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Change in Area and Ownership of Private Timberland in Western Oregon Between 1961-62 and 1973-76

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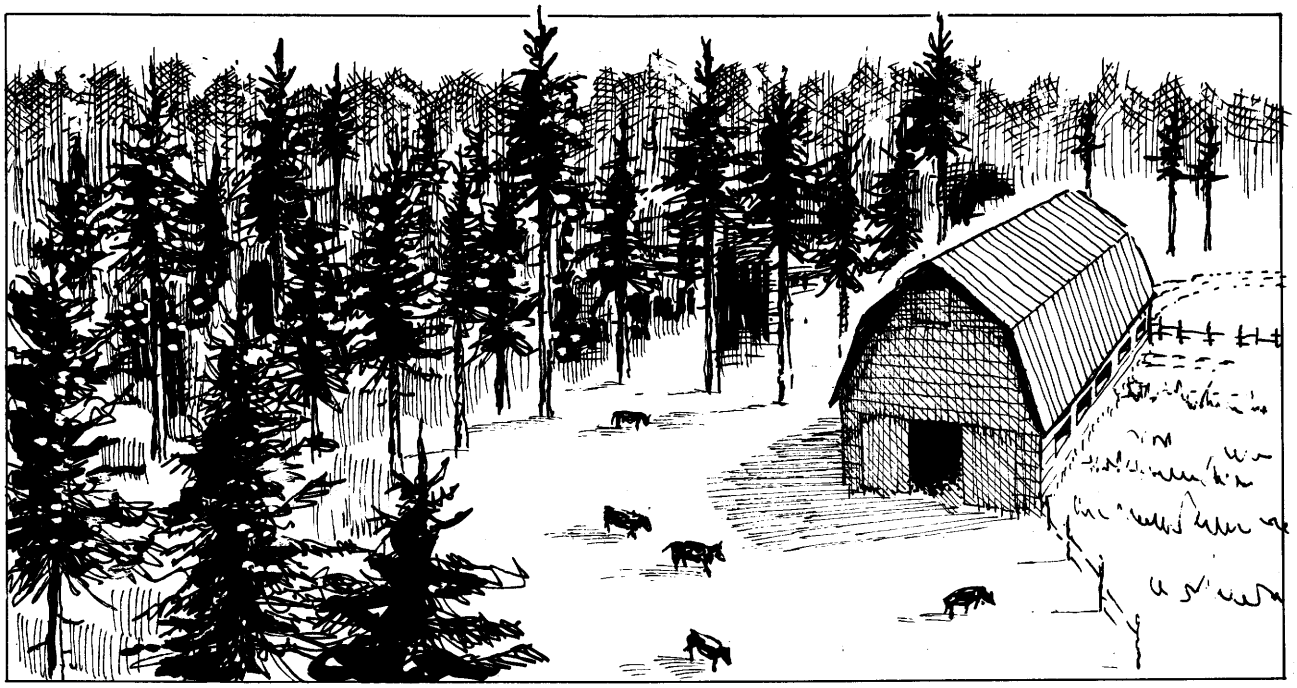

