

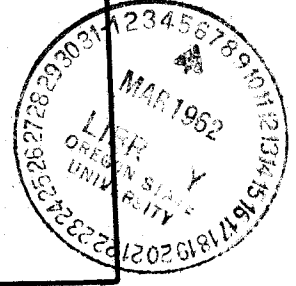
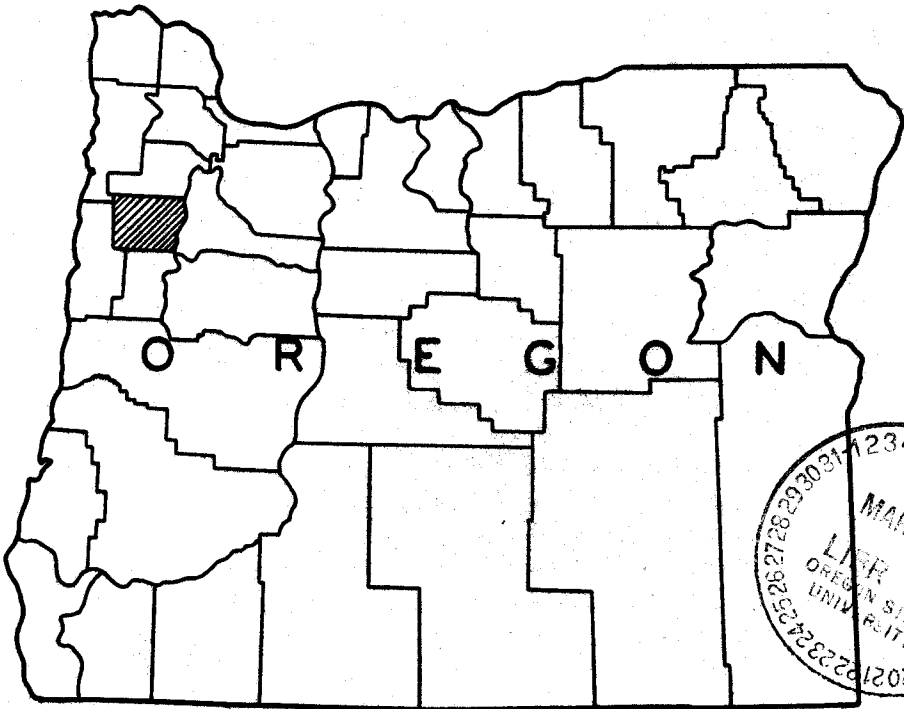
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FOREST STATISTICS FOR POLK COUNTY, OREGON

FROM THE FOREST SURVEY INVENTORY REVISED IN 1940

(FOREST SURVEY REPORT NO. 83)

