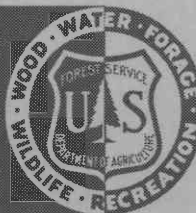


TIMBER RESOURCE STATISTICS

for central oregon
by john m. berger



PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
U.S. DEPT. OF AGRICULTURE • FOREST SERVICE



U. S. FOREST SERVICE
RESOURCE BULLETIN PNW-24

1968

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Acknowledgment is made of the cooperation of the Division of Timber Management, Region 6, U.S. Forest Service, in supplying the field plot data from National Forest lands; of the assistance of the county assessors of the inventoried counties in furnishing ownership information; and of the counties and other public and private agencies in making aerial photography available for photo interpretation.

PREFACE

This publication summarizes the results of the third inventory of the timber resources of nine counties in central Oregon: Crook, Deschutes, Gilliam, Jefferson, Klamath, Lake, Sherman, Wasco, and Wheeler. This block of nine counties is one of 10 such blocks set up in the States of Oregon and Washington by the Forest Survey to facilitate orderly reinventories of the timber resources. Each block will be reinventoried at 10-year intervals and the results published in a single report for the block. The five blocks in Oregon are northwest Oregon, west-central Oregon, southwest Oregon, central Oregon, and eastern Oregon.

The field data for central Oregon were collected for all lands except the National Forests during the summer of 1964; data were summarized as of January 1, 1965. Field data were collected for the Fremont, Malheur, and Winema National Forests and the Crooked River Working Circle of the Ochoco National Forest in 1962. The Deschutes National Forest was inventoried during 1961-62 and the Clackamas-Sandy and East Side Working Circles of the Mount Hood National Forest in 1960. The West Klamath and Rogue Basin Working Circles of the Rogue River National Forest were inventoried during 1957-59. The Burns Working Circle of the Ochoco National Forest was inventoried during 1957-58.

Previous inventories of these counties were made in the years shown below:

<u>County</u>	<u>Initial inventory</u>	<u>First reinventory</u>	<u>Second reinventory</u>
Crook	1936	1952	1964
Deschutes	1934	1953	1964
Jefferson	1934	1953	1964
Klamath	1934	1946	1964
Lake	1934-35	1947	1964
Wasco	1934	1954	1964
Wheeler	1936	1953	1964

The original inventory of central Oregon was conducted during the period 1934-36, and the results were released as a series of pamphlets containing forest statistics for each county. During the period 1946-54, this area was reinventoried and the results issued as a series of separate reports for each county.

Such inventories are a part of the Forest Survey--a nationwide project of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928 and subsequent amendments. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the amount and kind of timber volume on them, to determine rates of forest growth and depletion, to estimate timber cut and probable future trends in timber requirements, and to analyze and make available survey information needed in the formulation of forest policies and programs. Resurveys are made as necessary to keep the basic information up to date.

The Forest Survey is conducted in the various forest regions of the Nation by the Experiment Stations of the U.S. Forest Service. In the States of California, Oregon, Washington, and Alaska, it is the responsibility of the Pacific Northwest Forest and Range Experiment Station at Portland, Oregon.

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CENTRAL OREGON'S FOREST RESOURCE IN BRIEF

COMMERCIAL FOREST LAND--

Totals 6,255,000 acres and is 35 percent of the land area;
Is 70 percent publicly owned and 30 percent private;
Has sawtimber stands on 63 percent of its area; and
Is 39 percent ponderosa pine type, 22 percent lodgepole pine, 35 percent other softwood types, and 4 percent nonstocked.

GROWING-STOCK VOLUME--

Totals 13,849 million cubic feet; 82 percent in four species, ponderosa pine, lodgepole pine, white fir, and Douglas-fir;
Is 80 percent publicly owned and 20 percent private;
Is 83 percent in trees of sawtimber size; and
Is 99 percent softwoods.

SAWTIMBER VOLUME--

Totals 65,032 million board feet, International 1/4-inch rule (57,043 million board feet, Scribner rule);
Is 82 percent publicly owned and 18 percent private; and
Is 36 percent in trees 19.0 to 28.9 inches in diameter and 37 percent in trees over 29.0 inches in diameter.

NATIONAL FOREST OWNERSHIP--

Has 62 percent of the commercial forest area;
Controls 60 percent of the sawtimber area;
Has 46,409 million board feet, International 1/4-inch rule; and
Holds 71 percent of the sawtimber volume.

OTHER PUBLIC OWNERSHIP--

Has 8 percent of the commercial forest area;
Controls 8 percent of the sawtimber area;
Has 6,726 million board feet, International 1/4-inch rule; and
Holds 10 percent of the sawtimber volume.

FOREST INDUSTRY OWNERSHIP--

Has 20 percent of the commercial forest area;
Controls 22 percent of the sawtimber area;
Has 9,539 million board feet, International 1/4-inch rule; and
Holds 15 percent of the sawtimber volume.

FARMER AND MISCELLANEOUS PRIVATE OWNERSHIP--

Has 10 percent of the commercial forest area;
Controls 10 percent of the sawtimber area;
Has 2,358 million board feet, International 1/4-inch rule; and
Holds 4 percent of the sawtimber volume.

NET ANNUAL GROWTH--

Totals 196 million cubic feet (780 million board feet, International 1/4-inch rule; 672 million board feet, Scribner);
Is 1.4 percent of growing-stock volume; and
Is 99.9 percent softwood.

AVERAGE ANNUAL MORTALITY--

Totals 61 million cubic feet (251 million board feet, International 1/4-inch rule; 218 million board feet, Scribner);
Is 0.44 percent of growing-stock volume; and 62 percent occurs on publicly owned land.

AVERAGE ANNUAL CUT OVER THE PAST 5 YEARS--

Has been 827.5 million board feet, Scribner rule, of which 34 percent has been private timber.

Table 1.--Area by land class, by county, central Oregon, January 1, 1965

(In acres)

County	All land ^{1/}	Commercial forest	Productive-reserved forest	Unproductive forest	Total forest	Nonforest
Crook	1,907,000	421,000	--	529,000	950,000	957,000
Deschutes	1,937,000	968,000	42,000	270,000	1,280,000	657,000
Gilliam	774,000	(2/)	--	--	--	774,000
Jefferson	1,148,000	365,000	18,000	223,000	606,000	542,000
Klamath	3,822,000	2,601,000	169,000	257,000	3,027,000	795,000
Lake	5,292,000	1,169,000	13,000	307,000	1,489,000	3,803,000
Sherman	529,000	--	--	--	--	529,000
Wasco	1,525,000	419,000	1,000	130,000	550,000	975,000
Wheeler	1,093,000	312,000	2,000	193,000	507,000	586,000
Total	18,027,000	6,255,000	245,000	1,909,000	8,409,000	3/9,618,000

^{1/} From U.S. Bureau of the Census, Land and Water Area of the United States, 1960.^{2/} Less than 1,000 acres. Included with Wheeler County.^{3/} Includes 85,000 acres of water according to Forest Survey standards of area classification but defined as land by the U.S. Bureau of the Census.

Table 2.--Area of commercial forest land, by ownership class and county, central Oregon, January 1, 1965

(In acres)

Ownership class	Total	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
National Forest	3,897,000	333,000	815,000	135,000	1,454,000	829,000	198,000	133,000
Other Federal:								
Bureau of Land Management	107,000	11,000	24,000	--	59,000	4,000	--	9,000
Indian	295,000	--	--	136,000	--	--	159,000	--
Miscellaneous Federal	5,000	--	--	--	5,000	--	--	--
Total other Federal	407,000	11,000	24,000	136,000	64,000	4,000	159,000	9,000
State	52,000	--	--	--	52,000	--	--	--
County and municipal	1,000	--	1,000	--	--	--	--	--
Total State and county	53,000	--	1,000	--	52,000	--	--	--
Forest industry	1,250,000	57,000	75,000	59,000	701,000	263,000	15,000	80,000
Farmer owned	354,000	20,000	18,000	22,000	115,000	73,000	23,000	83,000
Miscellaneous private	294,000	--	35,000	13,000	215,000	--	24,000	7,000
Total private	1,898,000	77,000	128,000	94,000	1,031,000	336,000	62,000	170,000
All ownerships	6,255,000	421,000	968,000	365,000	2,601,000	1,169,000	419,000	312,000

^{1/} Includes Gilliam County.

Table 3.--Area of commercial forest land, by stand-size and ownership class,
central Oregon, January 1, 1965

(In acres)

Stand-size class	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
Sawtimber stands:					
Old-growth ^{1/}	2,252,000	1,650,000	186,000	339,000	77,000
Young-growth ^{2/}	1,690,000	731,000	140,000	507,000	312,000
Total	3,942,000	2,381,000	326,000	846,000	389,000
Poletimber stands	1,504,000	1,028,000	94,000	232,000	150,000
Sapling and seedling stands	567,000	383,000	22,000	113,000	49,000
Nonstocked areas	242,000	105,000	18,000	59,000	60,000
All classes	6,255,000	3,897,000	460,000	1,250,000	648,000

^{1/} Stands 140 years and older.

