From: Chambers, Jeanne -FS
To: Baxter, Ronald; Ted Koch; Todd Hopkins; Melvin (Joe) Tague; Heater, Thad - NRCS, Reno, NV; Tim Rubald; Tom Warren; zane.marshall@snwa.com; Selena Werdon; Steve Abele; Shaw, Nancy L -FS; jeff.white@newmont.com; smithcreekcowboy@hotmail.com; Glover, Brett -FS; Gail_Collins@fws.gov; eleger@cabnr.unr.edu; bperryman@cabnr.unr.edu; Sarah Kulpa; Carolyn Wells; Amy Lueders; Dunkelberger, William -FS; ldrozdoff@dcnr.nv.gov; cthunt@gov.nv.gov; Petersen, Bruce - NRCS, Reno, NV; john.entsminger@snwa.com; Ken Mayer; david_a_pyke@usgs.gov; Noreen Walsh; John Wilson; leeturner@ndow.org; Melissa Faigeles
Subject: RE: Nevada Cheatgrass Action Committee Meeting, NRCS Office, Reno, July 31st, 8:30am - 12:30pm
Date: Thursday, August 01, 2013 7:32:57 AM
Attachments: 13 Chambers Cheat Action Team2.pdf

Hello Everyone,

I enjoyed our discussions yesterday and look forward to working with the land owners. Attached is the powerpoint presentation that I promised to send out.

Best Regards,

Jeanne

Jeanne C. Chambers, Ph.D.
USDA Forest Service
Rocky Mountain Research Station
920 Valley Road
Reno, NV 89512
(775) 784-5329 (office)
(775) 224-1854 (cell)

jchambers@fs.fed.us

http://www.fs.fed.us/rm/reno

http://greatbasin.wr.usgs.gov/gbrmp/

From: Baxter, Ronald [mailto:ronald_baxter@fws.gov]
Sent: Tuesday, July 23, 2013 10:59 AM
To: Ted Koch; Todd Hopkins; Melvin (Joe) Tague; Heater, Thad - NRCS, Reno, NV; Tim Rubald; Tom Warren; zane.marshall@snwa.com; Selena Werdon; Steve Abele; Shaw, Nancy L -FS; jeff.white@newmont.com; smithcreekcowboy@hotmail.com; Glover, Brett -FS; Gail_Collins@fws.gov; eleger@cabnr.unr.edu; bperryman@cabnr.unr.edu; Chambers, Jeanne -FS; Sarah Kulpa; Carolyn Wells; Amy Lueders; Dunkelberger, William -FS; ldrozdoff@dcnr.nv.gov; cthunt@gov.nv.gov; Petersen, Bruce - NRCS, Reno, NV; john.entsminger@snwa.com; Ken Mayer; david_a_pyke@usgs.gov; Noreen Walsh; John Wilson; leeturner@ndow.org; Melissa Faigeles
Subject: Nevada Cheatgrass Action Committee Meeting, NRCS Office, Reno, July 31st, 8:30am - 12:30pm

All:

We hope you will be able to join us for a formative meeting of the Nevada Cheatgrass Action Committee. The purpose of this meeting is to explore with our working partners, the

Committee's goals to formulate a strategic plan to address the rapid expansion of cheatgrass. Initially, we hope to provide background on the concepts of a strategic plan, understand our Partner's goals, and to organize the group into a cohesive cooperative effort. All opinions and viewpoints are welcome.

Attached is the meeting agenda, including a call in number if you are unable to attend in person.

We hope to see you there,

Ron

--
Ronald J. Baxter
Endangered Species Biologist
U.S. Fish and Wildlife Service
1340 Financial Blvd., Suite 234
Reno, NV 89502
(775) 861-6377 (office)
(951) 237-8404 (cell)

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

Strategic approach to managing cheatgrass

Jeanne Chambers

CHEATGRASS INVASION

- Cheatgrass conversion (>6%)
  - 80% susceptible;
  - 45% of that area moderate to high risk
- Pinyon and juniper woodlands (>10%)
  - 2-6 fold increase since 1860
  - Canopy closure in next 50 yrs
- Larger and more frequent fires

Overarching Objective

- *Increase resilience of native ecosystems to disturbance*
- *Enhance resistance to invasive species*
  - Decrease cheatgrass abundance & spread
  - Increase perennial herbaceous species
  - Maintain desirable amount of sagebrush

- *Habitat for Greater Sage-Grouse and other sagebrush obligate species*
- *Ecosystem services such as clean air and water*

CURRENT MANAGEMENT

- Local-scale treatments/actions
  - Single or a few issues
  - Opportunistic - post-fire ESR, BAER

Mixed Success~

- Fire rehabilitation effectiveness
  - Aerial seeding largely ineffective
  - Drill seedling establishes introduced species – not natives
  - Sagebrush seeding largely ineffective. (Pyke et al. in process)

STRATEGIC PLANNING

Larger scales –

- *Objectives* – which are the most important issues?
- *Assessment* – what are the environmental characteristics, ecological site types, and ecological site conditions?
- *Diagnosis* – how is the landscape functioning; where are the areas of concern?

STRATEGIC PLANNING

Larger scales –

- *Management Activities/Treatments*–
  - Spatial design - where should current management practices be changed and/or treatments be implemented?
  - Evaluation of alternatives – what are the management/treatment options and which will have the greatest long-term positive effects?
  - Information needs – what are the critical research needs?
- *Identification of partners* – who needs to be involved to ensure success?
- *Monitoring* – how will monitoring be accomplished and needed adjustments made?

AVAILABLE TOOLS

- Climate information
  - Enhanced climate monitoring for Nevada (NOAA Coop Stations)
  - Tools for determining water deficit and seasonal forecasting
- NRCS soil surveys – 1:24,000 scale
  - Information on soil depth, texture, organic matter, structure, moisture
  - Mostly complete – still lacking parts of HTNF
- NRCS ecological site descriptions
  - Land units defined by climate, topography, soils and vegetation
  - State and transition models that describe plant community dynamics as affected by invasives, disturbance & management treatments
  - Good drafts for most of Nevada
- GIS capacity to develop assessments at management scales

