



Why Wildfires Keep Getting Bigger: An Introduction to Wildland Fires in New Mexico

Mary Stuever, Chama District Forester
New Mexico State Forestry



Why Wildfires...
Large Wildfires...
Collaboration...
After Wildfire

NM Vegetation Treatment map:
<https://nfwri.org/gis-projects/nm-vegetation-treatment-mapping>





AFTER WILDFIRE
A GUIDE FOR NEW MEXICO COMMUNITIES





Fire Scar Specimens from William DuBuys' property in El Valle, NM. Juniper and Ponderosa Pine.

Collected and prepared by the Laboratory of Tree Ring Research, University of Arizona.

Teaching specimens used by Visiting Foresters at Philmont Scout Ranch.

Rocky Mtn. Juniper

Pith date: 1671

Bark date: 1998

Fire scars:

1682 1777

1691 1801

1715 1842

1724 1852

1735 1890

1752

Ponderosa Pine

Pith date: 1584

Bark date: 1996

Fire scars:

1601 1777

1724 1801

1735 1823

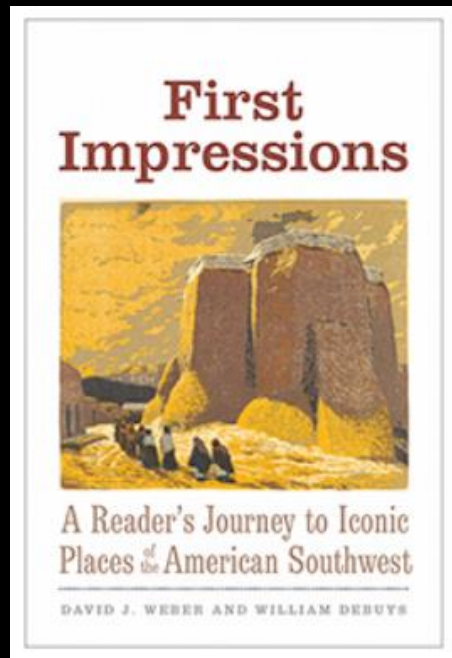
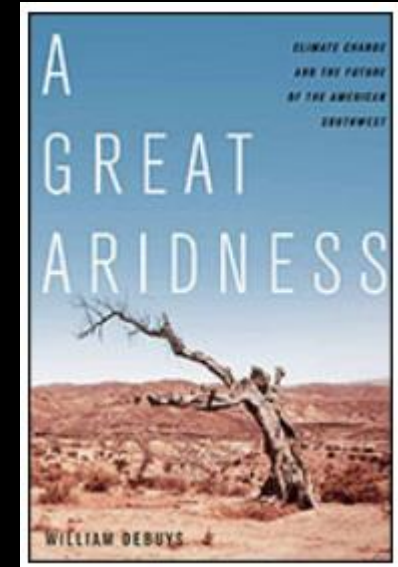
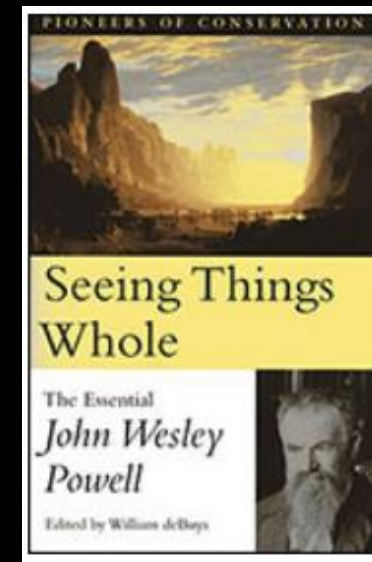
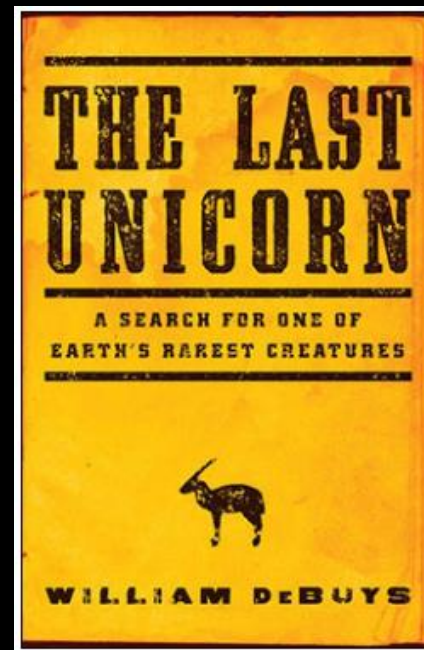
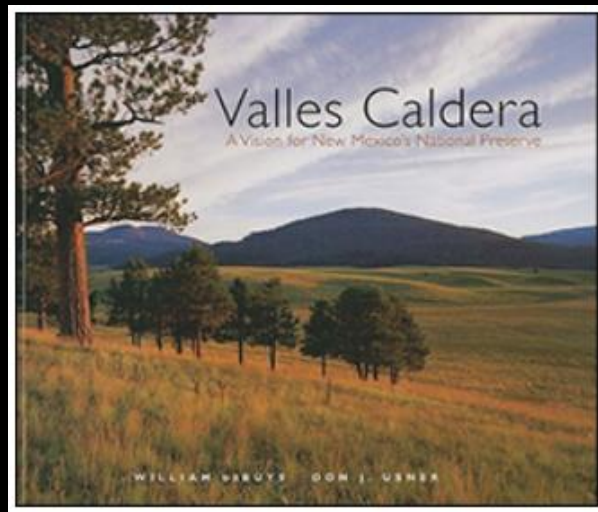
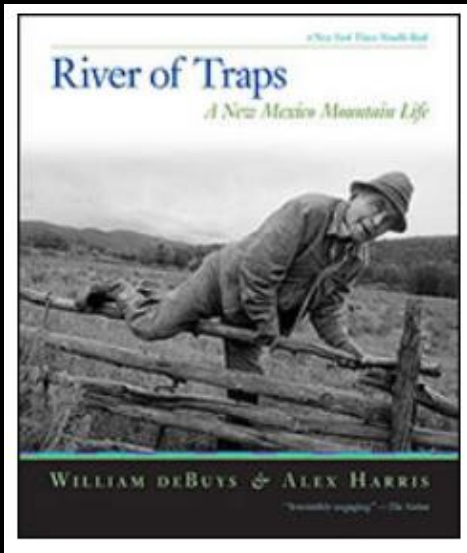
1744 1842