^{2/} Stands less than 140 years old.

Table 4.--Area of commercial forest land, by stand volume and ownership class,
central Oregon, January 1, 1965

(In acres)

Stand volume per acre ^{1/}	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
Less than 1,500 board feet	1,360,000	887,000	54,000	190,000	229,000
1,500 to 5,000 board feet	1,495,000	736,000	92,000	440,000	227,000
5,000 to 10,000 board feet	1,223,000	699,000	61,000	303,000	160,000
10,000 to 20,000 board feet	1,181,000	786,000	136,000	227,000	32,000
20,000 to 30,000 board feet	527,000	405,000	57,000	65,000	--
30,000 board feet or more	469,000	384,000	60,000	25,000	--
All classes	6,255,000	3,897,000	460,000	1,250,000	648,000

^{1/} Net volume, International 1/4-inch rule.

Table 5.--Area of commercial forest land, by stocking class of growing-stock trees and by stand-size class, central Oregon, January 1, 1965

(In acres)

Stocking class	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked stands
70 percent or more	4,020,000	2,675,000	1,068,000	277,000	--
40 to 70 percent	1,244,000	792,000	283,000	169,000	--
10 to 40 percent	749,000	475,000	153,000	121,000	--
Less than 10 percent	242,000	--	--	--	242,000
All classes	6,255,000	3,942,000	1,504,000	567,000	242,000

Table 6.--Area of commercial forest land by cubic-foot site class and by ownership class, central Oregon, January 1, 1965

(In acres)

Site class ^{1/}	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
165 cubic feet or more	77,000	--	30,000	47,000	--
120 to 165 cubic feet	156,000	1,000	81,000	61,000	13,000
85 to 120 cubic feet	1,136,000	783,000	59,000	211,000	83,000
50 to 85 cubic feet	4,318,000	2,996,000	232,000	722,000	368,000
20 to 50 cubic feet	568,000	117,000	58,000	209,000	184,000
All classes	6,255,000	3,897,000	460,000	1,250,000	648,000

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

Table 7.--Area of commercial forest land, by forest type and by ownership
class, central Oregon, January 1, 1965

(In acres)

Type	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
Ponderosa pine	2,410,000	1,307,000	170,000	588,000	345,000
Douglas-fir	914,000	685,000	78,000	86,000	65,000
Lodgepole pine	1,392,000	950,000	81,000	260,000	101,000
Spruce--fir	857,000	523,000	77,000	218,000	39,000
Other softwoods	408,000	314,000	32,000	39,000	23,000
Hardwoods	32,000	13,000	4,000	--	15,000
Nonstocked	242,000	105,000	18,000	59,000	60,000
All types	6,255,000	3,897,000	460,000	1,250,000	648,000

Table 8.--Area of noncommercial forest land, by forest type,
central Oregon, January 1, 1965

(In acres)

Type	All areas	Productive- reserved areas	Unproductive areas
Ponderosa pine	64,000	64,000	--
Lodgepole pine	108,000	108,000	--
True fir--mountain hemlock	69,000	69,000	--
Other softwoods ^{1/}	4,000	4,000	--
Subalpine	60,000	--	60,000
Juniper	1,685,000	--	1,685,000
Noncommercial rocky	39,000	--	39,000
Noncommercial other ^{2/}	125,000	--	125,000
All types	2,154,000	245,000	1,909,000

^{1/} Includes Douglas-fir, whitebark pine, nonstocked.

^{2/} Includes bogs, chaparral, oak-madrone, and others.

Table 9.--Volume of all growing stock and sawtimber on commercial forest
land, by county and ownership class, central Oregon,
January 1, 1965

County	Total	National Forest	Other public	Forest industry	Farmer and miscellaneous private
- - - - - <u>Million cubic feet</u> - - - - -					
All growing stock:					
Crook	939	827	28	61	23
Deschutes	1,821	1,637	34	118	32
Jefferson	1,018	396	518	83	21
Klamath	5,397	3,647	261	1,130	359
Lake	2,456	1,744	1	655	56
Wasco	1,636	955	580	32	69
Wheeler ^{1/}	582	377	17	101	87
Total	13,849	9,583	1,439	2,180	647
-- <u>Million board feet, International 1/4-inch rule</u> --					
Sawtimber:					
Crook	5,091	4,765	140	158	28
Deschutes	7,118	6,388	82	522	126
Jefferson	5,249	2,143	2,715	364	27
Klamath	23,983	16,575	1,175	4,784	1,449
Lake	12,450	9,023	7	3,218	202
Wasco	8,375	5,445	2,523	123	284
Wheeler ^{1/}	2,766	2,070	84	370	242
Total	65,032	46,409	6,726	9,539	2,358
- - - - - <u>Million board feet, Scribner rule</u> - - - - -					
Sawtimber:					
Crook	4,551	4,267	128	133	23
Deschutes	6,238	5,605	67	461	105
Jefferson	4,654	1,909	2,405	318	22
Klamath	20,821	14,330	1,032	4,200	1,259
Lake	11,102	8,051	6	2,874	171
Wasco	7,237	4,731	2,176	99	231
Wheeler ^{1/}	2,440	1,852	76	315	197
Total	57,043	40,745	5,890	8,400	2,008

^{1/} Includes Gilliam County.

Table 10.--Number of growing-stock trees on commercial forest land,
by diameter class and by softwoods and hardwoods,
central Oregon, January 1, 1965

(Thousands of trees)

Diameter class (inches d.b.h.)	All species	Softwoods	Hardwoods
5.0 - 6.9	280,284	279,066	1,218
7.0 - 8.9	161,740	160,845	895
9.0 - 10.9	96,261	95,940	321
11.0 - 12.9	52,735	52,659	76
13.0 - 14.9	35,349	35,298	51
15.0 - 16.9	22,737	22,721	16
17.0 - 18.9	16,257	16,248	9
19.0 - 28.9	42,179	42,167	12
29.0 - 38.9	12,412	12,412	--
39.0 and larger	2,658	2,658	--
All classes	722,612	720,014	2,598

Table 11.--Average number of growing-stock trees per acre on commercial
forest land, by diameter and ownership class,
central Oregon, January 1, 1965

Diameter class (inches d.b.h.)	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
5.0 - 6.9	44.8	50.9	39.3	34.1	32.5
7.0 - 8.9	25.8	29.5	27.2	18.4	17.5
9.0 - 10.9	15.3	16.7	19.3	12.6	10.3
11.0 - 12.9	8.4	8.9	10.9	7.0	6.3
13.0 - 14.9	5.6	5.7	8.3	4.9	4.5
15.0 - 16.9	3.6	3.8	5.1	2.9	2.8
17.0 - 18.9	2.5	2.8	3.8	2.1	1.4
19.0 - 28.9	6.7	7.7	9.5	4.9	2.4
29.0 - 38.9	1.9	2.5	2.1	1.3	.2
39.0 and larger	.4	.5	.5	.3	.1
All classes	115.0	129.0	126.0	88.5	78.0

Table 12.--Number of cull and salvable dead trees on commercial forest land,
by diameter class and by softwoods and hardwoods,
central Oregon, January 1, 1965

(Thousands of trees)

Diameter class (inches d.b.h.)	Cull trees	Salvable dead trees
Softwoods:		
5.0 - 10.9	38,725	(1/)
11.0 - 20.9	3,435	2,189
21.0 and larger	1,813	886
Total	43,973	3,075
Hardwoods:		
5.0 - 10.9	3,395	(1/)
11.0 - 20.9	534	16
21.0 and larger	32	--
Total	3,961	16
All species	47,934	3,091

1/ Not applicable.

Table 13.--Volume of timber on commercial forest land, by class of timber and by softwoods
and hardwoods, central Oregon, January 1, 1965

(In million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Sawtimber trees:			
Saw-log portion	10,277	10,274	3
Upper-stem portion	774	774	--
Total	11,051	11,048	3
Poletimber trees	2,798	2,789	9
All growing-stock trees	13,849	13,837	12
Sound cull trees:			
Sawtimber-size	62	57	5
Poletimber-size	159	151	8
Total	221	208	13
Rotten cull trees:			
Sawtimber-size	41	41	(1/)
Poletimber-size	2	2	(1/)
Total	43	43	(1/)
Salvable dead trees:			
Sawtimber-size	177	177	(1/)
Total all timber	14,290	14,265	25

1/ Less than 500,000 cubic feet.

