Fostering Resilience in Southwestern Ecosystems: A problem-solving workshop

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Tucson, Arizona

The Nature Conservancy

Protecting nature. Preserving life.™

Anne Bradley, Forest Conservation Program Manager for New Mexico

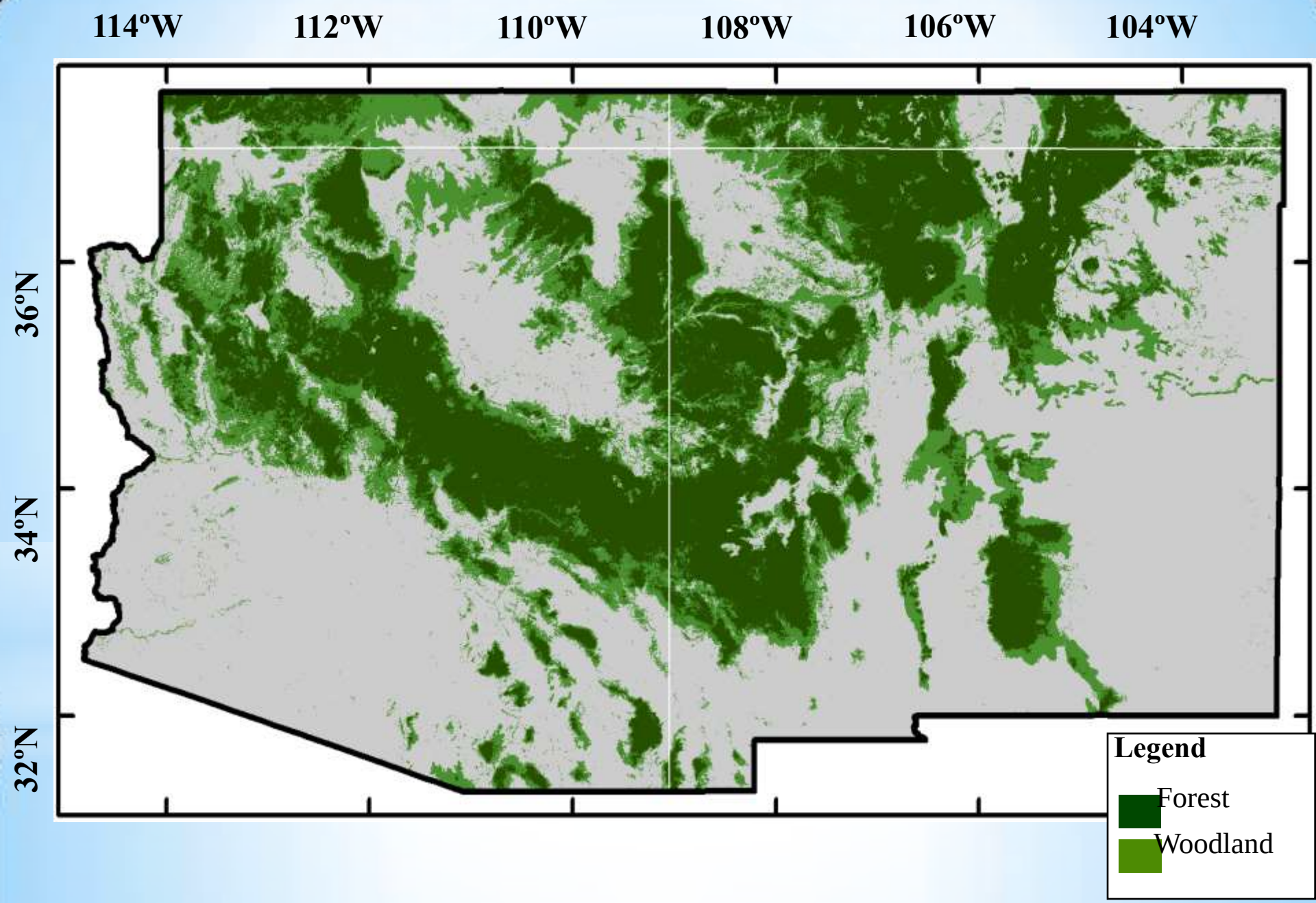
* The Consortium provides managers, scientists, and policy makers opportunities to interact and share science.