1760 1890

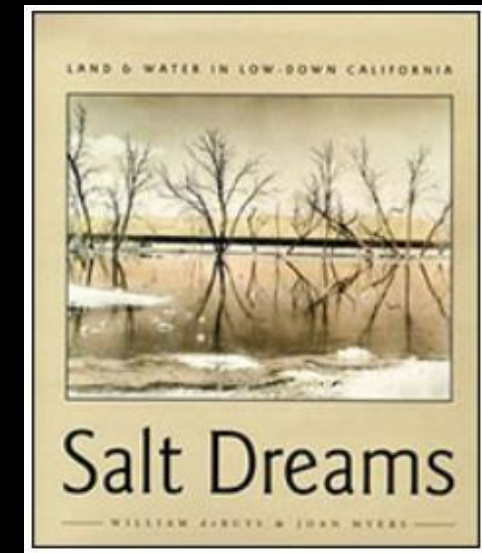
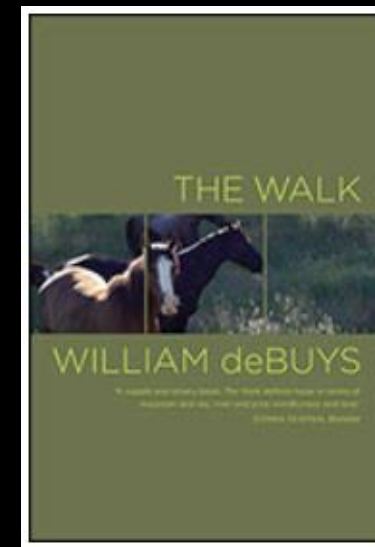
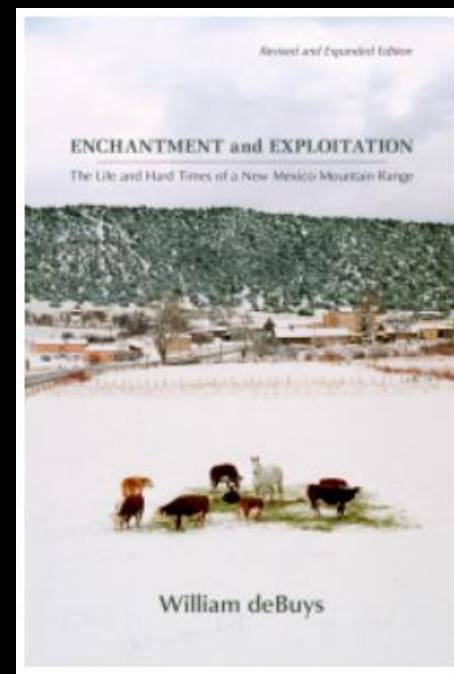


Visiting Forester Program at Philmont Scout Ranch





William DeBuys
Author
Landowner
Conservationist





Fire Scar Specimens from William DuBuys' property in El Valle, NM. Juniper and Ponderosa Pine.

Collected and prepared by the Laboratory of Tree Ring Research, University of Arizona.

Teaching specimens used by Visiting Foresters at Philmont Scout Ranch.

Rocky Mtn. Juniper

Pith date: 1671

Bark date: 1998

Fire scars:

1682 1777

1691 1801

1715 1842

1724 1852

1735 1890

1752

Ponderosa Pine

Pith date: 1584

Bark date: 1996

Fire scars:

1601 1777

1724 1801

1735 1823

1744 1842

1760 1890









Fire Scar Specimens from William DuBuys' property in El Valle, NM. Juniper and Ponderosa Pine.

Collected and prepared by the Laboratory of Tree Ring Research, University of Arizona.

Teaching specimens used by Visiting Foresters at Philmont Scout Ranch.

Rocky Mtn. Juniper

Pith date: 1671

Bark date: 1998

Fire scars:

1682 1777

1691 1801

1715 1842

1724 1852

1735 1890

1752

Ponderosa Pine

Pith date: 1584

Bark date: 1996

Fire scars:

