OREGON RANGELAND MONITORING

Local partners working together to assess landscape scale restoration effectiveness

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Megan Creutzburg, INR

Outline

- Context
  - Why & why now?
- Overview of 2022 pilot year
  - Timeline
  - Assessment protocols
  - Accomplishments to date
  - Lessons learned
- Next steps & opportunities
  - Plans for data analysis & Exploration Tool integration
  - Advisory group
  - Prepare for 2023 field season

Using best available science to guide restoration

Published, peer-reviewed research

Landscape scale restoration

How do we **harness practitioners' experience & outcomes** of **large-scale restoration** efforts to **inform future** restoration treatments and **adaptive management**?

Why?…and why now?

- We need an efficient means to determine if our statewide efforts are working.
- Best practice is to share lessons learned across the range.
- Large-scale funding opportunities and projects are occurring now.

Photo credit: S. Hyllested

Timeline

Brainstorming
Baker LIT, USGS, INR, ARS, OSU Extension

(Winter 2022)

BIL Science funding

(Awarded Spring 2022)

Outreach to project proponents

High Desert Partnership, BLM, ODFW, Baker & Vale LITs, DSL, Harney SWCD/CWMA

(Spring/Summer 2022)

Protocol development; Create Survey123 & AGOL maps; ongoing refinement

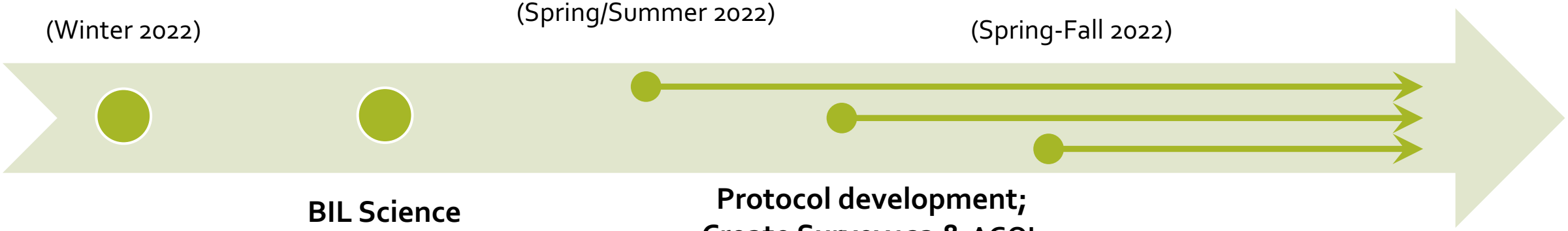
USGS, FWS, INR

(Spring-Fall 2022)

Pilot data collection

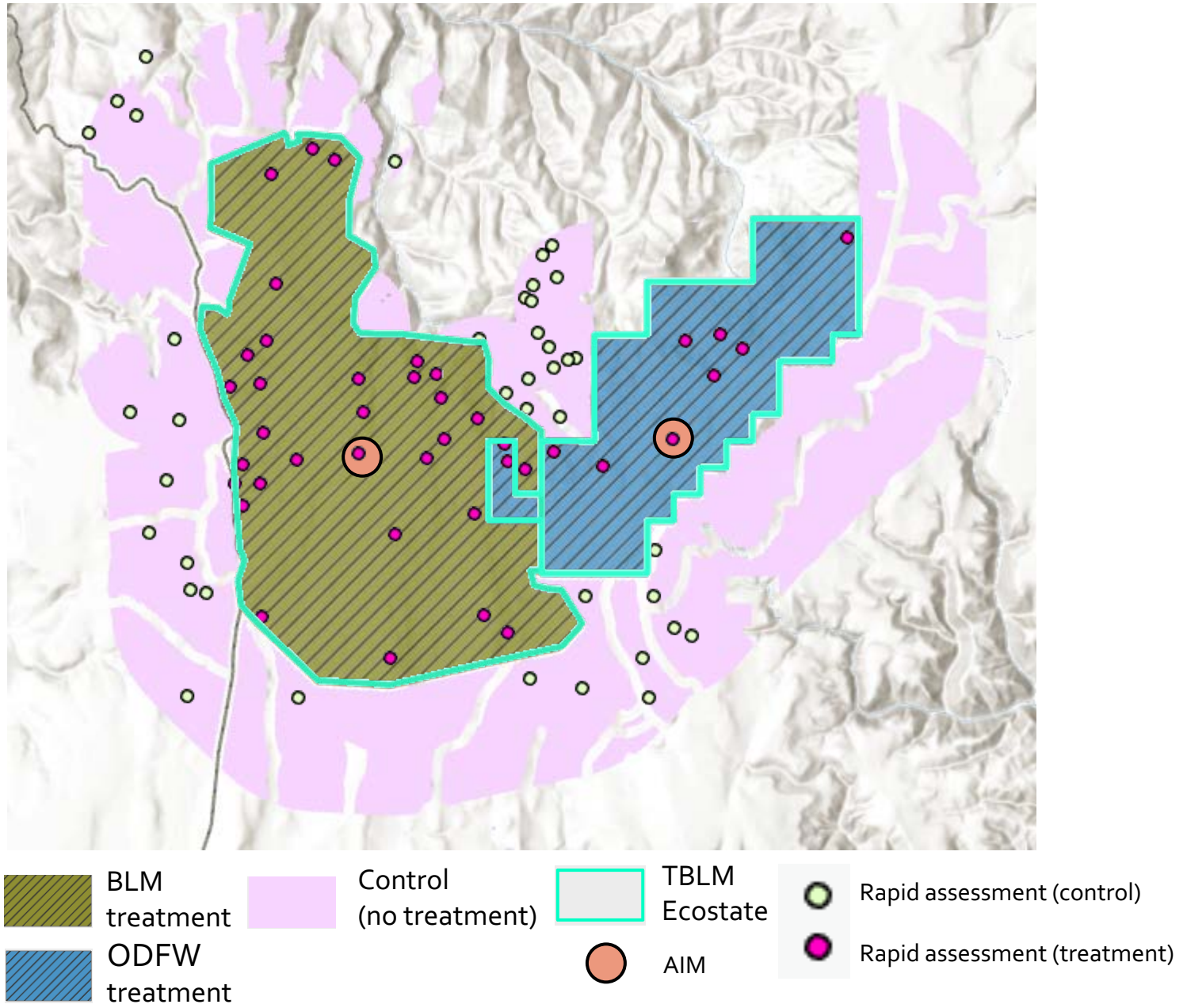
High Desert Partnership, INR, ODFW, BLM, DSL, Vale & Baker LITs, OSU Extension

(Spring-Fall 2022)



