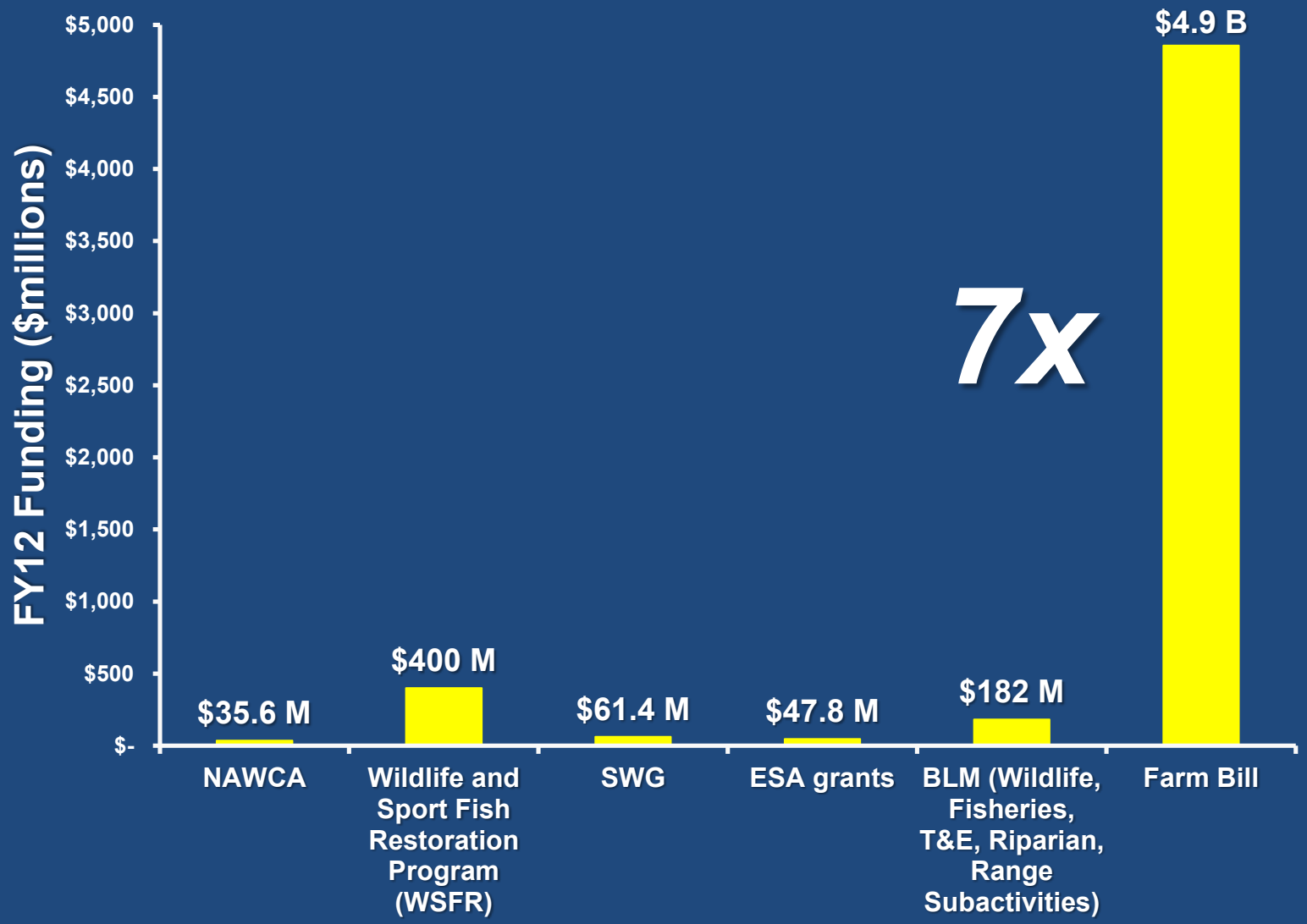
Who is NRCS?

- Born in Response to a National Tragedy
- 11,000 employees, 92% in county/field offices
- Staff trained in soils, agronomy, range, engineering, biology
- Private lands focus
- Public land partnerships
- Non-regulatory approach

NRCS Mission: Helping People Help the Land

Vision: Productive, sustainable agriculture in balance with a high quality environment

Traditional Model	*SGI Model*
Agency-specific	Collaborative, Partnership-driven
Opportunistic	Strategic, Targeted
Planning-averse	Science-based and Planning-intense
Management actions are based on achieving outputs	Management actions are based on achieving environmental outcomes
Monitoring and research are dispensable	Monitoring and research are indispensable



SGI is not a new 'program' but rather strategic focusing of existing programs

NRCS Programs

Technical Assistance Program

- Conservation planning assistance only

Financial Assistance Programs

- EQIP, WHIP
- Cost-share for practice implementation
- Typically 3-5 year contracts

Easement Programs

- FRPP, GRP, WRP
- Permanent easements, long-term rental agreements

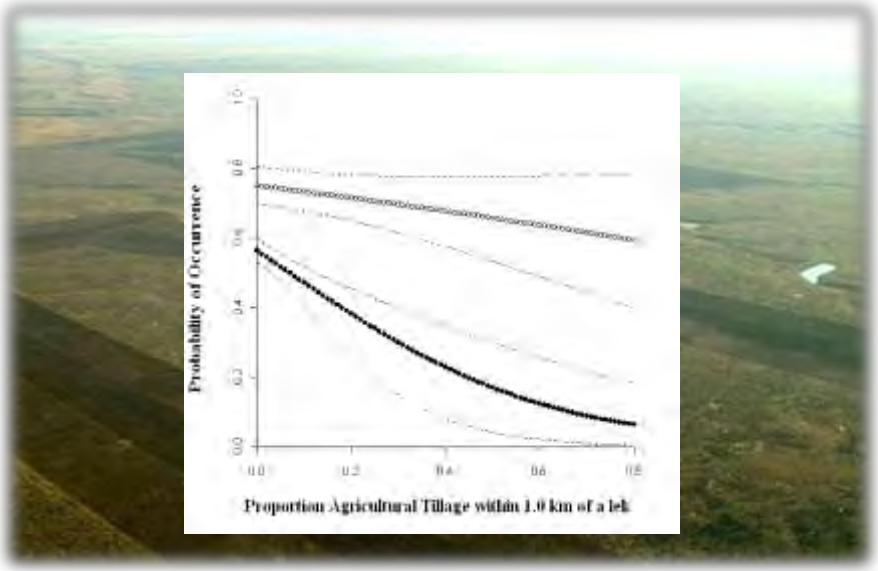
Science Support

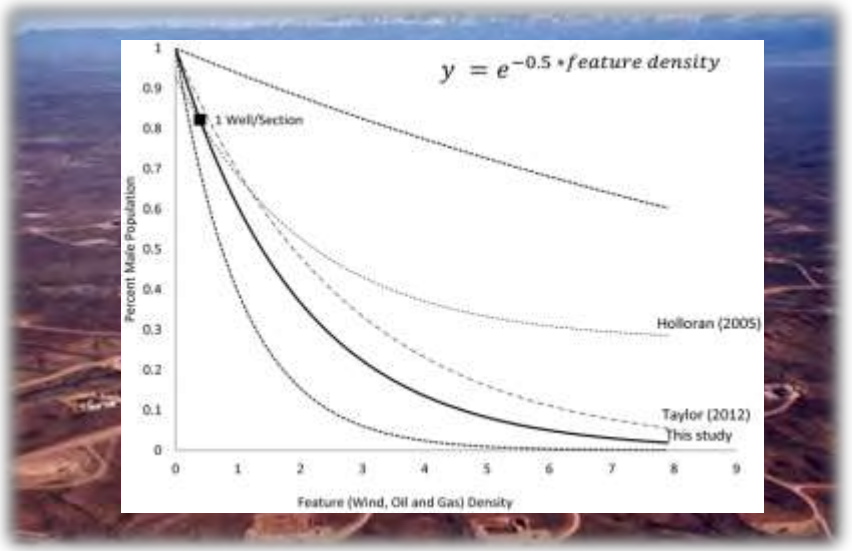
- CEAP, CIG, SWAT

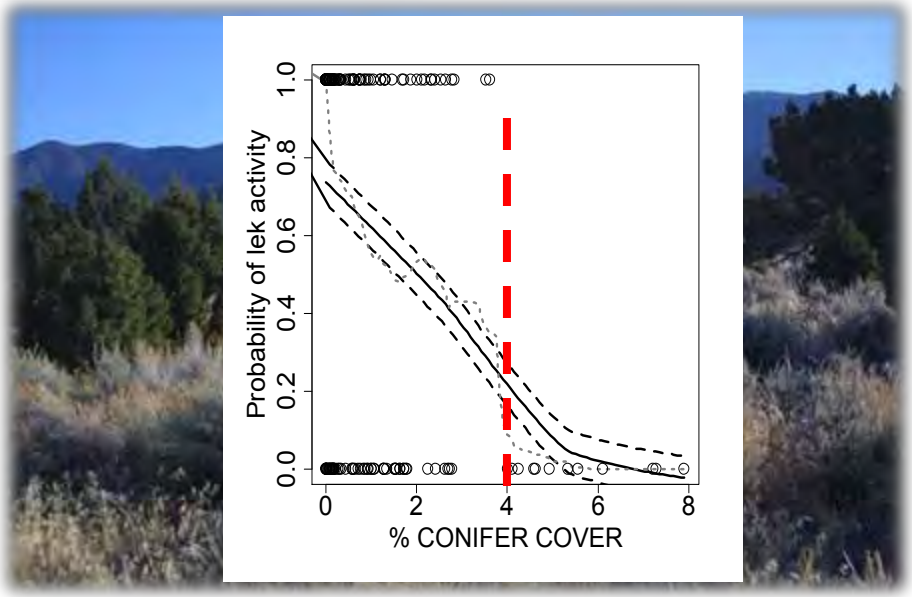
Sage Grouse Initiative

- Remove threats to sage-grouse and improve sustainability of working ranches
- Implement enough of the right practices in the right places to benefit populations
- Assess effectiveness, quantify benefits, adapt program delivery, and tell the story

Birds hate fragmentation







What's good for rangelands, is good for grouse

Good for both

- Large, intact landscapes
- Healthy perennial grasses/forbs
- Invasive species management
- Well-designed grazing plan

Bad for both

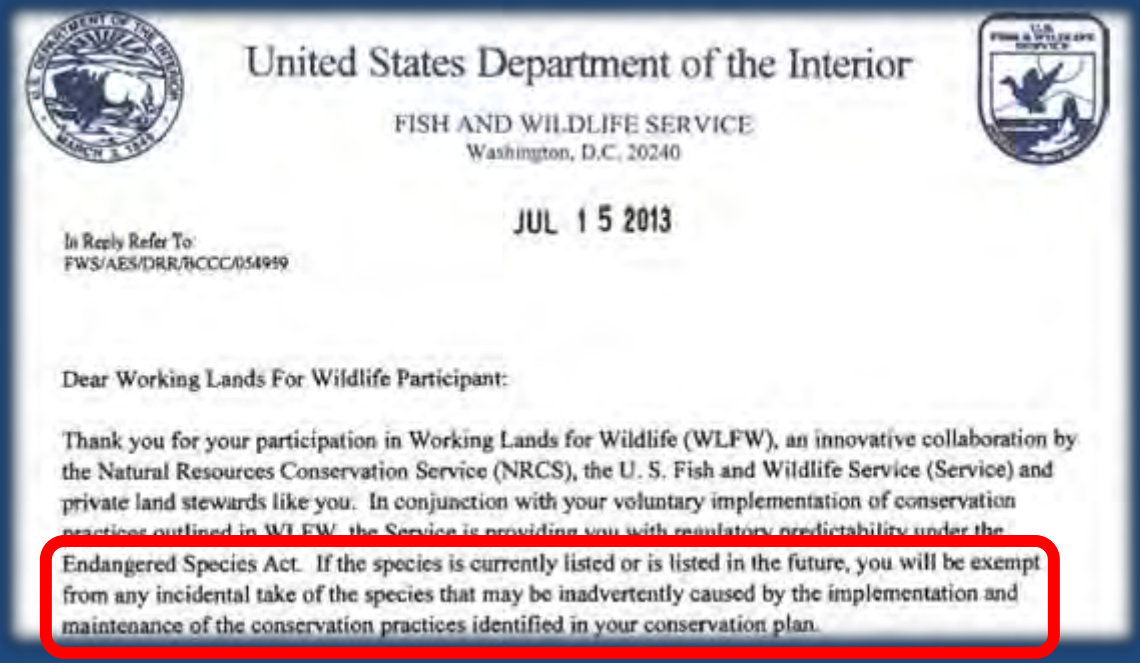
- Fragmented landscapes
- Overgrazing, depleted perennial plants
- Conifer encroachment
- Weeds/annual grasses

Shared Vision

Wildlife conservation through sustainable ranching

ESA Predictability

- NRCS 'conferenced' with USFWS and conditioned 40 practices to ensure benefits to sage-grouse
- Provides predictability to landowners



United States Department of the Interior

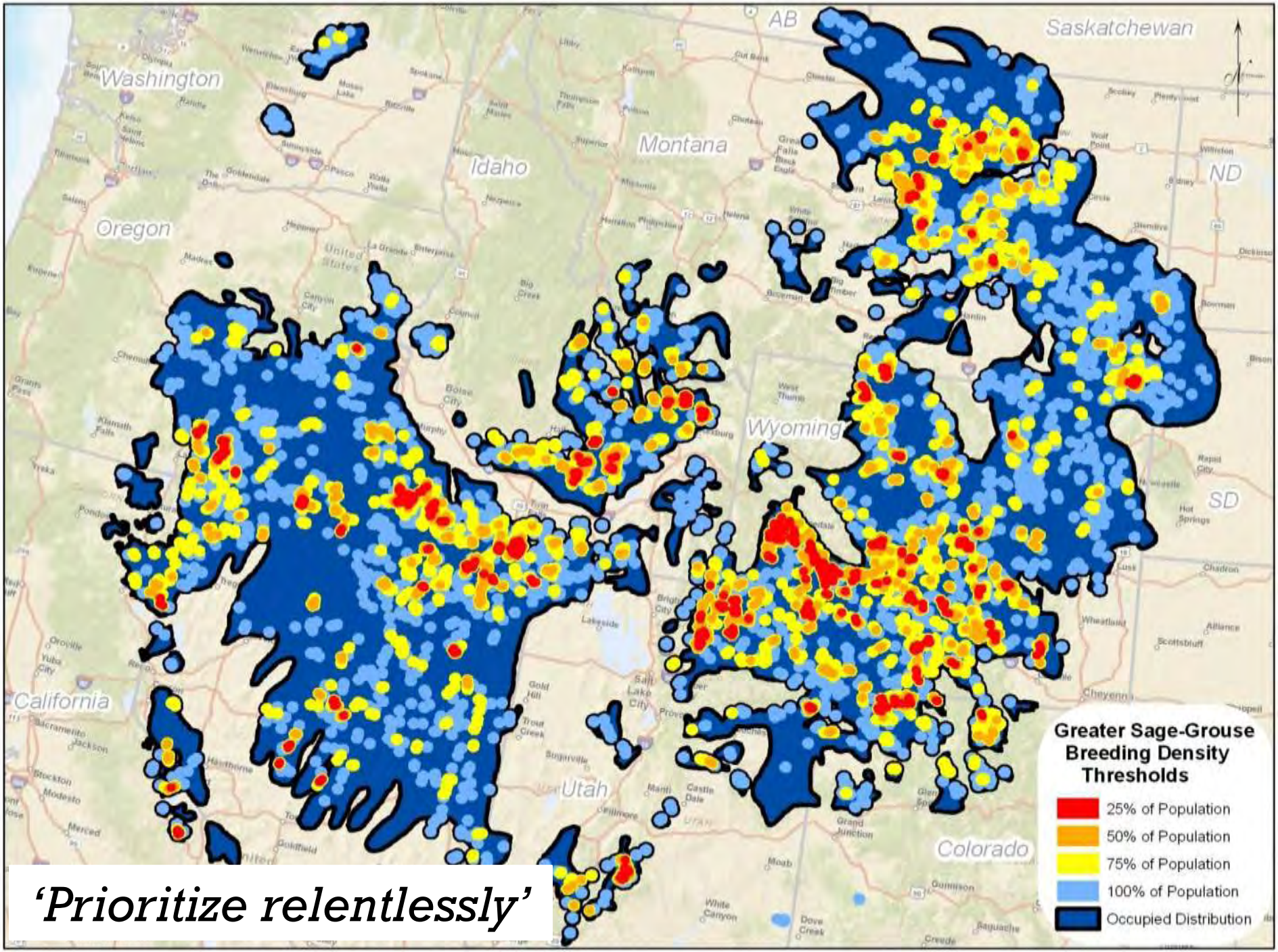
FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

