



# STATE FOREST NOTES

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## Commercial Firewood Harvesting Study Boggs Mountain State Forest

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There are areas on Boggs Mountain State Forest where large hardwoods, mostly oak with some madrone and dogwood, are towering over established conifer seedlings composed of ponderosa pine, sugar pine and Douglas-fir. Removal of most of the hardwoods would increase survival and growth of the conifers and also open additional areas for natural reseeding of commercial conifer species.

A demonstration area of 10 acres located near the north end of Boggs Mountain State Forest was selected for the study. The area has a northeast exposure with slopes ranging from 20 to 50 percent. Vegetative cover was predominately hardwoods composed of black oak, dogwood and some madrone. Ponderosa pine and Douglas-fir seedlings and saplings plus a few larger (18 inches diameter at breast height) trees of both species were intermixed with the hardwoods.

Most of the hardwoods were measured and marked for cutting and the volume estimated by use of cordwood volume tables. Douglas-fir tables were utilized because nothing else measuring volume in cords was available.



Typical area cleared of hardwoods revealing young conifers that will benefit from release.

<sup>1/</sup> The initial planning, area selection, and tree marking were done by Charles C. Joiner, former Forest Manager of Boggs Mountain State Forest. The project was put into action and supervised by John V. Spencer, present Forest Manager.



A small Caterpillar D-2 tractor was used to skid hardwood logs to a landing where they were bucked into firewood lengths.

Local woodcutters were contacted and one was selected on the basis of having an established business and who was willing to keep records of operating costs. The operator was required to comply with State Forest Practice Rules and additional operating restrictions imposed by the Forest Manager to protect standing conifer trees and reproduction.

Six men comprised the harvesting crew. The owner of the wood yard operated the tractor, and his son did the falling and set chokers. Four other men bucked the logs into firewood lengths with a chainsaw and split the rounds by hand using axes and wedges. The same four men loaded and drove the trucks used to transport the product to the wood yard approximately 15 miles away.



Loaded stakeside trucks leaving Boggs Mountain State Forest for the woodyard in nearby Kelseyville.

A D-2 Caterpillar tractor was used for skidding the logs to the landing. Logs were kept to reasonable lengths, usually not exceeding 30 feet. The small tractor, short logs and care taken with falling and skidding resulted in little damage to the residual stand and reproduction.

Upon completion of the operation, it was found that the actual volume removed exceeded the estimated volume by about 58 percent. As had been expected, Douglas-fir cord wood tables were completely inadequate for even a rough volume estimate.

The following data was collected from the operation:

Fifty-two cords of firewood were cut and sold as follows:

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16 inch pieces - 23-1/2 cords @ \$70.00 per cord	= \$1,645.00
24 inch pieces - 28-1/2 cords @ \$65.00 per cord	+ <u>\$1,852.50</u>
Total Gross Income	<u>\$3,497.50</u>
Expenses:	
Stumpage @ \$2.00 per cord	= \$ 104.00
Transportation (BMSF to Kelseyville)	= \$ 156.00
Operational Cost (labor + equipment)	= <u>\$2,474.75</u>
Total Expenses	<u>\$2,734.75</u>

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The gross income of \$3,497.50 minus expenses of \$2,734.75 gives a profit of \$762.75 or about 28 percent. A 15 percent profit is normally considered a reasonable return for forest products operations. If this operator had been charged \$5.00 per cord, which is the present charge for hardwoods by permit to the public, his profit still would have been 21 percent.

The extent of increased growth of the released conifers and the establishment of natural reproduction will be determined by close observation and measurements over a period of several years. A substantial increase in conifer growth is anticipated. An adjacent area on which no release or other treatment was made will serve for comparison.

#### Observations and Conclusions

1. Damage to seedlings and saplings was light.
2. It is possible to remove overstory hardwoods and retain a large proportion of the existing conifer regeneration.
3. This project was a timber stand improvement measure which yielded a slight return to the landowner rather than costing the owner \$100 to \$150 per acre.

4. Almost complete removal of cut material reduced fuel loadings to low levels.
5. There is a marked tendency for foresters and operators to underestimate the yield of firewood.
6. Sprouting and regrowth has not been excessive.
7. Blacktail deer have made greater use of the area since cutting.
8. Selection of an experienced operator, forester supervision, and operator instruction are critical to a successful operation.
9. Cord wood volume tables for black oak and madrone are needed for more precise estimation of volumes.

This operation has generated additional current income for the State Forest while improving the conifer growth potential for increased future yields. Operations of this type offer timberland owners an opportunity to increase forest productivity without environmental damage.

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