

## Thinning the Pinon-Juniper Forest to Improve Pest Resistance

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Note: There is not extensive history nor documented research in dealing with the cultural treatment of the pinon-juniper forest to improve pest resistance. These are only my observations based on my experience in dealing with forest dynamics and bark beetles in Colorado. Recommendations will be updated as more supporting information becomes available.

### Pest Management Considerations

- \* Ips engraver bark beetle (and associated Ceratocystis blue stain fungus)
- \* Black stain root disease
- \* Twig beetles

### Recommended Treatments

\* 1) Thin trees properly to increase the available light, water, and nutrients for remaining trees (note: trees infested with bark beetles or infected with black stain root disease require special actions)

#### Spacing Guidelines

Diameter at base	Desired trees/acre	Spacing between trees (in feet)
4 inches	458 - 687	8 - 10
6 inches	204 - 306	12 - 15
8 inches	115 - 172	16 - 19
10 inches	73 - 110	20 - 24
12 inches	51 - 76	24 - 29
14 inches	37 - 56	28 - 34
16 inches	29 - 43	32 - 39
18 inches	23 - 34	36 - 44
20 inches	18 - 27	40 - 49
22 inches	15 - 23	44 - 54
24 inches	13 - 19	48 - 58

- Limit tree cutting to winter months (November 1 through March 15)
- Avoid damage to residual trees during tree cutting operations

- Cut stumps low to ground (6 inches or less)
- Remove forest products off-site or in the case of firewood stockpiles... block wood, stack away from trees, and cover with clear plastic for greenhouse effect
- Avoid use of heavy equipment and minimize vehicle traffic in tree areas
- Promptly dispose of slash (tops and branch) prior to March 15:
  - Options for Disposal Chip
  - Remove Bark
  - Bury
  - Haul to approved site away from forest trees
  - Cover with plastic
  - Pile away from trees (in a safe, clear area) and burn during winter snow cover \*

\* Check with your local fire department or fire chief regarding burn requirements

\* 2) Maintain adequate moisture to plants by providing additional/supplemental water during drought periods; Don't over-water trees, especially pinon and juniper

Minimize turfgrass in tree areas as the moisture requirements of most sod-forming grasses are much higher than trees native to Log Hill Mesa.

\* 3) Avoid damaging trees caused by bark scraping, root injury, or soil disturbance. This includes damage resulting from:

- road and trail construction
- soil excavating
- foundations and pavement in forested areas
- trees used for fence or sign posts, phone lines, hammock or tent supports, etc.
- firewood stacks and brush piled near standing trees

\* 4) Replace over-mature forest gradually with young, fast-growing seedlings

\* 5) Diversify forest with plantings of ponderosa pine and Rocky Mountain juniper at higher elevations, or where supplemental irrigation is available

\* 6) Prune lower branches of pinon and ponderosa pine (no more than 1/3 of green crown)

\* 7) Prune out dead and dwarf mistletoe-infected branches

\* 8) Promptly cut and treat trees infested by bark beetles (special handling required)

\* 9) Remove groups of trees associated with black stain root disease (special handling required)