



Case Study by CART



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Forest Mayordomos: A Collaborative Forest Management Strategy

**A Case Study on Fire Management**  
**February 26, 2024**



## Introduction

The Carson National Forest (CNF) spans over 1.5 million acres in northern New Mexico and [contains mainly pinyon, juniper, and ponderosa pine trees](#). Various land protection acts dating back over 100 years required the USFS to suppress forest fires, increasing the length of time between low-intensity fires that the fire-dependent forests on the CNF evolved with. The longer fire return intervals have increased tree density and the amount of heavy fuels, such as trees and large dead wood. As climate change-driven drought increases, this excess vegetation in pinyon-juniper and ponderosa pine forests increases the risk of a high-intensity wildfire. Large high-intensity wildfires can damage natural ecosystems and harm the communities who rely on them. Increased density of trees also crowds out native grasses and forbs that carry beneficial low-intensity forest fires and support wildlife biodiversity.

Pueblo and Hispanic communities of northern New Mexico who reside within the borders of the CNF maintain a deep cultural connection to the landscape, including reliance on water and forest resources. [Acequias](#) are a traditional water management system used in Pueblo and Hispanic communities of northern NM. These systems have a mayordomo, or water manager, who oversees irrigation system operation. The mayordomo title is a title of respect in these communities because they represent a pillar with local knowledge and heritage to serve the community.

The [Cerro Negro Forest Council](#) (CNFC), the first successful modern forest mayordomo program, was started in 2018. The CNFC is modeled after the acequia system for water

management and was established by local residents of the Valdez and San Cristobal villages in partnership with the CNF. Like acequia mayordomos, forest mayordomos oversee forest thinning, conflict resolution, assist in plot assignments, and are respected as a pillar of forest knowledge. Under this model, an appointed mayordomo oversees woodcutters known as leñeros who thin smaller diameter trees in 1-acre plots. This thinning seeks to reduce risk of high-intensity fire, and helps the forest return to a fire regime of frequent low-intensity fires. Additionally, the program provides the community with firewood, economic opportunities, opportunities to spend time with family on the land, and collaborative working relationships with USFS.



## Key Issues Addressed

Overcrowded forests must be thinned and cleared of excess fuels to reduce the harm of high-intensity fires and allow for regrowth of herbaceous fuels that allow frequent, low-intensity fires to pass

through the landscape, and minimize the threat of larger fires. The USFS forest has limited capacity and resource to perform labor-intensive thinning techniques in all areas surrounding local communities.

Relegating forest management decisions and activities to the USFS does not allow local communities, such as San Cristobal, to steward and maintain the landscape surrounding the village using local cultural management practices. Previous forest regulations and current management practices have also caused many residents to feel like spectators rather than co-managers of the forest that has been their home for generations. Residents fear how drastic changes to the forest, exacerbated by climate change, threaten forest health and their cultural connections to the landscape.

Over 70% of local residents rely on firewood to heat their homes during winter months, especially as propane prices continue to rise. However, wood harvesting restrictions in CNF reduce the ability of local residents to harvest fuelwood close to their homes. As demand for firewood increases, the price of firewood has increased as well, creating another barrier to residents seeking to heat their homes with firewood.

## Project Goals

- Establish the Cerro Negro Forest Council (CNFC) to remove excess heavy fuels and strengthen connections between the local Valdez and San Cristobal communities, and the USFS.
- Reduce barriers to cultural connections between local community members and the land through the stewardship and management of assigned land.
- Provide a sustainable way to make fuelwood more accessible to local communities, such as Valdez and San Cristobal.

Image Caption: *Thinning in pinyon-juniper woodlands was intended to reduce the likelihood of high-severity wildfire near*

*adjacent communities while increasing the diversity of grasses and forbs in the understory. Participation by local community members in the thinning work generated more public interest and productive conversations between agency staff and locals about the condition of the forest and ways to make it more resilient in the face of a changing climate.*



## Project Highlights

- **Increasing Restoration Capacity:** Leñeros use their own tools and resources to remove smaller diameter trees and diseased vegetation as prescribed by USFS from 1-acre plots of CNF land. By thinning in labor-intensive areas of the CNF near communities like Valdez and San Cristobal, the CNFC increases the USFS's capacity to complete thinning and restoration on larger projects in other areas of the forest. The program also serves to build broader local support for restoration and active management of the forest.

- **Forest Restoration:** With the successes of forest thinning work, there has been an improvement in forest health. Native grasses have returned in restored sections of the forest, increasing the understory herbaceous cover from 10% to 70%. Sections of forest have been restored to lighter fuel-load density levels and an increase in wildlife abundance has been observed.
- **Connecting Communities:** The CNFC mayordomo program is structured around forest co-management between local residents and the USFS. Leñeros from the CNFC collaborate with USFS to share stewardship responsibilities through the maintenance of the forest under the guidance of local knowledge and USFS-produced forest prescriptions. Participating leñeros gain a sense of stewardship over their assigned land and a strengthened cultural connection to the forest. Many leñeros invited their families to help harvest wood, strengthening family ties and reconnecting generations to the land.
- **Collaboration in Carson:** This forest mayordomo program has given community members the opportunity to become more connected to the land. Woodcutters share observations about biodiversity and wildlife, and range specialists share data about understory plant community composition to understand management effects on forest health. Additionally, students from local high schools perform forest health surveys and gather data that can be used by the mayordomos and USFS to analyze program effectiveness. The Taos Soil and Water Conservation District also performs pre- and post-stand surveys to ensure the leñeros are meeting silvicultural targets.
- **Reaping the Rewards:** Participating leñeros are paid \$300 per acre restored and can keep the firewood they harvest, which amounts to 4-5 cords of wood/acre. In a survey administered by local high schoolers, many leñeros either keep the wood, give it away to friends and family, or sell to residents in San Cristobal.

