

Management Planning for Woodland Owners: An Example

C. Landgren and M.C. Bondi

This publication demonstrates one way of organizing and preparing a forest management plan for your property. By no means should you consider this the best or only way for you to plan; conditions vary—and so should your approach to planning. For more information on preparing a management plan, see OSU publication EC 1125, *Management Planning for Woodland Owners: Why and How*.

This plan was prepared by “John Doe” for his tree farm, the Backache-40. For background information on Doe, we will assume him to be 43 years old with a stable job of

average pay. Doe wants to do much of the work on the 40-acre farm himself, but his equipment is limited and his only free time is on weekends and after work hours. He is a knowledgeable, self-taught tree farmer who has learned much from the mistakes and successes of his neighbors and from educational resources.

Doe’s management plan follows. In it you will find a woodland map of his property (page 3), a summary of his inventory (page 4), and his management activity schedule and tree farm records (page 7).

Woodlot management plan for the Backache-40

Prepared by J. Doe, January 2003

We have inserted comments throughout this publication to define terms with which you may not be familiar and to explain concepts that Doe brings up in his management plan. These italicized statements belong to us.

—Chal Landgren
and Mike Bondi

Objectives

From my property I hope to obtain (in order of need):

- Money to pay for my 12-year-old daughter Susie’s college education (\$15,000 to \$20,000 per year, needed in 5 years)
- Eight cords of firewood per year
- Some money in my retirement years (\$700 per month as supplementary income)
- Land that looks neat

Oregon is divided into seed zones according to location, climate, and other environmental factors. When you reforest your property, determine the proper seed or seedling source for the area according to its zone. See OSU Extension publication EC 1196, Selecting and Buying Quality Seedlings.

A soil series is a group of soils with similar profiles (a vertical section of the soil through all its horizons) that evolved from like parent material under similar climatic and vegetational conditions.

Loess is material that wind transports and deposits. It usually consists of silt-size particles. (See your county's soil survey report.)

On the 1:24,000-scale map, 1 map inch represents 2,000 feet on the ground. Another useful map scale is the 1:2,400 quarter-section map, which is on file at most county assessors' offices.

Woodlot description

Legal description—The property is in Township 90 North, Range 95 West, section 20, NW $\frac{1}{4}$ NW $\frac{1}{4}$, Willamette meridian.

The property is in Paradox County and is taxed (except for 1 acre around the house) under the Western Oregon Land and Severance Tax. The deed is recorded in book 2, tax lot 103, and includes 40 acres.

Location—Backache-40 is 4 miles north of Happyville, on Highway 202 at Route 2, Box 20. The property is surrounded by Brand X Lumber Company land, which is not roaded. The entire property is in Douglas-fir seed zone 251.

Topography—Average elevation of the property is 1,000 feet above sea level; range is 900 feet to 1,200 feet. The area slopes gently down to an intermittent stream; little of the property slopes more than 30 percent.

Access—The only all-weather road onto the property is the one to the house from State Highway 202. Winter access is poor, but skid roads are ample for access during summer/fall dry periods.

Soils—Soil on the property is in the Goble Series. It is deep (60 inches rooting depth), well-drained, and derived from loess. Compaction may be a problem if I log (using ground-based methods) during the wet season.

Plant competition is severe once these highly productive soils are cleared. Therefore, I should replant with large growing stock as soon as possible after cutting.

Other references—Aerial photographs and topographic maps of the property include photos 107 and 108 (1981) on file at the county assessor's office, and the U.S. Geological Survey's 1:24,000-scale map (Happyville quadrangle).

Weather—Over the past 10 years, annual precipitation has averaged 54 inches, with only a small portion of that in snow. There are about 150 frost-free days per year, extending from May 15 to October 15.

Other considerations—There are no known disease or insect problems on the property or in surrounding areas. Browse damage from deer and elk can make it difficult to establish young tree seedlings. This has been a problem in the past. Blowdown also has been a problem—the east winds can be strong along the ridge on the northwest side of the property.

