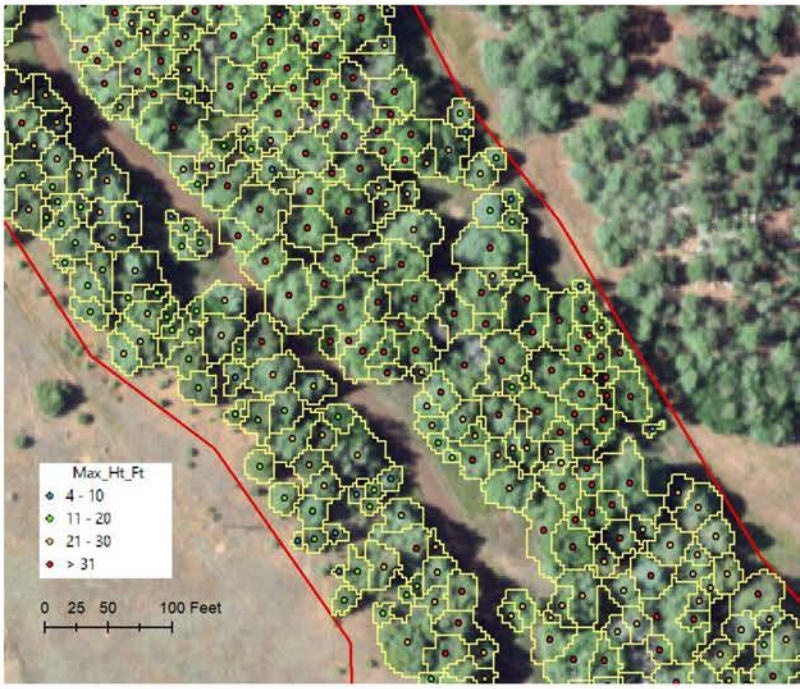
NM Forest & Watershed Restoration Institute

2024 Annual Report



New Mexico Forest and Watershed Restoration Institute
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Table of Contents

1 Introduction

2 Facts at a Glance

4 Federal Work Plan Themes and Programs

7 Conservation Science Center

9 Geospatial Analysis and Support

11 Ecological Monitoring

13 Collaboration

15 Research

17 Communication and Public Information

18 Agency and Community Partners

Cover Photos: Top left - A New Mexico landscape; Top right - Volunteers from Hermit's Peak Watershed Alliance learn tree measurement techniques from NMFWRI monitoring staff; Bottom left - A gathering of the 2-3-2 Cohesive Strategy Partnership; Bottom right -Aerial forest photo. Photos by Kathryn Mahan, Patti Dappen, Crystal Medina, and Elizabeth Becker. This page: Photo by Dana Heusinkveld. Annual report design by Dana Heusinkveld, Staci Matlock, Kathryn Mahan, and Shantini Ramakrishnan.

Introduction

The New Mexico Forest and Watershed Restoration Institute (NMFWRI) is a federal-state partnership, with a skilled staff that works to promote adaptive management practices that encourage healthy forests, and to support technologies and land management practices that reduce the risk of high-intensity and catastrophic wildfires in the Southwestern United States. NMFWRI is based at New Mexico Highlands University (HU) in Las Vegas, NM. NMFWRI staff with expertise in geospatial information systems, ecological monitoring, education, workforce development, and collaboration work alongside partnering organizations and affected entities around New Mexico and the Southwest.

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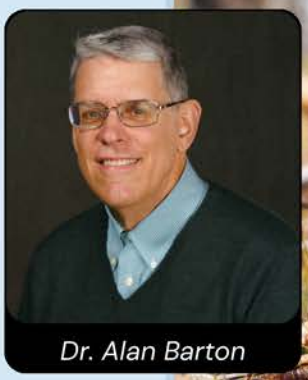
Learning From Experience

By Dr. Alan Barton



Dr. Alan Barton

Resiliency is a concept that we invoke frequently in our work at the New Mexico Forest & Watershed Restoration Institute. Resiliency goes hand-in-hand with restoration—to a large degree, restoring ecosystems means finding ways to build greater resiliency into their functioning. Resilient systems are built on adaptability, which provides the ability to handle and bounce back from adverse conditions, and which is why NMFWRI promotes adaptive management strategies as the path to resilient ecosystems. Effective adaptive management is rooted not just in ecological resiliency, but also in resilient human communities. Social and economic resiliency, and adaptive cultures, are those that can survive and thrive through adversity.

As we reflect on 2024, we look back on a year of unusual challenges, a gantlet of adversity produced by atypical trials in NMFWRI's communities. Our university faced a cyberattack that closed campus in the spring, and a crisis in the fall as our science building was shut down for an extended period to resolve issues with chemical storage. Our home community of Las Vegas, New Mexico faced dangerous flooding events over the summer as monsoon rains fell on the Hermit's Peak-Calf Canyon burn scar outside of town, again closing the university along with most businesses in town for over a week. And early this winter, Las Vegas was hit with a generational blizzard that locals have dubbed "snowpocalypse," that again shut down the university and most of the town. With so many challenges occurring in one year, 2024 was anything but typical.

At NMFWRI, our staff pushed through these disruptions and continued our work, seeing these challenges not as barriers but as opportunities. We increased our participation in campus committees and events. And following the adverse weather, we have redoubled our "Querencia in Action" outreach to local communities, helping landowners and local officials take steps to craft more resilient landscapes and communities.

As NMFWRI enters its 20th year in 2025, we can see how our consistent focus on resiliency over two decades has taken hold in our own Institute. While we did not expect the many challenges we faced in 2024, our experiences over the last two decades have instilled in us a resilient mindset and organizational culture that prepared us to bounce back quickly, adapt, and thrive as we worked with our partners to recover from short-term setbacks, while considering and fostering medium and long-term outcomes in these recovery efforts. Resiliency is central to our mission and our work.

