



**FOREST INDUSTRY  
RESEARCH PROGRAM**  
UNIVERSITY OF MONTANA

# **Timber Processing Capacity and Capability: Zuni Mountains Collaborative Forest Landscape Restoration Project**

**Prepared by:**

Ben Irely,  
Research Social Scientist

Thale Dillon,  
Forest Researcher

Todd A. Morgan,  
Director

Lauren Sampson,  
Research Associate

Clayton Dutton,  
Database Administrator

Forest Industry Research Program  
Bureau of Business and Economic Research  
University of Montana

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## Introduction

The Zuni Mountains Collaborative Forest Landscape Restoration Project (CFLRP) covers 210,000 acres in west-central New Mexico and is dominated by ponderosa pine and piñon-juniper ecosystems. The landscape is comprised mostly of Cibola National Forest lands on the Mt. Taylor Ranger District, with a mix of private, state, Tribal, and BLM lands in the northern portion of the landscape.

According to the Zuni Mountains CFLRP proposal:

The most significant restoration needs include restoring ecosystem structure, composition, processes, and hydrologic function; increasing forest resiliency to pests, pathogens, and climate change; and stabilizing local restoration-oriented businesses.

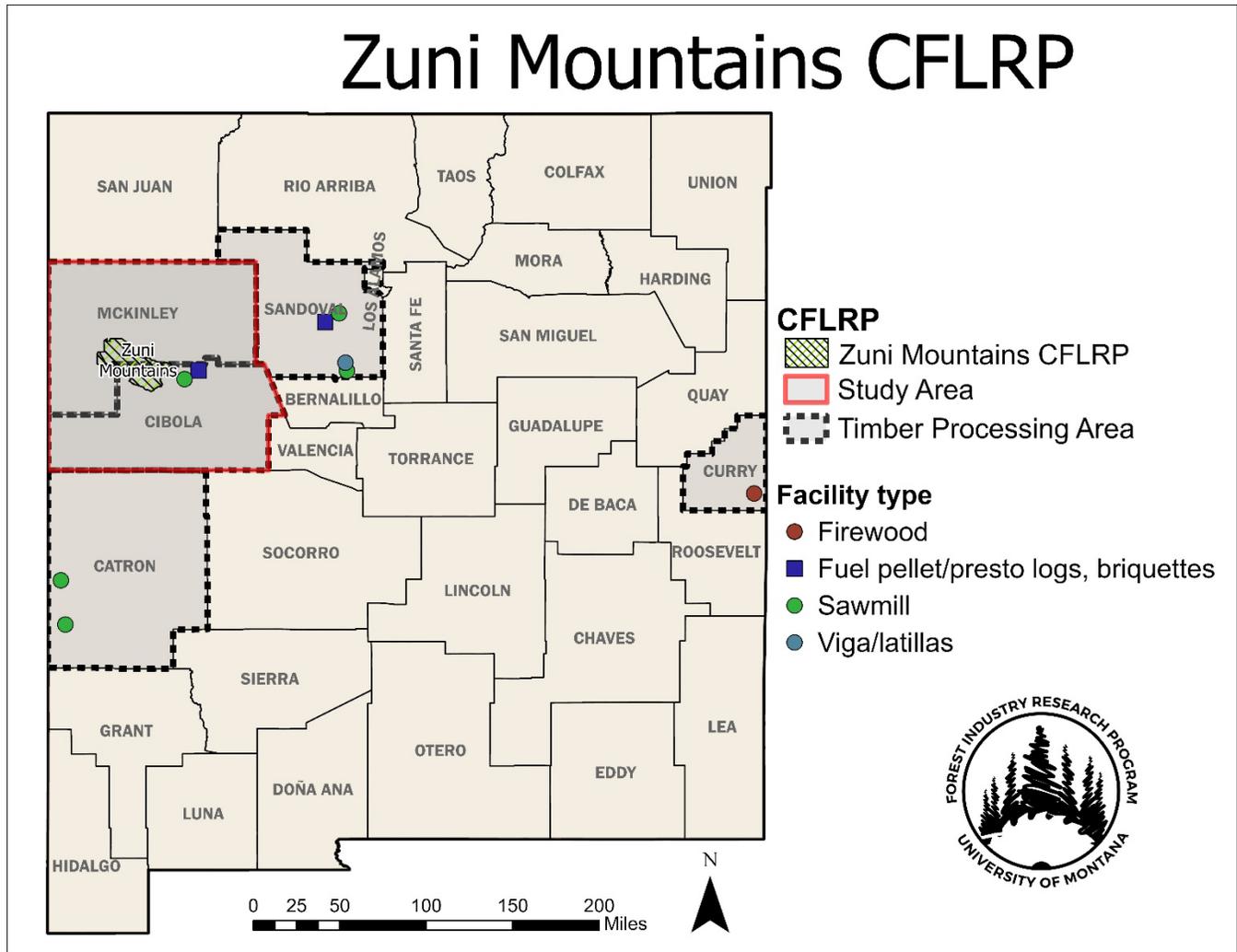
The Zuni Mountains CFLRP contains portions of Cibola and McKinley counties in New Mexico (figure 1). Together, the total area of these two counties covers nearly 6.4 million acres and constitutes the “Study Area” in this report. Analysis of timber flow indicates that timber harvested in the Zuni Mountains Study Area is processed by facilities located inside and outside the Study Area. All counties that contain one or more facilities that process timber harvested in the Study Area constitute the “Timber Processing Area” or TPA. The TPA for the Zuni Mountains CFLRP includes the two counties within the Study Area, as well as Catron, Curry, and Sandoval counties in New Mexico. McKinley County within the Zuni Mountains Study Area does not contain any timber processing facilities.

