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Changes in Area and Ownership of Timberland in Western Oregon: 1961-86

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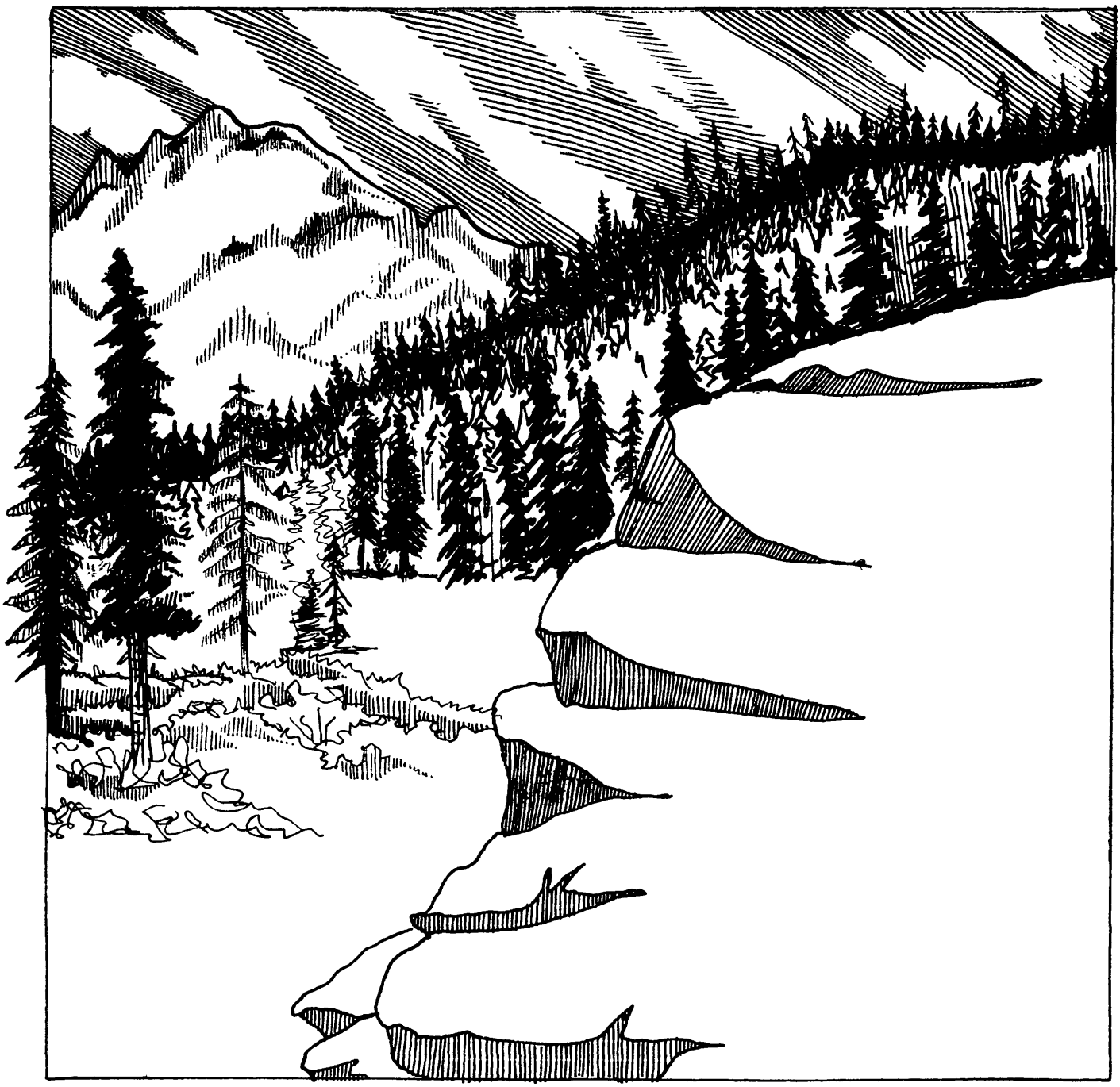

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Abstract

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This report notes the changes in timberland area and in timberland ownership that took place in western Oregon between 1961 and 1986. The data for the report were based on observations and measurements taken during three successive forest inventories of non-Federal lands in western Oregon. Estimates of change were based on repeat measurements of 1,465 permanent plots but older classification were revised to meet current definitions and standards.

