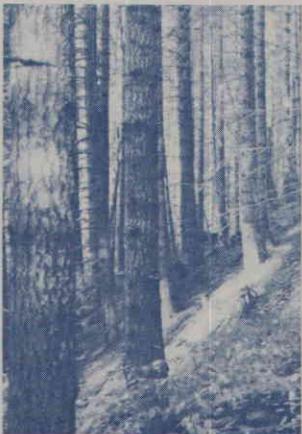
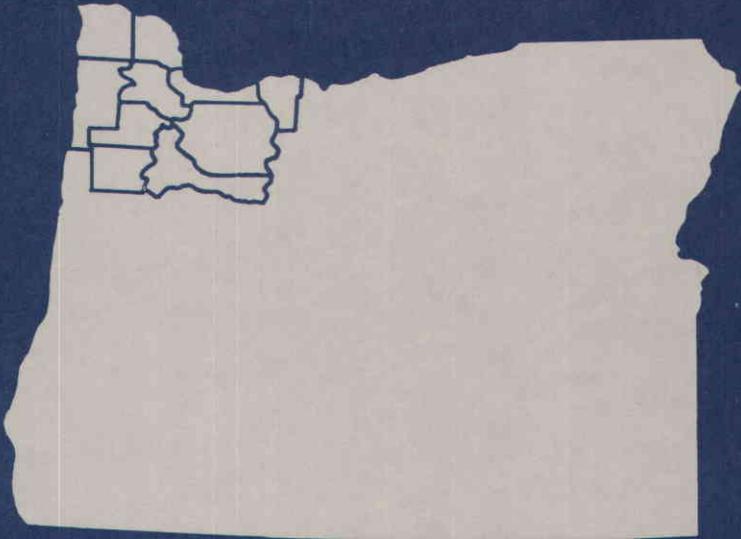


TIMBER RESOURCES OF NORTHWEST OREGON



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The USDA Forest Service supplied forest resource data for National Forests. The Bureau of Land Management, U.S. Department of the Interior, supplied resource data for Bureau of Land Management lands.

The county assessors and several private timber companies furnished ownership information. The U.S. Forest Service, Bureau of Land Management, and several private timber companies provided maps and information on access to forest lands, as well as general information related to forest management practices in Oregon.

METRIC EQUIVALENTS

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

TIMBER RESOURCES OF NORTHWEST OREGON

Reference Abstract

Mei, Mary A.

1979. Timber resources of northwest Oregon. USDA For. Serv. Resour. Bull. PNW-82, 29 p. Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

This report presents statistics from a 1976 timber resource inventory of 10 counties in northwest Oregon: Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill. Tables presented are of forest area, timber volume, growth, mortality, and harvest.

KEYWORDS: Forest surveys, statistics (forest), timber resources, resources (forest), Oregon (northwest), northwest Oregon.

RESEARCH SUMMARY

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The northwest Oregon resource area (Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill Counties) totals 5,587,000 acres, of which an estimated 3,760,000 acres are forested; an estimated 3,546,000 acres are in commercial forest land. The area has approximately 53 billion board feet (Scribner rule) of standing sawtimber; 62 percent of this volume is in Federal ownership.

PREFACE

This report presents statistics from the latest inventory of the timber resources of 10 counties in northwest Oregon: Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill.

Field data for all lands except National Forests and lands administered by the Bureau of Land Management were collected by the Renewable Resources Evaluation Work Unit of the Pacific Northwest Forest and Range Experiment Station. Resources Evaluation (formerly Forest Survey) is a nationwide project of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928 and amended by the Forest and Rangeland Renewable Resources Planning Act of 1974.

Resource evaluations are conducted through the 50 States by the USDA Forest Service Experiment Stations. The Pacific Northwest Forest and Range Experiment Station at Portland, Oregon, is responsible for resource evaluations in the States of Alaska, California, Hawaii, Oregon, and Washington.

The inventory data for lands administered by the Bureau of Land Management (BLM) were collected by that agency in 1968. Current (1976) data were furnished by the agency on all field plots silviculturally treated or cutover since inventory, including the status of all plantations. National Forest inventory data were collected by personnel at each National Forest.

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HIGHLIGHTS

IN 1975:

Commercial forest land--

- ° Covered 3,546,000 acres, 94 percent of the forest land area and 63 percent of the total land area.
- ° Had 70 percent of the area in site classes capable of producing more than 120 cubic-foot annual growth per acre per year.
- ° Was 61 percent in sawtimber stands.
- ° Was 57 percent in Douglas-fir type, 20 percent in other softwoods, 20 percent in hardwoods, and 3 percent in unclassified types.

Growing stock volume--

- ° Totaled 14,022 million cubic feet.
- ° Was comprised of 88-percent softwoods.
- ° Was 89-percent sawtimber-size trees.

Sawtimber volume--

- ° Totaled 53,485 million board feet, Scribner rule.
- ° Was 62 percent in Federal ownership.
- ° Was 57-percent Douglas-fir species.
- ° Was 92-percent softwood.
- ° Was 61 percent in trees over 21 inches.

Ownership distribution--

<u>Ownership</u>	<u>Commercial forest land area</u>	<u>Growing- stock volume</u>	<u>Sawtimber volume</u>
	- - - - - <u>Percent</u> - - - - -		
National Forest	26	46	50
Bureau of Land Management	6	8	11
Other public	16	10	9
Forest industry	33	24	20
Other private	19	12	10

Net annual growth--

- ° Totaled 362,022,000 cubic feet (1,948,844,000 board feet, International 1/4-inch rule).

Average annual mortality--

- ° Totaled 52,479,000 cubic feet (228,594,000 board feet, International 1/4-inch rule).

BETWEEN 1963 AND 1976:

Commercial forest land--

- ° Decreased by 408,000 acres, or 10 percent.

Growing stock volume--

- ° Decreased by 1,750,000 cubic feet, or 11 percent.

Sawtimber volume--

- ° Decreased by 12,082 million board feet, Scribner rule, or 18 percent.

Net annual growth of growing stock--

- ° Increased by 138,343,000 cubic feet, or 62 percent.

Net annual sawtimber growth--

- ° Increased by 1,088,375,000 board feet, International 1/4-inch rule, or 126 percent.

AVERAGE ANNUAL TIMBER HARVEST (1971-75):

- ° Was 1.31 billion board feet, Scribner scale, 15 percent of the State total.
- ° Was 53 percent from private lands and 47 percent from public lands.

TABLES FOR NORTHWEST OREGON,

JANUARY 1, 1977

Table 1--Area by land class and county, northwest Oregon, January 1, 1977

(In thousand acres)

Land class	All counties	Clackamas	Clatsop	Columbia	Hood River	Marion	Multnomah	Polk	Tillamook	Washington	Yamhill
Forest land:											
Commercial	3,546	845	415	306	223	314	110	254	606	234	239
Deferred	--	--	--	--	--	--	--	--	--	--	--
Productive reserved	43	2	5	1	6	14	8	1	5	1	1/1
Unproductive	171	50	13	3	41	38	15	3	5	2	1
Total	3,760	897	433	310	270	366	133	258	616	237	240
Nonforest land ^{2/}	1,827	309	82	99	65	380	138	213	98	228	215
Total area ^{3/}	5,587	1,206	515	409	335	746	271	471	714	465	455

^{1/}Less than 500 acres.