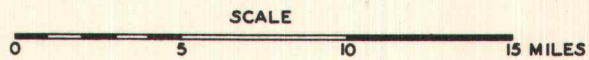
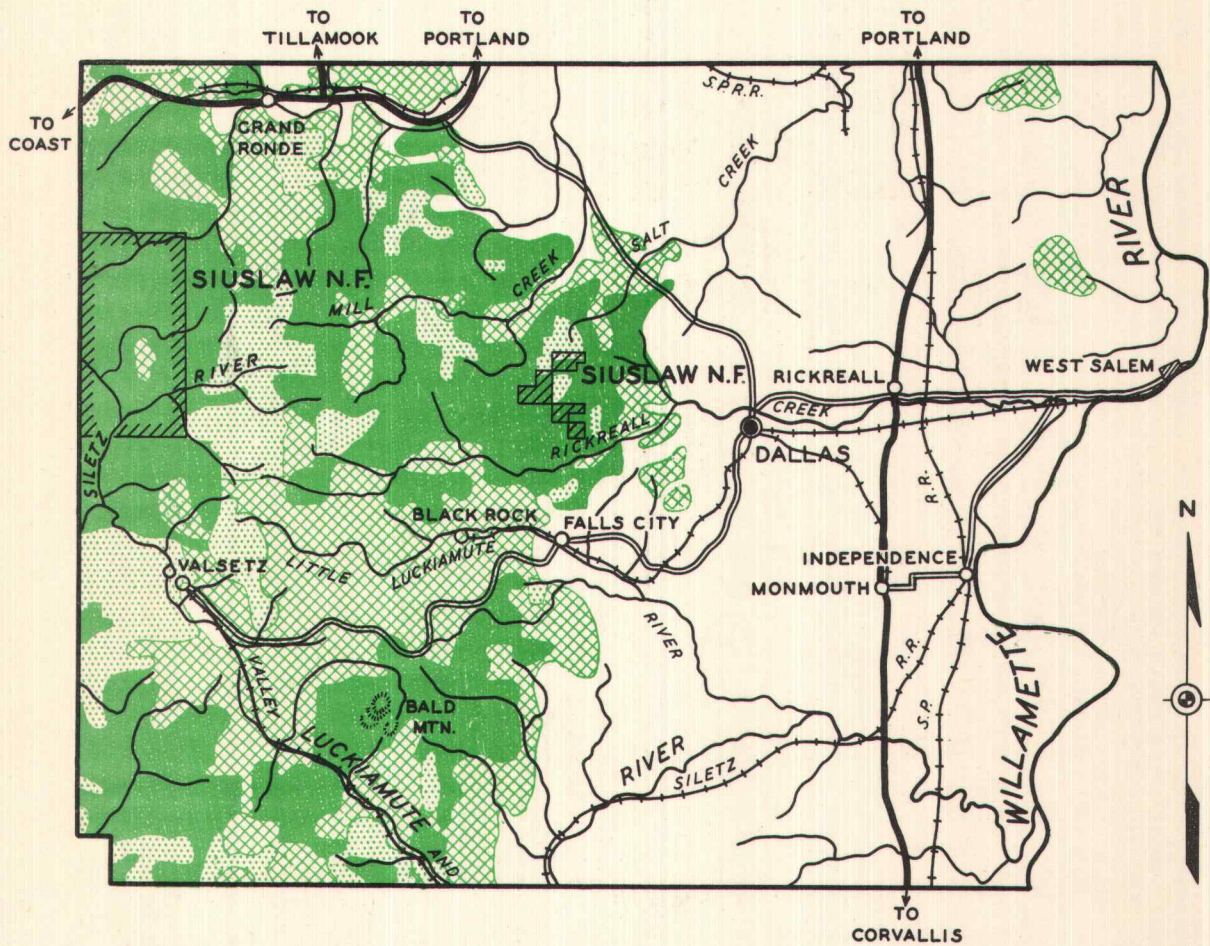


U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION
STEPHEN N. WYCKOFF, DIRECTOR

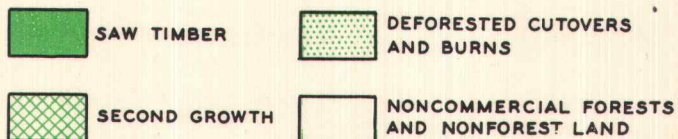
R.W. COWLIN, IN CHARGE OF FOREST SURVEY F.L. MORAVETS, ASSISTANT

PORTLAND, OREGON MAY 5, 1941

FIGURE 1
 OUTLINE MAP
 OF
 POLK COUNTY, OREGON
 1941



LEGEND



FOREWORD

The forest survey, a Nation-wide project, consists of a detailed investigation in five major parts of present and future forest resources: (1) An inventory of the country's existing forest resources in terms of areas occupied by forest-cover types and of timber volumes, by species, in board feet and cubic feet, and a study of conditions on cut-over and on burned forest lands; (2) a study of the depletion of the forests through cutting and through loss from fire, insects, disease, and other causes; (3) a determination of the current and potential growth on forest areas; (4) an investigation of present and prospective requirements of the United States for forest products; and (5) an analysis and correlation with other economic data of findings of these studies in order to make available basic facts and guiding principles necessary to plan for sound management and use of forest resources.

The forest survey of Oregon and Washington, an activity of the Pacific Northwest Forest and Range Experiment Station, was conducted in the Douglas-fir region during the period 1930-33, inclusive.* In 1937 work of keeping the survey up to date was commenced in counties in which there had been extensive depletion since the original survey.

