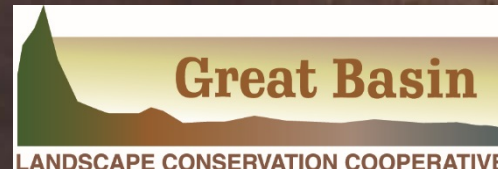


MONITORING VEGETATION RECOVERY FOLLOWING THE 2015 SODA WILDFIRE AND REHABILITATION TREATMENTS

Kyle Calf Looking, Matt Fisk, Cara Applestein, and Matt Germino
U.S. Geological Survey, Boise
Forest and Rangeland Ecosystem Science Center



OVERVIEW

- * The role of fire and changing fire regimes
- * Plant usage - traditional and current
- * Soda fire - treatments & monitoring
- * Take home: academic/cultural outcomes...

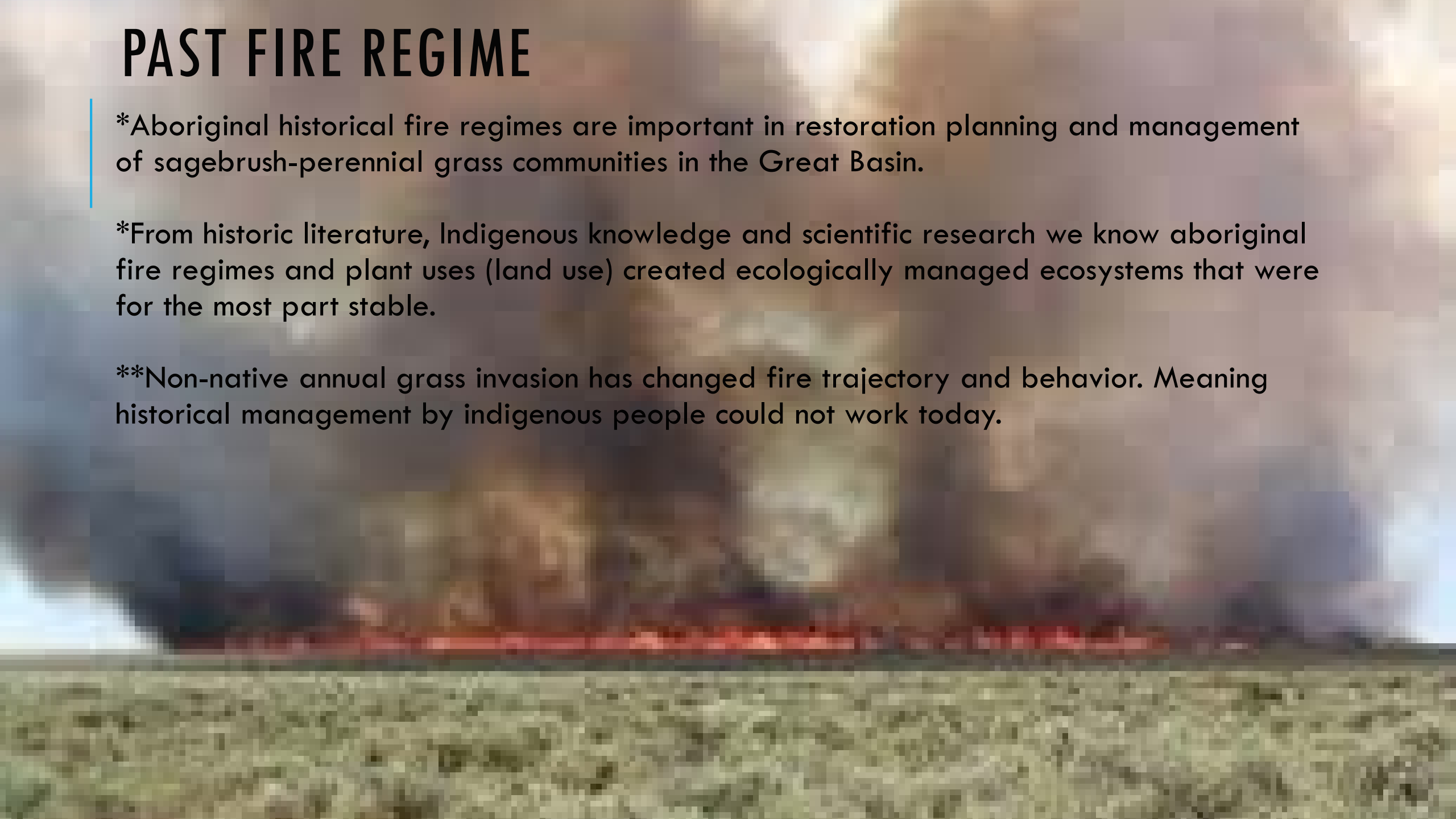
Over-all objective: facilitate a sustainable resilience/resistance based eco-region and habitat.