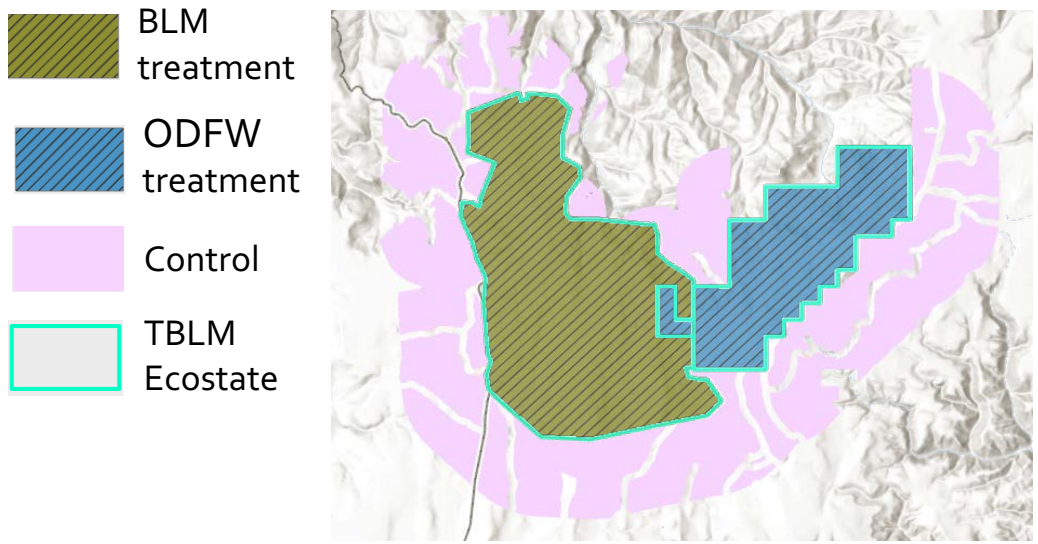
What?

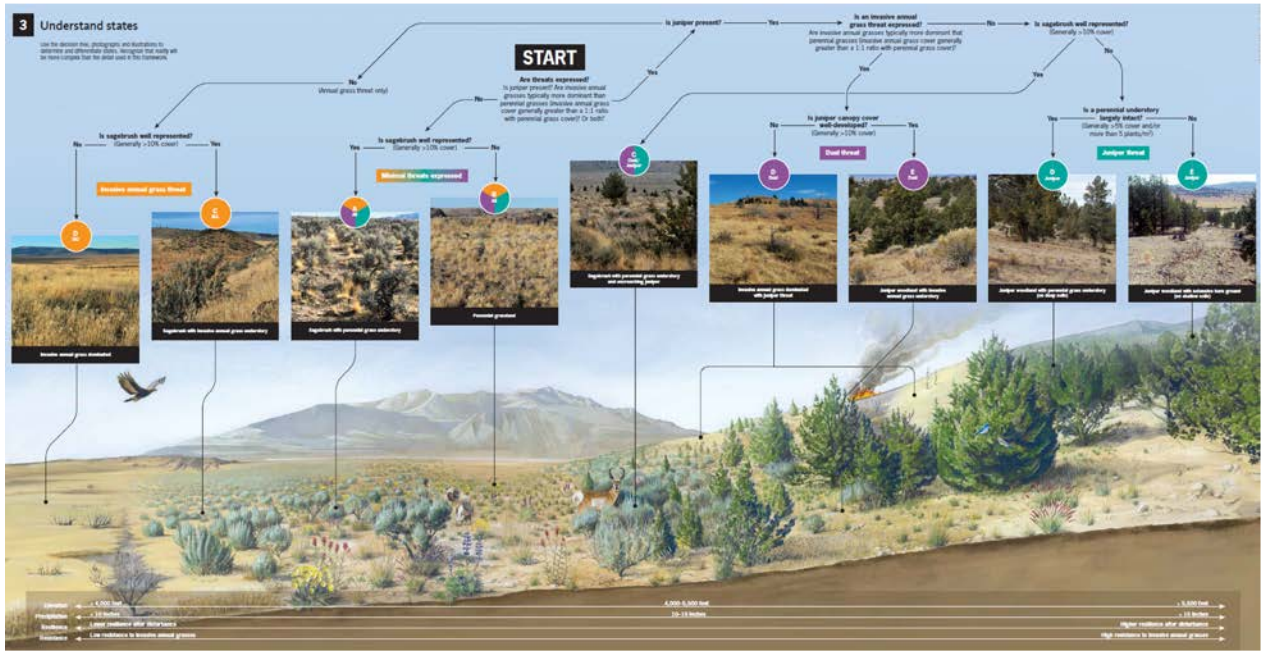
- ✓ **Robust**, but **practical** monitoring
- ✓ **Treatment metadata**
- ✓ **Blends** methods already in use with a new **rapid ocular vegetation assessment**
  - ✓ Threat-based ecostate
  - ✓ Modified AIM (line-point intercept)
  - ✓ Photo-points
  - ✓ Ocular estimates of key vegetation
- ✓ Different **methods** to answer different **questions** at different **scales**; one method does not replace another
- ✓ **Pre-** and **post-treatment**
- ✓ **Treatment** and **control** sites



Threat-based ecostate

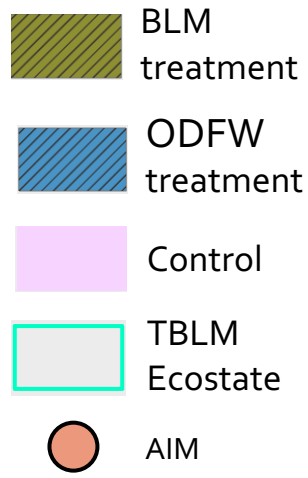
- Describes entire **treatment**
- Overall habitat quality
- Useful communication tool
- Method used by many SageCon partners (e.g., CCAA, Landscape Planning Tool, Mitigation Tool)
- Linked to sage-grouse habitat use (Doherty et al. 2021)

