



# **In a Dense Wood: Forest Restoration in New Mexico**

**Kent Reid**

**New Mexico Watershed Forum  
September 2010**

*PL 108-317*



## SOUTHWEST FOREST HEALTH AND WILDFIRE PREVENTION ACT OF 2004

An Act to establish Institutes to demonstrate and promote the use of adaptive ecosystem management to reduce the risk of wildfires, and restore the health of fire-adapted forest and woodland ecosystems of the interior West.

# *Three sister Institutes make up SWERI*



New Mexico Forest & Watershed  
Restoration Institute  
at New Mexico Highlands University

# Activity Areas



# *Why do we need restoration?*



# *Why do we need restoration?*

---



1. Grazing removed fine fuels
2. Wildfire suppression allowed growth

# *Why do we need restoration?*



# *What is watershed restoration?*



The recreation of historic structure (principally through the removal of small-diameter trees) in forests and woodlands, and maintenance of the structure and other ecological processes by reintroduction of an historic fire regime.



# *Economics as an ultimate driver*



“We can’t grant our way to forest health.”

- *Las Vegas flooring producer*

Behind every restored forest

is a restored forest industry.

- *after an idea of the former head of NMFIA*

# NM FOREST RESTORATION PRINCIPLES



*The Nature Conservancy*  
SAVING THE LAST GREAT PLACES ON EARTH

**NRCS**  
Natural Resources Conservation Service

**U.S. Department of the Interior**  
BUREAU OF LAND MANAGEMENT

**SIERRA CLUB**  
FOUNDED 1892

**FOREST GUARDIANS**

**NEW MEXICO STATE FORESTRY**

**FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE**

**U.S. DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS**

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

**forest GUILD**

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

**Center for Biological Diversity**

**Restoration Solutions, LLC**  
CORPORATE OFFICE

## NEW MEXICO FOREST RESTORATION PRINCIPLES

**Preamble:** These principles were collaboratively developed by a team of dedicated professionals representing industry, conservation organizations, land management agencies, and independent scientists. These principles for restoration should be used as guidelines for project development and they represent the “zone of agreement” where controversy, delays, appeals, and litigation are significantly reduced. They may be appropriate for application to specific restoration projects in the southwestern United States. Projects using these principles should be driven primarily by ecological objectives while promoting economic and social benefits.

**Participants:**

The Nature Conservancy of New Mexico	Bureau of Indian Affairs
Natural Resources Conservation Service	New Mexico State Lands
Bureau of Land Management	Forest Guild
Sierra Club, Rio Grande Chapter	Center for Biological Diversity
Forest Guardians	Restoration Solutions
New Mexico State Forestry Office	Public Service of New Mexico
U.S. Forest Service	

**Principles:**

- Collaborate.** Landscape scale assessment, and project design, analysis, implementation and monitoring should be carried out collaboratively by actively engaging a balanced and diverse group of stakeholders.
- Reduce the threat of unnatural crown fire.** A key restoration priority must be moving stands toward a more natural restored condition and the reduction of the risk of unnatural crown fires both within stands and across landscapes. Specific restoration strategies should vary based upon forest vegetation type, fire regime, local conditions, and local management objectives. Forests and woodlands with historical fire regimes characterized by infrequent and mixed fire intensities should be maintained such that spatial arrangements of high-density stands are discontinuous at the landscape scale.
- Prioritize and strategically target treatment areas.** Key considerations for prioritizing restoration treatment areas are: degree of unnatural crown fire risk, proximity to human developments and important watersheds, protection of old-growth forests and habitats of federally threatened, endangered, or listed sensitive species, and strategic positioning to break up landscape-scale continuity of hazardous fuels. Treatments should be done at a landscape scale to decrease forest vulnerability to unnatural stand-replacing fire. This priority-setting should take place during fire management planning, land management planning, and community wildfire protection planning.
- Develop site-specific reference conditions.** Site-specific historical ecological data can provide information on the natural range of variability for key forest attributes, such as tree age structure and fire regimes that furnish local “reference conditions” for restoration

*NM Restoration Principles*

[www.fs.fed.us/r3/spf/nm-restor-principles-122006](http://www.fs.fed.us/r3/spf/nm-restor-principles-122006)



# NM FOREST RESTORATION PRINCIPLES



1. ***Collaborate***
2. ***Reduce the threat of unnatural crown fire***
3. ***Prioritize and strategically target treatment areas***
4. ***Develop site-specific reference conditions***
5. ***Use low-impact techniques***
6. ***Utilize existing forest structure***
7. ***Restore ecosystem composition***
8. ***Protect and maintain watershed and soil integrity***
9. ***Preserve old or large trees while maintaining structural diversity and resilience***
10. ***Manage to restore historic tree species composition***

# NM FOREST RESTORATION PRINCIPLES



(cont.)