Facts at a Glance

WHO WE ARE

Authorized by Congress with the Southwest Forest Health and Wildfire Prevention Act of 2004, the New Mexico Forest and Watershed Restoration Institute (NMFWRI) was established in 2005 at New Mexico Highlands University in Las Vegas, NM.

Over the past twenty years, we have:

- provided support to affected entities who work to reduce catastrophic wildfires and create healthy and resilient forest and grassland ecosystems;
- engaged partners and communities to bridge scientific and local knowledge; and
- built capacity in landscape-scale adaptive management.

We are dedicated to a brighter future for New Mexico in which residents live in safe communities where the risk of wildfires is low, where neighbors benefit from participating in sustainable economies, and where healthy forests provide abundant resources and recreational opportunities for all New Mexicans.

Drone photo by Katie Withnall

A portion of the burn scar from the 341,000 acre Hermit's Peak/Calf Canyon Fire in Northeast NM.

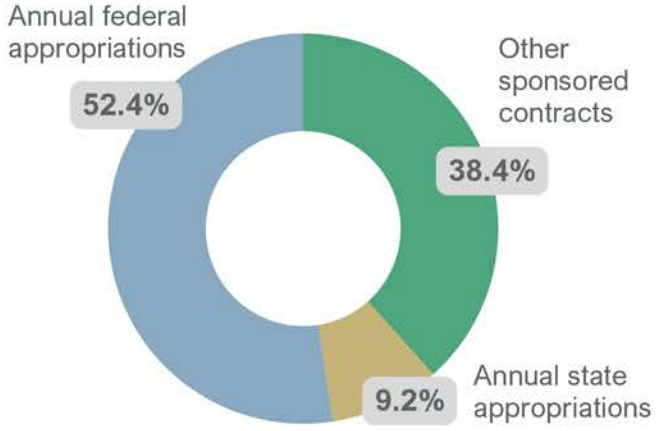
Photo by Alan Barton

NMFWRI staff visit visit Old Wood, a Las Vegas, NM custom wood flooring business.

TWO DECADES OF SERVICE

The NMFWRI celebrates its 20th anniversary in 2025. Over the past two decades, staff have worked to establish relationships with and provide support to faculty and staff at Highlands University; landowners and community organizations around Las Vegas; public agencies, non-profits, businesses, schools and community groups around New Mexico; and Intermountain West regional organizations. We advocate for effective applied adaptive management rooted in science and traditional knowledge.

NMFWRI FY24 DIRECT FUNDING



In FY24, NMFWRI activities were directly funded by three primary sources:

- federal appropriations;
- state appropriations; and
- other sponsored contracts (federal, state, NGO).

NMFWRI also receives in-kind support from New Mexico Highlands University.

Drone photo of Jemez Valley by Elizabeth Becker

IMPACTS

RESOURCE AND INFORMATION SHARING

- Strengthened partnerships with 60+ entities to restore ecological health, reduce wildfire risk, and improve community safety across large landscapes.
- Built tools for science-based forest restoration and fire management, including the NM Vegetation Treatment Geodatabase (covering 8 million acres), the NM Fire Viewer (175,000 visits during 2024 fire season), and Virtual Forest Tours showcasing desired forest conditions.
- Expanded expertise in GIS, ecological monitoring, landscape restoration, and project coordination through trainings, workshops, guidebooks, and collaboration with landowners and managers.
- Engaged over 1,000 K-12 and university students in STEM and resource careers through hands-on events like Envirothon, Project LISTOS, and the Mora Outdoor School.

TECHNICAL ASSISTANCE AND PRACTICE

- In the last 20 years, NMFWRI has monitored long-term ecological change cumulatively on over 2,500 plots around New Mexico affecting more than 64,000 acres, and provided data to researchers to assess treatment effectiveness.
- Facilitated and participated in 16 collaborative forest and watershed organizations and networks to coordinate restoration and public information projects.
- Coordinated trainings for landowners and forest managers in desired conditions, post-fire landscape recovery, and conducted research on watershed management and flood mitigation.
- Currently, NMFWRI researchers are carrying out 10 original research projects along with partners, affected entities, and communities.

LOOKING AHEAD TO 2025-2026

DECISION SUPPORT TOOLS

- Use ArcGIS Hub sites to support the Hermit's Peak/Calf Canyon post-fire recovery, statewide wildfire and post-fire response, and to facilitate information sharing among place-based collaborative groups in New Mexico.
- Expand the National Treatment and Wildfire Interagency Geodatabase (TWIG) in partnership with SWERIs, and contribute to research on its applications and treatment effectiveness.

EXPANDED PARTNERSHIPS

- NMFWRI researchers work with other SWERIs to assess collaborative governance in the Collaborative Forest Landscape Restoration Program (CFLRP).
- NMFWRI staff support local and statewide initiatives, including Luna Community College's Wildfire Resiliency Training Center, NMSU & NMHU's Reforestation Center, and post-fire recovery efforts in the Hermit's Peak/Calf Canyon fire scar.

FIRE-INFORMED RESTORATION EDUCATION FOR NEW MEXICO (FIRENM)

- NMFWRI's Ecological Monitoring, Conservation Science Center and Collaboration staff team up to develop community-engaged trainings and workshops for landowners and practitioners.
- Program includes placed-based training and short courses, community action days, technical guides, video series, and other resources.

Find us on YouTube, Instagram, Facebook, X, and LinkedIn

Our Dedicated Staff

Some of the NMFWRI team members at the *Randall Davey Audubon Center* during the 2024 staff retreat.

Photo by Staci Matlock

Federal Work Plan Themes and Programs:

Theme 1 *Community Engagement, Science Communication, and Restoration Education*

NMFWRI's Conservation Science Center and Education and Outreach staff increase awareness and understanding of ecological processes within forested ecosystems and watersheds across New Mexico and the related impacts of wildfire, including managed wildfires.