My woodland inventory

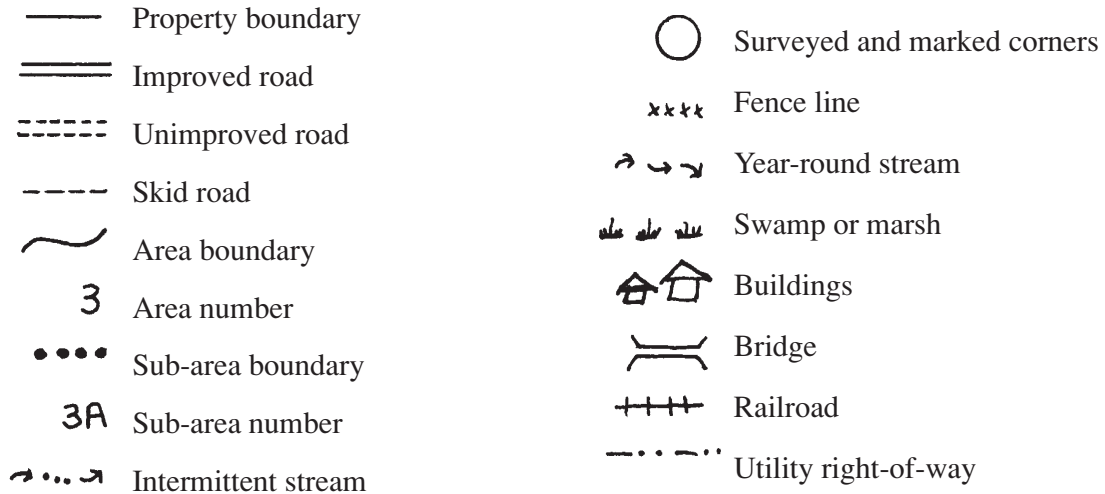
Chart #1, which is a map of my property, shows the location of each of the four areas that I describe in my inventory. Also, see my Chart #2 for a summary of my inventory. I adapted the chart from a sample management plan, courtesy of the Weyerhaeuser Tree Farm Family, Longview, WA.

Area #1. This 9-acre hay pasture includes the 1-acre homesite. The pasture was improved and reseeded 2 years ago. It now consists primarily of orchardgrass, New Zealand white clover, and fescue, with some bentgrass and a few scattered tansy plants (even after years of spraying and pulling).

My present operation runs a cow/calf combination on every 2 acres and selling feeder cows. I have been able to produce roughly 1,800 pounds of beef a year on the entire area.

Area #2. This is a 13-acre red alder forest, 23 years old. There are 495 stems per acre with an average diameter at breast height (dbh) of 6 inches and an average height of 60 feet. There are roughly 20 tons per acre of red alder on the area. Board-foot volumes are not significant yet.

(continued on page 4)



Diameter at breast height (dbh) is the diameter of a tree measured at a point 4.5 feet above ground level. (See OSU Extension publications EC 1129 and EC 1127.)

The Scribner log rule is a formula for estimating the volume of lumber you can saw from logs of a specific length and diameter. It allows 1-inch boards and ¼-inch saw cuts.

Area #3. This is a well-stocked to overstocked 8-acre area of 47-year-old Douglas-fir. There are about 400 stems an acre with an average dbh of 9 inches and an average height of 85 feet. Volume is approximately 15.2 thousand board feet per acre, Scribner log rule (MBF/acre–Scribner).

Area #4. This 10-acre area was planted in 1986 and is stocked poorly now (at least, it appears so when viewed in aerial photos). A walk through the area shows numerous Douglas-fir stems that are suppressed badly by overtopping red alder. There also are a number of areas along the border where deer and elk browsing has stunted the trees.

The largest trees on the area are 20 to 40 feet tall, with an average of 38 feet. Approximately 100 trees per acre are visible in aerial photos. There probably are an additional 100 stems per acre, which possibly could be released. I estimate the total volume to be 14 tons per acre.

Chart #2.—A summary of my inventory.

1	2	3	4	5	6	7	8	9			10			11	12
								Tree diameters			Tree heights				
Area number	Acres	Exam year	Species or cover type	Percent stocking	Site index	Birth year	Merchantable stems per acre	Dbh of tree with average basal area	Minimum dbh	Maximum dbh	Tree of average basal area	Tree of minimum diameter class	Tree of maximum diameter class	Tons per acre	MBF per acre (Scribner)
1	9	81	G	0										—	—
2	13	81	A	80	100	1980	495	6.0	4.0	8.0	60.	55.	65.	20	—
3	8	81	DF	70	100	1956	400	9.0	8.0	12.0	85.	60.	90.	—	15.2
4	10	81	DF	30	100	1986	100	5.0	3.0	7.0	38.	20.	40.	14	—

Column number

- Area number**—Areas that are somewhat uniform in species, age, and density.
- Acres**—The amount of land in that stand or area (43,560 square feet in 1 acre).
- Exam year**—The year in which I made the observations.
- Species or cover type**—I use the most abundant species in the stand to describe the type. Species designations are: DF—Douglas-fir, A—red alder, and G—grass pasture.
- Percent stocking**—The percentage of ground area the species occupies. For example, if the tree crowns of a species cover 60 percent of the ground area, I wrote 60 in column 5.
- Site index**—Represents the average height of the dominant trees in an even-age stand at age 50. It can vary from 50 to 160 feet.
- Birth year**—The approximate year in which most of the stand originated.