Table 14.--Volume of all growing stock and sawtimber on commercial forest land, by ownership class and by softwoods and hardwoods, central Oregon, January 1, 1965

Timber and ownership class	Average volume per acre	Total volume		
		All species	Softwoods	Hardwoods
	<u>Cubic feet</u>	- - - -	<u>Million cubic feet</u>	- - - -
All growing stock:				
National Forest	2,459	9,583	9,575	8
Other public	3,130	1,439	1,439	--
Forest industry	1,744	2,180	2,179	1
Farmer and miscellaneous private	998	647	644	3
All ownerships	2,214	13,849	13,837	12
	<u>Board feet</u>	- - - -	<u>Million board feet</u>	- - - -
Sawtimber (International 1/4-inch rule):				
National Forest	11,909	46,409	46,392	17
Other public	14,622	6,726	6,726	--
Forest industry	7,633	9,539	9,539	--
Farmer and miscellaneous private	3,636	2,358	2,358	--
All ownerships	10,397	65,032	65,015	17
Sawtimber (Scribner rule):				
National Forest	10,455	40,745	40,728	17
Other public	12,805	5,890	5,890	--
Forest industry	6,722	8,400	8,400	--
Farmer and miscellaneous private	3,096	2,008	2,008	--
All ownerships	9,119	57,043	57,026	17

Table 15.--Volume of all growing stock and sawtimber on commercial forest land, by stand-size class and by softwoods and hardwoods, central Oregon, January 1, 1965

Stand-size class	Average volume per acre	Total volume		
		All species	Softwoods	Hardwoods
	<u>Cubic feet</u>	- - - -	<u>Million cubic feet</u>	- - - -
All growing stock:				
Sawtimber stands	2,907	11,458	11,452	6
Poletimber stands	1,362	2,049	2,044	5
Sapling and seedling stands	561	318	317	1
Nonstocked areas	97	24	24	--
Total	2,214	13,849	13,837	12
	<u>Board feet</u>	- - - -	<u>Million board feet</u>	- - - -
Sawtimber (International 1/4-inch rule):				
Sawtimber stands	15,168	59,791	59,782	9
Poletimber stands	2,635	3,964	3,960	4
Sapling and seedling stands	2,062	1,169	1,165	4
Nonstocked areas	448	108	108	--
Total	10,397	65,032	65,015	17
Sawtimber (Scribner rule):				
Sawtimber stands	13,322	52,515	52,506	9
Poletimber stands	2,267	3,412	3,408	4
Sapling and seedling stands	1,802	1,022	1,018	4
Nonstocked areas	391	94	94	--
Total	9,119	57,043	57,026	17

Table 16.--Volume of growing stock on commercial forest land by species and ownership

class, central Oregon, January 1, 1965

(In million cubic feet)

Species	All ownerships	National Forest	Other public	Forest industry	Farmer and miscel- laneous private
Softwoods:					
Ponderosa pine	5,603	3,741	387	1,087	388
Douglas-fir	1,574	869	384	219	102
Sugar pine	73	45	3	21	4
Western white pine	126	108	11	7	--
Lodgepole pine	2,334	1,774	128	338	94
Whitebark pine	21	18	3	--	--
White fir	1,843	1,317	86	402	38
California-Shasta red fir	435	416	--	19	--
Grand fir	182	--	148	22	12
Pacific silver fir	101	66	35	--	--
Noble fir	111	93	18	--	--
Subalpine fir	87	85	2	--	--
Engelmann spruce	160	53	106	1	--
Mountain hemlock	825	759	66	--	--
Western hemlock	126	110	16	--	--
Incense-cedar	113	33	14	60	6
Western redcedar	14	7	7	--	--
Western larch	109	81	25	3	--
Total softwoods	13,837	9,575	1,439	2,179	644
Total hardwoods	12	8	--	1	3
Total all species	13,849	9,583	1,439	2,180	647

Table 17.--Volume of sawtimber on commercial forest land by species and ownership class,

central Oregon, January 1, 1965 (International 1/4-inch rule)

(In million board feet)

Species	All ownerships	National Forest	Other public	Forest industry	Farmer and miscel- laneous private
Softwoods:					
Ponderosa pine	31,851	22,935	2,022	5,360	1,534
Douglas-fir	8,547	5,199	1,967	1,032	349
Sugar pine	384	257	15	102	10
Western white pine	707	615	54	38	--
Lodgepole pine	4,900	3,379	330	919	272
Whitebark pine	56	52	4	--	--
White fir	8,062	5,846	407	1,677	132
California-Shasta red fir	2,350	2,270	--	80	--
Grand fir	725	--	600	83	42
Pacific silver fir	334	246	88	--	--
Noble fir	537	462	75	--	--
Subalpine fir	289	282	7	--	--
Engelmann spruce	899	267	632	--	--
Mountain hemlock	3,568	3,267	301	--	--
Western hemlock	707	637	70	--	--
Incense-cedar	452	143	53	237	19
Western redcedar	65	39	26	--	--
Western larch	582	496	75	11	--
Total softwoods	65,015	46,392	6,726	9,539	2,358
Total hardwoods	17	17	--	--	--
Total all species	65,032	46,409	6,726	9,539	2,358

Table 18.--Volume of sawtimber on commercial forest land by species and ownership

class, central Oregon, January 1, 1965

(In million board feet)

Species	All ownerships	National Forest	Other public	Forest industry	Farmer and miscel- laneous private
Softwoods:					
Ponderosa pine	28,598	20,662	1,817	4,785	1,334
Douglas-fir	7,517	4,600	1,732	904	281
Sugar pine	344	232	13	90	9
Western white pine	606	519	51	36	--
Lodgepole pine	3,964	2,725	267	749	223
Whitebark pine	47	43	4	--	--
White fir	7,093	5,143	360	1,479	111
California-Shasta red fir	1,854	1,783	--	71	--
Grand fir	613	--	508	70	35
Pacific silver fir	277	207	70	--	--
Noble fir	455	389	66	--	--
Subalpine fir	248	243	5	--	--
Engelmann spruce	786	228	558	--	--
Mountain hemlock	3,080	2,828	252	--	--
Western hemlock	601	540	61	--	--
Incense-cedar	391	123	46	207	15
Western redcedar	55	34	21	--	--
Western larch	497	429	59	9	--
Total softwoods	57,026	40,728	5,890	8,400	2,008
Total hardwoods	17	17	--	--	--
Total all species	57,043	40,745	5,890	8,400	2,008

Table 19.--Volume of growing stock on commercial forest land, by species and

diameter class, central Oregon, January 1, 1965

(In million cubic feet)

Species	Diameter class (inches at breast height)										
	All classes	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- 28.9	29.0- 38.9	39.0 & larger
Softwoods:											
Ponderosa pine	5,603	154	153	190	201	262	289	316	2,005	1,512	521
Douglas-fir	1,574	54	74	83	81	96	76	83	404	324	299
Sugar pine	73	2	2	2	3	1	6	4	18	17	18
Western white pine	126	3	5	7	7	7	8	8	44	29	8
Lodgepole pine	2,334	344	507	521	377	269	150	85	78	3	--
Whitebark pine	21	3	4	3	3	2	4	1	1	--	--
White fir	1,843	96	111	133	128	132	125	133	586	322	77
California-Shasta red fir	435	6	8	12	10	13	19	21	145	145	56
Grand fir	182	16	19	12	15	17	20	19	49	15	--
Pacific silver fir	101	9	12	16	10	10	9	12	19	4	--
Noble fir	111	6	7	7	6	6	8	7	37	21	6
Subalpine fir	87	5	11	11	12	10	12	8	17	1	--
Engelmann spruce	160	3	3	5	7	6	11	15	79	29	2
Mountain hemlock	825	23	41	63	65	79	89	90	285	74	16
Western hemlock	126	3	3	5	6	7	11	11	61	14	5
Incense-cedar	113	3	3	3	3	2	5	5	50	25	14
Western redcedar	14	1	--	1	--	1	1	1	8	1	--
Western larch	109	4	9	9	8	12	7	7	38	10	5
Total softwoods	13,837	735	972	1,083	942	932	850	826	3,924	2,546	1,027
Total hardwoods	12	3	3	2	1	2	--	--	1	--	--
Total all species	13,849	738	975	1,085	943	934	850	826	3,925	2,546	1,027

Table 20.--Volume of sawtimber on commercial forest land, by species and diameter class,central Oregon, January 1, 1965 (International 1/4-inch rule)

(In million board feet)