Theme 2 *Geospatial Analyisis & Support*

The NMFWRI GIS team represents an important center of restoration-based GIS, remote sensing, and GPS expertise in northern New Mexico, offering technological solutions to restoration-based issues while strengthening connections to affected entities. Projects include GIS support to collaborative groups, geospatial technology training for land managers and natural resource professionals, and continued development and maintenance of the New Mexico Fire Viewer. NMFWRI's New Mexico Vegetation Treatment Geodatabase paved the way for a nationwide wildfire and fuels treatment database and viewer.

Theme 3 *Monitoring Ecosystem Response and Reducing Barriers to Adaptive Management*

NMFWRI's Ecological Monitoring team collects and analyzes data on ecosystem response to restoration, providing a scientific basis for restoration treatments and adaptive management practices. Monitoring staff train partners and affected entities in monitoring practices, and each summer the Ecological Monitoring Program prepares New Mexico's future forestry work force by employing student interns and offering them training and valuable practical experience in forest restoration. NMFWRI also maintains a growing archive of monitoring data collected in New Mexico as a valuable resource for the state.

Theme 4 *Collaboration and Partnerships*

NMFWRI's Collaboration team advances collaborative conservation by promoting and coordinating partnerships, developing collaborative capacity in rural communities, creating and facilitating networks of collaborative organizations, improving communications among collaborative groups and the public, and supporting administrative needs of volunteer groups.

Theme 5 *Communication and Public Information*

NMFWRI's Public Information staff craft and disseminate strategic and effective multimedia communications to inform and engage the public and partners in the Institute's work. The Public Information Specialist develops videos, story maps, briefing papers, slideshows, posters, and articles that describe and highlight NMFWRI projects, and communicates regularly with media outlets, partners and affected entities to share knowledge and information on adaptive management and forest restoration.

Theme 6 *Forest Operations, Economics, and Utilization*

NMFWRI staff support effective forest operations and a sustainable, restorative and regenerative economy, and promotes an effective wood utilization industry as an agent of forest restoration. Operations, Economics and Utilization seeks to enhance business capacity, reduce barriers to trade, develop uses for small diameter timber, and plan and implement outreach on forest restoration protocols and treatment effectiveness. Forest Operations also includes developing and promoting forest restoration protocols, and studying treatment effectiveness and the effects of managed and prescribed fire.

Theme 7 *Research Coordination and Communication*

NMFWRI's Research Associates increase the Institute's capacity at translating and communicating scientific and traditional knowledge to a wide range of affected entities. Research associates conduct research that supports the work of all NMFWRI programs, and collaborate with staff to develop research and policy briefs, white papers, and scientific manuscripts rooted in NMFWRI's projects.

Theme 8 Professional Development

NMFWRI supports professional development opportunities for staff members to increase capacity and maintain a healthy and productive workplace. Organizational development includes shared leadership, regular staff meetings, occasional staff field trips and retreats, and inter-SWERI collaborations, workshops, and annual summits.

Programs


Santa Fe Co.; NM
Douglas-fir
Dendr seudotsugae
Dougl beetle
Hand Collected
V. Lucero 9-26-2023


FIRE ADAPTED
NEW MEXICO
learning network

Conservation Science Center

NMFWRI's Conservation Science Center builds the capacity of rural New Mexican youth to actively lead the conservation of local landscapes through place-based education, immersive outdoor engagements, and the empowerment of local voices. Program components are designed to remove barriers to adaptive management through K-16 education and adult land stewardship trainings in the management and restoration of forested ecosystems and watersheds throughout New Mexico.

CONSERVATION SCIENCE CENTER

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STEAM Programming

A total of 1,056 student interactions were achieved in 2024 through 17 CSC engagements, serving New Mexico youth primarily from Anton Chico, Española, Las Vegas, Mesa Vista, Mora, Peñasco, Santa Fe, Santa Rosa, Taos.

Types of CSC STEAM programming

*Numbers indicate total youth audience reached

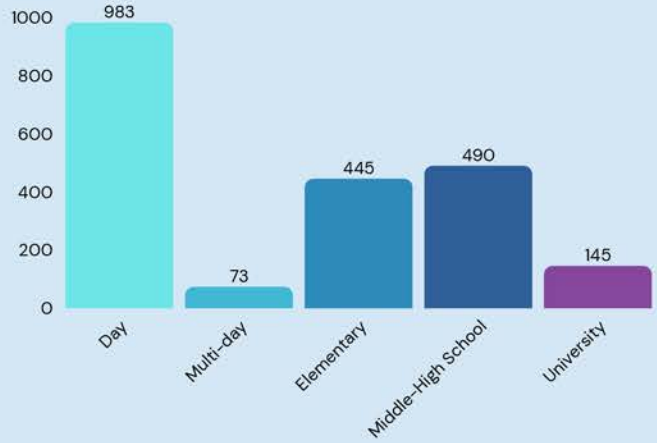


Photo by Celeste Baca

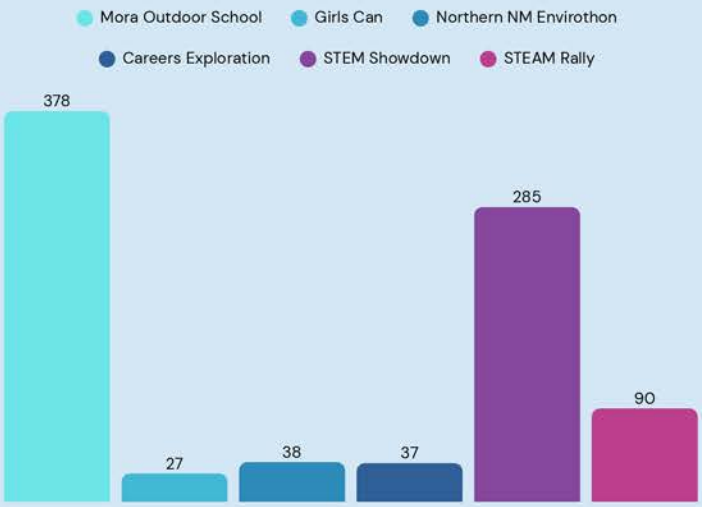
Students learn about soil science during a Summer Field Experience outing.

