



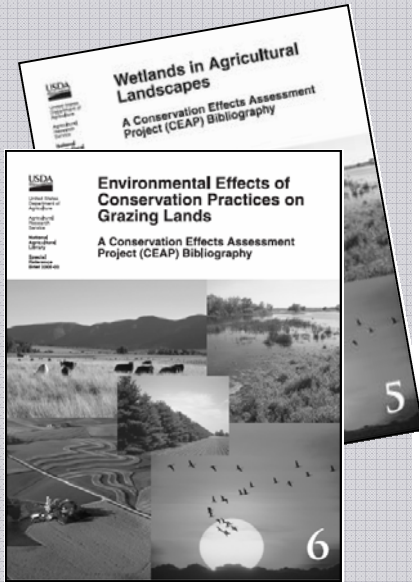
United States Department of Agriculture
Natural Resources Conservation Service

Helping People Help the Land

Conservation Effects Assessment Project CEAP Highlights

October 2006

New Bibliographies



Available online:

www.nrcs.usda.gov/technical/NRI/ceap/

Coming Soon

Next month, the Resources Inventory and Assessment Division will introduce two new series of information briefs in the CEAP product line:

- **CEAP Science Notes**
Intended for researchers, conservation professionals, and policymakers, these briefs will explore the science behind CEAP and define the scientific challenges to understanding and quantifying the environmental effects of conservation practices.
- **CEAP Conservation Insights**
Intended primarily for conservation policy and program leaders, these briefs will summarize CEAP findings and their implications for policy development and program implementation.

Secretary Announces New CSREES Watershed Studies

On October 4, USDA Secretary Johanns announced five new CEAP Competitive Grant Watersheds selected by the Cooperative State Research, Education and Extension Service (CSREES). The total number of CEAP watershed assessments is now 37 (see Fig. 1).

CEAP Competitive Grant Watersheds, funded in part by NRCS, are 3-year research projects designed to answer the following questions:

- Within the hydrologic and geomorphic setting of a watershed, how do the timing, location, and suite of implemented agricultural conservation practices affect surface and/or ground water quality at the watershed scale?
- What social and economic factors within the study watershed either fa-

ilitate or impede implementation or proper maintenance of conservation practices?

- What is the optimal set or suite of conservation practices and what is their optimal placement within the watershed in order to achieve water quality goals or to provide acceptable reductions in water quality impairments?

CEAP Technical Workshop Draws 370 Scientists, Policymakers

October 11-13 in Kansas City, Missouri, the Soil and Water Conservation Society (under a USDA contract) hosted the workshop *Managing Agricultural Landscapes for Environmental Quality: Strengthening the Science Base*.

The primary objective of the workshop was to bring together individuals in the scientific and technical communities to

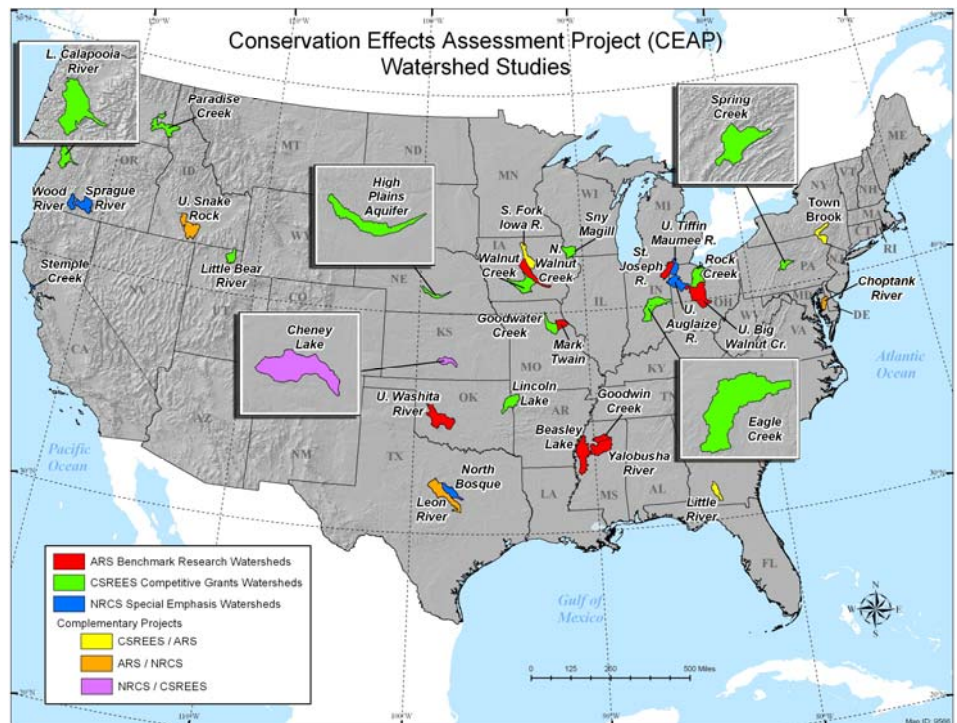


Figure 1.— CSREES Competitive Grant Watersheds selected in 2006.

discuss how to quantify the environmental benefits of conservation practices on agricultural land at landscape and/or watershed scales and how we can improve our capabilities to manage agricultural landscapes for environmental quality.