Keywords: Forest surveys, statistics (forest), forest area, forest area change, forest ownership, ownership change (forest), Oregon (western).

Summary

From 1961 to 1986, timberland area on private and non-Federal public lands in western Oregon declined at a rate of 0.2 percent per year. Forty percent of the decline occurred as a result of road widening or building-usually for timber harvest. The rate of conversion from timberland to roads did not differ between these classes of owners. The remaining 60 percent of the decline in timberland area occurred when timberland was converted from timberland to agricultural or urban use. Almost all conversion to these uses occurred on timberland held by nonindustrial private owners.

During the same 25 years, nonindustrial private ownership of timberland declined by 28 percent, because forest industry acquired almost 500,000 acres of this land and because 244 thousand acres of nonindustrial private timberland were converted to nonforest uses.

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Introduction

The USDA Forest Service makes periodic inventories of the Nation's timber resources. The Forest Inventory and Analysis Unit (FIA) of the Pacific Northwest Research Station conducts these inventories on all forest lands in the Pacific Coast States except for National Forest lands and – in western Oregon — for lands administered by the U.S. Department of the Interior, Bureau of Land Management (BLM). In western Oregon, FIA conducted inventories during 1961 and 1962 (Hazard and Metcalf 1964, 1965; Metcalf and Hazard 1964), from 1973 through 1976 (Bassett 1979, Jacobs 1978, Mei 1979), and from 1984 through 1986 (Gedney and others 1986a, 1986b, 1987). After each inventory was completed, estimates of timberland area and timber volumes were published for the three major owner groups — forest industry, nonindustrial private, and "other public" (State, county, Native American, and Federal other than National Forest or BLM). Although current inventory statistics were published after each of the inventoties, only one study of the western Oregon inventory data (Gedney 1981) discusses change between inventories. This followup to Gedney's 1981 paper presents estimates of change in timberland area and ownership based on a recompilation of three successive inventories of the non-Federal lands of western Oregon.

Methods

Comparison of Published Reports

One method of estimating change is to compare published reports of successive inventories. This method assumes that the estimation procedure was the same and that the same standards and definitions were used at each inventory occasion: unfortunately, such consistency is seldom possible. Information needs change and new and innovative sampling techniques are adopted — all at the expense of consistency. For this reason, I examined the methodology, standards, and definitions used in the three western Oregon inventories that form the basis for this study.

Over the 25 years covered by the study, a number of changes in definitions and classifications affected inventory results:

1. Before the mid-1960s, all forest roads less than 120 feet wide were classed as timberland — a carryover from the days when area estimates were derived from type maps. Currently, all constructed roads, regardless of width, are classed as nonforest. Thus, the change in timberland area since 1962 cannot be estimated accurately until the 1962 estimates of timberland area are reduced by the area of forest roads that existed at that time.

2. Another change in FIA standards took place in the mid-1960s when timberland was redefined to exclude lands incapable of producing at least 20 cubic feet per acre per year of industrial wood. In the 1961-62 inventory, virtually all forest land in western Oregon capable of growing conifer trees was called timberland. Since then, some of this land has been reclassified as "other forest." Examples include sites with very low natural productivity, swampland with trees growing only on hummocks and logs, rocky sites with shallow soil and limited tree stocking, and coastal beaches stocked with shorepine (*Pinus contorta* Dougl. ex Loud. var. *contorta*) (scientific nomenclature per Little 1979). A recompilation of the 1961-62 inventory, based on current definitions, shows substantially fewer acres of timberland than were reported originally.

3. One of the advantages of permanent plots is the chance to improve data quality by correcting errors uncovered at repeat visits to the plot locations. Such corrections improve the quality of current inventory statistics, but the previous statistics must also be updated, or estimates of change will be biased. An example of this is the problem presented by ownership misclassifications. At the time of the 1961-62 inventory, field plots occasionally fell in uncut stands of sawtimber straddling unmarked ownership boundaries. During later inventories, these previously invisible lines were newly blazed, or defined by fresh clearcuts, thereby revealing misclassificationof owner class. Thus, improvements in ownership classification had introduced changes in the inventory that did not reflect real shifts in ownership.

4. FIA inventories are based on permanent sample plots that reduce the effects of sampling error on estimates of change. But, because the FIA inventory design is double sampling for stratification (Cochran 1977), stratum weights differ slightly from one inventory occasion to the next. Such differences may bias estimates of change that are based on comparison of published reports.

