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Forest Statistics for Eastern Oregon, 1977

Thomas O. Farrenkopf

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Author

THOMAS O. FARRENKOPF is a research forester, Renewable Resources Evaluation, Pacific Northwest Forest and Range Experiment Station, 809 NE 6th Avenue, Portland, Oregon 97232.

Abstract

Farrenkopf, Thomas O. Forest statistics for eastern Oregon, 1977. U.S. Department of Agriculture, Resour. Bull. PNW-94. Portland, OR: Forest Service, Pacific Northwest Forest and Range Experiment Station; 1981. 28 p.

This report summarizes a 1977 inventory of timber resources in 17 Oregon counties east of the crest of the Cascade Range. Detailed data on forest area, timber volume, growth, mortality, and harvest are presented.

Keywords: Statistics (forest), forest surveys, timber resources, Oregon (eastern).

Summary

The eastern Oregon resource area consists of 17 counties that encompass 42,241,000 acres, of which an estimated 14,363,000 acres are forested. An estimated 10,126,000 acres are classified as unreserved timberland. This area has 21.0 billion cubic feet of standing timber, with 84 percent of the volume in public ownership.

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Purpose of the Inventory

The Forest and Rangeland Renewable Resources Planning Act of 1974 and the Forest and Rangeland Renewable Resources Research Act of 1978 give the USDA Forest Service the responsibility of keeping current inventories of the forest resources of the Nation. Keeping inventories current is essential because this information is used at local, regional, and national levels for public and private planning. Forest land in eastern Oregon not administered by the Forest Service was last inventoried by the Forest Survey[1] in two parts. The Central Oregon Survey Unit, which includes Crook, Deschutes, Gilliam, Jefferson, Klamath, Lake, Sherman, Wheeler, and Wasco Counties, was inventoried in 1964; and the Blue Mountain Survey Unit, which includes Baker, Grant, Harney, Malheur, Morrow, Union, Umatilla, and Wallowa Counties, was inventoried in 1969. Since the inventories of the 1960's, several changes have altered the structure of the forests and the ownership of forest land: timber has been harvested; trees have grown and then died from insect attacks and other natural causes; and parcels of land have been sold or exchanged. In addition, techniques have improved for measuring forest resources and describing the relation of trees to one another and the land.

[1] Forest Survey is the former name of the Renewable Resources Evaluation Research Work Unit of the Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

Description of the Inventory

The statistics in this report are for all of Oregon east of the crest of the Cascade Range. They include counties previously inventoried in the Central Oregon Survey Unit and the Blue Mountain Survey Unit.

Five sources of information used to compile these statistics are: National Forest System inventories for each of the National Forests, updated from the previous date of inventory to 1977; inventories conducted by the Bureau of Land Management in 1973 and 1974, and a portion of one conducted in 1977; and two inventories conducted in 1977 by the Renewable Resources Evaluation (RRE) Research Work Unit of the Pacific Northwest Forest and Range Experiment Station (PNW).

National Forest System inventories were conducted in accordance with procedures in the Forest Service Manual. To provide statistics for the 1980 Assessment required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), inventory statistics for each National Forest were updated from the year of inventory to 1977. This updated information reflects changes in land use classification, forest stand structure, composition, and volume.

The methods used for updating the statistics varied with each National Forest depending on when it was last inventoried. Nine National Forests are located partly or entirely in eastern Oregon. Dates of inventories used are:

Forest	Year of inventory
Deschutes	1971
Fremont	1973
Malheur	1968
Mount Hood	1971
Ochoco	1972
Rogue River	1967
Umatilla	1968
Wallowa-Whitman	1968
Winema	1972

The updated statistics provide the basic framework for the estimates included in this report. Reconciliation of the total acreage in eastern Oregon administered by the National Forest System in 1977 was based on the June 1976 Pacific Northwest Region lands report.[2]

Updated statistics for National Forests did not contain estimates of area by the forest-type classifications used in eastern Oregon. To obtain this estimate, weighted proportions of the distribution of acreage by forest type were obtained from information in published inventory statistics for eastern Oregon National Forests. The proportions were then applied to the updated acreage to obtain estimates of forest-type areas. Updated statistics of National Forest volume did not contain estimates of board-foot volume in Scribner rule. Where the information was available by species in published inventory statistics, Scribner board-foot — cubic-foot ratios by diameter class were obtained. Where this information was not available by species, ratio predictors were obtained by mathematical manipulation of local volume curves of cubic-foot volume and Scribner board-foot volume that were used to prepare the original published inventory statistics. The ratios obtained by these methods were applied to the updated estimates of cubic-foot volume to obtain estimates of Scribner board-foot volume.

[2] "Summary of National Forest acreages information sheet", 6-30-76, Region 6, Lands and Minerals Branch.

Comparison of Current and Previous Inventory Methods

Timber inventories of forest land administered by the Bureau of Land Management were done in accordance with agency directives. For the inventories conducted in 1973 and 1974 the basic data of the agency were obtained from the Oregon State Office and processed by PNW through FINSYS[3] to obtain the required estimates and associated error statistics. Information from a portion of the third Bureau of Land Management inventory of 1977 was obtained from the State Office in final form and added to the other estimates.

The two inventories conducted by the Renewable Resources Research Work Unit in 1977 covered the area of eastern Oregon not included in the inventories of the National Forest System nor the Bureau of Land Management.

Each of the inventories conducted by PNW covered the same areas covered by inventories of the 1960's; one included the counties in the Blue Mountains Survey Unit, the other the counties in the Central Oregon Survey Unit. Some of the techniques used in the two inventories differed substantially, and unit names are linked with techniques as appropriate in the explanation that follows:

The basic design for each unit was double sampling for stratification as described by Cochran (1963). The primary sample, which was used for stratification, was obtained from aerial photographs and maps and consisted of a classification of each sample point by land use class and ownership. Timberland classes were further classified by cubic-foot volume classes. Included as part of the photo-sample points were the estimated center points of each of the field samples from the inventories of the 1960's. The secondary samples, or field samples, were taken at the same places as the field samples taken in the inventories of the 1960's. The original field samples consisted of a cluster of 10 sample points in a geometric pattern that covered approximately 1 acre.

[3] "FINSYS-2: Subsystem TABLE-2 and OUTPUT-2", J. David Born and Joseph E. Barnard, General Technical Report (in press at the NE For. Exp. Stn. Broomall, PA), 1979.

In the Blue Mountains Survey Unit all 10 points of the field locations were visited to note changes in the status of sample trees present on the previous inventory. Changes were recorded for harvest and mortality. Information on the characteristics of trees needed to assess stocking and to describe the stand was also collected. Height and diameter measurements for new trees were not made. Estimates of diameters for 1977 were made from regression analyses of diameter growth information collected in 1969. Estimates of height were made from proportional changes in height derived from site-index curves.

The previous inventory of the Central Oregon Survey Unit was 13 years old, and a "walk-through" inventory—like the one conducted in the Blue Mountains, where the previous inventory was 8 years old—was not considered appropriate because more extensive changes could have taken place over the longer time period. At the same time, additional field information was needed to evaluate opportunities for silvicultural treatment. A design study[4] was done to determine an efficient way to utilize remeasurement data and collect data on treatment opportunity. The design selected resulted in a procedure whereby 2, and sometimes 3, of the 10 points of field locations from the previous inventory were remeasured for growth data; and the remeasured points, plus 3 newly established points were measured for volume data and information describing trees and the stand.

[4] An examination of alternative field plot designs for use in the 1977 inventory of central Oregon, Colin D. MacLean, March 1977, Office Report, Renewable Resources Evaluation Research Work Unit, Portland, Oregon.

The previous inventory of the Blue Mountains Survey Unit was reported by Bolsinger and Berger (1975), and the Central Oregon Survey Unit was reported by Berger (1968). Direct comparison between previous inventories and the current inventory to determine changes in area and timber volume may lead the reader to erroneous conclusions because different techniques were used. Techniques incorporated in inventories of the National Forest System and the Bureau of Land Management have been documented in inventory plans. Major changes in techniques used in inventories done by PNW, in addition to the changes of sampling design, are described below.

In determining timberland area for the current inventory, stocking capacity (MacLean and Bolsinger 1973) was estimated. In the previous inventory of the Blue Mountains Survey Unit, stocking capacity was estimated from less sophisticated guidelines than were used in the current inventory. Guidelines for stocking capacity were not available for the previous inventory of the Central Oregon Survey Unit, so no estimate was made.