Great Basin Vegetation Types

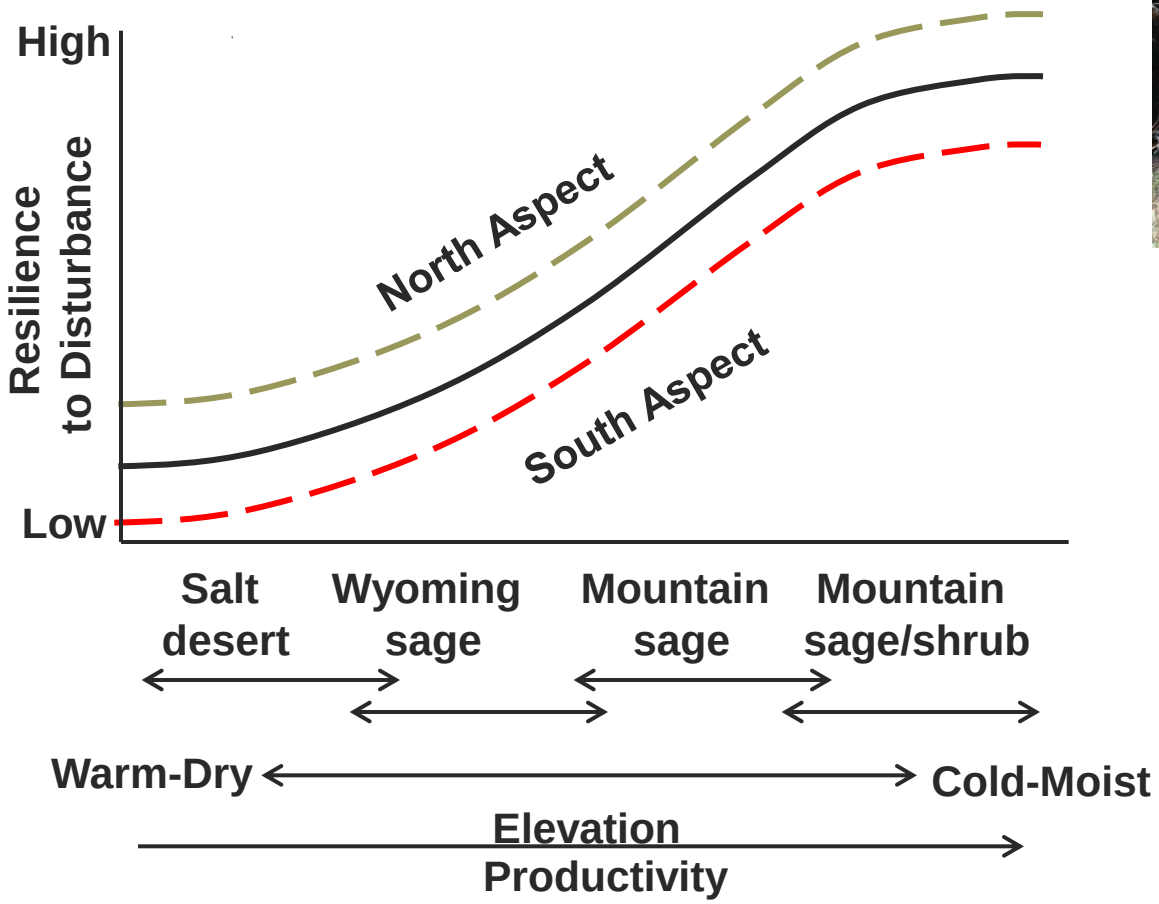
4”

12”

24 +”

Annual Precipitation

Resilience to Disturbance

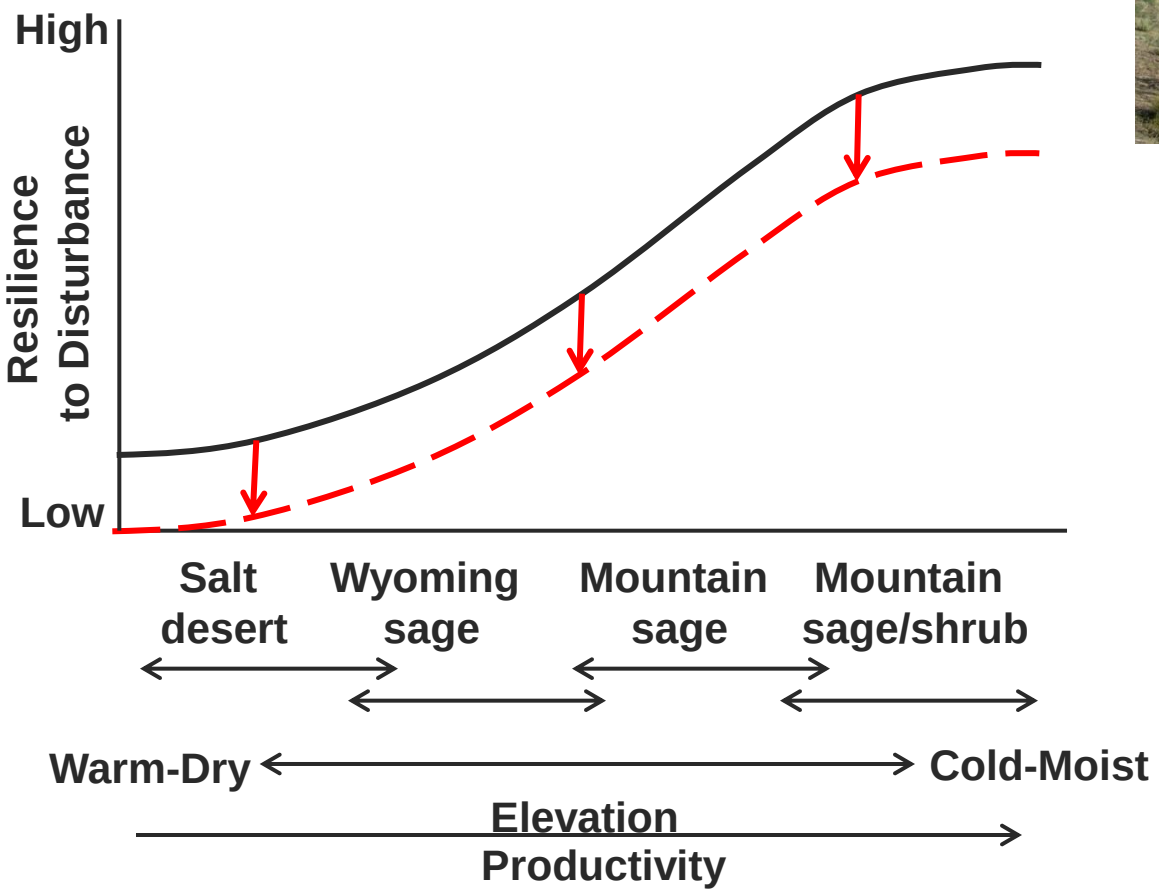


Resilience changes over environmental gradients

- Productivity & more favorable growing conditions
- Highest for mountain big sage and mountain brush
- Lowest for salt desert

