



# Conservation Effects Assessment Project CEAP Highlights

## Finding CEAP Information through the National Agricultural Library

In addition to producing the comprehensive, multi-volume CEAP bibliography series, the National Agricultural Library (NAL) provides various products and services designed to facilitate access to information relevant to CEAP.

The CEAP Steering Committee collaborates with NAL's Water Quality Information Center to identify and track publications (articles, reports, updates, etc.) produced by CEAP researchers and managers. NAL librarians are building capabilities to organize, store and retrieve citations and full text of CEAP materials. They have created tools to easily locate CEAP documents using online databases and alerts. They are also identifying and inputting full text materials so that they will be accessible via AGRICOLA---NAL's online catalog and database of agricultural literature.

The following are examples of how NAL assists CEAP researchers, team members and others in locating information useful to CEAP.

### Article Alerts

Article alerts are created in online journal and publisher databases to retrieve the latest journal articles, conference papers, and other materials on CEAP projects and CEAP related topics. The user is notified by e-mail when the searches find new results.

The e-mail alerts contain citation information, abstracts, author's keywords and references. The articles or documents are often available for full text retrieval through NAL.

If NAL has a journal subscription through DigiTop (USDA's portal to online journals and databases), NRCS and other USDA staff will be able to read the full text immediately. If NAL

does not have an electronic subscription, USDA staff can request the document from NAL. Additional information on obtaining materials from NAL for USDA personnel and people not in the department is available at <http://www.nal.usda.gov/services/request.shtml>.

### AGRICOLA

In addition to commercial databases and journals available to NRCS and other USDA staff through DigiTop, articles and other publications can be found by searching the publically available AGRICOLA database at <http://agricola.nal.usda.gov>. Retrieved records include citation information, and for many of the more recent items, a link to the online document. As information from CEAP is being produced, NAL is adding the records for these documents to AGRICOLA.

### Dynamic Bibliographies

To make it easier and faster to search AGRICOLA on CEAP-related topics, NAL librarians have created on-line "dynamic bibliographies." These use a predefined (or "canned") search strategy to retrieve the latest information. Unlike conventional bibliographies, which are static documents that become dated over time, each time a dynamic bibliography is accessed, it is updated with any new citations that are available. In this way, the bibliography stays current. Simply clicking on a link for a topic, e.g., riparian buffers, generates a search of AGRICOLA on the topic.

Dynamic bibliographies cover the CEAP multi-volume bibliography topics, publications and scholarly articles resulting from CEAP, as well as conservation practices and their environmental effects. The box at right lists the general subjects currently available. There are also additional bibliographies on more specific conservation topics.

For more information on these NAL tools and services, or help with locating information supporting or resulting from CEAP activities, contact the NAL Water Quality Information Center at [wqic@ars.usda.gov](mailto:wqic@ars.usda.gov).

### Topics covered in the dynamic bibliographies—information from real-time searches of the National Agricultural Library's AGRICOLA database

- Agricultural Conservation Practices and Related Issues
- Impacts of USDA Conservation Programs
- Implementing Agricultural Conservation Practices: Barriers and Incentives
- Environmental Credit Trading
- Environmental Effects of Conservation Practices on Grazing Lands
- Publications and Scholarly Articles Published through CEAP
- CEAP Watershed Studies
- Effects of Conservation Practices on Fish and Wildlife
- Conservation Buffers
- Conservation Tillage
- Cover Crops
- Drainage
- Fencing and Livestock Exclusion
- Integrated Pest Management
- Irrigation
- Manure Management
- Nutrient Management
- Stream Restoration
- Wetlands

Accessible from the CEAP Website at <http://www.nrcs.usda.gov/technical/nri/ceap/review.html>

**UMRB Cropland Modeling Report in Scientific Peer Review**

NRCS has distributed the draft Upper Mississippi River Basin (UMRB) cropland modeling report for scientific peer review. The review includes wide circulation among scientists from universities, nonprofit organizations, and government agencies both within and outside of USDA.

NRCS will analyze all scientific peer review comments following the close of the review period and revise the report.

Following the scientific peer review, the report will undergo policy review within the U.S. Department of Agriculture and will then be prepared for publication. Final copies are expected to be available this fall.

Several briefings on the report have been conducted for key NRCS staff:

- On March 30, a briefing was held for the State Conservationists and/or key staff from the six States that cover the majority of the basin—Illinois, Indiana, Iowa, Minnesota, Missouri, and Wisconsin.
- Separate briefings for the technical staffs from the Central and East National Technical Service Centers were conducted on April 7 and 9, respectively.
- On April 17, a final briefing prior to the start of the scientific peer review period was conducted for the NRCS Chief and Deputy Chiefs.

The cropland modeling team—which consists of researchers from Texas Agri-Life Research, the Agricultural Research Service, University of Massachusetts Extension, and NRCS—have begun model runs for cropland in other major river basins within the Mississippi River drainage.

The UMRB report will serve as the template for subsequent reports.