1601 1777

1724 1801

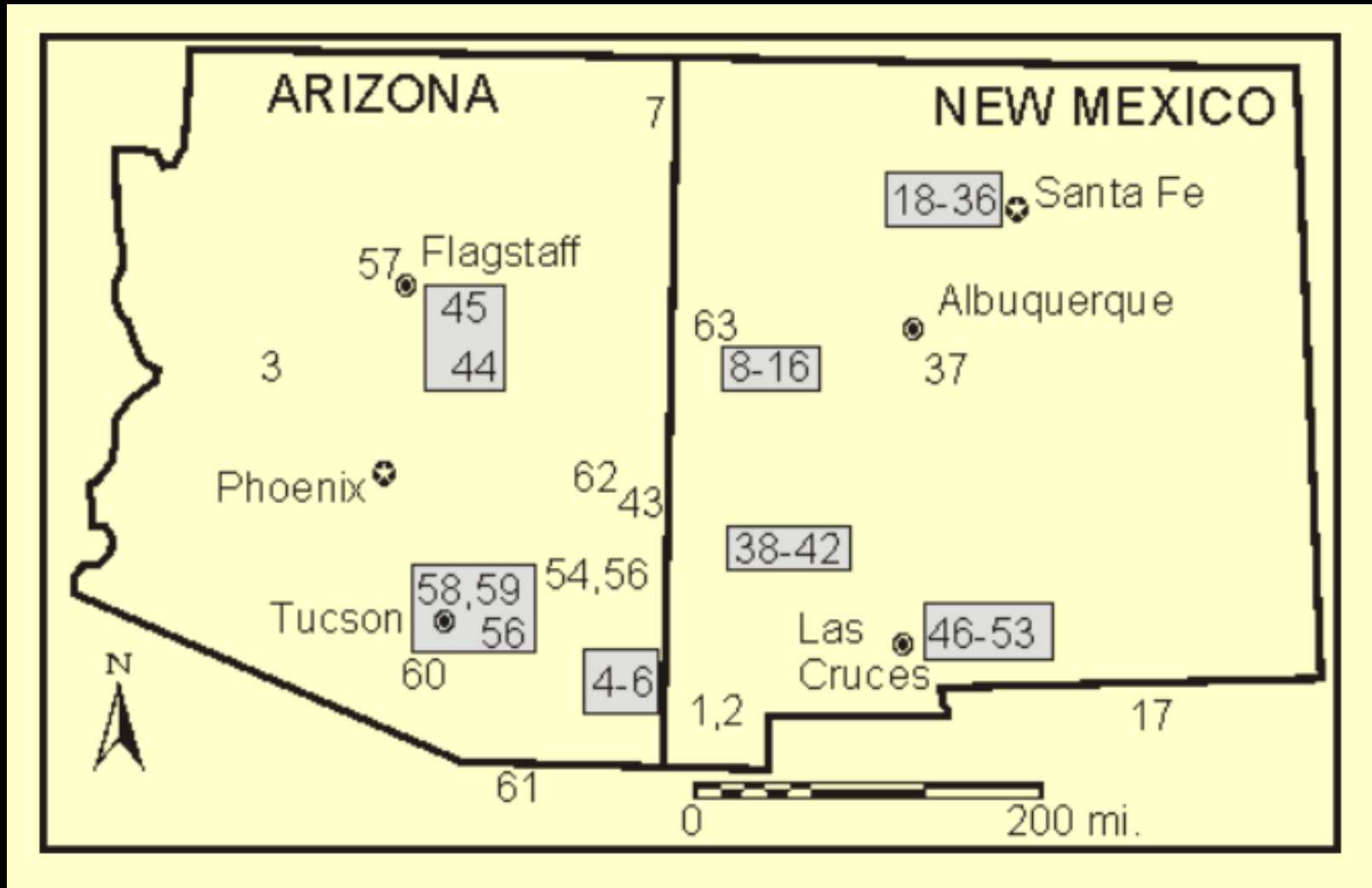
1735 1823

1744 1842

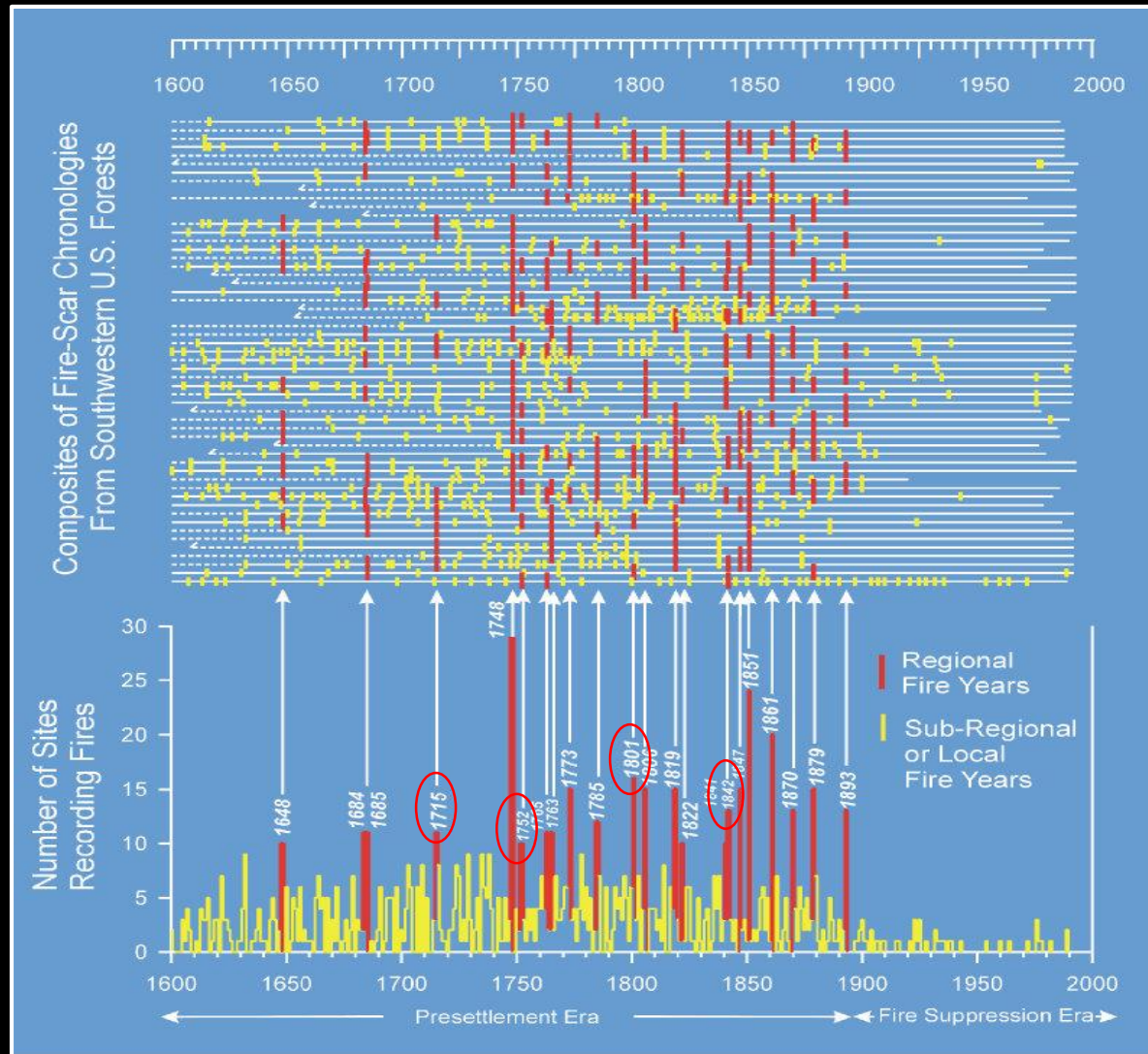
1760 1890



Southwest Fire Tree Ring Sites



Low severity surface fires occurred very frequently in ponderosa pine forests of the Southwestern US until about 1890-1910. Introduction of very large livestock herds and active fire suppression by government agencies disrupted surface fire regimes.