* Goal is to see the best science used to make management decisions and scientists working on the questions managers need answered

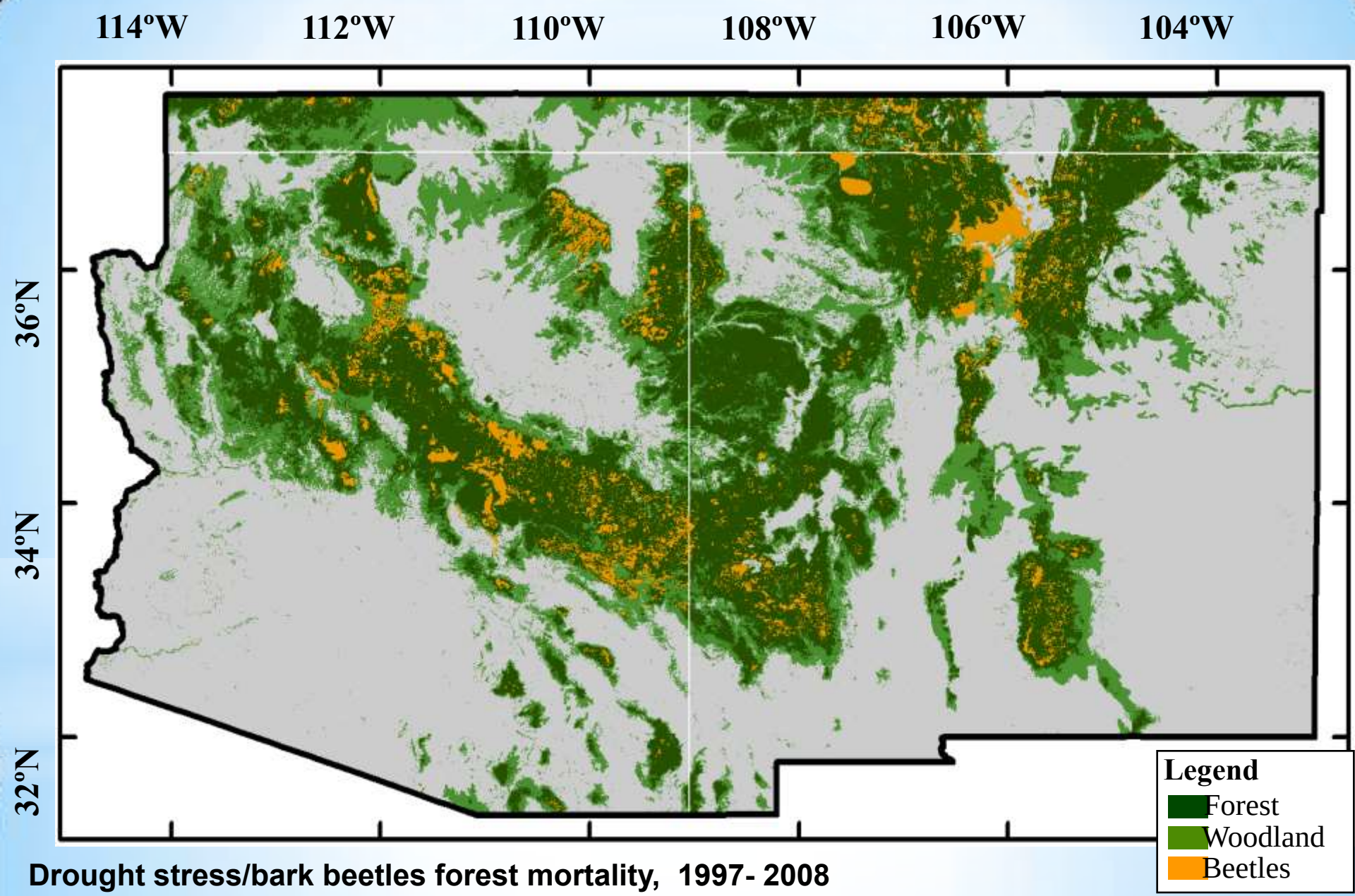
Our Context

Known Climate Effects on Fire & Landscapes:

- Earlier starts
- Higher intensity, severity
- Harder to control
- Longer season on more acres (Westerling and others 2005)
- Increasing Watershed & human impacts (Schultz, Heyman, R-C, Cerro Grande, Las Conchas, Waldo Canyon)