The method of determining individual tree stocking (MacLean 1979) was changed between inventories. Aggregated tree stocking is used to classify forest type and stand size class, hence the change in method of determining stocking can produce apparent changes in area.

The identification of white fir and grand fir in the Blue Mountains has always been difficult. Müller (1938) concluded that fir trees in the Blue Mountains, called by either of these names, was a racial variation of grand fir. More recent research (Daniels 1969) indicates that the Blue Mountains Survey Unit is in a zone of intergradation in the geographically defined grand fir-white fir complex. Trees

Definition of Terms

from populations in northeast Oregon, identified as one or the other of these fir species, are said to be introgressive hybrids exhibiting characteristics more like grand fir than white fir. In the current inventory of the Blue Mountains Survey Unit, we identified as grand fir, all trees identified as white fir in the previous inventory. No effort was made to recast white fir as grand fir in inventories of the National Forest System or the Bureau of Land Management that are wholly within or extend into the Blue Mountains Survey Unit, nor was any effort made to recast white fir as grand fir in the portion of the Central Oregon Survey Unit within the zone of intergradation. This problem will be considered in future inventories. As a result of this action, however, some areas in the Blue Mountains Survey Unit previously identified as in the white fir forest type are now identified as in the grand fir forest type. In addition, volume, growth, and mortality previously attributed to white fir trees are now part of the statistics for grand fir.

The final change of the major techniques incorporated in the inventories done by PNW was the use of volume equations that better describe tree growth patterns in eastern Oregon. The primary change was elimination of tree-volume equations dependent on form class, and reliance on equations that depended on total height and diameter at breast height. For some species, only form-class equations were available for estimating board-foot volume. In those cases, form class was derived from estimated cubic-foot volume, total tree height, and diameter at breast height.

Class of timber—A characterization of trees as growing stock, cull, and salvable dead. Growing stock trees are subdivided into poletimber trees and sawtimber trees.

Codominant trees—Live trees with crowns forming the general level of the crown canopy and receiving full light from above but comparatively little from the sides; usually with medium-size crowns more or less crowded on the sides.

Commercial species—A tree species suitable for industrial wood products.

Cull trees—Live trees of noncommercial species or live trees of commercial species that are more than 75 percent defective and unlikely to become growing stock.

Cull trees, rotten—Live trees with excessive defect primarily caused by rot.

Cull trees, sound—Live trees of noncommercial species, or live trees of commercial species with excessive defect caused by poor form, roughness, etc.

Diameter class—A classification of tree size based on diameter outside bark measured at breast height, 4½ feet above the ground. D.b.h. is the common abbreviation for "diameter at breast height."

Dominant trees—Live trees with crowns extending above the general level of the crown canopy and receiving full light from above and partly from the side; larger than average trees in the stand and with crowns that are dense, comparatively wide and long, but somewhat crowded on the sides.

Forest-industry lands—Lands owned by companies or individuals operating wood-using plants.

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.

Forest types—Stands with 50-percent or more stocking in live conifer trees are classed as softwood types. Stands with a majority of stocking in live hardwood trees are classed as hardwood types. Within these two groups, individual forest types are determined by plurality of stocking by species of live softwood or hardwood trees.

Growing stock trees—All live trees, except cull trees.

Growing stock volume—Net volume in cubic feet of live sawtimber and poletimber growing stock trees measured from stump to a minimum 4-inch top of central stem, outside bark. Net volume equals gross volume less deduction for rot and missing bole sections.

Hardwoods—Angiosperms, particularly dicotyledons.

Industrial wood—All commercial roundwood products except fenceposts and fuelwood.

International ¼-inch rule—The standard board-foot log rule adopted nationally by the USDA Forest Service for the presentation of inventory volume statistics.

Land area—Area reported as land by the Bureau of the Census and adjusted for water area reported by the State Water Resources Board. Total land area includes dry land and land temporarily or partially covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, and canals less than ⅛ mile wide; and lakes, reservoirs, and ponds of less than 40 acres.

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

Mean annual increment—A measure of productivity expressed as the average increase in cubic-foot volume per acre per year. For a given species and site index, the average is based on the number of years needed for the mean annual increment to culminate in stands fully stocked by applicable yield table definition.

Mortality—Volume of sound wood in trees that died from natural causes.

National Forest lands—Federal lands which have been designated by Executive Order or statute as National Forests or purchase units and other lands under the administration of the USDA Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth—The net increase in volume of trees during a specified year. Components of net annual growth of trees: (a) the increment in net volume of trees alive at the beginning of the specified year and surviving to the year's end, plus (b) the net volume of trees reaching sawtimber or poletimber size during the year, minus (c) the net volume of trees that died during the year.

Noncommercial species—A tree species not suitable for industrial wood products.

Nonforest land—Land that has never supported forests or was formerly forest and is currently developed for nonforest uses. Included are lands used for agricultural crops, improved pasture, residential areas, city parks, improved roads, operating railroads and their right-of-way clearings, powerline and pipeline clearings, streams over 30 feet wide, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and other nonforest strips more than 120 feet wide, and clearings or other areas 1 acre or larger qualify as nonforest land.

Nonstocked areas—Timberland less than 10 percent stocked with growing stock conifer, red alder, and black cottonwood trees.

Other forest land—Forest land incapable of yielding crops of industrial wood because of adverse site conditions or stocked predominantly with noncommercial species.

Other forest land, reserved—Public land withdrawn from timber utilization through statute, ordinance, or administrative order, but which otherwise qualifies as other forest land.

Other forest land, unreserved—Other forest land not withdrawn from timber utilization.

Other private lands—All privately owned lands except those classed as forest-industry lands.

Other private lands, farmer—Lands owned by operators of farms.

Other private lands, miscellaneous—Privately owned lands other than those owned by the forest industry or farmers.

Other public lands—Lands administered by public agencies other than the Forest Service and the Bureau of Land Management.

Ownership class—A classification of land based on the public agency or category of private owner administering the land.

Poletimber stands—Stands stocked at least 10 percent with growing stock conifer, red alder, and black cottonwood trees; half or more of which is in poletimber trees and sawtimber trees, with poletimber stocking exceeding sawtimber stocking.

Poletimber trees—Live trees of commercial species at least 5.0 inches in diameter at breast height but smaller than sawtimber size, and of good form and vigor.

Roundwood—Logs, bolts, or other round sections cut from trees.

Salvable dead trees—Standing or down trees of commercial species, at least 9.0 inches in d.b.h. for softwoods and at least 11.0 inches in d.b.h. for hardwoods, containing 25 percent or more sound wood and at least one merchantable 12-foot log, if softwood, or one merchantable 8-foot log, if hardwood.

Sapling and seedling stands—Stands stocked at least 10 percent with growing stock conifer, red alder, and black cottonwood trees; half or more of which is in sapling and seedling trees.

Sapling and seedling trees—Live trees of commercial species less than 5 inches in d.b.h. with no disease, defects, or deformities likely to prevent their becoming poletimber trees.

Saw log portion—The bole of sawtimber trees between the stump and the saw log top.

Sawtimber stands—Stands stocked at least 10 percent with conifer, red alder, and black cottonwood trees; half or more of which is in sawtimber and poletimber trees, with sawtimber stocking equal to or greater than poletimber stocking.

Sawtimber stands, large—Sawtimber stands where more than half the sawtimber stocking is in trees 21.0 inches or more in diameter at breast height.

Sawtimber stands, small—Sawtimber stands where half or more of the sawtimber stocking is in trees less than 21.0 inches in diameter at breast height.

Sawtimber trees—Live softwood trees of commercial species at least 9.0 inches in d.b.h. and hardwood trees of commercial species at least 11.0 inches in d.b.h. At least 25 percent of the board-foot volume in a sawtimber tree is free from defect. Softwood sawtimber trees contain at least one 12-foot saw log with a top diameter at least 6 inches inside the bark; hardwood sawtimber trees contain at least one 8-foot saw log with a top diameter at least 8 inches inside the bark.

Sawtimber volume—Net volume of sawtimber trees measured in board feet. Net volume equals gross volume less deduction for rot, sweep, crook, and other defects that affect use for lumber.

Scribner rule—The common board-foot log rule used locally in determining volume of sawtimber. Scribner volume is estimated in terms of 16-foot logs.

Site class—A classification of the potential productivity of forest land in terms of mean annual increment.

Site index—A measure of the productivity of forest land in terms of the average height of dominant and codominant trees at a specified age.

Softwoods—Gymnosperms, particularly conifers.