Photo by Faith Purvey

Students at United World College learn to use a SimTable.

Select CSC Annual Projects

*Numbers indicate total youth audiences reached



Post-fire Recovery: Holistically Responding to Community and Watershed Recovery

Querencia in Action: Living with Fire Workshops
Survival Space (Pendaries)
Bark Beetle Management (Rociada)

Conference Panels
After the Flames
Philanthropy Southwest
NM Wildland Urban Fire Summit
Congreso de las Acequia
4th SW Fire Ecology

Technical Guides
Bark Beetle Management
Contour Log Felling

Prescribed Fire
Rx fire training, cooperative burns, Prescribed Burn Associations, certified burn manager certification

Fundraising
External funding to scale up efforts

Photo by Faith Purvey

Students test their natural resource knowledge during an Envirothon at Collins Lake Ranch.

Program Support

Photo by Faith Purvey

Donations to the CSC through the HU Foundation are used to support K-12 programming in New Mexico, leadership and life skills development among under-graduate and graduate STEM students and CSC-related initiatives. Scan the QR code to support!

5th graders at Mora Outdoor School on a botanical scavenger hunt.

High Impact Practices at CSC

- Under-graduate Research
- Capstone Projects
- Collaborative Assignments
- Common Intelectual Experiences
- Service Learning
- Learning Communities

Partners

Reciprocal partnerships leverages limited resources for maximum impact

Geospatial Analysis and Support

NMFWRI's Geospatial Information System (GIS) work plays a pivotal role in fostering connections with our partners and communities and provides innovative technological solutions to restoration challenges. NMFWRI continues to serve as a hub for restoration-focused GIS, Remote Sensing, and GPS expertise in northern New Mexico. Key initiatives include GIS support to collaborative groups, delivering geospatial technology training for land managers and natural resource professionals, and maintaining and enhancing the tools highlighted below.

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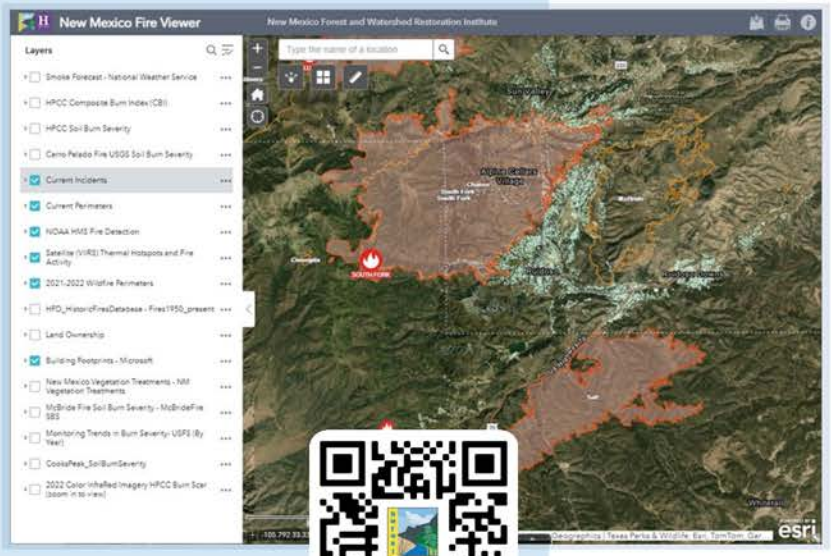
New Mexico Fire Viewer

nmfireviewer.org

Originally built for the Hermit's Peak/Calf Canyon fire, the NM Fire viewer was refocused to support individuals and communities impacted by the Salt and South Fork fires near Ruidoso, NM during May to June. The GIS team updated the viewer to show relevant local layers, such as satellite hot spot detections, building footprints, and smoke forecasts. The NM Fire Viewer was visited more than 175,000 times over the duration of the fires and 30,000 times per day in just the first week.



Visit the NM Fire Viewer

ReSHAPE & TWIG

reshapewildfire.org

Beta version was released in 2024!

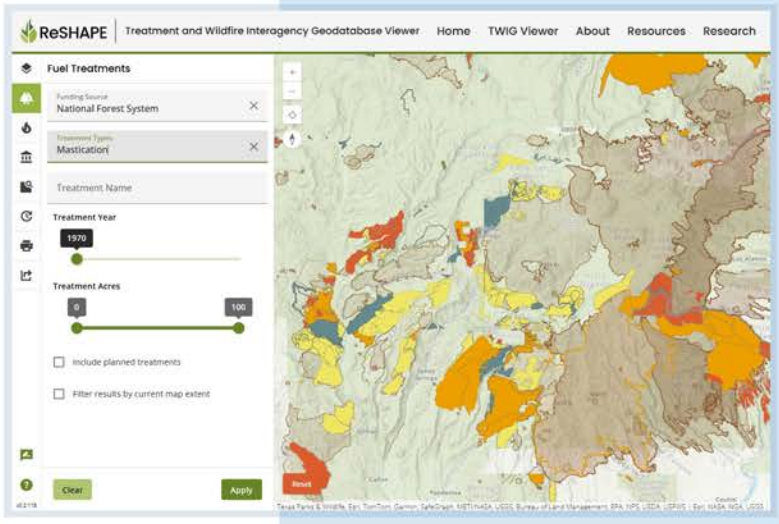


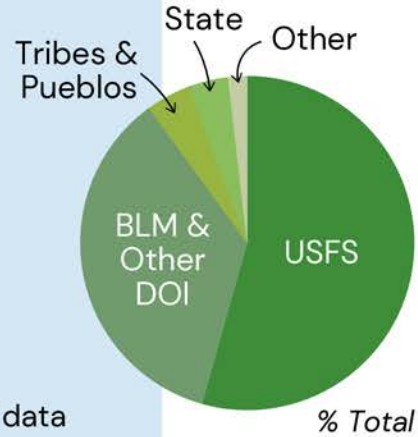
Photo by NMFWRI

SWERI, a consortium that includes NMFWRI, was funded by Congress to develop a nation-wide database and interactive map showing all federal vegetation treatments and wildfires. The GIS team collaborated with the other SWERI institutes to develop the Treatment and Wildfire Interagency Geodatabase (TWIG). The Beta version was released in September 2024 at the Society of American Foresters Conference.