The forests of Polk County, Oregon, were first inventoried in 1930. Later, the inventory was brought up to date as of March 1, 1933, through adjustments for cutting and fire depletion and in 1934 a report summarizing statistics on timber volume, forest type area, and site quality was issued. In the summer of 1940 the county's forests were reinventoried. This reinventory consisted of field examination of all cut-over lands logged during the decade 1920-29 and all burned areas to determine the degree of regeneration, checking the location and extent of recent cut-over areas logged since January 1, 1930, as shown by cut-over records, obtaining additional data on productive capacity of forest land, and recompilation of all statistical data.

This report, which follows the one issued in 1934, gives results of the reinventory and briefly discusses the extent and character of the county's forests, their utilization and rate of depletion, and the rate at which they are being replenished through growth.

* Oregon and Washington were divided for survey purposes into two regions, (1) Douglas-fir region, consisting of that part of both States west of the Cascade Range summit, and (2) ponderosa pine region, that part of both States east of the Cascade Range summit. A regional report which includes an interpretation of the forest-survey data and analysis of the forest situation in the Douglas-fir region has been published and a similar report for the ponderosa pine region is now in the process of being published. Each region was divided into units--11 in the Douglas-fir region and 7 in the ponderosa pine region--for the purpose of more intensive analysis of data. It is planned to issue reports presenting findings for each unit.

FOREST STATISTICS FOR POLK COUNTY, OREGON

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FOREST STATISTICS FOR POLK COUNTY, OREGON^{1/}

By Edward D. Buell^{2/}

While agriculture has been the principal industry in Polk County since its organization in 1845, its forest resources have also contributed much toward the economic and social welfare of its people. Logging and lumber manufacturing have been the chief sources of employment for industrial workers since the inception of the forest industry nearly a century ago. According to the Bureau of Census, 1,500 people were directly employed by forest industries in the county in 1930. Revenue derived through taxation of forest resources and forest industrial developments has been of great financial benefit to the county. Several communities are partially and a few are entirely dependent on logging and milling operations for their continued existence. Future plans dealing with land use and business management for Polk County should include sound forest policies to insure future timber supplies.

Physical Character of County

Polk County, located in northwestern Oregon, is about 50 miles south of Portland and directly west of Salem. The Willamette River forms the east boundary and the upper slopes of the Coast Range the west. It is 30 miles long, 25 miles wide, and has an area of 483,450 acres (fig. 1). Except for the extreme western section which is drained west by the Siletz River into the Pacific Ocean, the county's surface slopes to the east and is drained by streams tributary to the Willamette River.

The topography and elevation of Polk County vary considerably. The eastern part consists mainly of stream valleys and benchlands, which are as a rule nearly level or gently undulating, and have elevations varying from 120 to 300 feet above sea level. The west part is rough and mountainous with some points more than 2,500 feet in elevation.

The climate of the county is temperate, with rainy winters, dry summers and a long growing season at lower elevations. Precipitation varies considerably owing chiefly to the influence of the Coast Mountains. According to the U. S. Weather Bureau, the annual rainfall in 1940 at Salem was 43 inches, at Dallas 53 inches, at Falls City 70 inches, and at Valsetz 114 inches.

^{1/} Assistance in the compilation of the data contained in this report was furnished by the personnel of Work Projects Administration of official project 65-2-94-144.

^{2/} The field work of the revised inventory of the county's forests was done by E. D. Buell, and the compilation of the data was done by Edna L. Hunt, E. D. Buell, B. C. Baker, T. J. Rowe, and W. E. Zeuthen.

Soils of the east part of the county are mostly silty clay loams well suited to agriculture. They are especially adapted to fruit and grain crops. Soils of the west part as a general rule are less desirable for farming because of shallow depth and coarseness.

All physical factors of the county tend to divide it into two sections or zones, one best adapted to agricultural use and one best suited to forest use.

The Forests

Nearly all the forest land in Polk County is located within the well defined forest zone which occupies the approximate west half of the county. The remainder consists of small areas scattered throughout the agricultural zone in the east half. Because of the difference in the character of land use and cover types in the two zones a different method of inventory was employed in each. In the forest zone reliable preexisting information such as timber cruises, fire reports, and cut-over records were used in determining the extent and location of forest types and timber volume. This information was supplemented by field examination of areas for which no satisfactory data were available. The agricultural zone was inventoried by a statistical-strip method in which parallel lines were run across the zone at 3-mile intervals. This method is an accurate means of determining the aggregate amount of various land use types in the zone but does not allow their mapping in place as does the method used in the forest zone.