Swetnam, Allen & Betancourt Ecological Applications, 1999



Fire Exclusion



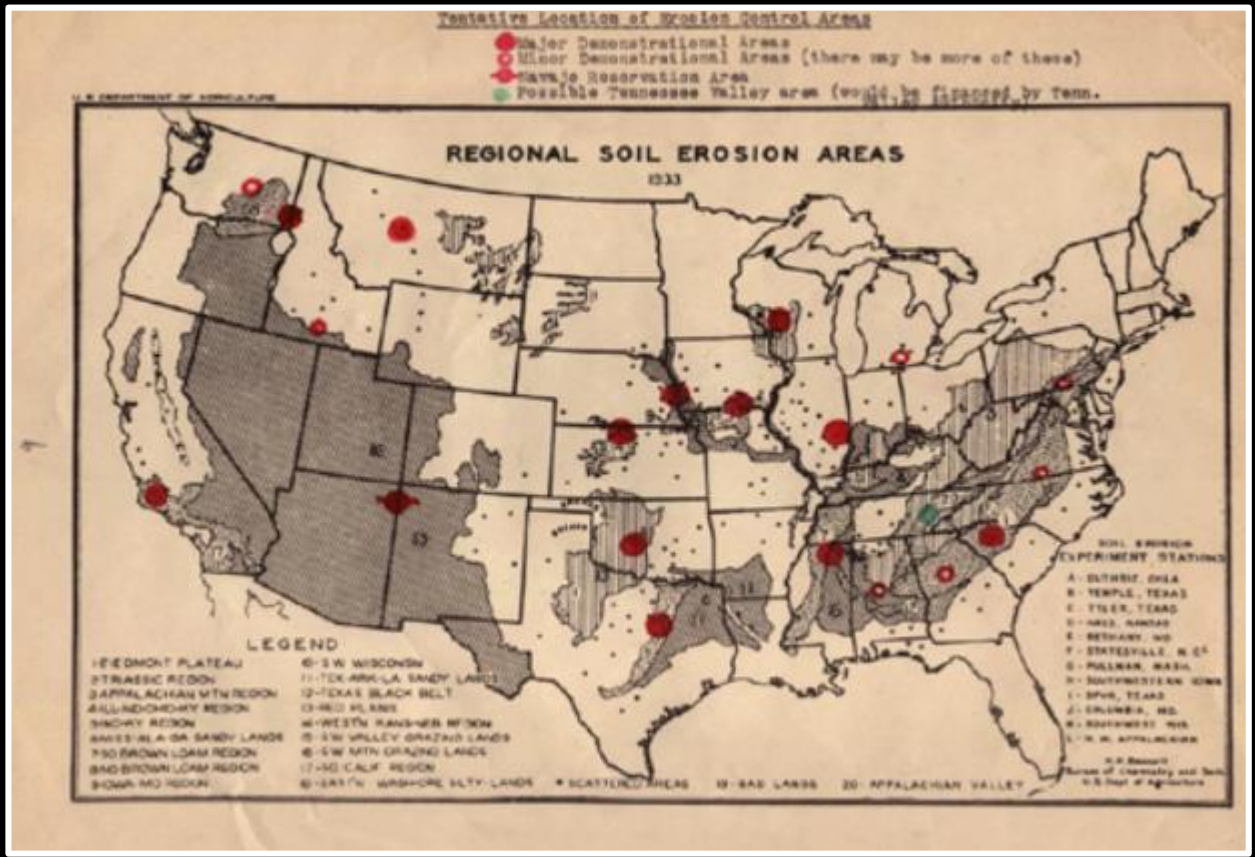
Dendrochronology studies in the Southwest ---

- identify fire exclusion
 - 1878-1890 start
 - late 1700's in early settlements
- identify prior fire regimes
- when correlated with weather can provide clues to ignition













Why and How?

Overgrazing (1st 50 yrs)

- Large numbers of cattle and sheep in late 1800's and early 1900's
- Fine fuels removed
- Large gullies > conservation practices
- Sound range management today



Fire Suppression (next 50 yrs)

- 10 A.M. policy established in 1910's
- Effective fire suppression around late 1940's, early 1950's
- Mainstream use of fire in woods ~ 1980's (for SW, other regions sooner)









MEGA FIRES on the LANDSCAPE



Cerro Grande Fire, Los Alamos, NM May 2000





Rodeo-Chediski Fires of 2002



Ponil Complex, NE New Mexico, June 2002



06/07/02
by Arnie Friedt, NM State Forestry





Schultz Fire Flagstaff, Summer 2010





Mostly in Arizona – total
538,049 acres (15K acres
in NM)

Currently the largest
recent fire in the
Southwest

Wallow Fire 2011





Las Conchas Fire 2011, Los Alamos

Part of this fire burned part of the 2000 Cerro Grande Fire... heralding in a new era of the second mega-fire on the same landscape.

Total size: 156,593 acres.



Little Bear 2012 Ruidoso, NM

- 44,330 acres
- 242 Residences & businesses burned, 12 outbuildings
- Major flooding following the fire



The western half of the
Gila National Forest –
297,845 acres, 11% high
severity



Whitewater-
Baldy Complex
2012



Silver Fire 2013

This time the east side of the
Gila.... 138,705 acres.



Tres Lagunas Fire 2013; Thompson Ridge Fire 2013

Three large fires (also Jaroso in the Pecos Wilderness) burning on the Santa Fe National Forest. This picture shows fire activity near headquarters of the Valles Caldera National Preserve.