5. Inconsistencies in the determination of the gross inventory area will also affect change estimation. The FIA inventory area in western Oregon includes all non-Federal lands; thus, when Federal and non-Federal owners exchange land, the gross inventory area changes and plot expansion factors are affected. In addition, estimates of gross land area are periodically revised by the Bureau of the Census. This creates a problem, particularly in coastal counties where land areas are difficult to separate from tidal flats, and new estimates of land area by the Bureau of the Census often differ from earlier estimates. Other discrepancies may occur when the gross area is reduced to exclude National Forests, BLM lands, and National, State, and county parks. The agencies managing these lands provide estimates of land area, and those estimates are not always consistent with estimates provided for earlier inventories. Such shifts in area currently are avoided by dot counting the area in census water, reserved areas, and excluded Federal lands on the primary sample grid; this ensures that future estimates of gross area will be consistent with those being made now.

Recompiling the Inventories

Given the problems with using published reports as bases for estimating inventory change, a recompiliation of the earlier inventory statistics based on current standards, definitions, and gross area estimates clearly is needed. In western Oregon, field data are available from plots remeasured in three successive inventories. If each of these past inventories were to be recalculated according to current inventory standards and classification rules, reliable and reasonably accurate estimates of change could be developed. Using this approach, Gedney assessed area and ownership changes in western Oregon between 1961-62 and 1973-76 (Gedney 1981). Since 1981, another inventory of western Oregon has been completed. This paper presents estimates of timberland area and ownership changes both between 1961-62 and 1973-76 and between 1973-76 and 1984-86. Differences between Gedney's (1981) estimates of change during the first remeasurement period (1961-62 to 1973-76) and those presented here for the same period reflect changes in classification since the second inventory.

For inventory purposes, western Oregon has been divided into three units: northwest Oregon (Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Washington, and Yamhill Counties); west-central Oregon (Benton, Lane, Lincoln, and Linn Counties); and southwest Oregon (Coos, Curry, Douglas, Jackson, and Josephine Counties). In each unit, the primary sample (the 0.85-mile photo grid) is classified by owner group and photo characteristics related to the land use and the tree cover. This information is then used to stratify the secondary sample—the field plots. In this study, the photo points were sorted into three owner classes: (1) other public (excluding National Forests and BLM areas), (2) forest industry, and (3) nonindustrial private. They also were sorted into four land classes: (1) timberland at both second and third measurements, (2) other forest, (3) nonforest at both second and third measurements, and (4) timberland at the second measurement but nonforest at the third. Timberland points were further sorted into several strata based on cover and stage of development, and appropriate stratum weights were developed. These weights were held constant across all three inventory compilations. Regardless of stratum, final determination of land class was made by field observation. The data on changes in timberland area presented in this report are based on physical changes observed from three visits to field plot locations during three successive inventories. Ownership changes were identified after careful study of ownership records at county assessors' offices.

Results

I have illustrated the changes in timberland area and ownership since 1961-62 (tables 1-4) by showing (1) timberland area by ownership group at the time of the first inventory; (2) subtractions from and additions to those areas that took place between 1961-62 and 1973-76; (3) timberland area by owner class in 1973-76—the algebraic sum of the 1961-62 estimates and the various changes that took place between the two inventories; (4) subtractions from and additions to timberland area by owner that took place between 1973-76 and 1984-86; and (5) estimates of timberland area by owner group from the most recent inventory.

Table 1—Changes in timberland area and ownership, northwest Oregon, 1961-86[a]

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
Timberland area in 1961	613	982	864	2,459
Gains and losses in timberland area (1961-76):				
A. Changes in land use				
(1) Timberland to roads	−14	−8	−7	−29
(2) Timberland to powerline	—	−7	—	-7
(3) Roads to timberland	+8	+14	+7	+29
(4) Timberland to urban	—	−7	-8	−15
(5) Timberland to agriculture	—	—	−59	−59
(6) Timberland to water	—	—	−7	−7
(7) Agriculture to timberland	—	+26	+14	+40
Net land use changes (1961-76)	−6	+18	-60	-48