- Stems per acre**—The total number of stems of potential crop trees.
- Tree diameters**—The diameter at breast height (dbh) taken at a point 4.5 feet above ground level. Average basal area refers to the dbh of a “typical tree” for that stand.
- Tree heights**—A measurement of tree height from ground level to treetop.
- Tons/acre**—Lower value and smaller wood is listed in tons per acre.
- MBF/acre–Scribner**—Thousand board feet per acre (Scribner rule).

Management recommendations

Here are my options for each area:

Area #1. The options I consider possible for this area are raising cattle or sheep, producing timber, or growing Christmas trees.

I have been producing about 1,800 pounds of beef each year on the 8 acres. Gross income has been about \$0.62 per pound, which equals \$1,116 per year for the 8-acre area, or \$140 per acre per year.

An option would be to convert to raising lambs. I probably could raise about 23 lambs on 8 acres. This year, lambs sold for about \$50 each. Theoretically, I could make slightly more income from this type of operation. Since my family knows little about sheep, however, the possible extra income doesn't seem to warrant the switch.

Other potential uses of this area include converting to timber production or growing Christmas trees. The family has thought a great deal about planting trees in the pasture. However, remembering how much work it was to clear the area, and how tight money is at present—both for us and for federal cost-sharing programs—I decided not to plant the area to timber.

Instead, I have decided to plant 2 acres of Christmas trees in the lower pasture—1 acre this year and another the next. I will keep 6 acres available for beef production. This seems to be a safe approach to providing more immediate income and some potential added income while Susie attends college.

The time frame I'll need to complete my project, and my expected income flow, appear in Chart #3; these represent only a rough guess.

I should be able to do all the proposed work with my own equipment, without hired assistance.

Area #2. This stand of 21-year-old red alder is a real problem. The trees are too small to be marketable now. Converting to conifers would involve significant cost, even after tax credits and cost sharing. I've decided to wait until the trees are marketable and to harvest at that time.

Simply piling and burning the trees seems a tremendous waste of possibly usable wood. So, my plan is to wait 10 years, hope for a good market, and try to sell the alder then. By that time, the alder should be marketable, at least by today's standards.

Finally, since it is close to the house, this area will be well suited to supply our drafty family home with about 8 cords of wood each year. We easily could gain this amount from thinning. When the time comes to do the logging, my equipment (and I) might be old enough that I'll need to contract out most of the work.

Area #3. This is the best stand of timber on the farm—and the area that I hope will help pay for Susie's college expenses. Five years from now, when I'll need the money, I expect there will be nearly 19 MBF/acre in this area.

For information about cost sharing, see OSU Extension publication EC 1119.

For help with record keeping, see OSU Extension publication EC 1187.

Chart #3.—Time frame and projected income for Area #1.

Activity	Affected acres	Yearly cost or revenue—gross (\$/acre)						
		1	2	3	4	5	6	7
Cattle production	6	+140	+140	+140	+140	+140	+140	+140
Christmas trees	1	–200	–15	–15	–15	+2,000	+4,000	
Christmas trees	1	0	–200	–15	–15	–15	+2,000	+4,000

“Hacking and frilling” encircles the stem of a tree with cuts that completely sever bark and cambium. You make a single line of overlapping, downward ax cuts to create a frill into which you can pour chemicals.

The Pacific Northwest Weed Management Handbook is a good resource for information on forestry herbicides; see page 8.

Use herbicides safely

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
- **Read** the herbicide label—even if you’ve used the herbicide before. **Follow closely** the instructions on the label (and any other directions you have).
- **Be cautious** when you apply herbicides—and other pesticides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Chart #4.—Projected income for Area #3.

Activity	Volume removed (MBF/year)	Gross income \$/year	Expense \$/year	Net income \$/year
Clearcut 2 acres each year.	38	\$15,200	\$4,000	\$11,200
Thin—Remove 20% of the volume every year.	30	\$12,000	\$4,500	\$7,500

There are a number of possible ways of generating income during these years. One method is to clearcut 2 acres during each of the 4 years that I’ll need the income. Another method, although it wouldn’t generate as much income, is to thin the entire stand heavily. The income these management steps *could* generate appears in Chart #4.

My preference is to thin the area and avoid clearcutting. However, since I will need approximately \$15,000 per year for Susie’s education, and clearcutting appears to be the best way to generate that money, I will clearcut approximately 2 acres each year. If the log price jumps in any of the 4 years, I may contract the operation and clearcut the entire area in 1 year. The revenue from harvest will not cover college costs but will help.

Area #4. This area needs some immediate attention. I plan to remove the alder in order to release the badly suppressed fir. I will do the work myself by hacking the bark and injecting an herbicide in the cut frill. The alder will die and rot in place.