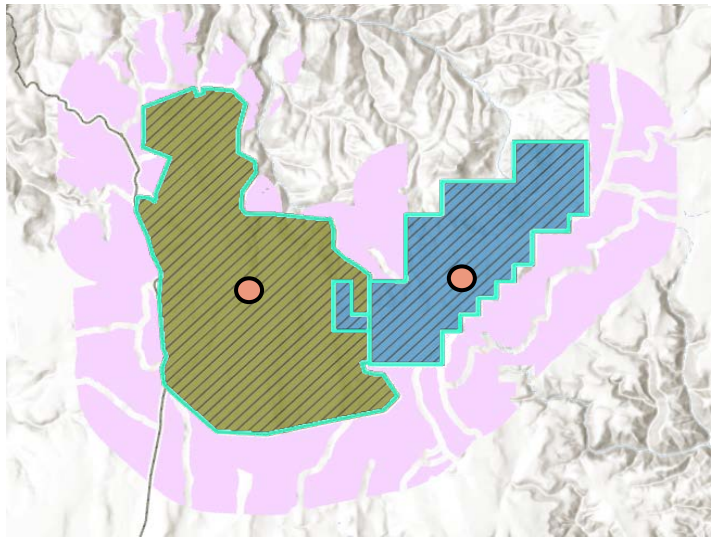


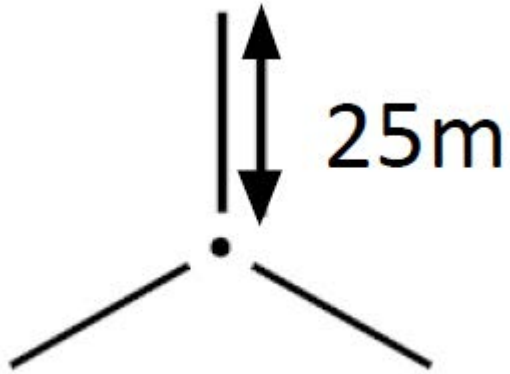


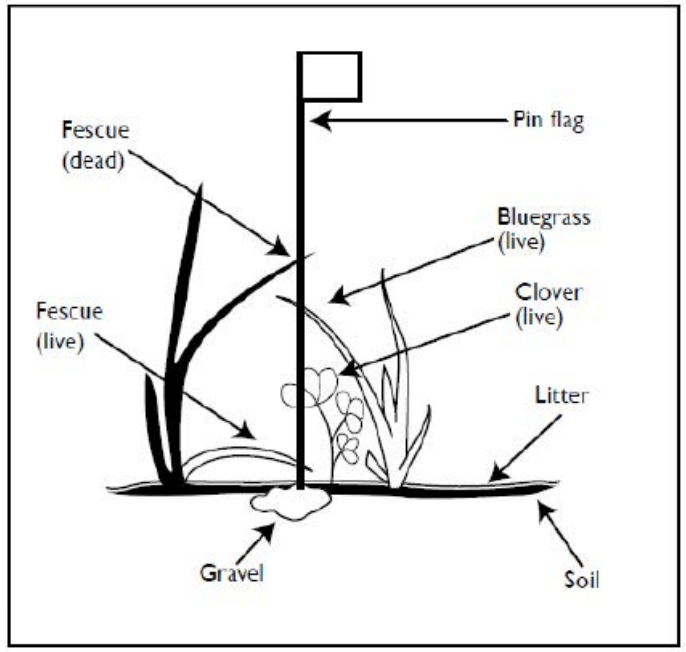
Modified AIM

- Collected **in treatment area only**
- Minimum of one representative site that coincides with a rapid ocular assessment point
- Three-spoke LPI design
- Useful to calibrate across methodologies
- Integrates with BLM AIM monitoring at district and state geographic scale