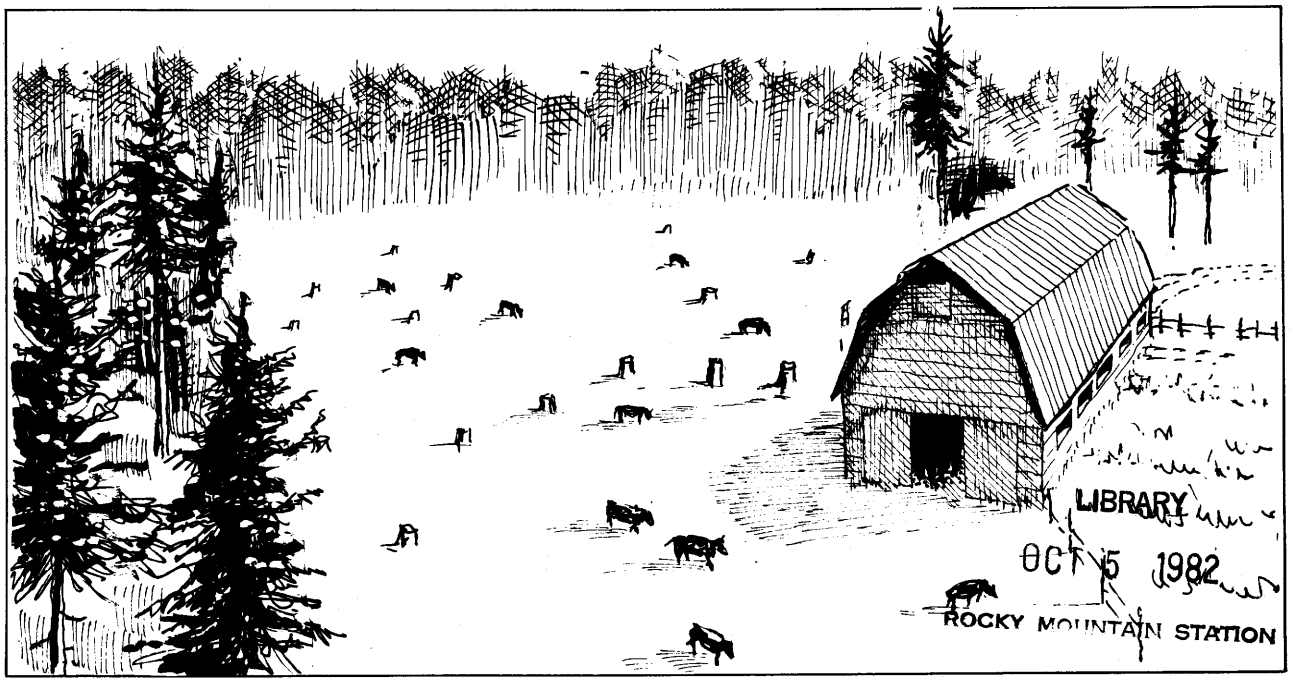

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Abstract

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A reinventory in 1973-76 of permanent inventory plots established in 1961-62 on western Oregon's forest industry and other private timberland provides data by ownership of timberland losses to nonforest land uses and changes in private ownership of timberland between inventories.

Keywords: Land owners, timberland, timber resources, land use, Oregon (western).

Summary

Between inventories made in 1961-62 and 1973-76, forest industry converted 17,600 acres of timberland to nonforest uses, and other private owners converted 194,400 acres—forest industry, mainly to roads; other private, mainly to pastures. During this time, purchases and sales of timberland resulted in a net increase of 279,900 acres for forest industry and a net loss of 251,300 acres for other private owners.

Preface

This report presents information on changes in area and ownership of private timberland in western Oregon. Data for this study came from two successive field inventories conducted by the Renewable Resources Evaluation Work Unit (formerly Forest Survey) of the Pacific Northwest Forest and Range Experiment Station.

Renewable Resources Evaluation is a nationwide project of the USDA Forest Service, authorized by the Forest and Rangeland Renewable Resources Act of 1978 (Public Law 95-307).

Evaluations of renewable resources are conducted in the 50 States by the USDA Forest Service Experiment Stations. The Pacific Northwest Forest and Range Experiment Station at Portland, Oregon, is responsible for evaluating resources in the States of Alaska, California, Hawaii, Oregon, and Washington.

Contents

Introduction

When timberland is bought and sold, some remains timberland under new owners and some is converted to other uses—a road, pasture, or location for a new home.[1] Sometimes an older rural homesite, road, or pasture is abandoned and becomes forested.

When timberland is converted to nonforest land, its potential to produce crops of timber or other forest resources is lost. Conversely, shifts from nonforest land to timberland add to the forest resource potential. Less obvious, but also important, is the impact of changes in ownership; a new owner may have different objectives for use of the land.

Private timberland owners are classified by USDA Forest Service inventories into two categories: forest industry and other private. Forest industry owners own timberland and operate a primary processing plant, such as a sawmill or plywood mill. They invest in forest management, meet payrolls, and provide profits to stockholders. Other private timberland is owned either by farmers or by miscellaneous private owners.

Farmers' timberland is part of an operating farm. Miscellaneous private owners are a diverse group, varying from large corporations owning many acres to individuals owning a few acres. Other private owners may also manage and harvest timber, although they frequently have interests other than growing timber. Some owners may value timberland more for its scenic and recreational qualities or for grazing livestock. They may also have limited time or capital to invest in forest management.

Changes in ownership of timberland, as well as changes from timberland to nonforest (or the reverse) can be significant if they are frequent or large or if timber is a major part of the State's economy, as it is in Oregon.