JUL 15 2013

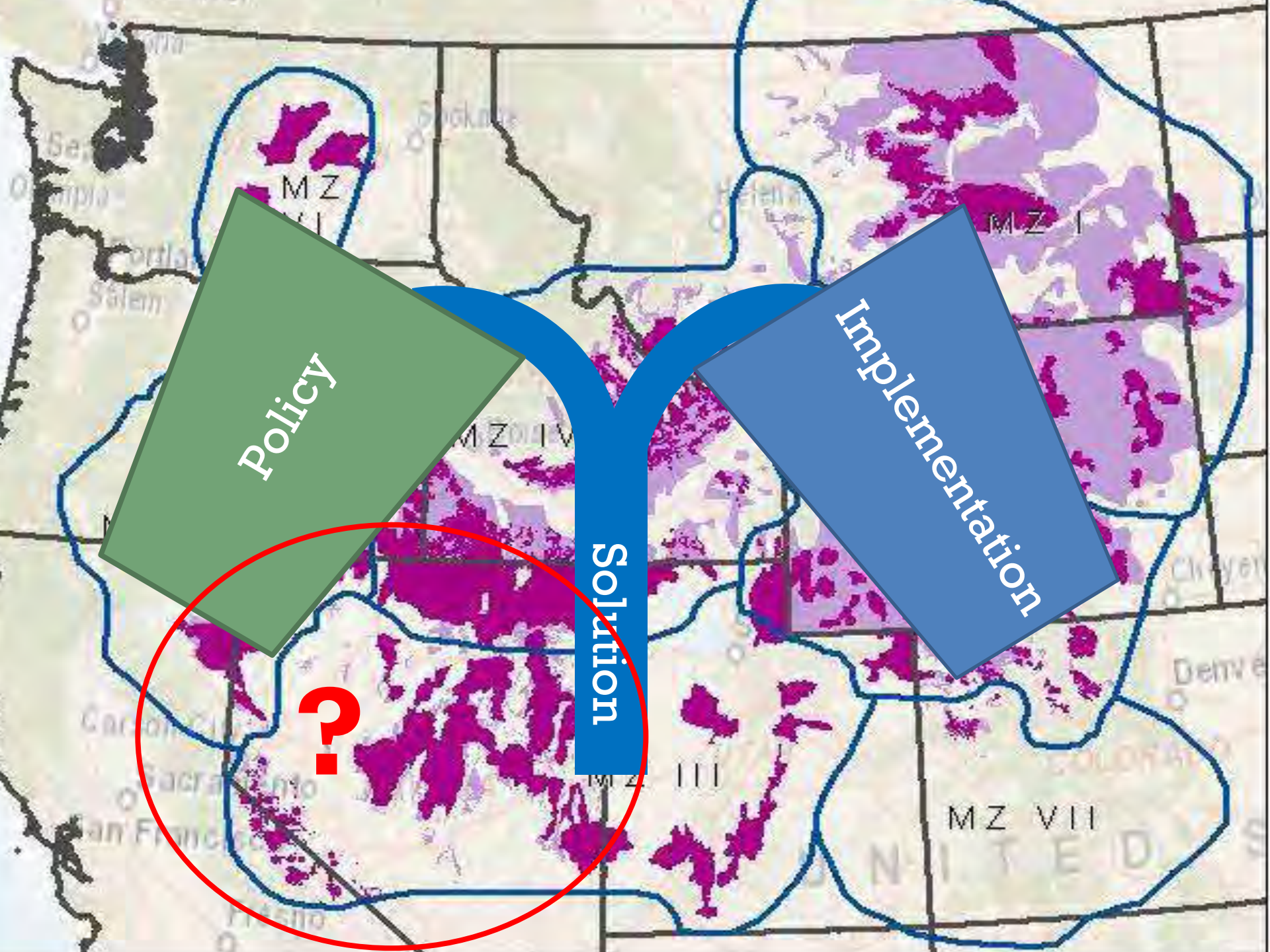
In Reply Refer To:
FWS/AES/DRR/BCCC/054959

Dear Working Lands For Wildlife Participant:

Thank you for your participation in Working Lands for Wildlife (WLFW), an innovative collaboration by the Natural Resources Conservation Service (NRCS), the U. S. Fish and Wildlife Service (Service) and private land stewards like you. In conjunction with your voluntary implementation of conservation practices outlined in WLFW, the Service is providing you with regulatory predictability under the Endangered Species Act. If the species is currently listed or is listed in the future, you will be exempt from any incidental take of the species that may be inadvertently caused by the implementation and maintenance of the conservation practices identified in your conservation plan.



'Prioritize relentlessly'


Policy
Solution
Implementation
?
MZ I
MZ III
MZ VII

Implementation through SGI

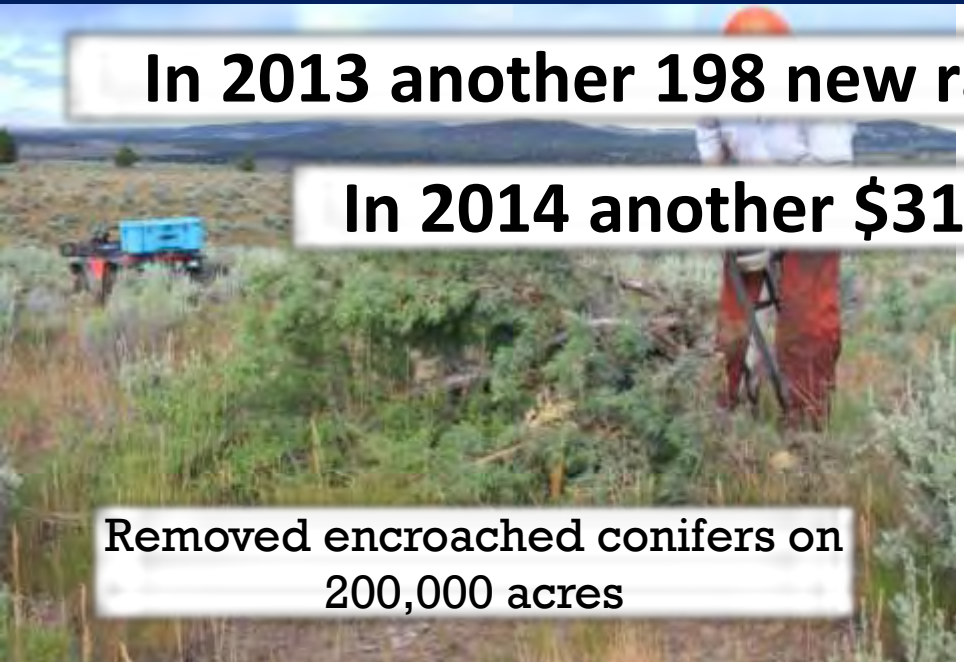
- Sagebrush Removal
- Ag Conversion
- Fire
- Conifer Encroachment
- Weeds/Annual Grasses
- Energy (Oil, Gas, Wind)
- Mining
- Range Management Structures
- Fences
- Infrastructure (non-range)
- Grazing
- Free-Roaming Equids
- Recreation
- Urbanization/Exurban Development

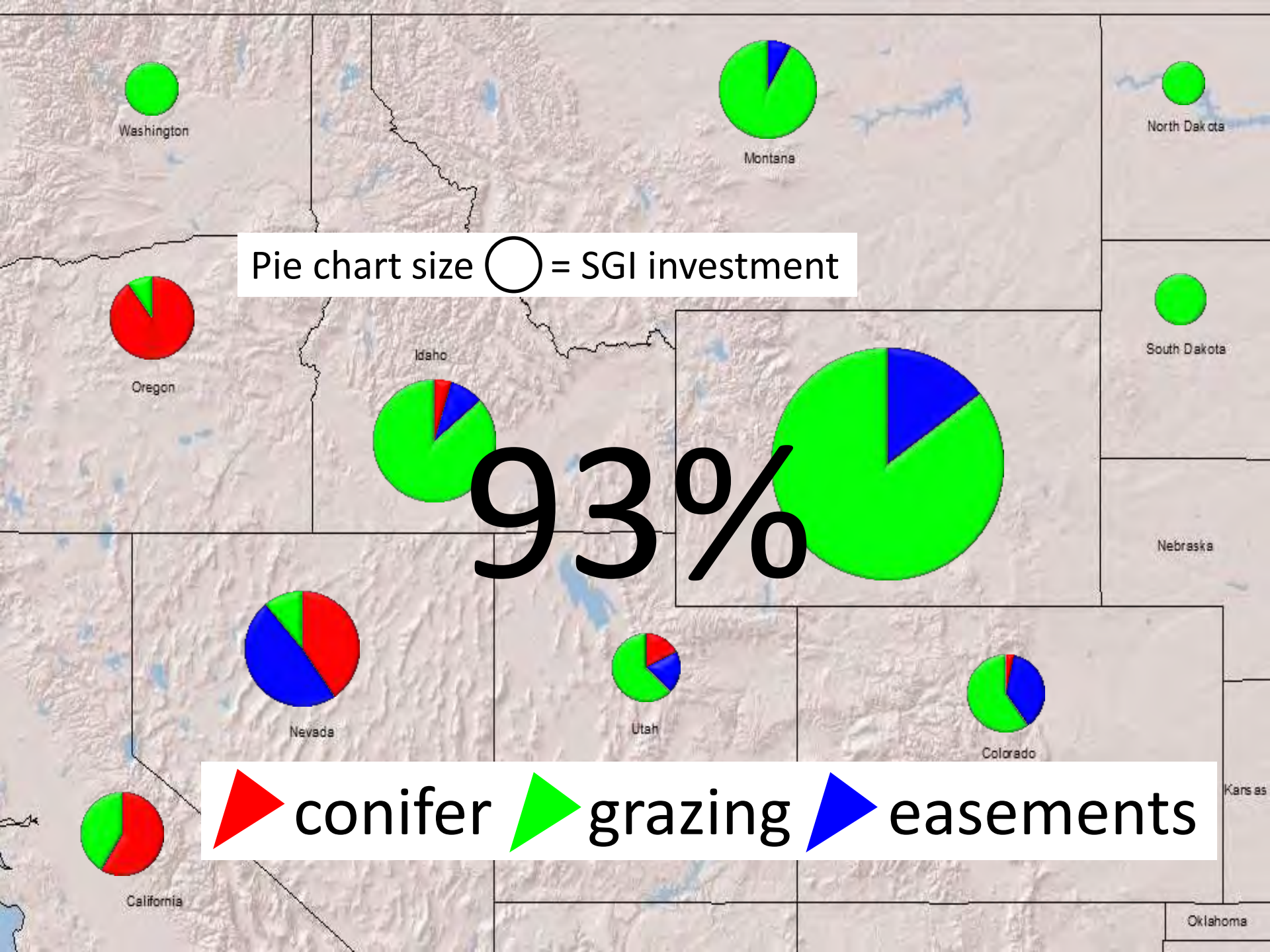
State-based strategies guide implementation

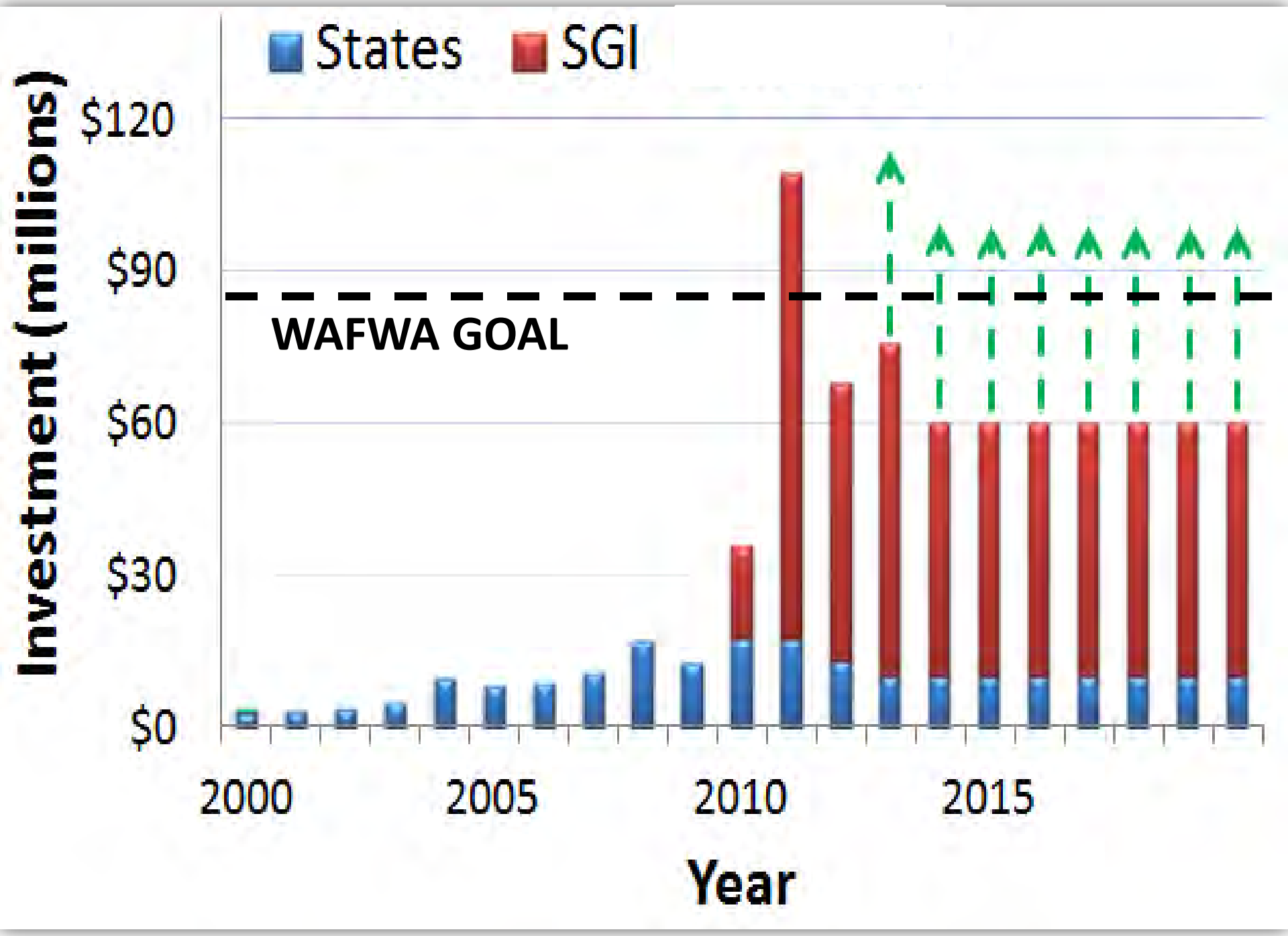
>700 ranchers enrolled, $145M invested, $70M match

In 2013 another 198 new ranchers & $19M invested

In 2014 another $31M is allocated to SGI



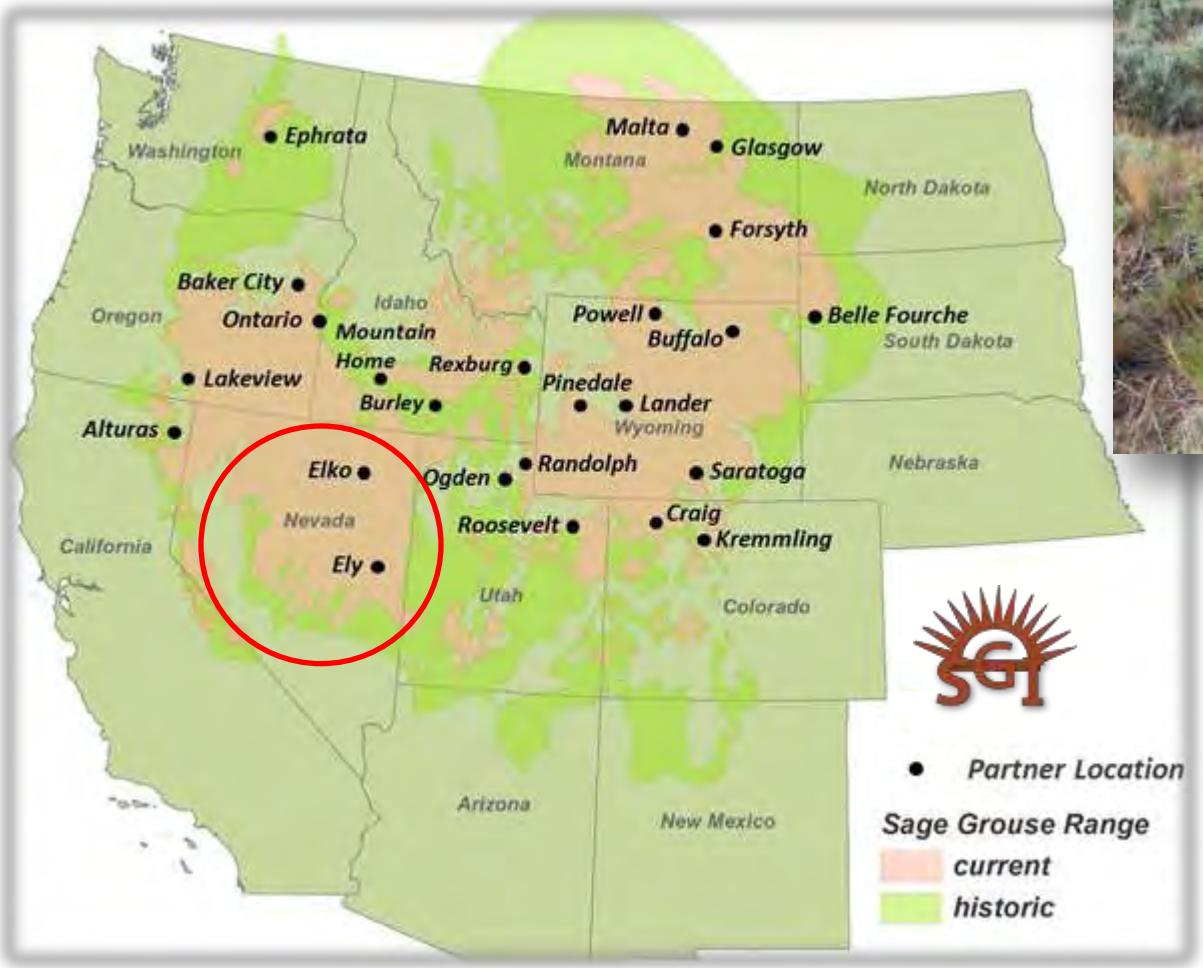

Pie chart size ◯ = SGI investment
93%
Washington
Montana
North Dakota
Oregon
Idaho
South Dakota
Nebraska
Nevada
Utah
Colorado
Kansas
California
Oklahoma
conifer
grazing
easements


