United States Department of Agriculture
Natural Resources Conservation Service

Helping People Help the Land

CEAP-Wetlands
Backgrounder

November 2008

Conservation Effects Assessment Project
Assessing the Effects of USDA Conservation Practices on Wetland Ecosystem Services in California's Central Valley

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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Agricultural development and urbanization in California's Central Valley (CCV) have resulted in the loss of over 90 percent of freshwater wetlands in that region. Similarly, drainage of wetlands for agriculture and urban development in Oregon's Upper Klamath Basin (UKB) has contributed to accelerated eutrophication of lakes and rivers and the decline of native fish populations.

Although the Wetlands Reserve Program (WRP) is widely viewed as benefiting wetland ecological functions, there has been little or no evaluation or quantification of the ecological services provided from this program; the conservation practices most commonly applied on WRP land in the CCV and UKB are wetland wildlife habitat management and wetland restoration. Likewise, the effects of specific management practices such as prescribed grazing, burning, pest management and conservation cover planting are poorly understood. Preliminary findings suggest that these practices vary widely among WRP and are applied adaptively with specific management goals in mind.

Objectives

The objectives of this project are to assess the following ecosystem services provided by WRP:

- Plant community quality and richness.
- Habitat quality for fauna.
- Soil and vegetation carbon sequestration.
- Floodwater storage.
- Sediment and nutrient load reduction.
- Nutrient uptake by wetland plants.

Key elements of this study include evaluating and quantifying ecosystem services along restoration age, management intensity, climate, and landscape composition gradients.

Data Collection Spring-Summer 2008

The CCV is an elongated sedimentary basin, often subdivided into the Sacramento River Valley in the north and San Joaquin and Tulare Valleys in the south. Distinct climatic gradients occur along a latitudinal gradient. Vegetation samples for nutrient analysis and biomass assessment were collected from 18 wetlands in the Tulare subbasin, five wetlands in the San Joaquin subbasin, and 21 in the Sacramento subbasin. These included six reference sites in national wildlife refuges. Wetland morphometry data was also collected onsite.

A census of wetland birds, bee pollinators and amphibian species was conducted in the spring and summer of 2008. Bees were collected using pan traps and netting, while amphibians were assessed via three methods: visual encounter surveys, nighttime auditory recordings, and funnel traps. Bird surveys were conducted in collaboration with the Point Reyes Bird Observatory (PRBO). Sample processing and data entry are currently underway at Humboldt State University.

Ongoing Data Collection

The following data are currently being collected:

- Land-use history and current management intensity survey.
- Climate.
- Landscape features and wetland inventories.
- Wetland construction and elevation information.
- Soils.

Sources include Natural Resources Conservation Service (NRCS) archival documents, NRCS-Web Soil Survey, California Department of Water Resources, the National Oceanic and Atmospheric Administration, U.S. Geological Survey gauging stations, U.S. Department of Agriculture Conservation Reserve Program and WRP land units, the U.S. Environmental Protection Agency National Land Cover Database, and the Central Valley Joint Venture.

NRCS digital soil survey maps will be used to determine WRP soil type. In addition, soil samples are currently being collected to provide estimates of soil moisture, bulk density and soil organic carbon stocks. Samples will then be submitted to the Colorado State University Soil-Water-Plant Testing Laboratory for determination of total phosphorus, total nitrogen, total carbon, and total inorganic carbon.

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