PAST FIRE REGIME

*Aboriginal historical fire regimes are important in restoration planning and management of sagebrush-perennial grass communities in the Great Basin.

*From historic literature, Indigenous knowledge and scientific research we know aboriginal fire regimes and plant uses (land use) created ecologically managed ecosystems that were for the most part stable.

**Non-native annual grass invasion has changed fire trajectory and behavior. Meaning historical management by indigenous people could not work today.



TRADITIONAL PLANT USAGES

Many plants provided ailments, tools, and food for local tribes with roots being a significant source.

Examples of species found on Soda Fire (* indicates species used in rehabilitation seed mixes)

- Big Sagebrush (*Artemisia tridentata*)*
- Fourwing Saltbush (*Atriplex canescens*)
- Bluebunch Wheatgrass (*Pseudoroegneria spicata*)*
- Indian Ricegrass (*Achnatherum hymenoides*)*
- Wood's Rose (*Rosa woodsii*)
- Fernleaf Biscuitroot (*Lomatium dissectum*)*
- Woollypod Milkvetch (*Astragalus purshii*)
- Fuller's Teasel (*Dipsacus fullonum*)
- Arrowleaf Balsamroot (*Balsamorhiza sagittata*)*
- Bitter Root (*Lewisia rediviva*)
- Basin Wildrye (*Leymus cinereus*)*
- Utah Serviceberry (*Amelanchier utahensis*)
- Chokecherry (*Prunus virginiana*)
- Small Camas (*Camassia quamash*)
- Western Wheatgrass (*Pascopyrum smithii*)
- White Sagebrush (*Artemisia ludoviciana*)

Artemisia tridentata

Big Sagebrush

200+ ethnobotanical uses

- Great Basin tribes/ Navajo (Dine`)
 - Drug (Cold Remedy)
 - Plant used for colds.
 - Fiber (Building Material)
 - Used between the poles of the sweatlodge to prevent the sand from sifting through.
 - Drug (Gastrointestinal Aid)
 - Decoction of plants taken for stomachaches.
 - Drug (Sports Medicine)
 - Plant taken before long hikes & athletic contests to rid the body of lingering, undesirable things.



Atriplex canescens

Fourwing Saltbush

45+ ethnobotanical uses

- Navajo, Ramah
 - Dye (Yellow)
 - Young leaves and twigs used to dye wool yellow.
- Havasupai
 - Drug (Misc. Disease Remedy)
 - Leaves made into a soapy lather and used for itches or rashes, such as chickenpox or measles.
- Hopi
 - Drug (Ceremonial Medicine)
 - Plant used for kiva fires.
- Navajo, Ramah
 - Food (Spice)
 - Leaves placed on coals in pit for roasting corn, to impart a salty taste.



Pseudoroegneria spicata

Bluebunch Wheatgrass

- Okanagan-Colville
 - Drug (Antirheumatic (External))
 - Decoction of leaves used for bathing sore, swollen, crippled or paralyzed limbs caused by arthritis.
 - Food (Forage)
 - Plant used as grazing grass for livestock and deer.



©2015 Justin J. Trujillo



Leymus cinereus

Basin Wildrye

18+ ethnobotanical uses

- Nlaka'pamux
 - Other (Cooking Tools)
 - Stout culms broken into lengths and poked into edges of cut fish to hold it flat while drying.
- Okanagan-Colville
 - Other (Toys & Games)
 - Stems straightened, notched, fixed with wooden tips into arrows and used in games.
- Nlaka'pamux
 - Fiber (Basketry)
 - Culms used for basket imbrication as a substitute for another plant or other swamp grasses.