11. ***Integrate process and structure***
12. ***Control and avoid using exotic species***
13. ***Foster regional heterogeneity***
14. ***Protect sensitive communities***
15. ***Plan for restoration using a landscape perspective that recognizes cumulative effects***
16. ***Manage grazing***
17. ***Establish monitoring and research programs and implement adaptive management***
18. ***Exercise caution and use site-specific knowledge in managing grasslands and piñon-juniper savannas, woodlands and forests***

# *Prescription Guidelines*



- Forest Service NGH
- ERI Evidence-based
- DoF Clumpy 40
- Genetic
- One size does not fit all

# *Historic Structure*



Studies show for **Southwest ponderosa pine**:

- Trees were in clumps
- Clumps were 0.1-0.7 acre in size
- Space without trees separated clumps
- All sizes and ages were in the landscape

See

[www.eri.nau.edu/en/the-ecological-restoration-process/  
establishing-reference-conditions](http://www.eri.nau.edu/en/the-ecological-restoration-process/establishing-reference-conditions)

# *Take-Home Message*



Clumps

and

Openings

# Northern Goshawk – *Accipiter gentilis*





# *Northern Goshawk guidelines*



Management is aimed at increasing habitat for about eight prey species of the NGH.

A group or clump consists of trees that are close enough together that a squirrel can travel from one to the other without having to go to the ground. **True for all sets of guidelines.**

# *Northern Goshawk guidelines*



Reynolds, Richard T.; Graham, Russell T.; Reiser, M. Hildegard; and others.

1992.

Management recommendations for the northern goshawk in the southwestern United States.

Gen. Tech. Rep. RM-217, Ft. Collins, CO:

U.S. Department of Agriculture, Forest Service,  
Rocky Mountain Forest and Range Experiment  
Station. 90 p.