Table 1—continued

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
B. Changes in ownership				
(1) To National Forest	–7	—	—	–7
(2) From National Forest	+7	—	—	+7
(3) From **BLM**	+14	—	—	+14
(4) From nonindustrial private	—	+137	–137	—
(5) From other public	–31	+18	+13	—
(6) From forest industry	—	-4	+4	—
Net ownership changes	–17	+151	–120	+14
Timberland area in 1976	590	1,151	684	2,425
Gains and **losses** in timberland area (1976-85):				
A. Changes in land use				
(1) Timberland to roads	—	–24	—	–24
(2) Timberland to urban	—	–7	–8	–15
(3) Timberland to agricutture	—	—	–14	–14
Net land use changes (1976-85)	—	–31	–22	–53
B. Changes in ownership				
(1) To reserved timberland	—	—	–4	-4
(2) From forest industry	+7	–13	+6	—
(3) From nonindustrial private	—	+20	–20	—
(4) From other public	–7	+7	—	—
Net ownership changes (1976-85)	—	+14	–18	-4
Timberland area 1984-85	590	1,134	644	2,368

— = **none found** or **less than 500 acres.**
[a] **Subject to sampling** error.

Table 2—Changes in timberland area and ownership, west-central Oregon, 1962-85[a]

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand Acres		
Timberland Area In 1962	109	1,152	607	1,868
Gains and **losses** in timberland area (1962-75):				
A. Changes in land use				
(1) Timberland to powerline	—	—	–8	–8
(2) Roads to timberland	—	—	+8	+8
(3) Timberland to urban	—	—	–8	–8
(4) Timberland to agriculture	—	–9	–22	–31
(5) Agriculture to timberland	—	—	+18	+18
Net land use changes (1962-75)	—	**–9**	–12	–21

Table 2—continued

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
B. Changes in ownership				
(1) To National Forest	—	−15	—	−15
(2) From National Forest	—	+8		+8
(3) From nonindustrial private		+86	−86	—
(4) From other public	-7	+7	—	—
Net ownership change (1962-75)	−7	+86	−86	−7
Timberland area in 1975	102	1,229	509	1,840
Gains and losses in timberland area (1975-85):				
A. Changes in land **use**				
(1) Timberland to roads	—	−7	−3	−10
(2) Timberland to urban	—	—	−13	−13
(3) Agriculture to timberland	—	—	+6	+6
Net land use change (1975-85)	—	−7	−10	−17
B. Changes in ownership				
(1) From National Forest	+11	—	—	+11
(2) To National Forest	—	—	−14	−14
(3) From **BLM**	+7	—	—	+7
(4) From Forest Industry	—	−14	+14	—
(3) From nonindustrial private	—	+47	-47	—
Net ownership changes (1975-86)	+18	+33	-47	+4
Timberland area 1985-86	120	1,255	452	1,827

— = none found or less than 500 acres.
[a] Subject to sampling error.

Table 3—Changes in timberland area and ownership, southwest Oregon, 1962-85[a]

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
Timberland area in 1962	177	1,522	1,047	2,746
Gains and losses in timberland area (1962-74):				
A. Changes in land use				
(1) Timberland *to* roads	—	—	−16	−16
(2) Timberland to gasline	—	−8		−8
(3) Roads *to* timberland	—	—	+6	+6
(4) Timberland to urban	—	—	−20	−20
(5) Timberland to agriculture	—	—	−45	−45
(6) Timberland to water	—	—	−8	−8
Net land use change (1962-74)	—	−0	−83	−91

Table 3—continued

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
B. Changes in ownership				
(1) To National Forest	—	−37	−15	−52
(2) From National Forest	—	+8	—	+8
(3) To BLM	—	−7	—	−7
(4) From nonindustrial private	+8	+122	−130	—
(5) From forest industry	—	−14	+14	—
Net ownership change (1962-74)	+8	+72	−131	−51
Timberland area in 1974	185	1,586	833	2,604
Gains and losses in Timberland area (1974-85):				
A. Changes in land use				
(1) Timberland to roads	−8	−14	−10	−32
(2) Timberland to agriculture	—	—	−14	−14
Net land use change (1974-85)	−8	−14	−24	-46
B. Changes in ownership				
(1) To reserved timberland	—	—	−2	−2
(2) To National Forest	−7	—	—	−7
(3) From nonindustrial private	—	+65	-65	—
(4) From other public	−9	+9	—	—
Net ownership change (1974-85)	−16	+74	-67	−9
Timberland area 1984-85	161	1,646	742	2,549

— = none found or less than 500 acres.
[a] Subject to sampling error.