States
SGI
$120
$90
$60
$30
$0
Investment (millions)
WAFWA GOAL
2000
2005
2010
2015
Year

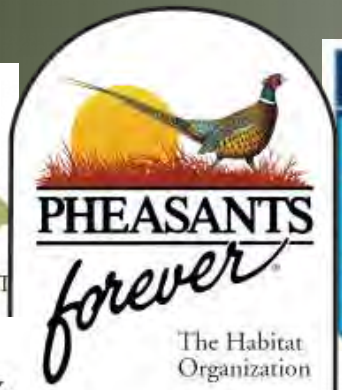
SWAT Partnership helps Double SGI Implementation

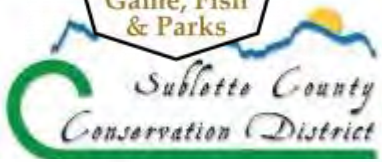
$15 million investment

Over a million acres

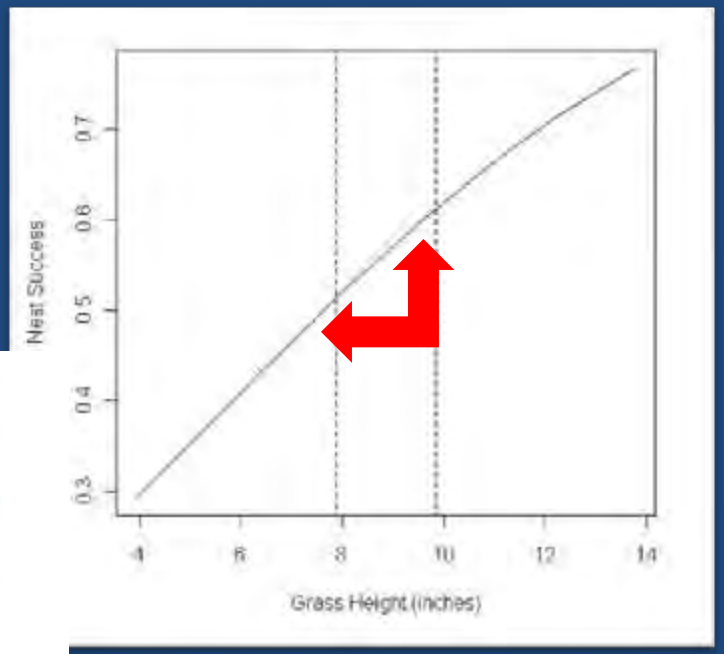


SGI SWAT: *Paying Partners*

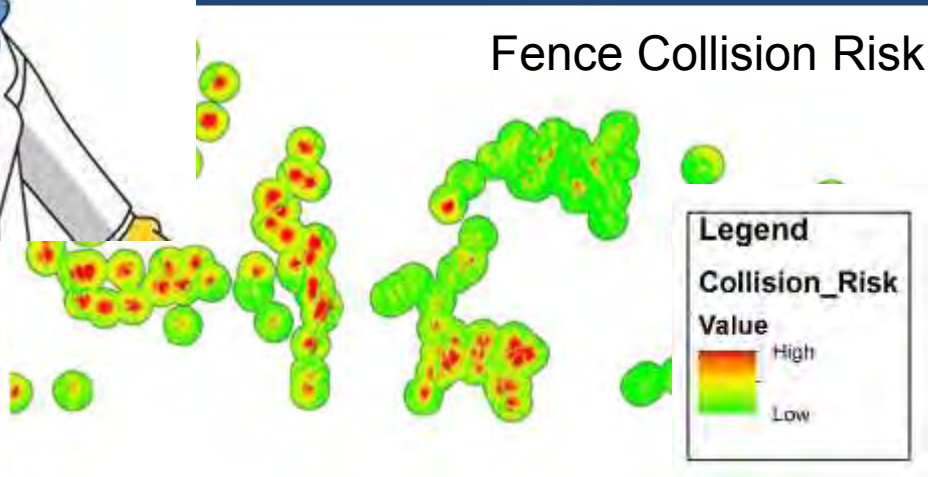




Supporting Science to Target Delivery and Measure Outcomes



Fence Collision Risk



Telling the Story

Lek us on facebook

Follow the partnership: www.sagegrouseinitiative.com

Saving Sage-Grouse from the Trees:

SGI's Strategic Approach to Tackling Conifer Encroachment and Quantifying Outcomes for Sage-Grouse

Key Threats in Great Basin

Scale of Conifer Encroachment

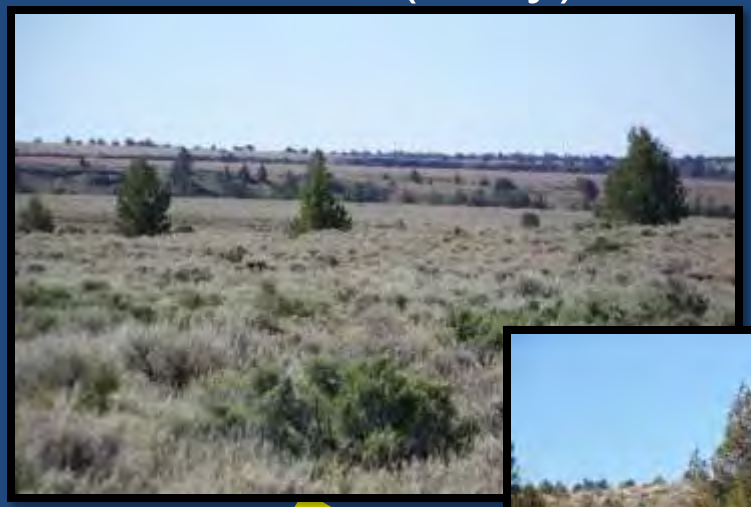
In the Great Basin:

- **~12 mill acres of expansion since 1860**
- **90% was historically sagebrush steppe**
  (Miller et al. 2011)

So….where do we start?

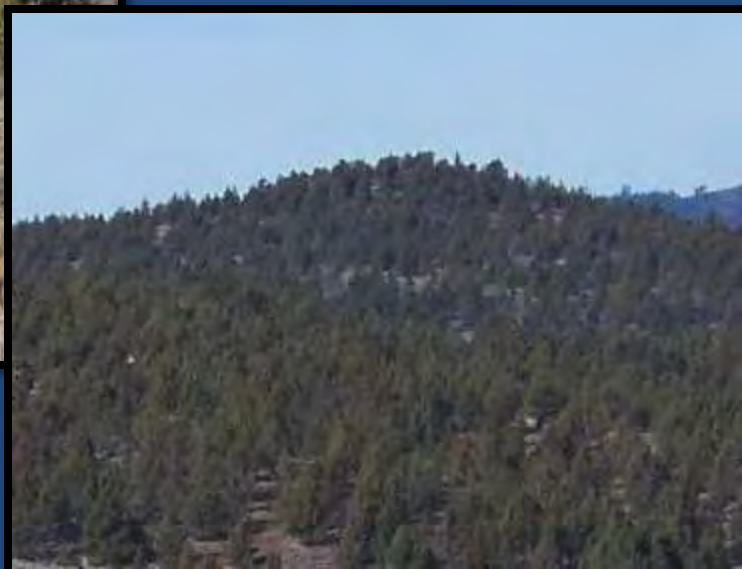
Phases of Woodland Succession

Phase I (early)



Phase II (mid)

Phase III (late)



1969

2005

Photo credits: BLM-Prineville District

We have an incredible conservation opportunity!

- Amount of Phase III today is 20% of total
- Expected to be 75% of total in next 30-50 years

(Miller et al. 2008)

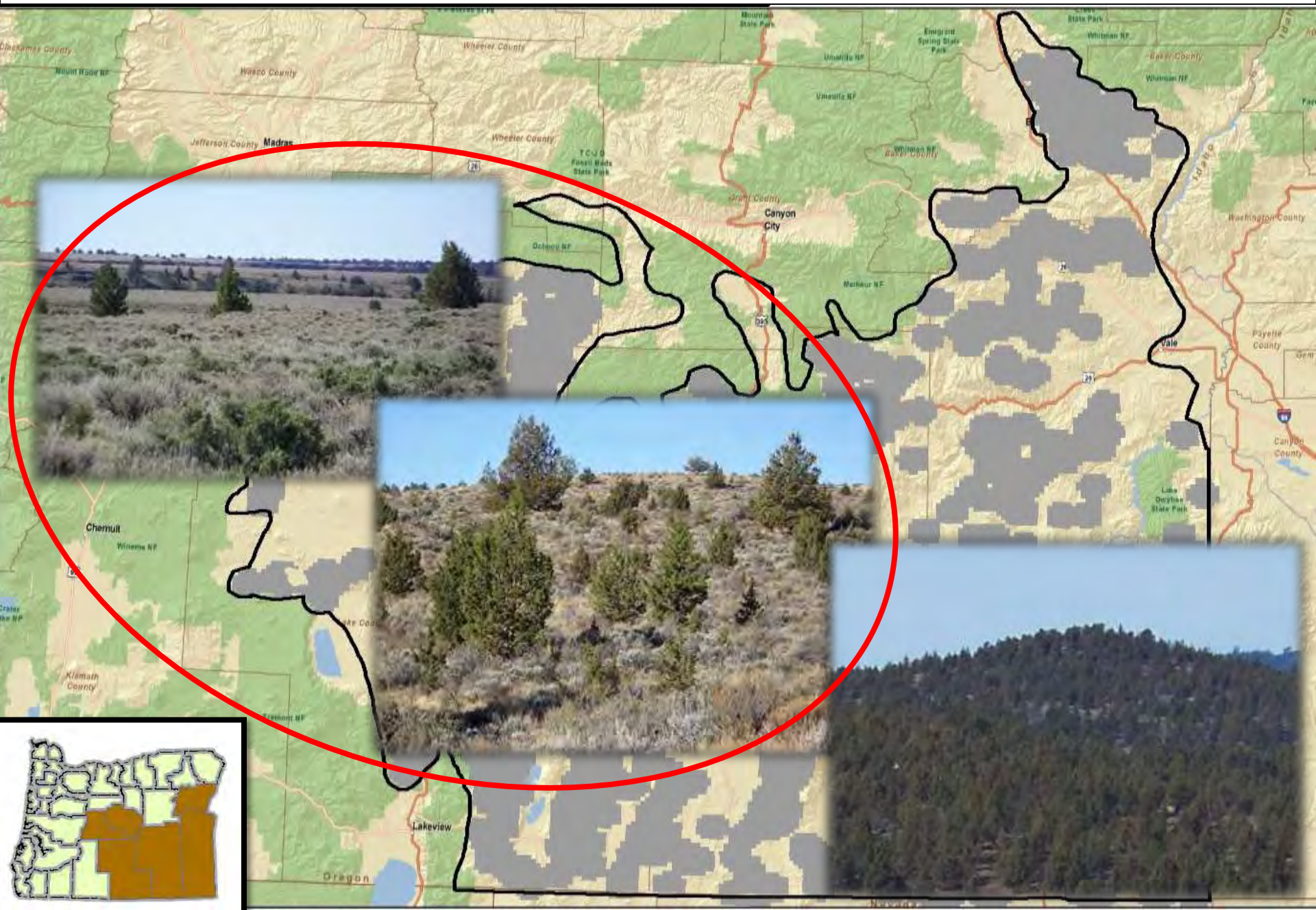
Conifer Removal Reduces Catastrophic Fire Risk

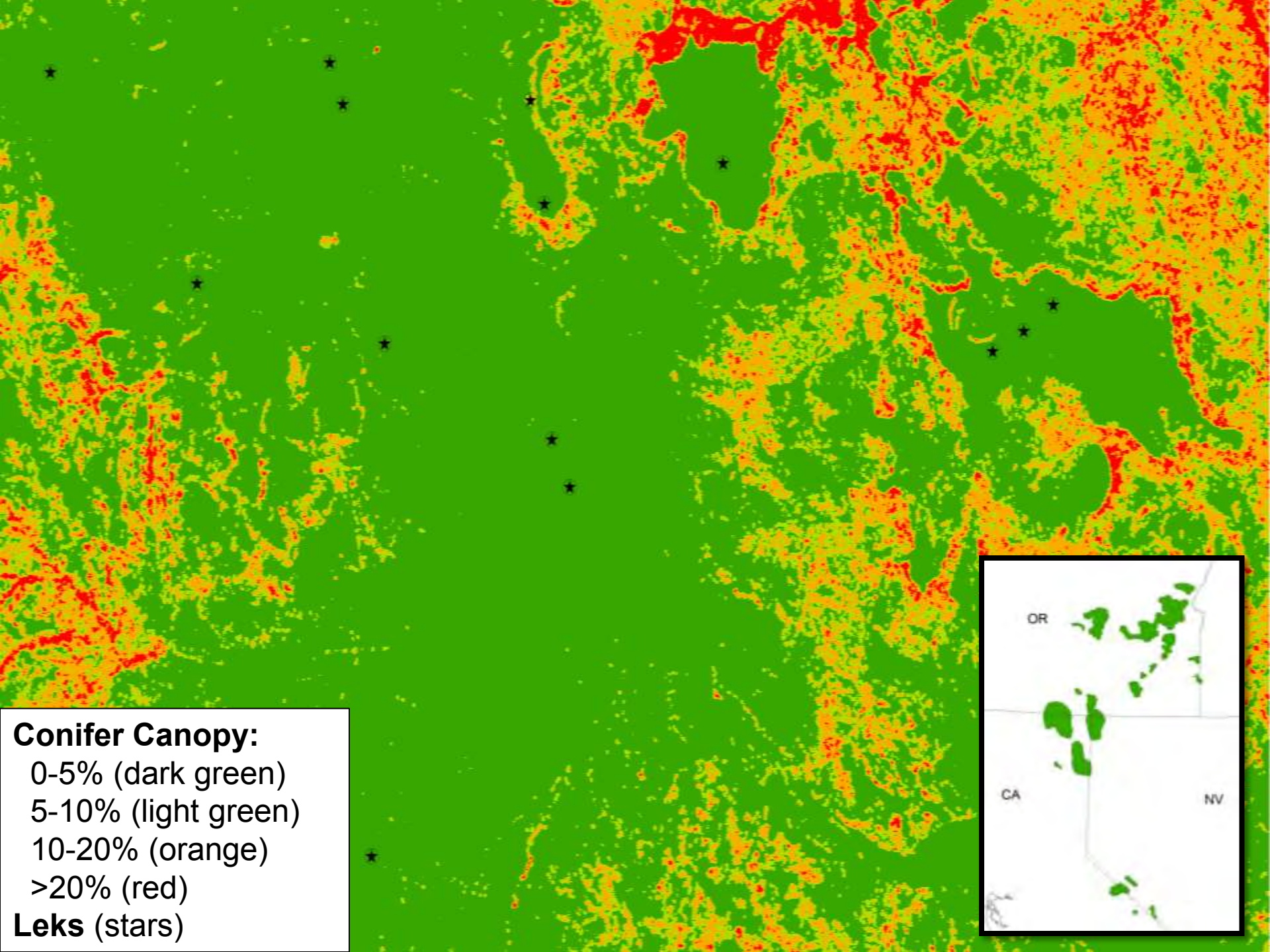
- Sagebrush ⟶ Phase II: Fuel loads double
- Phase II ⟶ III: Fuel loads double again
- Fuel loads up to 8x higher in woodland than sagebrush steppe

Chambers (2008)