(Wisdom & Chambers 2009; Brooks and Chambers 2011; Condon et al. 2011, Chambers et al in press.; Miller et al. in press)

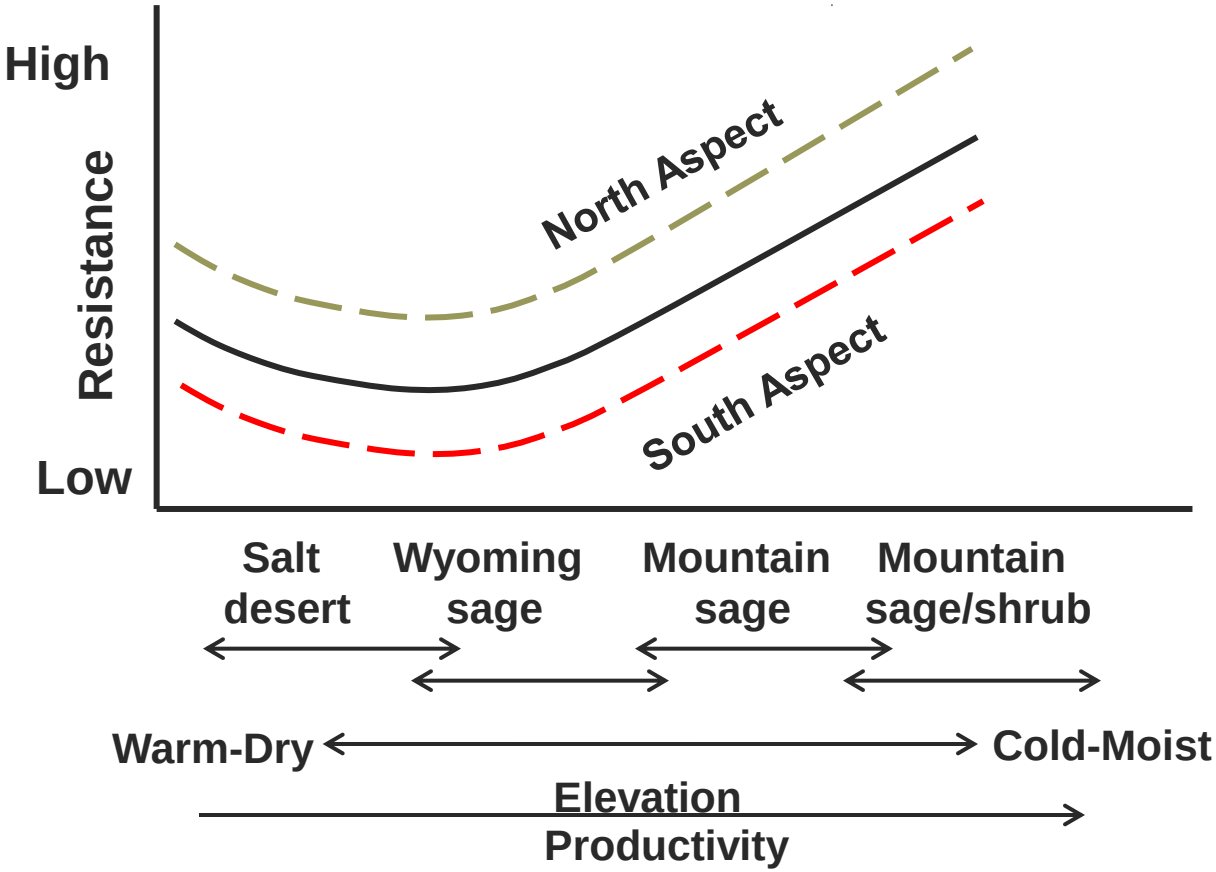
Resilience to Disturbance



Resilience decreases with disturbance/stress outside of historic range of variability

- Changes in vegetation structure or composition
  - ↑ Woody species
  - ↓ Perennial grass/forb
  - ↑ Invasive species
- Altered fire regimes
  - ➢ Severity, size, frequency

Resistance to Cheatgrass

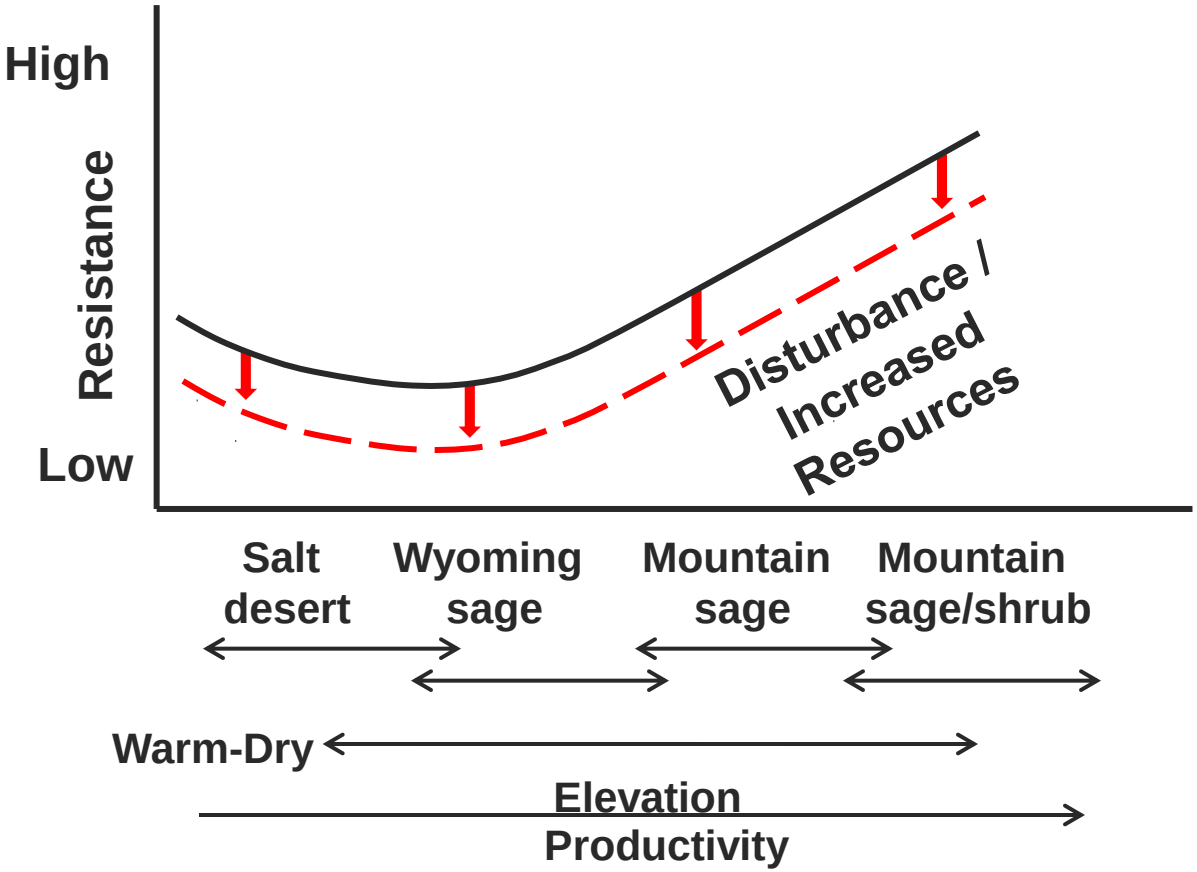


(Chambers et al. 2007)

