Forest Thinning

A DOI Nature-Based Solutions Roadmap Fact Sheet



Forest thinning refers to removing some trees from a forest stand to reduce density and allow space for other trees and plants to grow.¹ Thinning projects are usually done as part of a larger forest management plan, frequently for fuel management.² In this case, the primary goal is to decrease fuel loads and connectivity to reduce high-intensity crown fires. Thinning for fuel management is most effective when used alongside prescribed fire.³ Thinning can be done using crosscut saws, chainsaws, bulldozers, and woodchippers.⁴

TECHNICAL APPROACH

- Create a plan or prescription for the thinning project that takes into account the location, forest type, and project goals. A forester should be involved in project planning.⁵
- Perform thinning according to the plan. Machine thinning (using skid steers with various attachments) is generally more cost-effective than hand thinning (using chainsaws and other hand tools) but is not suitable for steep slopes or other sensitive areas.⁶
- Remove the slash (woody debris) left after thinning. This can be done by mastication (using machinery to break down slash and spread it across the forest floor), chipping, or creating piles for burning.⁷ In some cases, some of the material removed by thinning can be sold commercially to offset the project cost.⁸
- Monitor the project site to determine if the project was effective and when maintenance is needed.



Climate Threat Reduction

- Reduced wildfire risk
- Drought mitigation
- Improved air quality
- Carbon storage and sequestration

Social and Economic

- Property and infrastructure protection
- o Jobs
- Agriculture and timber yields

Ecological

- Supports native plants
- Invasive and nuisance species management



Commercial thinning can generate funds to offset project costs. Photo credit: US Forest Service – Pacific Northwest Region.





SITE SUITABILITY FACTORS

- Coniferous tree species
- Wildfire threats
- Community buy-in
- Areas affected by insect or disease
- ✓ Drought-prone areas
- Limited work capacity
- ★ Steep slopes (more than 30%)

EXAMPLE PROJECT

The Oakridge/Westfir Thinning and Fuels Reduction Project coordinated by the US Forest Service involves thinning and prescribed burns in the Willamette National Forest.⁹ First, commercial thinning removes trees that can be sold as timber; then, prescribed fire is used to burn away the remaining debris. Reducing tree density and ground fuels lowers the risk of catastrophic fire for the nearby communities of Oakridge and Westfir.



The Oakridge/Westfir thinning project is intended to reduce the risk of severe wildfires, such as the Beachie Creek Fire that burned more than 190,000 acres within Willamette National Forest in 2020. Photo credit: US Forest Service – Pacific Northwest Region.

REFERENCES

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CITATION

or disease 30%) Title and Link Fuels Reduction Guide (California Department of Forestry & Fire Protection) ng and Fuels Reduction Forest Service bed burns in the First, commercial A Land Manager's Guide for Creating Fire-Resistant Forests (Oregon State University, Northwest Fire

KEY RESOURCES

LEARN MORE

Science Consortium)

Visit the DOI Nature-Based Solutions Roadmap for more information on forest thinning, other naturebased solutions, and principles and considerations broadly relevant for nature-based solutions projects. The forest thinning summary includes additional details on each section included in this fact sheet, plus information on operations and maintenance, common barriers, and more resources and example projects.

Explore the Roadmap





Forest Thinning Section

www.nicholasinstitute.duke.edu/roadmap

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