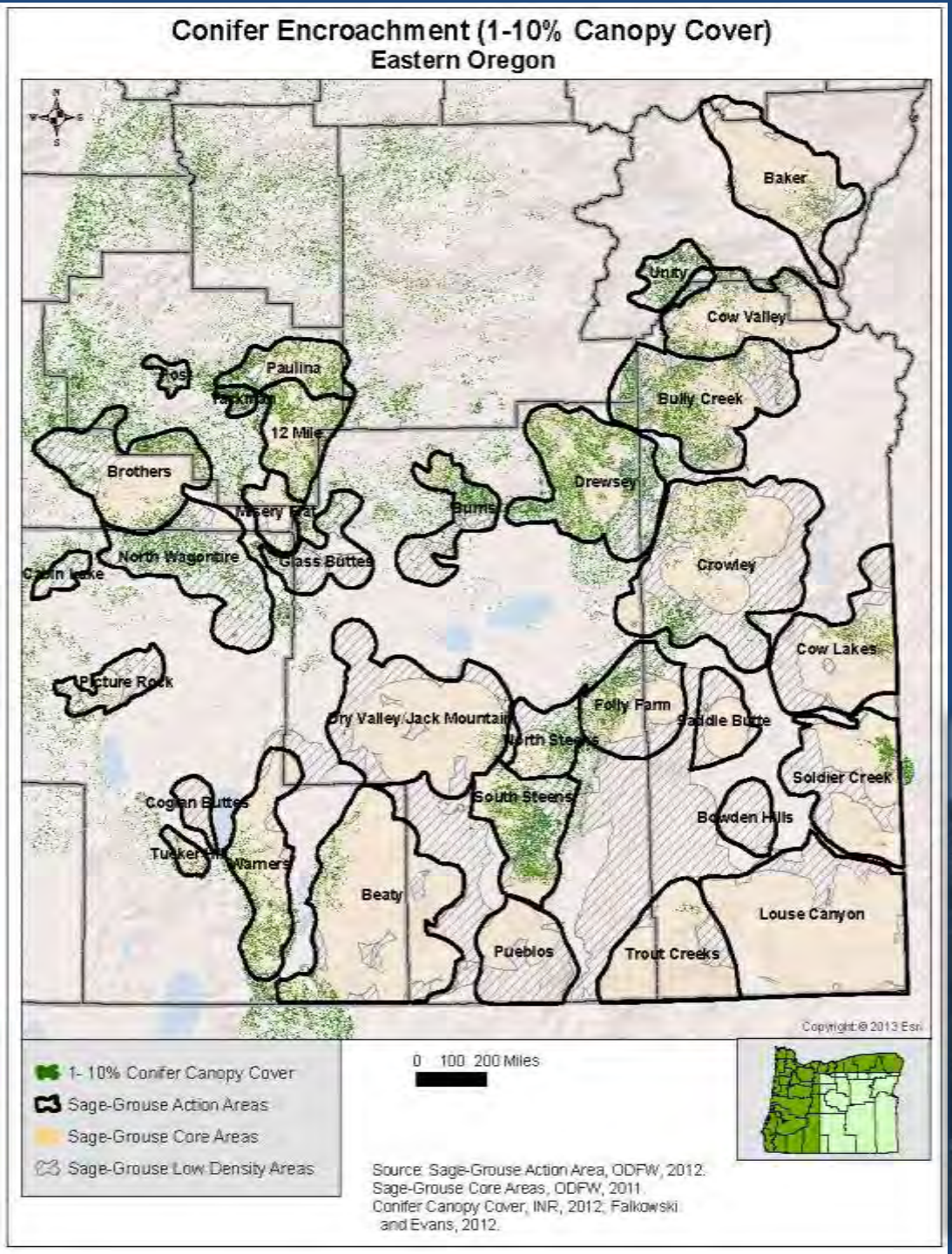
Photo credit: SageSTEP

A strategic approach will alleviate this threat





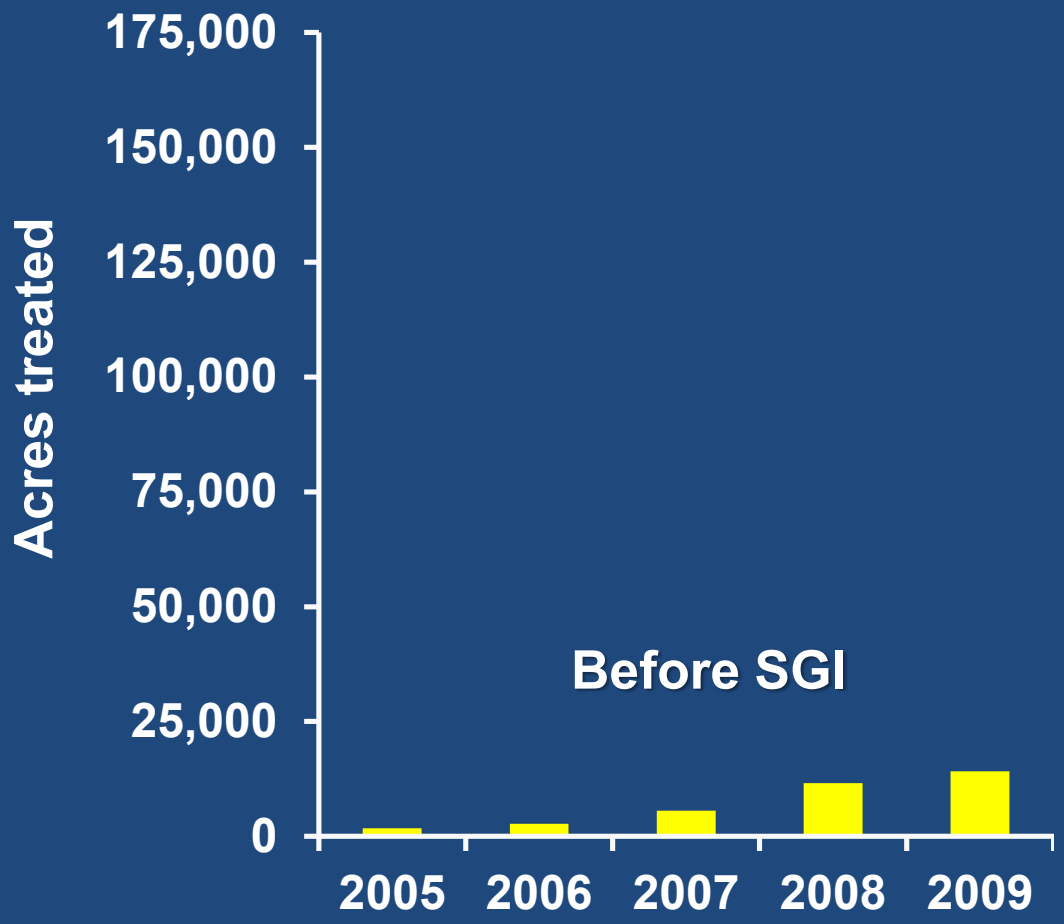
Conifer Canopy:
0-5% (dark green)
5-10% (light green)
10-20% (orange)
>20% (red)
Leks (stars)



Quantifying the Threat

- 1 million acres total of early phase encroachment (<10% can. cover)
- 875,000 acres within 3 miles of all leks

Cumulative Conifer Removal in Oregon



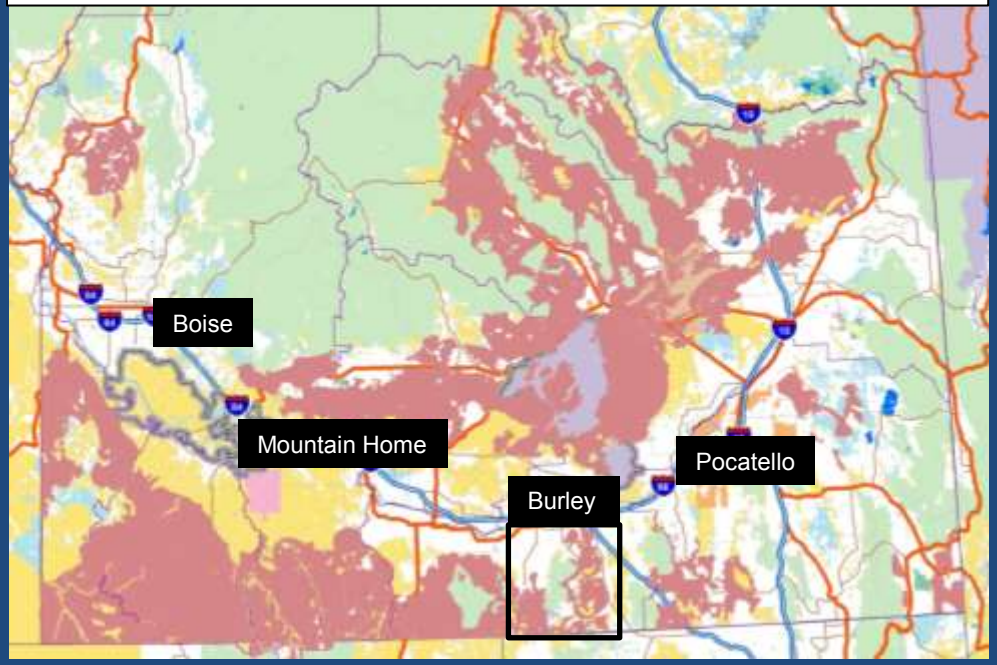
*In 4 short years…*146,348 acres treated (~229 mi^2)

SGI accelerated annual implementation 10 fold

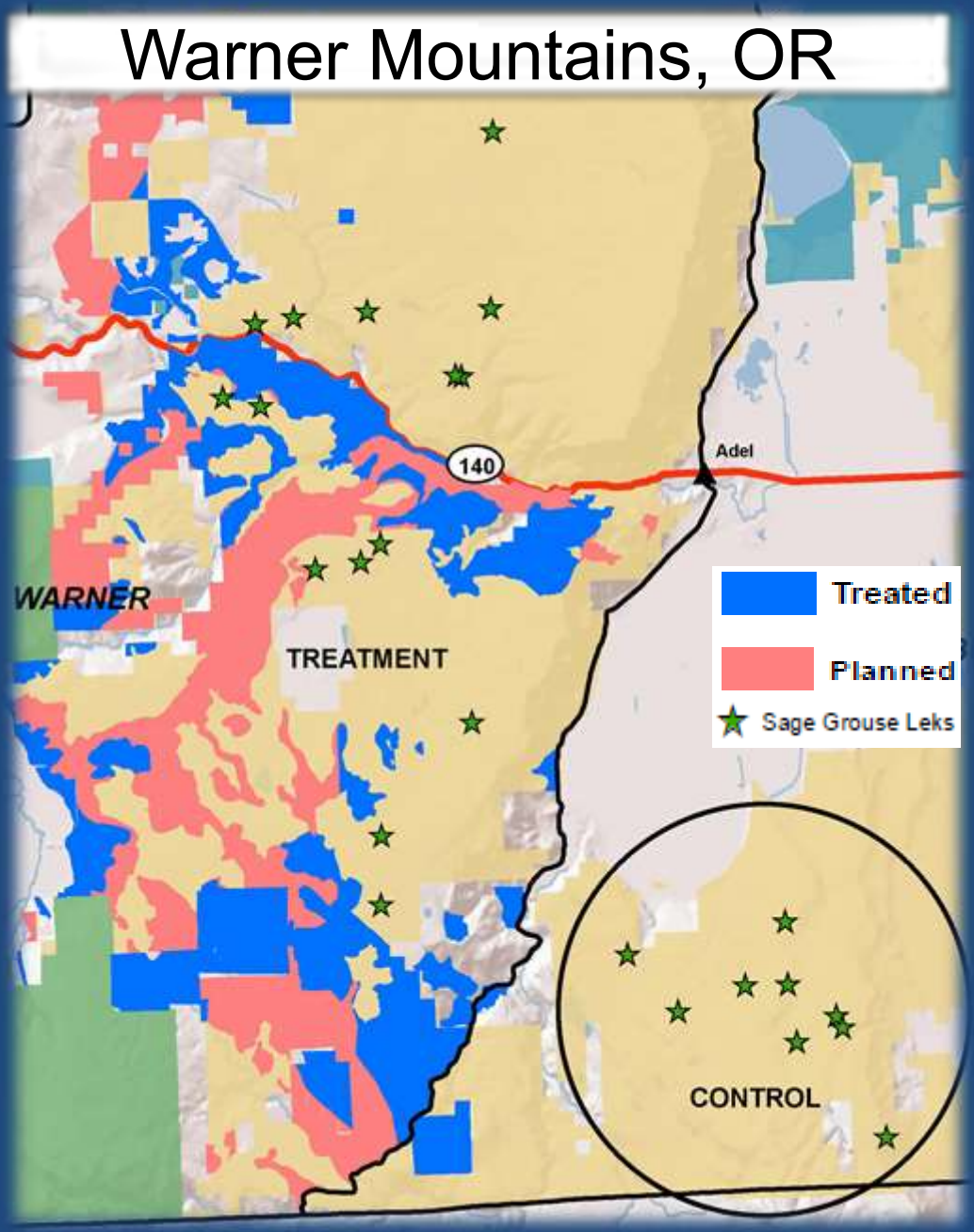
Photos by: Andy Gallagher

Linking SGI with public lands

Burley, Idaho Landscape Sage Grouse Project



- Farm Bill funding used to treat conifers across 32,000 ac of BLM land
- Enabled by partnership with Pheasants Forever, IDFG



Removal across Private-Public Lands Oregon

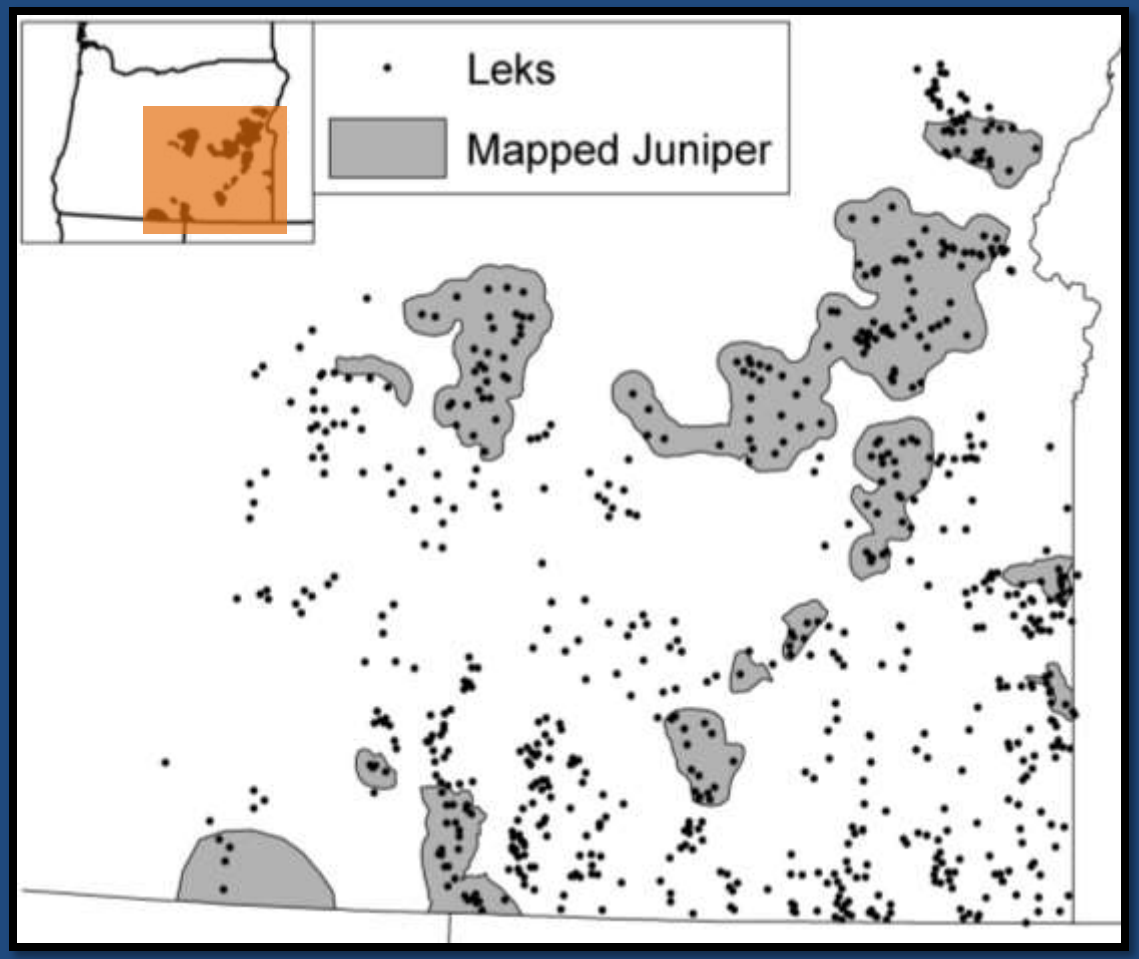
100,000 ac landscape

BLM funded removal ~ 25,000 ac

SGI funded removal ~ 22,000 ac

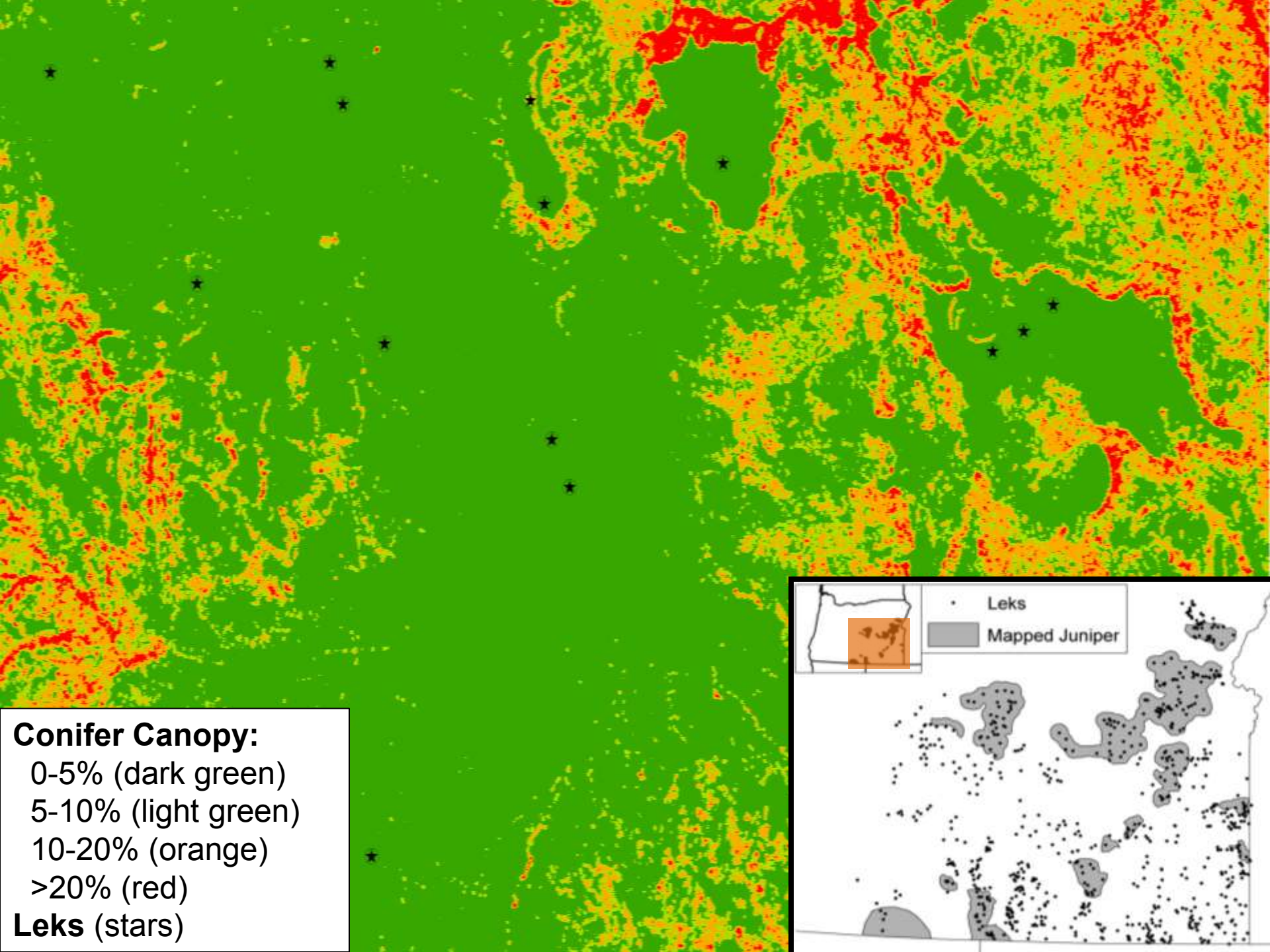
Outcome based evaluation

Interim lek analysis to forecast outcomes



- Modeled relationship of trees and lek activity at multiple scales
  (500, 1,000….5,000 m)
- 152 leks (78 active, 74 inactive)