The forest survey classified 16 forest types and 2 nonforest types in the county. Data concerning these types are presented statistically in tables 1 and 2. A generalized small scale forest type map of the county is presented in figure 1. A detailed 1-inch-to-the-mile county type map showing all the type detail mapped in the field is another product of the survey. This has been brought up to date as 1940.^{3/}

The forest land of Polk County which totals 249 thousand acres, slightly more than half the county's total area, is principally in private ownership. Private holdings account for 195 thousand acres, 42 thousand acres is owned by the Federal Government, 10 thousand by the county, and the rest is State or Indian land. Of the 42 thousand acres owned by the government 36 thousand is revested land grants, 4 thousand national forest, and 2 thousand public domain.

^{3/} One-inch-to-the-mile county type maps and $\frac{1}{4}$ -inch-to-the-mile lithographed State type maps have been prepared to show the location and extent of the forest types. For information on them, address Director, Pacific Northwest Forest and Range Experiment Station, 423 U. S. Court House, Portland, Oreg.

Table 1.-Area, in acres, of all forest cover types, by ownership class
Data corrected to October 1, 1940

Survey type no.	Type	Private	State ^{1/}	County	Indian	Federal ^{1/}			Total
						Revested land grants	Public domain	National forest	
4	Woodland Oak	11,558							11,558
6	Douglas-fir Large old growth	35,610		485	45	4,985	90	2,360	43,575
7	Small old growth	8,865		225		6,410			15,500
8	Large second growth	24,079		1,790	60	11,410	370		37,709
9	Small second growth	32,131	650	3,255	95	1,850	1,020	90	39,091
10	Seedlings and saplings	43,457	15	3,195	20	3,220			49,907
14	Western hemlock Large	3,685		5		700		380	4,770
15	Small	325					130	300	755
17	Western redcedar Large	80							80
23	Fir-mountain hemlock Large	1,285				320		880	2,485
31.5	Hardwood Large	1,210		40		130	10		1,390
31	Small	2,666		20					2,686
35	Nonrestocked cutover Cut prior to 1920	685		20		65			770
35A	Cut from 1920-29, incl.	745				750			1,495
36	Recent cutover Cut since 1930	26,581		680		6,360			33,621
37	Deforested burn	2,455		750		170	370		3,745
	Total forest types	195,417	665	10,465	220	36,370	1,990	4,010	249,137
3	Nonforest land Cultivated	229,310		40	320				229,670
2	Other	4,628				15			4,643
	Total	429,355	665	10,505	540	36,385	1,990	4,010	483,450

^{1/} Available for cutting.

Table 2.-Area, in acres, of generalized forest types, by ownership class
Data corrected to October 1, 1940

Type definition	Private	State ^{1/}	County	Indian	Federal ^{1/}			Total
					Revested land grants	Public domain	National forest	
Conifer saw timber Types 6, 7, 8, 14, 17, and 23	73,604		2,505	105	23,825	460	3,620	104,119
Conifer second growth Types 9 and 15								
On cut-over areas	26,336	520	1,110	60	270			28,296
On old burns	6,120	130	2,145	35	1,580	1,150	390	11,550
Total	32,456	650	3,255	95	1,850	1,150	390	39,846
Conifer seedlings and saplings Type 10								
On cut-over areas	41,842	15	2,935	20	3,115			47,927
On old burns	1,615		260		105			1,980
Total	43,457	15	3,195	20	3,220			49,907
Recent cut-over areas Type 36	26,581		680		6,360			33,621
Nonrestocked cut-over and burned areas								
Types 35, 35A, and 37	3,885		770		985	370		6,010
Hardwoods Types 31 and 31.5	3,876		60		130	10		4,076
Noncommercial land Type 4	11,558							11,558
Total forest types	195,417	665	10,465	220	36,370	1,990	4,010	249,137
Nonforest land Types 2 and 3	233,938		40	320	15			234,313
Total	429,355	665	10,505	540	36,385	1,990	4,010	483,450

^{1/} Available for cutting.