Resistance reflects environmental suitability

- Suitability differs
  - Lowest- salt desert and mountain sage/shrub
  - Highest- Wyoming sage
- Actual abundance determined by native community

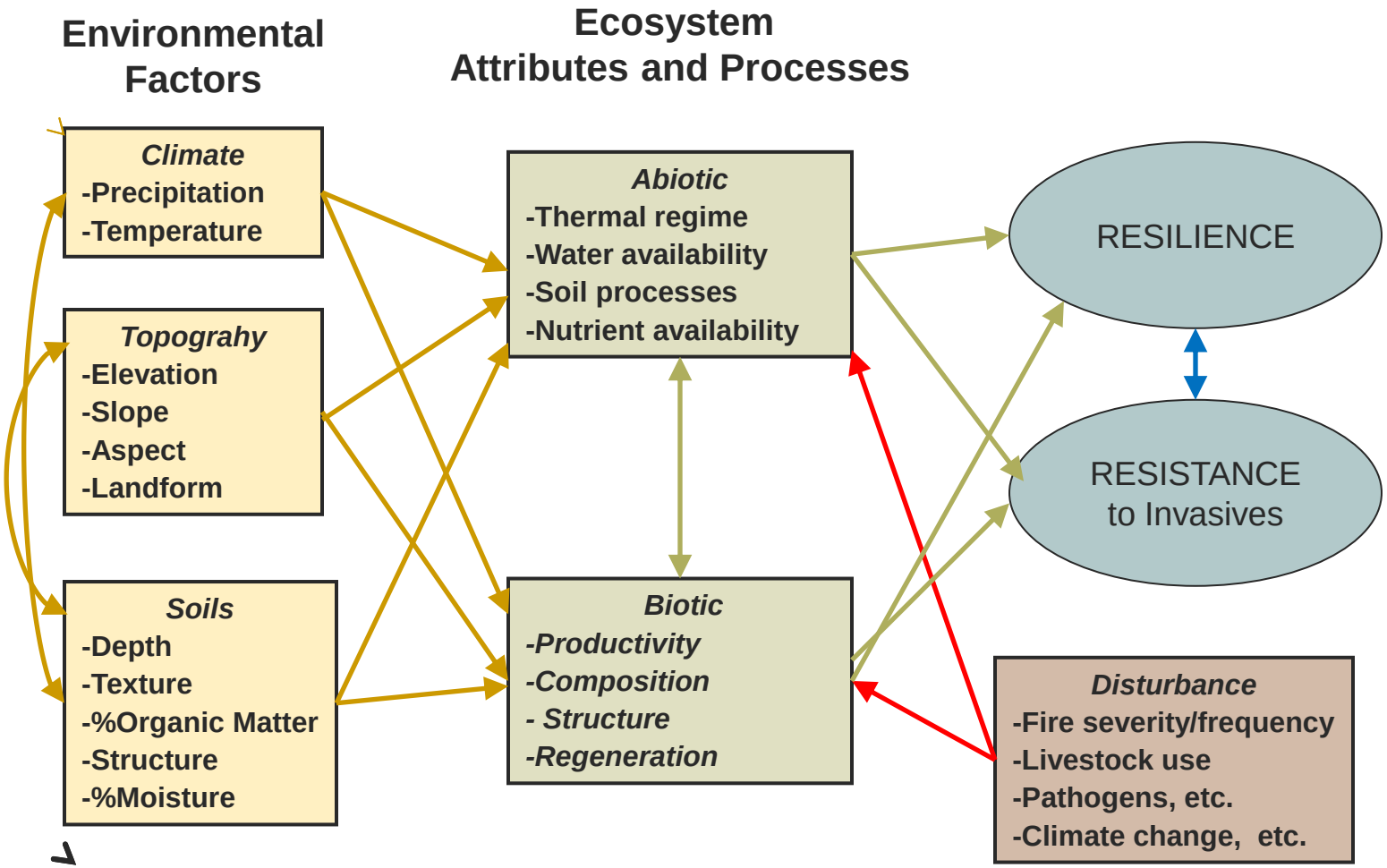
Resistance to Cheatgrass



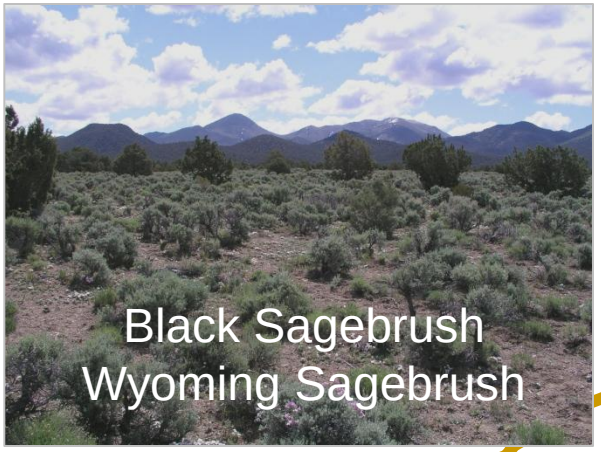
Resistance decreases with disturbance/stress

- Disturbance severity & increases in resources
  - Removal – 2 to 3 fold
  - Burning – 2 to 6 fold
  - Removal + Burning –10 to 30 fold
- Perennial grasses and forbs best competitors

