

Program in Forest Systems & Bio-Energy, CFR, University of Washington

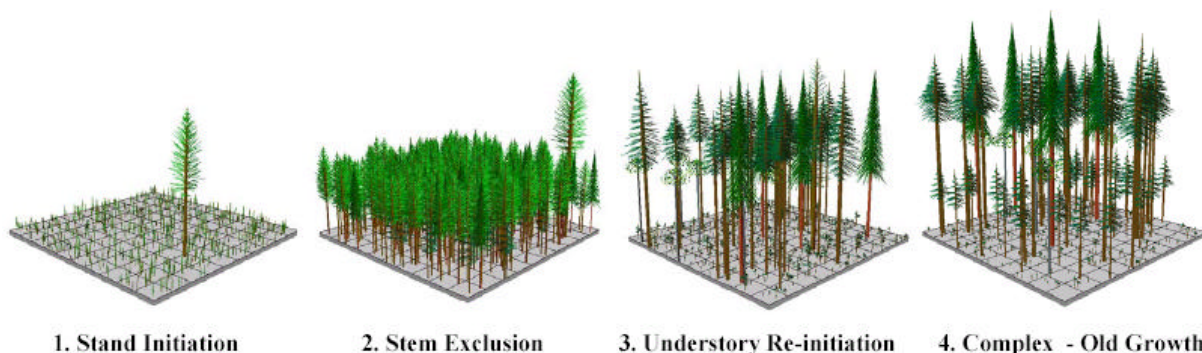
Frequently Asked Question about Forest Management and Bio-Energy

How can emerging technologies provide market opportunities to Washington's forest landowners?

The Program on Forest Systems and Bio-Energy is engaged in research linking sustainable forest management practices with new technologies such as mobile methanol production systems using thinned forest material and hydrogen fuel cells, effectively providing an alternative market for small diameter timber.

How is thinning a stand important for managing forest stand development?

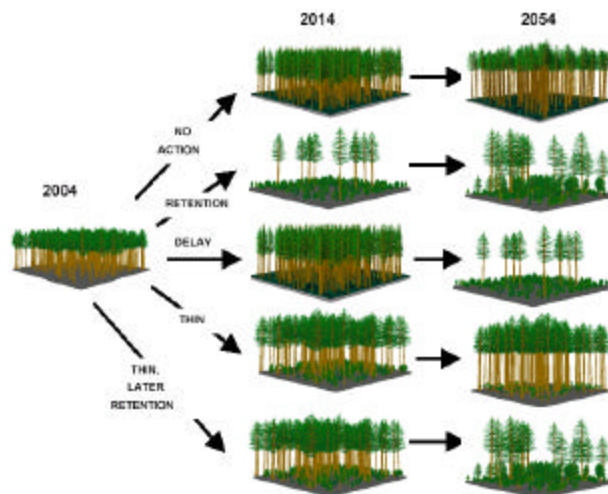
Forest stands are dynamic systems. Regardless of their origin (planted or naturally regenerated following a disturbance) stands go through a series of changes over time. It is simple to think of forest stand development as a temporal progression through four structural stages (Oliver and Larson, 1996): 1) Stand Initiation, 2) Stem Exclusion, 3) Understory re-initiation, and 4) Complex or Old Growth.



During each stage of development there are opportunities to manipulate the stand to meet the stated management objective. Manipulation of a stand can be achieved using various tools and techniques such as: mechanical tree harvesting (thinning), prescribed fire, herbicides, and tree planting. Thinning is a technique used to remove excess low-quality trees from the stand to encourage vigorous and healthy tree growth. In addition to benefiting growth of the residual trees, thinning can be used to alter the stand structure by creating growing space for trees of various sizes, species and shade tolerances. This can be important when managing a stand to meet wildlife habitat objectives.

Is thinning expensive?

Thinning costs vary dramatically depending on the size and amount of material to be removed. Site conditions such as steepness of the slope, proximity to creeks, streams or wetlands, and distance from the nearest road will affect thinning costs. Perhaps the most important variable affecting the cost of thinning is the status of the timber market at the time of harvest.



When markets for low-quality small diameter timber are good, thinning can be an opportunity for a landowner to manipulate stand conditions to meet stated objectives as well as an opportunity to generate income. Thinning generally focuses on removal of the less desirable trees in a stand. In some cases the trees have little to no value for producing solid wood products but can be chipped for use in the production of pulp and paper products. A landowner that can generate revenues early in the development of a stand and early in the investment horizon, can improve economic returns, making forest stewardship a profitable venture.