Table 4—Changes in timberland area and ownership, western Oregon, 1961-86'

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
Timberland area in 1961	899	3,656	2,518	7,073
Gains and losses in timberland area (1961-76):				
A. Changes in land use				
(1) Timberland to roads	−14	−8	−23	-45
(2) Timberland to powerlines	—	−7	−8	−15
(3) Timberland to gasline	—	−8	—	−8
(4) Roads to timberland	+8	+14	+21	+43
(5) Timberland to urban	—	−7	−36	-43
(6) Timberland to agriculture	—	−9	−126	−135

Table 4—continued

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
(7) Timberland to water	—	—	–15	–15
(8) Agriculture to timberland	—	+26	+32	+58
Net land use changes (1961-76)	-6	+1	–155	–160
B. Changes in ownership				
(1) To National Forest	–7	–52	–15	–74
(2) From National Forest	+7	+16	—	+23
(3) From **BLM**	+14	—	—	+14
(4) To **BLM**	—	-7	—	–7
(5) From nonindustrial private	+8	+345	–353	—
(5) From other public	–38	+25	+13	—
(6) From forest industry	—	–18	+18	—
Net ownership changes (1961-76)	–16	+309	–337	–44
Timberland area in 1976	877	3,966	2,026	6,869
Gains and **losses** in timberland area (1976-86):				
A. Changes in land use				
(1) Timberland to roads	–8	–45	–13	–66
(2) Timberland to urban	—	–7	–21	–28
(3) Timberland to agriculture	—	—	–28	–28
(4) Agriculture to timberland	—	—	+6	+6.
Net land use changes (1976-86)	–8	–52	–56	–116
B. Changes in ownership				
(1) To reserved timberland	—	—	–6	–6
(2) To National Forest	–7	—	–14	–21
(3) From National Forest	+11	—	—	+11
(4) From **BLM**	+7	—	—	+7
(5) From forest industry	+7	–27	+20	—
(6) From nonindustrial private	—	+132	–132	—
(7) From other public	–16	+16	—	—
Net ownership changes (1976-86)	+2	+121	–132	–9
Timberland area 1984-85	071	4,035	1,838	6,744

— = **none found** or **less than 500 acres.**
[a] **Subject to sampling error.**

Discussion

Losses of Timberland Area

Roads, powerlines, pipelines, and railroads—An estimated 255 thousand acres of non-Federal timberland has been converted to use for roads, powerlines, pipelines, and railroads—a reduction in timberland area of about 3.6 percent (table 5). Currently, about 6,500 acres of timberland–about 0.1 percent of the total timberland area–is being lost annually to road building and road widening projects. The rate of loss is the same for all three owner groups. No new powerline, pipeline, or railroad construction activity was sampled during the most recent 10-year period examined by this study, and almost all the recent road construction activity was related to timber harvest. When enough roads are built to meet most timber harvesting needs, roadbuilding activities should decline dramatically.

Urban use, agriculture, and water—Between the first and second inventories, 7,000 acres of forest industry-owned timberland (one field plot) were converted to urban use. Additionally, one field plot representing 9,000 acres was developed as a tree seed orchard, and 26,000 acres of farmland were purchased and reforested by industrial owners. Between the second and third inventory, 7,000 acres of industrial timberland were converted to urban use, but no agricultural land was reforested. In summary, land use conversion activity on forest industry-owned lands was largely limited to road construction. Although some agricultural land was purchased for conversion to timberland during the first remeasurement period, this activity ended by the mid-1970s.

Table 5-Losses of timberland to forest roads, powerlines, and gaslines'

Description	Other public	Forest industry	Nonindustrial private	All owners
		Thousand acres		
Area of forest roads, powerlines, and gaslines (1961-62)	25	82	57	164
Changes in area of forest roads, powerlines, and gaslines (1961-76):				
A. New roads	+14	+8	+23	+45
B. New powerlines and gaslines	—	+15	+8	+23
C. Roads reverted to timberland	–8	–14	–21	-43
Increase in road, powerline, and gasline area (1961-76)	+6	+9	+10	+25
Area of forest roads, powerlines, and gaslines (1973-76)	31	91	67	189
Changes in area of forest roads (1976-86):				
A. New roads	+8	+45	+13	+66
Area of forest roads, powerlines, and gaslines (1976-86):	39	136	80	255

— = none found or less than 500 acres.
[a] Subject to sampling error.