Standard error of the estimate—A statistical measure of the variability in the estimated total. In this report the probability that the true value of the sample estimate lies in the interval between the estimated value plus or minus the standard error of the estimate is 0.682.

Stand-size class—A classification of forest land based on the predominant size of timber present.

Stocking—Stand density expressed as a percentage of the density of trees desired to meet a management goal.

Timber harvest—Volume of roundwood removed from forest land for products.

Timberland—Forest land capable of producing 20 cubic feet per acre per year of industrial wood.

Timberland, deferred—National Forest timberland temporarily withdrawn from timber utilization and under study for possible inclusion in the wilderness system.

Timberland, reserved—Public land withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as timberland.

Timberland, unreserved—Timberland not withdrawn from timber utilization.

Timber volume—Includes the net volume, in cubic feet, of live growing stock poletimber and sawtimber trees and salvable dead sawtimber trees of all species, plus the net volume, in cubic feet, of cull trees of commercial species (gross volume of noncommercial species). Volume is measured from stump to a minimum 4-inch top outside bark.

True firs—A general term for trees in the species *Abies.*

Unclassified forest type—Forest land for which information needed to determine forest type is not available.

Unclassified stand-size class—Forest land for which information needed to determine stand-size is not available.

Upper stem portion—The bole of sawtimber trees above the saw log top, of 7.0 inches outside bark for softwoods and 9.0 inches outside bark for hardwoods, to a minimum top diameter of 4.0 inches outside bark, or the point where the central stem breaks into limbs.

Accuracy of Statistics

Of the five sources of the statistics contained in this report almost 60 percent of the information on forest area and more than three-fourths of the information on unreserved timberland volume comes from the updated National Forest System inventories. Each of the National Forest inventories was conducted according to instructions in the directives system of the Forest Service. These instructions describe minimum levels of accuracy for area and volume in terms of allowable sampling error, at the 68-percent confidence limit, as a percentage of a specified area or volume. These levels are:

- for unreserved timberland, the maximum allowable error is 3 percent per 1 million acres;
- for other forest land, the maximum allowable error is 10 percent per 1 million acres;
- for growing stock on unreserved timberland, the error is to be as close as practicable to 10 percent per 1 billion cubic feet; and,
- for net annual growth of growing stock on unreserved timberland, the error is to be as close as practicable to 10 percent per 1 billion cubic feet.

Procedures used for updating inventory statistics from the year of inventory to a common date introduce unquantifiable technique error into the results. The error of the results may, in fact, exceed the standards described above. Nevertheless these probable errors are not expected to be large enough to negate the utility of the updated statistics for regional analyses. There is danger in disaggregating updated statistics below the regional level because the reliability of such breakdowns would be unknown. Therefore, in this report, no attempt has been made to disaggregate in detail the information of the National Forest System at the National Forest, county, or other sublevel of eastern Oregon.

The inventories of the Bureau of Land Management are conducted with the same standards for accuracy as described for the Forest Service. Since the inventories were used without updating, additional error was not introduced in the estimates.

The accuracy of information derived from PNW inventories can be quantified. Shown below are standard errors of the estimated totals (at the 68-percent confidence level) in the measurement units and as percents of estimated totals. In addition, equation coefficients are supplied to allow the reader to approximate the percent error of a proportional part of the estimated total.

The equation form is:[5]

Percent error of the proportional part $= e^{a + b \text{ LN (proportion)}}$

where e is the base of the natural logarithm system

LN (proportion) is the natural logarithm of the proportional part

a and b are equation coefficients listed below:

Ownership class	Estimated total	Standard error of estimate		"a"	"b"
	(Thousand acres)	*(Thousand acres)*	*(Percent)*		
Unreserved timberland:					
Other public	388	±18.9	±4.9	2.075	–0.611
Forest industry	1,567	±40.0	±2.6	1.733	–0.530
Other private:	907	±70.6	±7.8	2.266	0.480
Farmer owned	625	±56.2	±9.0	2.331	–0.572
Miscellaneous	282	±42.7	±15.1	2.723	–0.574
	(Million cubic feet)	*(Million cubic feet)*	*(Percent)*		
Net growing stock volume:					
Other public	1,148	±133	±11.6	2.736	–0.302
Forest industry	2,253	±131	±5.8	1.975	–0.390
Other private	1,018	±94	±9.2	2.460	–0.324
	(Thousand cubic feet)	*(Thousand cubic feet)*	*(Percent)*		
Net growing stock growth:					
Other public	17,356	±3,556	±20.5	3.287	–0.251
Forest industry	53,675	±3,726	±6.9	2.243	–0.394
Other private	30,408	±4,275	±14.1	2.023	–0.271

[5] Example: to estimate the percent error of the area of unreserved timberland in the small sawtimber stand-size class owned by forest industry, first obtain the proportion of that cell to the total unreserved timberland owned by forest industry; i.e., 1,009,000 acres/1,567,000 acres = 0.644. Using the forest industry "a" and "b" coefficients —

$e^{1.733 - 0.530 \text{ LN}(.644)} = \pm 7.1$ percent estimated error of the 1,009,000 acres.

Names of Trees

Scientific name	Common name
Softwoods	
Abies amabilis Dougl. ex Forbes	Pacific silver fir
Abies concolor (Gord. & Glend.) Lindl. ex Hildebr.	white fire
Abies grandis (Dougl. ex D. Don) Lindl.	grand fir
Abies lasiocarpa (Hook.) Nutt	subalpine fir
Abies procera Rehd.	noble fir
Larix occidentalis Nutt.	western larch
Libocedrus decurrens Torr.	incense-cedar
Picea engelmannii Parry ex Engelm.	Engelmann spruce
Pinus contorta Dougl. ex Loud.	lodgepole pine
Pinus lambertiana Dougl.	sugar pine
Pinus monticola Dougl. ex D. Don	western white pine
Pinus ponderosa Dougl. ex Laws.	ponderosa pine
Pseudotsuga menziesii (Mirb.) Franco	Douglas-fir
Thuja plicata Donn ex D. Don	western redcedar
Tsuga heterophylla (Raf.) Sarg.	western hemlock
Tsuga mertensiana (Bong.) Carr	mountain hemlock
Hardwoods	
Alnus rhombifolia Nutt.	white alder
Alnus rubra Bong.	red alder
Populus tremuloides Michx.	quaking aspen
Quercus garryana Dougl. ex Hook	Oregon white oak
Salix spp.	willow

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Metric Equivalents

1,000 acres = 404.7 hectares
1,000 cubic feet = 28.3 cubic meters
1 cubic foot per acre = 0.07 cubic meters per hectare
1 foot = 30.48 centimeters
1 inch = 2.54 centimeters
1 mile = 1 609.3 meters

Tables

Estimates in this report are developed from statistically based samples and therefore are subject to sampling error. Information concerning approximate confidence intervals for estimates of various sizes is presented under section heading "Accuracy of Statistics", page 5.

Table 1—Area by county and land class, eastern Oregon, January 1, 1978[1]

	FOREST LAND						
	TIMBERLAND						
COUNTY 2/	UNRESERVED	DEFERRED	RESERVED	OTHER FOREST	TOTAL FOREST	NONFOREST LAND	ALL LANDS 3/
	THOUSAND ACRES						
BAKER	117	--	--	77	194	1,123	1,318
CROOK	94	--	--	486	580	890	1,469
DESCHUTES	117	--	2	286	405	526	931
GILLIAM	1	--	--	1	2	767	769
GRANT	238	--	--	313	551	785	1,336
HARNEY	21	--	4/	242	264	5,645	5,909
JEFFERSON	213	--	4/	169	382	495	877
KLAMATH	916	--	140	254	1,310	795	2,106
LAKE	297	--	1	274	572	3,605	4,177
MALHEUR	8	--	--	94	102	6,218	6,320
MORROW	65	--	--	16	81	1,093	1,174
SHERMAN	--	--	--	--	--	530	530
UMATILLA	146	--	4	60	210	1,448	1,658
UNION	202	--	1	52	255	429	684
WALLOWA	269	--	1	13	283	612	895
WASCO	232	--	4/	166	398	960	1,358
WHEELER	144	--	4/	209	354	572	926
NATIONAL FORESTS	7,046	175	267	934	8,422	1,372	9,794
TOTAL	10,126	175	416	3,647	14,363	27,865	42,231

1/Totals may be off because of rounding.

2/Estimates of land class area by county are not available for lands in the National Forest System. Table 1A contains estimates of land class area for individual National Forests in Eastern Oregon.