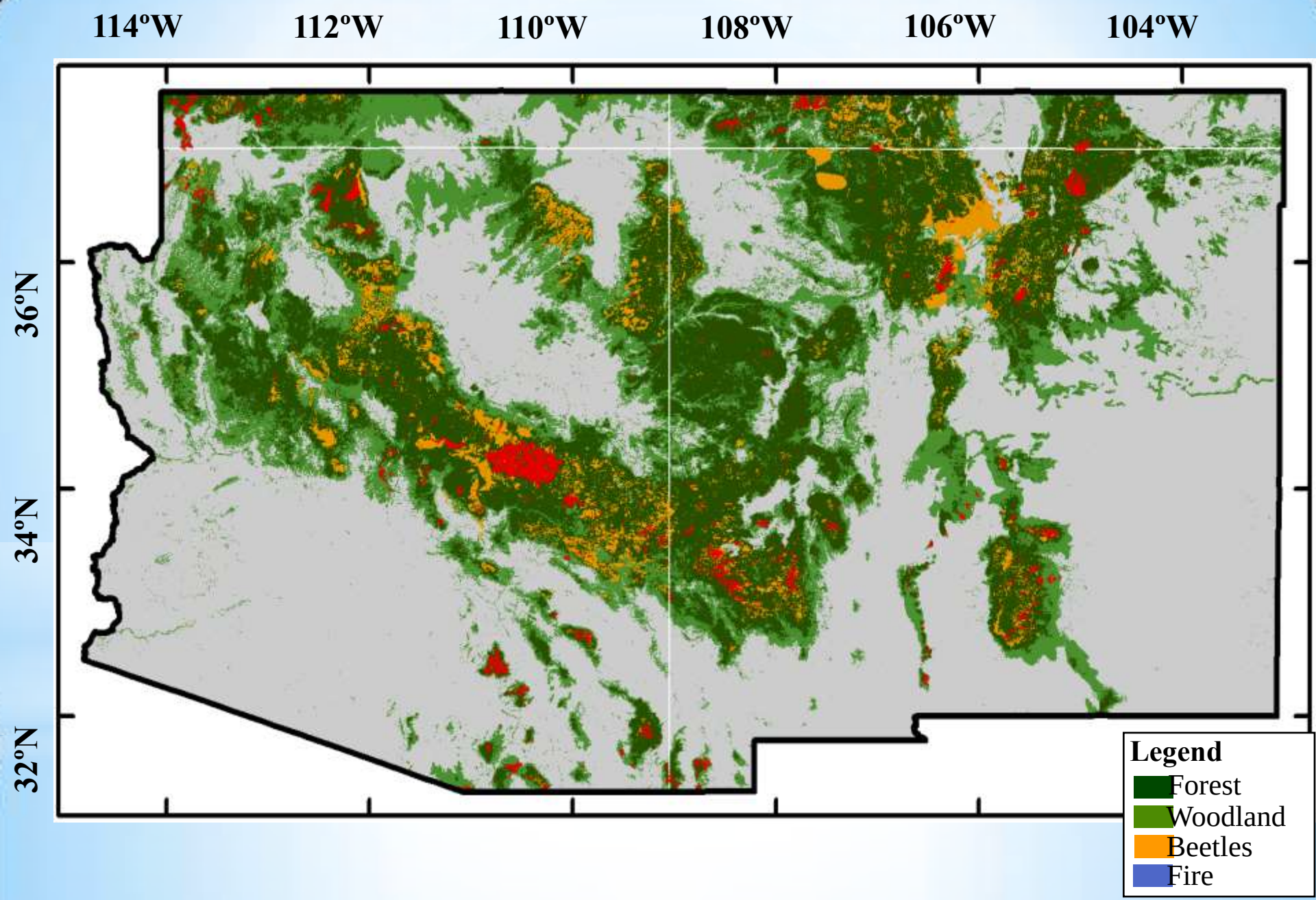
(Williams et al. 2010 and Allen 2014)