Due to the relatively small area of the Zuni Mountains CFLRP, and the relatively small number of mills within both the Study Area and the TPA, some data for this analysis have been combined to protect the confidentiality of individual facilities. As a result, county-level breakdowns are not available for most of the data categories presented here.

The data used to develop the information presented in this report were collected and processed by the University of Montana’s Forest Industry Research Program (FIRP) within the Bureau of Business and Economic Research under joint venture agreements with the USDA Forest Service’s Rocky Mountain Research Station. FIRP conducted a periodic census of timber-processing facilities in New Mexico in 2002, 2007, 2012, 2016, and 2021. In 2019 FIRP began conducting annual sampling of timber-processing facilities in New Mexico. FIRP would like to thank the timber-processing facilities for their participation, without which, analyses such as this one would not be possible. All but one of the tables in this report summarize data from the periodic census. Table 4 summarizes data from both the periodic census and annual sampling. Additional information from FIRP is available upon request; however, mill- or company-level data are confidential and will not be released.

FIRP attempts to identify and collect data from all commercial timber-processing facilities that buy logs and sell output products. Hobbyists and timber processors that supply their own logs or saw for hire may not be included in FIRP’s database. If the reader identifies facilities in the TPA counties that are missing from this analysis, please let FIRP know.

Figure 1. The Zuni Mountains CFLRP, Study Area, Timber Processing Area, and facilities.



The facilities within the Zuni Mountains TPA include 5 sawmills, 2 fuel pellet/presto logs or briquettes facilities, 1 firewood facility, and 1 viga/latilla facility (table 1).

**Table 1. Zuni Mountains CFLRP timber-processing facilities.**

Facility name	Facility type	State	County	Current Facility Status	Included in log-processing capacity analysis
K&B Timber Works, Inc.	Sawmill	NM	Catron	Active	Yes
Timber Tramp Logging LLC	Sawmill	NM	Catron	Active	Yes
Mount Taylor Pellet Mill	Fuel pellet/presto logs, briquettes	NM	Cibola	Active	No
Junction Commodities	Sawmill	NM	Cibola	Active	Yes
David's Firewood	Firewood	NM	Curry	Active	Yes
Wholesale Timber and Vigas - Sawmill	Sawmill	NM	Sandoval	Active	Yes
Wholesale Timber and Vigas - Vigas/latillas	Viga/latillas	NM	Sandoval	Active	Yes
Walatowa Timber Industries	Sawmill	NM	Sandoval	Active	Yes
Walatowa Timber (Pellets)	Fuel pellet/presto logs, briquettes	NM	Sandoval	Active	No

### Timber harvest within the Zuni Mountains CFLRP Study Area

The total volume of timber harvested from the Zuni Mountains Study Area and processed into commercial products was estimated at 2,538 hundred cubic feet (CCF) or 1,345 thousand board feet (MBF), Scribner in 2021 and the entire volume was comprised of sawlogs. In 2016, the harvest was 305 percent higher than in 2021 at 7,734 CCF or 4,416 MBF Scribner. The 2012 harvest was closer to what was seen in 2021, at 2,828 CCF or 1,523 MBF Scribner and 16 percent of the harvest volume were viga or latilla logs.