3/Sources: Gross area from Area measurement reports, Areas of Oregon: 1960, GE-20, No. 39, July 1964, U. S. Dept. of Commerce, Bureau of the Census, Washington, D. C. Water area from Surface area of lakes and reservoirs, Oregon, 1973, State Water Resources Board, Salem, OR.

4/Less than 500 acres.

Table 1A—Area by National Forest and land class, eastern Oregon, January 1, 1978[1]

NATIONAL FOREST	FOREST LAND: TIMBERLAND: UNRESERVED	FOREST LAND: TIMBERLAND: DEFERRED	FOREST LAND: TIMBERLAND: RESERVED	FOREST LAND: OTHER FOREST	FOREST LAND: TOTAL FOREST	NONFOREST LAND	ALL LANDS
	THOUSAND ACRES						
DESCHUTES	1,262	25	128	108	1,523	78	1,601
FREMONT	772	2/	18	200	990	205	1,195
MALHEUR	1,171	11	22	176	1,380	78	1,458
MOUNT HOOD	121	--	1	15	137	33	170
OCHOCO	673	--	2	58	733	214	947
ROGUE RIVER	20	39	5	8	72	--	72
UMATILIA	794	--	--	70	864	216	1,080
WALLOWA-WHITMAN	1,395	59	72	206	1,732	515	2,247
WINEMA	838	41	19	93	991	33	1,024
TOTAL	7,046	175	267	934	8,422	1,372	9,794

1/Totals may be off because of rounding.

2/Less than 500 acres.

Table 2—Area of unreserved timberland by county and ownership class, eastern Oregon, January 1, 1978[1]

COUNTY 2/	PUBLIC: NATIONAL FOREST	PUBLIC: BUREAU OF LAND MANAGEMENT	PUBLIC: OTHER	PUBLIC: TOTAL	PRIVATE: FOREST INDUSTRY	PRIVATE: FARMER OWNED	PRIVATE: MISCELLANEOUS	PRIVATE: TOTAL	ALL OWNERSHIPS
	THOUSAND ACRES								
BAKER	--	21	6	27	14	52	24	90	117
CROOK	--	9	1	10	56	18	10	84	94
DESCHUTES	--	21	1	22	57	23	16	95	117
GILLIAM	--	--	--	--	--	1	--	1	1
GRANT	--	35	6	41	97	73	28	198	238
HARNEY	--	15	1	16	3	2	--	5	21
JEFFERSON	--	1	129	130	55	15	12	82	213
KLAMATH	--	80	34	114	651	70	80	801	916
LAKE	--	9	1	10	229	26	30	286	297
MALHEUR	--	5	3/	5	3/	3	--	3	8
MORROW	--	1	--	1	32	23	9	64	65
SHERMAN	--	--	--	--	--	--	--	--	--
UMATILLA	--	4	18	22	49	74	--	123	146
UNION	--	4	4	8	94	91	9	194	202
WALLOWA	--	3	6	9	127	100	33	260	269
WASCO	--	2	181	183	16	22	12	50	232
WHEELER	--	7	3/	7	85	32	20	137	144
NATIONAL FORESTS	7,046	--	--	7,046	--	--	--	--	7,046
TOTAL	7,046	218	388	7,652	1,567	625	282	2,474	10,126

1/Totals may be off because of rounding.

2/Estimates of unreserved timberland area by county are not available for lands in the National Forest System. Table 1A contains estimates of unreserved timberland area for individual National Forests in Eastern Oregon.

3/Less than 500 acres.

Table 3—Area of unreserved timberland by cubic-foot site and ownership classes, eastern Oregon, January 1978[1]

SITE CLASS	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
CUBIC FEET			THOUSAND ACRES			
225 OR MORE	2/	1	--	--	--	1
165 TO 224	55	9	5	--	--	69
120 TO 164	172	12	2	94	22	302
85 TO 119	1,527	20	47	129	49	1,771
50 TO 84	4,078	59	101	402	279	4,918
20 TO 49	1,215	118	232	943	557	3,065
ALL CLASSES	7,046	218	388	1,567	906	10,126

1/Totals may be off because of rounding.

2/Not available as a separate estimate. Acreage in this class is included in the 165 to 224 cubic-foot site class.

Table 4—Area of unreserved timberland by stand-size and ownership classes, eastern Oregon, January 1978[1]

STAND-SIZE CLASS	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			THOUSAND ACRES			
SAWTIMBER STANDS:						
LARGE SAWTIMBER	2/	30	54	65	14	164
SMALL SAWTIMBER	4,691	114	249	1,009	526	6,589
TOTAL	4,691	144	303	1,075	540	6,753
POLETIMBER STANDS	1,587	27	66	314	244	2,238
SAPLING AND SEEDLING STANDS	610	18	19	111	80	838
NONSTOCKED AREAS	158	29	--	67	42	297
ALL CLASSES	7,046	218	388	1,567	906	10,126

1/Totals may be off because of rounding.

2/Not available as a separate estimate. Both large and small sawtimber are included in the small sawtimber stand-size class.

Table 5—Area of unreserved timberland by forest type and ownership class, eastern Oregon, January 1978[1]

FOREST TYPE	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			THOUSAND ACRES			
PONDEROSA PINE	3,079	89	157	663	328	4,316
LODGEPOLE PINE	1,337	39	48	233	129	1,786
WHITE FIR	1,052	8	--	234	55	1,349
DOUGLAS-FIR	670	38	123	183	246	1,260
GRAND FIR	240	4	29	161	95	529
MOUNTAIN HEMLOCK	127	--	20	--	--	146
SUBALPINE FIR	139	--	--	6	--	145
ENGELMANN SPRUCE	85	1	7	3	--	95
WESTERN LARCH	74	--	4	11	4	92
INCENSE-CEDAR	33	--	--	7	--	40
WESTERN WHITE PINE	23	1	--	--	--	24
SHASTA RED FIR	8	8	--	--	--	16
SUGAR PINE	9	--	--	--	--	9
WHITEBARK PINE	5	--	--	--	--	5
NOBLE FIR	--	1	--	--	--	1
ASPEN	--	--	--	--	7	7
OTHER HARDWOODS	7	--	--	--	--	7
NONSTOCKED	158	29	--	67	42	297
ALL TYPES	7,046	218	388	1,567	906	10,126

[1]Totals may be off because of rounding.

Table 6—Area of reserved timberland and other forest land by land class and forest type and by ownership class, eastern Oregon, January 1978 1/2/

(THOUSAND ACRES)

LAND CLASS AND FOREST TYPE	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			RESERVED			
TIMBERLAND:						
FIR-SPRUCE 3/	206	--	--	--	--	206
PONDEROSA PINE	126	1	52	--	--	179
LODGEPOLE PINE	74	--	75	--	--	149
DOUGLAS-FIR	37	--	2	--	--	39
TRUE FIRS	--	--	18	--	--	18
WESTERN LARCH	--	--	4/	--	--	4/
HARDWOODS	--	--	4/	--	--	4/
TOTAL	5/442	1	148	--	--	592
OTHER FOREST:						
PONDEROSA PINE	56	--	--	--	--	56
DOUGLAS-FIR	50	--	--	--	--	50
FIR-SPRUCE 3/	33	--	--	--	--	33
JUNIPER	--	6	5	--	--	11
LODGEPOLE PINE	8	--	--	--	--	8
OAK	--	--	4/	--	--	4/
UNCLASSIFIED	--	--	3	--	--	3
TOTAL	147	6	8	--	--	161
ALL RESERVED	589	7	156	--	--	752
			UNRESERVED			
OTHER FOREST:						
JUNIPER	294	679	72	39	1,004	2,088
PONDEROSA PINE	176	4	18	32	93	323
TRUE-FIRS	--	--	9	100	142	251
FIR-SPRUCE 3/	188	--	--	--	--	188
DOUGLAS-FIR	47	1	14	--	11	73
LODGEPOLE PINE	43	2	--	--	--	45
WESTERN LARCH	7	--	--	--	--	7
INCENSE-CEDAR	--	--	5	--	--	5
MOUNTAIN HEMLOCK	--	--	5	--	--	5
OTHER CONIFERS	--	1	--	--	--	1
OAK	--	--	12	8	88	109
WILLOW	--	--	--	--	33	33
OTHER HARDWOODS	6	1	--	--	--	7
UNCLASSIFIED	27	12	6	--	15	60
NONSTOCKED	--	279	--	6	9	294
ALL UNRESERVED	787	978	141	184	1,395	3,486

1/Totals may be off because of rounding.

2/Area of unreserved timberland by forest type and ownership class is presented in table 5.

