

**Sage Grouse Initiative
Conservation Effects Assessment Project
Inter-Agency Agreement #67-3A75-12-69
Final Report
March 14, 2016**

The Sage Grouse Initiative (SGI) Conservation Effects Assessment Project (CEAP) was initiated in 2012 to support the following research efforts:

- Evaluating rest-rotation grazing practice effects on sage grouse population dynamics in eastern Montana (Montana Fish, Wildlife and Parks and The University of Montana);
- Assessing the effects of juniper removal on sage grouse habitat and populations (University of Idaho/Oregon State University); and
- Documenting sage grouse responses to vegetation changes under prescribed grazing (Utah State University).

The Natural Resources Conservation Service (NRCS) provided \$500,000 of CEAP funds through an Inter-Agency Agreement (Agreement #67-3A75-12-69) with the U.S. Fish and Wildlife Service (USFWS). CEAP funding played a critical role in supporting actual research as well as leveraging long-term funding. For example, research by Montana Fish, Wildlife and Parks (FWP) is fully funded through 2020 and conifer research, now led by Oregon State University, continues with significant support from the U.S. Bureau of Land Management (BLM).

The following summarizes activities, results, and noteworthy items from these research efforts from April 1, 2012 – December 31, 2015.

1. ***Montana Fish, Wildlife & Parks (FWP) and The University of Montana (UM):***
Implementing a long-term research project, evaluating rest-rotation grazing practice effects on sage grouse population dynamics in eastern Montana.

This is a long-term study planned to last at least 10 years (2010-2020) so research is ongoing. In December 2013, FWP produced a report highlighting preliminary results from the first three years of research. Two important findings from that report were that pastures enrolled in SGI produce more hiding cover (2 cm taller grass) for nesting hens, which resulted in more food (25% for preferred insect items) for growing young.

Nest success does not appear to limit this population; rather, brood survival is low, as indicated by marked chicks that have been monitored individually for 3 years. FWP and UM are now completing a habitat analysis to determine factors associated with low recruitment.

This study will be a primary highlight of the 6th Annual SWAT training workshop with ~300 participants expected to visit and tour this landscape June 28-30, 2016.

A second component of this CEAP-funded project is assessing the top-down threat of expanding cultivation on sage-grouse populations. A manuscript recently completed by University of Montana graduate student, Joe Smith, shows that a single landowner breaking out a new field can strongly reduce persistence of leks in a landscape ten times the size of the field itself. Without action, a 50% increase in total cropland area could result in a 5-7% loss in eastern Montana, northeastern Wyoming, and Dakota grouse populations. Conversely, these losses could be prevented with the strategic investment of \$100M toward conservation easements.

The easement targeting tool (Figure A) and the predicted outcomes resulting from easement acquisitions (Figure B) are primary drivers assisting NRCS staff and partners to focus easement efforts.