West Fork Fire 2013



19 Granite Mountain Hotshots
killed.

Sure to change MUCH about how
we approach fire on the
landscape.



Yarnell Hill Fire 2013





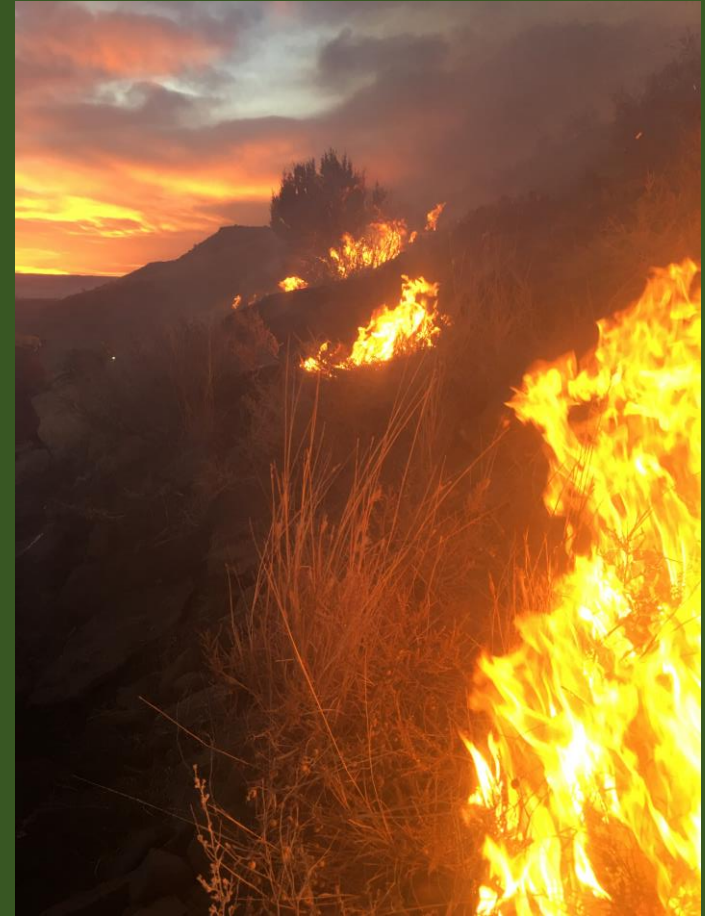
Southwest “wetter” in 2016-17, meanwhile

- **Oregon & Washington (2015)**, 3,800 wildfires (almost 2,300 in Oregon and more than 1,500 in Washington); 1,600,000 acres (more than 630,000 acres in Oregon and more than 1,000,000 acres in Washington)
- **California (2017)**, 9,000 wildfires; 1.2 million acres of land ; 10,800 structures destroyed and 46 people dead.



Southwest 2018 Season so far...

- Dry year, will go in more detail later today
- Tree ring pattern – 2-3 wet winters, followed by dry winter = large fires
- Early fire season activity
 - Stateline (Black Mesa) in March
 - April 12 – 12 new fires
 - April 10 – 10 new fires
- Diener Canyon Fire (escaped Rx Burn)



Fire in the Southwest

Fire Regimes

- Informed by dendrochronology (study of tree rings)
- when correlated with weather can provide clues to ignition sources



New Mexico Forest Overview

Sub-Alpine



corkbark or subalpine fir

Engelmann spruce

bristlecone pine



Spruce-Fir Zone



FIRE REGIME

- Long time (century or 3) between fires
- Stand replacement fires

MANAGEMENT

- Shallow roots systems
- Major water storage
- Short growing season



New Mexico Forest Overview



Mixed Conifer

white fir

limber pine

Douglas-fir

blue spruce

aspen



Mixed Conifer Zone - wet



FIRE REGIME

- Varied time (years to decades) between fires
- Varied intensity of fires

MANAGEMENT

- Productive forests
- Wildlife habitat
- Major water storage
- Much diversity
- Aspen issues



Mixed Conifer Zone - dry



FIRE REGIME

- Short intervals between fires (2-10 years)
- Favors seral species like ponderosa pine/oak

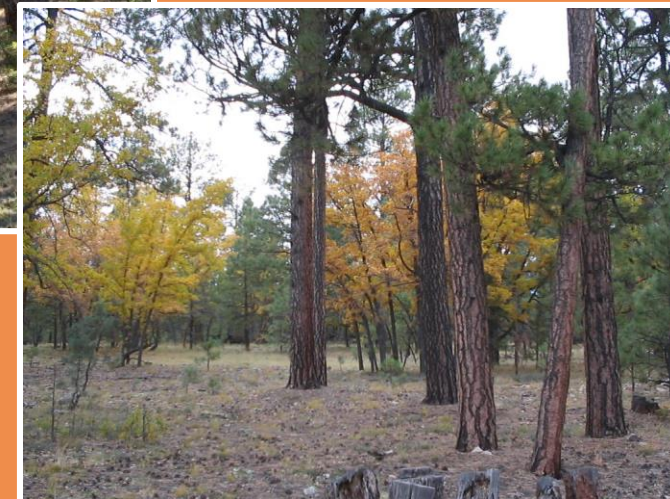
MANAGEMENT

- Prone to severe tree density issue w/o fire
- High wildlife values
- Watershed health



New Mexico Forest Overview

Ponderosa Pine



Ponderosa Pine Zone



FIRE REGIME

- Short intervals between fires (2-10 years)
- Typical low intensity fires
- Large landscape scale

MANAGEMENT

- Many issues
- Much knowledge
- Extensive areas in AZ
- Watershed health



New Mexico Forest Overview



Piñon/Juniper



Woodland Zone



FIRE REGIME

- varied intervals between fires (years, decades, centuries)
- Not well documented