Drought stress/bark beetles forest mortality, 1997- 2008

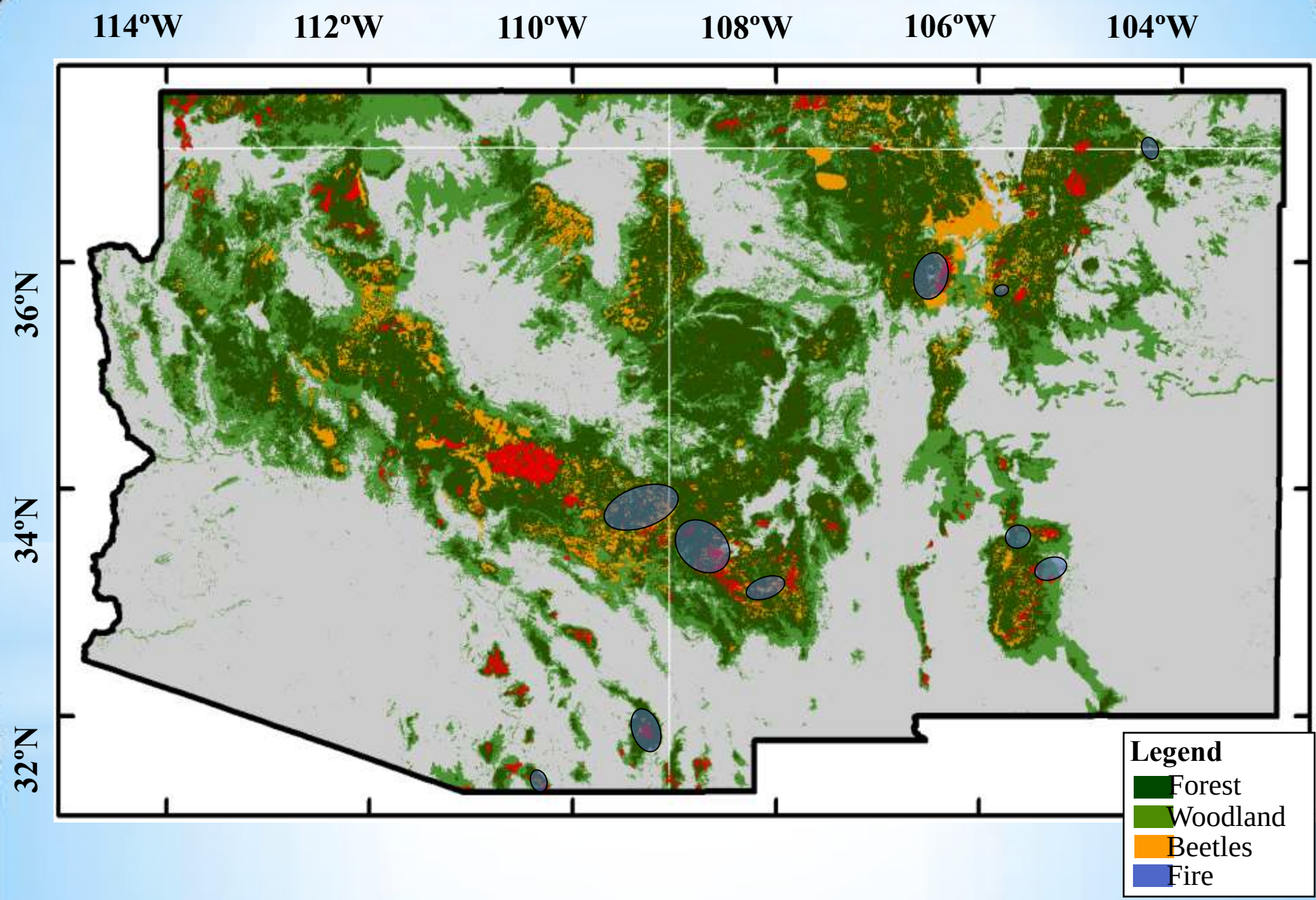
~ 11 % of forest and woodland (green) was severely affected.

(Williams et al., 2010)



Add tree-killing fire, and ~ 18 % of forest was severely affected from 1984 - 2008.

(Williams et al., 2010)



Add beetle areas and fires of 2011 – 2012, 20+ % of forest severely affected since 1984.

Workshop Objectives

* Bring together scientists and natural resource managers to discuss concepts of *resilience* in a time of changing climate and fire regimes
* Identify and evaluate current and potential resilience-building practices.
* Identify management goals and objectives for improving practice
* Identify and prioritize future research needs
* Collaboratively develop a set of key recommendations and next steps
* Improve natural resource managers' ability to help communities become fire adapted

*Workshop Format

* Series of facilitated roundtables on different fire topics (14 per topic)
* Structured notetaking for all roundtables
* Now developing an exec. summary that will help guide the Consortium

Profile of Participants

Organization

Univ.	29.76%
Fed	35.12%
Local	5.95%
Private Co.	3.57%
State govt.	10.12%
NGOs	11.90%

Role in Fire Management

Decision maker	11.31%
Implementers	23.21%
Planners	10.71%
Public outreach	11.31%
Researcher	39.29%

*Roundtable topics

* Definitions of Resiliency
* Building landscape resilience
* Using Wildfire as a Resiliency Tool: Tactics, Strategies and Communication
* Post-fire management options for building resiliency
* Collaborative problem-solving: Accelerating the development of fire adapted communities

Categories of Barriers and Opportunties

* Practice
* Building social support
* Science needs
* External Policies, including Congress
* Internal Agency Policies

Questions about resilience

D. Falk,
U of Az.

How will ecosystems recover after severe disturbance, and what can and should managers do?