**Table 2. Timber harvest by timber product type in the Zuni Mountains Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.**

Facility input type	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
Sawlog	1,321	2,380	84%	4,416	7,734	100%	1,345	2,538	100%
Viga or latilla log	202	448	16%	-	-	0%	-	-	0%
<b>Total</b>	<b>1,523</b>	<b>2,828</b>	<b>100%</b>	<b>4,416</b>	<b>7,734</b>	<b>100%</b>	<b>1,345</b>	<b>2,538</b>	<b>100%</b>

The vast majority of timber harvested within the Zuni Mountains Study Area across the last three census years was ponderosa pine, constituting 97 percent of the harvest volume (2,469 CCF or 1,308 MBF) in 2021 (table 3). Douglas-fir, white fir, and Englemann spruce have made up small percentages of the total harvest across the last three census years.

**Table 3. Timber harvest by species in the Zuni Mountains Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.**

Species	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
White fir	10	20	1%	167	293	4%	3	6	0%
Englemann spruce	-	-	0%	150	263	3%	2	4	0%
Lodgepole pine	-	-	0%	-	-	0%	2	3	0%
Ponderosa pine	1,466	2,720	96%	3,998	7,002	91%	1,308	2,469	97%
Douglas-fir	46	89	3%	101	177	2%	30	56	3%
<b>Total</b>	<b>1,523</b>	<b>2,828</b>	<b>100%</b>	<b>4,416</b>	<b>7,734</b>	<b>100%</b>	<b>1,345</b>	<b>2,538</b>	<b>100%</b>

The timber harvest on the Zuni Mountains Study Area was all on national forest lands in 2012 and 2016 with a smaller amount of harvest on Tribal lands in 2021.

The Zuni Mountains Study Area harvests of sawlogs were all live from 2019 through 2023 while the firewood log harvests in 2023 was 21 percent standing dead (table 4).

**Table 4. Timber harvest by live/dead in the Zuni Mountains Study Area, 2019-2023.**

Study Area	2019		2020		2021		2022		2023	
	Live percent	Dead percent								
Sawlogs	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%
Firewood log	0%	0%	0%	0%	0%	0%	0%	0%	79%	21%
<b>Volume-weighted average</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>79%</b>	<b>21%</b>

### Timber-processing within the Zuni Mountains CFLRP Timber Processing Area

Ninety-eight percent of the timber harvested in the Zuni Mountains Study Area was processed in the TPA in 2021. The remaining 2 percent (47 CCF or 25 MBF Scribner) was processed outside the TPA in Santa Fe County.

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Santa Fe County was not included in the TPA because FIRP’s database showed only as small volume of timber flowing into the county in two different years.

Timber processors in the Zuni Mountains TPA sourced their logs from both within and outside the Study Area and the TPA (table 5). Fifty-six percent of timber received by TPA facilities originated within the Zuni Mountains TPA with the remainder being sourced from other New Mexico counties.

**Table 5. Origin of timber processed within the Zuni Mountains TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2021.**

Origin of timber	Volume (MBF)	Volume (CCF)	Proportion of the total
			timber received
From the TPA	5,966	11,340	56%
From other New Mexico counties	3,261	9,089	44%
<b>Total</b>	<b>9,227</b>	<b>20,429</b>	<b>100%</b>

### Timber-processing capacity and capability

The purpose of this report is to provide the Zuni Mountains CFLRP and its stakeholders with information on 1) The current use of timber by primary wood-processing facilities in the vicinity of the Zuni Mountains CFLRP, and 2) The maximum amount of timber these facilities could economically use in their current configuration. This information is intended to help stakeholders understand the available milling capacity within the TPA.

The term “capacity” refers to the maximum total volume of timber (excluding pulpwood and fuelwood) that existing timber processors within the TPA could use annually, given firm market demand for products, sufficient raw material, and ordinary downtime for maintenance. Also known as “timber-processing capacity”, it is a measure of mills’ timber *input* capacity and is expressed in MBF Scribner and CCF per year. Input capacity is a useful measure when attempting to express the capacity of multiple types of mills in a common unit of measure. It is estimated from production (output) capacity information provided by facilities. Estimates in this report include the capacity of active facilities as well as idle (inactive) facilities with equipment still in place. Facilities that are permanently closed are not included. This analysis focuses on facilities that exclusively use timber in round form, which includes sawmills, viga/latilla facilities, and firewood facilities. Facilities that use a mix of roundwood and non-roundwood inputs, such as chips, sawdust, shavings, and bark (e.g., fuel pellet/presto logs, briquettes facilities) are not included in this capacity analysis because the combination of roundwood and non-roundwood inputs can vary widely from year to year, potentially over- or under-estimating capacity and use of roundwood by substantial margins.