**Preliminary Findings: CEAP-Wetlands California Central Valley Regional Investigation**

The collaborative CEAP-Wetlands California Central Valley Regional Investigation was initiated to (1) quantify ecosystem services provided by wetlands located across an alteration gradient; (2) interpret effects of conservation practices to establish wetlands on lands enrolled in WRP easements; (3) identify factors contributing to differences in levels of ecosystem services measured across the alteration gradient; and (4) integrate data and findings into the USDA Integrated Landscape Model (USDA ILM), a simulation and forecasting tool under development through CEAP-Wetlands.

More than 1.6 million hectares of native freshwater marshes once lined the major rivers and tributaries throughout the Valley. Extensive manipulation of surface water processes throughout the Valley, however, has reduced the extent of native wetlands by 94 percent. In place of these wetlands, a significant acreage of managed wetlands on U.S. Fish and Wildlife Service (USFWS) National Wildlife Refuges have been established.

Data collected provide information on wetland and catchment structure and function, and measure a variety of wetland ecosystem service metrics: habitat quality for overwintering waterfowl, migratory and nesting land and water birds, plant, bird, native bee and amphibian diversity; and regulation of pollutants, greenhouse gases, and floodwater. See [ftp://ftp-fc.sc.egov.usda.gov/NHQ/nri/ceap/ccv\\_proposal.pdf](ftp://ftp-fc.sc.egov.usda.gov/NHQ/nri/ceap/ccv_proposal.pdf) for a description of the study design and general sampling methods.

The final data collection season does not end until later this summer and analysis is incomplete at this time, but the following preliminary findings provide some insight into the potential outcomes of applying conservation practices to establish wetlands in the California Central Valley:

- Vegetation density was highest in the shallow marsh zone followed by the low prairie zone.

- Younger sites tended to have larger upland zones than older sites, while older sites had larger wet meadow and shallow marsh zones.
- Vegetation biomass was higher for older sites and did not differ due to management intensity.
- Litter depths were greater on Intensively managed sites than on low- or intermediate-management sites.
- Bees were collected on more than 50 flowering plants—more on black mustard than any other plant. More than 80 percent of the bees trapped on WRP sites were honeybees.
- The Pacific Tree Frog was the most common amphibian recorded on WRP easements. Amphibians were more common on older than younger WRP sites.

The progress report and preliminary findings will be published on the CEAP Web site soon. The final report is targeted for completion in June 2010. Contact Diane Eckles for more information ([diane.eckles@wdc.usda.gov](mailto:diane.eckles@wdc.usda.gov)).



Location of study sites in the three Central Valley sub-basins: Sacramento (light blue [top]), San Joaquin (gray [middle]), and Tulare (dark blue [bottom]).

## Wildlife National Assessment

### CRP Enrollments Boost Numbers and Diversity of Grassland Birds

The number of grassland bird species is enhanced in areas where land is enrolled in the Conservation Reserve Program (CRP), according to a University of Northern Colorado study funded by the Conservation Effects Assessment Project (CEAP).



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The study was conducted to assess the local and landscape-scale benefits of the CRP to grassland birds using existing data from the USGS North American Breeding Bird Survey and the USDA/NRCS National Resources Inventory. The primary investigator was Dr. Joseph Veech, formerly of the University of Northern Colorado and now at Texas State University.

Findings from the study:

- Grassland bird populations have declined in recent decades due to habitat loss and other factors.
- Breeding bird survey and land-use data from the 1990s indicate that local areas with lands enrolled in the CRP had, on average, 51 percent of the regional species pool of grassland birds, whereas local landscapes without CRP land had on average only 35 percent of the pool.
- Landscapes with CRP had higher grassland bird species richness—that is, more species of grassland-

nesting birds—than did landscapes without CRP in eight of 16 bird conservation regions (BCRs) examined.

- Grassland bird species richness was also correlated with higher landscape percentage in cropland in ten, primarily forested central and eastern BCRs.
- The CRP has been effective in preserving diversity of grassland birds at local and ecoregional landscape scales.

The findings are presented in a CEAP *Conservation Insight*, “The Conservation Reserve Program Enhances Landscape-level Grassland Bird Species Richness.” The *Insight* is available online at [my.NRCS](http://my.NRCS.gov) under the Technology tab, and at <http://www.nrcs.usda.gov/technical/nri/ceap/library>.

For further information, contact Charlie Rewa, NRCS Resources Inventory and Assessment Division, 301-504-2326 or [charles.rewa@wdc.usda.gov](mailto:charles.rewa@wdc.usda.gov).

## Grazing Lands National Assessment

### New Grazing Lands Technology

During the coming year, expect progress in the CEAP-Grazing Lands literature syntheses as well as the national assessment. By documenting what is known and not known about grazing lands, the literature syntheses—scheduled for completion this year and next for rangeland and pastureland, respectively—will help focus research on the least-well-understood facets of the science bases for adaptive management on rangeland and pastureland, and on merging science and technology.