Nonforest land in the county is all agricultural except that within incorporated cities. Commercial conifers cover the bulk of the forest land, oak woodland totals 11 thousand acres, and other hardwoods occupy 4 thousand acres. Commercial conifer lands form three general groups; lands occupied by saw-timber types, lands occupied by immature types, and deforested lands.

Saw-Timber Types

Saw-timber types (trees 20 inches d.b.h. and larger) occupy 104 thousand acres or over 40 percent of the forest land in Polk County. Types in which Douglas-fir is predominant cover 97 thousand acres; western hemlock, western redcedar, or the balsam firs are the prevalent species in the remainder.

Old-growth Douglas-fir more than 40 inches d.b.h. (type 6) is the most important type in the county. It extends over nearly 44 thousand acres located chiefly in the northwest part of the forest zone. Smaller amounts are found to the south. The timber stands comprising the type are made up mostly of trees of high quality. A relative high percentage of material suitable for veneer logs is available.

Stands of old-growth Douglas-fir 20 to 40 inches d.b.h. (type 7) cover 15,500 acres. They occur as small bodies ranging in size from 40 to 600 or 700 acres scattered throughout the forest zone where timber of sawlog size still remains. The quality of the timber is good but below that of the large old-growth stands.

Second-growth Douglas-fir 20-40 inches d.b.h. (type 8) occupies an area of approximately 38 thousand acres. It is found mostly in the east half of the forest zone where it extends over areas ranging in size from 40 to 1,000 acres or more. The trees of the stands comprising the type are thrifty and well formed for the most part. They are still growing rapidly as compared to the old stands and therefore have not the quality material that will accumulate later if they are allowed to continue to grow to maturity.

Saw-timber types other than those predominantly Douglas-fir are located at the higher portions of the county at the west edge of the forest zone. Hemlock stands cover 4,770 acres, balsam fir stands 2,485 acres, and cedar 80 acres. At present these types are of less importance than the Douglas-fir.

Immature Stands

In Polk County, stands of timber less than saw-timber size occupy a total of 90 thousand acres, or about 36 percent of the county's forest land. The virgin stands on about 76 thousand acres were removed by cutting and on about 14 thousand acres by fire.

Douglas-fir is the predominant species over all but 755 acres in this category. The Douglas-fir stands were divided into two types, small second growth (type 9) and seedlings and saplings (type 10). The stands on the 755 acres stocked by species other than Douglas-fir were classified as small second-growth western hemlock (type 15). Table 3 shows the acreages of these immature types by age class and degree of stocking.

The small second-growth types, in which the trees are from 6 to 20 inches in diameter, cover 40 thousand acres. Although stands in these types vary from 30 to 80 years of age, a majority of them are of the 30- and 40-year age classes. The degree of stocking of these stands is considerably above that of the average for the Douglas-fir region as a whole. Nearly 55 percent is well stocked, 38 percent is of medium stocking, and 7 percent is poorly stocked.

The seedling and sapling type, in which most of the trees are less than 6 inches d.b.h. covers an area of 50 thousand acres. Stands in the type are somewhat more abundant in the 10-year age class than in the 20. None of the type is older than the 20-year age class. Stocking conditions are not as satisfactory in this type as in the pole types. About 20 percent is well stocked, 44 percent is of medium stocking, and 36 percent is poorly stocked. The larger area of poorly stocked stands of this type is chiefly the result of fire.

Deforested Areas

Deforested lands of the county that have not been put to agricultural use amount to 40 thousand acres or about 16 percent of the total forest land. These lands were classified by the survey into four classes: Nonrestocked cut-over lands logged prior to 1920, nonrestocked cut-over lands logged during the decade 1920-29, recent cut-over lands logged since January 1, 1930, and nonrestocked burned-over lands regardless of date of burn.

Nonrestocked cut-over lands and nonrestocked burned-over lands total 6 thousand acres, of which nearly 4 thousand acres is of the latter class. Most of nonrestocked burns are located in the southern part of the forest zone where they occur as extended fern patches. They date back many years to the time of early land clearing when slash fires were allowed to run wild year after year. The natural regeneration of these areas will be very slow. Nonrestocked cut-over lands do not total enough area to be a problem in land use.