Baruch-Mordo et al. (2013)



Conifer Canopy:
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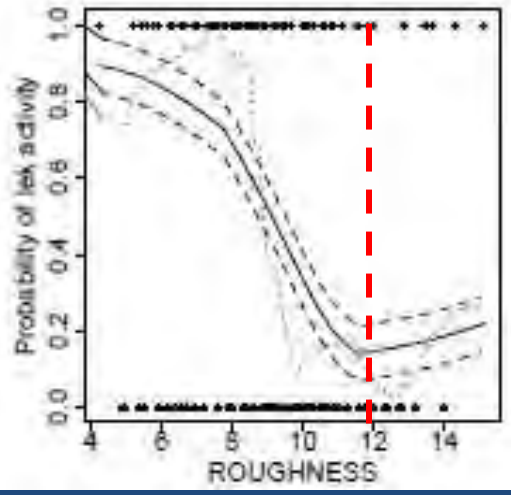
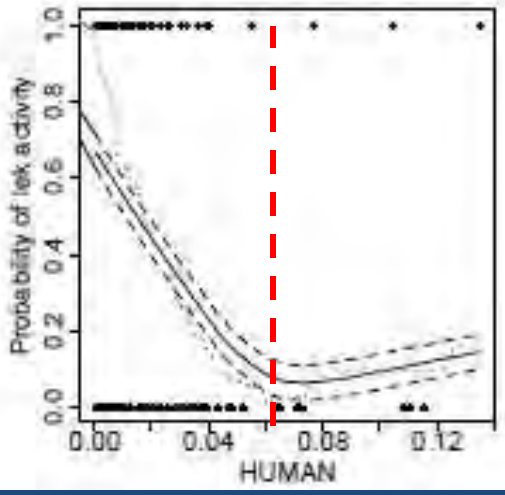
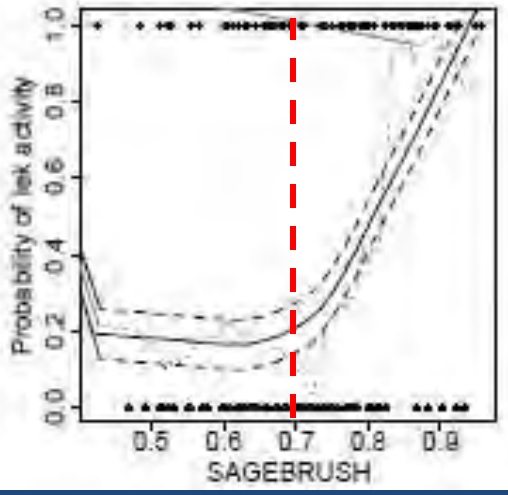
>20% (red)
Leks (stars)

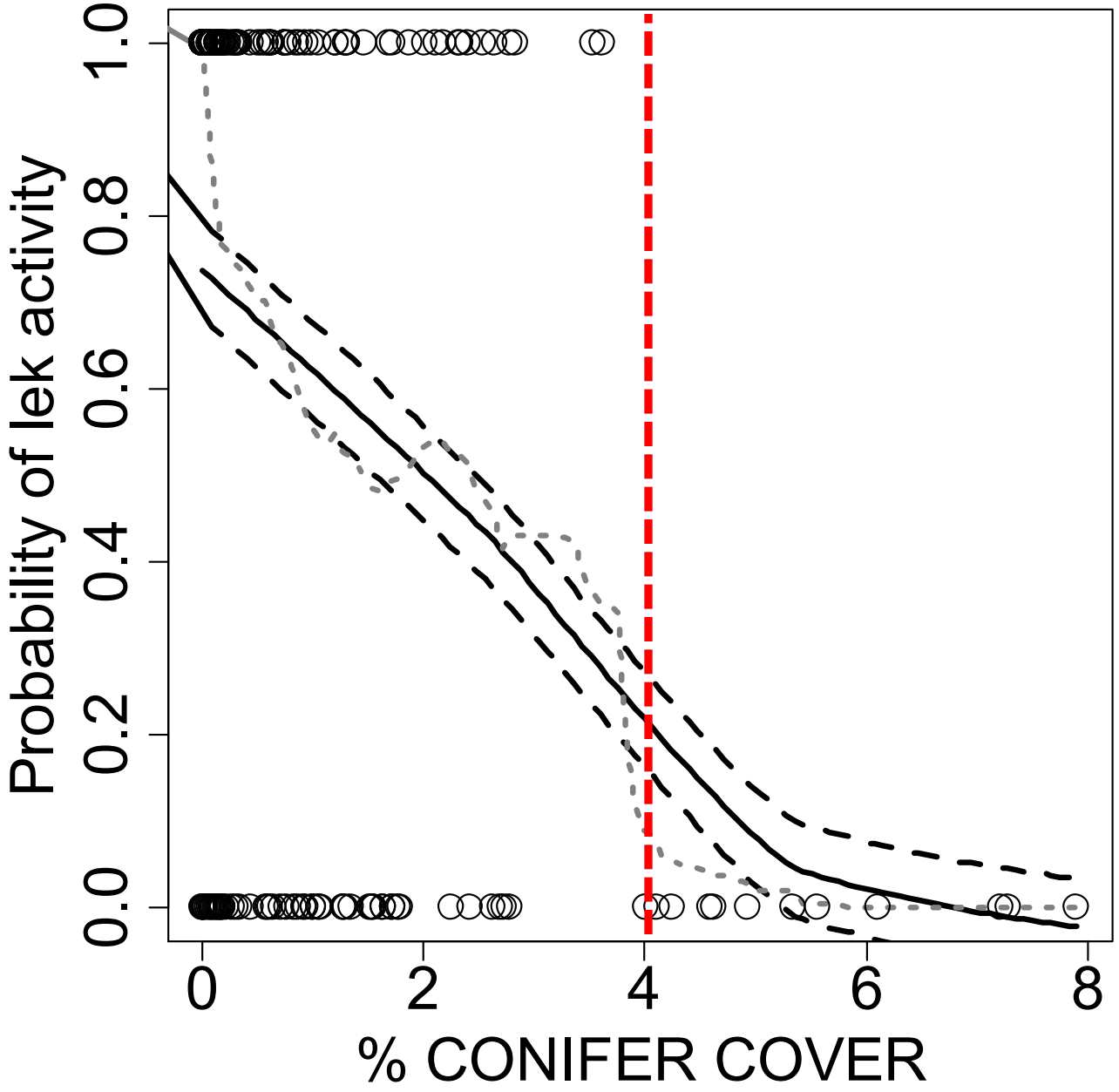






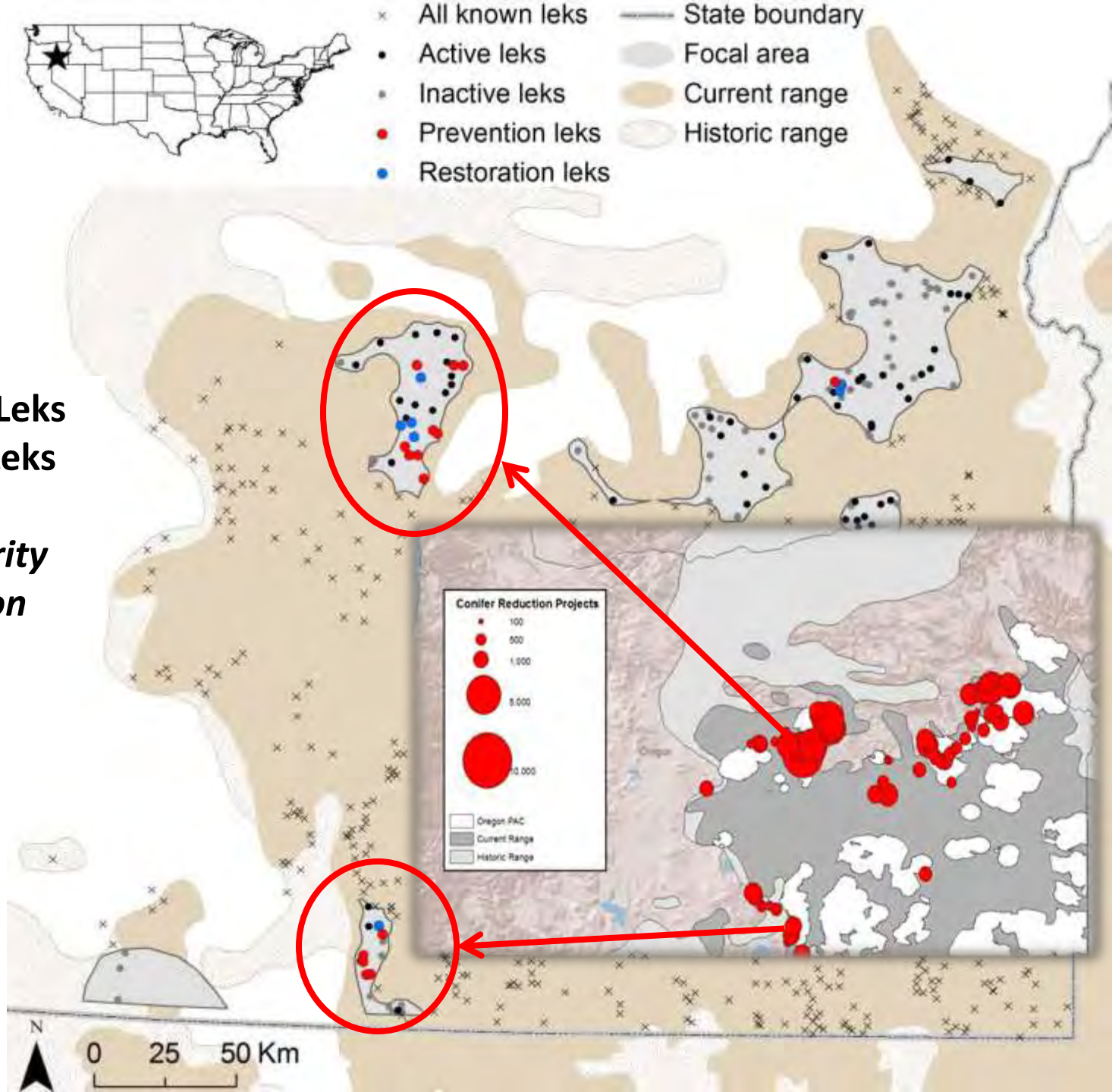
Birds occupy big, gentle, and undisturbed sagebrush landscapes

Consistent with Knick et al. 2013

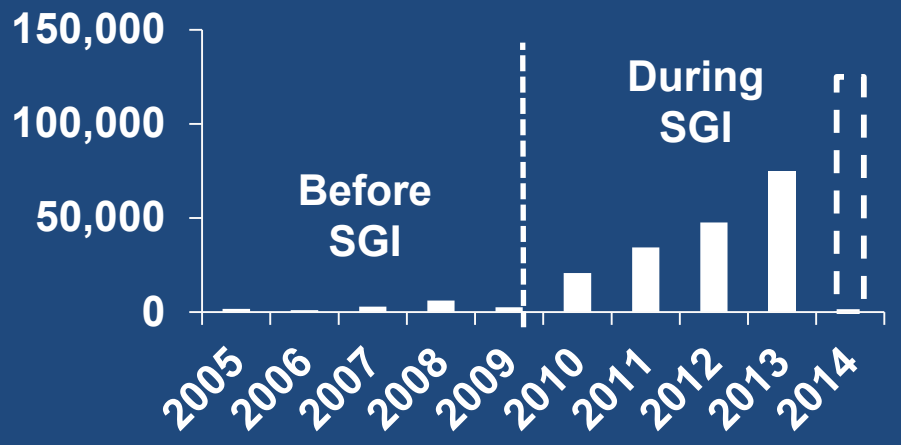

Probability of lek activity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
% CONIFER COVER

- **17 ‘Prevention’ Leks**
- **8 ‘Restoration’ Leks**

Cost to treat priority leks = $17.5 million



10-Year Business Plan for Alleviating the Conifer Threat



Treating All Leks in OR

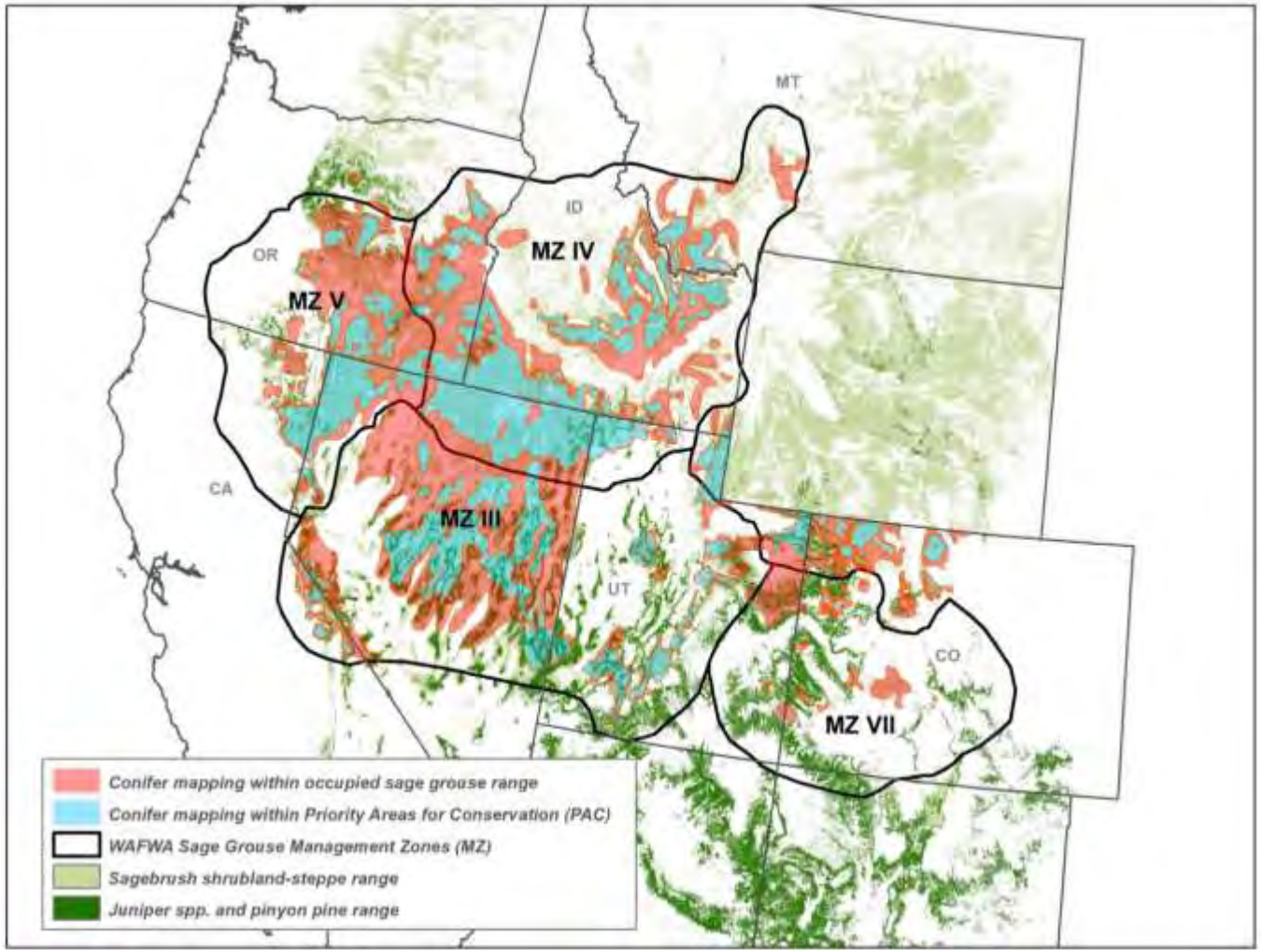
- *(875,000 ac Phase I-II near leks) – (146,000 ac treated) = 729,000 ac left*

Sustained Investment Needed

- *Total Annual Cost = (729,000 ac left) X ($100/ac) = ($72.9M) / 10 yrs = $7.3M/yr*
- *($7.3M/yr) – ($4M/yr current NRCS investment) =*

$3.3M/yr additional partner investment needed to solve in 10 years

A rangewide tool for scaling up implementation



State	Status	Acres
CA	PAC	2.1
	Non PAC	1.1
CO	PAC	2.4
	Non PAC	6.3
ID	PAC	9.8
	Non PAC	7.1
MT	PAC	1.4
	Non PAC	2.2
NV	PAC	20.4
	Non PAC	21.4
OR	PAC	6.6
	Non PAC	12.5
UT	PAC	7.5
	Non PAC	4.2

Proposed acres (millions) of conifer mapping by state within PAC and non-PAC areas.