Systems can:

* **Recover quickly to pre-fire condition** ("resilient").
* **Recover slowly (decades, centuries) to pre-fire condition**.
* **Become entrained in a new state** (e.g. shrub-dominated, chaparral; "tipping point" type conversion)

* Not all stasis is **adaptive**; not all change is bad. How can we make the distinction?
* Can we **decompose "resilience"** into its spatial, temporal and biological scales?
* Do we **understand the mechanisms** of persistence, recovery, and reorganization that govern post-disturbance ecological trajectories?

Challenges of moving to resilience from restoration

* We need to consider Resilience as a process rather than a state-maintain of values as conditions change
* There is a long time needed for managers to assess remaining resiliency (recovery) vs need to intervene
* Definitions of success may have to change as will the public perception of healthy ecosystems

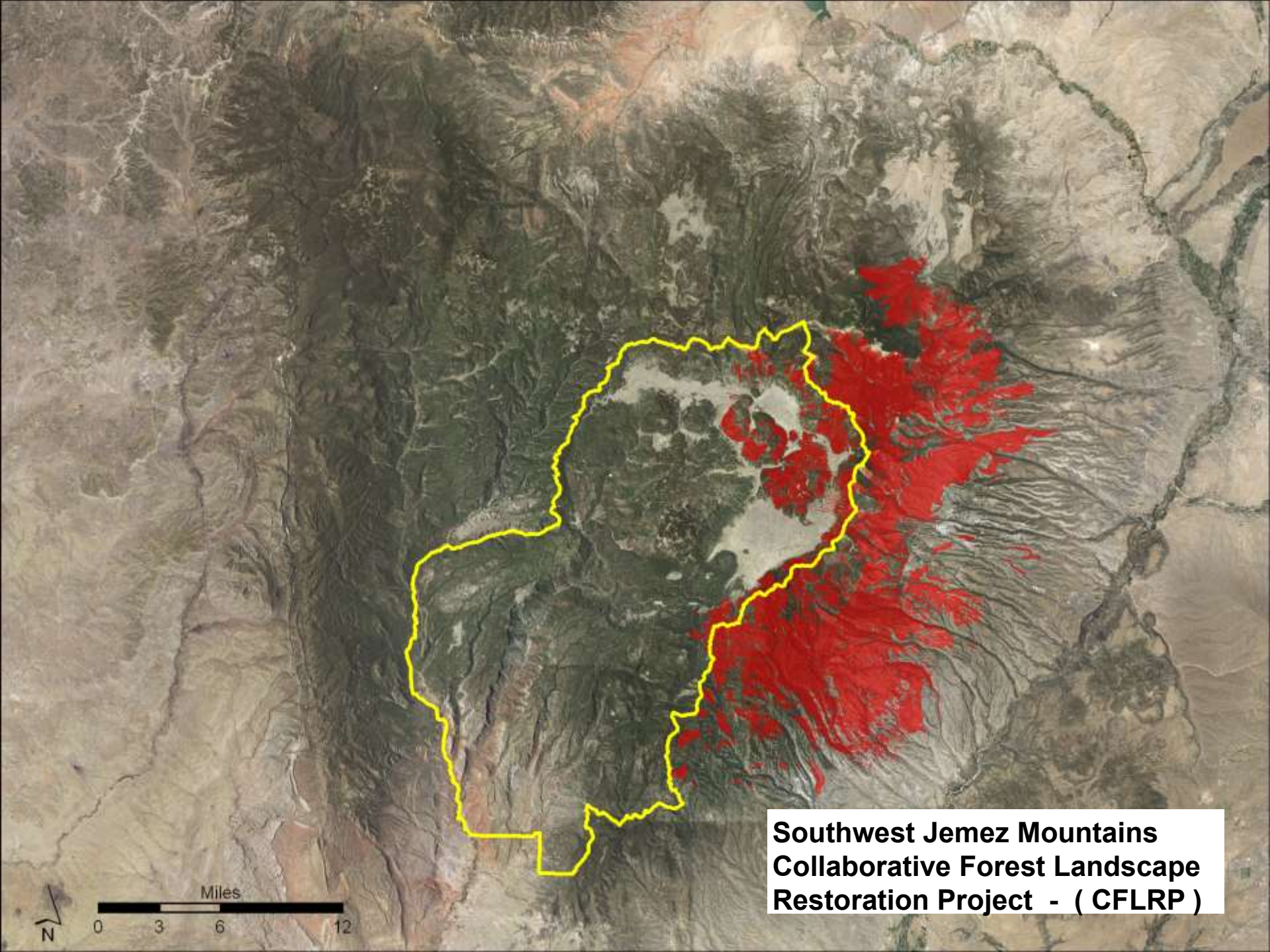
* **We have a limited set of tools,- thinning, prescribed fire, planting- how we use them and how well they are accepted is the heart of the discussion**

