

A Decade of Science Support in the Sagebrush Biome

Introduction

Photo: Jeremy Roberts/Conservation Media

Seventy percent of the western United States is rangeland where rural communities maintain large intact grass and shrublands through domestic livestock grazing. More than 350 plant and animal species call this land home, notably sage grouse, sagebrush songbirds, and migratory big game populations. These important rangelands are under threat from land-use conversion, woodland expansion, invasive annual grasses, and dewatering of wet meadows and riparian sites.

Starting in 2010, the USDA's Natural Resources Conservation Service (NRCS)—through its Working Lands for Wildlife (WLFW) Sage Grouse Initiative (SGI)—accelerated efforts to help combat these threats to the sagebrush biome through WLFW's vision of wildlife conservation through sustainable ranching. To date, the NRCS has invested \$536.2 million into SGI with 2,366 participating landowners in the sagebrush biome, resulting in the conservation of 8.58 million acres of working lands. A decade later and WLFW's new five-year Framework for Conservation Action (<https://wlfw.rangelands.app>) is the agency's continuing contribution to

voluntary conservation of sagebrush country with the people who live and work in this biome.

COPRODUCTION OF SCIENCE: LINKING PEOPLE TO CONSERVATION

Coproduction is the joint creation of new knowledge based on interactions between scientists and affected stakeholders. Coproduction in rangeland conservation makes science more actionable by engaging stakeholders to share in both design and implementation, striving to achieve better outcomes for ranching and wildlife.¹ Along with the rise of coproduction is a renewed interest in working lands as stewards of some of the most productive lands in the West. A focus on working lands also helps actively manage persistent threats for conservation-reliant species like sage grouse.

WLFW scientists engage with practitioners to proactively target conservation and assess resulting outcomes, focusing efforts on threats that can be addressed through voluntary

“Outcomes provide the backbone for effective communications with producers.” —Julia Debes, WLFW Director of Agricultural Communications

Science investment is an integral part of WLFW because outcomes don't measure themselves.

conservation on private working lands. The uptake of science is rapid because findings are directly relevant to conservation actions.

QUANTIFYING OUTCOMES IN CONSERVATION

WLFW recognized early that limited resources necessitate a strategic, landscape approach to succeed. Outcomes are defined as the impact of conservation actions. Outputs, on the other hand, are defined as the amount of something produced. In conservation, outputs typically are tallied as acres enrolled, dollars allocated, or miles restored. Outputs are an integral, yet interim, step in quantifying outcomes, allowing conservationists to track progress towards implementation goals.

Tracking outputs electronically is vital as it enables scientists to evaluate the effectiveness of resulting outcomes. For example, practitioners that maintain GIS shapefiles showing locations and timing of pinyon-juniper cuts enables scientists to assess the restorative outcomes of these actions on deep-rooted forage plants or nest survival of radio-tagged grouse.

Outcomes answer the “so what?” question in strategic conservation. WLFW invests in science support and provides the capacity to proactively target investments and quantify outcomes. Knowing outcomes provides the mechanism for sustained investment because stakeholders can communicate their return on investment.

PURPOSE

This report summarizes—in one place—more than a decade of WLFW science support that NRCS staff and partners can incorporate into their future work. Rather than list citations, this report summarizes science’s current understanding of identified threats and how best to address them through voluntary conservation actions.

At the time of this report, WLFW scientists have authored 61 peer-reviewed publications that help target conservation and quantify outcomes for threats that can be reduced with voluntary actions. These papers have been cited 1,264 times thus far by other researchers in the scientific literature and another 43 times in the Federal Register to articulate the outcomes of voluntary conservation (SGI Outcomes in Conservation Report 2015) in Endangered Species Act determinations.

This accumulation of findings quantifies outcomes and sparks new ways of thinking about how to address threats facing rangelands and wildlife. The report also details WLFW’s advanced spatial technologies that help practitioners best identify where conservation work will yield the greatest outcomes. WLFW thanks the NRCS’ Conservation Effects Assessment Project–Wildlife Component as an early adopter and continued partner in the coproduction of science on western rangelands.² Please explore this report and learn what we have learned over more than a decade of putting science into action.

1. Naugle, D.E., B.W. Allred, M.O. Jones, D. Twidwell, and J.D. Maestas. 2020. Coproducing science to inform working lands: The next frontier in nature conservation. *BioScience* 70:90–96.

2. Naugle, D.E., J.D. Maestas, B.W. Allred, C.A. Hagen, M.O. Jones, M.J. Falkowski, B. Randall, and C.A. Rewa. 2019. CEAP quantifies conservation outcomes for wildlife and people on western grazing lands. *Rangelands* 41:211–217.