The more than 370 attendees included participants from Canada, Australia, and New Zealand. The workshop opened with a panel session on the needs and

expectations of conservation policymakers and practitioners. Plenary sessions addressed the following topic areas:

- What should we measure, and how, to account for environmental effects?
- Methods for environmental management research at landscape and watershed scales.
- The science of targeting within landscapes and watersheds to improve conservation effectiveness.

- Realistic expectations about the timing between conservation implementation and environmental effects — lessons learned from long-term research.

Over 100 papers were presented at the concurrent sessions held on each topic area, and 72 poster papers summarized watershed scale research findings. SWCS plans to post the presentations on its website (www.swcs.org) and to issue proceedings early in 2007.

Cropland National Assessment

Cropland Literature Review Expected January 2007

Over the past 2 years the Soil and Water Conservation Society (SWCS) has been leading an effort to synthesize from the current scientific literature what is known and not known about the field-level effects of conservation practices applied to cropland. The report, entitled *Evaluating the Environmental Benefits of Agricultural Conservation Practices — the Status of Our Knowledge*, is in the final stages of preparation. Publication is expected by January 2007.

Leading experts recruited by SWCS are overseeing the literature search, review, and synthesis for ten main topics. Authors will address the environmental effects of one of the following five basic conservation systems — soil management, water management, nutrient management, pest and weed management, and landscape management -- applied to one of the following two basic cropping systems — rainfed and irrigated. The analysis of each topic will summarize, in a parallel fashion, what is known and what is not know about—

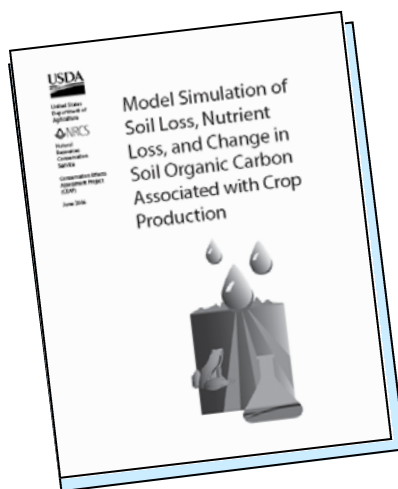
- Positive and negative environmental effects;
- Interactions and potential tradeoffs among conservation practices, systems, and environmental outcomes;
- Key factors driving the magnitude and direction of environmental effects, interactions, and tradeoffs;
- The degree of confidence that can be accorded documented environmental effects;
- Gaps in knowledge where additional research is needed.

2006 Farmer Survey

This fall, the National Agricultural Statistics Service completes the fourth and last year of CEAP farmer survey data collection. This survey provides information needed at the selected NRI sample points to run field-level process models for the national cropland assessment.

First CEAP Cropland Report — An Aid for Targeting and Allocating Resources

Available now is the first CEAP cropland component report — *Model Simulation of Soil Loss, Nutrient Loss, and Change in Soil Organic Carbon Associated with Crop Production*.



The report was prepared by staff from the Resources Inventory and Assessment Division (RIAD) at NRCS National Headquarters in partnership with the Texas Agricultural Experiment Station (TAES) in Temple, Texas.

Identified in the report are areas of the country that have the highest potential for sediment and nutrient loss from farm fields and for soil quality degradation — areas of the country that would likely benefit the most from conservation practices.

The model results and maps presented in the report were obtained using a system of databases and models built by NRCS and TAES from 2000 to 2004, prior to collection of CEAP farmer survey data. The 1997 National Resources Inventory (NRI) was used as the basis for the study. The study also includes a preliminary assessment of the effects of three tillage systems (no tillage, conservation tillage, and conventional tillage) on sediment and nutrient loss from farm fields and the effects of contour farming, strip cropping, and terraces.

Future CEAP cropland reports will extend the analysis by incorporating the CEAP farmer survey data, which provides on-site farming activity and conservation practice information at sample points used for the 2003 Annual NRI.