New Mexico Vegetation Treatment Database

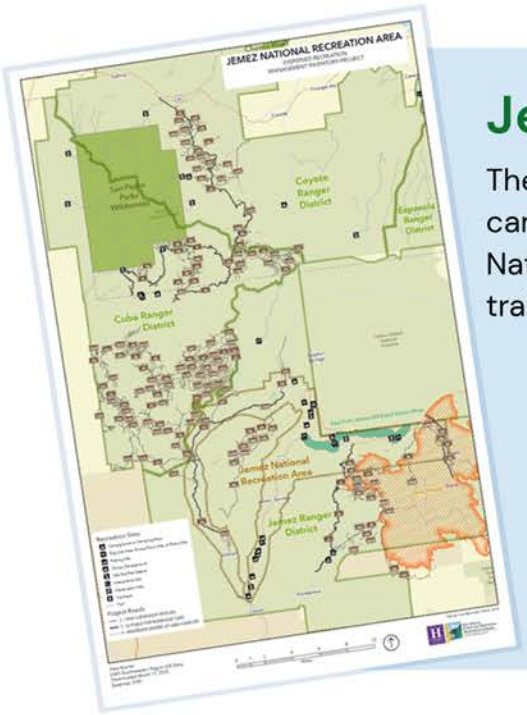
vegetationtreatments.org

The New Mexico Vegetation Treatment Database provides information on vegetation treatments covering over 8 million acres across New Mexico, and cross-boundary projects in Colorado, Texas, and Oklahoma.



% Total Treatments by Agency

Treatments are displayed by status (ongoing, completed, or historical) and data attributes include name, type, landowner, agency, and funding source.



Jemez Recreational Mapping

The GIS team partnered with the USFS to locate and map dispersed camping sites and unofficial recreational trails within the Jemez National Recreation Area. The USFS will use the data to identify new trails that can in turn be funded and maintained.

Embedded photos by NMFWRI

***627** dispersed campsites were documented and **17 miles** of unofficial recreational trails were mapped.*

Virtual Forest Tours

forestvisualization.org

NMFWRI joined a field tour of the Midnight Fire burn scar near El Rito, NM, showcasing how effective forest management helped to control wildfire behavior and avoid catastrophe. The GIS team collected 360° photos, drone imagery, and videos to build a new Forest Visualization StoryMap about this success story - *coming in 2025!*

Photo by NMFWRI

GoPro Images by NMFWRI

Ecological Monitoring

NMFWRI's Ecological Monitoring Program maintains a professionally managed field crew to collect and analyze data on short and long-term ecosystem responses to restoration treatments and wildfire, providing a critical scientific basis for adaptive management decisions and improved forest treatment effectiveness. As of 2024, the program has collected data on over 2,500 plots across more than 64,000 acres in upland and riparian areas (including over 500 plots in the Hermit Peak/Calf Canyon and Cooke's Peak burn scar). The program collaborates with more than 40 partners and is responsive to partner needs related to monitoring and adapative management, and works to build state-wide capacity for ecological monitoring and restoration.

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Upland, Riparian, and Post-Fire Fieldwork

See a map of our upland projects here

Photo by Emily Yannayon.

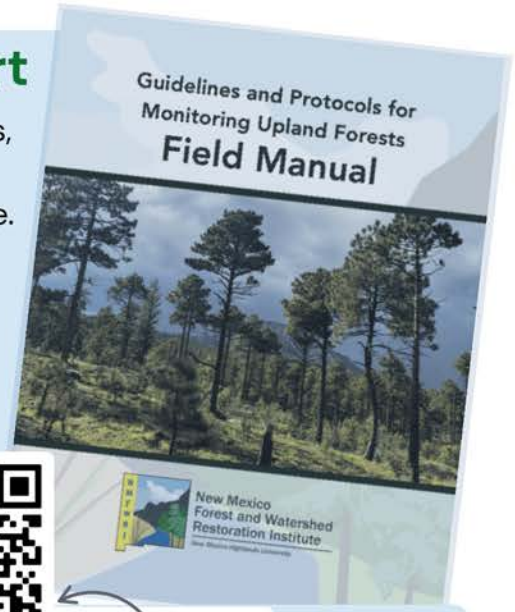
Midmorning golden hour at Upper Mora.

- The NMFWRI Ecological Monitoring team completed a full cycle of post-fire monitoring on long-term sites within the Hermit's Peak/Calf Canyon (HPCC) burn scar, an effort the team began in 2022. These 300+ post-fire plots provide opportunities for in-depth comparison of untreated sites and treated sites and improved understanding of treatment effectiveness and longevity. (*cross-project publications expected in 2025!*)
- Cooperatively collected 25 plots and cored 62 trees with USGS at Rowe Mesa to study ponderosa pine/Piñon-Juniper intergrade.
- Completed a contract with Dr. Keith Moser of Rocky Mountain Research Station in Flagstaff at the Fort Valley Experimental Forest.
- Continued partnership with the Greater Rio Grande Watershed Alliance to monitor non-native phreatophyte removal treatments and provide adaptive management support.
- Implemented a Quality Assurance protocol to expand Measurement Quality Objectives, quantify data quality, and refine training programming.
- Publication of webmaps, project reports, and more!