3/Separate area for true fir and Engelmann spruce forest types not available for National Forests.

4/Less than 500 acres

5/Includes 174,700 acres in deferred category not separable by forest type.

Table 7—Volume of timber on unreserved timberland by class of timber and by softwoods and hardwoods, eastern Oregon, January 1, 1978[1/]

CLASS OF TIMBER	SOFTWOODS	HARDWOODS	ALL SPECIES
		MILLION CUBIC FEET	
SAWTIMBER TREES:			
SAW LOG PORTION	16,546	11	16,557
UPPER STEM PORTION	745	3	748
TOTAL	17,291	14	17,305
POLETIMBER TREES	3,696	18	3,714
ALL GROWING STOCK	20,987	32	21,019
SOUND CULL TREES	182	12	194
ROTTEN CULL TREES	390	2	392
SALVABLE DEAD TREES	303	2/	303
ALL TIMBER	21,862	46	21,908

1/Totals may be off because of rounding.

2/Less than 500,000 cubic feet.

Table 8—Volume of growing stock and sawtimber on unreserved timberland by ownership class and by softwoods and hardwoods, eastern Oregon, January 1, 1978[1/]

OWNERSHIP CLASS	AVERAGE VOLUMES	SOFTWOODS	HARDWOODS	ALL SPECIES
	CUBIC FEET PER ACRE	- - - - - - MILLION CUBIC FEET		- - - - - - -
GROWING STOCK: 2/				
NATIONAL FOREST	2,305	16,234	9	16,243
BUREAU OF LAND MANAGEMENT	1,633	356	1	356
OTHER PUBLIC	2,959	1,143	5	1,148
FOREST INDUSTRY	1,437	2,245	8	2,253
OTHER PRIVATE	1,122	1,008	10	1,018
TOTAL	2,076	20,987	32	21,019
	BOARD FEET PER ACRE	- - - - - - MILLION BOARD FEET		- - - - - -
SAWTIMBER (INTERNATIONAL 1/4-INCH RULE): 3/				
NATIONAL FOREST	11,120	78,324	25	78,349
BUREAU OF LAND MANAGEMENT	9,000	1,960	2	1,962
OTHER PUBLIC	15,028	5,825	6	5,831
FOREST INDUSTRY	6,551	10,227	39	10,266
OTHER PRIVATE	4,363	3,941	12	3,953
TOTAL	9,911	100,277	84	100,361
	BOARD FEET PER ACRE	- - - - - - MILLION BOARD FEET		- - - - - -
SAWTIMBER (SCRIBNER RULE): 4/				
NATIONAL FOREST	9,099	64,090	25	64,115
BUREAU OF LAND MANAGEMENT	7,509	1,635	2	1,637
OTHER PUBLIC	11,201	4,342	5	4,346
FOREST INDUSTRY	4,791	7,475	33	7,507
OTHER PRIVATE	2,966	2,676	10	2,687
TOTAL	7,929	80,218	74	80,292

1/Totals may be off because of rounding.

2/Includes trees 5.0-inch d.b.h. and larger.

3/Includes softwood trees 9.0-inch d.b.h. and larger and hardwood trees 11.0-inch d.b.h. and larger.

4/Includes trees 11.0-inch d.b.h. and larger.

Table 9—Volume of growing stock and sawtimber on unreserved timberland by county and ownership class, eastern Oregon, January 1, 1978[1/]

COUNTY 2/	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			MILLION CUBIC FEET			
GROWING STOCK: 3/						
BAKER	--	21	13	18	84	136
CROOK	--	8	5/	69	23	100
DESCHUTES	--	21	2	60	29	112
GILLIAM	--	--	--	--	5/	5/
GRANT	--	32	6	107	120	265
HARNEY	--	13	1	3	2	19
JEFFERSON	--	1	388	61	21	471
KLAMATH	--	227	59	863	200	1,349
LAKE	--	5	2	418	69	494
MALHEUR	--	5	5/	5/	3	8
MORROW	--	5/	--	56	38	94
SHERMAN	--	--	--	--	--	--
UMATILLA	--	5	41	85	95	226
UNION	--	5	7	187	135	334
WALLOWA	--	4	7	200	128	339
WASCO	--	2	622	18	25	667
WHEELER	--	7	5/	108	48	163
NATIONAL FORESTS	16,243	--	--	--	--	16,243
TOTAL	16,243	356	1,148	2,253	1,018	21,019
			MILLION BOARD FEET			
SAWTIMBER (INTERNATIONAL 1/4-INCH RULE): 4/						
BAKER	--	105	53	70	261	489
CROOK	--	45	6/	280	90	415
DESCHUTES	--	83	11	240	108	442
GILLIAM	--	--	--	--	1	1
GRANT	--	159	27	429	481	1,096
HARNEY	--	62	3	14	9	88
JEFFERSON	--	7	1,995	244	83	2,329
KLAMATH	--	1,325	277	4,117	761	6,480
LAKE	--	25	8	2,218	263	2,514
MALHEUR	--	26	1	1	19	47
MORROW	--	2	--	262	156	420
SHERMAN	--	--	--	--	--	--
UMATILLA	--	25	197	366	461	1,049
UNION	--	25	31	700	503	1,259
WALLOWA	--	21	32	806	458	1,317
WASCO	--	12	3,195	72	102	3,381
WHEELER	--	40	6/	446	196	682
NATIONAL FORESTS	78,349	--	--	--	--	78,349
TOTAL	78,349	1,962	5,831	10,266	3,953	100,361
			MILLION BOARD FEET			
SAWTIMBER (SCRIBNER RULE): 7/						
BAKER	--	86	38	50	171	345
CROOK	--	39	--	197	61	297
DESCHUTES	--	47	8	167	70	292
GILLIAM	--	--	--	--	1	1
GRANT	--	130	20	305	344	799
HARNEY	--	51	2	10	7	70
JEFFERSON	--	6	1,491	173	56	1,726
KLAMATH	--	1,131	202	3,023	516	4,872
LAKE	--	21	6	1,722	179	1,928
MALHEUR	--	21	1	1	15	38
MORROW	--	2	--	195	111	308
SHERMAN	--	--	--	--	--	--
UMATILLA	--	21	149	259	344	773
UNION	--	20	23	466	318	827
WALLOWA	--	18	22	570	290	900
WASCO	--	10	2,385	50	71	2,516
WHEELER	--	33	--	318	132	483
NATIONAL FORESTS	64,115	--	--	--	--	64,115
TOTAL	64,115	1,637	4,346	7,507	2,687	80,292

1/Totals may be off because of rounding.

2/Estimates of volume by county are not available for lands in the National Forest System. Table 9A contains estimates of volume for individual National Forests in eastern Oregon.

3/Includes trees 5.0-inch d.b.h. and larger.

4/Includes softwoods trees 9.0-inch d.b.h. and larger and hardwood trees 11.0-inch d.b.h. and larger.

5/Less than 500,000 cubic board feet.

6/Less than 500,000 board feet.

7/Includes trees 11.0-inch d.b.h. and larger.

Table 9A—Volume of growing stock and sawtimber on unreserved timberland by National Forest, eastern Oregon, January 1, 1978[1/]

NATIONAL FOREST	VOLUME
	MILLION CUBIC FEET
GROWING STOCK: 2/	
DESCHUTES	3,174
FREMONT	1,479
MALHEUR	2,620
MT HOOD	593
OCHOCO	1,305
ROGUE RIVER	49
UMATILLA	2,439
WALLOWA-WHITMAN	3,013
WINEMA	1,571
TOTAL	16,243
	MILLION BOARD FEET
SAWTIMBER (INTERNATIONAL 1/4-INCH RULE): 3/	
DESCHUTES	11,993
FREMONT	7,472
MALHEUR	13,731
MT HOOD	3,428
OCHOCO	7,300
ROGUE RIVER	275
UMATILLA	11,977
WALLOWA-WHITMAN	14,212
WINEMA	7,960
TOTAL	78,349
	MILLION BOARD FEET
SAWTIMBER (SCRIBNER RULE): 4/	
DESCHUTES	9,814
FREMONT	6,115
MALHEUR	11,237
MT HOOD	2,805
OCHOCO	5,974
ROGUE RIVER	225
UMATILLA	9,801
WALLOWA-WHITMAN	11,630
WINEMA	6,514
TOTAL	64,115

1/Totals may be off because of rounding.

2/Includes trees 5.0-inch d.b.h. and larger.

3/Includes softwood trees 9.0-inch d.b.h. and larger and hardwood trees 11.0-inch d.b.h. and larger.