# *Northern Goshawk guidelines*

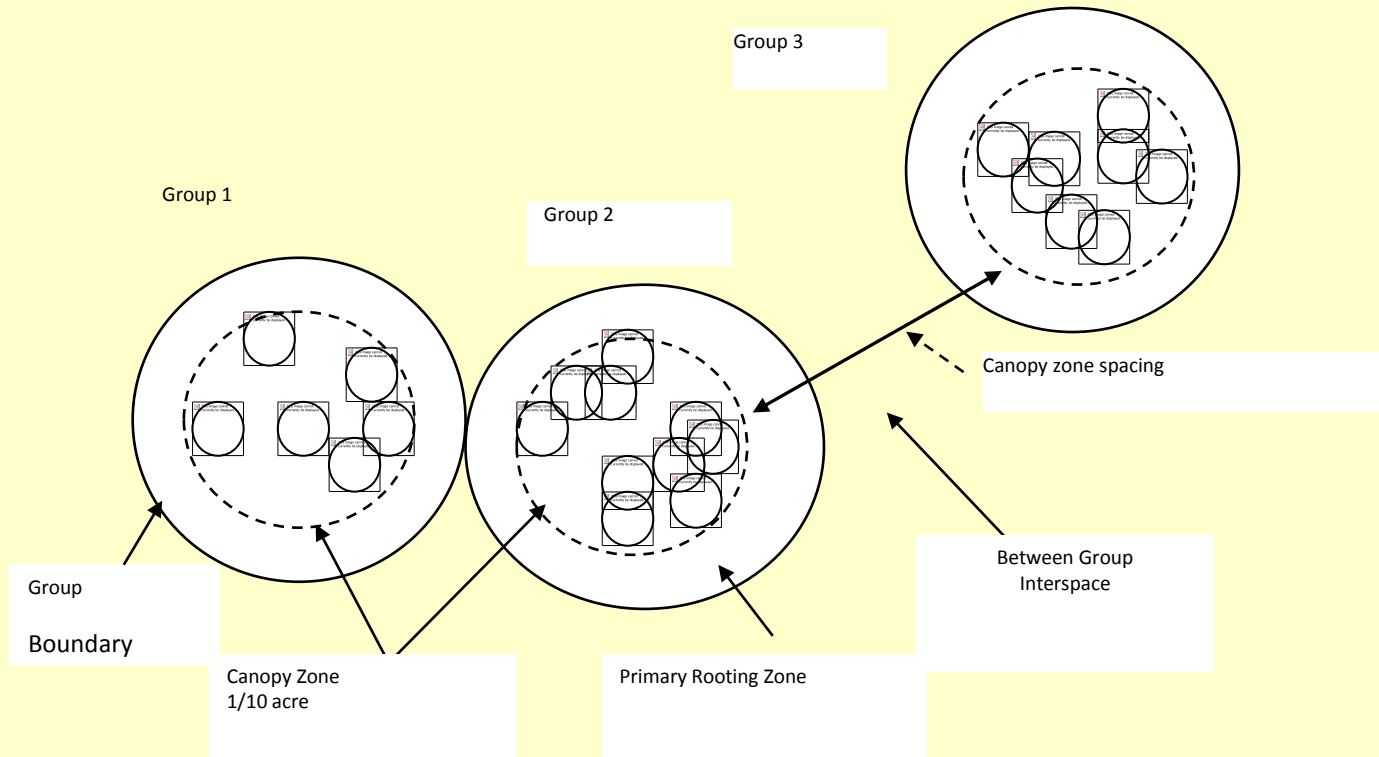


## Vegetation Structural Stages

- VSS1 – grass/ forb/ shrub, 0-1" dbh
- VSS2 – seedling/ sapling, 1-4.9" dbh
- VSS3 – young, 5-11.9" dbh
- VSS4 – mid-age, 12-17.9" dbh
- VSS5 – mature, 18-23.9" dbh
- VSS6 – old, 24+" dbh



# Northern Goshawk guidelines



# *Northern Goshawk guidelines*



## Proportion of clumps on the landscape

- VSS1 – 10%
- VSS2 – 10%
- VSS3 – 20%
- VSS4 – 20%
- VSS5 – 20%
- VSS6 – 20%

# *Northern Goshawk guidelines*



# *ERI "Evidence" guidelines*



- Retain all "big" trees
- Replace all evidence with 3 trees (< 16-in dbh)
- Replacement trees are best and closest to evidence

See

[www.eri.nau.edu/en/restoration-treatments/presettlement-model](http://www.eri.nau.edu/en/restoration-treatments/presettlement-model)





# *ERI "Evidence" guidelines*



# *"Clumpy 40" guidelines*



- Basal area = 40 sq ft / acre
- Residual stand with trees in clumps  
and openings between the clumps
- Poorest trees are cut

# *Phenotype "Lean Wolf" guidelines*



- Lean - Leaner
- Wolf - Wolfy/ undesirable branch structure
- 2 - Two or split topped
- Low - Low vigor/ sickly
- D - Diseased/ unhealthy
- O - Overtopped/ suppressed
- C - Crooked/ sweep

# *One size does not fit all*



*Consult your local professional*



# *Prescribed Fire*



# *Prescribed Fire*



New Mexico  
Department of  
Energy, Minerals  
& Natural  
Resources

January 1992



## **Guidelines for Prescribed Fire In New Mexico**

**Prepared by  
Forestry & Resources  
Conservation Division**



# *Prescribed Fire*



New Mexico  
Department of  
Energy, Minerals  
& Natural  
Resources

January 1992



## **Guidelines for Prescribed Fire In New Mexico**

**Prepared by  
Forestry & Resources  
Conservation Division**



New Mexico Prescribed Fire Council will hold its first general membership meeting at 9am on Thursday 21 October at the Albuquerque Fire Department Academy Auditorium



# *Prescribed Fire*



# *Contacts*

---



- <http://www.nmfwri.org>
- [rkreid@nmhu.edu](mailto:rkreid@nmhu.edu)
- 505-426-2080