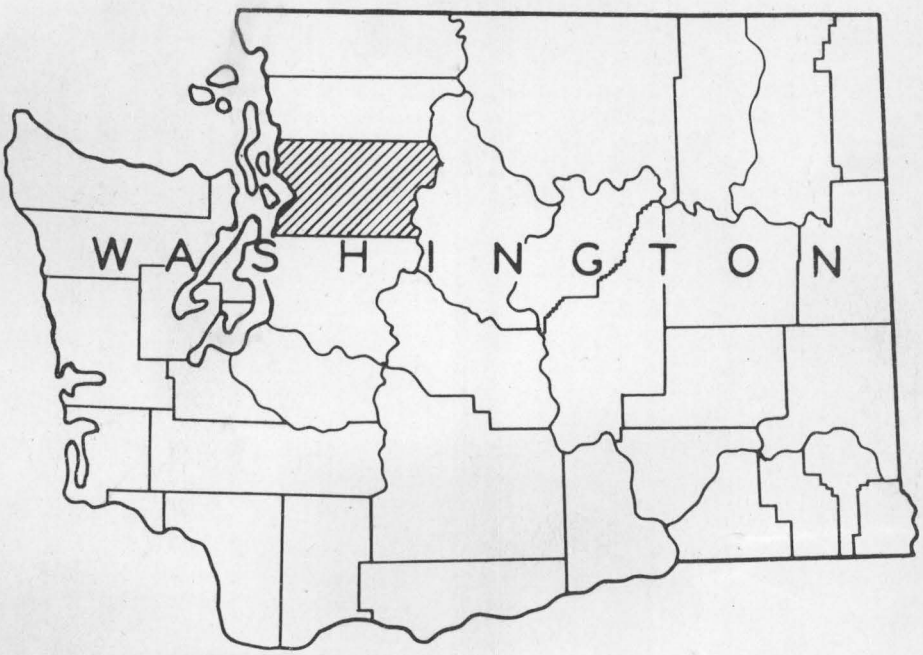
FOREST STATISTICS
FOR
SNOHOMISH COUNTY, WASHINGTON

FROM THE INVENTORY PHASE OF THE FOREST SURVEY



U. S. DEPARTMENT OF AGRICULTURE US 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 DECEMBER 20.1939

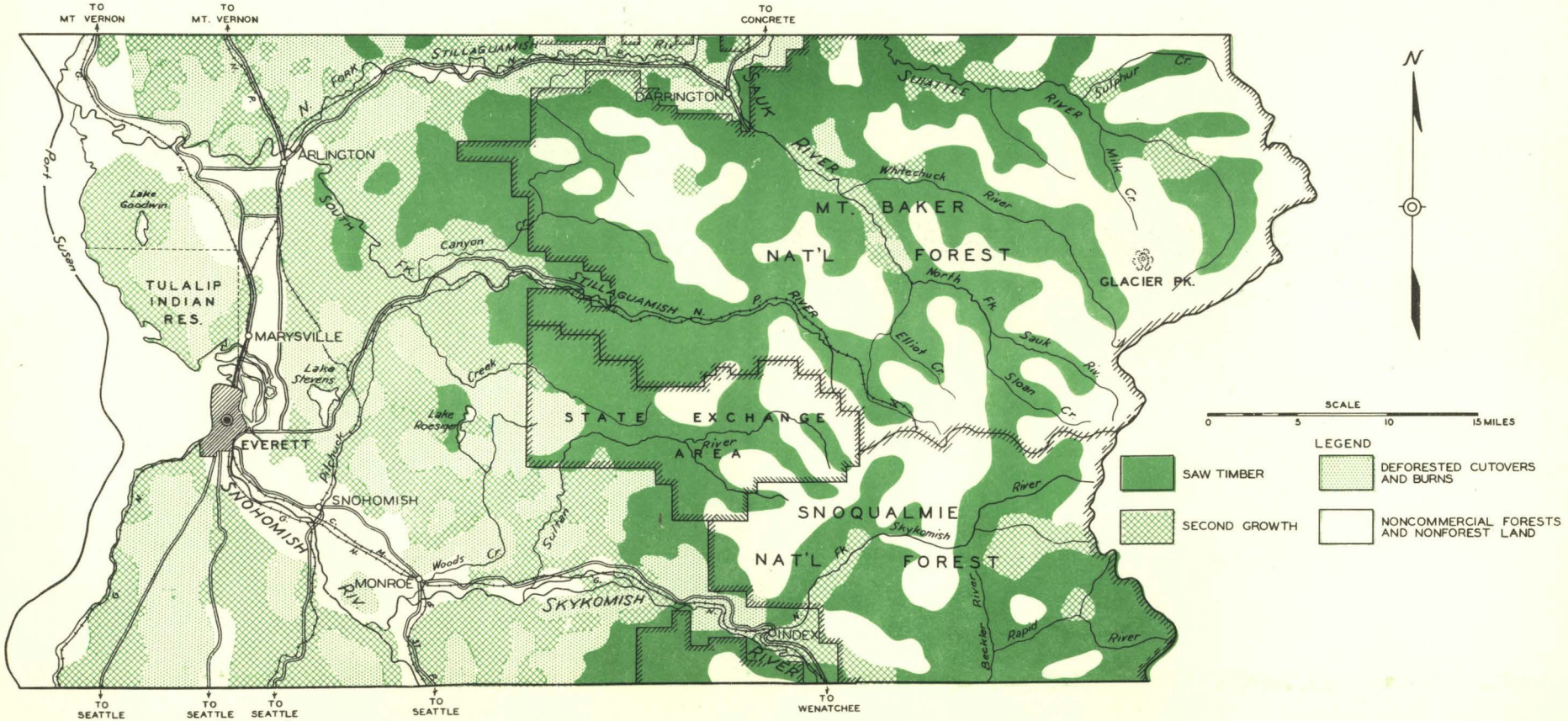
FIGURE 1.