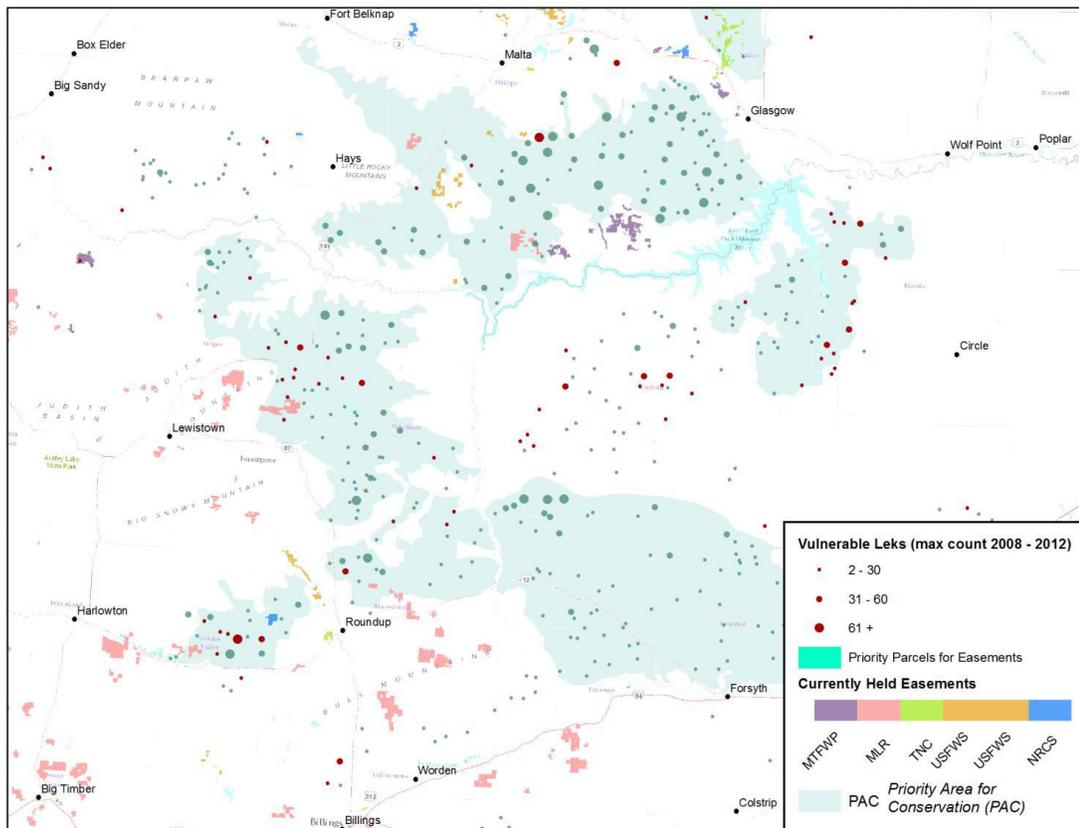


Figure A

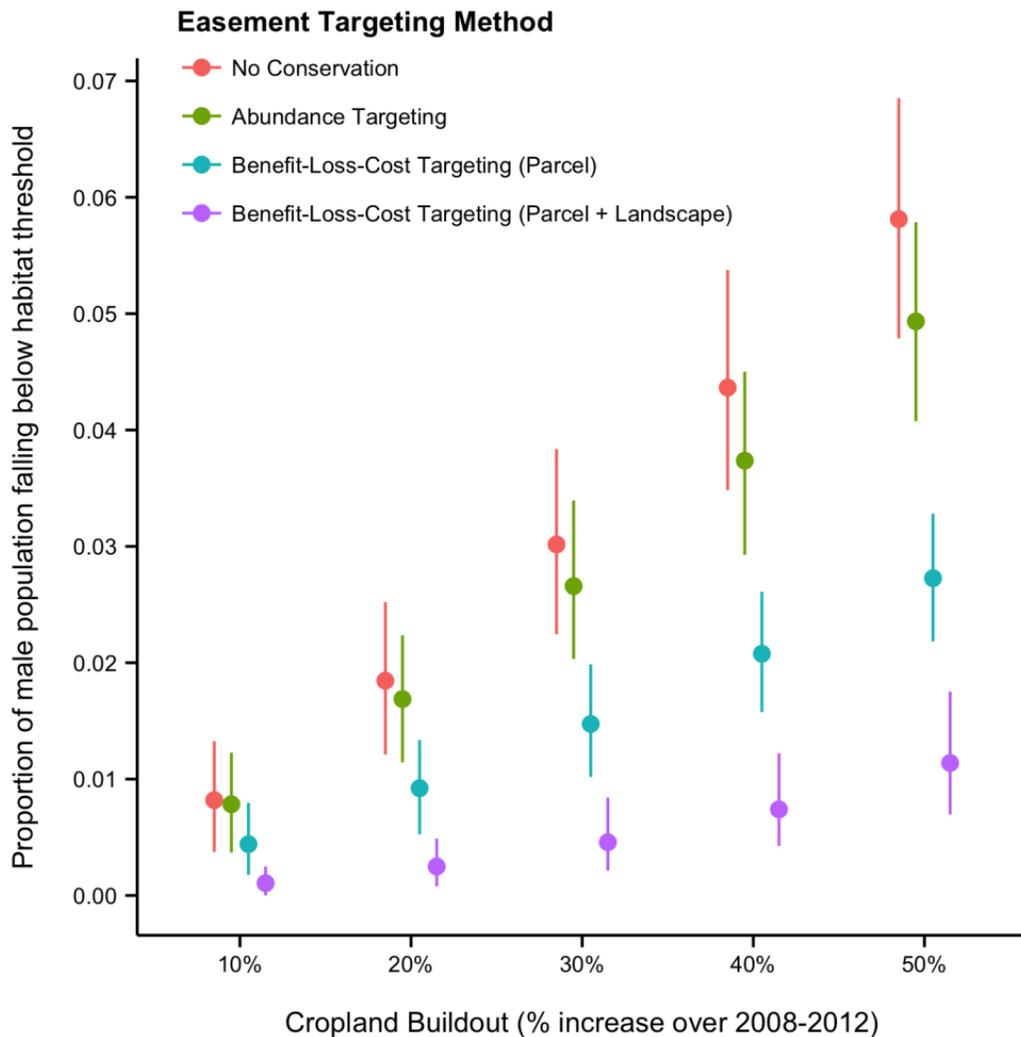


Figure B

NRCS Chief Weller recently flew to Helena, MT, and with the Montana Governor, and the head of the Conservation Districts signed a Memorandum saying partners work together to accelerate easement acquisitions and other beneficial practices for grouse. This includes using the Governor’s Sage Grouse Stewardship Fund as match for NRCS conservation easements. A briefing has been scheduled in March 2016 for SGI science to brief Easements Programs Division staff at headquarters about availability of these new science tools.

2. ***The University of Idaho (UI)/Oregon State University (OSU):*** Conducting a multi-year assessment on the effects of juniper removal on sage grouse habitat and populations.

John Severson's (University of Idaho) work through 2014 resulted in two manuscripts. The first manuscript examines the short-term response of sage-grouse nesting to conifer removal (Figure C). Tree removal made available for nesting an additional 28% of the treatment landscape by expanding habitat an estimated 9,603 ha (3,201 ha [± 480 SE] annually). Probability of use of newly restored sites increased by 22% annually, and hens were 43% more likely to nest within 1,000 m of treatments. By 2014, 29% of the marked population (9.5% [± 1.2 SE] annually) had shifted its nesting activities into mountain big sagebrush habitats that were cleared of encroaching conifer. This paper is in peer review now and if successful will be part of the SGI and LPCI (WLFW) 17-paper special issue on conifer removal in SRM's journal *Rangeland Ecology and Management*.