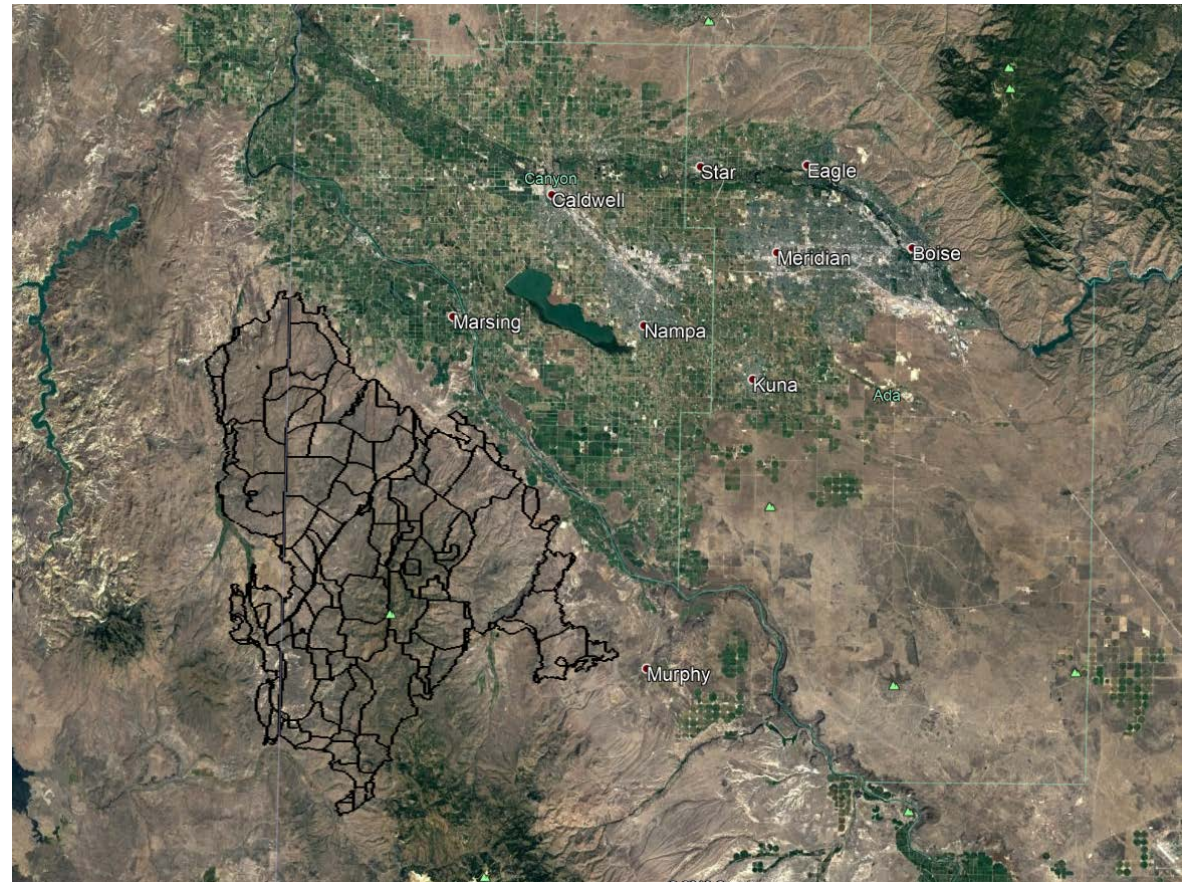
SODA FIRE

Burned August 10-25 2015 (15 days)

- Started 8 miles northeast of Jordan Valley, OR
- Lightening caused

279,144 acres in Owyhee (ID) and Malheur (OR) counties

Elevation range from 706-2054m



ESR PROCESS AND CULTURAL PROTECTION

Rapid Assessment Process

- Field reconnaissance and data compilation/analysis of damage

Coordinated effort between BLM field offices, Tribes, state and federal agencies, landowners, permittees, and suppression forces; threats include:

- Invasive plant species
- Habitat recovery for threatened species
- Increased runoff, erosion potential, and flooding
- Loss of cultural resources

Under the Emergency Stabilization (ES) treatment is Cultural Protection.

* 12 cultural sites were identified by the Owyhee field office recreational planner 08/22/15-08/26/16

* One negative outcome of fire is it makes looting more apparent since there is soil exposure of rock structures and other artifacts.