The recent cut-over lands logged since January 1, 1930, which total nearly 34 thousand acres, were not examined to determine the degree of regeneration since, in most cases, insufficient time had elapsed since logging to permit seedlings to become established.

Table 3.-Area, in acres, of certain immature conifer forest types,
by age class and degree of stocking
Data corrected to October 1, 1940

Age class (years)	Degree of stocking	Type number and name			Total
		10 Douglas- fir seedlings and saplings	9 Douglas- fir small second growth	15 Western hemlock small second growth	
10	Good	2,204			2,204
	Medium	8,816			8,816
	Poor	16,960			16,960
	Total	27,980			27,980
20	Good	7,397			7,397
	Medium	13,165			13,165
	Poor	1,365			1,365
	Total	21,927			21,927
30	Good		9,071	325	9,396
	Medium		904		904
	Poor		225		225
	Total		10,200	325	10,525
40	Good		3,598	430	4,028
	Medium		4,997		4,997
	Poor		1,037		1,037
	Total		9,632	430	10,062
50	Good		3,066		3,066
	Medium		4,205		4,205
	Poor		1,430		1,430
	Total		8,701		8,701
60	Good		1,316		1,316
	Medium		3,130		3,130
	Poor		481		481
	Total		4,927		4,927
70	Good		3,591		3,591
	Medium		1,590		1,590
	Poor		80		80
	Total		5,261		5,261
80	Good		370		370
	Medium				
	Poor				
	Total		370		370
Total all ages	Good	9,601	21,012	755	31,368
	Medium	21,981	14,826		36,807
	Poor	18,325	3,253		21,578
	Total	49,907	39,091	755	89,753

Productive Capacity of Forest Land

The relative productive capacity of the forest land, known as site quality, was determined during the forest inventory primarily to compute forest growth and volume of immature stands. All commercial conifer lands in Polk County were designated as to site class according to the Douglas-fir site classification. Table 4 summarizes results of the site classification.

The productivity of the forest lands of Polk County is about on a par with the average for the Douglas-fir region. Site III is predominant to an even greater degree in the county than in the region as a whole. Areas of site II are found over a much larger acreage than site IV. Sites I and V occur over such limited acreages that they were not recorded; however, it is safe to say that there are small areas of these sites in the county.

Saw-Timber Volume

The volume of saw timber remaining in the county after nearly a century of logging amounts to 4.4 billion board feet. As shown in table 5, this volume is chiefly of Douglas-fir, this species comprising over 80 percent of the total. Nearly all the remainder is made up of such other conifers as western hemlock, Pacific silver fir, noble fir, grand fir, western redcedar, western white pine, and Sitka spruce. The volume of hardwood species amounts to about one-half of 1 percent of the total. Of the county's total Douglas-fir volume, two-thirds or 2.4 billion board feet is found in slow-growing mature or decadent trees and one-third or 1.2 billion feet is found in immature trees that are growing at a rate that insures net annual increment in stands in which they predominate.

A major part, 3.1 billion board feet, of the saw-timber volume is privately owned. The Federal Government, largely through revested land grants, owns 1.2 billion, and the rest is divided among other public agencies.

Forest Depletion

The forests of Polk County have been depleted mostly by logging. Extensive cutting began during the decade 1910 to 1919 and has continued to the present. Fire also has taken a toll but in recent years no major fires have occurred in merchantable stands. Burning of reproduction and small second-growth stands has depleted some areas of growing stock.

The volume of sawlogs produced from the forests of the county averaged 133 million board feet annually during the period 1925-33, inclusive, although the production for 1933, the final year of the period, was less than one-half the annual average. Following 1933

Table 4.-Land areas, forest land areas, and commercial conifer areas,
by site quality class^{1/}
Data corrected to October 1, 1940

Kind of forest land and site quality class	Total area		Area in forest land	Area in commercial conifers
	Acres	Percent	Percent	Percent
Commercial conifer				
Douglas-fir				
Class II	45,850	9.5	18.4	19.6
Class III	179,844	37.2	72.2	77.0
Class IV	7,809	1.6	3.1	3.4
Total commercial conifer	233,503	48.3	93.7	100.0
Woodland	11,558	2.4	4.6	
Hardwood	4,076	.8	1.7	
Total other	15,634	3.2	6.3	
All forest land	249,137	51.5	100.0	
Nonforest land	234,313	48.5		
Grand total	483,450	100.0		

^{1/} The "site quality" of a forest area is its relative productive capacity, determined by climatic, soil, topographic, and other factors. The index of site quality is the average height of the dominant stand at the age of 100 years. Five site quality classes are recognized for Douglas-fir types, class I being the highest. In the survey Douglas-fir classifications were used not only for types in which this species is dominant but also for other types for which no site quality classifications have been developed.