Between 1961 and 1976, 9,000 acres of nonindustrial privately owned timberland were converted annually to urban and agricultural use—2,000 acres per year to urban use and a net of about 7,000 acres per year to agricultural use. Between 1976 and 1986, the conversion of nonindustrial privately owned timberland to agricultural use declined to 7,000 acres annually, while the rate of conversion to urban use remained constant at 2,000 acres per year. Thus, during the most recent inventory period, the total loss of industrial privately owned timberland to agricultural and urban expansion was only 5,000 acres per year.

Ownership shifts—Since 1961, the only significant ownership shift in western Oregon has been from nonindustrial private owners to industrial owners. From 1961 to 1976, forest industry acquired about 27,000 acres a year of timberland from nonindustrial private owners—an annual acquisition of about 1 percent of the total timberland held by those owners. Since 1976, the rate has slowed by about half, to 13,200 acres per year. A comparison of the lands acquired by forest industry with all private timberlands follows:

Timberland productivity, conifer stocking, and average conifer volume	Acquired by forest industry 1973-86	All timberland 1984-86	
		Forest industry	Nonindustrial private
Percent of timberland area capable of producing at least 120 ft ^{3}acre^{-1}yr^{-1} of industrial wood	56	73	59
Percent of timberland stocked with manageable stands of conifer	69	86	63
Average ft^3/acre volume of conifer growing stock	2,105	2,298	1,846

Gedney (1981) found that forest industrial owners were acquiring nonindustrial private lands of higher than average productivity, but this no longer seems to be the case. Timberland purchased by forest industry differs little in either site productivity or stand characteristics from timberland currently held by nonindustrial private owners. Although the purchased lands seem to support a higher average volume (2105 ft^3/acre) than do the remaining nonindustrial private lands (1846 ft^3/acre), this difference reflects the effect of only one high-volume field plot. The average volume on the acquired lands is otherwise no different than that found on nonindustrial timberland.

Conclusions

The timberland base in western Oregon has been relatively stable for at least 25 years. Even though, in the recent past, about 6,000 acres of timberland have been converted to roads each year, roadbuilding activities will probably decline once an adequate road system is in place. Because most of the urban expansion in Oregon occurs at the expense of agricultural land, timberland area is not greatly affected. Each year, a few acres of nonindustrial private timberland are converted to agricultural use, but the acreage is small and seems to be declining.

Between 1961 and 1986, the acres of timberland held by nonindustrial private owners declined by almost 28 percent. Although some of this loss occurred when timberland was converted to other uses, the primary cause of the loss was the selling of timberland to industrial owners. Since the early 1960s, forest industries have purchased almost 500,000 acres of timberland from nonindustrial owners. This trend continues, although at a slower rate than during the 1960s. These ownership changes, when combined with losses of timberland to other uses, account for the reduction in the area of timberland held by nonindustrial private owners. Although the greatest losses occurred during period between 1961 and 1976, the annual loss from 1973 to 1986 was still 12,800 acres—almost 0.7 percent per year.

Reliability of the Data

All statistics presented in this report are est mates based on sampling and thus are subject to sampling error. Confidence intervals for the current inventory statistics (timberland area by owner group) are as follows:

Owner	Unit	Timberland area	Confidence interval
		- - - *Thousand acres* - - -	
Other public	Northwest	590	± 24
Forest industry	Oregon	1,134	± 23
Nonindustrial private		643	± 23
All owners		2,367	± 32
Other public	West-central	109	± 7
Forest industry	Oregon	1,270	4 26
Nonindustrial private		449	± 17
All owners		1,827	± 28
Other public	Southwest	163	± 11
Forest industry	Oregon	1,643	± 23
Nonindustrial private		777	± 41
All owners		2,583	± 45

Confidence intervals are quantitative expressions of the reliability of the timberland area statistics. The above tabulation indicates, for instance, a two-in-three (68 percent) chance that the timberland area for all owners in northwest Oregon is within ± 32,000 acres of the estimated 2,367,000 acres.

Confidence intervals vary by both the size of the estimate and the variance of the item being estimated. The confidence interval guides that follow are based on the assumption that variance is proportional to the size of the estimate, and thus they provide only an approximation of the confidence limits for individual estimates.

Timberland area	Confidence interval for change estimates
Thousand acres	*Thousand acres*
600	± 51
400	± 43
200	± 31
100	± 23
50	± 17
25	± 12
15	± 10
10	± 8
5	± 5

Terminology

BLM lands—Federal lands administered by the Bureau of Land Management, U.S. Department of the Interior.