Scan QR code for GRGWA StoryMap

Capacity-Building and Technical Support

- Worked with dozens of different partners to develop monitoring plans, train crews, collect, analyze, report and interpret data, assisted with data management workflows, served on advisory committees, & more.
- Publication of the Guidelines and Protocols for Monitoring Upland Forests Field Manual *(riparian manual update expected 2025-6)*.
- Student support: guest lectures, trainings, and internships for HU students, including research experiences and crew exchanges.
  - 94% of Monitoring student interns 2014-2024 have gone on to careers in STEM and/or graduate studies
  - Provided training in field safety, professional behavior, wilderness first aid, and more to 25+ interns



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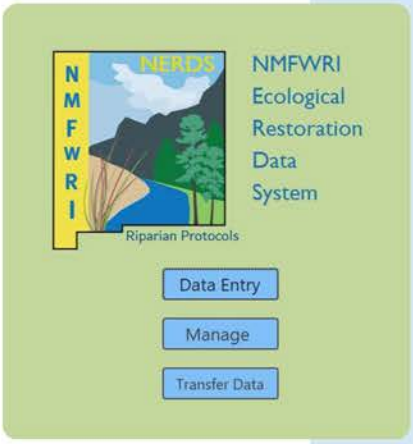
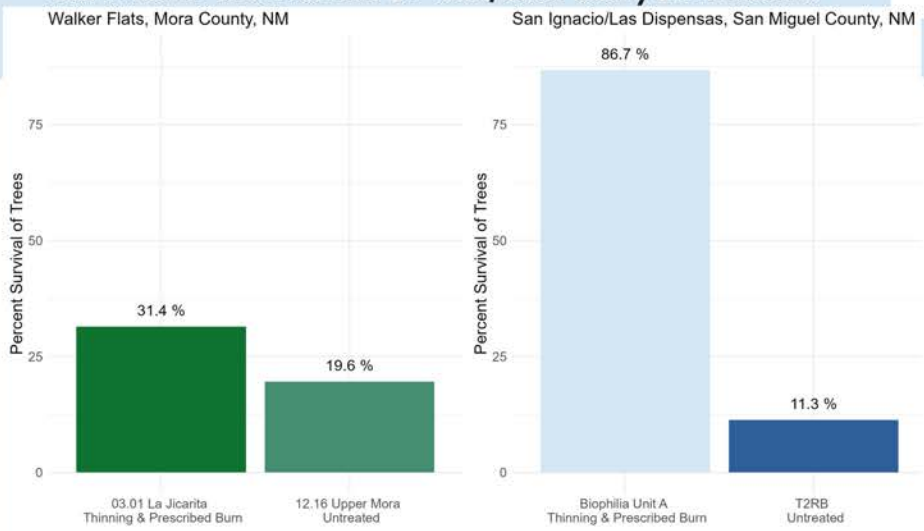
Other Projects



- Responded to at least 7 data requests from other researchers.
- Developed and deployed *NERDS* data entry and management platform.
- Concluded the study, "Ecological Monitoring in NM: Extent, Needs and Opportunities"; began new studies: "Ecological Monitoring with professionals, students, and volunteers" and "A look back at the adaptive management of ecological monitoring at the New Mexico Forest and Watershed Restoration Institute."
- Publication of the "Piñon-Juniper Restoration Protocols" and PJ Desired Condition Tours.
- Presented on panels at After the Flames conference in Estes Park, Colorado; Wildland Urban Fire Summit in Taos, NM; and more.

Effect of Forest Restoration Treatments on Tree Survival in the Hermit's Peak/Calf Canyon Wildfire



In mixed conifer stands near Mora, the treated site at La Jicarita (03.01)—which had been both thinned and burned—saw 31.4% overstory tree survival, compared to just 19.6% at the adjacent untreated site (12.16 Upper Mora). Though survival rates were modest due to the nature of mixed conifer fuels, the treated site still demonstrated 1.5 times higher survival. The impacts of restoration thinning are even more pronounced in ponderosa pine. The Biophilia Unit A project near San Ignacio, also thinned and burned, preserved 86.7% of overstory trees, while the nearby untreated T2RB site experienced a dramatic loss, with only 11.3% of trees surviving. These case studies underscore the protective role of proactive forest treatments in a site's resilience to wildfire. lower survival rates in untreated stands are not inherently negative—many of these areas were overstocked before the fire. These examples suggest that forest treatments don't just alter fire behavior—they give us greater control over which trees have the best chance of survival. This comparison is preliminary, with more detailed analysis to be released in 2025.

Collaboration

NMFWRI's Collaboration Program expanded its network of partners across agencies, organizations, and regional groups in New Mexico and the Southwest. The team actively participated in meetings and conferences, facilitated discussions , and provided advisory support, thereby strengthening connections that informed key initiatives. The Collaboration Team developed informational resources for local communities on adaptive land management, collaborative conservation, and funding opportunities and maintained the NM Collaborative Map. By continuously engaging with local groups and partners, the team conducted informal, observational needs assessments to identify common challenges faced by leaders in collaborative efforts. These insights directly shaped the development of the NM Collaboration Hub – an online repository built using ArcGIS Hub to provide publicly accessible resources, tools, event listings, programs, rosters, and archival documents. The team plans to launch the Hub in early 2025 to further support and connect practitioners across the state.