4/Includes trees 11.0-inch d.b.h. and larger.

Table 10—Volume of growing stock on unreserved timberland by species and ownership class, eastern Oregon, 1978[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			MILLION CUBIC FEET			
SOFTWOODS:						
PONDEROSA PINE	5,997	99	273	805	406	7,579
LODGEPOLE PINE	3,051	48	148	352	132	3,730
TRUE FIR 2/	3,331	59	--	--	--	3,390
DOUGLAS-FIR	2,068	60	320	358	273	3,079
WESTERN LARCH	737	2	20	65	40	864
MOUNTAIN HEMLOCK	469	--	82	--	1	552
ENGELMANN SPRUCE	435	1	81	16	5	537
WHITE FIR	--	48	11	368	59	485
GRAND FIR	--	16	108	216	89	428
WESTERN WHITE PINE	79	9	2	2	--	92
INCENSE-CEDAR	31	3	8	43	3	88
SUGAR PINE	34	8	1	14	--	57
PACIFIC SILVER FIR	--	--	39	--	--	39
SUBALPINE FIR	--	3/	11	6	2	20
NOBLE FIR	--	3	12	--	--	15
OTHER SOFTWOODS	3/	3/	10	2	--	12
WESTERN REDCEDAR	2	--	10	--	--	12
WESTERN HEMLOCK	--	--	8	--	--	8
TOTAL	16,234	356	1,144	2,245	1,008	20,987
HARDWOODS:						
QUAKING ASPEN	6	1	--	6	6	19
OREGON WHITE OAK	3	--	3	2	2	10
RED ALDER	3/	--	2	--	--	2
OTHER HARDWOODS	3/	--	--	--	2	2
TOTAL	9	1	5	8	10	32
ALL SPECIES	16,243	356	1,148	2,253	1,018	21,019

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 cubic feet.

Table 11—Volume of sawtimber, International ¼-inch rule, on unreserved timberland by species and ownership class, eastern Oregon, 1978[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			MILLION BOARD FEET			
SOFTWOODS:						
PONDEROSA PINE	35,605	539	1,612	4,034	1,615	43,405
LODGEPOLE PINE	7,258	169	587	1,489	450	9,954
TRUE FIR 2/	15,166	394	--	--	--	15,560
DOUGLAS-FIR	10,874	330	1,712	1,564	1,115	15,595
WESTERN LARCH	4,095	10	105	239	130	4,579
MOUNTAIN HEMLOCK	2,312	--	419	--	1	2,733
ENGELMANN SPRUCE	2,225	4	498	48	12	2,787
WHITE FIR	--	278	43	1,729	235	2,283
GRAND FIR	--	89	470	807	369	1,734
WESTERN WHITE PINE	431	59	14	10	--	513
INCENSE-CEDAR	157	18	35	220	7	437
SUGAR PINE	190	49	6	64	--	308
PACIFIC SILVER FIR	--	--	152	--	--	152
SUBALPINE FIR	--	1	49	19	6	75
NOBLE FIR	--	20	54	--	--	74
OTHER SOFTWOODS	1	3/	14	6	--	21
WESTERN REDCEDAR	11	--	45	--	--	56
WESTERN HEMLOCK	--	--	13	--	--	13
TOTAL	78,324	1,960	5,825	10,227	3,941	100,277
HARDWOODS:						
QUAKING ASPEN	13	2	--	32	7	55
OREGON WHITE OAK	10	--	--	7	3	19
RED ALDER	1	--	6	--	--	6
OTHER HARDWOODS	--	--	--	--	3	3
TOTAL	25	2	6	39	12	84
ALL SPECIES	78,349	1,962	5,831	10,266	3,953	100,361

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 board feet.

Table 12—Volume of sawtimber, Scribner rule, on unreserved timberland by species and ownership class, eastern Oregon, 1978[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			MILLION BOARD FEET			
SOFTWOODS:						
PONDEROSA PINE	32,528	464	1,276	3,069	1,113	38,450
DOUGLAS-FIR	8,790	274	1,320	1,152	745	12,281
TRUE FIRS 2/	11,592	359	--	--	--	11,951
LODGEPOLE PINE	3,673	85	344	948	298	5,348
WESTERN LARCH	3,231	8	79	130	72	3,521
ENGELMANN SPRUCE	1,782	3	404	38	7	2,234
MOUNTAIN HEMLOCK	1,862	--	317	--	--	2,179
WHITE FIR	--	230	34	1,306	164	1,734
GRAND FIR	--	74	333	584	274	1,266
WESTERN WHITE PINE	362	56	11	8	--	436
INCENSE-CEDAR	102	16	27	176	3	325
SUGAR PINE	160	46	4	50	--	260
PACIFIC SILVER FIR	--	--	73	--	--	73
SUBALPINE FIR	--	3/	43	12	--	55
NOBLE FIR	--	19	32	--	--	51
WESTERN REDCEDAR	8	--	34	--	--	42
OTHER SOFTWOODS	--	--	6	3	--	9
WESTERN HEMLOCK	--	--	5	--	--	5
TOTAL	64,090	1,635	4,342	7,475	2,676	80,218
HARDWOODS:						
QUAKING ASPEN	15	2	--	27	5	49
OREGON WHITE OAK	9	--	--	5	2	17
RED ALDER	1	--	5	--	--	6
OTHER HARDWOODS	--	--	--	--	3	3
TOTAL	25	2	5	33	10	74
ALL SPECIES	64,115	1,637	4,346	7,507	2,687	80,292

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 board feet.

Table 13—Volume of growing stock on unreserved timberland by species and diameter class, eastern Oregon, January 1, 1978[1/]

SPECIES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)										
	5.0-6.9	7.0-8.9	9.0 10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER	ALL CLASSES
	MILLION CUBIC FEET										
SOFTWOODS:											
PONDEROSA PINE	297	322	347	372	391	415	444	510	2,211	2,270	7,579
LODGEPOLE PINE	1,013	740	709	561	316	195	100	51	43	2	3,730
TRUE FIRS 2/	242	291	322	313	295	283	269	233	678	463	3,390
DOUGLAS-FIR	155	219	258	299	267	256	233	201	633	558	3,079
WESTERN LARCH	47	63	83	88	87	82	78	71	177	88	864
MOUNTAIN HEMLOCK	22	33	41	51	55	62	58	48	127	55	552
ENGELMANN SPRUCE	31	28	42	52	48	54	59	42	126	55	537
WHITE FIR	26	33	46	29	45	36	31	29	95	116	485
GRAND FIR	45	40	41	51	47	34	27	28	62	53	428
WESTERN WHITE PINE	4	3	4	7	7	7	7	5	29	20	92
INCENSE-CEDAR	5	4	3	6	4	4	4	3	20	34	88
SUGAR PINE	1	2	3	3	2	1	5	5	12	24	57
PACIFIC SILVER FIR	3	5	14	7	4	2	3	1	--	--	39
SUBALPINE FIR	1	4	2	3	4	3	--	2	1	--	20
NOBLE FIR	1	1	4	--	--	1	1	2	4	3	15
OTHER SOFTWOODS	4	3	2	3/	3/	3/	2	3/	3/	3/	12
WESTERN REDCEDAR	3/	1	1	1	1	2	1	1	3	1	12
WESTERN HEMLOCK	2	3	1	1	--	--	--	--	--	--	8
TOTAL	1,901	1,795	1,921	1,844	1,574	1,436	1,321	1,230	4,220	3,744	20,987
HARDWOODS:											
QUAKING ASPEN	2	3	5	1	4	1	3/	--	3	3/	19
OREGON WHITE OAK	4	2	1	1	2	--	3/	3/	3/	3/	10
RED ALDER	--	3/	3/	1	3/	--	--	3/	--	--	2
OTHER HARDWOODS	3/	1	--	--	1	--	--	--	--	--	2
TOTAL	6	6	7	3	6	1	3/	3/	3	3/	32
ALL SPECIES	1,907	1,801	1,928	1,847	1,580	1,437	1,321	1,231	4,223	3,744	21,019

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 cubic feet.