[1]In this report, timberland is forest land capable of growing at least 20 cubic feet of wood per acre per year and not withdrawn from timber harvest. It is synonymous with the classification "commercial" used in other USDA Forest Service reports. The term "timberland" is used to avoid the connotation that all these lands are commercial; that is, that they are available and suitable for timber harvesting on a continuing basis.

Method

Changes in the amount and ownership of private timberland were estimated from a re-examination of a 3.4-mile-square grid of permanent sample points distributed across all private, State, county, and municipal land in western Oregon. The points were classified in 1961 and 1962 and reclassified from 1973 to 1976.[2]

Western Oregon was inventoried by unit: southwest, west-central, and northwest. Southwest Oregon was inventoried in 1962 and reinventoried in 1974; west-central in 1962 and 1975; and northwest Oregon in 1961 and 1976. Figure 1 shows inventory units and counties in each unit.

There are 1,467 sample points in private, State, county, and municipal lands in the three inventory units; 958 of these are on timberland. Permanent field plots are established at each sample point on timberland. Classification of land and collection of field data were done as part of the inventories made by the Renewable Resources Evaluation Work Unit of the Pacific Northwest Forest and Range Experiment Station.

To compare the 1961-62 and 1973-76 inventories, the Renewable Resources Evaluation Work Unit recompiled the 1961-62 inventory. Some 1961-62 field plots could not be located for remeasurement. In these cases, the Work Unit established new plots in the approximate location and, by backdating tree measurements, developed a simulated plot and included it in the recompilation of the 1961-62 inventory.

[2]For more detail on sample design, remeasurement, and sampling accuracies see Bassett (1979), Jacobs (1978), and Mei (1979).

Errors in the 1961-62 inventory, such as incorrect classifications, were corrected. A major reason for recompilation was that several definitions and standards had changed between inventories—in 1961-62, roads and streams were classified as nonforest only if they were wider than 120 feet; between 1973 and 1976, the standard was changed to 30 feet. In 1973-76, a minimum productivity of 20 cubic feet of timber per acre per year was required for land to be classified as timberland; this was not a qualification in 1961-62.