Factors Affecting Resilience and Resistance



Sagebrush Treatment Evaluation Project

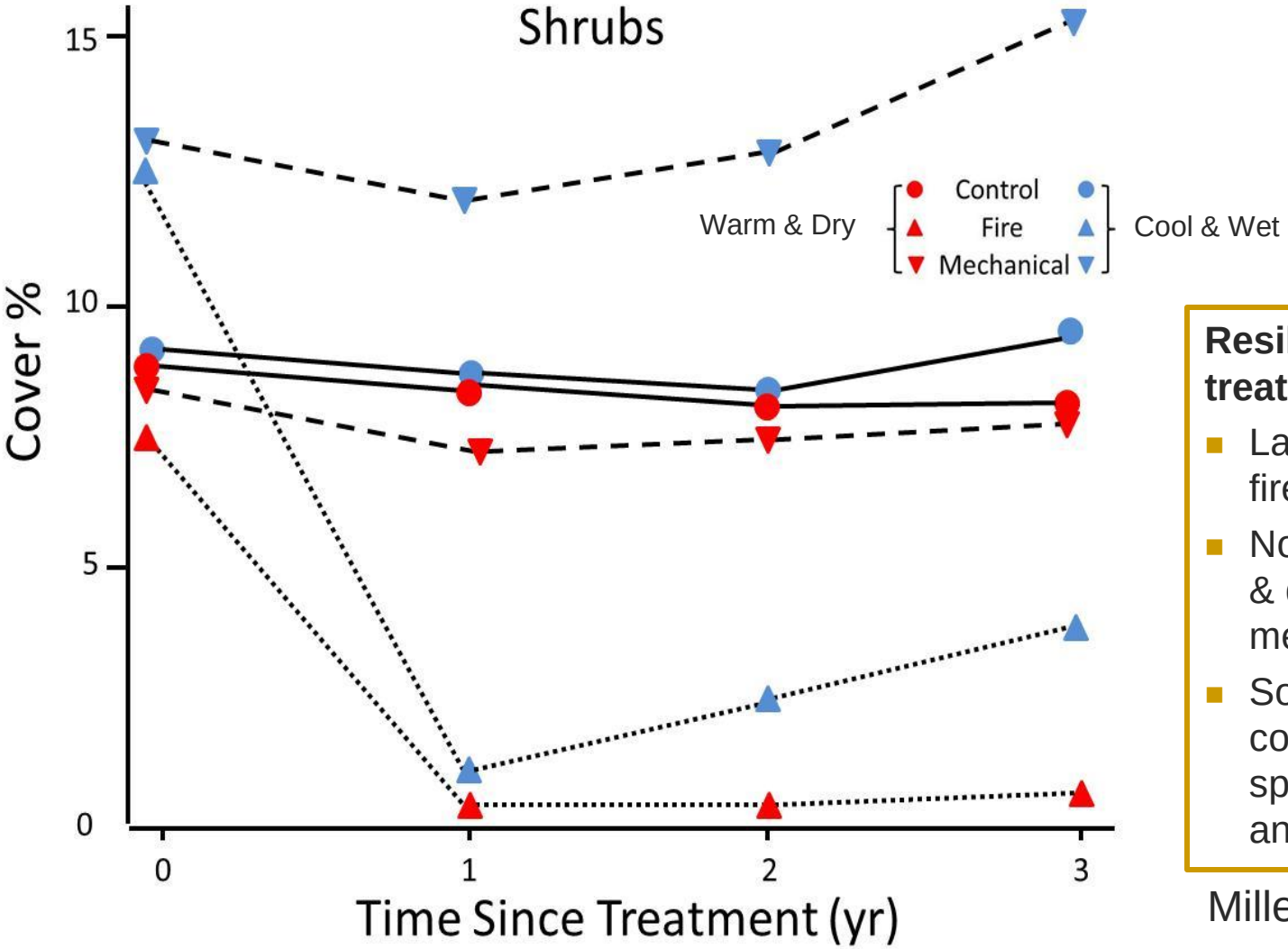


SageSTEP.org

Warm & Dry

Cool & Wet

Effect of Fire vs Mechanical treatments

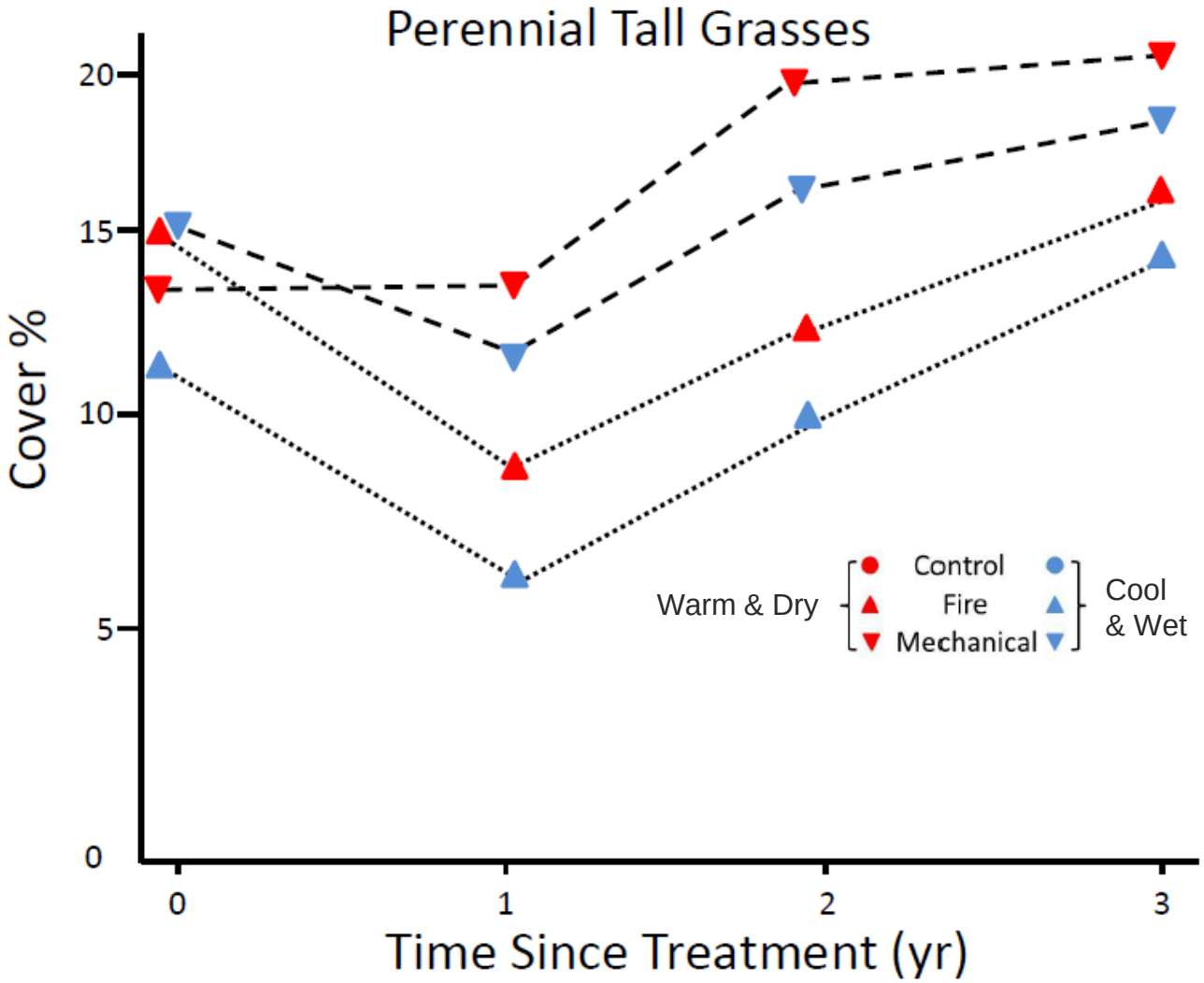


Resilience depends on treatment

- Large decrease after fire
- No increase on warm & dry after mechanical or fire
- Some increase on cool& wet (root sprouters) after fire and mechanical

