

Conservation Benefits of Rangeland Practices

Assessment, Recommendations, and Knowledge Gaps



This document was written to provide an unprecedented source of evidence-based information to guide the development and assessment of management practices and conservation programs on the nation's rangelands.”

Leonard W. Jolley

David D. Briske



Conservation Benefits of Rangeland Practices: Assessment,
Recommendations, and Knowledge Gaps

United States Department of Agriculture, Natural Resources
Conservation Service

David D. Briske, editor

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PREFACE

Conservation is a major tenet of American society that is symbolized by Aldo Leopold's iconic work *Sand County Almanac*. A conservation ethic emphasizes the protection, management, and restoration of natural resources for the public benefit, including sustainable social and economic utilization. The importance of conservation was imprinted on the national psyche by several episodes of environmental degradation, including severe overgrazing of western rangelands in the late 19th century and the Dust Bowl of the 1930s—the latter of which provided the impetus for organization of the current-day Natural Resource Conservation Service. Black Sunday—a severe dust storm that occurred in the southern Great Plains on April 14, 1935—serves as a symbol of the devastating consequences of unsustainable land use on both natural resources and human well-being that is dependent on them. The rangeland profession similarly emerged from the actions of early government researchers and managers, focused largely on grazing management and restoration, to halt and reverse degradation of western rangelands in the late 19th century. These episodes of natural resource degradation have contributed to the growing awareness that conservation of the nation's natural resources is as much about managing human actions and values as it is about managing natural resources themselves.

In spite of broad recognition of the importance of natural resource conservation to the nation, it is necessary to substantiate the outcomes of conservation programs in an era of increasing fiscal responsibility and accountability. The Conservation Effects Assessment Project (CEAP) was created to assemble the baseline knowledge of rangeland conservation programs, inspire innovation in the design and implementation of future programs, and provide a blueprint for the delivery of science-based and cost-effective conservation programs. CEAP expressly emphasizes that conservation programs address the environmental quality of lands in addition to the sustainable production of agricultural goods. Future conservation programs will be increasingly called on to evaluate the benefits of local agricultural production relative to the maintenance of regional ecosystem services.

The academic community has embraced the vision of CEAP and has committed to this synthesis by retrieving and evaluating thousands of published research papers and compiling the most relevant information into readily accessible forms. The evidence-based recommendations originating from this synthesis can guide the development and assessment of future management practices and conservation programs. The knowledge gaps that have been identified can inform funding programs of areas in need of further research. Success of the Rangeland CEAP Synthesis will partially be determined by 1) the extent to which it can strengthen the linkage between scientific and management knowledge, 2) advance conservation science and policy, and 3) promote assessment of societal benefits, including both agricultural goods and ecosystems services, emerging from conservation programs.

Even though the Rangeland CEAP Synthesis was explicitly designed and implemented to assess conservation programs of the US Department of Agriculture–Natural Resources Conservation Service, it has broad and significant implications to the entire rangeland profession. This synthesis provides a compelling argument for the development of an expanded rangeland research agenda that can more effectively articulate and embrace the scope and complexity of the conservation challenges that are most pressing to the nation.

Rangelands are complex adaptive systems that encompass both ecological and social components as well as the intricate and poorly understood interactions among these components. This requires that social knowledge of rangeland systems, including management, socioeconomics, and policy, merit equal priority to that of ecological knowledge because they collectively establish conservation success. Therefore, conservation programs and practices within rangeland systems should be designed, implemented, and modified on the basis of multiple knowledge sources acquired from both anticipated and unanticipated conservation outcomes. Partnerships among natural resource managers, researchers, and policymakers are likely to generate the most relevant knowledge to address the emerging conservation challenges confronting the nation.

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Special recognition must be afforded the authors since much was asked of these subject matter experts, and most of them labor in an environment where synthesis documents are not very helpful on matters of promotion and advancement in the research world. They are a very talented group, and their labors on this milestone document are greatly appreciated. Nearly 30 external reviewers were involved in the evaluation of this document, and their significant inputs enhanced the quality of this work.

The US Department of Agriculture–Natural Resources Conservation Service (USDA-NRCS) and its leadership are to be commended for initiating and consistently supporting this project to scrutinize the science supporting rangeland conservation practices. The CEAP Steering Committee was a consistent advocate for the pursuit and publication of this literature synthesis. I extend a special thanks to the NRCS specialists who functioned interactively with the science writing teams to ensure that the use of conservation practices in the NRCS planning environment was fully appreciated.

The Agricultural Research Service (ARS) allowed several of their scientists to function as authors on this project. The long-term nature of the ARS research vision and their selfless research and service contributions are truly impressive. Dr. Mark Weltz (USDA-ARS) was crucial to the administration of key agreements in support of this project. The Society for Range Management supported Rangeland CEAP by hosting an initial organizational meeting at their national headquarters and by managing USDA funds to conduct this project.

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(Photo: Chris Call, Invasive species management; p. 321)



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The recent success of CEAP provides numerous opportunities and challenges to achieve its full potential within the USDA and the broader conservation community”