>102 million acres to be mapped

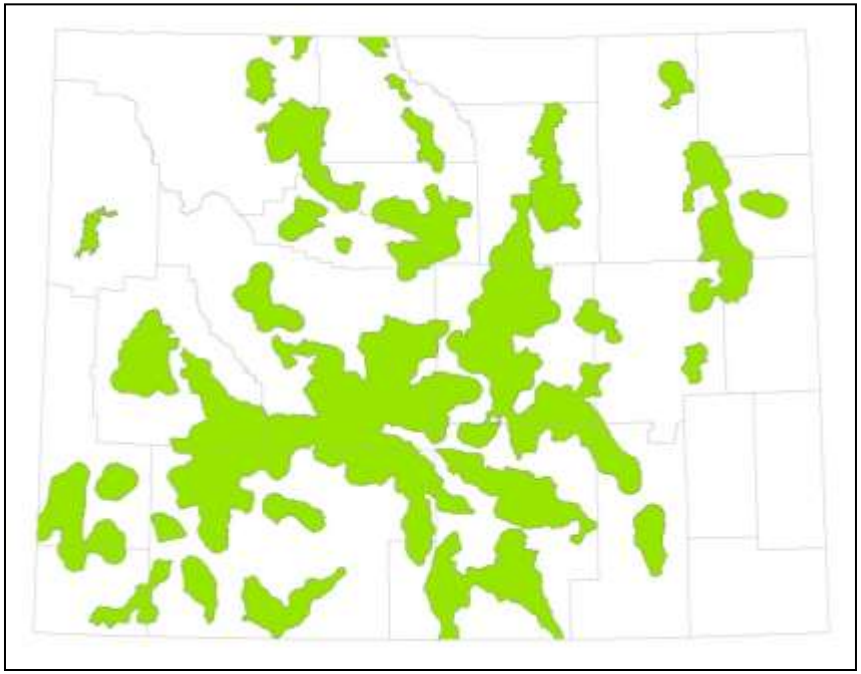


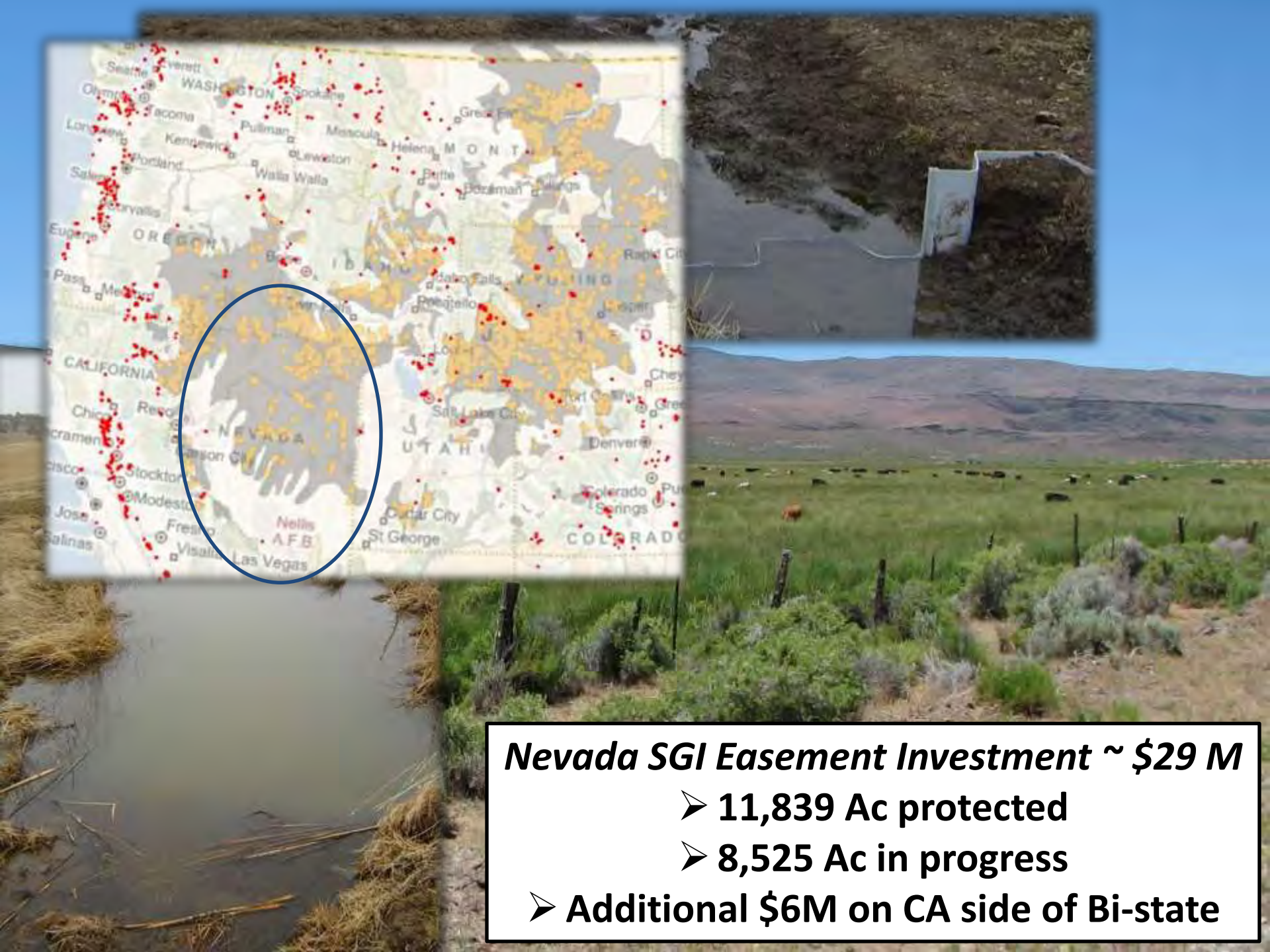

SAVING SAGE-GROUSE

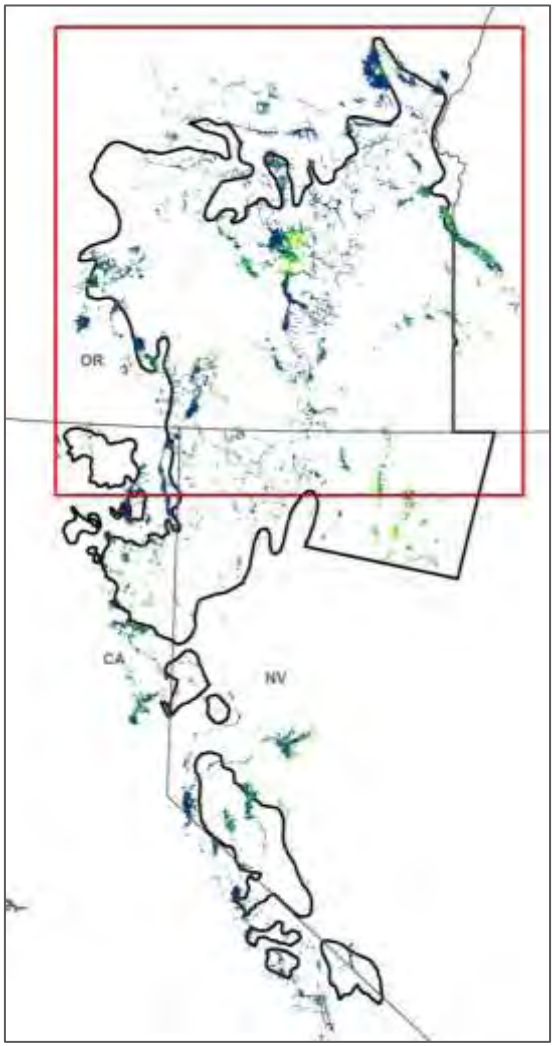
THE WYOMING EXAMPLE

Implementation
Conservation Easements

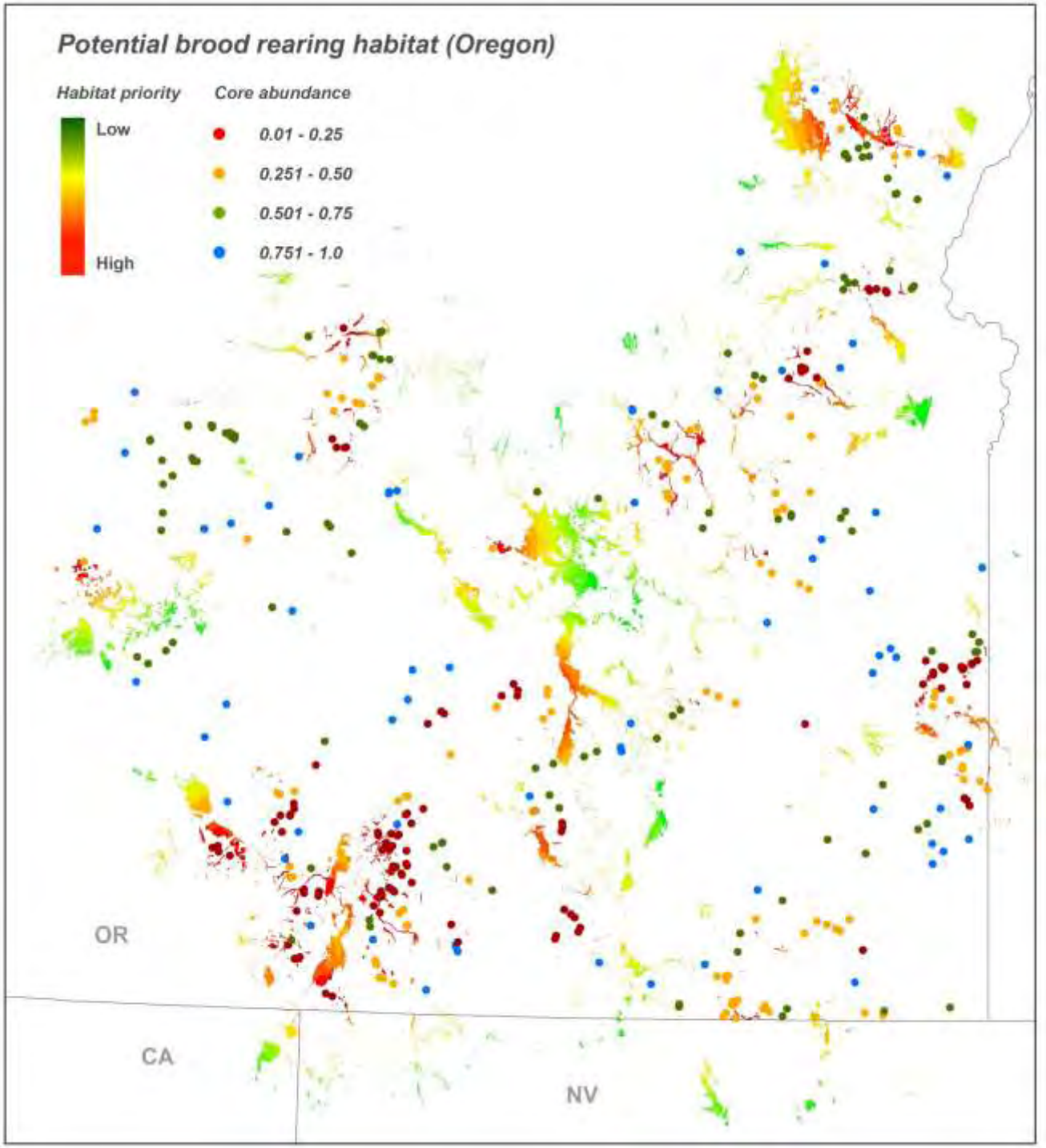
Policy
Core Area Strategy




Seattle
Everett
WASHINGTON
Spokane
Olympia
Tacoma
Pullman
Missoula
Great Falls
Kennewick
Helena
MONTANA
Portland
Lewiston
Walla Walla
Butte
Bozeman
Billings
Salem
Corvallis
Eugene
OREGON
Rapid City
IDAHO
Idaho Falls
WYOMING
Pocatello
Medford
CALIFORNIA
Chico
Reno
Salt Lake City
Cheyenne
NEVADA
Carson City
UTAH
Denver
Stockton
Modesto
Colorado Springs
Fresno
Nellis AFB
Cedar City
St George
Visalia
Las Vegas
COLORADO
Salinas
Nevada SGI Easement Investment ~ $29 M
➢ 11,839 Ac protected
➢ 8,525 Ac in progress
➢ Additional $6M on CA side of Bi-state



Project Area



Patrick Donnelly –
USFWS (unpublished data 2013)

The Journal of Wildlife Management 76(2):336–347; 2012; DOI: 10.1002/jwmg.267

Population Ecology

Managing Multiple Vital Rates to Maximize Greater Sage-Grouse Population Growth

REBECCA L. TAYLOR,[1,2] *Wildlife Biology Program, College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812, USA*
BRETT L. WALKER,[3] *Wildlife Biology Program, College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812, USA*
DAVID E. NAUGLE, *Wildlife Biology Program, College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812, USA*
L. SCOTT MILLS, *Wildlife Biology Program, College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812, USA*

Chick Survival

Nest Success

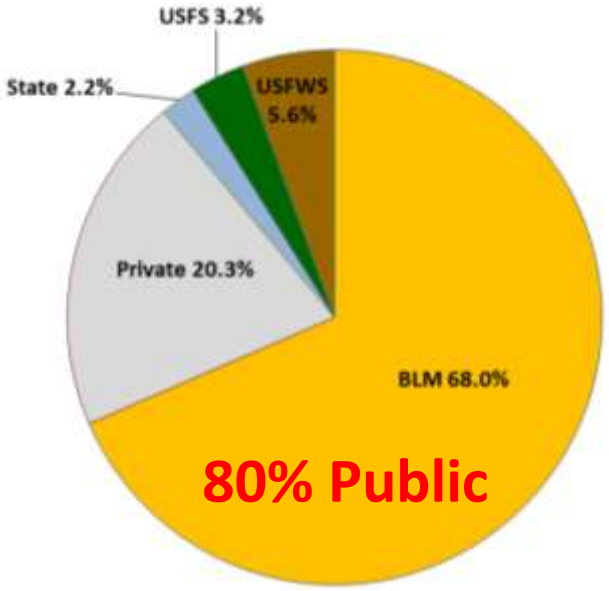
Hen Survival

Journal of Wildlife Management 74(7):1533–1543; 2010; DOI: 10.2193/2009-226

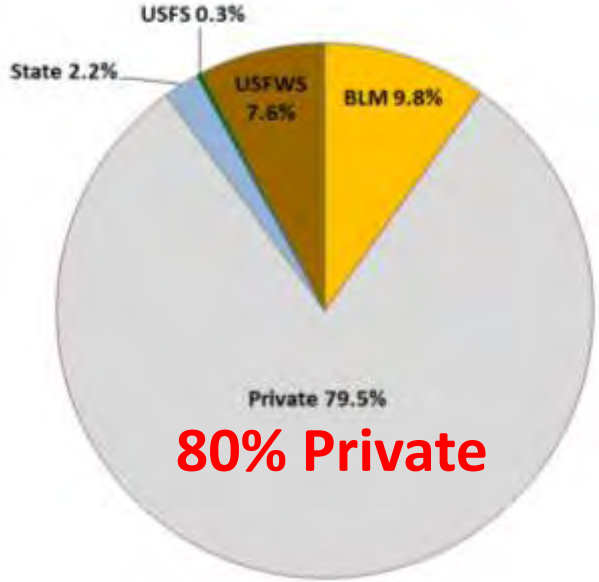
Management and Conservation Article

Landscape-Level Assessment of Brood Rearing Habitat for Greater Sage-Grouse in Nevada

MICHAEL T. ATAMIAN,[1] *Natural Resources and Environmental Science, University of Nevada – Reno, Reno, NV 89512, USA*
JAMES S. SEDINGER,[2] *Natural Resources and Environmental Science, University of Nevada – Reno, Mail Stop 186, Reno, NV 89512, USA*
JILL S. HEATON, *Department of Geography, University of Nevada – Reno, Reno, NV 89512, USA*
ERIK J. BLOMBERG, *Natural Resources and Environmental Science and Program in Ecology, Evolution and Conservation Biology, University of Nevada – Reno, Reno, NV 89512, USA*