^{2/}Includes cropland, pasture and range, swampland, industrial and urban areas, powerline clearings, railroads, all improved roads and highways, and 7,706 acres classified as water by Renewable Resources Evaluation standards, but defined by the Bureau of the Census as land.

^{3/}Source: United States Bureau of the Census, Land and Water Area of the United States, 1970.

Table 2--Area of commercial forest land by ownership class and county, northwest Oregon, January 1, 1977
(In thousand acres)

Ownership class	All counties ^{1/}	Clackamas	Clatsop	Columbia	Hood River	Marion	Multnomah	Polk	Tillamook	Washington	Yamhill
National Forest	936	473	--	--	151	156	53	<u>2/</u>	78	--	25
Bureau of Land Management	227	55	--	10	--	19	5	37	46	12	43
Other public	575	27	136	12	26	22	6	6	282	52	6
Total public ^{1/}	1,738	555	136	22	177	197	64	43	406	64	74
Private:											
Forest industry	1,144	131	241	215	31	53	11	144	162	85	71
Other private:											
Farmer owned	318	52	15	28	5	22	9	48	17	53	69
Miscellaneous	347	107	24	40	10	42	26	18	22	33	25
Total private ^{1/}	1,809	290	280	283	46	117	46	210	201	171	165
All ownerships ^{1/}	3,546	845	415	306	223	314	110	254	606	234	239

^{1/}Totals may be off because of rounding.

^{2/}Less than 500 acres.

Table 3--Area of commercial forest land by cubic-foot site and ownership classes, northwest Oregon, January 1, 1977

Site class ^{1/}	All ownerships ^{2/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
<u>Cubic feet</u>		<u>Thousand acres</u>				
225 or more	180	20	4	46	85	25
165 to 224	456	91	25	64	229	47
120 to 164	1,845	271	143	352	698	381
85 to 119	599	209	42	88	97	163
50 to 84	453	339	13	25	34	42
20 to 49	13	6	--	--	--	7
All classes ^{2/}	3,546	936	227	575	1,144	665

^{1/}A classification in terms of capacity for cubic-foot annual growth per acre at culmination of mean annual growth in fully stocked stands.

^{2/}Totals may be off because of rounding.

Table 4--Area of commercial forest land by stand-size and ownership classes, northwest Oregon, January 1, 1977

(In thousand acres)

Stand-size class	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Sawtimber stands:						
Large sawtimber ^{2/}	646	378	63	47	67	91
Small sawtimber ^{3/}	1,507	300	73	239	607	288
Total ^{1/}	2,154	678	137	286	674	379
Poletimber stands	508	113	17	134	139	105
Sapling and seedling stands	678	111	63	137	291	76
Nonstocked areas	206	34	10	17	40	105
All classes ^{1/}	3,546	936	227	575	1,144	665

^{1/}Totals may be off because of rounding.

^{2/}Large sawtimber includes trees 21.0-inch d.b.h. and larger.

^{3/}Small sawtimber includes softwood trees 9.0- to 20.9-inch d.b.h. and hardwood trees 11.0- to 20.9-inch d.b.h.

Table 5--Area of commercial forest land by forest type and ownership class, northwest Oregon, January 1, 1977

(In thousand acres)

Forest type	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Douglas-fir	2,008	443	171	412	737	245
Grand fir	53	19	--	--	27	7
Pacific silver fir	104	100	--	--	4	--
Noble fir	23	13	--	--	10	--
Ponderosa pine	6	6	--	--	--	--
Lodgepole pine	38	30	--	8	--	--
Whitebark pine	2	2	--	--	--	--
Engelmann spruce	2	2	--	--	--	--
Sitka spruce	160	5	--	25	109	21
Mountain hemlock	34	34	--	--	--	--
Western hemlock	215	197	18	--	--	--
Western redcedar	60	12	2	3	12	31
Red alder	554	39	22	110	206	177
Cottonwood	8	--	--	--	--	8
Maple	67	--	3	--	9	55
Oregon white oak	54	--	--	--	1	53
Other hardwoods	21	--	--	--	--	21
Noncommercial hardwoods	22	--	1	--	7	14
Unclassified ^{2/}	118	34	10	17	24	33
All types ^{1/}	3,546	936	227	575	1,144	665

^{1/}Totals may be off because of rounding.

^{2/}Unclassified type has less than 10 percent stocked with live trees.

Table 6--Area of noncommercial forest land by forest type and land class and by ownership class, northwest Oregon, January 1, 1977

(In thousand acres)

Forest type and land class	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
RESERVED						
Productive:						
Douglas-fir	23	1	--	22	--	--
Pacific silver fir	8	8	--	--	--	--
True firs	2/	--	--	2/	--	--
Ponderosa pine	2/	--	--	2/	--	--
Lodgepole pine	1	1	--	2/	--	--
Sitka spruce	4	--	--	4	--	2/
Hemlock	4	--	--	4	--	--
Red alder	2/	--	--	2/	--	--
Cottonwood and aspen	2/	--	--	2/	--	--
Oaks	2/	--	--	2/	--	--
Other hardwoods	3	--	--	3	--	--
Total ^{1/}	43	10	--	33	--	2/
Unproductive:						
Rocky ^{2/}	1	--	--	1	--	--
Willow	2/	--	--	2/	--	--
Unknown	18	17	--	1	--	--
Total ^{1/}	19	17	--	2	--	--
Total reserved ^{1/}	62	27	--	35	--	2/
UNRESERVED						
Unproductive:						
Rocky ^{3/}	7	--	7	--	--	--
Low site ^{3/}	2/	--	2/	--	--	--
Adverse location ^{3/}	2/	--	2/	--	--	--
Unclassified: ^{4/}						
Douglas-fir	65	65	--	--	--	--
Pacific silver fir	8	8	--	--	--	--
Subalpine fir	2	2	--	--	--	--
Noble fir	11	11	--	--	--	--
Lodgepole pine	1	1	--	--	--	--
Mountain hemlock	12	12	--	--	--	--
Western hemlock	5	5	--	--	--	--
Alaska-cedar	1	1	--	--	--	--
Hardwoods	2	2	--	--	--	--
Total ^{1/}	114	107	7	--	--	--
Unknown	4	--	--	--	--	4
Oak-madrone	15	--	--	7	--	8
Willow	19	--	--	9	3	7
Total unreserved ^{1/}	152	107	7	16	3	20

^{1/}Totals may be off because of rounding.

^{2/}Less than 500 acres.

^{3/}Cannot be broken down by forest type.

^{4/}Cannot be broken down by land class.

Table 7--Volume of timber on commercial forest land by class of timber and by softwoods and hardwoods, northwest Oregon, January 1, 1977

(In million cubic feet)

Class of timber	All species ^{1/}	Softwoods	Hardwoods
Sawtimber trees:			
Saw-log portion	10,557	9,691	866
Upper-stem portion	1,869	1,727	142
Total ^{1/}	12,426	11,419	1,007
Poletimber trees	1,596	993	603
All growing-stock trees ^{1/}	14,022	12,411	1,611
Sound cull trees	132	46	86
Rotten cull trees	234	182	52
Salvable dead trees	155	146	10
All timber ^{1/}	14,543	12,786	1,758

^{1/}Totals may be off because of rounding.