Miller et al. in process

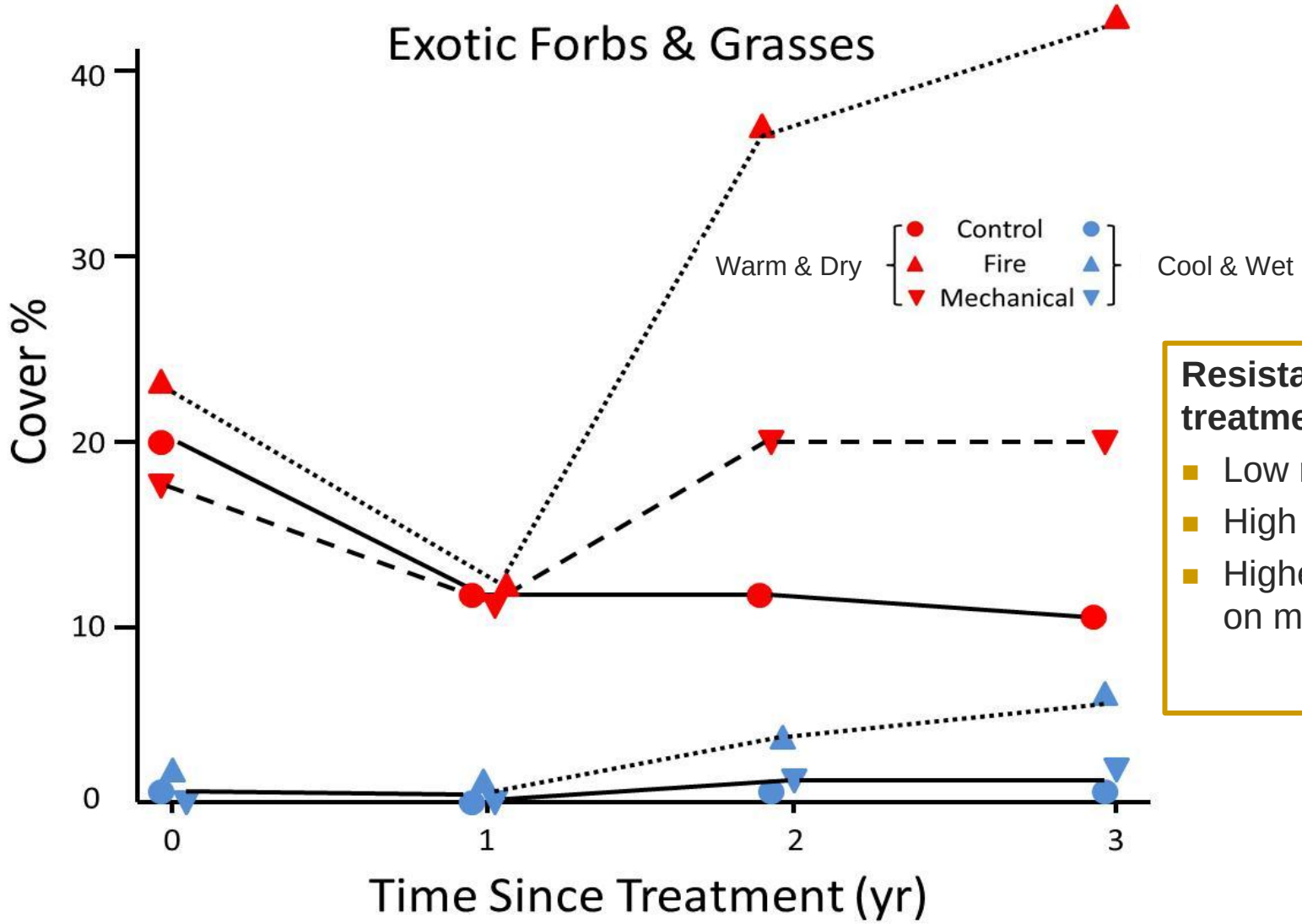
Effect of Fire vs Mechanical treatments



Resilience to treatment moderate to high

- Temporary decrease after fire
- Longer-term increase on all treatments
- No differences in warm and dry vs cool and wet for these sites