The rangeland assessment will emphasize the following management practices: prescribed grazing, pest management, fire management, brush management, riparian management, riparian seeding, and upland habitat management. The most extensive of these practices—prescribed grazing—was used on some 13.8 million hectares of U.S. rangeland between 2004 and 2008.

A key tool in this assessment is RHEM—the Rangeland Hydrology and

Erosion Model. Developed by the Agricultural Research Service, RHEM can be used with other models to perform ecological site assessments by simulating hydrology, erosion, and plant cover from climate, soils, and vegetation data at some 10,000 NRI rangeland sample points in the West.

Output from RHEM and other ALMANAC models provides insight into plant growth and site conditions that can be evaluated at the watershed level or nationally. Insight thus gained will inform development of a range of products, including training materials, the literature reviews, and planning tools at field and watershed scales. It can also allow informed inferences on the effects of climate change and soil carbon sequestration. Scientific findings are intended to be tied back into NRCS practice standards and specifications, and into the NRCS planning process. Findings related to the spatial placement of practices and resource management systems will be available for conservation planning and technical assistance.

Planned enhancements to RHEM include—

- incorporation into other models to enable more sophisticated analyses;
- development of parameters for major vegetation growth types; and
- enhancement of tools to account for the effects of climate, economic factors, and management practices.

### CSREES Releases RFAs for 2009 Grazing Lands Research

The Cooperative State Research, Education, and Extension Service (CSREES) has released its 2009 Request for Applications (RFA) for rangeland research. In FY 2009, RRP funds will support projects focused on the effectiveness of multiple conservation practices, quantitative interpretive techniques and geographically-based methods, and grazing land health. The deadline for applications is July 1, 2009.

For more information, visit <http://www.csrees.usda.gov/>.

### WEBS/CEAP Presentation at U.N. Commission on Sustainable Development-17

CEAP watershed studies have benefitted from information sharing and scientific exchange with a similar effort in Canada, the Watershed Evaluation of Beneficial Management Practices (WEBS) program of Agriculture and Agri-Food Canada (AAFC). The latest cooperative venture in this effort was a joint U.S.-Canadian presentation at the United Nations Commission on Sustainable Development-17 (CSD-17) on May 6 in New York City. Themes for CSD-17 included agriculture, drought and desertification, and land.

The presentation, “On-Farm Conservation of Soil and Water Resources: Practical Lessons From Investigations at Watershed-Scale,” was part of a U.N. Learning Centre on Ecosystem Services, Sustainable Landscapes, and Markets. Speakers were from AAFC, the Natural Resources Conservation Service, and the Agricultural Research Service.

The overall objective of the session was to present an overview and encourage panel and audience interaction regarding a wide range of ecosystem services and conservation practices associated with sustainable bio-based products and improved landscape management. Some 75 scientists and diplomats from around the world attended the session.

The speakers outlined the challenges of quantifying the environmental effects of agricultural management and conservation practices. They identified the synergies and differences between the AAFC and USDA approaches, provided brief summaries of some initial results, and shared examples of international collaborations from a CEAP watershed.

The presenters discussed the importance of doing this kind of assessment within the geographic bounds of a watershed, why analyzing long-term datasets is important in the context of climatic variability, and the challenges inherent in interagency and interdisciplinary collaborative efforts. They also discussed the importance of farmers’ acceptance of programs and the human dimensions of implementing conservation practices. They noted the need for more science to fully understand interactions among practices, the ecosystem services provided, and the tradeoffs that can occur when multiple practices are implemented on a landscape or in a watershed.

One example from the Canadian experience focused on cattle exclusion fencing. Preliminary findings indicate that although exclusion fencing has not yet demonstrated a reduction in nutrients, there are short-term benefits to riparian and benthic health. The practice needs to be adapted to the way livestock respond in drier and wetter landscapes.

CEAP watershed studies were highlighted as well. Conservation practices installed in CEAP watersheds provide offsite benefits that vary from place to place depending on the hydrology, biophysical settings, and placement and suite of practices in place. The New York City Watershed, which includes a CSREES Competitive Grant CEAP project and an ARS study were cited as examples. International collaborations in the Little Washita ARS Benchmark CEAP Watershed were also highlighted. The Little Washita is part of the UNESCO HELP (Hydrology for the Environment, Life, and Policy) Watershed Network intended to enhance scientific exchange.

The other presentations in this session included a U.S. Forest Service primer on ecosystem services and markets, and a Foreign Agricultural Service presentation on other USDA efforts in ecosystem services and markets and on improved water quality management in aquaculture in China.

The audience expressed interest in future international collaborations applying the methods and science of CEAP or WEBS to other countries and conditions and on how the findings from CEAP would be applied to program or policy decisions.

For more information, contact Lisa Duriancik, CEAP Coordinator, at [lisa.duriancik@wdc.usda.gov](mailto:lisa.duriancik@wdc.usda.gov).

## The Conservation Effects Assessment Project Translating Science into Practice

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 constituents of CEAP—the national assessments, 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, assessment, and outreach.

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