



United States Department of Agriculture  
Natural Resources Conservation Service

Helping People Help the Land

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# Conservation Effects Assessment Project CEAP Grazing Lands Assessment

## 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.

The technologies that NRCS brings to our technical assistance on rangeland, pastureland, and grazed forestland are built upon the scientific understanding developed by our federal agency partners, land grant universities, non-governmental organizations and other cooperators and scientists.

Because fish and wildlife are affected by conservation actions on a variety of landscapes on grazing lands, CEAP will carefully examine these interactions.

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### CEAP Website:

[www.nrcs.usda.gov/technical/NRI/ceap](http://www.nrcs.usda.gov/technical/NRI/ceap)

## CEAP Complements GLCI

The Grazing Lands Conservation Initiative (GLCI) has had, for several years, a primary focus of increasing the technical assistance available on the ground in the form of skilled rangeland and pastureland specialists to work with private landowners. GLCI has been very effective in this effort, and technical assistance on grazing lands has increased nationwide.

The Conservation Effects Assessment Project (CEAP) has complementary objectives. CEAP scientists search out and document the scientific findings that support the best and most effective technology related to prescribed grazing, burning, brush management, seeding, and all the other practices that support and accelerate conservation grazing systems.

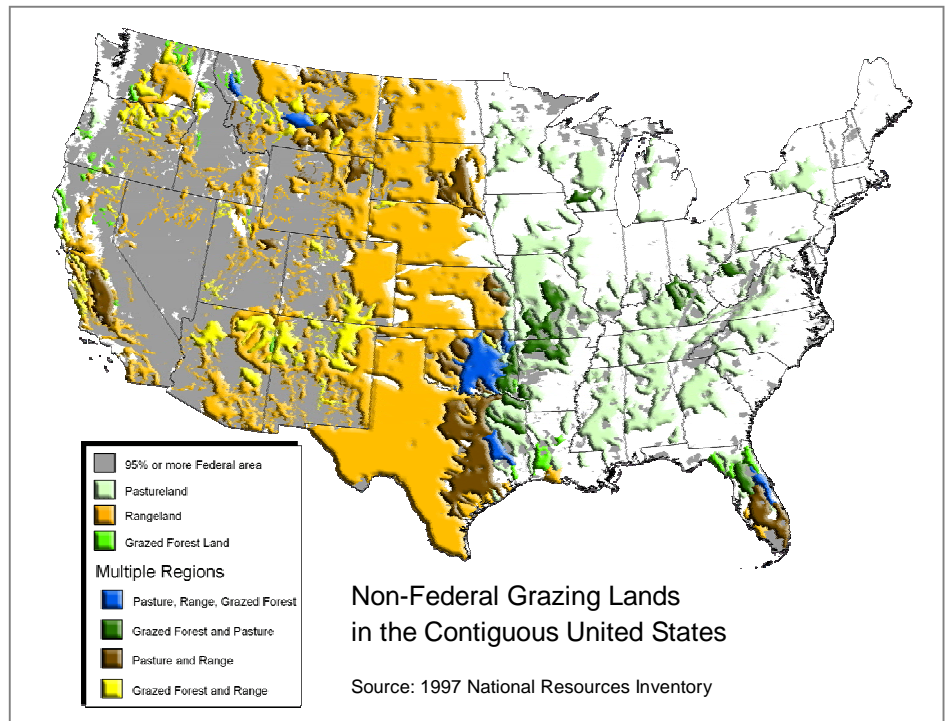
## Collaborative Approach Underway

In 2006, with the appointment of an NRCS coordinator, the CEAP grazing

lands assessment formally got underway. The intent of this effort is to strengthen the collaboration among grazing lands groups and scientists and to strengthen the science base for producing a national assessment of the effects of conservation practices on grazing lands.

CEAP, in documenting the scientific underpinnings of NRCS conservation practices, will support projects of the Grazing Lands Conservation Initiative, which has as its goal the delivery of high quality technical assistance for non-federal grazing lands.

This shared undertaking is enormously important to our stewardship of grazing lands and to our stewardship of the public conservation dollar. We need to understand the impact and interactions of conservation practices on the landscape. We need to test the science behind conservation practices and program efficacy and determine how to improve and deliver better conservation on the land.