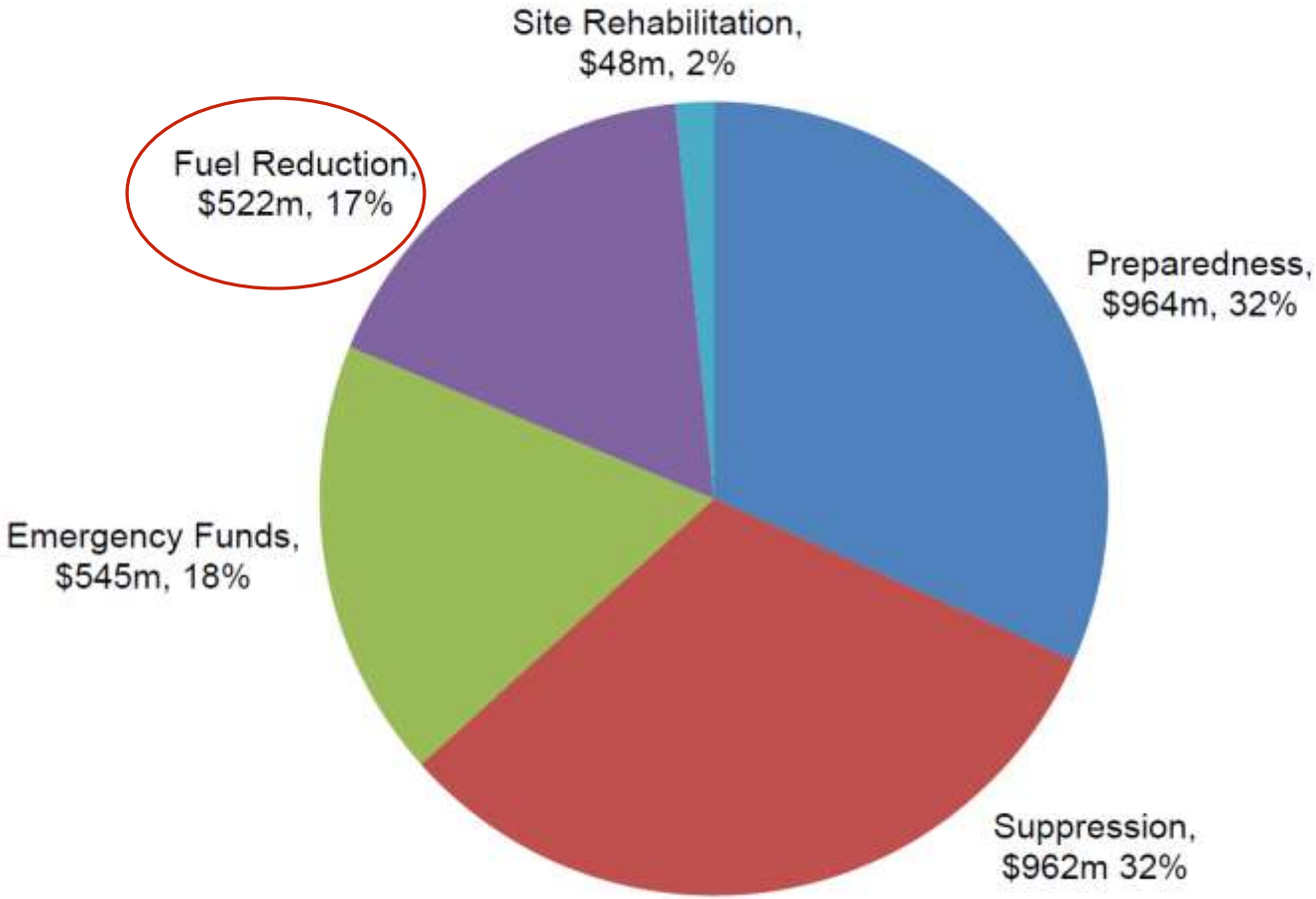
Type conversion from forest to shrubland, Dalton Fire (near Pecos)