Species	Diameter class (inches at breast height)							
	All classes	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-28.9	29.0-38.9	39.0 & larger
Softwoods:								
Ponderosa pine	31,851	944	1,215	1,433	1,690	12,306	10,473	3,790
Douglas-fir	8,547	386	475	396	457	2,471	2,200	2,162
Sugar pine	384	10	4	29	20	103	103	115
Western white pine	707	36	39	48	48	283	199	54
Lodgepole pine	4,900	1,762	1,371	815	478	454	20	--
Whitebark pine	56	13	11	19	7	6	--	--
White fir	8,062	591	644	632	697	3,249	1,823	426
California-Shasta red fir	2,350	47	62	93	103	811	883	351
Grand fir	725	78	87	100	107	271	82	--
Pacific silver fir	334	45	46	48	64	105	26	--
Noble fir	537	24	29	40	35	225	143	41
Subalpine fir	289	48	44	56	40	93	8	--
Engelmann spruce	899	35	32	56	85	494	182	15
Mountain hemlock	3,568	272	363	432	451	1,535	420	95
Western hemlock	707	31	38	60	64	378	101	35
Incense-cedar	452	14	9	22	20	215	108	64
Western redcedar	65	5	3	4	4	42	7	--
Western larch	582	41	65	40	44	268	81	43
Total softwoods	65,015	4,382	4,537	4,323	4,414	23,309	16,859	7,191
Total hardwoods	17	4	4	2	2	5	--	--
Total all species	65,032	4,386	4,541	4,325	4,416	23,314	16,859	7,191

Table 21.--Volume of sawtimber on commercial forest land, by species and diameter class,central Oregon, January 1, 1965 (Scribner rule)

(In million board feet)

Species	Diameter class (inches at breast height)							
	All classes	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-28.9	29.0-38.9	39.0 & larger
Softwoods:								
Ponderosa pine	28,598	704	976	1,209	1,469	11,118	9,636	3,486
Douglas-fir	7,517	265	367	325	390	2,200	1,998	1,972
Sugar pine	344	7	3	24	17	91	95	107
Western white pine	606	25	30	41	41	247	173	49
Lodgepole pine	3,964	1,289	1,113	700	426	417	19	--
Whitebark pine	47	10	9	16	6	6	--	--
White fir	7,093	453	534	544	611	2,919	1,647	385
California-Shasta red fir	1,854	43	57	83	90	656	666	259
Grand fir	613	52	68	84	92	242	75	--
Pacific silver fir	277	32	35	39	52	94	25	--
Noble fir	455	17	22	32	29	193	126	36
Subalpine fir	248	38	37	48	36	82	7	--
Engelmann spruce	786	26	26	48	74	441	160	11
Mountain hemlock	3,080	209	303	374	396	1,348	366	84
Western hemlock	601	21	29	49	54	328	88	32
Incense-cedar	391	9	6	17	16	187	97	59
Western redcedar	55	3	2	4	3	37	6	--
Western larch	497	27	50	32	37	238	74	39
Total softwoods	57,026	3,230	3,667	3,669	3,839	20,844	15,258	6,519
Total hardwoods	17	4	4	2	2	5	--	--
Total all species	57,043	3,234	3,671	3,671	3,841	20,849	15,258	6,519

Table 22.--Volume of all growing stock on commercial forest land, by species
and county, central Oregon, January 1, 1965
(In million cubic feet)

Species	Total	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
Softwoods:								
Ponderosa pine	5,603	660	692	459	1,850	1,441	246	255
Douglas-fir	1,574	144	18	227	372	--	647	166
Sugar pine	73	--	--	--	66	7	--	--
Western white pine	126	--	15	4	70	14	23	--
Lodgepole pine	2,334	6	604	28	1,307	348	23	18
Whitebark pine	21	--	9	3	4	5	(2/)	--
White fir	1,843	95	130	74	703	580	174	87
California-Shasta red fir	435	--	(2/)	--	430	5	--	--
Grand fir	182	1	13	53	6	1	104	4
Pacific silver fir	101	--	1	21	14	--	65	--
Noble fir	111	--	12	--	27	1	71	--
Subalpine fir	87	--	39	8	37	--	1	2
Engelmann spruce	160	(2/)	10	102	27	--	11	10
Mountain hemlock	825	--	278	16	421	7	103	--
Western hemlock	126	--	--	(2/)	6	--	120	--
Incense-cedar	113	--	--	15	56	40	2	--
Western redcedar	14	--	--	--	--	--	14	--
Western larch	109	32	--	8	--	--	29	40
Total softwoods	13,837	938	1,821	1,018	5,396	2,449	1,633	582
Total hardwoods	12	1	--	--	1	7	3	--
Total all species	13,849	939	1,821	1,018	5,397	2,456	1,636	582

^{1/} Includes Gilliam County.

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

Table 23 --Volume of sawtimber on commercial forest land, by species and county,
central Oregon, January 1, 1965 (International 1/4-inch rule)
(In million board feet)

Species	Total	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
Softwoods:								
Ponderosa pine	31,851	3,856	4,006	2,587	10,033	8,637	1,309	1,423
Douglas-fir	8,547	657	108	1,214	2,229	--	3,638	701
Sugar pine	384	--	--	--	345	39	--	--
Western white pine	707	--	76	29	410	79	113	--
Lodgepole pine	4,900	9	985	68	2,918	865	38	17
Whitebark pine	56	--	25	5	13	13	--	--
White fir	8,062	365	478	323	3,147	2,596	832	321
California-Shasta red fir	2,350	--	1	--	2,325	24	--	--
Grand fir	725	4	50	195	31	7	426	12
Pacific silver fir	334	--	1	69	57	--	207	--
Noble fir	537	--	55	--	129	2	351	--
Subalpine fir	289	--	105	19	155	--	4	6
Engelmann spruce	899	2	40	608	148	--	52	49
Mountain hemlock	3,568	--	1,187	63	1,790	28	500	--
Western hemlock	707	--	--	(2/)	21	--	686	--
Incense-cedar	452	--	--	53	232	157	10	--
Western redcedar	65	--	--	--	--	--	65	--
Western larch	582	195	--	16	--	--	134	237
Total softwoods	65,015	5,088	7,117	5,249	23,983	12,447	8,365	2,766
Total hardwoods	17	3	1	--	--	3	10	--
Total all species	65,032	5,091	7,118	5,249	23,983	12,450	8,375	2,766

^{1/} Includes Gilliam County.

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

Table 24.--Volume of sawtimber on commercial forest land, by species and county,

central Oregon, January 1, 1965 (Scribner rule)

(In million board feet)

Species	Total	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
Softwoods:								
Ponderosa pine	28,598	3,490	3,620	2,337	8,891	7,804	1,171	1,285
Douglas-fir	7,517	569	97	1,083	1,995	--	3,172	601
Sugar pine	344	--	--	--	308	36	--	--
Western white pine	606	--	66	25	344	72	99	--
Lodgepole pine	3,964	7	780	50	2,377	708	28	14
Whitebark pine	47	--	21	4	11	11	--	--
White fir	7,093	308	407	279	2,826	2,276	723	274
California-Shasta red fir	1,854	--	1	--	1,832	21	--	--
Grand fir	613	3	43	161	28	6	364	8
Pacific silver fir	277	--	1	58	56	--	162	--
Noble fir	455	--	45	--	110	1	299	--
Subalpine fir	248	--	88	15	137	--	3	5
Engelmann spruce	786	2	35	537	123	--	42	47
Mountain hemlock	3,080	--	1,033	46	1,568	25	408	--
Western hemlock	601	--	--	(2/)	17	--	584	--
Incense-cedar	391	--	--	46	198	139	8	--
Western redcedar	55	--	--	--	--	--	55	--
Western larch	497	169	--	13	--	--	109	206
Total softwoods	57,026	4,548	6,237	4,654	20,821	11,099	7,227	2,440
Total hardwoods	17	3	1	--	--	3	10	--
Total all species	57,043	4,551	6,238	4,654	20,821	11,102	7,237	2,440

^{1/} Includes Gilliam County.^{2/} Less than 500,000 board feet.

Table 25.--Volume of sawtimber on commercial forest land, by species and log grades, for lands

other than National Forest, central Oregon, January 1, 1965

(In thousand board feet)

Species	All grades	Log grades ^{1/}				
		1	2	3	4	5
Softwoods (International 1/4-inch rule):						
Ponderosa pine	8,825,856	368,230	705,526	1,791,074	216,969	5,744,057
Douglas-fir	3,333,004	545,585	1,675,068	1,112,351	--	--
Total	12,158,860	913,815	2,380,594	2,903,425	216,969	5,744,057
Softwoods (Scribner rule):						
Ponderosa pine	7,853,560	339,003	645,258	1,635,621	183,693	5,049,985
Douglas-fir	2,905,378	476,191	1,433,995	995,192	--	--
Total	10,758,938	815,194	2,079,253	2,630,813	183,693	5,049,985

^{1/} See "Log Grades," page 32.