Table 8--Volume of growing stock and sawtimber on commercial forest land by ownership class and by softwoods and hardwoods, northwest Oregon, January 1, 1977

Ownership class	Average volume per acre	Total volume		
		All species ^{1/}	Softwoods	Hardwoods
	<u>Cubic feet</u>	- - - -	<u>Million cubic feet</u>	- - - -
Growing stock: ^{2/}				
National Forest	6,724	6,294	6,158	136
Bureau of Land Management	5,004	1,136	1,053	83
Other public	2,546	1,464	1,193	271
Forest industry	2,990	3,421	2,901	520
Other private	2,567	1,707	1,106	601
All ownerships ^{1/}	3,954	14,022	12,411	1,611
	<u>Board feet</u>	- - - -	<u>Million board feet</u>	- - - -
Sawtimber (International 1/4-inch rule): ^{3/}				
National Forest	37,194	34,814	34,234	580
Bureau of Land Management	30,066	6,825	6,471	354
Other public	12,012	6,907	6,263	644
Forest industry	14,438	16,517	14,869	1,648
Other private	11,469	7,627	5,777	1,850
All ownerships ^{1/}	20,499	72,690	67,614	5,076
Sawtimber (Scribner rule): ^{4/}				
National Forest	29,046	27,187	26,796	391
Bureau of Land Management	25,881	5,875	5,527	348
Other public	8,042	4,624	4,117	507
Forest industry	9,194	10,518	9,211	1,307
Other private	7,941	5,281	3,770	1,511
All ownerships ^{1/}	15,083	53,485	49,421	4,064

^{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 commercial forest land by county and ownership class, northwest Oregon, January 1, 1977

County	Total ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
<u>Million cubic feet</u>						
Growing stock: ^{2/}						
Clackamas	4,235	3,153	348	78	226	430
Clatsop	1,272	--	--	471	713	88
Columbia	1,147	--	29	82	834	202
Hood River	1,120	919	--	83	62	56
Marion	1,556	1,161	93	51	103	148
Multnomah	522	369	23	10	23	97
Polk	793	--	163	15	477	138
Tillamook	1,874	501	251	511	491	120
Washington	625	--	15	147	235	228
Yamhill	875	191	214	15	256	199
Total ^{1/}	14,022	6,294	1,136	1,464	3,421	1,707
<u>Million board feet</u>						
Sawtimber (International 1/4-inch rule): ^{3/}						
Clackamas	22,835	17,381	2,051	377	1,014	2,013
Clatsop	6,026	--	--	2,273	3,333	420
Columbia	5,814	--	128	511	4,179	996
Hood River	5,875	4,907	--	390	292	286
Marion	8,550	6,610	585	247	463	645
Multnomah	2,802	2,065	123	53	103	458
Polk	4,031	--	1,033	78	2,410	510
Tillamook	9,535	2,790	1,544	2,245	2,336	620
Washington	2,745	--	61	655	1,082	947
Yamhill	4,478	1,061	1,300	78	1,306	733
Total ^{1/}	72,690	34,814	6,825	6,907	16,517	7,627
<u>Million board feet</u>						
Sawtimber (Scribner rule): ^{4/}						
Clackamas	17,486	13,523	1,727	241	586	1,409
Clatsop	4,013	--	--	1,584	2,110	318
Columbia	3,910	--	89	384	2,717	720
Hood River	4,443	3,820	--	245	176	202
Marion	6,560	5,187	506	160	269	438
Multnomah	2,243	1,719	102	35	59	328
Polk	2,870	--	913	52	1,575	330
Tillamook	6,949	2,166	1,362	1,479	1,481	461
Washington	1,719	--	42	392	685	600
Yamhill	3,290	772	1,134	52	858	474
Total ^{1/}	53,485	27,187	5,875	4,624	10,518	5,281

^{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 commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In million cubic feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	7,336	3,220	902	555	1,837	821
White fir	1	1	--	--	--	--
Grand fir	176	109	1	26	4	36
Subalpine fir	7	7	--	--	--	--
Pacific silver fir	531	511	8	--	12	--
Noble fir	275	233	19	2	21	--
Ponderosa pine	26	22	--	--	2	2
Lodgepole pine	77	69	--	8	--	--
Western white pine	37	37	^{2/}	--	--	--
Engelmann spruce	24	24	--	--	--	--
Sitka spruce	305	87	4	20	119	75
Mountain hemlock	190	185	5	--	--	--
Western hemlock	2,984	1,405	107	551	854	68
Incense-cedar	1	1	--	--	--	--
Alaska-cedar	17	17	--	--	--	--
Western redcedar	390	196	7	31	52	104
Western larch	34	34	--	--	--	--
Total ^{1/}	12,411	6,158	1,053	1,193	2,901	1,106
Hardwoods:						
Red alder	1,113	129	68	234	429	253
Oregon ash	21	--	--	--	--	21
Black cottonwood	47	--	1	--	--	46
Bigleaf maple	304	6	14	37	88	158
Oregon white oak	124	--	--	--	2	122
Golden chinkapin	1	1	--	--	--	--
Total ^{1/}	1,611	136	83	271	520	601
All species ^{1/}	14,022	6,294	1,136	1,464	3,421	1,707

^{1/}Totals may be off because of rounding.

^{2/}Less than 500,000 cubic feet.

Table 11--Volume of sawtimber, International 1/4-inch rule, on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In million board feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	41,502	19,183	5,633	2,732	9,806	4,148
White fir	3	3	--	--	--	--
Grand fir	809	539	5	76	16	173
Subalpine fir	36	36	--	--	--	--
Pacific silver fir	2,480	2,411	43	--	26	--
Noble fir	1,580	1,366	124	8	82	--
Ponderosa pine	170	146	--	--	14	10
Lodgepole pine	196	176	--	20	--	--
Western white pine	205	204	1	--	--	--
Engelmann spruce	118	118	--	--	--	--
Sitka spruce	1,876	579	25	123	618	531
Mountain hemlock	938	917	21	--	--	--
Western hemlock	15,323	7,163	589	3,143	4,061	367
Incense-cedar	5	5	--	--	--	--
Alaska-cedar	78	78	--	--	--	--
Western redcedar	2,110	1,122	31	162	247	548
Western larch	188	188	--	--	--	--
Total ^{1/}	67,614	34,234	6,471	6,263	14,869	5,777
Hardwoods:						
Red alder	3,536	560	290	515	1,373	798
Oregon ash	70	--	--	--	--	70
Black cottonwood	272	--	3	--	--	269
Bigleaf maple	960	20	60	129	264	487
Oregon white oak	238	--	--	--	11	227
Total ^{1/}	5,076	580	354	644	1,648	1,850
All species ^{1/}	72,690	34,814	6,825	6,907	16,517	7,627

^{1/}Totals may be off because of rounding.