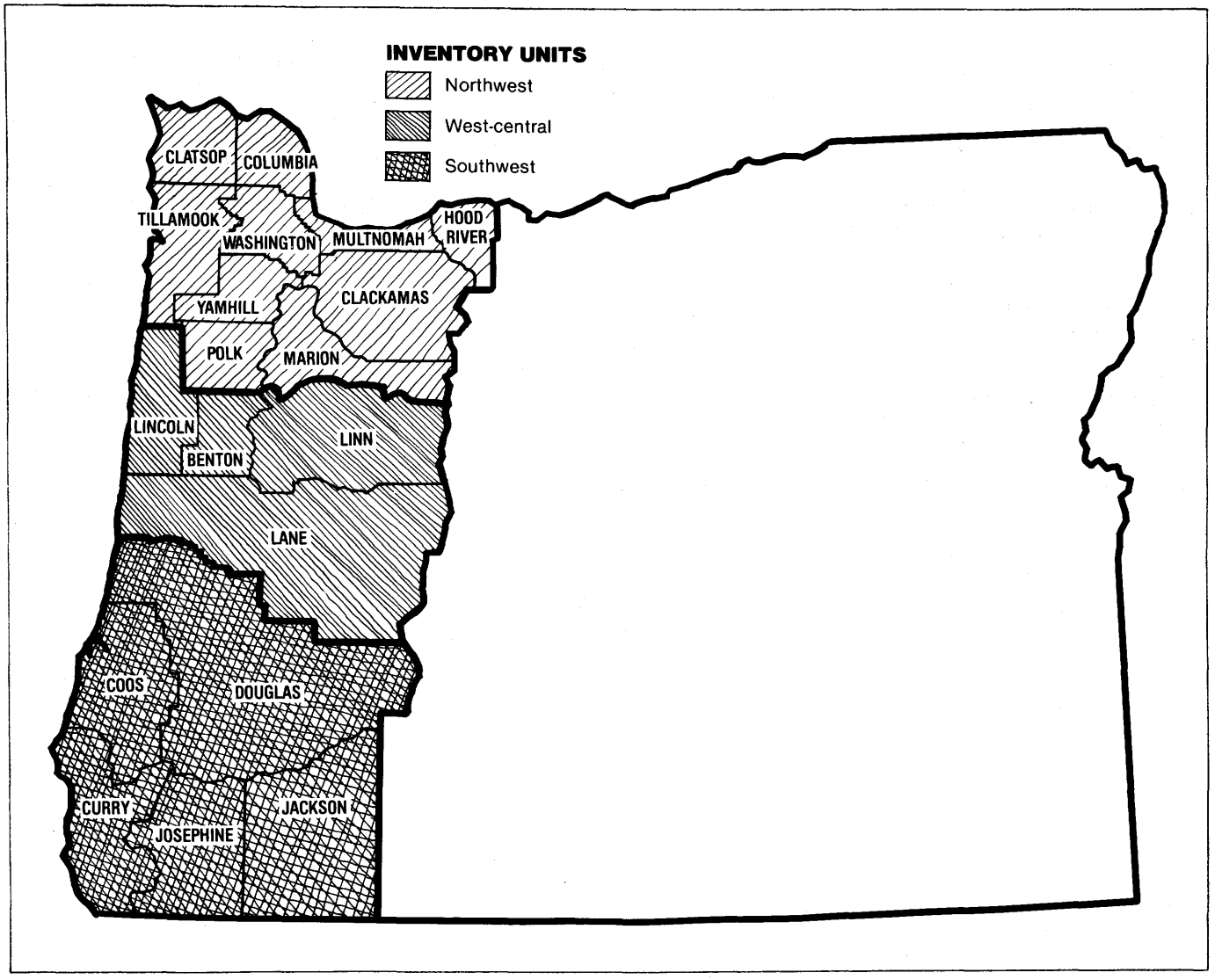

Figure 1.—Inventory units by county in western Oregon.

Change in Land Use

Changes in the total area of timberland occur when timberland is converted to nonforest or when nonforest land is converted to timberland by natural processes or afforestation. Between 1961-62 and 1973-76, 262,000 acres of timberland in private ownership was converted to nonforest land, and 50,000 acres of nonforest land reverted to timberland for a net decrease of 212,000 acres (table 1 presents these statistics; table 2 shows the confidence intervals associated with the estimates in table 1). This is an average annual loss from timberland conversion of 16,000 acres, or 0.25 percent of the 1961-62 timberland area of 6.4 million acres.

Table 1—Change in the ownership and area of private timberland in western Oregon by inventory unit between 1961-62 and 1973-76

Owner and inventory unit	Shifts in timberland ownership	Timberland conversion			Total change in timberland	Annual change[1/]
		To nonforest	From nonforest	Net change		
			Acres			
Forest industry:						
Southwest Oregon	94,200	—	—	—	94,200	7,800
West-central Oregon	79,900	−7,300	—	−7,300	72,600	5,200
Northwest Oregon	105,800	−32,300	22,000	−10,300	95,500	6,400
Total	279,900	−39,600	22,000	−17,600	262,300	19,400
Other private:						
Southwest Oregon	−95,600	−105,000	—	−105,000	−200,600	−16,700
West-central Oregon	−73,100	−33,500	12,500	−21,000	−94,100	−6,700
Northwest Oregon	−82,600	−83,900	15,500	−68,400	−151,000	−10,100
Total	−251,300	−222,400	28,000	−194,400	−445,700	−33,500
All private owners:						
Southwest Oregon	−1,400	−105,000	—	−105,000	−106,400	−8,900
West-central Oregon	6,800	−40,800	12,500	−28,300	−21,500	−1,500
Northwest Oregon	23,200	−116,200	37,500	−78,700	−55,500	−3,700
Total	[2/] 28,600	−262,000	50,000	−212,000	−183,400	−14,100

[1/]Based on 12 years between inventories in southwest Oregon, 14 years in west-central Oregon, and 15 years in northwest Oregon.
[2/]The increase of 28,600 acres is the result of sale or transfer of public lands to private ownership.

Table 2—Confidence intervals at the 68-percent level for estimates of change in area and ownership of private timberland in western Oregon by inventory unit between 1961-62 and 1973-76[1/]

Owner and inventory unit	Shifts in timberland ownership	Timberland conversion: To nonforest	Timberland conversion: From nonforest	Total change in timberland
		Acres		
Forest industry:				
Southwest Oregon	±29,200	—	—	±29,200
West-central Oregon	±23,400	±7,300	—	±24,500
Northwest Oregon	±29,600	±17,000	±11,100	±35,900
Western Oregon	±47,700	±18,500	±11,100	±52,400
Other private:				
Southwest Oregon	±29,200	±41,500	—	±50,700
West-central Oregon	±22,400	±15,200	±9,400	±28,700
Northwest Oregon	±27,000	±25,000	±11,000	±38,400
Western Oregon	±47,000	±50,000	±14,500	±70,700
All private owners	±67,000	±54,100	±18,300	±88,000

[1/]Confidence intervals apply to estimates of change shown in table 1.