Table 26.--Net annual growth of all growing stock and sawtimber on commercial forest land, by species and ownership class, central Oregon, 1964

Species	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
GROWING STOCK - - - - - <u>Thousand cubic feet</u> - - - - -					
Softwoods:					
Ponderosa pine	74,010	36,275	6,306	18,649	12,780
Douglas-fir	23,404	6,485	6,569	4,758	5,592
Lodgepole pine	41,310	33,627	3,046	5,353	1/-716
Other softwoods	57,277	35,401	9,267	11,260	1,349
Total softwoods	196,001	111,788	25,188	40,020	19,005
Total hardwoods	87	99	--	38	1/-50
Total all species	196,088	111,887	25,188	40,058	18,955
SAWTIMBER - <u>Thousand board feet, International 1/4-inch rule</u> -					
Softwoods:					
Ponderosa pine	342,441	185,177	24,183	76,052	57,029
Douglas-fir	72,714	21,520	22,726	10,327	18,141
Lodgepole pine	120,760	64,824	9,622	35,850	10,464
Other softwoods	243,601	166,427	42,192	30,143	4,839
Total softwoods	779,516	437,948	98,723	152,372	90,473
Total hardwoods	210	210	--	--	--
Total all species	779,726	438,158	98,723	152,372	90,473
SAWTIMBER - - - - <u>Thousand board feet, Scribner rule</u> - - - -					
Softwoods:					
Ponderosa pine	297,732	163,110	21,499	65,923	47,200
Douglas-fir	62,937	19,001	20,050	9,728	14,158
Lodgepole pine	100,309	57,327	7,912	27,040	8,030
Other softwoods	210,848	145,379	35,370	26,361	3,738
Total softwoods	671,826	384,817	84,831	129,052	73,126
Total hardwoods	188	188	--	--	--
Total all species	672,014	385,005	84,831	129,052	73,126

^{1/} Negative growth is result of annual mortality exceeding annual growth.

Table 27.--Net annual growth of all growing stock and sawtimber on commercial forest
land, by species and county, central Oregon, 1964

Species	All counties	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
GROWING STOCK - - - - - <u>Thousand cubic feet</u> - - - - -								
Softwoods:								
Ponderosa pine	74,010	8,021	10,803	7,296	30,263	10,557	3,029	4,041
Douglas-fir	23,404	3,245	82	2,462	3,243	--	8,244	6,128
Lodgepole pine	41,310	155	13,623	604	22,501	3,555	426	446
Other softwoods	57,277	2,072	4,303	5,247	23,585	9,279	10,764	2,027
Total softwoods	196,001	13,493	28,811	15,609	79,592	23,391	22,463	12,642
Total hardwoods	87	--	--	--	-38	26	99	--
Total all species	196,088	13,493	28,811	15,609	79,554	23,417	22,562	12,642
SAWTIMBER - - - - - <u>Thousand board feet, International 1/4-inch rule</u> - - - - -								
Softwoods:								
Ponderosa pine	342,441	26,323	43,874	23,815	147,597	71,977	8,465	20,390
Douglas-fir	72,714	4,864	2/-49	9,024	5,597	--	38,739	14,539
Lodgepole pine	120,760	370	21,051	3,903	88,454	5,109	930	943
Other softwoods	243,601	5,230	21,924	20,329	102,579	32,061	57,646	3,832
Total softwoods	779,516	36,787	86,800	57,071	344,227	109,147	105,780	39,704
Total hardwoods	210	54	--	--	--	--	156	--
Total all species	779,726	36,841	86,800	57,071	344,227	109,147	105,936	39,704
SAWTIMBER - - - - - <u>Thousand board feet, Scribner rule</u> - - - - -								
Softwoods:								
Ponderosa pine	297,732	23,063	37,921	21,492	127,613	62,740	7,480	17,423
Douglas-fir	62,937	4,410	2/-43	7,724	5,246	--	33,169	12,431
Lodgepole pine	100,309	331	18,665	2,921	71,371	5,339	838	844
Other softwoods	210,848	4,685	18,911	16,976	88,483	28,547	49,656	3,590
Total softwoods	671,826	32,489	75,454	49,113	292,713	96,626	91,143	34,288
Total hardwoods	188	49	--	--	--	--	139	--
Total all species	672,014	32,538	75,454	49,113	292,713	96,626	91,282	34,288

^{1/} Includes Gilliam County.

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

Table 28.--Net annual growth of all growing stock and sawtimber on commercial forest land, by forest type and ownership class, central Oregon, 1964

Forest type	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
- - - <u>Thousand cubic feet</u> - - - - -					
All growing stock:					
Ponderosa pine	86,302	42,957	7,431	21,399	14,515
Douglas-fir	22,066	7,950	5,024	2,848	6,244
Lodgepole pine	37,960	28,813	4,110	5,544	<u>1/</u> -507
True firs	40,730	24,607	6,737	9,165	221
Other softwoods	10,514	7,427	1,832	1,048	207
Hardwoods	<u>1/</u> 167	29	54	54	30
Nonstocked	<u>1/</u> -1,651	104	--	--	<u>1/</u> -1,755
All types	196,088	111,887	25,188	40,058	18,955
- - <u>Thousand board feet, International 1/4-inch rule</u> - -					
Sawtimber:					
Ponderosa pine	359,968	189,187	29,017	82,216	59,548
Douglas-fir	73,961	31,807	18,688	4,275	19,191
Lodgepole pine	120,349	64,173	9,657	34,109	<u>1/</u> 12,410
True firs	179,417	118,091	33,176	28,320	<u>1/</u> -170
Other softwoods	48,094	34,421	8,185	3,131	2,357
Hardwoods	<u>1/</u> 763	257	--	321	<u>1/</u> 185
Nonstocked	<u>1/</u> -2,826	222	--	--	<u>1/</u> -3,048
All types	779,726	438,158	98,723	152,372	90,473
- - - - <u>Thousand board feet, Scribner rule</u> - - - - -					
Sawtimber:					
Ponderosa pine	313,494	167,600	25,707	71,342	48,845
Douglas-fir	64,920	27,996	17,582	4,301	15,041
Lodgepole pine	99,425	56,192	7,900	25,541	<u>1/</u> 9,792
True firs	153,183	102,907	25,877	24,550	<u>1/</u> -151
Other softwoods	42,545	29,886	7,765	3,024	1,870
Hardwoods	<u>1/</u> 690	228	--	294	168
Nonstocked	<u>1/</u> -2,243	196	--	--	<u>1/</u> -2,439
All types	672,014	385,005	84,831	129,052	73,126

1/ Negative growth is result of annual mortality exceeding annual growth.

Table 29.--Net annual growth of all growing stock and sawtimber on commercial forest land,
by forest type and county, central Oregon, 1964

Forest type	All counties	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
----- <u>Thousand cubic feet</u> -----								
All growing stock:								
Ponderosa pine	86,302	10,718	11,883	7,899	31,923	16,905	3,109	3,865
Douglas-fir	22,066	1,348	72	1,858	2,395	--	10,156	6,237
Lodgepole pine	37,960	70	12,246	2,047	19,785	3,354	216	242
True firs	40,730	1,014	2,628	3,574	21,508	3,869	6,408	1,729
Other softwoods	10,514	343	1,913	228	3,794	1,107	2,560	569
Hardwoods	^{2/} 167	--	--	--	54	--	113	--
Nonstocked	^{2/} -1,651	--	69	3	95	^{2/} -1,818	--	--
All types	196,088	13,493	28,811	15,609	79,554	23,417	22,562	12,642
----- <u>Thousand board feet, International 1/4-inch rule</u> -----								
Sawtimber:								
Ponderosa pine	359,968	28,480	44,638	25,057	147,829	85,901	11,579	16,484
Douglas-fir	73,961	4,443	^{2/} -84	6,312	6,267	--	45,897	11,126
Lodgepole pine	120,349	179	23,275	4,784	88,762	2,060	513	776
True firs	179,417	2,016	10,453	18,597	85,470	21,379	34,601	6,901
Other softwoods	48,094	1,660	8,422	2,321	15,154	3,061	13,059	4,417
Hardwoods	763	63	--	--	321	92	287	--
Nonstocked	^{2/} -2,826	--	96	--	424	^{2/} -3,346	--	--
All types	779,726	36,841	86,800	57,071	334,227	109,147	105,936	39,704
----- <u>Thousand board feet, Scribner rule</u> -----								
Sawtimber:								
Ponderosa pine	313,494	25,039	38,515	22,787	127,361	75,313	9,857	14,622
Douglas-fir	64,920	3,981	^{2/} -74	5,916	5,624	--	39,903	9,570
Lodgepole pine	99,425	160	20,617	3,723	71,958	1,822	451	694
True firs	153,183	1,805	8,909	14,415	73,893	19,244	29,165	5,752
Other softwoods	42,545	1,497	7,403	2,272	13,198	2,876	11,649	3,650
Hardwoods	690	56	--	--	294	83	257	--
Nonstocked	^{2/} -2,243	--	84	--	385	^{2/} -2,712	--	--
All types	672,014	32,538	75,454	49,113	292,713	96,626	91,282	34,288

^{1/} Includes Gilliam County.

^{2/} Negative growth is a result of  annual mortality exceeding  annual growth.