Photo: CD Allen

Current Condition Fire Preparedness

* High level of concern that we are not working at the pace and scale that addresses the current need


Southwest Jemez Mountains
Collaborative Forest Landscape
Restoration Project - (CFLRP)
Miles
0
3
6
12
N



R. Gorte, Headwaters Economics 2013

Besides overriding budget constraints:

* Smoke is a contentious issue
* Expanding WUI
* Funding goes to mechanical treatments, little left for using fire-reduces scope of treatments
* Risk and liability- few internal incentives for informed risk-taking, no consequences for no action

* Current Condition Fire Preparedness

Intersection of Social and Ecological Systems

* Internal and external Policies lag behind the ecological changes
* Long term goals vs short term political and social needs create significant challenges
* Changing systems and static regulatory structures

* Current Condition Fire Preparedness

*Current avenues to working at scale

*Need to pool resources across jurisdictions- policy limitations need to be addressed; new sources of funding being developed

(Water Funds, Forest to Faucet)

* Industry is not yet a driver for low value wood-new markets and technologies

*Work actively with forest affected/forest-embedded communities

“With the cost of suppression having grown from 13 percent of the agency’s budget just 10 years ago to over 40 percent in 2014, it is clear that the cost of wildland fire suppression is subsuming the agency’s budget and jeopardizing its ability to implement its full mission”

USDA Forest Service 2015 Budget submitted to Congress

Current Conditions Fire Operations

Current Conditions Fire operations

- Budgetary and cultural focus on suppression
- Fire fighters well trained to do their jobs but don't always have an ecological perspective
- Fire teams are mobilized from around the country and then disperse. Locals manage the consequences
- Opportunities to use wildfire for resource benefits may be missed
- Focus on suppression leads to increased fire size and severity later

Fire operations

- Establish a sense of community between fire suppression and local resource managers
- Incorporate fire ecology into fire fighter training;, resource managers have fire training and understand operational goals
- Ecological after action reviews as well as safety reviews
- Preplanning critical- resource information analyzed and communicated to fire teams; outreach to air quality, power, county, and other organizations

*Postfire management

* Is our definition of system recovery or resilience based on the right time scale (human lifetime? or how much longer?)

* Defining what should be the right intervention is tricky-short term vs long, community safety and ecological productivity

* Funding and programs focus on immediate site stabilization. Not on long-term recovery or reintegration of burns into fire mgt.

*Postfire Management

* Pre-planning for the post fire environment important-risk analyses, reforestation potential , anticipate a changing climate
* Need post-fire evaluation of previous management as well as the long-term effectiveness of post-fire treatments
* Whether, what and how we plant may need to change
* The public needs realistic expectations of what post fire management can do to reduce flooding and debris flows

Current condition fire adapted communities

* more than 70,000 communities at risk from wildfire, and less than 15,000 have a community wildfire protection plan. (USDA Forest Service, 2012)

* In 2011 90% of fuel treatment monies for DOI were sent to the WUI

* Concept of social resilience new to many natural resource mgrs
* Communication builds social support:
  a) Ask questions and understand people's values;
  b) Uncover existing networks in communities;
  c) Hold meetings in places people are comfortable;
  d) Use local examples and photos; and
  e) Provide resources for people to start working on community preparedness.
* Social research shows that people understand more than you think, and care about more than safety

* fire adapted communities

Building Social Support

* Fire management is our key resilience building tool. There is still a lack of understanding and acceptance of the side effects of fire –smoke, patches of higher severity fire.