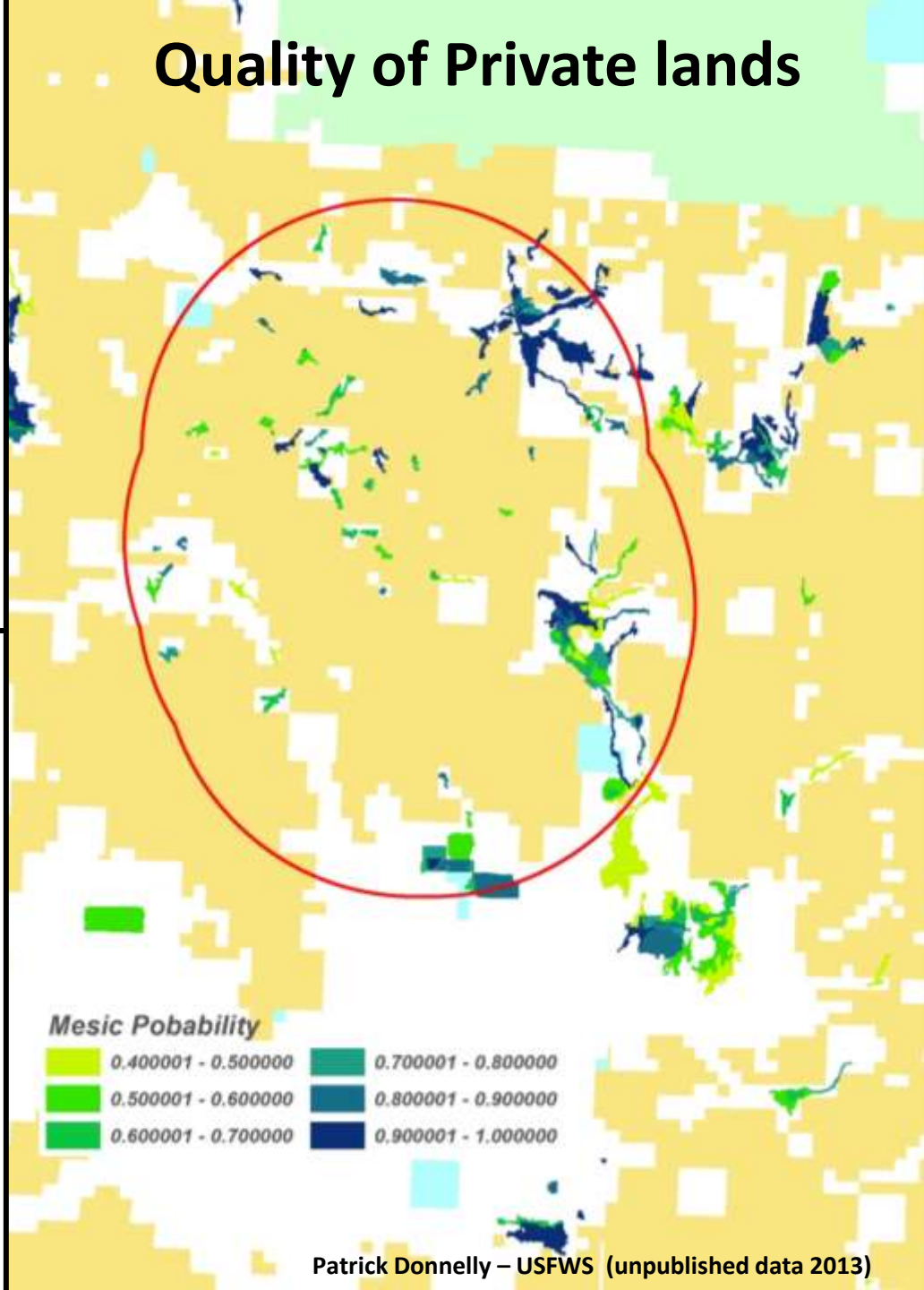


Core habitat ownership



Brood habitat ownership

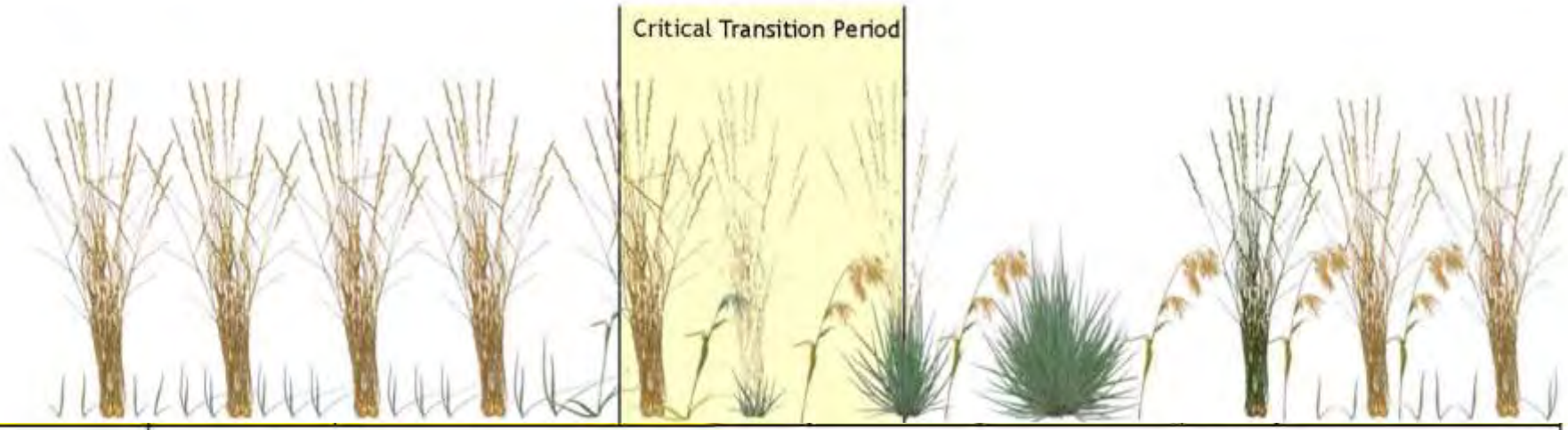
Quality of Private lands



Patrick Donnelly – USFWS (unpublished data 2013)

Ranching is the common thread that maintains large and intact landscapes across a tapestry of co-mingled land ownerships

NRCS Prescribed Grazing practice is designed to promote critical perennial plants!



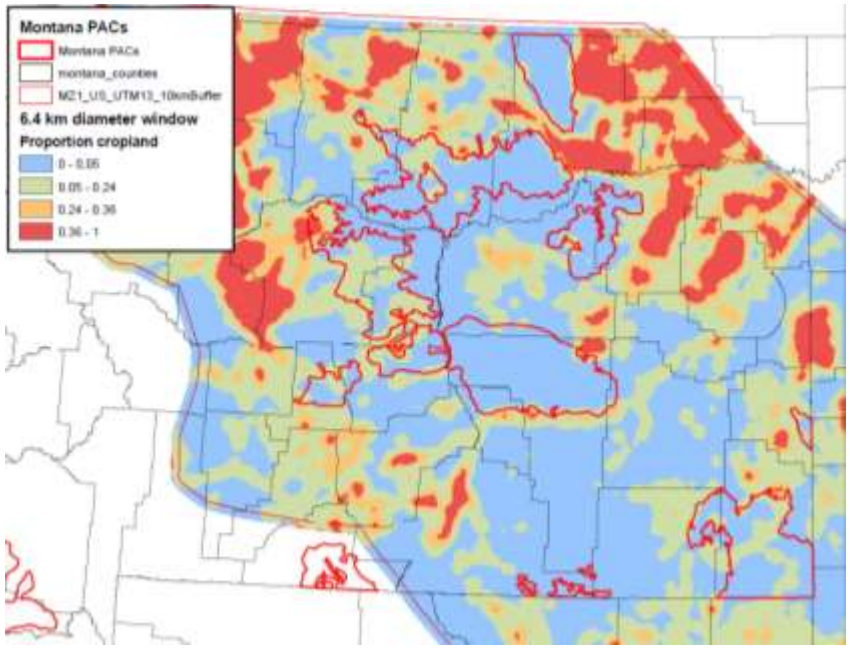
Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Perennial Grasses	Senescence		Dormancy				Growth initiation	Leaf growth	Boot stage & seed head emergence		Flowering & seed development		Seed hardening & scatter & senescence		
Annual Grasses	Germination		Growth initiation			Leaf growth	Boot stage	Flowering & seed development		Seed hardening & scatter		Death	Germination & growth initiation		

Reducing "gaps" between perennial plants result in:

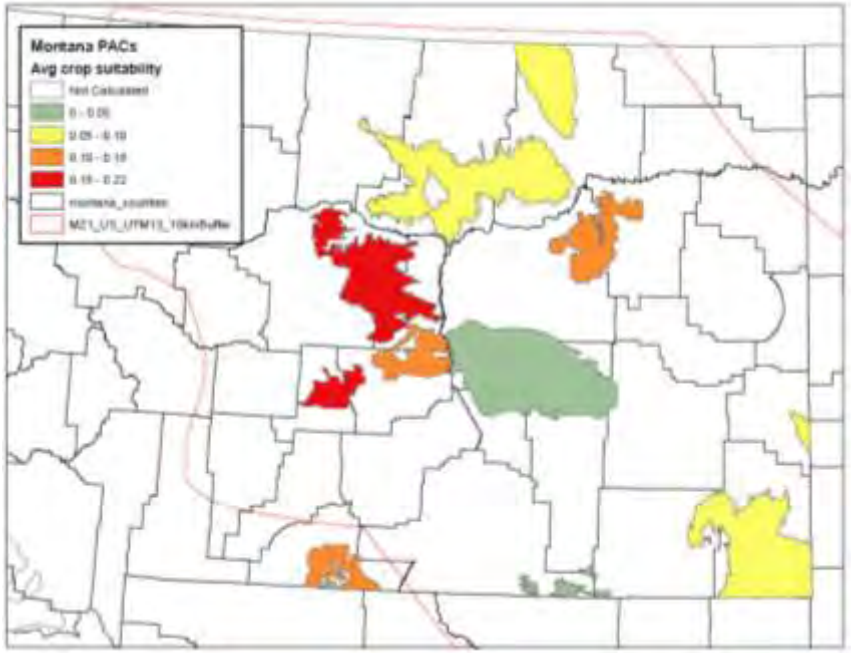
- *Increased hiding cover for grouse*
- *Increased resistance to annuals*
- *Reduced soil erosion and increased water infiltration*
- *More sustainable grazing operations*

A science-based approach to tackle conversion risk

Crop suitability model



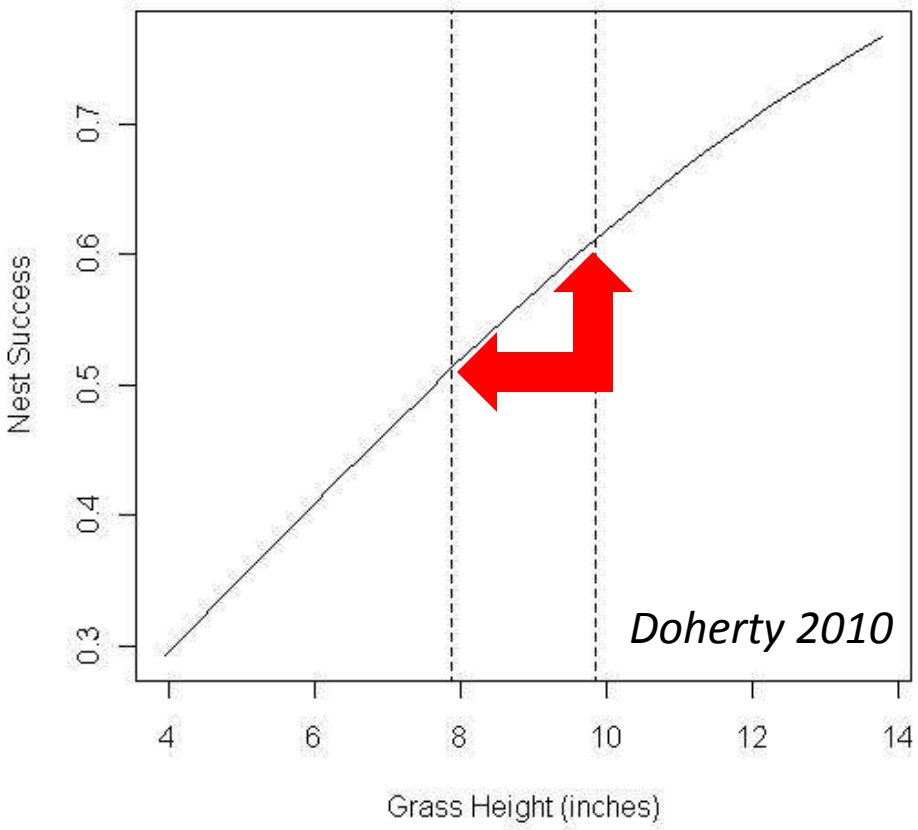
Conversion risk



Better targeting of easement and grazing system investments

A Meta-analysis of Greater Sage-grouse *Centrocercus urophasianus* Nesting and Brood-rearing Habitats