Forest industry lands–Lands owned by companies for the purpose of growing timber.

Forest land—Land at least 10 percent stocked by live trees or land formerly having such tree cover and not currently developed for nonforest use.

Land area—Area reported as land by the Bureau of the Census, U.S. Department of Commerce. Total land area includes dry land and land temporarily or partially covered by water, such as marshes, swamps, and river flood plains; also streams, sloughs, and canals less than 40 acres in area.

Land class—A classification of land by major use. The minimum area for classification is 1 acre.

National Forest lands—Federal lands that have been designated by Executive order or statute as National Forest or purchase units and other lands under the administration of the Forest Service, U.S. Department of Agriculture, including experimental areas and Bankhead-Jones Title III lands.

Non-Federal lands—All land except lands owned or managed by the Forest Service, U.S. Department of Agriculture, and the Bureau of Land Management, U.S. Department of the Interior.

Nonforest land—Land that has never supported forests or was formerly forested and is currently developed for nonforest uses. Included are pastures, residential areas, city parks, constructed roads, operating railroads and their right-of-way clearings, powerline and pipeline clearings, streams more than 30 feet wide, and bodies of water (acres that are classed as land by the Bureau of the Census, U.S. Department of Commerce.

Nonindustrial private lands—Private lands held by individuals or by companies holding forest lands for reasons other than timber production.

Other forest land—Forest land incapable of producing 20 cubic feet per acre per year of industrial wood because of adverse site conditions, such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rocky conditions.

Other public lands—Lands administered by public agencies other than the Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior.

Reserved land—Public or private land withdrawn from timber utilization through statute, ordinance, or administrative order.

Timberland—Forest land capable of producing 20 cubic feet or more per acre per year of industrial wood, and not withdrawn from timber utilization.

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 foot = 0.3048 meter
1 inch = 2.54 centimeters
1 mile = 1.609 kilometers

Literature Cited

Bassett, Patricia M. 1979. Timber resources of southwest Oregon. Resour. Bull. PNW-72. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 29 p.

Cochran, W.G. 1977. Sampling techniques. 3d ed. New York: Wiley & Sons. 428 p.

Gedney, Donald R. 1981. Change in area and ownership of private timberland in western Oregon between 1961-62 and 1973-76. Resour. Bull. PNW-92. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 8 p.

Gedney, Donald R.; Bassett, Patricia M.; Mei, Mary A. 1986a. Timber resource statistics for non-Federal forest land in northwest Oregon. Resour. Bull. PNW-140. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

Gedney, Donald R.; Bassett, Patricia M.; Mei, Mary A. 1986b. Timber resource statistics for non-Federal forest land in southwest Oregon. Resour. Bull. PNW-138. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

Gedney, Donald R.; Bassett, Patricia M.; Mei, Mary A. 1987. Timber resource statistics for non-Federal forest land in west-central Oregon. Resour. Bull. PNW-143. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

Hazard, John W.; Metcalf, Melvin E. 1964. Forest statistics for southwest Oregon. Resour. Bull. PNW-8. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 32 p.

Hazard, John W.; Metcalf, Melvin E. 1965. Forest statistics for west-central Oregon. Resour. Bull. PNW-10. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 35 p.

Jacobs, David M. 1978. Timber resources of west-central Oregon. Resour. Bull. PNW-76. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 30 p.

Little, Elbert L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture. 375 p.

Mei, Mary A. 1979. Timber resources of northwest Oregon. Resour. Bull. PNW-82. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 29 p.

Metcalf, Melvin E.; Hazard, John W. 1964. Forest statistics for northwest Oregon. Resour. Bull. PNW-7. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 38 p.

MacLean, Colin D. 1990. Changes in area and ownership of timberland in western Oregon: 1961-86. Resour. Bull. PNW-RB-170. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 13 p.

This report notes the changes in timberland area and in timberland ownership that took place in western Oregon between 1961 and 1986. The data for the report were based on observations and measurements taken during three successive forest inventories of non-Federal lands in western Oregon. Estimates of change were based on repeat measurements of 1,465 permanent plots but older classification were revised to meet current definitions and standards.

Keywords: Forest surveys, statistics (forest), forest area, forest area change, forest ownership, ownership change (forest), Oregon (western)

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