Table 12--Volume of sawtimber, Scribner rule, on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In million board feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	30,710	15,268	4,837	1,701	6,242	2,662
White fir	2	2	--	--	--	--
Grand fir	536	380	5	37	10	103
Subalpine fir	30	30	--	--	--	--
Pacific silver fir	1,780	1,727	36	--	17	--
Noble fir	1,249	1,096	109	4	40	--
Ponderosa pine	144	128	--	--	10	6
Lodgepole pine	91	90	--	2	--	--
Western white pine	153	152	1	--	--	--
Engelmann spruce	87	87	--	--	--	--
Sitka spruce	1,419	489	22	90	393	425
Mountain hemlock	689	675	14	--	--	--
Western hemlock	10,814	5,578	479	2,170	2,342	245
Incense-cedar	3	3	--	--	--	--
Alaska-cedar	52	52	--	--	--	--
Western redcedar	1,522	898	26	113	157	328
Western larch	141	141	--	--	--	--
Total ^{1/}	49,421	26,796	5,527	4,117	9,211	3,770
Hardwoods:						
Red alder	2,780	377	285	404	1,081	633
Oregon ash	61	--	--	--	--	61
Black cottonwood	250	--	3	--	--	247
Bigleaf maple	784	14	59	103	217	391
Oregon white oak	189	--	--	--	9	180
Total ^{1/}	4,064	391	348	507	1,307	1,511
All species ^{1/}	53,485	27,187	5,875	4,624	10,518	5,281

^{1/} Totals may be off because of rounding.

Table 13--Volume of growing stock on commercial forest land by species and diameter class, northwest Oregon, January 1, 1977

(In million cubic feet)

Species	Diameter class (inches at breast height)											
	All classes ^{1/}	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	29.0-38.9	39.0 and larger
Softwoods:												
Douglas-fir	7,336	167	290	378	561	536	566	576	525	1,607	1,143	987
White fir	1	--	2/	--	--	1	--	--	--	--	--	--
Grand fir	176	17	20	19	24	14	20	18	8	23	11	2
Subalpine fir	7	1	1	--	2/	1	2/	1	1	2	--	--
Pacific silver fir	531	29	49	47	47	62	57	55	39	101	40	7
Noble fir	275	3	20	14	26	14	18	15	12	59	61	34
Ponderosa pine	26	2/	2/	1	2	--	2/	2	2/	13	7	1
Lodgepole pine	77	14	21	16	11	8	4	1	2/	2	2/	--
Western white pine	37	1	2	3	3	1	2	2	4	8	6	5
Engelmann spruce	24	1	2	1	6	2	4	1	2	2	3	--
Sitka spruce	305	6	10	11	20	7	11	18	8	37	59	115
Mountain hemlock	190	5	8	11	16	19	19	22	29	48	11	1
Western hemlock	2,984	128	169	241	225	246	236	205	204	683	425	226
Incense-cedar	1	--	2/	2/	--	1	2/	--	--	2/	--	--
Alaska-cedar	17	2/	2	2	3	3	1	2/	1	2	2	1
Western redcedar	390	10	16	25	17	21	18	33	26	71	62	93
Western larch	34	1	2	3	1	3	4	5	3	7	4	1
Total ^{1/}	12,411	382	612	771	960	940	960	955	862	2,664	1,833	1,472
Hardwoods:												
Red alder	1,113	81	141	190	176	165	116	98	46	90	8	2/
Oregon ash	21	--	2	7	4	1	2	2	--	3	--	--
Black cottonwood	47	--	--	--	--	2	3	4	6	8	11	12
Bigleaf maple	304	26	49	34	50	43	17	22	14	28	18	3
Oregon white oak	124	17	14	42	25	10	6	--	3	7	2/	--
Golden chinkapin	1	1	--	--	--	--	--	--	--	--	--	--
Total ^{1/}	1,611	125	205	274	254	221	144	128	70	138	37	15
All species ^{1/}	14,022	507	817	1,045	1,214	1,161	1,104	1,083	932	2,802	1,870	1,487

^{1/}Totals may be off because of rounding.^{2/}Less than 500,000 cubic feet.

Table 14--Volume of sawtimber, International 1/4-inch rule, on commercial forest land by species and diameter class, northwest Oregon, January 1, 1977

(In million board feet)

Species	Diameter class (inches at breast height)									
	All classes ^{1/}	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	29.0-38.9	39.0 and larger
Softwoods:										
Douglas-fir	41,502	1,684	2,776	2,919	3,287	3,478	3,241	10,291	7,390	6,438
White fir	3	--	--	3	--	--	--	--	--	--
Grand fir	809	90	123	82	117	106	50	157	69	15
Subalpine fir	36	--	3	6	3	5	6	13	--	--
Pacific silver fir	2,480	200	228	325	311	302	222	590	258	46
Noble fir	1,580	66	124	82	106	91	74	387	416	234
Ponderosa pine	170	3	7	--	2	9	2	83	53	11
Lodgepole pine	196	72	45	42	22	4	3	6	2	--
Western white pine	205	16	13	8	10	11	29	48	39	31
Engelmann spruce	118	8	24	9	20	8	10	19	20	--
Sitka spruce	1,876	52	102	37	64	110	49	243	400	819
Mountain hemlock	938	49	78	97	102	115	155	269	67	6
Western hemlock	15,323	1,128	1,151	1,372	1,350	1,192	1,161	4,000	2,547	1,423
Incense-cedar	5	1	--	1	1	--	--	2	--	--
Alaska-cedar	78	7	12	15	5	2	6	13	13	5
Western redcedar	2,110	104	78	104	96	188	144	425	384	588
Western larch	188	14	5	16	23	34	18	44	27	7
Total ^{1/}	67,614	3,492	4,770	5,116	5,520	5,655	5,168	16,589	11,685	9,620
Hardwoods:										
Red alder	3,536	--	755	818	614	537	254	508	49	3
Oregon ash	70	--	21	4	12	13	--	20	--	--
Black cottonwood	272	--	--	12	15	25	32	45	69	73
Bigleaf maple	960	--	203	204	81	116	78	154	109	14
Oregon white oak	238	--	97	48	31	--	19	38	3	--
Total ^{1/}	5,076	--	1,076	1,086	753	692	384	766	229	90
All species ^{1/}	72,690	3,492	5,846	6,202	6,273	6,347	5,552	17,355	11,914	9,710

^{1/}Totals may be off because of rounding.

Table 15--Volume of sawtimber, Scribner rule, on commercial forest land by species and diameter class, northwest Oregon, January 1, 1977

(In million board feet)

Species	Diameter class (inches at breast height)									
	All classes ^{1/}	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	29.0-38.9	39.0 and larger
Softwoods:										
Douglas-fir	30,710	--	1,558	1,850	2,214	2,457	2,387	8,182	6,292	5,771
White fir	2	--	--	2	--	--	--	--	--	--
Grand fir	536	--	77	58	83	78	37	128	60	14
Subalpine fir	30	--	2	5	1	4	6	12	--	--
Pacific silver fir	1,780	--	152	234	228	228	175	495	228	41
Noble fir	1,249	--	76	58	81	72	58	323	369	209
Ponderosa pine	144	--	4	--	1	7	2	70	49	11
Lodgepole pine	91	--	31	31	17	3	2	5	2	--
Western white pine	153	--	9	5	8	9	22	39	34	27
Engelmann spruce	87	--	17	7	16	7	8	16	16	--
Sitka spruce	1,419	--	56	22	40	70	35	180	321	696
Mountain hemlock	689	--	53	69	75	86	120	223	59	5
Western hemlock	10,814	--	686	909	917	865	871	3,185	2,147	1,235
Incense-cedar	3	--	--	1	1	--	--	1	--	--
Alaska-cedar	52	--	8	10	4	1	4	10	11	4
Western redcedar	1,522	--	45	63	63	122	98	314	307	510
Western larch	141	--	3	13	17	25	14	38	24	7
Total ^{1/}	49,421	--	2,776	3,337	3,764	4,033	3,839	13,222	9,920	8,529
Hardwoods:										
Red alder	2,780	--	554	621	478	433	212	436	45	3
Oregon ash	61	--	18	3	10	11	--	18	--	--
Black cottonwood	250	--	--	10	13	23	29	41	64	69
Bigleaf maple	784	--	153	159	65	96	66	135	98	12
Oregon white oak	189	--	75	37	25	--	16	33	2	--
Total ^{1/}	4,064	--	799	830	591	563	323	664	209	85
All species ^{1/}	53,485	--	3,575	4,167	4,355	4,596	4,162	13,886	10,129	8,614

^{1/}Totals may be off because of rounding.