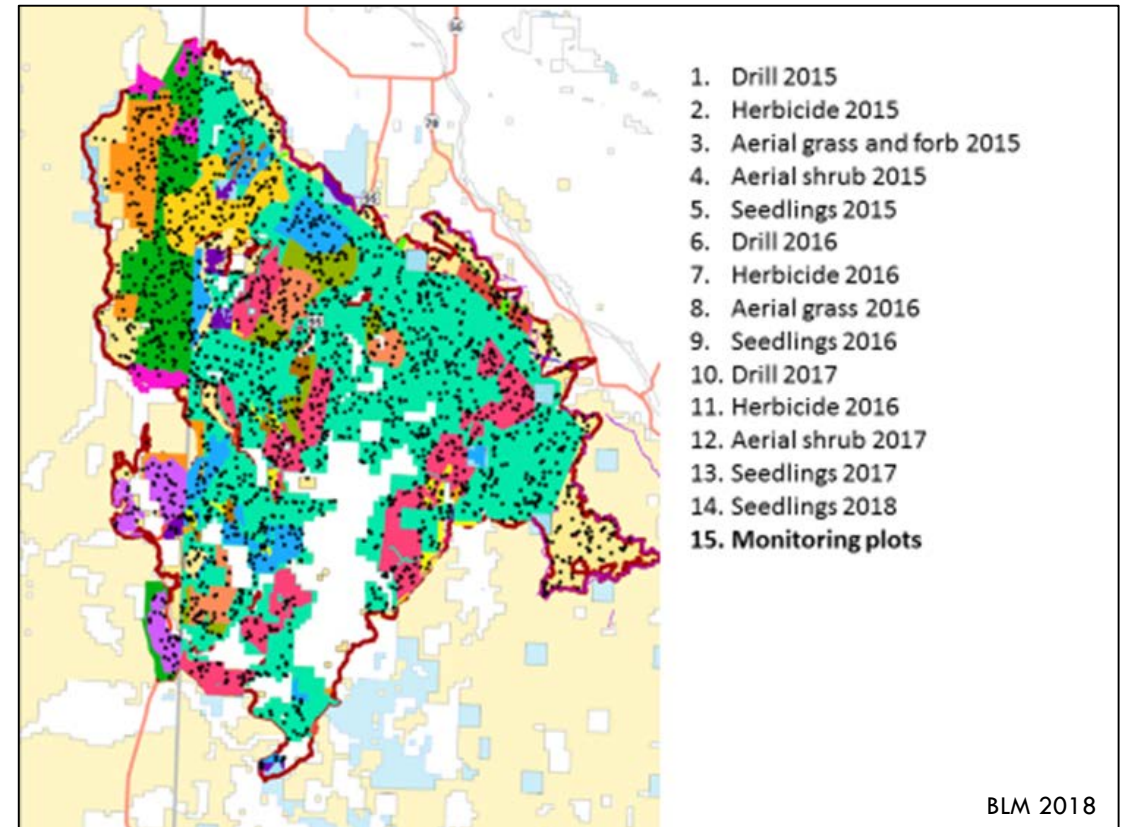
TREATMENTS

Drill Seeding

Aerial Grass / Shrub / Forb Seeding

Herbicide

Outplanting of sagebrush



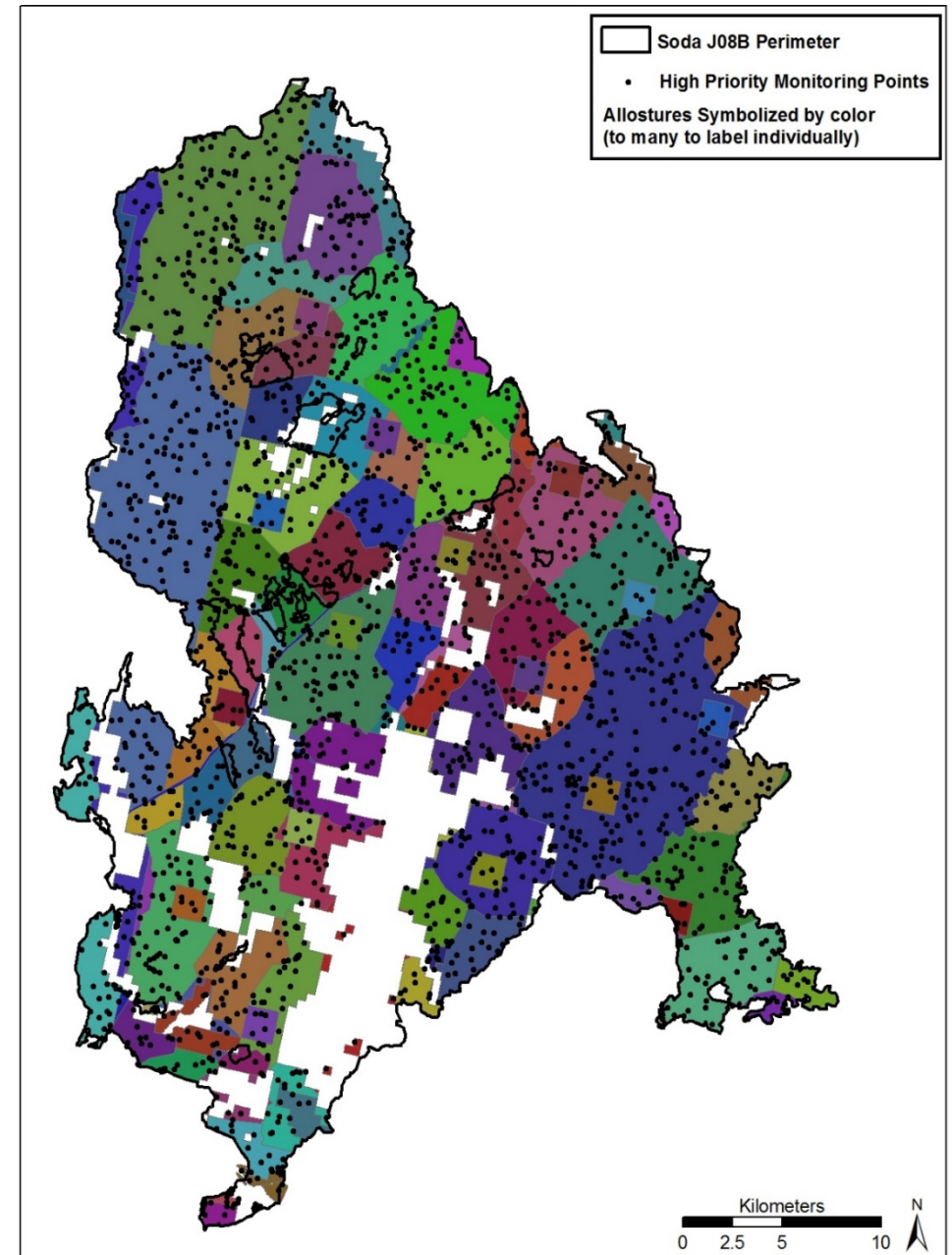
Monitoring and adaptive-management