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NMFWRI Collaboration Program

Collaborative Groups

- Estancia Basin Watershed Health Restoration and Monitoring (EBWHRM) Committee*
- Magdalena Collaborative
- Otero Working Group
- High Plains Grasslands Alliance
- Zuni Mountain Collaborative
- NM Fuelwood Working Group
- Cimarron Watershed Alliance
- 2-3-2 Cohesive Strategy Partnership
- New Mexico Prescribed Fire Council
- Greater Santa Fe Fireshed Coalition
- East Jemez Resource Council
- NM Tribal Forest & Fire WG
- Taos Valley Watershed Coalition

Workshops & Training

- GIS Training with NMFWRI GIS Program
- High Plains Grassland Alliance Informational Workshop with Conservation Science Center

Collaborative Networks

- SW Collaboratives Support Network (SWCSN)
- C4C Santa Fe
- Western Collaborative Conservation Network (WCCN)
  - Steering Committee
  - Emerging Leadership WG
  - Engagement WG

Conference Presentations

- AFE 4th SW Fire Ecology Conference
- NM Wildland Urban Fire Summit (WUFS)
- Philanthropy Southwest 76th Annual Conference
- Conference for Latin American Geography
- Rural Sociological Society Annual Meeting
- WCCN Confluence
- UNM Mentorship Conference

Photo by Crystal Medina

Participants at a Southwest Fire Ecology Conference disussion co-hosted by NMFWRI.

Facilitation, Coordination and Support

- Facilitated, coordinated, and/or provided direct support to the Estancia Basin Watershed Health, Restoration and Monitoring (EBWHRM) Committee, the Magdalena Collaborative, the Otero Working Group, the High Plains Grasslands Alliance, the New Mexico Fuelwood Working Group, and the Wood Utilization Working Group of the Zuni Mountain Collaborative.
- Worked with the NMFWRI GIS Program to promote AllPoints GIS Trainings for Collaborative groups and support organizations, and with the NMFWRI Conservation Science Center to organize a landowner-engaged workshop with the High Plains Grasslands Alliance on *Using Fire to Manage Private Lands*.
- Regularly attended and participated in meetings of the Cimarron Watershed Alliance, the 2-3-2 Cohesive Strategy Partnership, the New Mexico Rx Fire Council, the Greater Santa Fe Fireshed Coalition, the East Jemez Resource Council, the New Mexico Tribal Forest & Fire Working Group, and the Taos Valley Watershed Coalition.
- Coordinated and provided direct support to the Southwest Collaboratives Support Network (SWCSN), the Steering Committee of the Western Collaborative Conservation Network (WCCN), the Emerging Leadership Working Group of the WCCN, the Awareness and Engagement Working Group of the WCCN, and Connecting for Conservation (C4C) Santa Fe.
- Organized, moderated, and/or served as a speaker for three conference panel sessions focused on conservation and land management practices in New Mexico, fostering dialogue and knowledge-sharing among practitioners and stakeholders.

Photo by Crystal Medina

2024 Collaboration staff

Scan to view Collaboration map

Resource Publications Produced

Compiled the following resources for local collaborative groups and communities:

- What are Collaborative Conservation Groups in New Mexico?
- Mulching vs Chipping: A Brief Overview
- Firewood Banks: A Brief Overview
- Mora County: Public Water System Information
- Key Takeaways from the Association for Fire Ecology 4th Annual Southwest Fire Ecology Conference Special Session: Learning from the Hermit's Peak Calf Canyon Wildfire, the largest fire in New Mexico – From erosion to reforestation and living in the continuum of wildfire cycles
- High Plains Grasslands Alliance Post-Workshop Information Packet from the Informational Workshop on Using Fire to Manage Private Working Lands

Photo by Crystal Medina

A gathering of the 2-3-2 Cohesive Strategy Partnership.

Research

In its inaugural year, NMFWRI's research coordination program began developing projects and relationships with three primary purposes. These are: to synthesize and share more broadly the information generated by NMFWRI programs; to conduct research that furthers understanding of the fire-vulnerable human and ecological systems of the Southwest; and to develop collaborative relationships with land managers and landowners, water systems managers, non-governmental organizations (NGOs), academic researchers at Highlands University and other universities, and colleagues at the other Southwest Ecological Restoration Institutes (SWERIs). The Research Coordination Theme is divided into two primary focuses: technical and applied science and civic and community action research.

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New Research Development

Partnered in developing **8 research projects**:

- Counterfactual analysis of wildfire burn severity to quantify fuel treatment effectiveness – a Hermits Peak/Calf Canyon Fire, NM, USA case study.
- Creating Clarity in mixed-conifer forest types of the Southern Rocky Mountain Region, USA
- Treatment Wildfire Interagency Database: Data, uses, and applications
- Finding a way forward with JAWS: A reflective practitioner case study of the Jemez Alliance of Water Systems
- STEM Showdown: A longitudinal study of changing perceptions and attitudes of place, identity, and science in high school and middle school students living in rural New Mexico
- A look back at the adaptive management of the ecological monitoring program at the New Mexico Forest and Watershed Restoration Institute
- Exploring the challenges and opportunities of engaging communities in the Collaborative Forest Landscape Restoration Program (SWERI Project)
- Facilitating the use, application, and evaluation of the Treatment and Wildfire Interagency Geodatabase (SWERI Project)

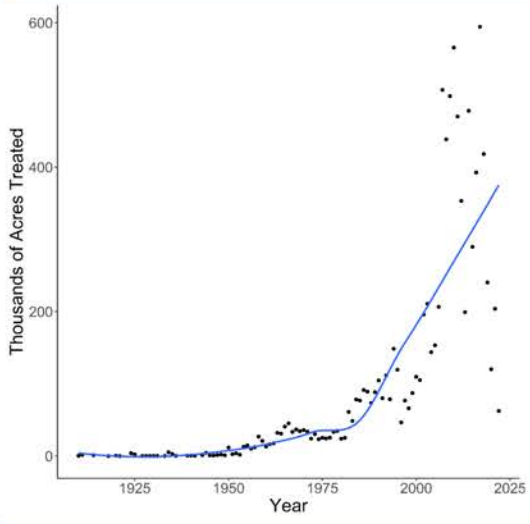
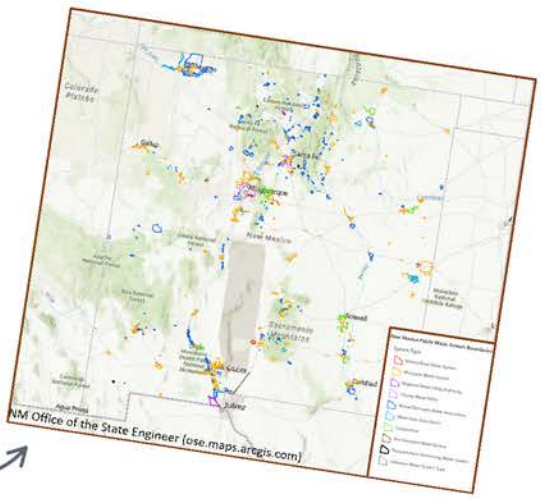