Table 16--*Net annual growth of growing stock and sawtimber on commercial forest land by ownership class and by softwoods and hardwoods, northwest Oregon, January 1, 1977*

Ownership class	Average volume per acre	All species ^{1/}	Softwoods	Hardwoods
	<u>Cubic feet</u>	<u>----- Thousand cubic feet -----</u>		
Growing stock: ^{2/}				
National Forest	55	51,519	49,850	1,669
Bureau of Land Management	100	22,810	20,108	2,702
Other public	116	66,816	49,673	17,143
Forest industry	135	154,295	131,508	22,787
Other private	100	66,583	45,461	21,122
All ownerships ^{1/}	102	362,022	296,599	65,423
	<u>Board feet</u>	<u>----- Thousand board feet -----</u>		
Sawtimber (International 1/4-inch rule): ^{3/}				
National Forest	331	309,809	289,935	19,874
Bureau of Land Management	610	138,504	124,519	13,985
Other public	534	307,088	265,877	41,211
Forest industry	749	857,379	775,712	81,667
Other private	505	336,064	260,660	75,404
All ownerships ^{1/}	550	1,948,844	1,716,703	232,141

^{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.

Table 17--Net annual growth of growing stock on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In thousand cubic feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	187,924	24,089	16,711	29,589	81,732	35,803
White fir	36	36	--	--	--	--
Grand fir	4,546	1,631	8	1,009	180	1,718
Subalpine fir	<u>2/</u> -109	<u>2/</u> -109	--	--	--	--
Pacific silver fir	8,731	7,643	113	--	975	--
Noble fir	4,509	2,743	357	101	1,308	--
Ponderosa pine	135	89	--	--	19	27
Lodgepole pine	2,126	1,427	--	699	--	--
Western white pine	<u>2/</u> -2,233	<u>2/</u> -2,190	<u>2/</u> -43	--	--	--
Engelmann spruce	354	354	--	--	--	--
Sitka spruce	8,538	1,112	46	526	5,452	1,402
Mountain hemlock	1,873	1,836	37	--	--	--
Western hemlock	72,329	9,469	2,481	17,119	40,314	2,946
Incense-cedar	21	21	--	--	--	--
Alaska-cedar	330	330	--	--	--	--
Western redcedar	7,551	1,431	398	629	1,528	3,565
Western larch	<u>2/</u> -62	<u>2/</u> -62	--	--	--	--
Total^{1/}	296,599	49,850	20,108	49,673	131,508	45,461
Hardwoods:						
Red alder	49,970	1,467	2,215	16,054	19,539	10,695
Oregon ash	363	--	--	--	--	363
Black cottonwood	1,454	--	22	--	--	1,432
Bigleaf maple	11,181	177	465	1,089	3,370	6,080
Oregon white oak	2,430	--	--	--	<u>2/</u> -122	2,552
Golden chinkapin	25	25	--	--	--	--
Total^{1/}	65,423	1,669	2,702	17,143	22,787	21,122
All species^{1/}	362,022	51,519	22,810	66,816	154,295	66,583

^{1/} Totals may be off because of rounding.

^{2/} Negative net annual growth is the result of net annual mortality exceeding gross annual growth.

Table 18--Net annual growth of sawtimber, International 1/4-inch rule, on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In thousand board feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	1,125,691	152,898	107,282	153,183	512,593	199,735
White fir	70	70	--	--	--	--
Grand fir	21,858	7,747	79	3,538	1,005	9,489
Subalpine fir	<u>2/-690</u>	<u>2/-690</u>	--	--	--	--
Pacific silver fir	37,350	34,638	598	--	2,114	--
Noble fir	29,455	19,332	2,591	857	6,675	--
Ponderosa pine	1,163	494	--	--	140	529
Lodgepole pine	9,315	6,754	--	2,561	--	--
Western white pine	<u>2/-12,930</u>	<u>2/-12,677</u>	<u>2/-253</u>	--	--	--
Engelmann spruce	1,990	1,990	--	--	--	--
Sitka spruce	51,538	7,152	366	2,831	30,868	10,321
Mountain hemlock	11,499	11,293	206	--	--	--
Western hemlock	395,130	52,432	11,991	99,361	213,922	17,424
Incense-cedar	41	41	--	--	--	--
Alaska-cedar	1,068	1,068	--	--	--	--
Western redcedar	44,903	8,141	1,659	3,546	8,395	23,162
Western larch	<u>2/-748</u>	<u>2/-748</u>	--	--	--	--
Total^{1/}	1,716,703	289,935	124,519	265,877	775,712	260,660
Hardwoods:						
Red alder	172,876	18,455	11,474	35,866	74,987	32,094
Oregon ash	1,630	--	--	--	--	1,630
Black cottonwood	10,664	--	127	--	--	10,537
Bigleaf maple	37,716	1,419	2,384	5,345	6,504	22,064
Oregon white oak	9,255	--	--	--	176	9,079
Total^{1/}	232,141	19,874	13,985	41,211	81,667	75,404
All species^{1/}	1,948,844	309,809	138,504	307,088	857,379	336,064

^{1/}Totals may be off because of rounding.

^{2/}Negative net annual growth is the result of net annual mortality exceeding gross annual growth.

Table 19--Average annual mortality of growing stock on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In thousand cubic feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	18,654	8,448	3,531	1,105	3,822	1,748
Grand fir	1,542	1,076	--	466	--	--
Subalpine fir	238	238	--	--	--	--
Pacific silver fir	1,850	1,850	--	--	--	--
Noble fir	872	872	--	--	--	--
Ponderosa pine	85	43	--	--	--	42
Lodgepole pine	445	445	--	--	--	--
Western white pine	2,574	2,554	20	--	--	--
Engelmann spruce	53	53	--	--	--	--
Sitka spruce	1,127	143	--	120	864	--
Mountain hemlock	217	217	--	--	--	--
Western hemlock	10,618	5,328	317	1,112	3,719	142
Incense-cedar	2	2	--	--	--	--
Alaska-cedar	55	55	--	--	--	--
Western redcedar	1,490	551	--	198	399	342
Western larch	512	512	--	--	--	--
Total ^{1/}	40,332	22,387	3,868	3,001	8,803	2,273
Hardwoods:						
Red alder	8,618	1,692	--	1,140	3,168	2,618
Oregon ash	292	--	--	--	--	292
Black cottonwood	707	--	--	--	--	707
Bigleaf maple	1,667	18	--	286	329	1,034
Oregon white oak	863	--	--	--	155	708
Total ^{1/}	12,147	1,710	--	1,426	3,652	5,359
All species ^{1/}	52,479	24,097	3,868	4,427	12,455	7,632

^{1/}Totals may be off because of rounding.

