



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 The Choptank Watershed Wetland Study

This study brings together an interdisciplinary group of experts and resources from the Natural Resources Conservation Service, Agricultural Research Service, U.S. Geological Survey, and University of Maryland to assess the ability of wetlands along a land-use/hydrologic alteration gradient to improve water quality. Study scientists are combining information gained from individual wetlands with landscape scale measurements from geospatial datasets.

The ability to quantify ecosystem services “on the ground” and then link this information to remotely sensed data represents a powerful tool for future wetland applications. The impact of this study is greatly enhanced by extending the analysis to adjacent streams and measuring the effect of wetland biogeochemical processes on stream health.

Scope

Nine wetland/stream study sites have been established in the headwaters of the Choptank River Watershed, divided equally among prior-converted wetlands on croplands, lands where conservation practices to restore wetland hydrology have been implemented, and wetlands with native vegetation. Approximately 50 shallow groundwater wells have been distributed across the nine study sites to monitor parameters that best indicate—

- the hydrologic connectivity of wetland sites to ground and surface waters,
- the potential of these sites to reduce and transform water-borne agrochemicals, and
- the amount of denitrification occurring at these sites.

The water quality and quantity data are complemented by additional field-collected data on soils, vegetation, and biota.

Early Results

The synergistic potential of the ground data and multiple types of remotely sensed images is being assessed, and initial results are extremely promising. Radar data have been used to create multi-temporal maps of wetland hydroperiod—the most important abiotic factor controlling wetland function and extent. A combination of the hydroperiod maps, digital elevation maps, and ancillary data is being used to help determine the origin of waters flowing into different types of wetlands and the likelihood that agrochemicals are being removed from these waters before they enter adjacent streams. The ground data are being used to calibrate and validate these estimates of wetland water quality services and to extend the predictive function of the geospatial data to other important services.

Findings will be used to assess and improve the effectiveness of conservation practices and Farm Bill programs affecting wetlands and associated lands on the Maryland and Delaware Coastal Plain. The study serves as a testing ground and springboard for the Mid-Atlantic Regional CEAP-Wetland study and is an important step towards producing a national landscape analysis tool as part of the National Wetlands Monitoring Framework being developed through CEAP-supported research.

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