Table 14—Volume of sawtimber, International ¼-inch rule, on unreserved timberland by species and diameter class, eastern Oregon, January 1, 1978[1]

SPECIES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER	ALL CLASSES
	MILLION BOARD FEET								
SOFTWOODS:									
PONDEROSA PINE	1,410	1,643	1,899	2,181	2,508	3,060	14,464	16,241	43,405
LODGEPOLE PINE	3,152	2,873	1,667	1,088	581	305	272	16	9,954
TRUE FIRS 2/	1,406	1,449	1,509	1,540	1,513	1,331	4,022	2,790	15,560
DOUGLAS-FIR	1,074	1,384	1,387	1,412	1,350	1,205	4,004	3,777	15,595
WESTERN LARCH	386	450	502	507	508	467	1,176	583	4,579
MOUNTAIN HEMLOCK	173	231	278	324	323	272	766	366	2,733
ENGELMANN SPRUCE	166	235	258	309	358	261	829	370	2,787
WHITE FIR	157	124	218	183	171	161	555	714	2,283
GRAND FIR	161	224	232	176	141	150	357	293	1,734
WESTERN WHITE PINE	15	31	35	36	40	33	184	140	513
INCENSE-CEDAR	14	28	18	19	20	18	112	208	437
SUGAR PINE	7	8	7	3	24	30	70	158	308
PACIFIC SILVER FIR	59	33	21	12	20	7	--	--	152
SUBALPINE FIR	10	13	21	16	--	9	7	--	75
NOBLE FIR	15	--	--	5	5	11	17	19	74
OTHER SOFTWOODS	9	2	3/	3/	7	3/	2	3/	21
WESTERN REDCEDAR	4	4	5	11	6	7	15	4	56
WESTERN HEMLOCK	6	7	--	--	--	--	--	--	13
TOTAL	8,224	8,739	8,056	7,822	7,575	7,327	26,853	25,681	100,277
HARDWOODS:									
QUAKING ASPEN	3/	4	22	5	3/	--	22	1	55
OREGON WHITE OAK	--	6	11	--	1	1	1	1	19
RED ALDER	--	4	1	--	--	1	--	--	6
OTHER HARDWOODS	--	--	3	--	--	--	--	--	3
TOTAL	3/	14	38	5	1	2	23	1	84
ALL SPECIES	8,224	8,754	8,094	7,827	7,576	7,328	26,876	25,682	100,361

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 board feet.

Table 15—Volume of sawtimber, Scribner rule, on unreserved timberland by species and diameter class, eastern Oregon, January 1, 1978[1]

SPECIES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER	ALL CLASSES
	MILLION BOARD FEET							
SOFTWOODS:								
PONDEROSA PINE	1,165	1,501	1,822	2,180	2,695	13,264	15,823	38,450
DOUGLAS-FIR	1,034	1,125	1,182	1,155	1,035	3,386	3,364	12,281
TRUE FIRS 2/	1,102	1,217	1,270	1,270	1,126	3,442	2,524	11,951
LODGEPOLE PINE	2,064	1,378	938	497	246	214	11	5,348
WESTERN LARCH	327	394	416	425	399	1,027	533	3,521
ENGLEMANN SPRUCE	181	208	257	306	225	723	334	2,234
MOUNTAIN HEMLOCK	176	235	285	285	238	660	299	2,179
WHITE FIR	89	171	149	144	137	439	604	1,734
GRAND FIR	162	183	146	121	127	282	244	1,266
WESTERN WHITE PINE	28	31	30	33	28	163	124	436
INCENSE-CEDAR	14	12	13	15	15	88	168	325
SUGAR PINE	5	6	3	22	27	61	136	260
PACIFIC SILVER FIR	23	17	10	17	6	--	--	73
SUBALPINE FIR	10	18	14	--	8	5	--	55
NOBLE FIR	--	--	4	5	10	13	19	51
WESTERN REDCEDAR	2	3	9	5	6	12	4	42
OTHER SOFTWOODS	2	--	--	6	--	1	--	9
WESTERN HEMLOCK	5	--	--	--	--	--	--	5
TOTAL	6,390	6,499	6,548	6,486	6,328	23,780	24,186	80,218
HARDWOODS:								
QUAKING ASPEN	4	19	5	3/	--	20	1	49
OREGON WHITE OAK	5	8	--	1	1	1	1	17
RED ALDER	4	1	--	--	1	--	--	6
OTHER HARDWOODS	--	3	--	--	--	--	--	3
TOTAL	13	30	5	1	2	21	2	74
ALL SPECIES	6,403	6,529	6,553	6,487	6,330	23,801	24,188	80,292

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Less than 500,000 board feet.

Table 16—Net annual growth of growing stock and sawtimber on unreserved timberland by ownership class and by softwoods and hardwoods, eastern Oregon, 1977[1]

OWNERSHIP CLASS	AVERAGE VOLUME	SOFTWOODS	HARDWOODS	ALL SPECIES
	CUBIC FEET PER ACRE	- - - - - -	THOUSAND CUBIC FEET	- - - - -
GROWING STOCK:				
NATIONAL FOREST	33	231,600	100	231,700
BUREAU OF LAND MANAGEMENT	25	5,337	15	5,352
OTHER PUBLIC	44	17,081	276	17,357
FOREST INDUSTRY	34	53,660	15	53,675
OTHER PRIVATE	33	29,958	450	30,408
ALL OWNERSHIPS	33	337,636	855	338,491
	BOARD FEET PER ACRE	- - - - - -	THOUSAND BOARD FEET	- - - - -
SAWTIMBER (INTERNATIONAL 1/4-INCH RULE):				
NATIONAL FOREST	134	943,300	300	943,600
BUREAU OF LAND MANAGEMENT	136	29,550	70	29,620
OTHER PUBLIC	249	96,557	20	96,578
FOREST INDUSTRY	158	246,976	--	246,976
OTHER PRIVATE	132	119,489	273	119,762
ALL OWNERSHIPS	142	1,435,872	664	1,436,535

[1]Totals may be off because of rounding.

Table 17—Net annual growth of growing stock on unreserved timberland by species and ownership class, eastern Oregon, 1977[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			THOUSAND CUBIC FEET			
SOFTWOODS:						
PONDEROSA PINE	65,200	1,309	2,930	15,358	12,626	97,423
LODGEPOLE PINE	56,200	806	2,112	6,451	409	65,978
TRUE FIRS 2/	64,700	--	--	--	--	64,700
DOUGLAS-FIR	32,000	1,173	6,699	12,657	10,245	62,773
WHITE FIR	--	1,197	3/-14	9,228	1,676	12,086
GRAND FIR	--	363	2,463	6,428	2,194	11,448
ENGELMANN SPRUCE	7,200	13	201	1,433	562	9,409
MOUNTAIN HEMLOCK	4,400	--	878	--	--	5,278
WESTERN LARCH	100	20	414	776	2,151	3,461
SUGAR PINE	400	371	47	640	--	1,458
INCENSE-CEDAR	250	40	94	570	55	1,009
WESTERN WHITE PINE	900	--	--	--	--	900
WESTERN REDCEDAR	250	--	157	--	--	407
WESTERN HEMLOCK	--	--	325	--	--	325
PACIFIC SILVER FIR	--	--	306	--	--	306
SUBALPINE FIR	--	3	158	84	42	287
NOBLE FIR	--	43	174	--	--	217
WHITEBARK PINE	--	--	137	37	--	173
TOTAL	231,600	5,337	17,081	53,660	29,958	337,636
HARDWOODS:						
QUAKING ASPEN	4	15	--	--	337	356
OREGON WHITE OAK	--	--	266	15	54	335
OTHER HARDWOODS 4/	96	--	--	--	59	155
RED ALDER	--	--	10	--	--	10
TOTAL	100	15	276	15	450	855
ALL SPECIES	231,700	5,352	17,357	53,675	30,408	338,491

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests.

3/Negative net annual growth is the result of annual mortality exceeding gross annual growth.

4/Estimates for National Forests were not separable by individual species. On private land the species is predominantly white alder.