Table 5.-Volume of timber by species and ownership class
Data corrected to October 1, 1940.

Trees 16" and more d.b.h.^{1/}
Thousands of board feet, log scale, Scribner rule

Species	Private	State ^{2/}	County	Indian	Federal ^{2/}			Total
					Revested land grants	Public domain	National forest	
Douglas-fir								
Large old growth	1,208,218		12,469	1,432	293,085	872	67,904	1,583,980
Small old growth	576,228		5,874	364	211,237	262	2,791	796,756
Large second growth	524,390		15,464	1,080	334,841	4,270	24,893	904,938
Small second growth	211,691	3,239	14,374	591	82,293	1,060	5,167	318,415
Sitka spruce								
Large	5,000							5,000
Western hemlock								
Large	371,942		941		89,383	180	31,340	493,786
Small	41,597		105		9,932	137		51,771
Western redcedar								
Live	24,011				4,103		6,643	34,757
Dead							270	270
Western white pine	14,425				592		1,498	16,515
Grand fir	18,726				13,148		696	32,570
Noble fir	34,772				13,792		890	49,454
Pacific silver fir	90,524						24,257	114,781
Yew	62		1		25		1	89
Red alder	6,417		898	3	964	282	35	8,599
Bigleaf maple	12,132		270	18	4,201	55	197	16,873
Northern black cottonwood	760							760
Oregon white oak	400							400
Oregon ash	2,375							2,375
Total	3,143,670	3,239	50,396	3,488	1,057,596	7,118	166,582	4,432,089

^{1/} Trees of hardwood species taken from 12" and more d.b.h.

^{2/} Available for cutting.

drain on the county's forests has increased each year. For the period 1934 to 1939, inclusive, sawlog production averaged 137 million board feet with well over twice as much cut in 1939 as in 1934. It is safe to estimate that in 1940 a still larger cut occurred.

Depletion is largely of Douglas-fir volume. Of the 1.3 billion board feet reduction in saw-timber volume occurring between inventories, 1.1 billion feet was Douglas-fir and of this nearly half came from large old-growth trees, the kind that produces high-quality logs and veneer stock. Net depletion of second-growth volume between 1933 and 1940 was 329 thousand board feet despite the fact that current annual growth had probably added over 250 thousand board feet during the period. Part of the immature timber was removed during the logging of old-growth stands but most of this depletion was the result of cutting immature stands that were very accessible and easily logged with light equipment.

Losses from insect epidemic, disease, or wind throw have been of minor significance in forest drain in this county.

Forest Growth

Calculations of forest growth are based on the 1933 inventory data when 120 thousand acres of forest land maintained timber stands that were classified as adding net growth. The current annual growth for the year 1933 in board-foot volume computed for trees 15.1 inches or more in diameter was 38 million feet. In cubic-foot volume computed for trees 5.1 inches or more in diameter it amounted to 11 million cubic feet. It is probable that the current annual growth for 1940 was greater than that of 1933 because of the increase in the acreage and age of the growing stands.

It was calculated that Polk County's commercial forest land could produce 79 million board feet annually under intensive forest management. This figure, known as potential annual growth, assumes that all commercial forest land would be producing at 75 percent of capacity. The cubic-foot potential annual growth would be 26 million cubic feet.

Forest Industries

The forest industries of Polk County consist chiefly of logging and sawmill operations. The Willamette River is a source of water transportation that facilitates the movement of logs to mills outside the county, but does not supply a means of shipping manufactured products to market except locally. Partly as a result of this, the volume of sawlogs produced in the county is greater than the volume of lumber. The output of some logging operations, especially those in the east part of the forest zone, goes out of the county for milling.

Logging operations are very active in the county at present. Sawlog production likely exceeded 200 million board feet in 1940 which, if it did, would be the largest volume ever cut during a single year.