Image Caption: A leñero bucks a thinned tree into firewood for home heating. Leñero are local woodcutters who thin their allocated blocks according to a Forest Service silviculturist's prescription. This helps reduce the likelihood of high-severity wildfire in areas near the communities of San Cristobal and Valdez and provides communities with firewood for home heating and sale.



## Lessons Learned

### SPREADING SUCCESS

The Forest Mayordomo Model has already been adopted in four other locations in New Mexico on a variety of land ownership types, including state land.

Although the CNFC enables the USFS to focus on high-risk priority areas to restore, forest restoration within the boundaries of the mayordomo program is slow. Leñeros are typically non-professional woodcutters taking on forest clearing work in their

spare time with their own equipment and are slower than hired crews.

Because leñeros use personal vehicles to access their assigned parcels, acres assigned must be in easy-to-access areas. This occasionally requires the development of new roads, increasing the risk of soil erosion in the forest.

Tree diseases and pests play a large role in restoration decisions and how quickly leñeros can work. In wetter areas, pockets of root rot have been discovered which can spread to other trees if not handled properly. Root rot can also make trees more dangerous to remove; leñeros must exercise additional caution when removing rot-infested trees. Additionally, concerns of bark beetle spread have restricted windows for when leñeros can cut and transport wood without spreading beetles and has led to leñeros cutting down more trees in their assigned parcels to control spread of bark beetle populations in the forest.

By working with local leadership, the CNFC can work peer-to-peer with community members which avoids unnecessary conflict, resolves communication or regulation issues accordingly, and reconnects the community to the land. Additionally, the CNFC made use of pre-existing forms of local governance within the community rather than imposing a new governance structure. This made the establishment and maintenance of the Cerro Negro Forest Council more efficient and effective.

After harvesting firewood, leñeros leave behind tree tops and limbs, called slash, that can be a fuel source for wildfires if not burned in a controlled manner. Slash is typically managed using lop-and-scatter or by making piles that USFS burns after the acre plot is cleared. However, hotter, drier climates are lengthening fire seasons and shortening windows where USFS can safely conduct prescribed burns of this slash. This makes it difficult for

the CNFC to balance giving woodcutters the ability to cut at their own pace and safely manage the slash left behind after thinning.

*Image Caption: Local high school students, under the guidance of a high school science teacher, conducted pre- and post-treatment stand exams for this project. They also interviewed several leñeros and conducted surveys to gather data about their experience participating in the project.*



## Next Steps

- Develop similar mayordomo programs in other national forest communities to restore the forest and provide a personal benefit to participating community members.
- Implement leñero feedback to improve program functionality.
- Experiment with slash mastication to reduce fuel hazards without relying on controlled burns, which are becoming more

challenging in light of climate change and lengthened fire seasons that are reducing the length or safe burn windows.

- Initiate conversations between silviculturalists and hydrologists to analyze effects of forest management on the watershed

*Image Caption: Using their own chainsaws and pickup trucks, more than 150 community members thinned a total of 163 acres and harvested over 850 cords of firewood over the Cerro Negro Forest Council's four-year forest mayordomo pilot project. In January 2024, there were six similar forest mayordomo projects, overseen by other local groups, operating on the Carson National Forest in northern New Mexico.*



## Resources

## February 2024 Case Study Handout

### Collaborators

- [U.S. Forest Service in Carson National Forest](#)
- [Taos County](#)
- [The Nature Conservancy in New Mexico](#)
- [New Mexico State Land Office](#)
- [Forest Stewards Guild](#)

### Funding Partners

- [U.S. Forest Service \(Collaborative Forest Restoration Program grant\)](#)
- [The Nature Conservancy in New Mexico](#)

### Resources

- [Taos County Wildfire Plaza Website](#)
- [New Mexico in Focus PBS Video](#)
- [The Nature Conservancy Webinar Web Article](#)
- [The Santa Fe Reporter Web Article](#)
- [USDA Common Trees of Carson National Forest Document](#)
- [New Mexico State University Acequia Culture Webpage](#)
- [Mayordomo Program Expands to Taos Canyon](#)
- [Mayordomo Program on NM State Land](#)
- [Rio de Las Trampas Forest Council](#)

### Photo Gallery

- [Photo Album and Credits](#)

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Image Caption: *Each acre on the Cerro Negro Forest Council project produced between 4 and 5 cords of pinyon pine and juniper firewood. Many leñeros (woodcutters) kept this wood to heat their own homes during winter, while others sold harvested firewood for as much as \$500/cord.*

## **More Information on CART**