Over 2,000 plots sampled each year, covering > 2 million square meters

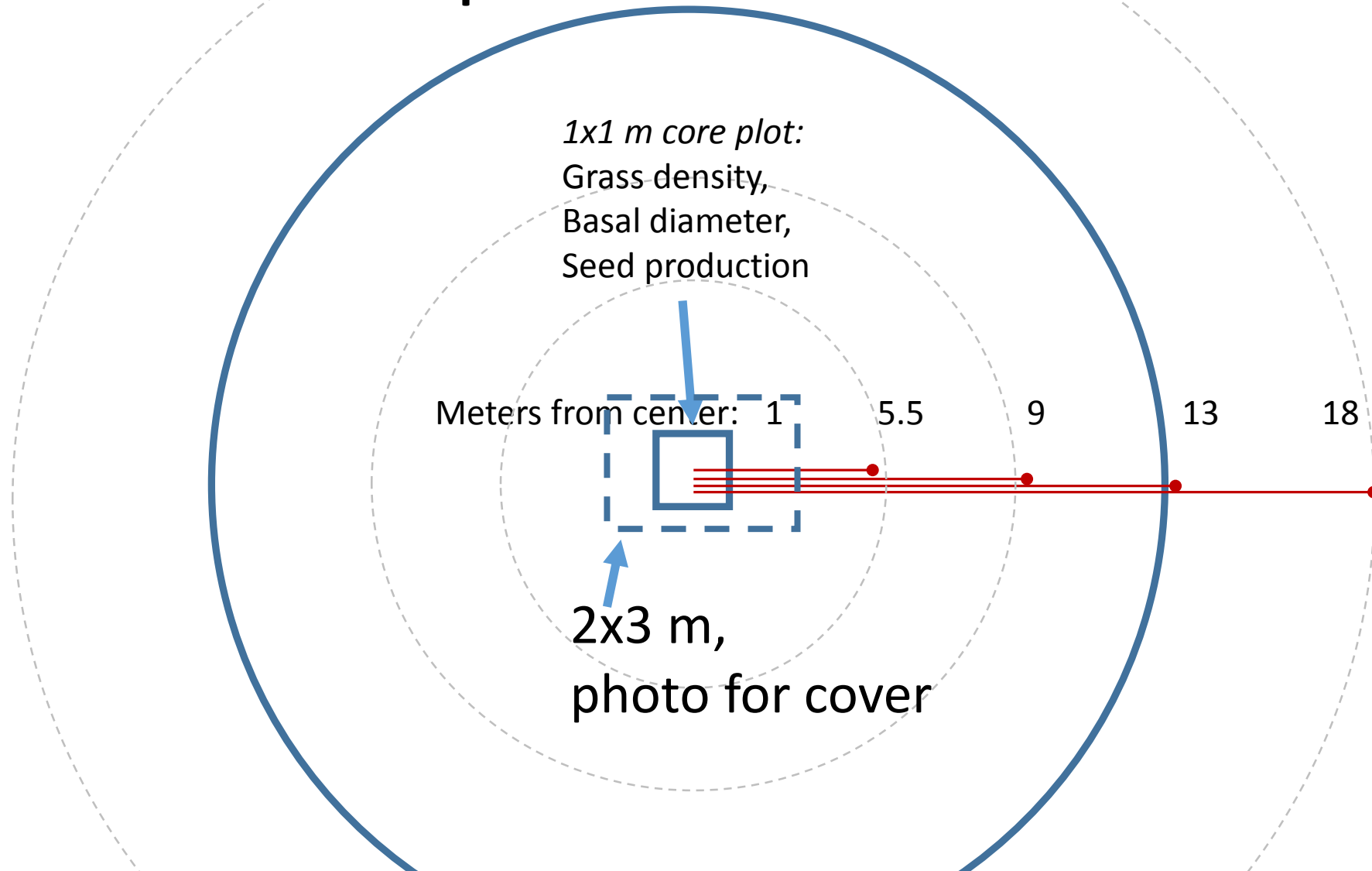
Currently in year 3 of 5 of monitoring

Monitoring is for:

- 1) Grazing resumption decisions
- 2) Adaptive management (retreatment decisions)