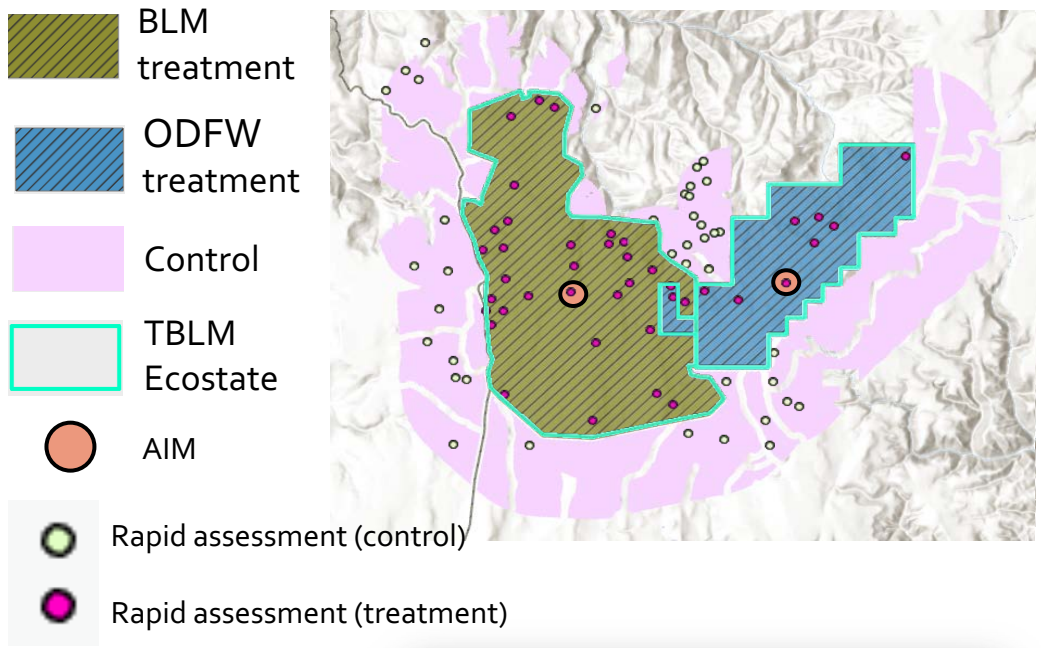


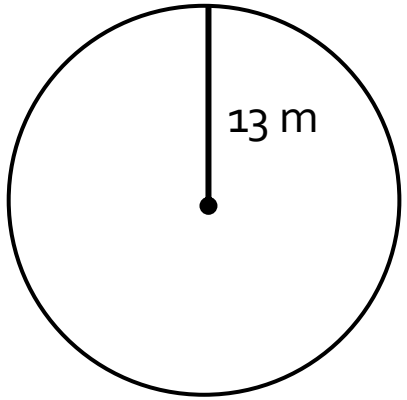


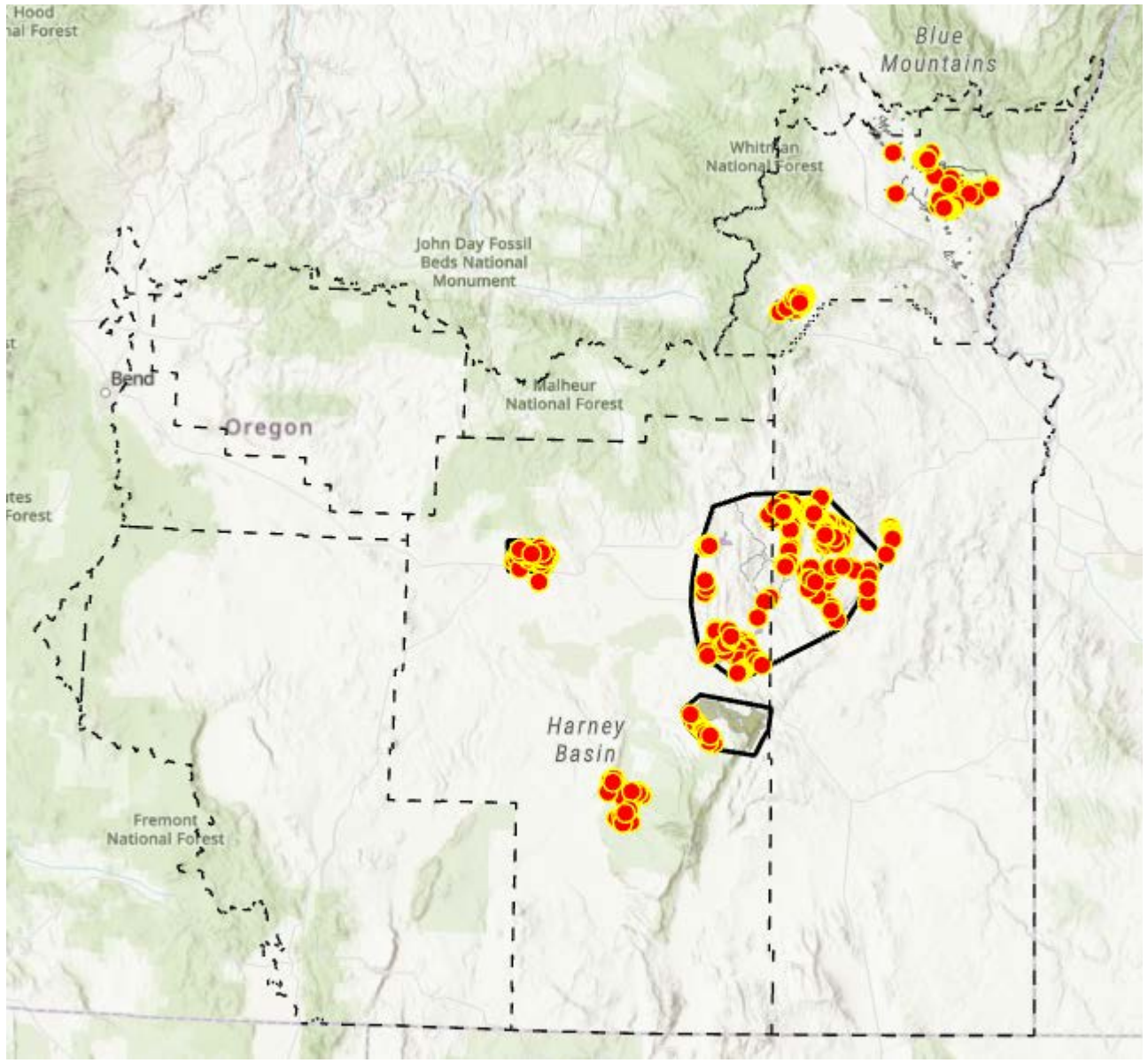


Rapid Ocular Assessment

- Protocol used across Great Basin
- Random points **in treatment and control areas**
- Quantitative estimate of cover key vegetation functional groups
- Landscape and downward facing photos
- Plot-scale ecostate







Pilot year (2022) accomplishments

- **40 treatment areas** implemented by **7 local agencies** on private, DSL, BLM lands
- **78 miles (roadside)** and **118,795 treatment acres** (Baker, Malheur, Harney counties)
- **67 Ecostate**, **67 Modified AIM**, **392 Rapid Ocular Assessments**
- Leveraged **field capacity** from **7 partner organizations**
- Incorporated feedback throughout field season

Lessons learned

- Easy to learn
- Streamlined, but some technical glitches
- Hints and photos within survey critical
- Project areas are often not finalized for assessment prior to treatment
- But… can collect pre-treatment vegetation data immediately after herbicide application

Lessons learned, cont.

- Without pre-treatment data, we can still compare treatments to control plots
- Modified AIM
  ~1-2 hrs/plot, ~2-3 plots/day
- Rapid ocular assessment
  ~22 min/plot, ~8 plots/day
- Dedicated, trained, calibrated field crews
- Monitoring needs and interest is growing

SRM Society for Range Management

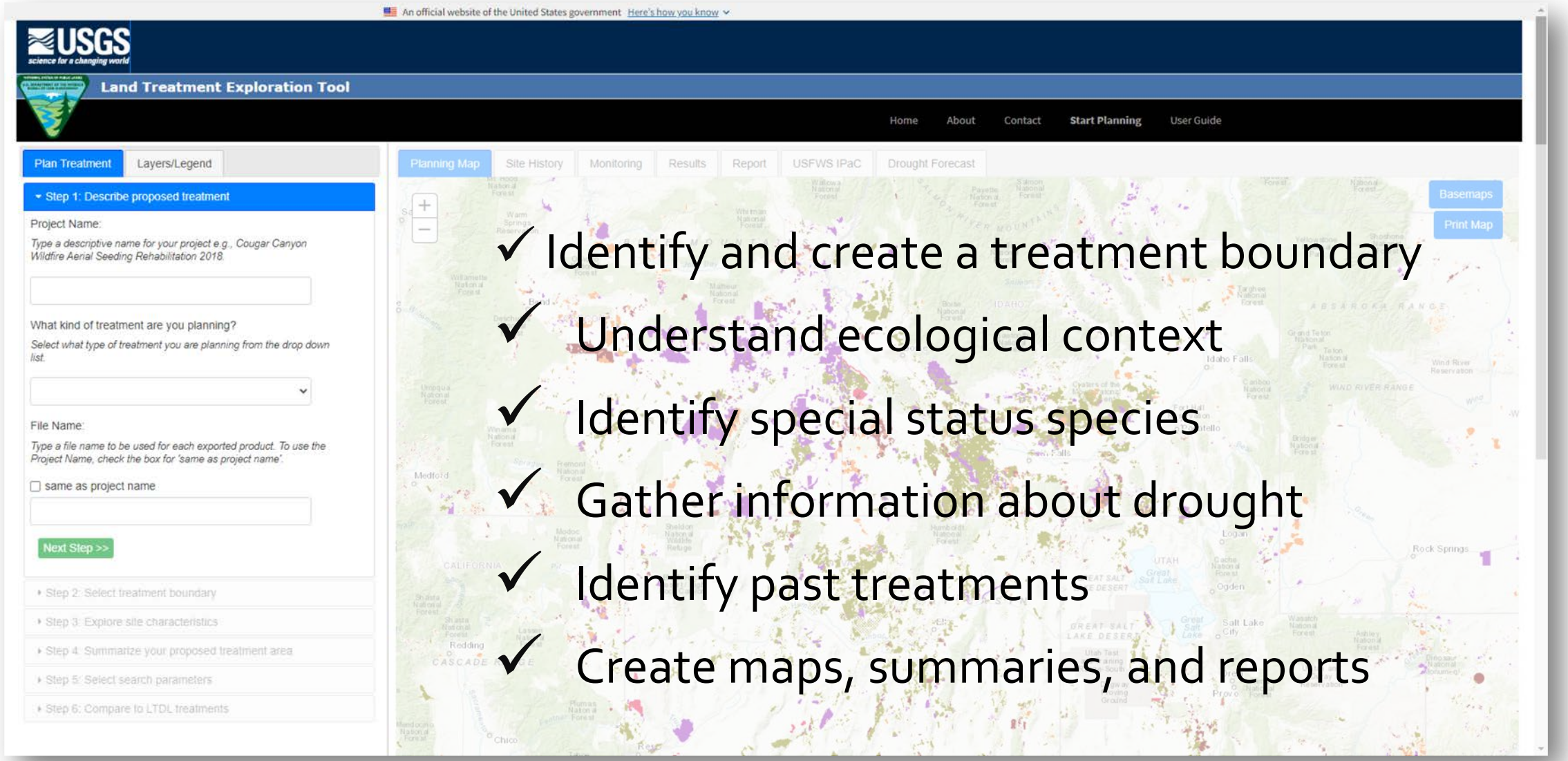
Managing invasive annual grasses, annually: A case for more case studies