Methods of logging have changed considerably in recent years. Prior to 1930 heavy steam equipment was used extensively for yarding and loading and railroads were used almost exclusively for transporting logs to manufacturing plants or the open market. By 1940 tractors and lighter yarding and loading equipment powered by internal combustion engines were fast replacing steam in the woods and trucks were used extensively for transportation. Most of the large operators were continuing to use the main line railroad facilities already installed, but instead of building spur lines supplemented these with truck hauling from yarding sides to the main lines where the logs were reloaded on to cars. Companies that began operating in the county during the last few years are using trucks entirely. Four companies logging in Polk County, using a total of 46 trucks, hauled 115 million board feet of logs during 1940 according to data published in the "West Coast Lumberman" for April 1941.

The practice of clear cutting followed by broadcast burning so widely used throughout the Douglas-fir region is still generally in vogue in Polk County. Examples of incomplete stand removal are present however. The partially cut areas were so logged because of economic factors rather than any thought of applying good silviculture. Most of the material left is suitable only for fuel wood. This practice affords an abundant seed supply so that the areas thus logged and those adjacent to them should regenerate in a very satisfactory manner, provided they are given adequate fire protection.

The most important sawmills in the county are located at Dallas and Valsetz. The Dallas plant which had a daily installed capacity of 325 M board feet per 8-hour shift was severely damaged by fire in the fall of 1940. However, it is expected that this damage will be completely repaired and no reduction in size will result. The plant at Valsetz has an installed capacity of 200 M board feet per 8-hour shift. There is a total of 14 small mills with a total capacity of approximately 250 M feet per 8-hour shift.

Douglas-fir and oak fuel wood is cut in considerable quantities in the county annually as is a small volume each of pulpwood, piling, and veneer logs. Use of yew wood is also made especially for bow stock material.

Comparison of Inventories

Present trends in the forest situation in Polk County are indicated by a comparison of the results obtained in the original inventory in 1933 and the reinventory in 1940. This comparison is shown in the following tabulation:

	<u>1933 inventory</u>	<u>1940 inventory</u>	<u>Change</u>
Area data			
Saw-timber stands	127 M acres	104 M acres	-18%
Conifer second-growth timber 6"-20" d.b.h.	32 M acres	40 M acres	+25%
Conifer second-growth timber less than 6" d.b.h.	27 M acres	50 M acres	+85%
Nonrestocked cut-over and burned areas	10 M acres	6 M acres	-40%
Area cut over 1920-32	39 M acres		
Area cut over 1930-40		34 M acres	
Volume data			
Saw-timber volume	5,697,470 M bd.ft.	4,432,089 M bd.ft.	-22%
Douglas-fir saw-timber volume (all sizes)	4,675,349 M bd.ft.	3,604,089 M bd.ft.	-23%
Douglas-fir saw-timber volume old growth	3,123,304 M bd.ft.	2,380,736 M bd.ft.	-24%
Douglas-fir saw-timber volume second growth	1,552,045 M bd.ft.	1,223,353 M bd.ft.	-21%

Conclusion

At a continuation of the present rate of cutting a major part of the merchantable saw timber in Polk County will be depleted in a few years. However, the forest lands should be kept in a productive state to insure future crops for a permanent lumber industry through a policy based on good forest management. Several things about the forest situation in the county should encourage good forest practice. A large market for all types of forest products is near at hand in the Portland area. The easy accessibility of practically all the forest zone allows for full use of all

forest land. The satisfactory stocking conditions found on most of the cut-over and burned-over lands is encouraging. Logging practices now becoming common favor closer utilization and can be economically followed on small units.

Premature cutting of second-growth stands should be discouraged. The danger of it becoming a grave problem is already present, as shown by the amount of depletion of second-growth saw-timber volume between 1933 and 1940. Most of the second-growth stands can be logged cheaply because they are easily accessible and the logs produced are small. Low logging costs tend to promote small-scale operations carried on with only a small investment, often by farmers and seasonal industrial workers. This practice not only removes the growing stock needed to produce future crops of higher quality but also adds to the fire protection problem by increasing both the hazard and the risk.

The essentials to a permanent forest industry in the county are adequate fire protection and the practicing of sustained yield forest management.