Table 20--Average annual mortality of sawtimber, International 1/4-inch rule, on commercial forest land by species and ownership class, northwest Oregon, January 1, 1977

(In thousand board feet)

Species	All ownerships ^{1/}	National Forest	Bureau of Land Management	Other public	Forest industry	Other private
Softwoods:						
Douglas-fir	88,818	46,025	20,092	3,592	13,684	5,425
Grand fir	6,491	5,302	--	1,189	--	--
Subalpine fir	1,251	1,251	--	--	--	--
Pacific silver fir	8,292	8,292	--	--	--	--
Noble fir	4,960	4,960	--	--	--	--
Ponderosa pine	286	286	--	--	--	--
Lodgepole pine	1,142	1,142	--	--	--	--
Western white pine	14,257	14,147	110	--	--	--
Engelmann spruce	255	255	--	--	--	--
Sitka spruce	5,212	148	--	630	4,434	--
Mountain hemlock	1,068	1,068	--	--	--	--
Western hemlock	52,340	23,545	2,017	4,468	21,400	910
Incense-cedar	8	8	--	--	--	--
Alaska-cedar	245	245	--	--	--	--
Western redcedar	7,165	2,706	--	615	2,030	1,814
Western larch	2,791	2,791	--	--	--	--
Total^{1/}	194,581	112,171	22,219	10,493	41,548	8,148
Hardwoods:						
Red alder	23,273	3,978	--	1,858	8,354	9,083
Oregon ash	1,395	--	--	--	--	1,395
Black cottonwood	3,524	--	--	--	--	3,524
Bigleaf maple	5,153	44	--	1,543	1,640	1,926
Oregon white oak	670	--	--	--	--	670
Total^{1/}	34,015	4,022	--	3,401	9,994	16,598
All species^{1/}	228,594	116,193	22,219	13,894	51,542	24,746

^{1/}Totals may be off because of rounding.

Table 21--Timber harvest by ownership class, northwest Oregon, 1950-75

(In thousand board feet, Scribner scale)

Year	All ownerships	Private			State	National Forest	Bureau of Land Management	Other public
		Total private	Forest industry	Other				
1950	1,820,569	1/			1,652,269	167,300	--	1,000
1951	1,860,799	1/			1,687,999	172,800	--	--
1952	1,908,200	1/			1,711,900	196,300	--	--
1953	1,651,879	1/			1,374,192	277,600	--	87
1954	1,504,386	1/			1,283,086	221,300	--	--
1955	1,628,234	1/			1,370,985	257,249	--	--
1956	1,863,444	1/			1,555,380	260,300	47,764	--
1957	1,270,422	1/			987,668	206,700	76,054	--
1958	1,339,235	865,279	2/	2/	89,102	308,198	76,656	--
1959	1,517,907	863,803	2/	2/	99,840	448,409	105,855	--
1960	1,329,708	780,908	2/	2/	121,579	334,748	92,473	--
1961	1,063,687	518,316	2/	2/	108,917	339,030	97,424	--
1962	1,216,622	593,205	510,861	82,344	98,180	390,900	134,337	--
1963	1,321,967	660,941	557,349	103,592	138,316	412,900	109,810	--
1964	1,389,370	705,875	587,184	118,691	123,532	422,100	137,863	--
1965	1,453,284	754,899	631,098	123,801	99,892	480,100	115,578	2,815
1966	1,375,667	712,167	624,284	87,883	79,543	421,800	137,187	24,970
1967	1,214,950	637,594	566,775	70,819	64,644	375,100	127,742	9,870
1968	1,601,193	851,398	760,104	91,294	102,306	472,784	163,434	11,271
1969	1,470,278	810,336	677,225	133,111	85,243	446,991	108,573	19,135
1970	1,280,586	723,979	664,563	59,416	64,528	360,446	130,213	1,420
1971	1,389,183	848,997	780,814	68,183	73,756	318,842	137,768	9,820
1972	1,422,204	666,540	590,382	76,158	119,823	464,717	157,236	13,888
1973	1,519,491	675,907	513,249	162,658	146,192	494,720	176,597	26,075
1974	1,156,344	617,685	557,871	59,814	77,554	358,458	99,054	3,593
1975	1,065,190	641,572	593,414	48,158	75,942	283,323	53,861	10,492

1/ Private and State lands are added together.

2/ No breakdown available.

INVENTORY PROCEDURES

This report of northwest Oregon's forest resources combines data from three sources: (1) a 1976 inventory of private, State, county, and municipal lands conducted by the Renewable Resources Evaluation Work Unit; (2) three National Forest inventories--two completed in 1971 and one in 1974; and (3) a 1968 Bureau of Land Management (BLM) inventory. The BLM inventory has been updated to 1976 to account for cutting, reforestation, growth, and mortality since 1968.

Inventory Design

National Forest and Bureau of Land Management Inventories.--The National Forest inventories relied on a systematic sample of field plots arranged in a 1.7-mile-square grid; the BLM used an 0.85-mile grid interval. On the National Forests, nonforest, noncommercial forest, and clearcut areas were mapped and excluded from the sample. The Bureau of Land Management sampled all land, regardless of status--all volume, area, and growth data were expanded from field plots; each plot was given equal weight. National Forest statistics for the sampled area were developed in the same way, but information about clearcuts came from forest records of plantation and compartment examinations.

The field plots used in both inventories were clusters of 10 variable-radius points distributed over approximately an acre. Seedlings

and saplings were sampled on 1/300th-acre fixed-radius plots located at each of the 10 points.

Estimates of volume, growth, and mortality obtained from the BLM inventory were updated by stand projection (Larson and Goforth 1970). In addition, all plots cut since the inventory were identified and assigned new area classifications based on data furnished by the BLM.

Renewable Resources Evaluation inventory.--The sampling design used was double sampling for stratification (Cochran 1963). About 8,912 photo points were classified by (1) owner group; (2) major land class (commercial forest, noncommercial forest, and nonforest); and (3) stand volume class.

The 10-point field plot design that had been used on the National Forest and Bureau of Land Management inventories was used in this inventory. Unlike those inventories, however, most of these field plots were established in 1961 and were remeasured for this inventory. Growth and mortality were estimated on the remeasured plots by comparing old and new tallies. A few new plots were established--either because of ownership change or failure to relocate the old plot. On these new plots, growth was estimated from increment cores and mortality was backdated from current observations.