By Vanessa M. Schroeder, Dustin D. Johnson, Rory C. O'Connor, Carter G. Crouch, William J. Dragt, Harold E. Quicke, Lynne F. Silva, and Debbie J. Wood

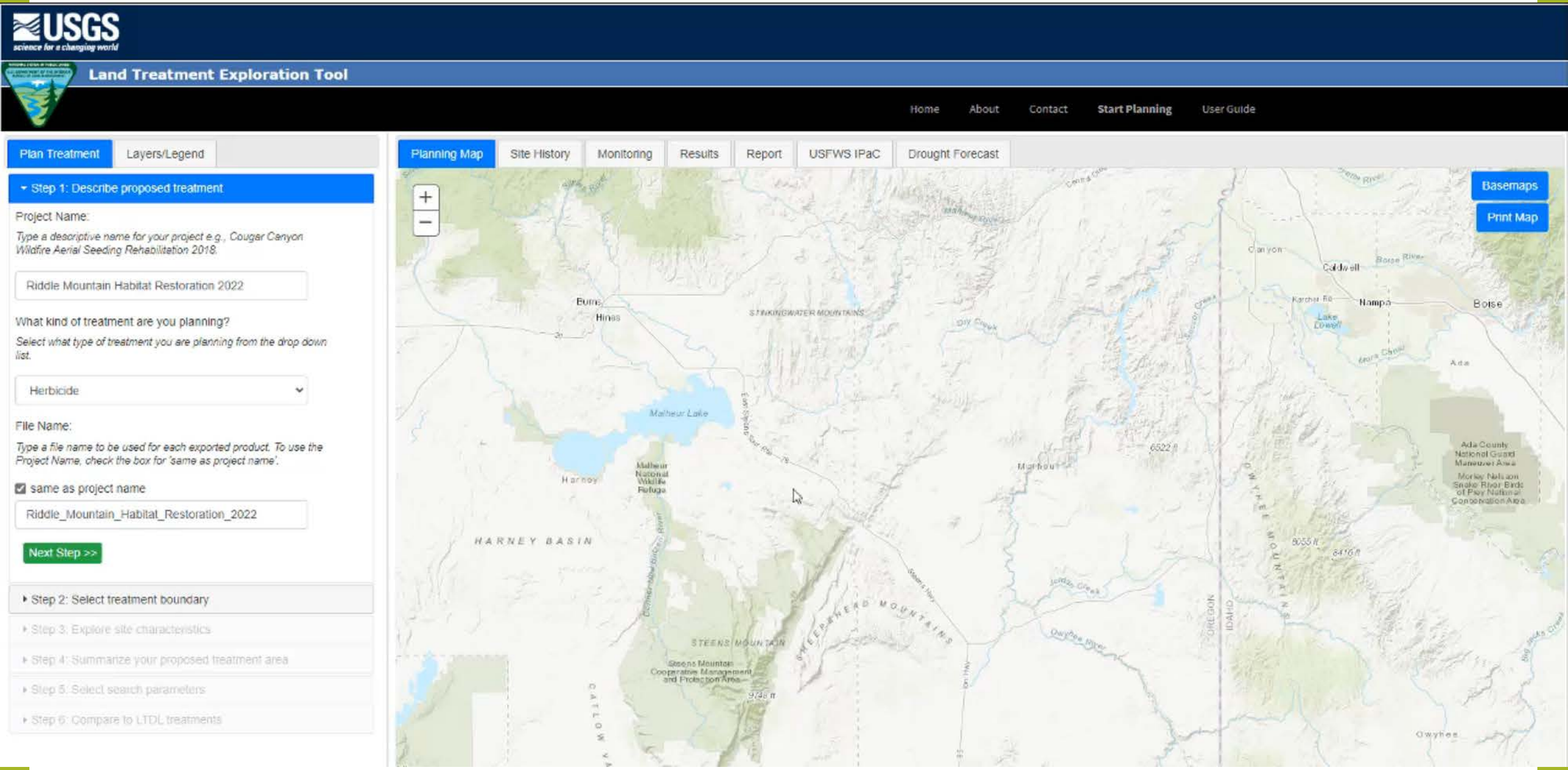
"Researchers typically restrict the number and scale of sites by necessity, but **landscape level analyses conducted by researchers might help land managers better understand where exactly on the landscape a treatment might succeed (or fail).**"

"To advance the learning portion of the adaptive management process used by rangeland managers, **we need a tool such as a dynamic management database capturing the variability and successes or failures of past treatments.**"