Interim Cropland Report

An interim report of findings based on the first 2 years of farmer survey data (2003-2004) will be ready in January 2007 for peer review. Publication is scheduled for June 2007.

The final report — based on all 4 years of farmer survey data — should be completed by June 2008.

Visit the CEAP website!
www.nrcs.usda.gov/technical/NRI/ceap

Regional Assessments

The wetlands component of the CEAP national assessment takes a collaborative approach with regional assessments across the lower 48 states (see Fig. 2). Below are highlights from the regional assessments that are under way. NRCS is a collaborator in these assessments.

Prairie Pothole Region. The U. S. Geological Survey (USGS) Northern Prairie Wildlife Research Center is preparing to release this year its preliminary estimates of ecosystem services provided by (a) prairie pothole wetlands and associated uplands on cropland, (b) lands enrolled in the Wetlands Reserve Program (WRP) and the Conservation Reserve Program (CRP) that involve conservation practices focused on restoration and enhancement, and (c) native prairie that has never been cultivated.

Mississippi Alluvial Valley. The USGS National Wetlands Research Center expects to release in February 2007 its preliminary estimates of floodwater storage capacity for the region and other ecosystem services provided by (a) bottomland hardwood wetlands and associated uplands on cropland; (b) lands enrolled in the WRP that involve conservation practices for restoration and enhancement, and (c) mature stands in

Louisiana and Arkansas watersheds (habitat quality for wildlife, floral biotic diversity and quality, carbon sequestration, nutrient and sediment/erosion reduction).

The High Plains regional assessment was initiated in June 2006 and will be conducted through an interagency agreement with the USGS Texas Cooperative Fish and Wildlife Research Unit at Texas Tech University. It will involve modeling to identify factors that influence differences in estimates of ecosystem services for populations of playa and Rainwater Basin wetlands in the High Plains. Ecosystem services to be measured include groundwater recharge, floodwater storage capacity, reduction in sediment and nutrient potential, floral biotic diversity and quality, and habitat quality for breeding and migratory birds and amphibians. Release of preliminary findings is scheduled for late 2007.

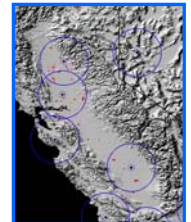
Wetlands Literature Synthesis

NRCS, the U.S. Forest Service, and the Ecological Society of America will release in 2008 a synthesis from current scientific literature on the effects of conservation practices on ecosystem services provided by wetlands and associated uplands on agricultural landscapes.

Regional Project Reports

The CEAP wildlife assessment component is a major collaborative effort across regional landscapes. Here are upcoming releases from some of the NRCS-funded regional projects:

- Missouri pilot assessment focusing on processes that can evaluate the benefits of previously installed conservation practices as well as help prioritize farm bill program allocations — Report expected February 2007.
- Doppler radar study of wintering water bird use of WRP land in California — February 2007.
- Fish response to dam removal and stream restoration practices in the Northeast — June 2007.



Regional studies support the CEAP wildlife assessment strategy of using existing data wherever possible, capitalizing on relevant studies already underway, and basing our scientific efforts on regional priorities.

Wildlife Literature Review II (Practices)

The Wildlife Society expects to release in January 2007 a literature synthesis on the fish and wildlife benefits of conservation practices. Funded by NRCS and the Farm Service Agency, this CEAP product is a companion piece to the recently published edition on wildlife benefits of farm bill conservation programs.

Farmer Perspectives on Wildlife

Also available in January 2007 will be preliminary findings on farmer perspectives on wildlife. These findings were extracted from the 2004 farmer surveys conducted for the cropland national assessment component of CEAP.

This effort supports a short-term objective of the CEAP wildlife component — to develop and implement approaches for estimating fish and wildlife effects associated with cropland conservation.