- 3) Answer research questions

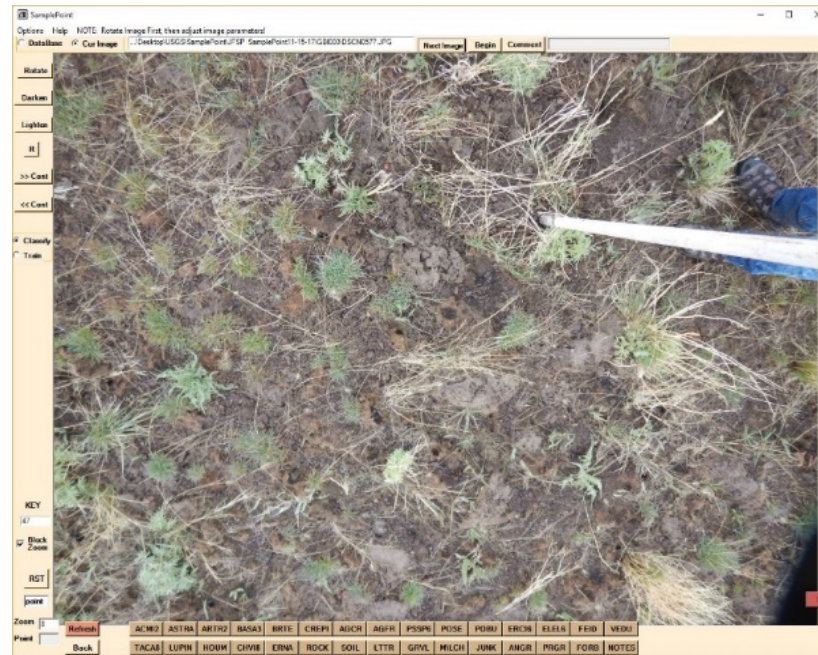


Measurements and plot size:



Frequency-Density could be 1 to 1000 m² searched.
Root sampling outside of plot in representative places.