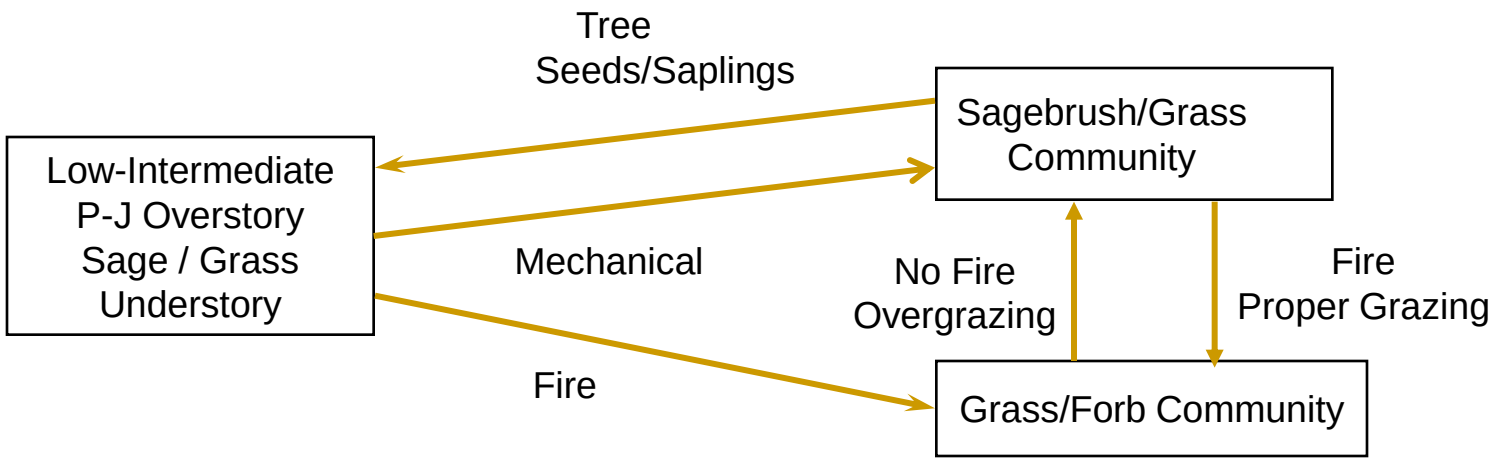
Effect of Fire vs Mechanical treatments



Resistance site & treatment dependent

- Low risk on frigid
- High risk on mesic
- Highest risk after fire on mesic

State and transition Model
State I – Wyoming/mountain Sage



Highest resilience and resistance

- Lower treatment severity
- Sufficient perennial grasses and forbs to facilitate recovery

Caveats

- Cheatgrass will probably always occur on Wyoming sage and warmer mountain big sage sites given a seed source
- Wyoming sage highest risk of cheatgrass dominance after fire
- Overgrazing post treatment can result in cheatgrass dominance

Chambers et al. in process

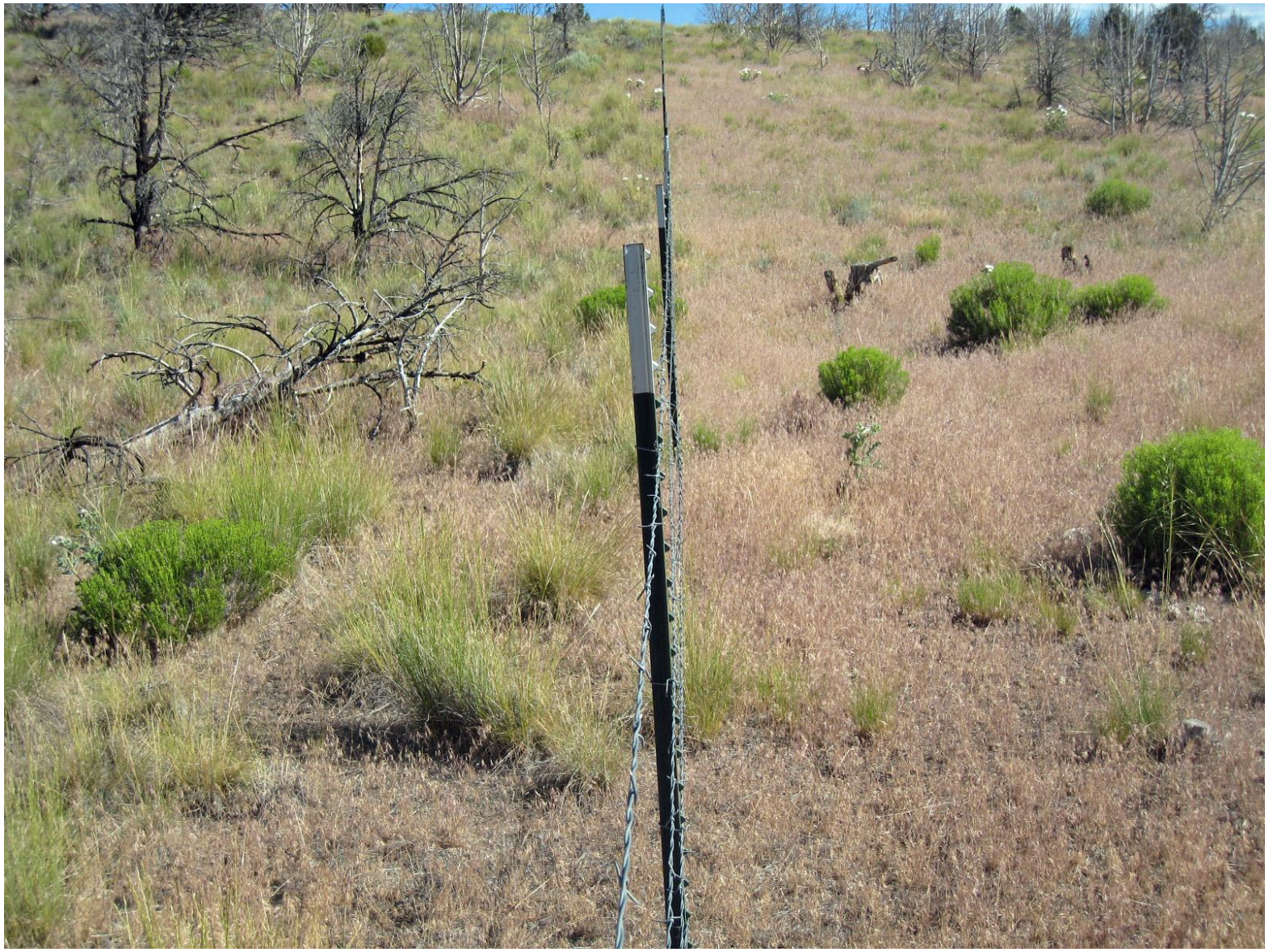
Warm/dry basin big sagebrush and bluebunch wheatgrass site