Table 30.--Average annual mortality of growing stock and sawtimber on commercial forest land, by species and ownership class, central Oregon, 1959-64

Species	Total	National Forest	Other public	Forest industry	Farmer and miscellaneous private
GROWING STOCK - - - - - <u>Thousand cubic feet</u> - - - - -					
Softwoods:					
Ponderosa pine	16,406	8,688	570	4,452	2,696
Douglas-fir	6,975	4,256	1,221	1,365	133
Lodgepole pine	16,527	6,337	919	5,511	3,760
Other softwoods	20,495	13,111	2,292	3,933	1,159
Total softwoods	60,403	32,392	5,002	15,261	7,748
Total hardwoods	260	108	--	--	152
Total all species	60,663	32,500	5,002	15,261	7,900
SAWTIMBER - <u>Thousand board feet, International 1/4-inch rule</u> -					
Softwoods:					
Ponderosa pine	78,907	51,571	2,935	18,184	6,217
Douglas-fir	40,041	27,236	5,167	6,948	690
Lodgepole pine	39,105	15,888	2,730	16,018	4,469
Other softwoods	92,425	64,744	6,440	16,924	4,317
Total softwoods	250,478	159,439	17,272	58,074	15,693
Total hardwoods	198	198	--	--	--
Total all species	250,676	159,637	17,272	58,074	15,693
SAWTIMBER - - - - - <u>Thousand board feet, Scribner rule</u> - - - - -					
Softwoods:					
Ponderosa pine	71,227	46,619	2,642	16,369	5,597
Douglas-fir	36,087	24,566	4,649	6,251	621
Lodgepole pine	31,914	12,941	2,231	13,090	3,652
Other softwoods	78,858	55,243	5,516	14,582	3,517
Total softwoods	218,086	139,369	15,038	50,292	13,387
Total hardwoods	190	190	--	--	--
Total all species	218,276	139,559	15,038	50,292	13,387

Table 31.--Average annual mortality of growing stock and sawtimber on commercial
forest land, by species and county, central Oregon, 1959-64

Species	Total	Crook	Deschutes	Jefferson	Klamath	Lake	Wasco	Wheeler ^{1/}
GROWING STOCK - - - - - Thousand cubic feet - - - - -								
Softwoods:								
Ponderosa pine	16,406	1,556	1,343	711	4,110	7,040	1,324	322
Douglas-fir	6,975	663	120	1,380	1,918	--	2,039	855
Lodgepole pine	16,527	22	2,041	326	10,081	3,981	56	20
Other softwoods	20,495	808	1,702	1,933	8,592	3,556	3,082	822
Total softwoods	60,403	3,049	5,206	4,350	24,701	14,577	6,501	2,019
Total hardwoods	260	38	--	--	38	184	--	--
Total all species	60,663	3,087	5,206	4,350	24,739	14,761	6,501	2,019
SAWTIMBER - - - - - Thousand board feet, International 1/4-inch rule - - - - -								
Softwoods:								
Ponderosa pine	78,907	8,885	8,571	3,952	19,714	29,794	7,171	820
Douglas-fir	40,041	2,681	804	7,743	11,627	--	11,904	5,282
Lodgepole pine	39,105	60	3,933	1,120	20,312	13,509	171	--
Other softwoods	92,425	4,289	6,599	6,999	41,194	15,803	13,678	3,863
Total softwoods	250,478	15,915	19,907	19,814	92,847	59,106	32,924	9,965
Total hardwoods	198	106	--	--	--	92	--	--
Total all species	250,676	16,021	19,907	19,814	92,847	59,198	32,924	9,965
SAWTIMBER - - - - - Thousand board feet, Scribner rule - - - - -								
Softwoods:								
Ponderosa pine	70,259	8,048	7,844	3,576	17,269	26,359	6,477	686
Douglas-fir	35,762	2,316	721	7,176	10,376	--	10,664	4,509
Lodgepole pine	32,144	44	3,133	814	16,910	11,144	99	--
Other softwoods	79,921	3,675	5,765	5,969	35,197	14,181	11,778	3,356
Total softwoods	218,086	14,083	17,463	17,535	79,752	51,684	29,018	8,551
Total hardwoods	190	102	--	--	--	88	--	--
Total all species	218,276	14,185	17,463	17,535	79,752	51,772	29,018	8,551

^{1/} Includes Gilliam County.

Table 32.--Average annual mortality of growing stock and sawtimber on commercial forest land, by cause of death and by softwoods and hardwoods, central Oregon, 1959-64

Species	Cause of death					
	Fire	Insects	Disease	Other	Unknown	All causes
- - - - - <u>Thousand cubic feet</u> - - - - -						
Growing stock:						
Softwoods	4,822	20,625	5,180	17,354	12,422	60,403
Hardwoods	38	--	--	222	--	260
Total	4,860	20,625	5,180	17,576	12,422	60,663
- - - <u>Thousand board feet, International 1/4-inch rule</u> - - -						
Sawtimber:						
Softwoods	5,986	101,268	23,141	67,056	53,027	250,478
Hardwoods	--	--	--	198	--	198
Total	5,986	101,268	23,141	67,254	53,027	250,676
- - - - - <u>Thousand board feet, Scribner rule</u> - - - - -						
Sawtimber:						
Softwoods	4,887	88,478	19,769	58,517	46,435	218,086
Hardwoods	--	--	--	190	--	190
Total	4,887	88,478	19,769	58,707	46,435	218,276

Table 33.--Volume of salvable dead sawtimber-size trees on commercial forest land, by ownership class and by softwoods and hardwoods, central Oregon, January 1, 1965

Ownership class	All species	Softwoods	Hardwoods
<u>----- Million cubic feet -----</u>			
National Forest	106	106	(1/)
Other public	29	29	--
Forest industry	30	30	--
Farmer and miscellaneous private	12	12	--
All ownerships	177	177	(1/)
<u>- Million board feet, International 1/4-inch rule -</u>			
National Forest	658	657	1
Other public	142	142	--
Forest industry	150	150	--
Farmer and miscellaneous private	59	59	--
All ownerships	1,009	1,008	1
<u>----- Million board feet, Scribner rule -----</u>			
National Forest	575	574	1
Other public	126	126	--
Forest industry	133	133	--
Farmer and miscellaneous private	53	53	--
All ownerships	887	886	1

1/ Less than 500,000 cubic feet.

Table 34.--Timber harvest, by ownership class, centralOregon, 1950-64 (Scribner rule)

(In thousand board feet)

Year ^{1/}	Total	Private	State	National Forest	Other public ^{2/}
1950	681,838	256,338		289,500	136,000
1951	814,628	405,528		251,100	158,000
1952	681,828	291,239		275,000	115,589
1953	772,355	340,276		318,300	113,779
1954	752,176	332,584		321,200	98,392
1955	849,595	405,648		310,550	133,397
1956	875,606	314,205		385,000	176,401
1957	680,966	278,575		340,200	62,191
1958	773,417	269,237	1,094	284,005	219,081
1959	887,942	280,831	--	510,984	96,127
1960	824,086	345,192	472	372,348	106,074
1961	728,721	236,114	1,651	439,503	51,453
1962	786,923	272,444	1,380	460,400	52,699
1963	809,788	262,176	1,400	465,200	81,012
1964	988,035	313,301	2,379	562,400	109,955

Source: Reports of the State Forester; U.S. Bureau of Land Management; U.S. Bureau of Indian Affairs; and Division of Timber Management, Region 6, U.S. Forest Service.

^{1/} For the years 1950-57, data for private and State ownerships were not separated.

^{2/} For the years 1950-55 timber harvest data for the Bureau of Land Management were included with State and private.

ACCURACY OF THE CURRENT INVENTORY DATA

Forest-Land Area and Timber Volume

The estimates of forest-land area and timber volume in central Oregon were derived by sampling and consequently have sampling error. Sampling errors have been computed for the estimates of commercial forest-land area, noncommercial forest-land area, net cubic-foot volume of growing-stock volume, and net board-foot volume (International 1/4-inch rule) of sawtimber. These are presented in table 35 as a percent of the estimated total at the 68-percent and 95-percent probability levels. They may be interpreted as meaning that the odds are two out of three for 68-percent probability, or 19 out of 20 for 95-percent probability; that had a 100-percent inventory been taken using the same methods, the results would have been within the ranges shown. For example, the estimate of total commercial forest-land area from a 100-percent inventory would be expected to fall within plus or minus 0.7 percent of 6,255,000 acres, unless a one in three chance of sampling has occurred.