Felling the alder is simply too slow, and there is danger of covering over or knocking down some of the established firs. I plan to use some of the alder for firewood, but much of it is too small.

A bit of roadwork also is needed to gain access into this area. I plan to extend the road from area #3 to about the middle of area #4. I’ll hire out the Cat work to my neighbor, who has the equipment. Some time in the future it will be useful to rock this road, but that simply is too expensive now. The road will have to remain a summer road only.

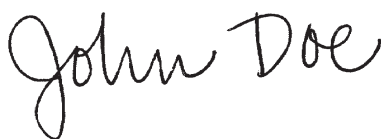
To control deer browse on the trees I release, I plan to install budcaps just before budbreak.

Also, if some of the site preparation for the Christmas trees is difficult with the tractor, the Cat used in the road construction may prove useful.

Summary

The activities I have planned seem best to meet our family needs now. All these items, though, may change with time. If they do, the plan will change, too.

Signed,



John Doe

Management activity schedule

The following schedule summarizes specific activities that have occurred and will occur on my property. It also prioritizes the activities in the order in which they were and are to be accomplished.

Area # (see map)	Acres	Activities	Time period
1	6	Maintain cattle production.	Yearly work
1	1	Christmas trees Site preparation: spray/plow/one disking; order 1,500 Douglas-fir seedlings (seed zone 251—1,000 feet).	Summer '03 Fall '03
4	10	Hack and squirt alder with full strength 2,4-D amine in July to release fir.	Summer '03
4	10	Do road extension from area #3 to area #4; 1,500 to 2,000 feet of Cat work (to be bid in spring).	Summer '03
1	1	Plant Christmas trees. Spray atrazine on 1 acre.	Spring '04
1	1	Christmas trees Site preparation: spray/plow/one disking; order 1,500 Douglas-fir seedlings (seed zone 251—1,000 feet); Plant trees; spray atrazine on 2 acres.	Summer '04 Fall '04
3	2	Order 800 Douglas-fir seedlings (seed zone 251—1,000 feet) for area #3A; log area #3A.	Spring '05 Summer '07
3	2	Plant area #3A; order 800 Douglas-fir seedlings (seed zone 251—2,000 feet) for area #3B; log area #3B.	Spring '08 Summer '08
3	2	Plant area #3B; order 800 Douglas-fir seedlings (seed zone 251—2,000 feet) for area #3C; log area #3C.	Spring '09 Summer '09
3	2	Plant area #3C; order 800 Douglas-fir seedlings (seed zone 251—2,000 feet) for area #3D; log area #3D.	Spring '10 Summer '10
3	2	Plant area #3D (spring).	Spring '11
2	13	Check on cost sharing; cut alder; prepare site; order 5,200 Douglas-fir seedlings (seed zone 251—1,000 feet).	2012

Tree farm records: Backache-40 property

This chart shows cash flow on my property from 1959 to the present.

Date	Account type	Events/comments	Cost \$	Revenue \$
1/1/59	Land	Purchased property (paid cash).	5,000	
12/31/59	Land/taxes	Yearly ad valorem taxes		75
(yearly entries)	"	"		
	"	"		400
12/31/79	Land/taxes	Switched taxes to Western Oregon Land and Severance Tax because of lower land tax.		70
(yearly entries)	"	"		
1/1/80	Equipment	Purchased Farmall tractor with disk and plow attachment (paid cash).	2,000	
1/5/81	Equipment	Spent \$100 on gas and oil and \$50 on tractor maintenance (paid cash).	150	
(yearly entries)	"	"		
3/1/80	Timber	Planted area #4 with 800 trees per acre. Trees were of unknown origin and were 2 years old when planted. Paid Corval- lis Nursery \$200 per thousand for the seedlings.	1,760	
3/10/86	Timber	Replanted area #4 with 300 trees per acre. (Poor site preparation resulted in poor survival in 1960 planting.) Used improved planting stock and spent more time in planting. Purchased trees for this area and elevation: 2-0 seedlings.*	750	
6/1/87	Timber	Sold alder firewood from area #2. Sold 20 cords to Boy Scout Troop #107.		500

*The first numeral in this age classification system (2-0) gives the number of growing seasons the seedling spent in the nursery seedbeds; the second gives the number of growing seasons spent in nursery transplant beds.

—Chal Landgren and Mike Bondi

For more information

Management Planning for Woodland Owners: Why and How, EC 1125

Record Keeping: A How-to-Do-It Guide for Small Woodland Owners, EC 1187

Incentive Programs for Resource Management and Conservation, EC 1119

Selecting and Buying Quality Seedlings, EC 1196

Measuring Timber Products Harvested from Your Woodland, EC 1127

Tools for Measuring Your Forest, EC 1129

Pacific Northwest Weed Management Handbook (revised annually), WEED

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