Figure above is from "A database of vegetation treatments in New Mexico, USA and surrounding regions" published in Data in Brief. This figure illustrates the trend in the total area of treatments recorded in the database over time.

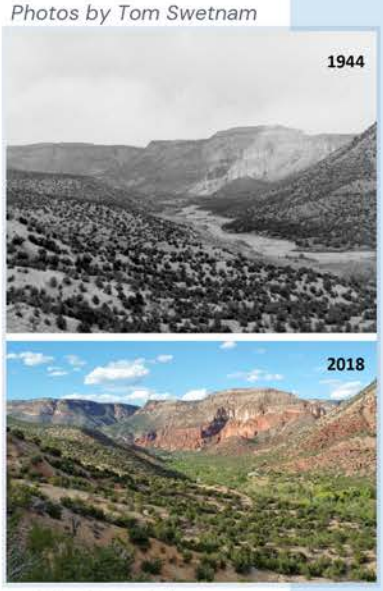


Map of community water systems in New Mexico. Courtesy Office of the State Engineer

Research Communication

Some of the pictures taken by community members as part of the photovoice project.

Photos by Tom Swetnam



Rio Guadalupe, then and now.

- Presented research at Southwest Fire Ecology
  - "*Burn severity analysis of treated and untreated forest stands*". This study explores the effects of fuel reduction treatments that burned in the 2022 Hermit's Peak-Calf Canyon fire. Additionally, this project seeks to build a data pipeline for estimating whether fuel reduction treatments lowered the burn severity, relative to a control expectation.
- Presented research at Southwest Fire Ecology:
  - "*How to empower public water systems to become more resilient to wildfire and post-fire impacts*". This presentation reviews initial findings from an ongoing collaboration with the New Mexico Rural Water Association that uses participatory action research methods (photovoice) to help public water systems in the Jemez Mountains translate their collective values and interests into sustainable actions.
- Presented research at the Society for Freshwater Science
  - "*Using national monitoring data to evaluate the efficacy of environmental policy: a case study in nutrient pollution*". This presentation made the case for explicit evaluation of environmental policy's effects on water quality. While there are numerous studies of the factors that influence water quality, policy is rarely considered explicitly in the context of pollution that decreases water quality for aquatic life.
- Moderated a panel presentation at After the Flames Conference
  - "*Community-level recovery and restoration following the Hermit's Peak Calf Canyon Fire, 2022*". This panel brought together local government (NM Forestry Division), community-led NGOs (Neighbors Helping Neighbors, NM Acequia Association, AgWell) and NMFWRI staff to reflect on community recovery efforts and to share lessons learned with the wider post-fire community of researchers and practitioners.
- Moderated a panel presentation at the Philanthropy Southwest Conference
  - "*Exploring the role of philanthropy in recovering rural communities devastated by wildfire*". Using the Hermits Peak Calf Canyon recovery effort as a case study, the speakers on this panel (post-fire recovery experts and New Mexico based philanthropic organizations) explored the potential for charitable investments to help recover and restore ecosystems and communities devastated by fire.

Publications

NMFWRI staff members Katie Withnall, Dr. Nathan Tomczyk and Patti Dappen published a manuscript in Data in Brief: "*A database of vegetation treatments in New Mexico, USA and surrounding regions*". This manuscript describes the creation and validation of the New Mexico Vegetation Treatment Database and will assist the reuse of these data in scientific applications, as the repeatable process to collect the data is fully described. Additionally, the validation of the vegetation treatment data will assist researchers in assessing the value of this data product for their work.

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Communication and Public Information

NMFWRI's Public Information staff work across NMFWRI programs to communicate the institute's work and to share knowledge and information on adaptive management and forest restoration with partner agencies, landowners, and forest-dependent communities. Public information staff create multimedia digital and print products to share through traditional print and broadcast media, social media, and in-person events.

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HU Student Interns:
Rob Garner, Gabriel Jimenez, Destiny Zukevich and Julianna Olguin

Workshop & Resource Promotion

- Worked with a local newspaper on a weekly print and digital ad campaign to promote NMFWRI land restoration workshops and resource guides.
- Promoted 10 workshops and events hosted by partners through ads, press releases, and social media.
- Wrote news items regarding NMFWRI publications and workshops.and posted to website.at nmfwri.org.

Expand Knowledge of NMFWRI

- Designed and produced a monthly e-newsletter.
- Worked with NMHU Media Arts interns to develop a wildfire risk reduction game app; launch expected in Summer, 2025.
- Crafted and scheduled posts about NMFWRI programs, workshops, and resources on social media; grew social media presence on LinkedIn, Youtube, Facebook, Instagram, and X.
- Wrote an article on HPCC Fire recovery for NM Magazine: "Forged in Fire", July, 2024

Agency and Community Partners

NMFWRI collaborates with more than 60 partners around the state and region, including tribes, community groups, NGOs, landowners, businesses, schools and universities, and local, state, and federal agencies. NMFWRI strives to meet partners needs through research, technical trainings and services, data analysis, decision support tools, workforce development, learning opportunities, and sharing information on adaptive forest and watershed management.