Table 35.--Sampling errors of estimates of forest area
and timber volume

Item	Estimated totals	Sampling error in percent	
		68-percent probability	95-percent probability
Commercial forest land.....acres..	6,255,000	+0.7	+1.4
Noncommercial forest land.....acres..	2,154,000	+2.2	+4.3
Volume:			
Growing stock.....MM cu. ft..	13,849	+1.8	+3.5
Sawtimber (International 1/4-inch rule).....MM bd. ft..	65,032	+2.2	+4.2

In addition to measurable sampling errors, there may be other nonsampling errors due to mistakes in judgment, measurement, and compilation. The magnitude of errors from these sources cannot be determined. However, such errors are kept to a minimum through training, supervision, field checking, and complete editing and machine verification in compiling the data.

The sampling error of any breakdown of these totals will be substantially greater than for the total. The smaller the breakdown, the larger the sampling error. An approximation of the increasing sampling error for the smaller breakdowns can be obtained from table 36, which shows the sampling error to which the estimates are liable, two chances out of three.

Table 36.--Approximate sampling error by size of estimate

Forest area	Sampling error ^{1/}	Cubic volume	Sampling error ^{1/}	Sawtimber volume	Sampling error ^{1/}
<u>M acres</u>	<u>Percent</u>	<u>MM cu. ft.</u>	<u>Percent</u>	<u>MM bd. ft., International 1/4-inch rule</u>	<u>Percent</u>
6,255	0.7				
3,065	1.0	13,849	1.8		
765	2.0	11,300	2.0	65,032	2.2
341	3.0	4,996	3.0	34,960	3.0
191	4.0	2,810	4.0	19,665	4.0
123	5.0	1,799	5.0	12,586	5.0
31	10.0	450	10.0	3,146	10.0
14	15.0	200	15.0	2,517	15.0
8	20.0	112	20.0	787	20.0
5	25.0	72	25.0	503	25.0
3	30.0	50	30.0	350	30.0
		28	40.0	196	40.0
		18	50.0	125	50.0
		5	100.0	31	100.0

^{1/} By random sampling formula; 68-percent probability.

COMPARISON WITH PREVIOUS INVENTORIES

Tables 37 and 38 present area and volume statistics as reported for three successive Forest Survey inventories in central Oregon. Some of the differences between inventories are due to actual physical changes such as cutting and growth of stands, restocking of forest lands, and the shift of forest land to other uses. Some differences are due to sampling and technique errors and some to changes in definitions and standards of utilization. The latter differences complicate direct comparison of the statistics.

Area.--Although total forest-land area as shown in table 37 has decreased 3.5 percent or 270,000 acres since the first reinventory of 1945-54, this decrease is not all real change. It is due, in part, to changes in definition of land classes between the two inventory periods, 1945-54 and 1964. Acreage figures during the first reinventory were obtained from type maps with a minimum type acreage of 40 acres. Thus, a type island of commercial forest land, 40 acres or larger in size, could contain a large number of 1-acre noncommercial or nonforest areas. The area figures for the 1964 inventory, on the other hand, are based on a minimum area of 1 acre. Some change is also due to expansion of powerline and road right-of-ways and to conversion of some fringe forest areas to agriculture and grazing.

The 46,000-acre reduction in noncommercial productive-reserved forest land is due to reclassification of Waldo Lakes Limited Area in Deschutes County and the Sky Lakes Limited Area in Klamath County from reserved to available.

Table 37.--Comparison of forest area statistics for central Oregon

(In acres)

Land class	Initial inventory 1934-36	First reinventory 1945-54	Current inventory 1964
Commercial forest	6,565,000	6,337,000	6,255,000
Noncommercial forest:			
Productive-reserved	221,000	291,000	245,000
Unproductive	1,295,000	2,051,000	1,909,000
Total	1,516,000	2,342,000	2,154,000
Total forest	8,081,000	8,679,000	8,409,000
Total nonforest	8,371,000	8,063,000	8,315,000
Total all land	16,452,000	16,742,000	16,724,000

Volume.--The results of the 1964 inventory for the nine counties as a whole cannot be compared with the previous inventory for this group of counties made during the period 1945-54. This is due primarily to substantial differences between the techniques, definitions, and standards used in the 1964 inventory of Klamath County compared to those used in preparing the previous estimate in 1946, which was based largely on the earlier 1934 estimate.

Table 38.--Comparison of sawtimber and growing-stock volumestatistics for central Oregon

Species	Initial inventory 1934-36	First reinventory 1945-54	Current inventory 1964
GROWING STOCK - - - - - <u>Million cubic feet</u> - - - - -			
Softwoods:			
Ponderosa pine	--	6,023	5,603
Douglas-fir	--	1,404	1,574
White fir	--	1,388	1,843
Other true firs	--	478	916
Other softwoods	--	1,679	3,901
Total softwoods	--	10,972	13,837
Total hardwoods	--	5	12
Total all species	(1/)	10,977	13,849
SAWTIMBER - - - - - <u>Million board feet, Scribner</u> - - - - -			
Softwoods:			
Ponderosa pine	43,888	34,365	28,598
Douglas-fir	3,723	6,639	7,517
White fir	3,163	4,097	7,093
Other true firs	979	1,484	3,447
Other softwoods	3,871	5,282	10,371
Total softwoods	55,624	51,867	57,026
Total hardwoods	4	15	17
Total all species	55,628	51,882	57,043

1/ Not available for 1934-36.

The current volume in Klamath County is the result of the first complete inventory of that county based on a large sample of carefully measured field sample plots well dispersed over all ownerships in the county. In contrast, previous inventories were based primarily on compilation of previous cruise data. In addition to inventory technique differences, the earlier inventory in Klamath County heavily discounted the usable volume in species other than ponderosa pine. In 1946, the volume in Douglas-fir, true firs, and other softwood species, excluding pine, was estimated to be 3.4 billion board feet; in 1964, the volume for these same species was estimated at 11.9 billion. This difference is responsible, to a large degree, for the apparent increase in volume in Klamath County.

The sawtimber volume in Crook, Deschutes, Jefferson, and Wheeler Counties has declined since the previous inventory, whereas relatively little change has occurred in Lake and Wasco Counties. For the year 1964, growth and cut were relatively in balance in Klamath, Wasco, and Wheeler Counties, while cut substantially exceeded growth in Crook, Deschutes, Jefferson, and Lake Counties.

<u>County</u>	<u>1964 growth</u> (Thousand bd. ft., Scribner)	<u>1964 cut</u> (Thousand bd. ft., Scribner)
Crook	32,538	103,387
Deschutes	75,454	113,381
Jefferson	49,113	92,371
Klamath	292,713	289,886
Lake	96,626	258,807
Wasco	91,282	95,242
Wheeler	34,288	34,961

Table 38 indicates also that the volume of ponderosa pine has declined significantly. This decline occurs in all counties and reflects the concentration of harvesting efforts on this valuable species.

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FOREST SURVEY PROCEDURES

This inventory of central Oregon combines the data from all or parts of nine separate inventory projects: Burns Working Circle, 1957-58, and Crooked River Working Circle, 1962, Ochoco National Forest; Rogue River National Forest, 1957-59; Umatilla National Forest, 1958; Winema National Forest, 1958-62; Mount Hood National Forest, 1960; Deschutes National Forest, 1961; Fremont National Forest, 1962; and the remaining area outside the National Forests, 1964. No attempt was made to update the inventories for growth or cut to a common date; however, changes in gross area were made to agree with the most current records available.

National Forest

Field plots on the seven National Forest were distributed on a systematic grid at 1.7-mile intervals. Plots consisted of clusters of three 1/5-acre circular subplots. Estimates of area, volume, and growth were obtained from the field sample plots.

Outside National Forest

The area outside National Forests in central Oregon was inventoried by Forest Survey during the summer of 1964.

A systematic sample of field plots was distributed across all owners other than National Forest. Field plots, located on a 3.4-mile grid, were supplemented by a more intensive sample of photo plots. The ratio of photo to field plots was approximately 16 to 1. Field plots consisted of 10 sample points distributed systematically over an acre. The variable-radius-plot sampling principle was used at each point to select the trees to be tallied. The summation of the 10-point tally expressed the resources and conditions for that acre and was used with the photo sample to provide area, volume, growth, and mortality statistics.

DEFINITION OF TERMS

Land Area

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 Area

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

Nonforest-Land Area

Land that does not qualify as forest land.

Forest-Land Classes

Commercial Forest-Land Area

Forest land which is producing or capable of producing industrial wood and not withdrawn from timber utilization.

Noncommercial Forest-Land Area

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

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

Unproductive. Forest land incapable of yielding crops of industrial wood products (usually sawtimber) because of adverse site conditions. Unproductive forest land is divided into the following classes:

Subalpine. Forest stands at the upper elevational limits of tree growth.

Noncommercial rocky. Forested areas within the commercial forest zone so steep and rocky that they are incapable of producing usable wood products.

Juniper. Forest stands at the lower elevational limits of tree growth in which the predominant species is juniper.

Noncommercial other. Other areas within the commercial forest zone unsuitable for producing usable wood products due to poor drainage, shallow, infertile soils, etc.