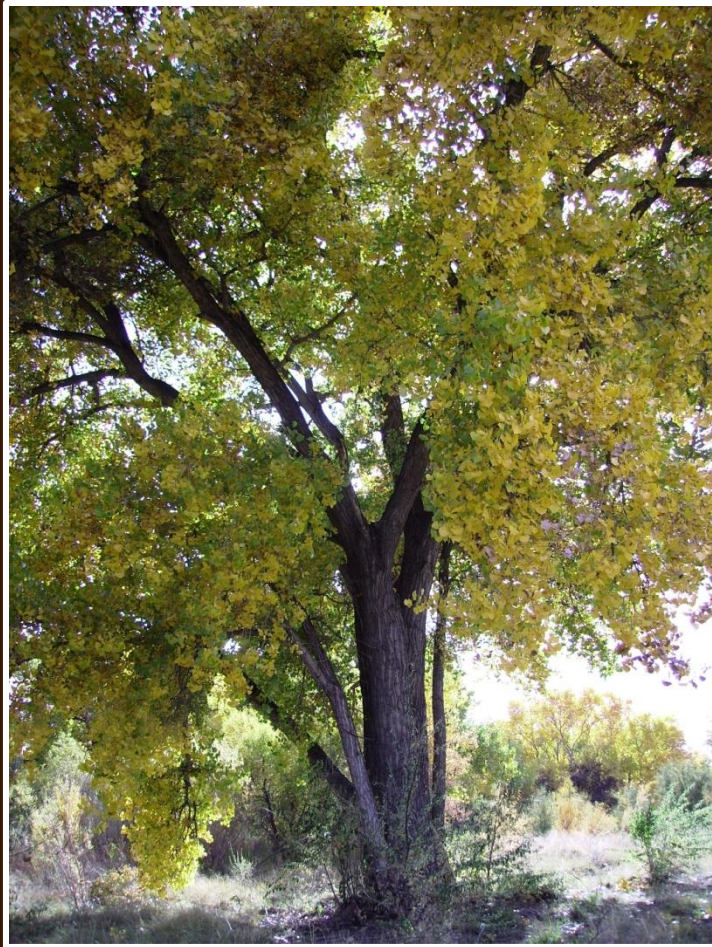
MANAGEMENT

- Long history of human interaction
- Grazing issues
- Erosion



New Mexico Forest Overview

Bosque (Gallery Forest)



Riparian Zone



FIRE REGIME

- Flooding more important disturbance than fire
- Fires may have less active

MANAGEMENT

- Water table connections with the river
- Invasive species







Managing for resiliency





There is an option to avoiding
landscape scale catastrophic fire...





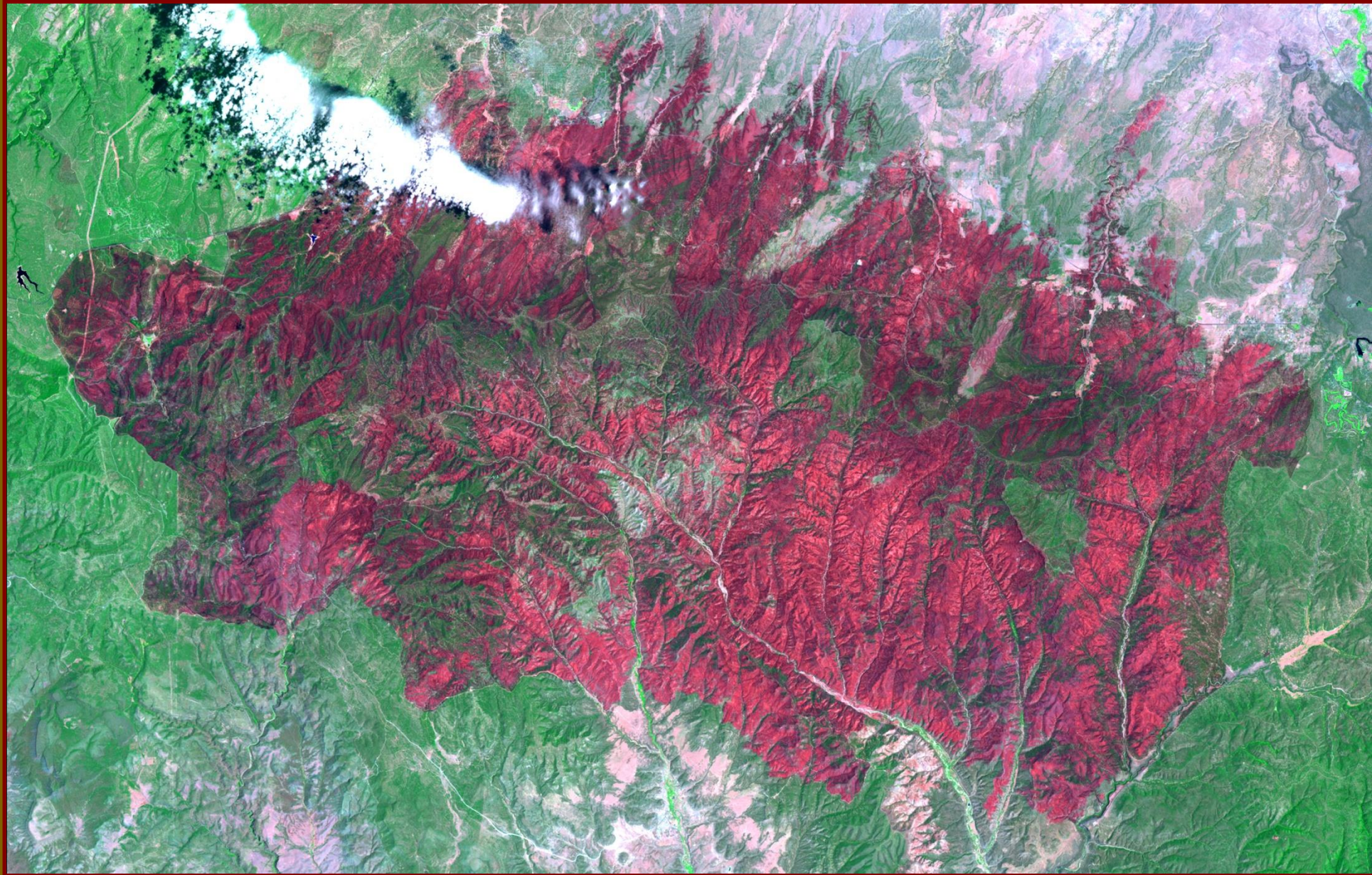
Put the role of fire back in the ecosystem...