Table 18—Net annual growth of sawtimber on unreserved timberland by species and ownership class, eastern Oregon, 1977[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
		THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE				
SOFTWOODS:						
PONDEROSA PINE	286,200	7,129	15,856	76,978	54,925	441,087
LODGEPOLE PINE	179,100	3,184	11,658	40,043	3/-802	233,183
TRUE FIRS 2/	269,100	--	--	--	--	269,100
DOUGLAS-FIR	153,300	7,141	39,562	53,822	44,261	298,086
WHITE FIR	--	7,087	3/-13	42,104	8,487	57,665
GRAND FIR	--	2,026	11,688	21,546	6,617	41,878
ENGELMANN SPRUCE	31,500	92	1,369	956	905	34,822
MOUNTAIN HEMLOCK	16,300	--	5,251	--	--	21,551
WESTERN LARCH	300	108	3,333	5,510	4,743	13,994
SUGAR PINE	1,500	2,355	332	2,997	--	7,184
INCENSE-CEDAR	1,300	191	488	2,291	--	4,270
WESTERN WHITE PINE	3,400	--	--	--	--	3,400
WESTERN REDCEDAR	1,300	--	672	--	--	1,972
WESTERN HEMLOCK	--	--	1,301	--	--	1,301
PACIFIC SILVER FIR	--	--	3,355	--	--	3,355
SUBALPINE FIR	--	14	921	600	353	1,888
NOBLE FIR	--	222	596	--	--	818
WHITEBARK PINE	--	--	189	129	--	318
TOTAL	943,300	29,550	96,557	246,976	119,489	1,435,872
HARDWOODS:						
OTHER HARDWOODS 4/	290	--	--	--	--	290
QUAKING ASPEN	10	70	--	--	194	275
OREGON WHITE OAK	--	--	--	--	79	79
RED ALDER	--	--	20	--	--	20
TOTAL	300	70	20	--	273	664
ALL SPECIES	943,600	29,620	96,578	246,976	119,762	1,436,535

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests.

3/Negative net annual growth is the result of annual mortality exceeding gross annual growth.

4/Estimates for National Forests were not separable by individual species.

Table 19—Annual mortality of growing stock on unreserved timberland by species and ownership class, eastern Oregon, 1977[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
			THOUSAND CUBIC FEET			
SOFTWOODS:						
TRUE FIRS 2/	25,154	73	--	--	--	25,227
LODGEPOLE PINE	10,706	366	1,553	2,419	5,141	20,185
DOUGLAS-FIR	16,171	151	198	1,036	608	18,164
PONDEROSA PINE	12,203	310	1,734	2,153	1,650	18,050
WESTERN LARCH	5,465	--	103	688	237	6,493
ENGELMANN SPRUCE	2,695	--	393	168	--	3,256
GRAND FIR	--	20	588	1,288	1,293	3,189
MOUNTAIN HEMLOCK	1,722	--	--	--	--	1,722
WHITE FIR	--	6	432	832	--	1,269
WESTERN WHITE PINE	599	--	--	--	--	599
PACIFIC SILVER FIR	--	--	157	--	--	157
INCENSE-CEDAR	75	--	--	41	--	116
SUBALPINE FIR	--	--	--	42	41	83
SUGAR PINE	75	--	--	--	--	75
NOBLE FIR	--	35	--	--	--	35
TOTAL	74,865	962	5,157	8,667	8,970	98,620
HARDWOODS:						
QUAKING ASPEN	53	--	--	--	--	53
OTHER HARDWOODS 3/	22	--	--	--	--	22
TOTAL	75	--	--	--	--	75
ALL SPECIES	74,940	962	5,157	8,667	8,970	98,695

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Estimates for National Forests were not separable by individual species.

Table 20—Annual mortality of sawtimber on unreserved timberland by species and ownership class, eastern Oregon, 1977[1]

SPECIES	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	FOREST INDUSTRY	OTHER PRIVATE	ALL OWNERSHIPS
	THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE					
SOFTWOODS:						
TRUE FIRS 2/	135,486	492	--	--	--	135,978
DOUGLAS-FIR	96,825	777	117	4,360	1,897	103,975
PONDEROSA PINE	33,630	1,543	9,364	7,683	5,407	57,626
LODGEPOLE PINE	20,674	1,374	5,418	6,721	13,815	48,002
WESTERN LARCH	31,287	--	307	2,767	695	35,056
ENGELMANN SPRUCE	15,299	--	2,458	855	--	18,612
GRAND FIR	--	119	1,853	6,008	6,604	14,583
MOUNTAIN HEMLOCK	7,925	--	--	--	--	7,925
WHITE FIR	--	32	1,782	3,876	--	5,690
WESTERN WHITE PINE	2,928	--	--	--	--	2,928
INCENSE-CEDAR	483	--	--	155	--	638
NOBLE FIR	--	228	--	--	--	228
SUGAR PINE	35	--	--	--	--	35
TOTAL	344,572	4,564	21,299	32,424	28,417	431,276
HARDWOODS:						
QUAKING ASPEN	211	--	--	--	--	211
OTHER HARDWOODS 3/	88	--	--	--	--	88
TOTAL	299	--	--	--	--	299
ALL SPECIES	344,871	4,564	21,299	32,424	28,417	431,575

1/Totals may be off because of rounding.

2/Estimates for true firs were not separable by individual species for National Forests and portions of Bureau of Land Management forests.

3/Estimates for National Forests were not separable by individual species.

Table 21—Timber harvest by ownership class, eastern Oregon, 1950-77

YEAR	PRIVATE: FOREST INDUSTRY	PRIVATE: OTHER	PRIVATE: TOTAL PRIVATE	STATE	NATIONAL FOREST	BUREAU OF LAND MANAGEMENT	OTHER PUBLIC	ALL OWNERSHIPS
				THOUSAND BOARD FEET, SCRIBNER SCALE				
1950	--	--	1/	493,311 1/	454,600	--	137,000	1,084,911
1951	--	--	1/	717,605 1/	414,400	--	159,000	1,291,005
1952	--	--	1/	568,383 1/	448,600	--	120,496	1,137,479
1953	--	--	1/	634,778 1/	481,700	--	126,204	1,242,682
1954	--	--	1/	762,690 1/	550,300	--	109,380	1,422,370
1955	--	--	1/	818,742 1/	554,645	--	133,405	1,506,792
1956	--	--	1/	783,865 1/	655,200	21,304	162,539	1,622,908
1957	--	--	1/	704,034 1/	586,400	22,811	52,316	1,365,561
1958	2/	2/	694,774	2,686	672,654	29,567	98,928	1,498,609
1959	2/	2/	741,678	1,875	865,408	36,239	75,658	1,720,858
1960	2/	2/	622,807	3,464	705,172	48,732	75,942	1,456,117
1961	2/	2/	529,017	2,160	790,639	31,400	40,636	1,393,852
1962	371,221	170,573	541,794	1,380	852,700	19,547	53,027	1,468,448
1963	345,857	144,140	489,997	5,575	966,700	21,456	71,071	1,554,799
1964	365,577	179,373	544,950	2,477	1,064,700	22,756	90,517	1,725,400
1965	410,604	171,634	582,238	13,857	1,181,800	11,571	73,869	1,863,335
1966	497,934	108,165	606,099	3,783	1,089,900	42,559	60,241	1,802,582
1967	318,368	150,043	468,411	1,360	1,133,900	27,311	109,616	1,740,598
1968	470,375	147,442	617,817	2,869	1,182,548	39,307	99,768	1,942,309
1969	584,067	115,552	699,619	8,756	1,230,907	26,326	91,903	2,057,511
1970	566,239	95,857	662,096	2,397	1,017,762	23,291	78,516	1,784,062
1971	557,463	286,152	843,615	2,875	1,147,075	35,768	87,086	2,116,419
1972	590,709	113,806	704,515	9,923	1,319,580	33,961	80,713	2,148,692
1973	466,434	93,527	559,961	9,716	1,237,425	45,891	94,589	1,947,582
1974	613,934	233,848	847,782	9,423	1,178,107	25,666	110,577	2,171,555
1975	602,755	113,029	715,784	--	1,151,508	16,662	119,589	2,003,543
1976	470,007	101,907	571,914	8,056	1,257,108	29,403	107,558	1,974,039
1977	383,331	143,311	526,642	6,666	1,123,840	39,060	114,741	1,810,949

1/ Private and state lands are added together.

2/ Data not available.

Sources: 1950-76: Timber harvest reports for Oregon by year (published by Pacific Northwest Forest and Range Experiment Station); 1977 -- Oregon Timber Harvest Report 1977 (Revised), Oregon State Department of Forestry.

Farrenkopf, Thomas O. Forest statistics for eastern Oregon, 1977. U.S. Department of Agriculture, Resour. Bull. PNW-94. Portland, OR: Forest Service, Pacific Northwest Forest and Range Experiment Station; 1981. 28 p.

This report summarizes a 1977 inventory of timber resources in 17 Oregon counties east of the crest of the Cascade Range. Detailed data on forest area, timber volume, growth, mortality, and harvest are presented.

Keywords: Statistics (forest), forest surveys, timber resources, Oregon (eastern).

The **Forest Service** of the U.S. Department of Agriculture is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives — as directed by Congress — to provide increasingly greater service to a growing Nation.

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Pacific Northwest Forest and Range
Experiment Station
809 NE Sixth Avenue
Portland, Oregon 97232

GPO 994-351