A summary of the three inventory designs follows:

<u>Inventory</u>	<u>Number of photo plots</u>	<u>Number of field plots</u>	<u>Field grid intensity</u>	<u>Inventory date</u>	<u>Updated to</u>
			<u>Miles</u>		
Private, State, County, and municipal	8,912	571	3.4	1976	--
Siuslaw National Forest	--	108	1.7	1974	--
Willamette National Forest	--	53	1.7	1971	--
Mount Hood National Forest	--	351	1.7	1971	--
Salem District of BLM	--	502	.85	1968	1976

RELIABILITY OF CURRENT INVENTORY DATA

Forest Land Area and Timber Volume

The area of commercial forest land on National Forests in northwest Oregon was determined by mapping. All other forest land area and timber volume estimates are based on sampling and consequently have sampling errors. These sampling errors and their associated confidence intervals have been computed for all estimates except BLM volume. Since BLM volume estimates were updated with a stand projection model (Larson and Goforth 1970), I was unable to compute legitimate sampling errors for those estimates.

The confidence intervals shown in tables 22-27 are a quantitative expression of the reliability of the forest area and volume estimates. Table 22, for example, indicates that there is a 68-percent probability that the true area of commercial forest land on private and other public holdings is within 1.9 percent of the inventory estimate of 2,383,000 acres and 95-percent probability that the true area is within 3.7 percent of the inventory estimate. There is a 2-in-3 chance that the commercial forest area on private and other public lands lies between 2,428,000 and 2,338,000 acres and a 19-in-20 chance that the area lies between 2,471,000 acres and 2,295,000 acres.

Table 22--Confidence intervals for estimates of forest area and timber volume on private and other public lands, northwest Oregon, January 1, 1977

Item	Estimated total	Confidence interval	
		68-percent probability	95-percent probability
- - - - - Percent - - - - -			
Commercial forest land	2,383,000 acres	±1.9	±3.7
Noncommercial forest land	39,000 acres	±38.6	±75.7
Volume:			
Growing stock	6,592 million cubic feet	±4.4	±8.6
Sawtimber (International 1/4-inch rule)	31,051 million board feet	±5.3	±10.4

Table 23--Approximate confidence intervals^{1/} for area and volume estimates on various sizes of private and other public lands, northwest Oregon, January 1, 1977

Commercial forest land			Growing stock		Sawtimber	
Area	Confidence intervals at the 68-percent probability level for:		Volume	Confidence interval at the 68-percent probability level	Volume	Confidence interval at the 68-percent probability level
	Tables 1 and 2 ^{2/}	Tables 3, 4, and 5 ^{3/}				
Thousand acres	Percent (±)	Percent (±)	Million cubic feet	Percent (±)	Million board feet ^{4/}	Percent (±)
2,000	2.1	3.0	6,000	4.6	30,000	5.4
1,000	2.9	6.6	4,000	5.6	28,000	5.6
800	3.3	7.8	2,000	8.0	26,000	5.8
600	3.8	9.5	1,000	11.3	24,000	6.0
400	4.6	12.1	800	12.6	22,000	6.3
200	6.6	17.9	600	14.6	20,000	6.6
100	9.3	25.8	400	17.9	18,000	7.0
50	13.1	36.8	200	25.3	16,000	7.4
25	18.6	52.3	100	35.7	14,000	7.9
15	23.9	67.7	50	50.5	12,000	8.5
10	29.3	83.0	25	71.4	10,000	9.3
			15	92.2	5,000	13.2
					1,000	29.5
					800	33.0
					400	46.7
					200	66.0
					100	93.4

^{1/}Constant variance is assumed.

^{2/}Applies to the estimated total of commercial forest land which is based on double sampling.

^{3/}Applies to any breakdown of the total estimate of commercial forest land; e.g., site class, stand-size class, forest type, etc.

^{4/}International 1/4-inch rule.

Table 24--Confidence intervals for estimates of areas and timber volume, on National Forest forest lands, northwest Oregon, January 1, 1977

Item	Estimated total	Confidence interval	
		68-percent probability	95-percent probability
- - - - - Percent - - - - -			
Commercial forest land	936,000 acres	<u>1/</u>	<u>1/</u>
Noncommercial forest land	107,000 acres	<u>1/</u>	<u>1/</u>
Volume:			
Growing stock	6,293 million cubic feet	±2.9	±5.7
Sawtimber (International 1/4-inch rule)	34,814 million board feet	<u>2/</u>	<u>2/</u>

^{1/}The commercial forest land and the noncommercial forest land were classified by type-mapping procedures and have no associated sampling error.

^{2/}Not available.

Table 25--Approximate confidence interval^{1/} for volume estimates on various areas of National Forests, northwest Oregon, January 1, 1977

Commercial forest land ^{2/}		Growing stock	
Area	Confidence interval, 68-percent probability	Volume	Confidence interval, 68-percent probability
Thousand acres	Percent (±)	Million cubic feet	Percent (±)
900	0.88	6,000	3.0
800	1.8	4,000	3.6
600	3.3	2,000	5.1
400	5.1	1,000	7.3
200	8.5	800	8.1
100	13.5	600	9.4
50	18.6	400	11.5
25	26.7	200	16.3
15	34.7	100	23.0
10	42.6	50	32.5
		25	46.0
		15	59.4

^{1/}Constant variance is assumed.

^{2/}Total commercial forest land area is without error, but breakdowns are based on field plot proportions and are subject to sampling error.

Table 26--Confidence interval for estimates of area on Bureau of Land Management forest lands, northwest Oregon, January 1, 1977

Item	Estimated total	Confidence interval	
		68-percent probability	95-percent probability
	<u>Acres</u>	- - - - - <u>Percent</u> - - - - -	
Commercial forest land	227,000	±1.3	±2.5
Noncommercial forest land	7,000	±24.6	±48.2
Volume		<u>1/</u>	<u>1/</u>

1/Unable to compute because volume statistics were updated.

Table 27--Approximate confidence intervals^{1/} for estimates of various areas of Bureau of Land Management commercial forest land, northwest Oregon, January 1, 1977

Area	Confidence interval, 68-percent probability
<u>Thousand acres</u>	<u>Percent (±)</u>
200	1.6
100	5.0
50	8.4
25	12.7
15	16.8
10	20.8

1/Constant variance is assumed.

The confidence intervals associated with any of the breakdowns of forest area and volume will be substantially wider than those shown in tables 22, 24, and 26; generally, the smaller the breakdown, the wider the confidence interval. An approximation of the width of the confidence intervals associated with subtotals and breakdowns of forest area and volume can be obtained from tables 23, 25, and 27.

In addition to measurable sampling errors, there may be errors caused by mistakes in judgment and by measurement and compilation errors. The magnitude of such errors cannot be determined; but they are minimized by training and supervising personnel, by checking for errors in the field, and by careful editing of data.

DEFINITION OF TERMS

Land Area

Total land area is that reported by the Bureau of the Census. 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 one-eighth mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

Forest land is at least 10 percent stocked by live trees or formerly having such tree cover and not currently developed for nonforest use. Minimum area of forest land recognized is 1 acre.

Nonforest land has never supported forests or was formerly forested 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 must be

more than 120 feet wide and clearings, etc., more than 1 acre in size to qualify as nonforest land.

Forest-Land Classes

Commercial forest land is capable of producing 20 cubic feet per acre per year of industrial wood and is not withdrawn from timber utilization.

Noncommercial forest land is incapable of yielding crops of industrial wood because of adverse site conditions, or it is productive public forest land withdrawn from commercial timber use through statute or administrative regulation.

Productive-reserved forest land is public land withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land.