## Complex Landscapes, Challenging Science

The complexity of the CEAP grazing lands effort is apparent if you consider that these landscapes cover two-thirds of agricultural land in the U.S. — some 588 million acres in all — including rangeland, pastureland, grazed forestland, native and naturalized pasture, hayland, and grazed cropland.

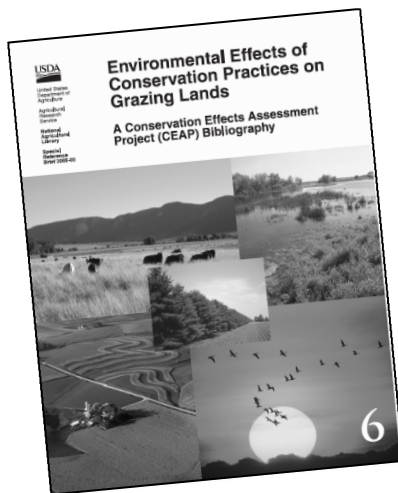
Especially challenging is the grazing lands environment in the western United States. There, the ecology and use of rangelands are intertwined for non-federal and federal lands when it comes to wildlife habitat, grazing operations, water quality, and water quantity issues. Management at many levels transcends ownership boundaries.

Teasing out the conservation effects from the enormous environmental complexities of these landscapes will require careful science and diligent interpretation of the literature. The interplay of climate, topography, organisms, and parent material yield a succession of plant communities over time on the thousands of soils on U.S. landscapes, influenced by management and periodic disturbances such as fire. We have the tools to tease out the effects, but they are not all in one place.

The National Resource Inventory (NRI) of NRCS — which tracks changes in erosion and land use over time — has been a valuable tool for broadly assessing the benefits of conservation practices. CEAP is an evolutionary step in this national assessment effort, bringing additional scientific rigor in the quest to accurately determine how grazing land practices benefit distinct elements of the environment. NRCS is attempting to relate these benefits to those related to soils, water, air, plants, and animals.

Among the scientific questions being asked are:

- Can we define our knowledge about the impact on the hydrologic cycle from conservation practices on rangeland, and pastureland?
- What about our knowledge of the impact upon soil quality, on plant communities and community dynamics, on wildlife habitat and wildlife populations, and impacts at the landscape scale and ecoregions from conservation practices?



### Grazing Lands Bibliography

The National Agricultural Library published in September 2006 the sixth CEAP bibliography — *Environmental Effects of Conservation Practices on Grazing Lands*.

This resource contains more than 1,300 citations, most with abstracts, pertaining to conservation effects on rangeland or pastureland. It is topically subdivided by soil and water effects, fish and wildlife effects, and plant ecology, biodiversity, and other environmental effects. The scope of this bibliography is world

wide, but only for works published since 1980. Its development was guided by CEAP's multi-agency grazing lands advisory group.

The bibliography is available on the CEAP website. More than 200 of the NAL Grazing lands bibliographies were mailed out to all NRCS state conservationists and grazing land specialists.

### Next Steps

Work Plan. The CEAP Grazing Lands Work Plan has been started and will be completed in 2007.

Advisory Group. The CEAP Grazing lands component has begun to assemble an advisory group drawn from scientists in the Agricultural Research Service, U.S. Geological Survey, and land grant universities in Colorado, Oregon, Pennsylvania, Texas and Arizona. Other advisory group members are being solicited from non-governmental organizations and user groups.

Evaluate 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.

### CEAP Literature Synthesis Planning Underway

More than 40 grazing lands scientists met in Beltsville Maryland, December 5-7 to scope out the contents of a landmark synthesis of findings from the current scientific literature on long term effects of conservation practices upon rangeland, pastureland, and grazable woodland. This synthesis will allow better documentation of both gross and subtle effects of conservation practices over time, point out promising research areas, and lend itself to adaptive management.

Most of the participants at the scoping meeting were ARS range-

land and pastureland scientists. The National Aeronautics and Space Administration, Colorado State University, and the Long Term Ecological Research Program (LTER) were also represented. Break out sessions resulted in solid proposals for the structure and format of the proposed synthesis, as well as rangeland hydrology modeling. Followup sessions will be planned for mid 2007, and the invitation list will go to a wider pool of specialists and scientists in NRCS and other agencies.

Publication is anticipated in 2008 or 2009.