Hagen et al. 2007 Wildlife Biology 13:42-50

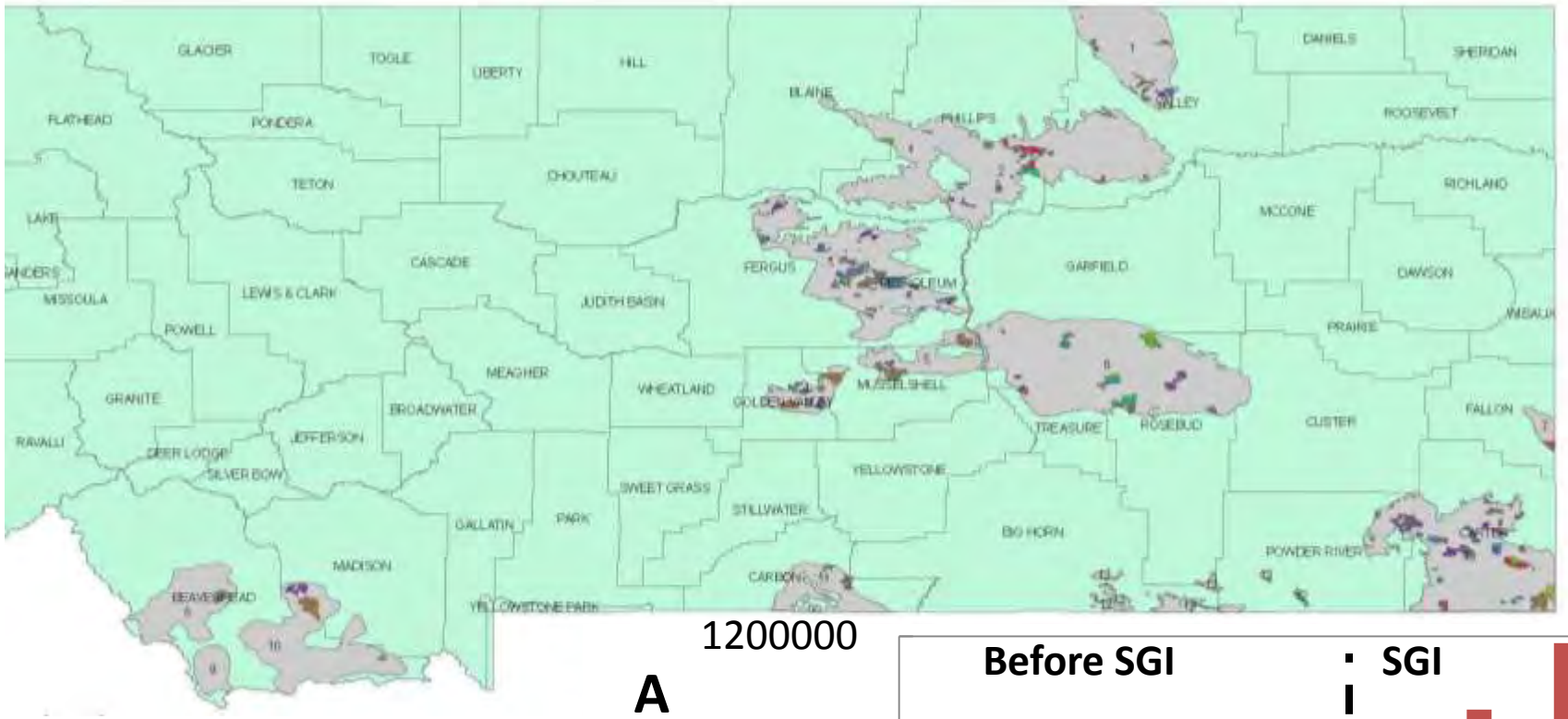


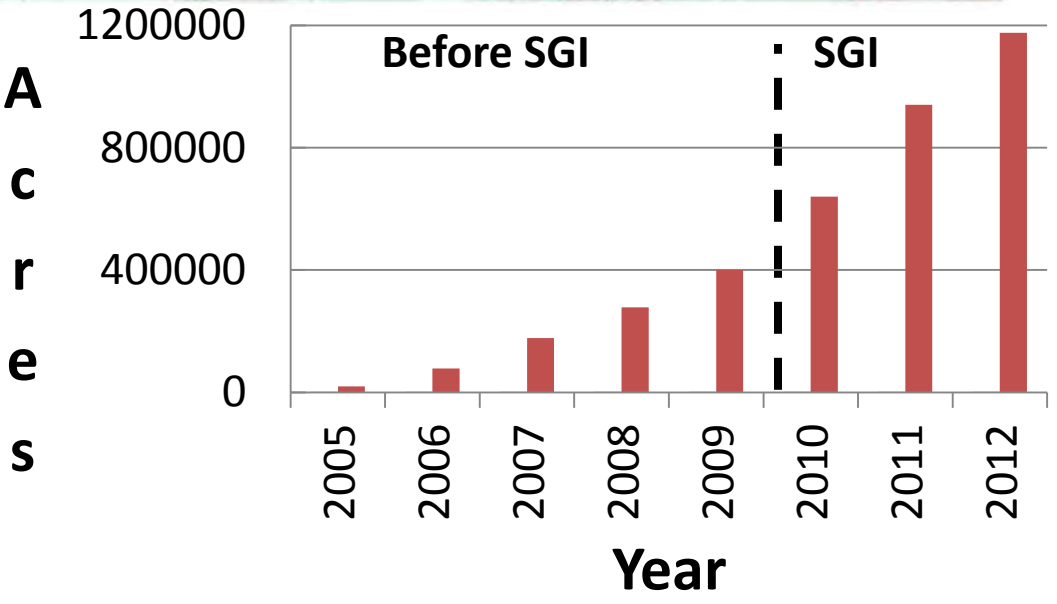
8% increase in nest success

equates to 10% increase in population growth

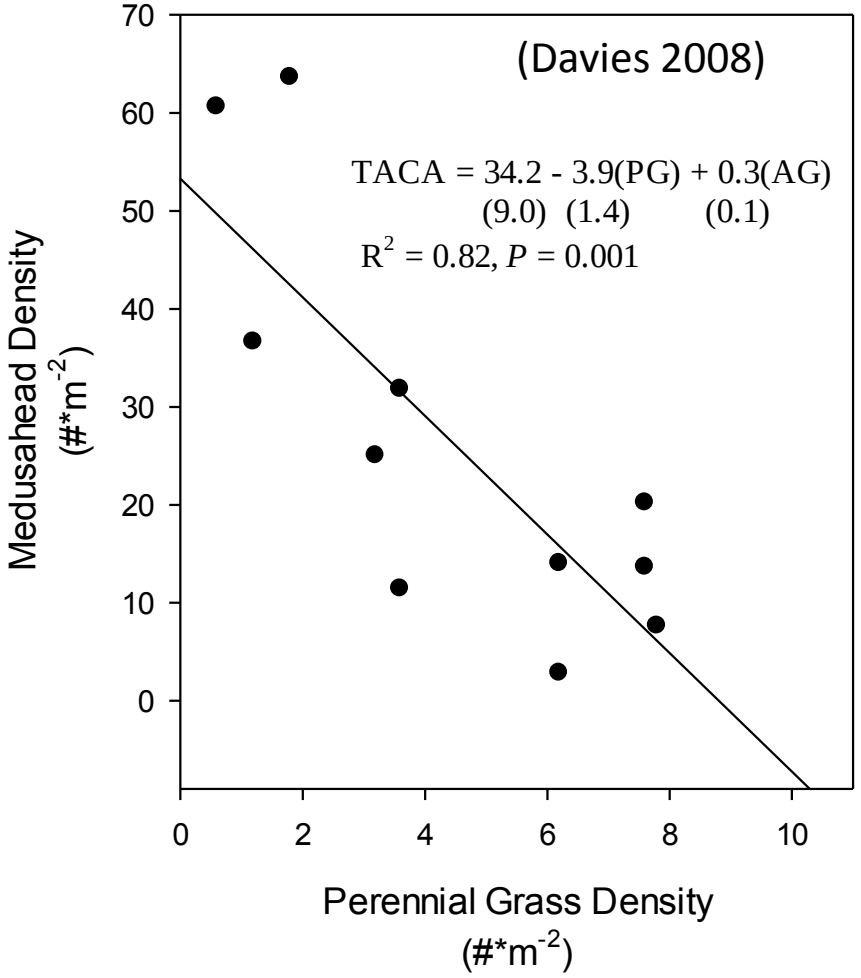
Taylor, Naugle and Mills BLM Report 2011

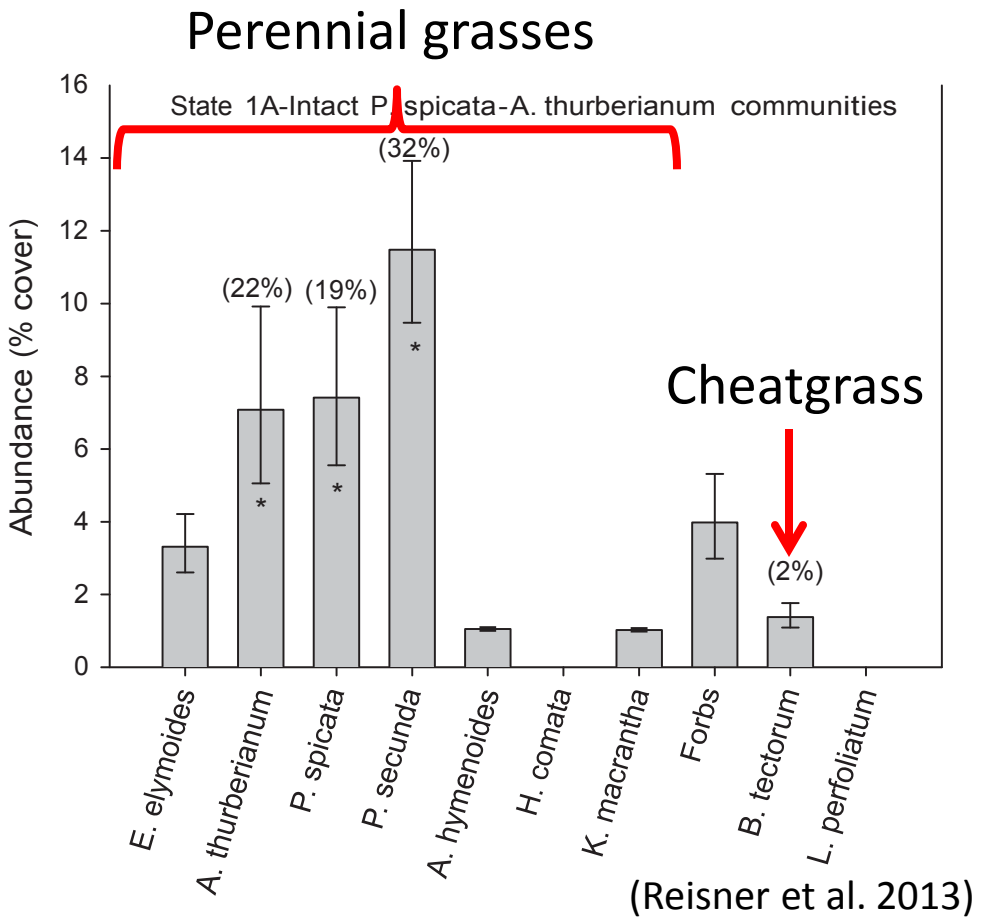
Montana Grazing Systems 4x higher with SGI





Perennial grasses key to resistance against annuals



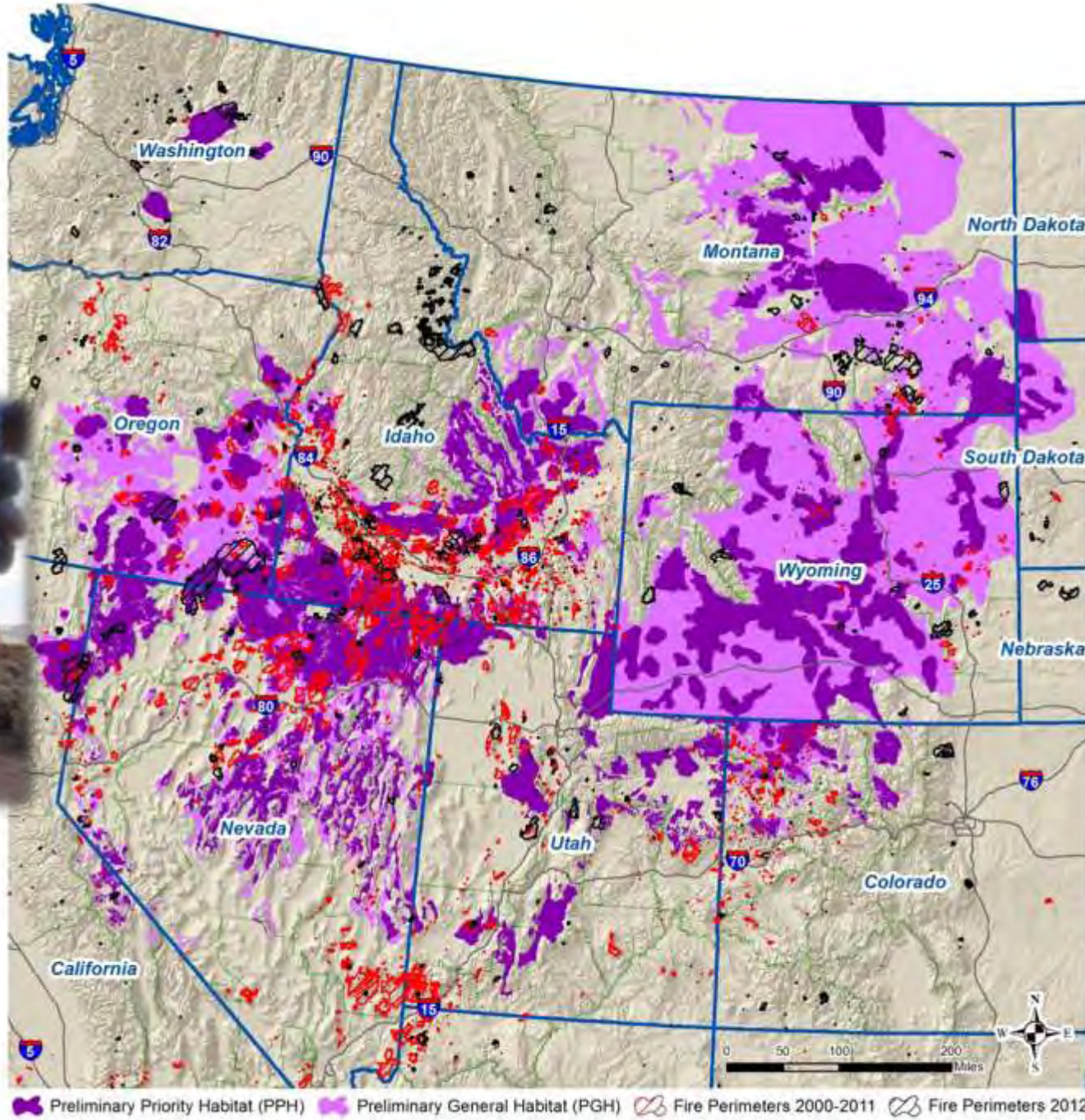


(Reisner et al. 2013)

(Additional support: Chambers et al. 2007; Blank and Morgan 2012)

How can SGI help Nevada reduce fire & invasive species impacts?

Trial by Fire- Murphy et al. 2013 *Rangelands*



Wildlife Society Bulletin; DOI: 10.1002/wsb.273

Tools and Technology

Mapping Sage-Grouse Fence-Collision Risk: Spatially Explicit Models for Targeting Conservation Implementation

BRYAN S. STEVENS,[1,2] *Department of Fish and Wildlife Sciences and Statistical Sciences, University of Idaho, P.O. Box 441136, Moscow, ID 83844, USA*

DAVID E. NAUGLE, *Wildlife Biology Program, University of Montana, Missoula, MT 59812, USA*

BRIAN DENNIS, *Department of Fish and Wildlife Sciences and Statistical Sciences, University of Idaho, P.O. Box 441136, Moscow, ID 83844 USA*

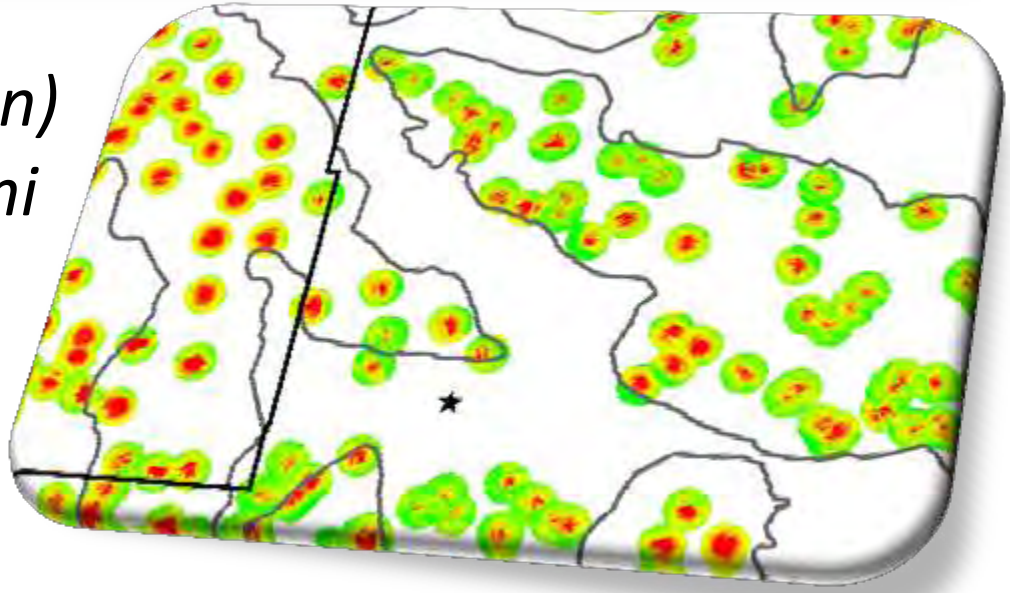
JOHN W. CONNELLY, *Idaho Department of Fish and Game, 1345 Barton Road, Pocatello, ID 83204, USA*

TIM GRIFFITHS, *United States Department of Agriculture, Natural Resource Conservation Service, 10 E. Babcock Street, Bozeman, MT 59718, USA*

KERRY P. REESE, *Department of Fish and Wildlife Sciences, University of Idaho, P.O. Box 441136, Moscow, ID 83844, USA*

High collision risk (>1 collision) is 6-14% of area within 1.8 mi of leks range wide…

In Nevada it's 8.5%



NRCS
United States Department of Agriculture
Natural Resources Conservation Service

CEAP Conservation Insight
Conservation Effects Assessment Project

November 2012

Applying the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes

Summary Findings

- Fence collisions by sage-grouse can be widespread, and a proven fence-marking method is now available to reduce strikes by up to 83 percent.
- Science also suggests that collisions are highly variable, so practitioners implementing the NRCS Sage Grouse Initiative (SGI) desired a targeting tool to prioritize their fence-marking efforts in areas of highest strike risk.
- The Conservation Effects Assessment Project (CEAP) responded by supporting development of a spatial targeting tool for practitioners that used a dataset from a rigorous study in Idaho to fit collision-risk models to all known sage-grouse lekking areas in 10 western states.
- The resulting product maps relative collision risk as a function of terrain ruggedness and distance to nearest lek, providing practitioners with a simple decision-support tool for use in geographic information systems (GIS). Findings indicate that only a small proportion of the landscape (6–14 percent) is predicted to pose a relatively high collision risk (more than one collision over a lekking season).
- This Conservation Insight informs practitioners on proper use of the new targeting tool to efficiently reduce fence strike risks, maximizing our return on investment and freeing up resources to achieve additional benefits.

SAGE-GROUSE INITIATIVE

Background

Bird collision with human structures is common, and European science reports cite grouse among the most common infrastructure-collision victims (e.g., Bevanger and Broseth 2000). New studies document the susceptibility of North American prairie-grouse to collision with fences (Patten et al. 2005, Stevens et al. 2012a). Fence collision was attributed to 40 percent of mortality for lesser prairie-chickens in Oklahoma (Wolfe et al. 2007), and fence-collision rates of 0.64 strikes/mile were reported for sage-grouse in Idaho (fig. 1; Stevens 2011).

A proven fence-marking method is now available to reduce strikes by up to 83 percent (fig. 2; Stevens et al. 2012a, b). Findings show that sage-grouse collision is highly variable spatially, suggesting that targeting marking efforts as a function of risk enables cost-effective implementation of conservation actions. Thus, small but targeted investments could potentially alleviate much of the breeding season fence-collision risk in lekking areas, freeing up resources to achieve additional conservation benefits in other areas. Reducing fence collisions alone will not recover sage-grouse populations, but alleviating collision risk as part of an integrated conservation strategy reduces the need to list the species under the Federal Endangered Species Act (USFWS 2010a).

Figure 1. Dead sage-grouse following collision with a fence.

Photo by Jesse R. Rotella

The Idaho Study

Fence collisions and marking efforts are documented in unpublished reports, but the first replicated and published study was completed across four areas in central Idaho (Stevens et al. 2012a).

Scientists in this study monitored high-risk fences near leks during the breeding season and documented sage-grouse fence strikes before and after marking in a before-after control-impact design. Further analysis revealed that terrain ruggedness and distance from the lek were primary factors associated with fence collision risk across the landscape (fig. 3; Stevens et al. in press). Markers reduced collisions by 83 percent, or six-fold, over unmarked fences (Stevens et al. 2012a). These findings validate the application of fence markers to substantially reduce fence collisions, and suggest that this relatively inexpensive practice could be applied with a high likelihood of success if targeted in the right places.

Terrain ruggedness and distance from the lek were primary factors associated with fence collision risk across the landscape. Markers reduced collisions by 83 percent, or six-fold, over unmarked fences.

CEAP Science Partnership

The Idaho study has spurred fence-marking efforts on public and private lands across 11 western states. However, sage-grouse occupy approximately 186 million acres, and practitio-

Prevent locating **new** fences in high risk locations

Identify existing fences to remove and modify