Land Treatment Exploration Tool



https://usgs.gov/ltet



https://usgs.gov/ltet

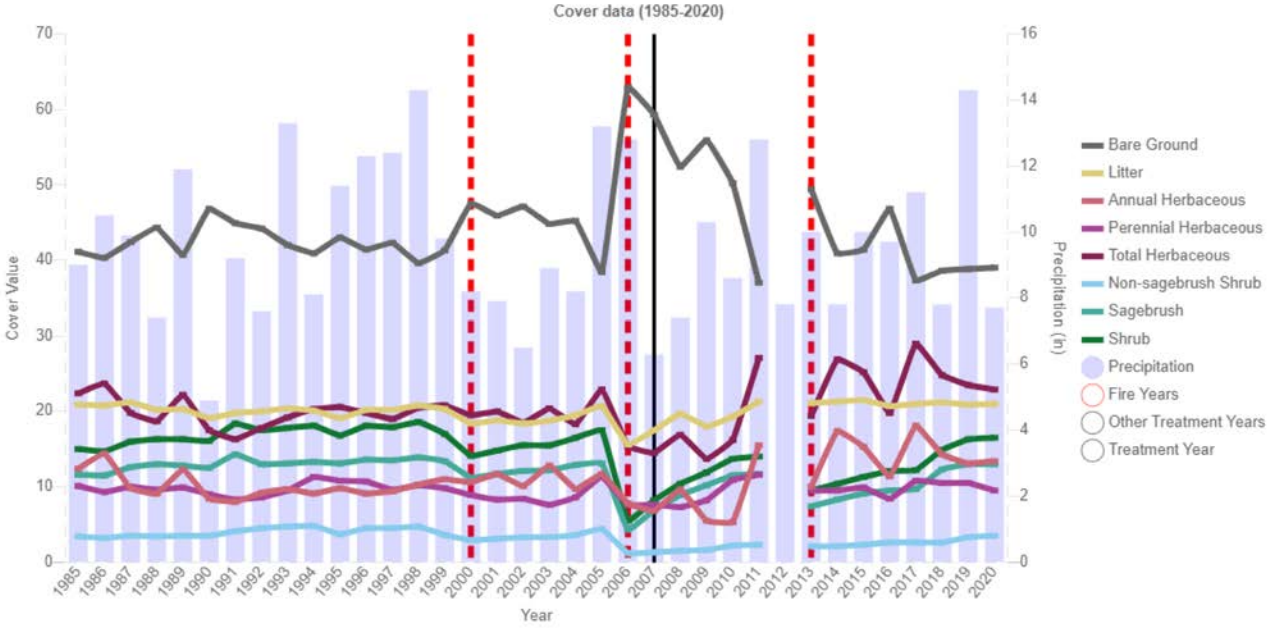
Project Name: Crater Wildfire Rehabilitation 2006
Project ID: 2919
Treatment ID: 8118
BLM Field Office: BURNS THREE RIVERS FIELD OFFICE
State: Oregon
Major Treatment: Herbicide/Weeds/Chemical
Sub Treatment: Herbicide
Treatment Type: Noxious Weeds: Weed Control - Herbicide Application
BLM Reported Success: Partially Successful

Purpose: Wildfire
Dates: (Confirmed)
Start: 8/16/2007
End: 8/16/2007
Area: none
GIS Acres: 16924.35 acres
GIS Feature Type: Polygon
Feature Status: Confirmed

Objectives: The burned area was inventoried by the Harney County Strategic Weeds Attack Team (SWAT). The team inventories and spot treats weeds under a cooperative agreement with the BLM and Harney County.

Actual Implementation: Early identification and treatment of weeds helped to limit the establishment and spread of noxious weeds within the fire perimeter. The utilization of the Harney County SWAT proved to be an effective use of funds and resources.

Treatment Results: A small patch of knapweed was discovered on the site and treated in 2007. The initial treatment was effective at eliminating the knapweed. The fire boarders the Malheur National Wildlife Refuge and the BLM will continue to work with refuge staff to control noxious weeds along the BLM and refuge boundary.



Use **quantitative** monitoring data to **assess treatment outcomes** and inform **adaptive management**

https://usgs.gov/ltet

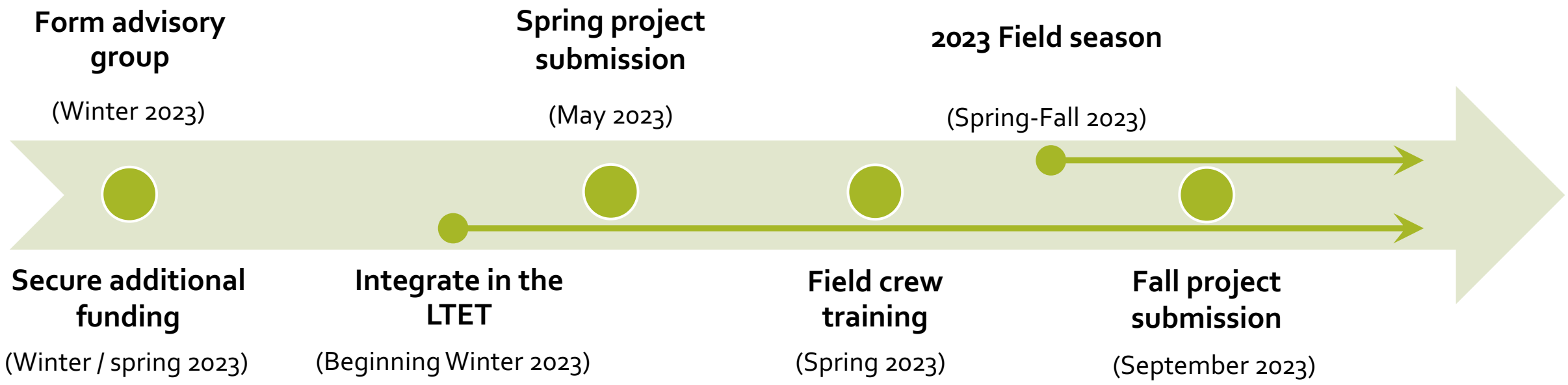
Planned new features

Use **quantitative** monitoring data to assess **treatment outcomes** and inform **adaptive management**

- **Prior treatment outcomes** as a resource for professionals **to design projects**
- **Communicate restoration effectiveness**
- Assess **overall progress** of statewide efforts **to protect or enhance core, intact habitat**

https://usgs.gov/ltet

Timeline – next steps



Thank you!

Baker Sage-grouse LIT

BAKER COUNTY WEED DISTRICT
BLM
PULLING TOGETHER
AGAINST NOXIOUS WEEDS

STATE OF OREGON
OREGON DEPARTMENT OF
STATE LANDS
1859

TRI-COUNTY
CWMA

OREGON
Fish & Wildlife

Private landowners

HIGH DESERT
Partnership

HARNEY SOIL & WATER
CONSERVATION DISTRICT

and Harney CWMA

PHEASANTS
forever
The Habitat
Organization

POWDER BASIN
WATERSHED COUNCIL

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science for a changing world

INSTITUTE
FOR
NATURAL
RESOURCES

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Interested in monitoring your treatments?

