site were more than 100 meters from the habitat edge and more than 400 meters from a paved road.

All but two of the Louisiana bottomland hardwood sites occurred on public land in the Tensas River National Wildlife Refuge (NWR), Buckhorn Wildlife Management Area (WMA), and Big Lake WMA. In Arkansas, all of the BLH sites were on public land in the Cache River and White River NWRs.

### Preliminary Findings

The investigators measured a suite of edaphic, vegetative, and morphological characteristics at both the patch scale and landscape scale to evaluate the following ecosystem services:

- **Biogeochemically Related Services:** Carbon sequestration, nutrient and sediment reduction;

- **Biological Conservation, Sustainability, and Habitat Quality:**

Neotropical migratory birds, waterfowl, amphibians, and black bear.

Preliminary results are available for biogeochemically related services and biological conservation services related to neotropical migratory birds, waterfowl, and amphibians. Work continues on the black bear.

Using these data, researchers are developing functional indicator models and field testing those with an additional 30 WRP sites in the Yazoo Basin in Mississippi. The patch and landscape data are also being used to develop integrated landscape and frame-based models to predict ecosystem services from restoration and conservation practices.

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