MONITORING



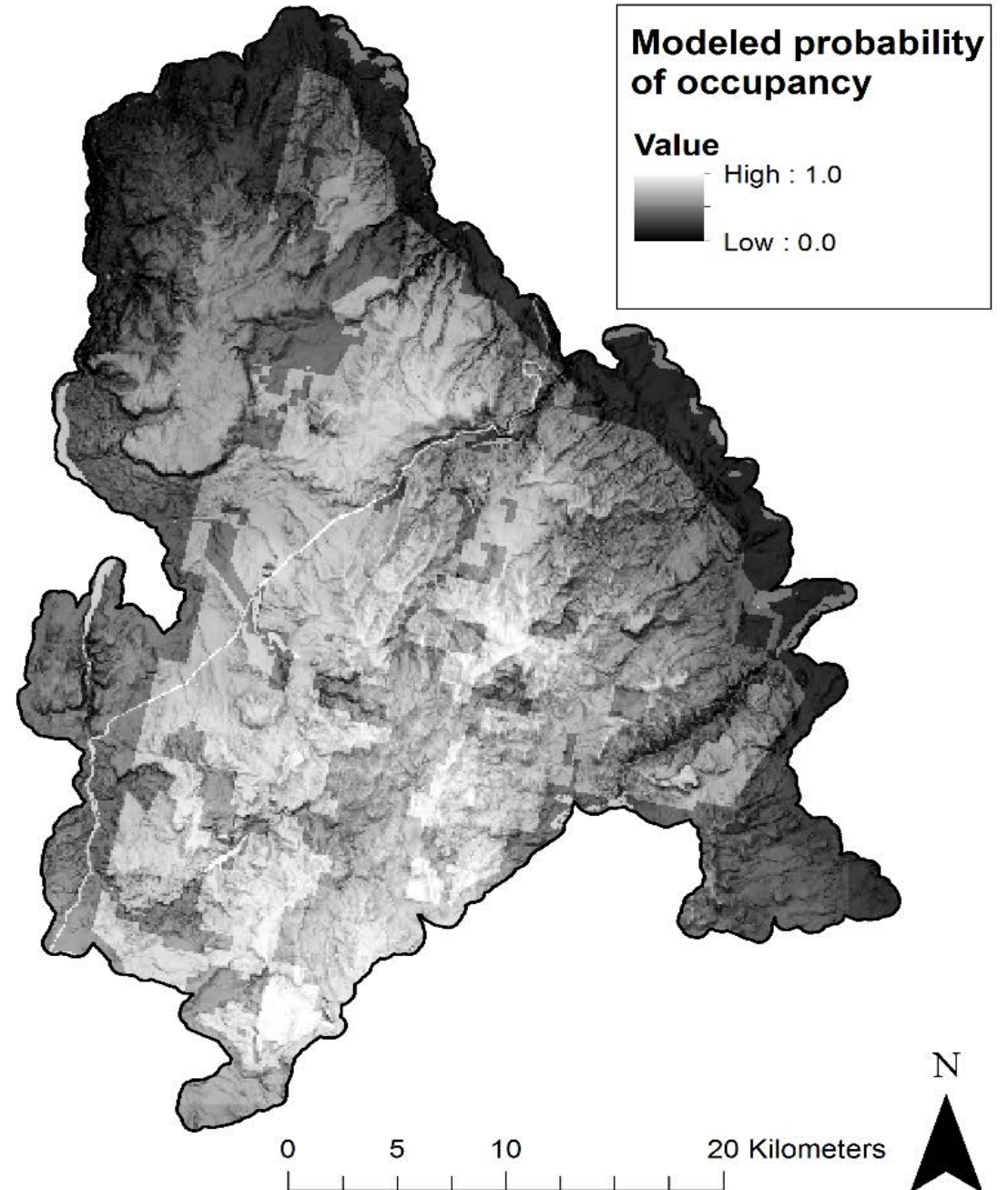
Field and software collection of data - overhead and perspective photos for each point. Mesa tablets save info instantly into cloud and photos analyzed in samplepoint software.

- * Two man monitoring teams collect data on seeded species and sagebrush establishment, cover of functional groups, species richness, perennial grass size, and grass reproduction.
- * Long term project to see if treatments are progressing.
- * Will help inform how to rehabilitate future megafires for resistant/resilient ecosystems

RECOVERY IN PROGRESS



Recovery in Progress.
Seeding led to >double the
occupancy of sagebrush seedlings
found in lowest elevations.



QUESTIONS?