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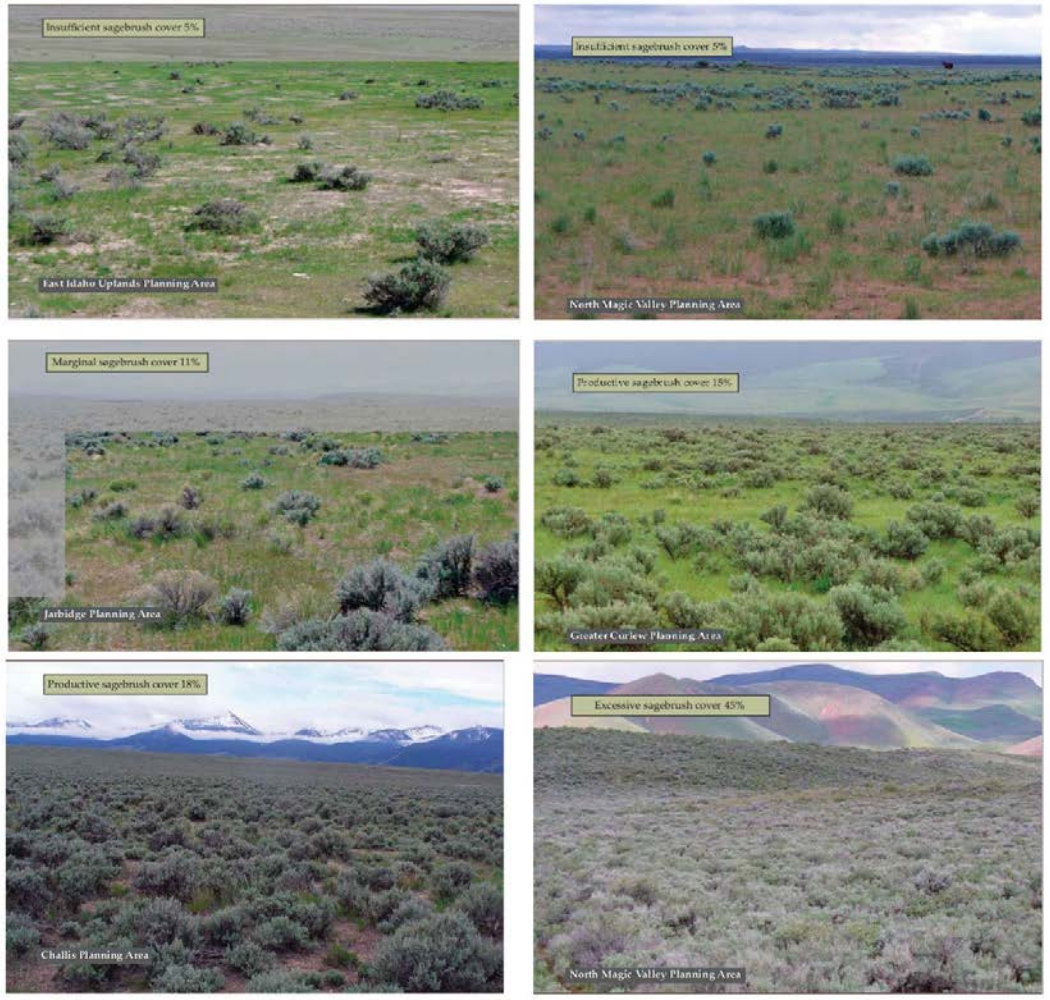
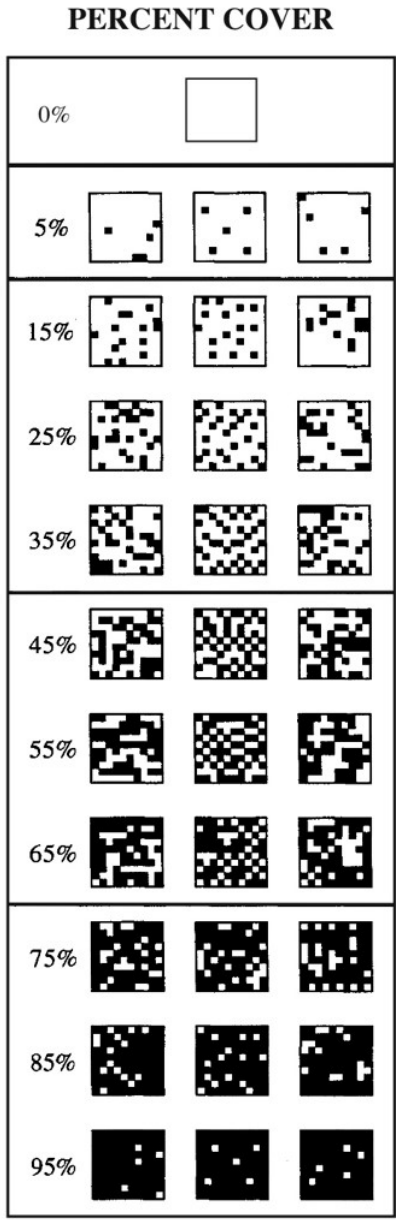
Cover guides





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DOI: 10.1002/ecs2.4195

ARTICLE

ECOSPHERE
AN ESA OPEN ACCESS JOURNAL

Ecosphere v. 13 (8) (2022) p. e4195

Reestablishing a foundational species: Limitations on post-wildfire sagebrush seedling establishment

Robert S. Arkle | **David S. Pilliod** | **Matthew J. Germino** | **Michelle I. Jeffries** | **Justin L. Welty**

Crews also characterized the habitat and other plant species using ocular cover estimates across each 13-m plot, including the cover of bare ground, fertile island microsites, litter, non-native annual grass, non-native forbs, native perennial grasses (NPGs), native forbs, shrubs, and big sagebrush. These estimates were standardized through co-training of field technicians, use of visual aids representing each cover category at each plot (cover bins varied across functional groups), and multi-observer estimation at each plot.

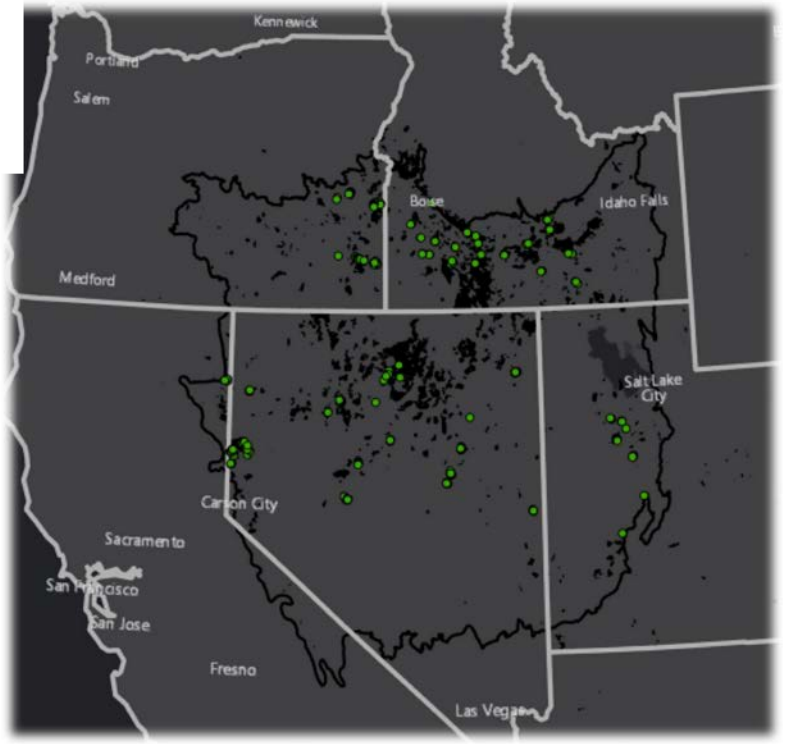


FIGURE 2 Study area showing Great Basin boundary (black line) composed of three level III US EPA ecoregions (Snake River Plains, Northern Basin and Range, and Southern Basin and Range), 460 sagebrush populations (some aerially seeded with sagebrush, some not) sampled 1–2 years post-wildfire (green points), and all historic post-wildfire sagebrush seeding treatments contained within the USGS Land Treatment Digital Library (Pilliod & Welty, 2013) as of July 2017 (black polygons) to provide perspective of overlap between sagebrush habitats that tend to burn and our sample.