Forest industry converted timberland at a considerably slower rate than other private owners did. Between 1961-62 and 1973-76, forest industry had a net loss of 17,600 acres or 1,200 acres per year, and other private owners had a net loss of 194,400 acres of timberland to nonforest uses or 14,800 acres per year. These annual losses are 0.03 percent of the 3.5 million acres of timberland owned by industry in 1961-62 and 0.51 percent of the 2.9 million acres of other private timberlands. Although losses of timberland were negligible for forest industry, they were significant for other private owners, especially in southwest Oregon as is shown in the following tabulation:

Other private owners, by inventory unit	Average annual timberland converted to nonforest uses	Other private timberland, 1961-62	Average annual rate of conversion
	— — — (Thousand acres) — — —		(Percent)
Southwest Oregon	8.8	1,171.6	0.75
West-central Oregon	1.5	794.8	.18
Northwest Oregon	4.6	917.7	.50
Western Oregon	14.9	2,884.1	.51

Other private timberland converted to nonforest had a higher site potential, a lower softwood volume per acre, but about the same distribution of major forest types as other private timberland not converted to nonforest uses. The average site potential of other private timberland converted to nonforest was 122 cubic feet per acre per year compared with 112 cubic feet for all remaining other private timberland.[3] The distribution by site class is shown in table 3.

Almost all the timberland in other private ownership that changed to nonforest uses had lower volumes of softwood per acre than the average volume in timberland not converted. On the other hand, most of the timberland converted to nonforest had above average volumes of hardwood per acre. Lower volumes of softwood may have resulted in part from the sale of softwood timber before conversion, or selection of poorer stands.

The distribution of major forest types in other private ownership converted to nonforest was about the same as on the remaining timberland. About half is in hardwood type and half in softwood type.

[3]Based on lower limits of each site class.

Table 3—Timberland of other private owners converted to nonforest uses and timberland not converted, by site class, western Oregon

Site class[1]	Converted to nonforest uses, 1961-62 to 1973-76	Other private timberland, 1973-76
Cubic feet per acre	Percent	
225 or more	9	10
165-224	22	13
120-164	34	22
85-119	28	43
50-84	—	8
20-49	7	4
Total	100	100

[1]Capacity for cubic-foot annual growth per acre at culmination of mean annual growth in fully stocked natural stands.

Table 4—Forest industry and other private timberland converted to nonforest uses in western Oregon between 1961-62 and 1973-76

Nonforest uses	Forest industry	Other private
	Percent	
Pasture and cropland	—	59
Suburban and urban areas	19	13
Roads	31	7
Water	—	9
Powerline	32	3
Christmas tree farms	18	6
Miscellaneous	—	3
Total	100	100

Of timberland of other private owners converted to nonforest uses, 59 percent was for pastures, including a small amount for cropland (table 4). About 13 percent was used for homesites in suburban and urban areas, principally in southwest Oregon. Small amounts were lost to water and the remainder to powerlines and Christmas tree farms.[4] This is a different pattern of losses than occurred between 1945 and 1970. Bolsinger (1973) found that in all of Oregon, from 1945 to 1970, only 20 percent of timberland was lost to pastures and Christmas tree farms, whereas roads, powerlines, and urban-industrial development accounted for 77 percent.

Losses for roads and powerlines accounted for 63 percent of the forest industry converted to nonforest use (table 4). Roads have consistently been a major factor (Bolsinger 1973), accounting for 72 percent of timberland lost by the forest industry between 1945 and 1970.

[4]The loss to water resulted from a changed stream course. Christmas tree farms are not classed as timberland.