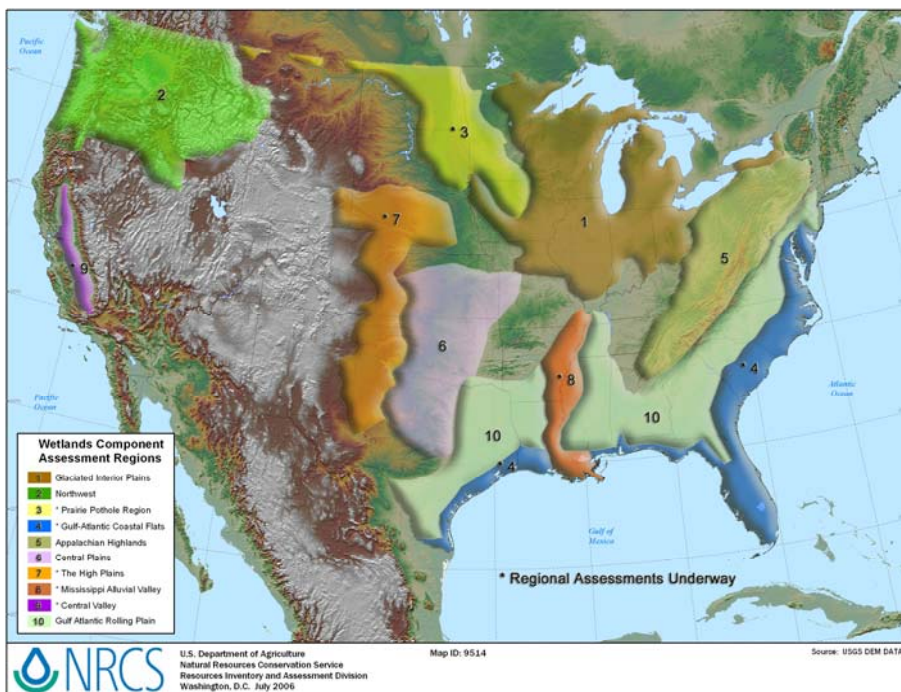


Figure 2.— CEAP wetlands assessment regions

Grazing Lands National Assessment



Two-thirds of the Nation's agricultural land is used for grazing. Teasing out the conservation effects from the enormous environmental complexities of these landscapes and ecosystems will require careful science and diligent interpretation of the literature.

The intent of CEAP is to strengthen the collaboration among grazing lands groups and scientists and to produce a national assessment of the effects of conservation practices on grazing lands. This increased collaboration and partnership will further our ability to distinguish conservation effects.

Grazing Lands Bibliography

The National Agricultural Library published in September the sixth CEAP bibliography — *Environmental Effects of Conservation Practices on Grazing Lands*. This guide to the recent scientific literature was guided by CEAP's multi-agency grazing lands advisory group. The bibliography is available on the CEAP website.

Rangeland Hydrology and Erosion Model (RHEM)

In an effort to model soil and water outputs from grazing lands, CEAP is employing RHEM, a successor to the Water Erosion Prediction model. RHEM will depend upon the rangeland and pastureland data collected at National Resources Inventory sample points. Data collected from NRCS and Agricultural Research Service (ARS) rainfall simulators and from instrumented watersheds will also be used to populate the model.

Grazing Lands Literature Review

Planning is underway for a landmark synthesis of findings from the current scientific literature on long term effects of conservation practices upon rangeland, pastureland, and grazable woodland. It will allow better documentation of both gross and subtle effects of conservation practices over time, will point out promising research areas, and will lend itself to adaptive management.

Watershed Assessments

Research Component of CEAP

The CEAP watershed assessment studies are the research component of CEAP — important because they focus on the effects of conservation practices at the landscape or watershed scale, help us to refine our national models, and provide specific guidance for land treatment practices that will reduce agricultural sources of pollution.

Watershed Reports

Special Emphasis Watersheds (SEWs), managed by NRCS, have drafted preliminary reports of findings, some of which will be summarized in the new *CEAP Science Notes* series to be issued starting next month. The SEW's also are completing their year-end progress reports.

Benchmark Research Watersheds, managed by ARS, will present their reports at the 2007 annual conference of the Soil and Water Conservation Society.

Competitive Grant Watersheds, managed by CSREES, will provide final reports in December 2007 for the first four study areas selected.

Assessing Agricultural Impacts on Coral Reefs

In support of the U.S. Coral Reef Task Force, USDA and the National Oceanic and Atmospheric Administration (NOAA) are collaborating to gauge the effects of agricultural land use on estuaries, coastal waterways, and coral reefs. As part of this effort, CEAP will investigate the extent to which conservation practices can reduce deterioration of coral reefs from agricultural sources of pollution.

NRCS — in cooperation with ARS, NOAA, and other partners — will apply the SWAT (Soil and Water Assessment Tool) model in selected watersheds that impact coral reefs to simulate changes in land use (including agricultural practices and conservation practices) that potentially will reduce stressors on coral reefs.

The first step is to draft a work plan for a pilot watershed and identify potential sources of funding. NRCS, ARS, and NOAA currently are preparing a proposal to study two watersheds in Puerto Rico.

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 scientifically quantify the environmental benefits of conservation practices used by private landowners participating in U.S. Department of Agriculture (USDA) and other conservation programs. Project findings will guide USDA conservation policy and program

development and help farmers and ranchers to 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 evolving process of building the science base for conservation. That process includes research, monitoring and data collection, modeling, and assessment.

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