The term “capability” refers to the volume of trees of a certain size class (measured as dbh) that existing timber processors can economically process annually. This report uses three dbh classes: <7”, 7 to 9.9”, and ≥10”. These size classes were chosen to focus analysis on the smaller log sizes that are merchantable in the western U.S. and that are often harvested in restoration treatments conducted on national forest lands. Some facilities are designed to operate using only trees of a given size class. Capability at these facilities is readily classified in just one of the size classes (e.g., veneer/ plywood plants typically only use trees ≥10” dbh, and post manufacturers primarily use trees <10” dbh). Many facilities can and do use timber from a variety of size classes, especially sawmills, which often process trees that are larger than the smallest tree size they are capable of processing due to greater profitability. However, some sawmills that process larger trees are not capable of processing smaller-diameter timber due to the configuration of their equipment.

“Use” refers to the volume of timber, both in total and by tree dbh class, that facilities are currently processing.

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*Annual processing capacity, capability, and utilization*

The estimated annual timber-processing capacity of facilities in the Zuni Mountains TPA in 2021 was 46,598 CCF or 22,852 MBF (table 6). Of this volume, 69 percent (32,349 CCF or 17,094 MBF) fell within the  $\geq 10$ " dbh size class, 28 percent (13,092 CCF or 5,476 MBF) fell into the 7-9.9" dbh size class, and the remaining 3 percent (1,157 CCF or 283 MBF) fell into the  $< 7$ " dbh size class. As such, Zuni Mountains TPA facilities are mostly able to process larger logs and may not be able to process smaller ones, either due to their equipment or because such processing would have a profit margin too small to be economical.

As a group, the timber processors in the Zuni Mountains TPA were, for a variety of reasons, not operating at full capacity in 2021. While the total capacity was 46,598 CCF (22,852 MBF), only 17,277 CCF or 8,056 MBF (37 percent) was being used (table 6). The prevailing cause for facilities to be operating below capacity is a lack of a steady log supply with limited availability of size-specific logs, especially in the larger size classes. Seventy percent of the capability to process timber in the  $< 7$ " dbh size class in 2021 was unused, 62 percent of the 7-9.9" dbh size class capability was unused, and 64 percent for the  $\geq 10$ " dbh size class was unused.

**Table 6. Annual timber-processing capacity and capability, timber consumption, and unused timber-processing capacity of facilities in the Zuni Mountains CFLRP TPA by dbh size class in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2021.**

Tree dbh	Capacity to process timber		Timber consumption		Unused timber-processing capacity	
	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)
<7 in.	283	1,157	56	343	227	814
7 - 9.9 in.	5,476	13,092	1,772	5,080	3,704	8,012
≥10 in.	17,094	32,349	6,228	11,854	10,866	20,495
<b>Total capacity</b>	<b>22,852</b>	<b>46,598</b>	<b>8,056</b>	<b>17,277</b>	<b>14,797</b>	<b>29,321</b>

## Discussion

The capacity utilization levels presented in this report indicate that the forest products industry in the Zuni Mountains TPA has capacity available to process an increased yield of timber resulting from mechanized fuels reduction (table 6). However, the size and quality of timber available, as well as prevailing market prices and the availability of qualified labor, also affect the level of capacity at which primary processors are able to operate and in what size class(es) capability is concentrated. Fuels reduction treatments frequently involve the harvesting of smaller-diameter timber, the profitability of which diminishes as tree diameter decreases (Stewart et al. 2004). Harvesting salvage (standing dead) timber can become similarly unprofitable, especially if logs are less than 10" dbh, due to the lower grade recovery for these logs (Fahey et al. 1986).

While some operators have configurations capable of accommodating the processing of large and small logs, not all processors are able to do so. Processing a greater volume of logs from smaller trees, that typically yield lower recovery, could reduce profit margins to the point of a mill becoming unprofitable, especially in a weak lumber market.

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## Sources

Cibola National Forest, 2005. Zuni Mountain Collaborative Forest Landscape Restoration Program Proposal.

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