Contents lists available at ScienceDirect

Rangeland Ecology & Management

journal homepage: http://www.elsevier.com/locate/rama

Rangeland and Ecology Management v.71(6) (2018) p. 721-726

Appropriate Sample Sizes for Monitoring Burned Pastures in Sagebrush Steppe: How Many Plots are Enough, and Can One Size Fit All?☆,☆☆

Cara Applestein [1], Matthew J. Germino *,[1], David S. Pilliod, Matthew R. Fisk, Robert S. Arkle

US Geological Survey, Forest and Rangeland Ecosystem Science Center, 970 Lusk St, Boise, ID 83706, USA

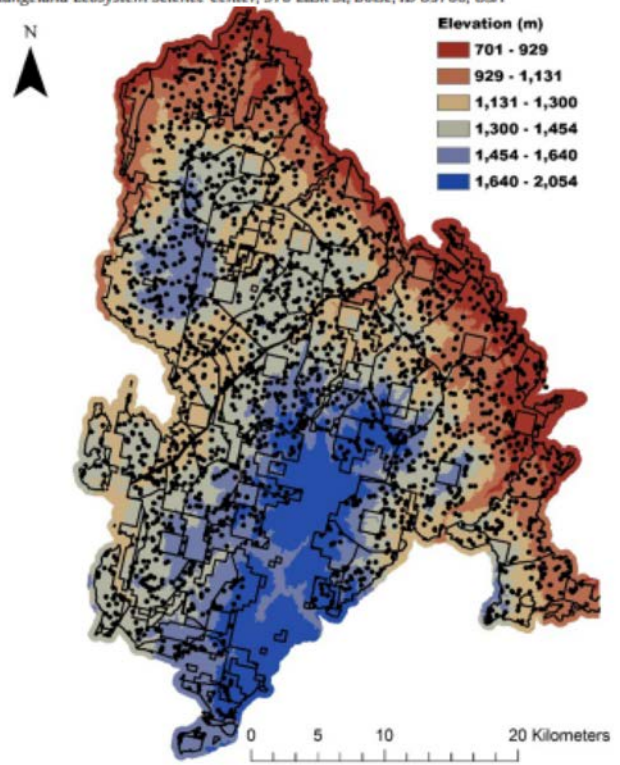
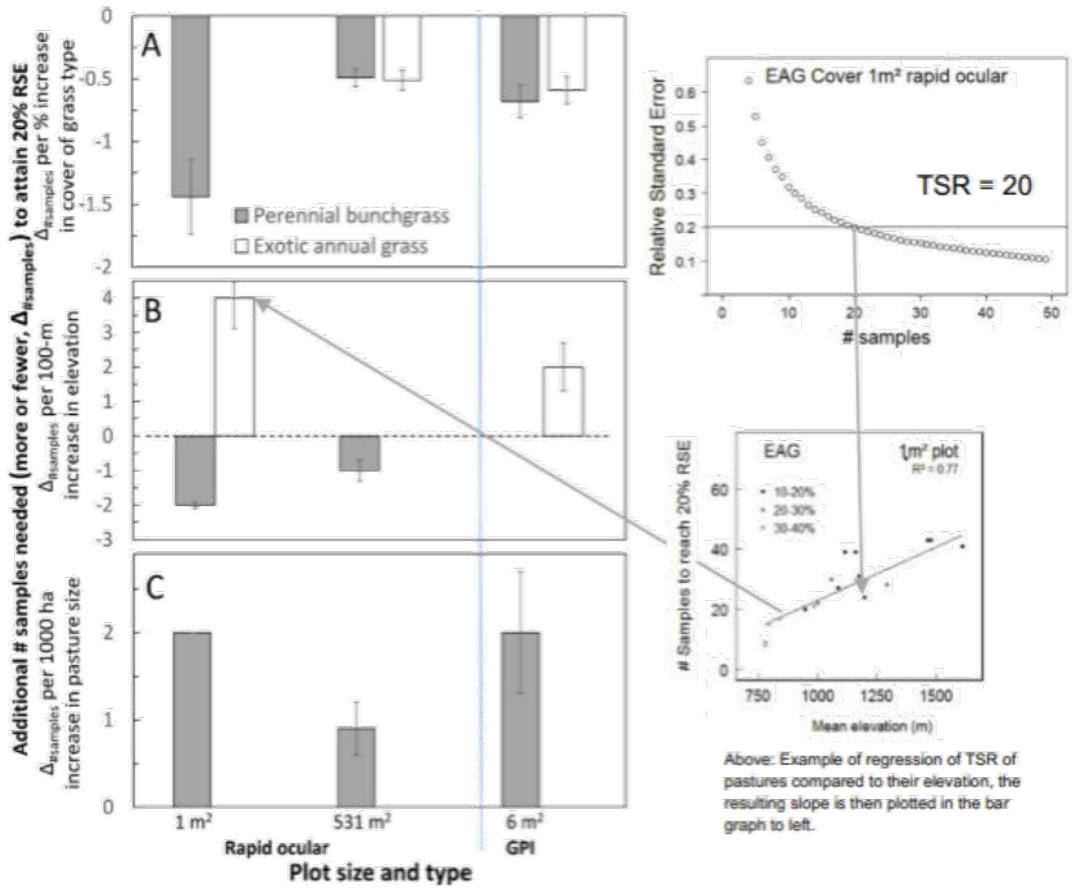


Figure 1. Perimeter and pasture boundaries of the Soda Fire (solid black lines). The black and round symbols show the location of sampled plots. Elevation (color scale) ranges from 701 to 2 054 m (US Geological Survey's Digital Elevation Model, 30 m pixels).



Above: Example of regression of TSR of pastures compared to their elevation, the resulting slope is then plotted in the bar graph to left.

Figure 3. Slopes of the relationships between TSR (threshold sampling requirement, = number of plots needed to attain SE/mean ≤ 0.2) for perennial or exotic annual grasses (EAG) in the different plot size and sampling types to their dominance of (**A**) community cover, (**B**) elevation, and (**C**) pasture size. Regressions show an example of how the data are derived from plots within a pasture (upper right graph) to the slope of TSR and landscape variables across many pastures (lower right graph). See Table 3 for the statistical coefficients and significance for each model.