Types

Forest-land types are determined on the basis of species plurality of all live trees that contribute to stocking, considering both size and spacing.

Tree Classes

Growing-Stock Trees

Sawtimber trees, poletimber trees, saplings, and seedlings; that is, all live trees except cull trees.

Sawtimber trees (11.0 inches d.b.h. and larger). Live trees of commercial species that contain at least one 12-foot coniferous saw log with a top diameter not less than 6 inches inside bark, or one 8-foot hardwood saw log with a top diameter not less than 8 inches inside bark and with not less than 25 percent of the board-foot volume in the tree free of defect for either conifer or hardwood.

Poletimber trees (5.0 to 10.9 inches d.b.h.). Live trees of commercial species not less than 50 percent sound on a cubic-foot basis and with no disease, defects, or deformities which are likely to prevent them from becoming growing-stock sawtimber trees.

Sapling and seedling trees (less than 5.0 inches d.b.h.). Live trees of commercial species with no disease, defects, or deformities which are likely to prevent them from becoming growing-stock poletimber trees.

Nongrowing-Stock Trees

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

Sound cull trees. Trees of noncommercial species, or with excessive defect due to form, roughness, etc.

Rotten cull trees. Trees with excessive defect due primarily to rot.

Mortality trees. Trees of commercial species which died from natural causes and which were not cull trees at the time of death.

Salvable dead trees. Standing or down dead trees of commercial species 11.0 inches or more in diameter that contain 25 percent or more of sound volume and at least one merchantable 16-foot coniferous or 8-foot hardwood saw log.

Stand-Size Classes

Sawtimber Stand

Stand at least 10 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber and poletimber trees, and with sawtimber stocking equal to or greater than poletimber stocking.

Large sawtimber stand. Stand in which the majority of the sawtimber stocking is in trees 21.0 inches d.b.h. and larger.

Small sawtimber stand. Stand in which the majority of the sawtimber stocking is in trees from 11.0 to 20.9 inches d.b.h.

Poletimber Stand

Stand at least 10 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber and poletimber trees, and with poletimber stocking exceeding sawtimber stocking.

Sapling and Seedling Stand

Stand at least 10 percent stocked with growing-stock trees, with more than half of this stocking in saplings and/or seedlings.

Nonstocked Area

An area of commercial forest land less than 10 percent stocked with growing-stock trees.

Stocking

Stocking is an effort to express the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. "Percent of stocking" is synonymous with "percentage of growing space occupied" and means the ratio of actual stocking to full stocking for comparable sites and stands. Basal area is used as a basis for measuring stocking.

"Stocking percentages" express current area occupancy in relation to specified standards for full stocking based on number, size, and spacing of trees considered necessary to fully utilize the forest land.

Full utilization of the site is assumed to occur over a range of basal area. As an interim guide, 60 percent of the normal yield table values has been used to establish the lower limit of this range which represents full site occupancy. This is called 100-percent stocking. The upper limit to full stocking has been set at 125 percent. Sites with less than 100-percent stocking represent understocking with less than full site occupancy. Overstocking is characterized by sites that have over 125-percent stocking.

Rotation Ages

Rotation ages used to determine tree class are as follows:

<u>Species type</u>	<u>Rotation age</u>
Hardwoods	50
Lodgepole pine	80
All other east-side types	120
All other west-side types	100

Timber Volume

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees of commercial species. 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 in determining volume of sawtimber in the Pacific Northwest.

International 1/4-inch rule. The standard board-foot log rule adopted nationally by the Forest Service for the presentation of Forest Survey volume statistics.

Growing-Stock Volume

Net volume 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 Volume

Net volume in cubic feet of live and salvable dead sawtimber trees and poletimber trees of commercial species, and cull trees of all species from stump to a minimum 4.0-inch top outside bark.

Log Grades

A classification of logs based on external characteristics as indicators of quality or value.

The following grading rules were used:

Ponderosa pine. "Improved System for Grading Ponderosa Pine and Sugar Pine Saw Logs in Trees," Technical Paper 75, 1962, issued by Pacific Southwest Forest and Range Experiment Station.

Douglas-fir. "Grades for Inland Douglas-Fir Saw Logs in Standing Trees," Research Note PNW-19, December 1964, issued by Pacific Northwest Forest and Range Experiment Station.

Only the butt logs were graded in the field. The distribution of total tree volume by log grade was derived from separate studies showing the relationship between the grade of the butt log and grades in the upper stem.

Growth

Net Annual Growth

The increase in volume of a specified size class for a specific year. (Components of net annual growth include the increment in net volume of trees at the beginning of the specific year surviving to the year's end plus volume of trees reaching the size class during the year minus the volume of trees that died during the year minus the net volume of trees that became culls during the year.)

Ownership Classes

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 Forest Service, including experimental areas and Bankhead-Jones title III lands.

Other Public Lands

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

Forest Industry Lands

Lands owned by companies or individuals operating wood-using plants.

Farmer-Owned Lands

Lands owned by operators of farms.

Miscellaneous Private Lands

Privately owned lands other than forest industry or farmer-owned lands.

TREE SPECIES

Tree species found in central Oregon include:

Softwoods:

California red fir (*Abies magnifica* var. *magnifica*)
Douglas-fir (*Pseudotsuga menziesii*)
Engelmann spruce (*Picea engelmannii*)
Grand fir (*Abies grandis*)
Incense-cedar (*Libocedrus decurrens*)
Lodgepole pine (*Pinus contorta*)
Mountain hemlock (*Tsuga mertensiana*)
Noble fir (*Abies procera*)
Pacific silver fir (*Abies amabilis*)
Ponderosa pine (*Pinus ponderosa*)
Shasta red fir (*Abies magnifica* var. *shastensis*)
Subalpine fir (*Abies lasiocarpa*)
Sugar pine (*Pinus lambertiana*)
Western hemlock (*Tsuga heterophylla*)
Western larch (*Larix occidentalis*)
Western redcedar (*Thuja plicata*)
Western white pine (*Pinus monticola*)
Whitebark pine (*Pinus albicaulis*)
White fir (*Abies concolor*)

Hardwoods:

Aspen (*Populus tremuloides*)
Black cottonwood (*Populus trichocarpa*)
Golden chinkapin (*Castanopsis chrysophylla*)
Oregon white oak (*Quercus garryana*)
Red alder (*Alnus rubra*)

RECENT FOREST SURVEY PUBLICATIONS

<u>Number</u>	<u>Title</u>	<u>Date</u>
Resource Bulletins:		
PNW-23	Preliminary Timber Resource Statistics for Humboldt County, California, January 1, 1967	1968
PNW-22	1966 Oregon Timber Harvest	Dec. 1967
PNW-21	1966 Washington Timber Harvest	Oct. 1967
PNW-18	1965 Washington Timber Harvest	Dec. 1966
PNW-17	Forest Industries of Eastern Washington	1966
PNW-16	1965 Oregon Timber Harvest	June 1966
PNW-15	Timber Resource Statistics for Southwest Washington	1965
PNW-14	1964 Washington Timber Harvest	Dec. 1965
PNW-13	1964 Oregon Log Production	Sept. 1965
PNW-12	The Timber Situation and Outlook for Northwest Oregon	1965
PNW-11	Hardwood Timber Resources of the Douglas-fir Subregion	1965
PNW-10	Forest Statistics for West-Central Oregon	1965
PNW-9	Timber Resource Statistics for the Pacific Northwest	1965
PNW-8	Forest Statistics for Southwest Oregon	Aug. 1964
PNW-7	Forest Statistics for Northwest Oregon	July 1964
PNW-6	1962 Washington Log Production	Dec. 1963
PNW-5	Forest Statistics for Chelan and Douglas Counties, Washington	May 1963
PNW-4	Forest Statistics for Northeast Washington	May 1963
PNW-3	Toward Complete Use of Eastern Oregon's Forest Resources	May 1963
PNW-2	1962 Oregon Log Production	Apr. 1963
PNW-1	1961 Washington Log Production	Jan. 1963
Research Papers:		
PNW-28	Manpower Use in the Wood-Products Industries of Oregon and Washington 1950-63	1965
PNW-5	Timber Trends in Western Oregon and Western Washington	Oct. 1963

Available from:

Pacific Northwest Forest & Range Experiment Station
P.O. Box 3141
Portland, Oregon 97208

Berger, John M.

1968. Timber resource statistics for central Oregon.
U.S. Forest Service Resource Bull. PNW-24,
38 pp. Pacific Northwest Forest & Range
Experiment Station, Portland, Oregon.

A summary, as of January 1, 1965, of the results of the third inventory of the timber resources, area, volume, growth, cut, and mortality, of nine counties in central Oregon: Crook, Deschutes, Gilliam, Jefferson, Klamath, Lake, Sherman, Wasco, and Wheeler. Data were collected during summer of 1964.

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