3 years post-burn

Cool/wet mountain big Sagebrush and Idaho Fescue site

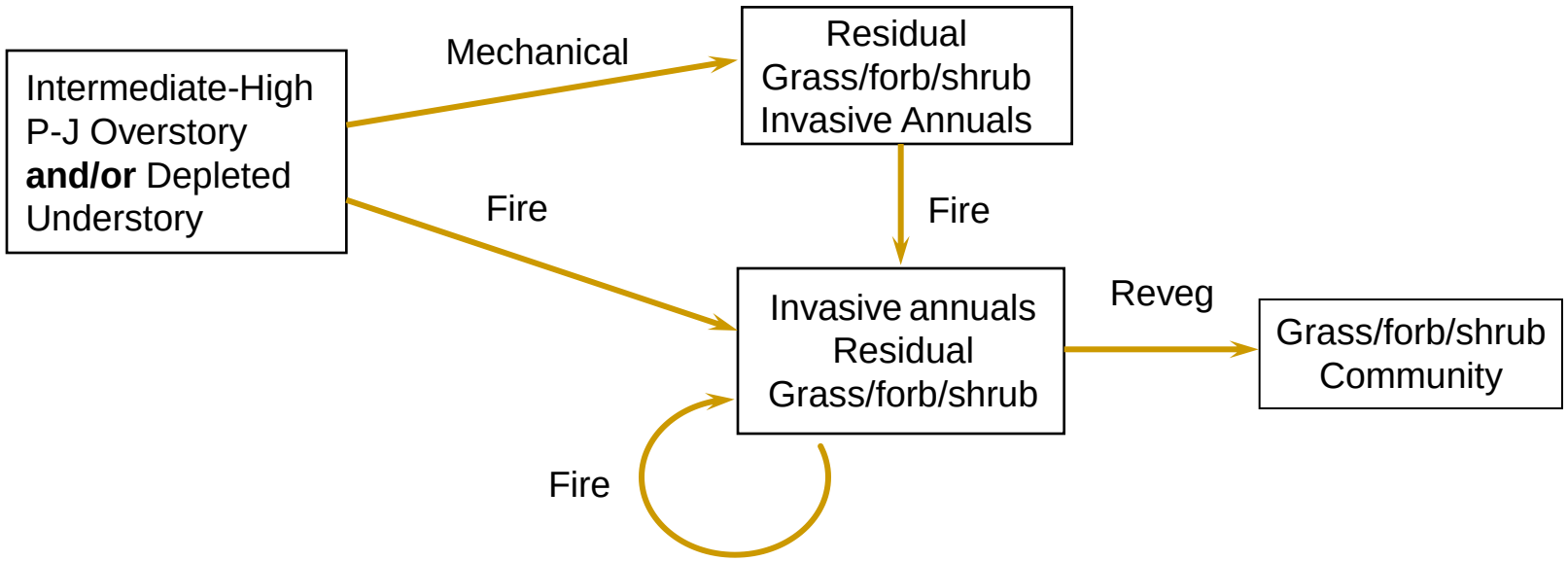
3 years post-burn

Black sagebrush/Wyoming sagebrush
and bluebunch wheatgrass site
5 years post-treatment



Black sagebrush/Wyoming sagebrush
and bluebunch wheatgrass site
5 years post-treatment

State II – Wyoming/ warmer mountain Sage



Lowest resilience and resistance

- High treatment severity
- Insufficient grasses and forbs to facilitate recovery

Caveats

- Effects of mechanical vs fire will depend on site conditions
- Revegetation can be difficult on warmer and drier sites
- Livestock management necessary

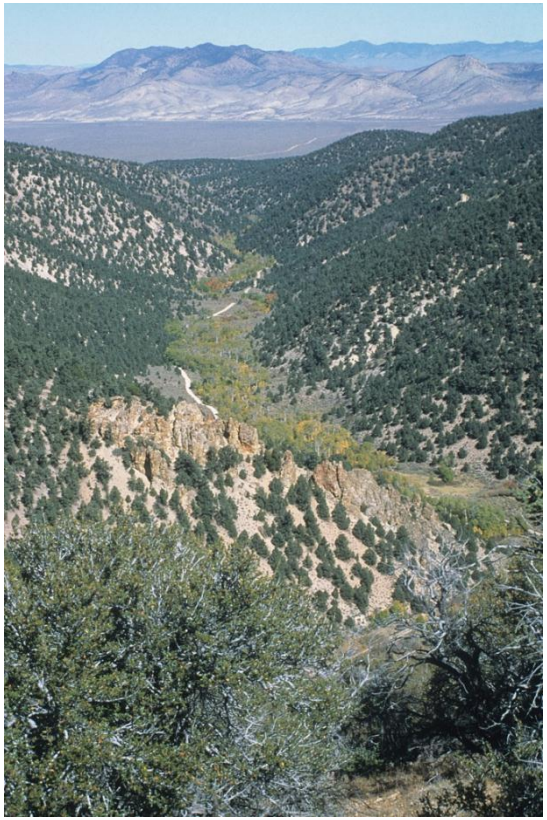
Warm mountain big sagebrush and Idaho fescue site

5 years post burn

Strategic Planning Approach

Current tools and ecological understanding allow strategic planning based on resilience and resistance

- *Management Activities/Treatments* –
  - Spatial design - where should current management practices be changed and/or treatments be implemented?
  - Evaluation of alternatives – what are the management/treatment options and which will have the greatest long-term positive effects?
    - *Protection*
    - *Prevention*
    - *Restoration*
    - *Monitor and Adapt*



Protection

- Areas with inherently low resistance or resilience (salt desert, Wyoming sage)
- Areas of high conservation value

- Eliminate stressors like repeated fire and inappropriate livestock grazing
  - Use active fire suppression
  - Plant green strips
  - Strategically locate fuels treatments
- Control surface disturbances and invasion corridors
- Increase efforts to detect and eradicate invasives

Prevention - Vegetation Treatments

- Areas with moderate to high resilience and especially resistance
  - Wet and cool Wyoming & mountain sage
  - Adequate perennial herbaceous species and shrubs to ensure recovery

- Consider disturbance severity
  - Fire eliminates fire intolerant species, increases resources for invasive species
  - Mechanical treatments that remove only trees, less effect on resources

- Place fuels treatments strategically
- Manage livestock grazing

Active Restoration

- Most successful prior to invasive dominance & on cooler/wetter sites
- Post-fire rehabilitation, WUI areas, habitat for T&E species, green strips, cheatgrass die-off areas

- Control/suppress invasives
  - Targeted herbicide application
  - Weed suppressive bacteria - seed bank fungal pathogens?
- Focus on natives adapted to local conditions (seed zones)
  - Competitive with invasives - different maturation and rooting depths
  - Fire tolerant and capable of soil stabilization - perennial, root-sprouting
  - Adapted to drought and drier conditions
- Manage livestock grazing

Monitor and adapt

- Implement comprehensive monitoring to track landscape change & management outcomes

- Monitor all major land treatments
- Use common data base for monitoring results (Land Treatment Digital Library)
- Develop monitoring products that inform future management

Resources

Miller, R. and J. Chambers. A field guide to selecting the most appropriate treatment in sagebrush and pinyon-juniper ecosystems in the great basin: Understanding resilience to disturbance and resistance to invasive species, and predicting vegetation response**.** Gen. Tech. Rep. RMRS-GTR-###. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. ### p. *in press*.

Miller, R. F., J. C. Chambers, D. A. Pyke, F. Pierson, J. . Williams Fire effects on vegetation in the Great Basin region: plant response and site attributes. Gen. Tech. Rep. RMRS-GTR-###. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. ### p. *in press*.

Pyke, DA. 2011. Restoring and rehabilitating sagebrush habitats. In: Knick, S.T.; Connelly, J.W., eds. Greater sage-grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology. Berkeley, CA: University of California Press; 38: 531-548.