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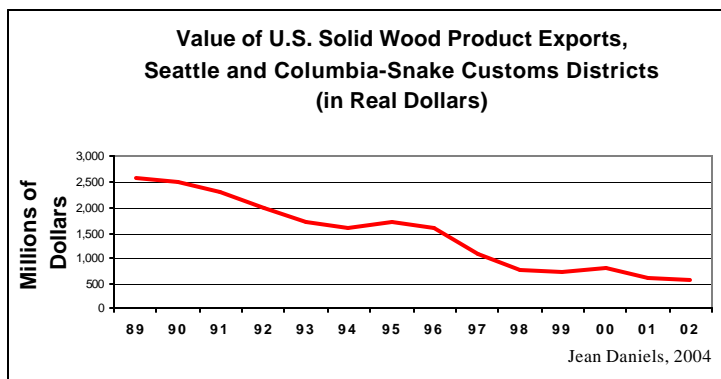
If timber markets are down at the time of harvest, the cost of thinning to remove the trees may exceed the value of the trees sold. This can have serious negative consequences for a forest landowner both because the expected income stream from the property has been altered and the silvicultural manipulation needed to meet the stated objective is too costly. The lack of thinning will lead to reduced growth rates and eventual mortality of standing trees and simultaneously increase the risk of extensive damage from insects and diseases. In addition, an overcrowded stand that has not been properly thinned is at greater risk of a devastating crown fire if such an event were to occur.

What are the market conditions for low-quality small diameter wood in Washington?

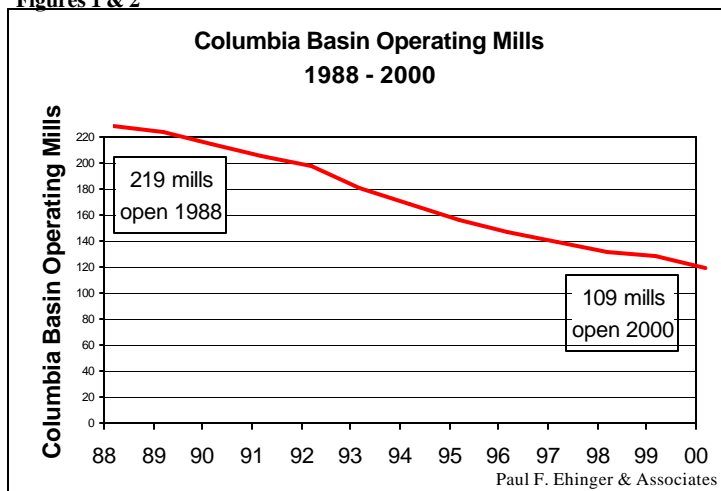
As a result of a weak global economy and increased global competition wood exports from the state of Washington have been declining over the last decade (Figure 1.). During this same period mills have been closing throughout the state (Figure 2). Recent economic reports have estimated that in the state of Washington, 2,500 jobs in the lumber and wood products sector were lost in the last two years. (Misc. Report 0511).

What can be done to create opportunities for forest landowners?

Finding alternative uses for wood is critical if these trends are to be changed in a positive manner. By linking wood extraction to small-scale methanol production we can create new and alternative markets for thinned forest material. This research will provide forest landowners in Washington and throughout the region with opportunities to manage forests to meet both ecological and economic management objectives.



Figures 1 & 2



References

- Daniels, Jean. 2004. Unpublished compilation of trade statistics, University of Washington.
- Oliver CD and BC Larson. 1996. Forest Stand Dynamics, John Wiley & Sons, Inc., New York.
- Paul F. Ehinger & Associates. 2001 Inland Northwest Socio-Economic Assessment – Phase II Forest Products Data – 1989-2000. <http://www.econ.state.or.us/CB2rpt.PDF>
- WSU Dept. of Natural Resource Science Cooperative Extension. 2003. Misc. Report 0511 Washington's Forest Products Industry: Current Conditions and Forecast 2003, Pullman.

Michael Andreu, Research Associate, Co-Program Coordinator Forest Systems and Bioenergy, CFR, University of Washington (andreu@u.washington.edu)