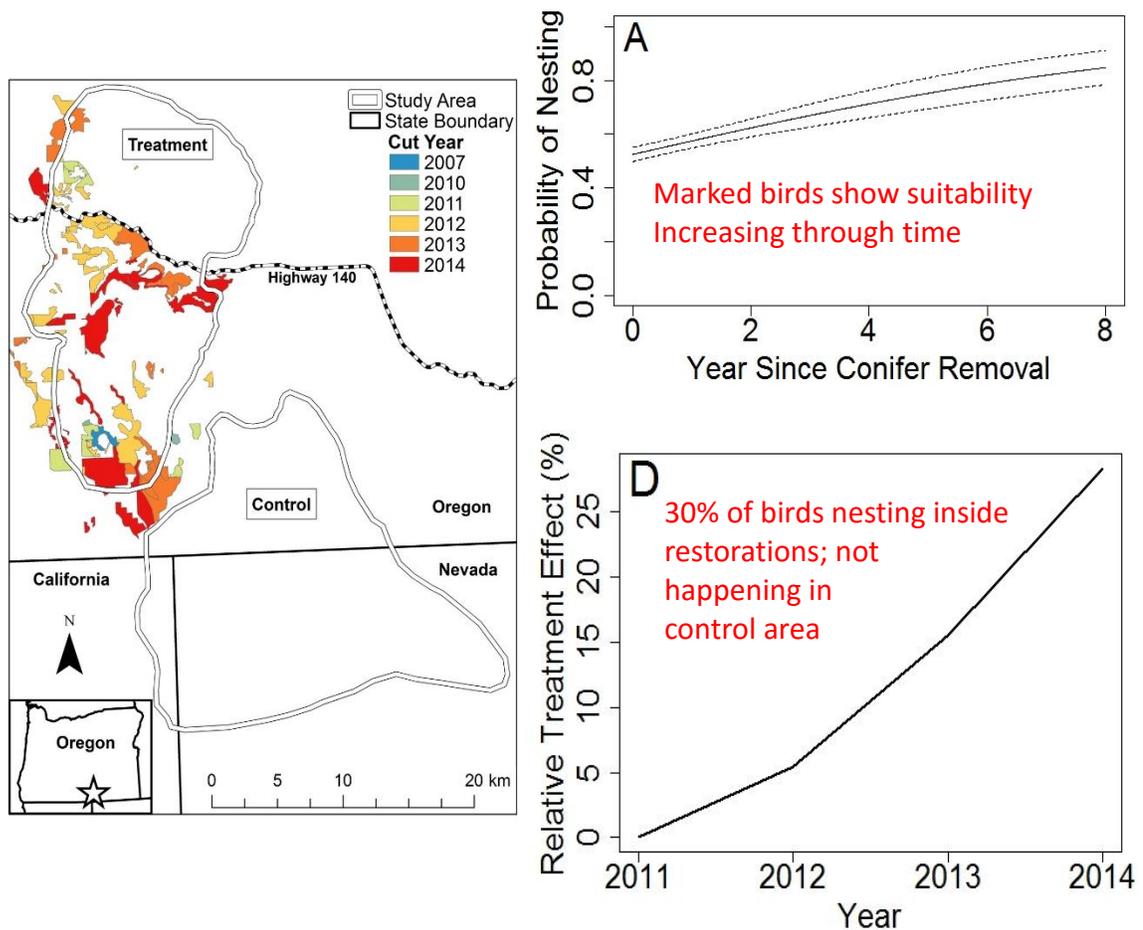


Figure C

The second manuscript looks at the effects of conifer encroachment on nesting site selection. Research showed that the most important scale of selection relative to conifer characteristics was within 800 m of nests, and $>3\%$ conifer cover was negatively associated with selection. Additionally, where trees were present within 800 m of nests, sage-grouse selected nest sites in areas where trees were clustered rather than dispersed, potentially indicating preference for more open habitat. The manuscript

concludes that conifer encroachment may restrict high quality nesting habitat, which suggests that removing trees in these areas may potentially increase desirable nesting habitat and produce population-wide benefits where nest habitat is a limiting factor.

John Severson has finished at University of Idaho. Andrew Olsen, Oregon State University, will finish the project working under Christian Hagen. Andrew will defend his dissertation proposal this spring 2016 using the following 3 objectives:

1. Analyze habitat selection of female sage-grouse during nesting and brood rearing before and after juniper treatments.
2. Quantify demographic response of sage-grouse to western juniper management.
3. Model landscape resistance (connectivity analyses) in relation to western juniper in the project area.

These 3 objectives characterize where SGI is heading with this study in furthering the understanding of how sage-grouse alter their space use and habitat selection after large-scale conifer removal, what the population-level impacts of conifer management are on sage-grouse, and how conifer restoration can remove barriers in habitat connectivity.

3. ***Utah State University (USU): Documenting Greater Sage Grouse individual and population responses to vegetation changes that occur under prescribed grazing of paired sites located in Rich County, Utah, using a Before-After Control-Impact design.***

USU recently completed an analysis of nest survival and brood success through 2015 for the paired sites, Deseret L&L and Three Creeks. Deseret L&L, a 200,000 acre, privately-owned ranch, uses prescribed grazing management. The Three Creeks allotment did not use a prescribed grazing management plan between 2012 and 2015. The analysis shows that for the four years of the study, Deseret L&L had an overall nest survival rate of 36% while Three Creeks' overall nest survival rate was 16%. There was not a significant difference in brood success between the sites, but the results may be limited by small sample sizes. The analysis also included a look at vegetation. Despite receiving less precipitation, perennial grass heights were significantly taller at the Deseret L&L site. In fact, all vegetation was taller at the Deseret L&L site, which suggests a positive effect of grazing management on sage grouse habitat. Utah State is working up a manuscript as the deliverable to this phase one of the project.

The next phase of this study is to manipulate grazing in Three Creeks to assess changes in habitat and sage-grouse demographics (the before-after component of design). Manipulations are dependent upon the BLM getting the Environmental Assessment approved, which partners hoped would be completed last year. Dr. Dave Naugle has interacted with Utah State University indicating that SGI cannot further fund this work until the grazing manipulations have been initiated. Phase one provides a nice stand-alone product but phase two science will not begin unless/until manipulations occur.