Change in Ownership

Forest Industry

Between 1961-62 and 1973-76, forest industry purchased 326,800 acres of timberland and disposed of 46,900 acres for a net increase of 279,900 acres. Throughout western Oregon, the industry had active acquisition programs, especially in northwest Oregon:

Inventory unit	Change in forest industry area from shifts in timberland, 1961-62 to 1973-76	Timberland owned by forest industry, 1961-62	Total increase from 1961-62 to 1973-76
	— — — (Thousand acres) — — —		(Percent)
Southwest Oregon	94.2	1,544.7	6.1
West-central Oregon	79.9	1,029.7	7.8
Northwest Oregon	105.8	946.8	11.2
Western Oregon	279.9	3,521.2	7.9

Ninety percent of the timberland acquired by forest industry came from other private owners; the remainder from publicly owned land.

In general, forest industry purchased timberland with low volumes of timber. This was especially true in southwest Oregon where 77 percent of all timberland acquired from other private owners from 1961-62 to 1973-76 had less than 1,000 cubic feet of softwood growing stock per acre:

Inventory unit	Volume of softwood growing stock from timberland purchased (cubic feet per acre)			
	<1,000	1,000-3,000	>3,000	Total
		(Percent)		
Southwest Oregon	77	8	15	100
West-central Oregon	43	29	28	100
Northwest Oregon	37	40	23	100
Average	53	25	22	100

Although volumes per acre were low, the site quality of purchased timberland was comparable to timberland already owned by the forest industry. The average site quality of timberland acquired by forest industry in western Oregon was 115 cubic feet per acre per year; the site class for all timberland owned by the industry in 1973-76 was 118 cubic feet per acre per year (table 5). This comparability of site appears reasonable, as purchased timberland is frequently close to, adjacent to, or surrounded by the industry's own land.

The forest industry's acquisition program is apparently a long-term investment. The purchased land is not high in volume; more than half is in immature stands; one-third is in hardwood types; but it has good inherent site productivity.

Metric Equivalents

1,000 acres = 404.7 hectares
1,000 cubic feet = 28.3 cubic meters
1 cubic foot per acre = 0.07 cubic meter per hectare
1 square foot of basal area per acre = 0.23 square meter per hectare
1 foot = 30.48 centimeters
1 inch = 2.54 centimeters
1 mile = 1 609.3 meters

Table 5—Site capacity[1/] of timberland in forest industry and other private ownership, western Oregon

Inventory unit	Acquired by forest industry, 1961-62 to 1973-76	All timberland, 1973-76	
		Forest industry	Other private
	Cubic feet per acre		
Southwest Oregon	101	103	80
West-central Oregon	125	118	110
Northwest Oregon	122	128	110
Average	115	118	101

1/Capacity for cubic-foot annual growth per acre at culmination of mean annual growth in fully stocked natural stands.

Other Private Owners

Other private owners sold 305,600 acres and purchased 54,300 acres, resulting in a net loss of 251,300 acres. With the exception of 7,400 acres of county and municipal land, all timberland acquired had previously been owned by forest industry. The land acquired by other private owners is of relatively high site and has somewhat higher than average volumes per acre. All the timberland sold went to forest industry except 12,500 acres which went mainly to the State.

Of the 46,900 acres of timberland sold by forest industry, 3,800 acres went to farmers and the remainder to miscellaneous private owners. Seventy percent of the timberland sold went to corporations who had an apparent objective of managing timberland for timber production. Some of these owners were former forest industry owners who had disposed of their mills but retained their land. This shift in ownership from forest industry will probably not affect timber supply as timber is likely to be still available from these lands.

Literature Cited

Bassett, Patricia M. Timber resources of southwest Oregon. USDA For. Serv. Resour. Bull. PNW-72 (rev.). Portland, OR: Pac. Northwest For. and Range Exp. Stn.; 1979.

Bolsinger, Charles L. Changes in commercial forest area in Oregon and Washington, 1945-70. USDA For. Serv. Resour. Bull. PNW-46. Portland, OR: Pac. Northwest For. and Range Exp. Stn.; 1973.

Jacobs, David M. Timber resources of west-central Oregon. USDA For. Serv. Resour. Bull. PNW-76. Portland, OR: Pac. Northwest For. and Range Exp. Stn.; 1978.

Mei, Mary A. Timber resources of northwest Oregon. USDA For. Serv. Resour. Bull. PNW-82. Portland,OR: Pac. Northwest For. and Range Exp. Stn.; 1979.

Gedney, Donald R. Change in area and ownership of private timberland in western Oregon between 1961-62 and 1973-76. USDA For. Serv. Resour. Bull. PNW-92, 8 p. Portland, OR: Pac. Northwest For. and Range Exp. Stn.; 1981.

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