And manage forests...

Forest density management
through mechanical treatments...





**Rodeo-Chediski Fire
Recent Thinning, Prescribed Fire and Fire Severity
Fort Apache Agency**



LEGEND

- Precommercial Thinning 1993-Present
- Prescribed Fire 1988-Present
- Wildfires 1989-Present
- Carrizo Fire
- Rodeo-Chediski Fire Boundary on the FAIR

SCALE

0.6 0 0.6 1.2 Miles

Rodeo-Chediski Fire Effects & Recent Forest Management History



Resilient Forests

- **Public outreach & support**

- technical assistance to landowners
- special events
- demonstration forests
- forestry camp

- **Plan**

- **Treat**

- tree density reduction
- ecologically appropriate responses

-Every forest is unique, deserves its own prescription base on objectives.

- **Monitor & Adapt**



Fire-Driven Forestry

Angel Fire, New Mexico



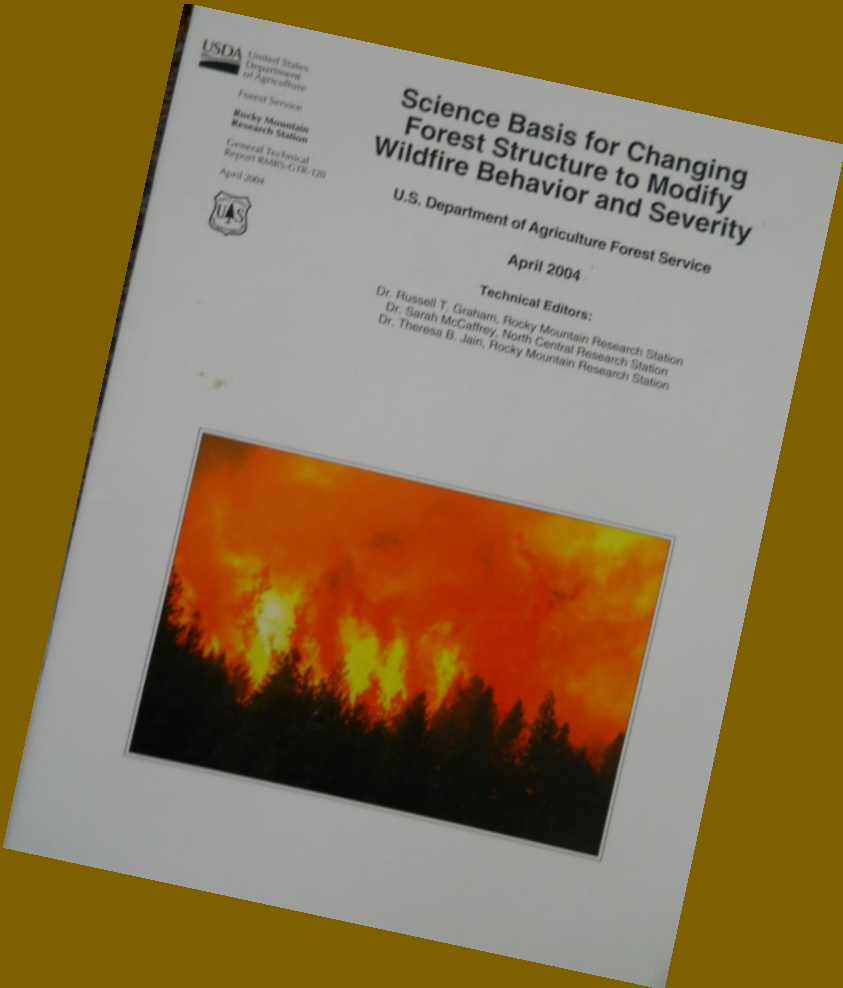
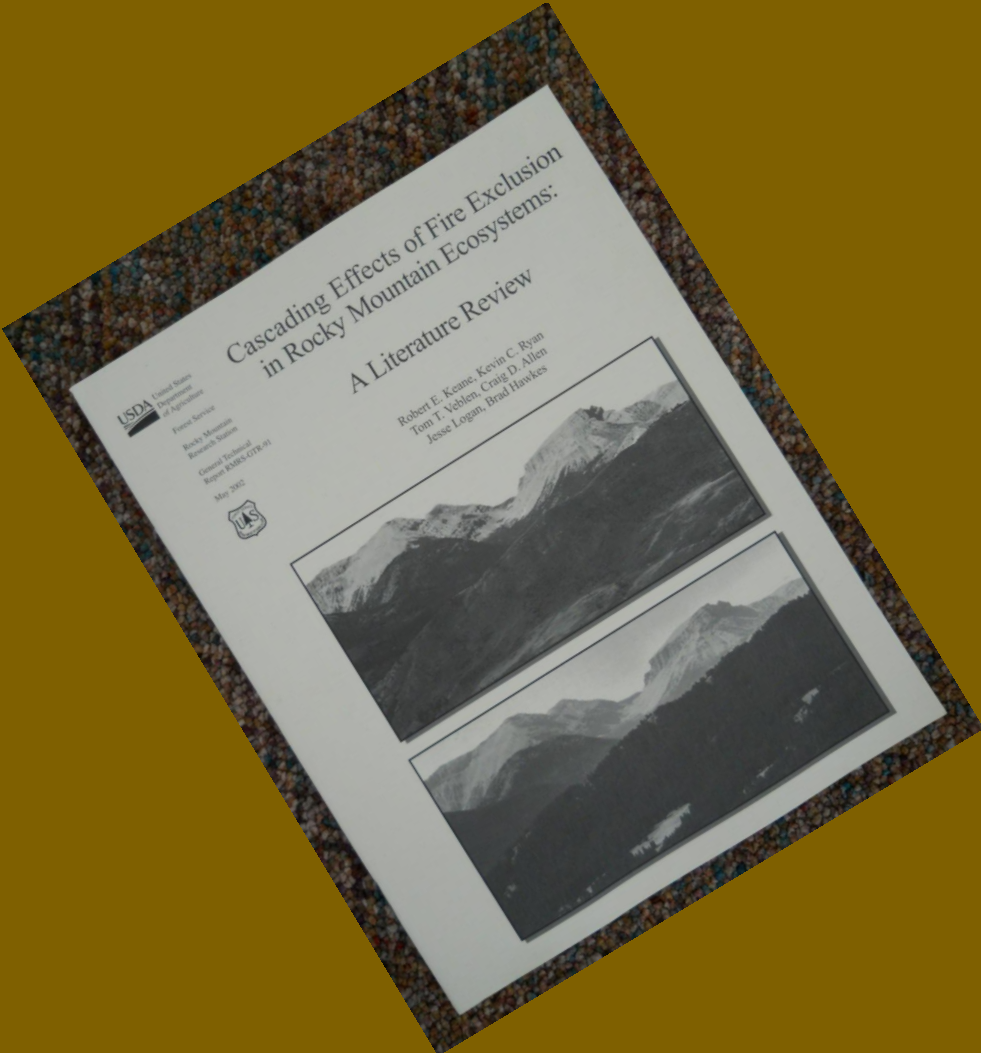
Fuels Management