* A robust monitoring program and rapid feedback has the power to inspire confidence; the confidence needed to increase treatment size and move forward in the face of uncertainty”

Fire Practice

Rx fires planned earlier in the season as fire season moves up

Thinning and burning activities should leave a greater diversity of species to preserve more options for regenerating forest cover

Project layout that maximizes snow retention (size of openings, exposure)

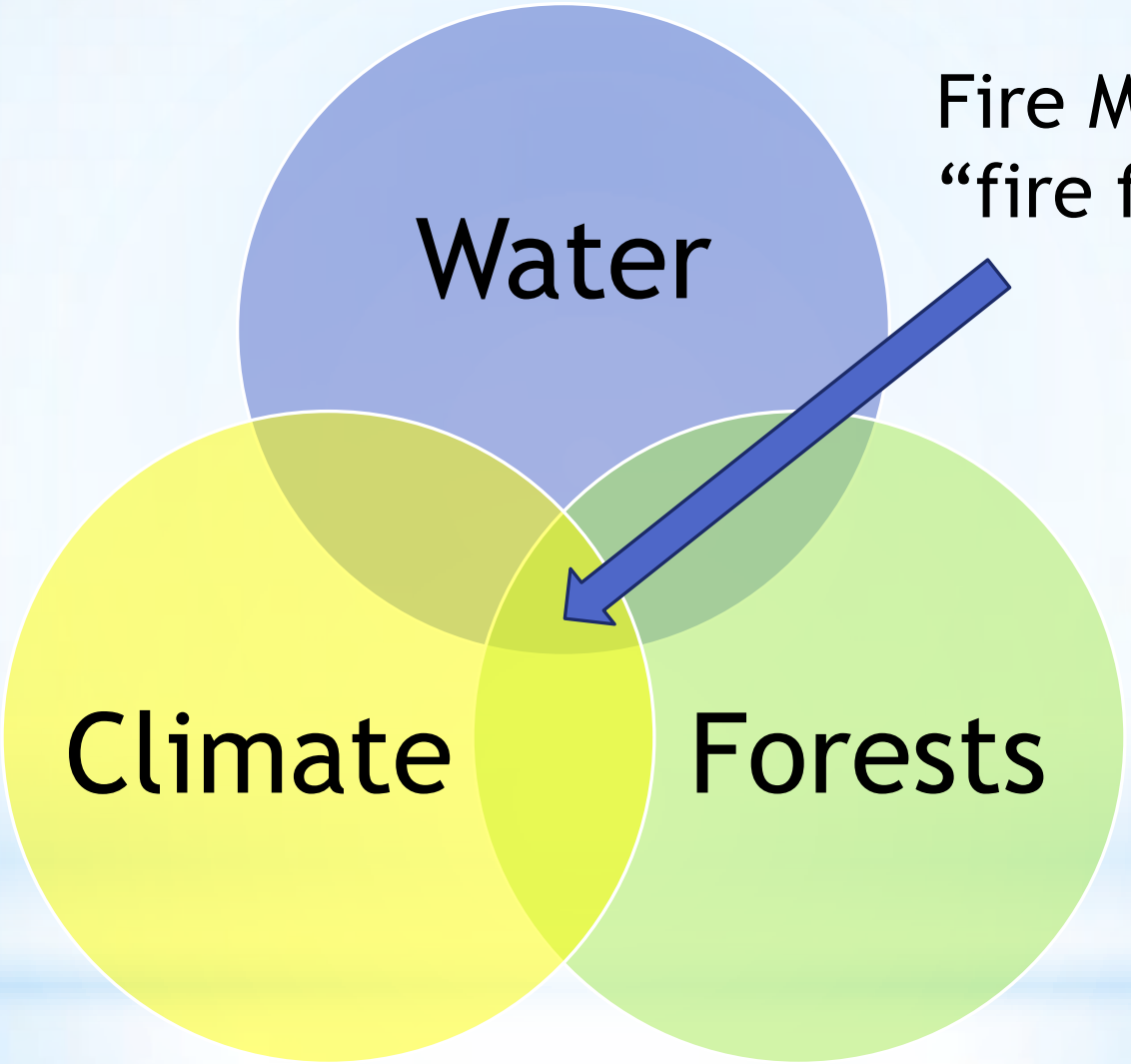
Post -fire changes:

Preserve islands of vegetation within large fire areas to act as refugia for species

Changes to BAER (post fire rehab)-different more drought tolerant species mix, less grass if we to favor some tree regeneration,

Prepare the public for conversion of forests to shrub fields after some large fires

* New Strategies for Coming Decades



Fire Management
"fire for water"

Intersection of Resources
and Processes


SOUTHWEST
FIRE SCIENCE
CONSORTIUM
A JFSP KNOWLEDGE EXCHANGE CONSORTIUM
JOINT FIRE SCIENCE PROGRAM