Unproductive forest land is land incapable of yielding crops of industrial wood products because of adverse site conditions, such as sterile soils, poor drainage, high elevation, steepness, and rockiness.

Forest Types

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

Tree Classes

Growing Stock

Growing stock trees are all live trees with the exception of noncommercial species and cull trees which are nongrowing stock.

Sawtimber growing stock trees are at least 9.0 inches in d.b.h. if they are softwoods and at least 11.0 inches in d.b.h. if they are hardwoods. At least 25 percent of board-foot volume in a sawtimber tree must be free from defect. Softwood trees must contain at least one 12-foot saw log with a top diameter of not

less than 6 inches inside the bark; hardwood trees must contain at least one 8-foot saw log with a top diameter of not less than 8 inches inside the bark.

Poletimber growing stock trees are 5.0 to 8.9 inches in d.b.h. if they are softwoods and 5.0 to 10.9 inches in d.b.h. if they are hardwoods, with a cubic-foot volume of wood at least 25 percent free from defect. They are free from any disease, defect, or deformity likely to prevent their becoming sawtimber trees.

Sapling and seedling growing stock trees are less than 5.0 inches in d.b.h. and have no disease, defects, or deformities likely to prevent their becoming growing stock poletimber trees.

Nongrowing Stock

Cull trees are noncommercial species or commercial species which are too defective or unlikely to become growing stock trees because of deformity, disease, low vigor, etc.

Sound cull trees are noncommercial species or commercial species with excessive defect caused by form, roughness, etc.

Rotten cull trees have excessive defect primarily caused by rot.

Salvable dead trees are standing or down trees of commercial species, 9.0 inches or more in diameter for softwoods and 11.0 inches or more in diameter for hardwoods, containing 25 percent or more of sound volume and at least one merchantable 12-foot log if softwood or one merchantable 8-foot log if hardwood.

Mortality Trees

Commercial species that died from natural causes within a specified period and were growing stock trees at the time of death.

Stand-Size Classes

Sawtimber stands are at least 10 percent stocked with growing stock conifer, red alder, and black cottonwood trees; half or more of this stocking is in sawtimber and poletimber trees, and sawtimber stocking is equal to or greater than poletimber stocking. In *large sawtimber stands*, the majority of the sawtimber stocking is in trees 21.0 inches and larger at breast height. In *small sawtimber stands*, the majority of the sawtimber stocking is in trees from 9.0 to 20.9 inches at breast height.

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

Sapling and seedling stands are at least 10 percent stocked with growing stock conifer, red alder, and black cottonwood trees; more than half of this stocking is in saplings, seedlings, or both.

Nonstocked areas of commercial forest land are less than 10 percent stocked with growing stock conifer, red alder, and black cottonwood trees.

Timber Volume

Live Sawtimber

Net volume of live sawtimber trees of commercial species is 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 is the common board-foot log rule used locally in determining volume of sawtimber before harvest. Scribner volume was measured in terms of 32-foot logs for all owners except BLM which uses 16-foot logs.

Scribner scale is the common board-foot log scale used locally in determining volume of harvested sawtimber.

International 1/4-inch rule is the standard board-foot log rule adopted nationally by the USDA Forest Service for the presentation of Renewable Resources Evaluation volume statistics before harvest.

Saw-log portion is the bole of sawtimber trees between the stump and the saw-log top.

Upper-stem portion includes the bole of sawtimber trees above the saw-log top of 7.0 inches outside bark for softwoods and 8.0 inches outside bark for hardwoods to a minimum top diameter of 4.0 inches outside bark, or to the point where the central stem breaks into limbs.

Growing Stock

Net volume of growing stock is measured in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) outside bark. Net volume equals gross volume less deduction for rot and missing bole sections.

All Timber

All timber includes the net volume in cubic feet of live growing stock poletimber and sawtimber trees and salvable dead sawtimber trees of commercial species and the gross volume in cubic feet of cull trees of all species. Volume is measured from stump to a minimum 4.0-inch top outside bark.

Net Annual Growth

Components of net annual growth are: (a) the increment in net volume of trees at the beginning of the specified year surviving to the year's end plus (b) the net volume of trees reaching the size class during the year minus (c) the net volume of trees that died during the year minus (d) the net volume of trees that became culls during the year.

Net Annual Mortality

Mortality data are reported as periodic annual mortality. In northwest Oregon, the periods are as follows:

BLM, 5 years	1963 to 1968
Siuslaw National Forest, 10-11 years	1963 to 1973-74
Willamette National Forest, 10-11 years	1961 to 1970-71
Mount Hood National Forest, 11 years	1961 to 1972
Private and other public, 15 years	1961 to 1976

Ownership Classes

National Forest lands are Federal lands which have been designated by Executive order or statute as National Forest or purchase units and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones title III lands.

Other public lands are Federal lands other than National Forests or lands administered by the Bureau of Land Management and lands owned by States, counties, and local public agencies or leased by these governmental units for more than 50 years.

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

Other private lands include all private lands except those classed as forest industry lands.

Miscellaneous Definitions

A short log is a standard 16-foot log.

A long log is a standard 32-foot log.

Plantation examination is the examination of an artificially reforested area established by planting or direct seeding.

Compartment examination is the examination of a small subdivision of forest area defined by permanent boundaries and used for orientation, administration, and silvicultural operations.

PLANT SPECIES

This list includes tree species occurring in northwest Oregon. The source for scientific name is Little (1953).

<u>Scientific name</u>	<u>Common name</u>
Softwood trees:	
<i>Abies amabilis</i> (Dougl.) Forbes	Pacific silver fir
<i>Abies concolor</i> (Gord. & Glend.) Lindl.	white fir
<i>Abies grandis</i> (Dougl.) Lindl.	grand fir
<i>Abies lasiocarpa</i> (Hook.) Nutt.	subalpine fir
<i>Abies procera</i> Rehd.	noble fir
<i>Chamaecyparis nootkatensis</i> (D. Don) Spach	Alaska-cedar
<i>Larix occidentalis</i> Nutt.	western larch
<i>Libocedrus decurrens</i> Torr.	incense-cedar
<i>Picea engelmannii</i> Parry	Engelmann spruce
<i>Picea sitchensis</i> (Bong.) Carr.	Sitka spruce
<i>Pinus contorta</i> Dougl.	lodgepole pine
<i>Pinus monticola</i> Dougl.	western white pine
<i>Pinus ponderosa</i> Laws.	ponderosa pine
<i>Pseudotsuga menziesii</i> (Mirb.) Franco	Douglas-fir
<i>Thuja plicata</i> Donn	western redcedar
<i>Tsuga heterophylla</i> (Raf.) Sarg.	western hemlock
<i>Tsuga mertensiana</i> (Bong.) Carr.	mountain hemlock

Hardwood trees:

<i>Acer macrophyllum</i> Pursh	bigleaf maple
<i>Alnus rubra</i> Bong.	red alder
<i>Arbutus menziesii</i> Pursh	Pacific madrone
<i>Castanopsis chrysophylla</i> Dougl. A. DC.	golden chinkapin
<i>Fraxinus latifolia</i> Benth.	Oregon ash
<i>Populus trichocarpa</i> Torr. & Gray	black cottonwood
<i>Quercus garryana</i> Dougl.	Oregon white oak

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