- National Fire Plan & Cohesive Fire Strategy
- NM State Severance Funding
- Rio Grande Water Fund
- Community Wildfire Protection Plans
- Firewise Communities
- Millions of dollars, tens of thousands of acres treated

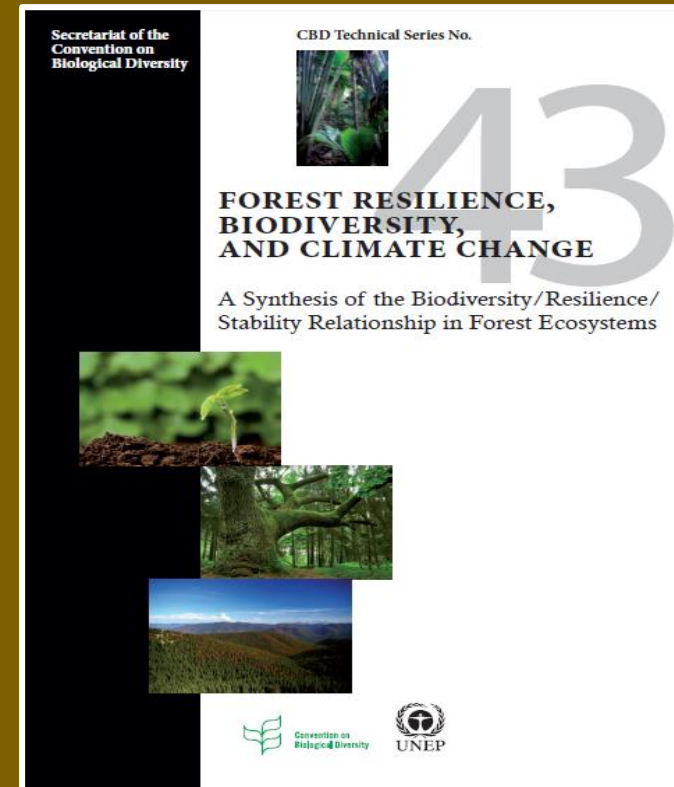
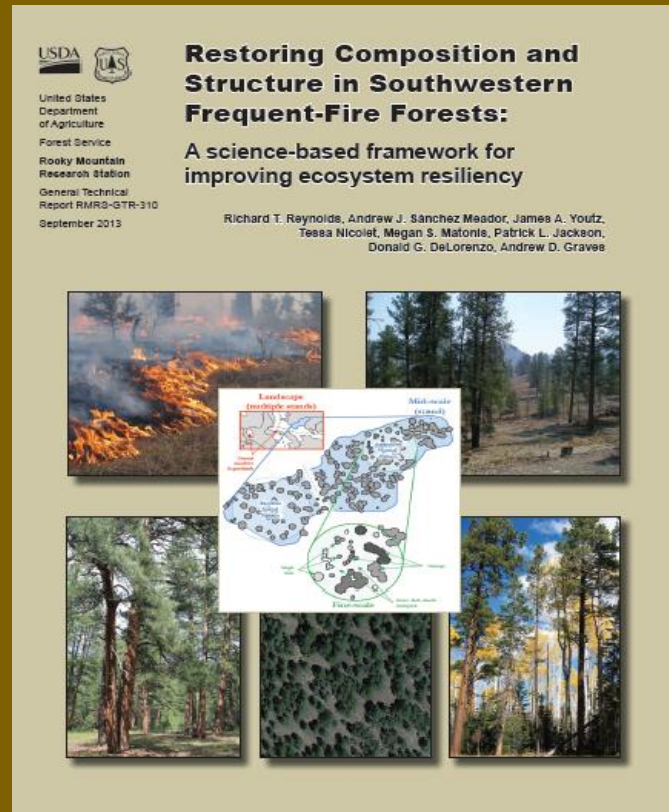




The Science



Using best knowledge

























A large, dark tree with a fire burning on its trunk, set against a blue, cloudy sky. The fire is bright orange and yellow, contrasting with the dark tree and the cool blue tones of the background.

Questions?

mary.stuever@state.nm.us

Preparing for Large Wildfires in New Mexico: Workshops were implemented under a sub-grant from the New Mexico Department of Homeland Security and Emergency Management (NM DHSEM) with funding provided by the Federal Emergency Management Agency (FEMA). Points of view or opinions expressed are those of the authors and do not necessarily represent the official position or policies of NM DHSEM or FEMA.