OUTLINE MAP

OF

SNOHOMISH COUNTY, WASHINGTON

1939



FOREWORD

The forest survey, a Nation-wide project authorized by Congress in 1928, consists of a detailed investigation of the country's present and future forest resources in five major parts: (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 to public and private agencies basic facts and guiding principles necessary to formulate and execute rational plans, national, regional, and local, for orderly, sound management and use of forest resources.

The Pacific Northwest Forest and Range Experiment Station was designated to conduct the forest survey of Washington and Oregon and work was commenced in the Douglas fir region in 1930.1/ In Snohomish County, Washington, field work of the survey was carried on in 1932, the data were compiled the following year, and a statistical report, "Forest Statistics for Snohomish County, Washington", summarizing results of the inventory phase, was issued in 1934. Data on growth of the county's forests were presented in "Forest Growth in the Douglas Fir Region", published in 1936. During 1938 the inventory was brought up to date through field examination covering the entire county and recompilation of data. Adjustments were made for all changes in forest type areas and timber volumes resulting from logging and fire, restocking of deforested cut-over and burned areas, and changes in land ownership since the original survey. Results of this revision of the inventory are summarized in this report which supersedes the one issued in 1934.

1/ 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. Regional reports will be issued which will present findings for each region as a whole. The regional reports will include an interpretation of the forest-survey data and a comprehensive economic analysis of the regional forest situation.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON[1/]

By F. L. Moravets[2/]

The forests of Snohomish County were its richest natural resource and their exploitation has been the most important factor in the county's economic and social development. Originally forests probably covered nearly 90 percent of the county's total land area; in fact, all except small areas of delta lands at the mouths of the Stillaguamish and Snoqualmie Rivers and barren ridges and peaks, steep rocky slopes, and meadows in the high mountains. A large portion of this forested area was stocked with dense stands of large-sized Douglas fir, western red cedar, and western hemlock. The topography, varying from nearly level bench lands to gentle slopes, afforded ideal logging conditions. This was particularly true of the western half of the county which reaches from Puget Sound eastward to the foothills of the Cascade Mountains. It is here that the exploitation of the forests has played such an important part in the economy of the county. Sawmills produced the county's first manufactured goods and, with other wood-utilizing industries, still remain the backbone of its economic existence.

The availability of deep-water transportation, providing facilities for the coastal, intercoastal, or foreign shipment of products and the accessibility of dense stands of saw timber, determined the location of the mills on tidewater, and Everett, situated on Port Gardner Bay, became the center of the wood-using industry.

As in other western Washington counties the lumbering industry made slow but gradual growth in Snohomish County until about 1890 when completion of the first two transcontinental railroads, the Northern Pacific and Great Northern, gave real impetus to production. Rapid expansion followed during the next four decades and many mills of large capacity were built. The peak of lumber production in the county was reached during the years 1925 to 1929 when the annual average amounted to approximately 1 billion board feet. Although by this time about half of the volume of logs utilized by the mills was being imported from neighboring counties, sawlog production in Snohomish County during the 5-year period averaged approximately 425 million board feet. There were from 35 to 40 active sawmills in the county with a total daily capacity

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1/ Assistance in the compilation of the data contained in this report was furnished by the personnel of Works Progress Administration official project 765-94-3-5.

2/ The field and office work of the revised forest inventory of Snohomish County, Washington, was done by M. J. Lauridsen, B. C. Baker, E. D. Buell, D. Lester Lynch, E. A. Erickson, W. C. Wingrove, P. F. Liniger, W. E. Zeuthen, T. J. Rowe, and H. W. Bell.

of about 3,400 M board feet, 2 pulp mills with a capacity of 225 tons of wood pulp per 24 hours, a number of wood-working plants manufacturing plywood, sash and door stock, millwork, caskets, etc., and a large number of shingle mills. According to the Bureau of the Census approximately 26 percent of the gainfully employed in the county in 1929 was engaged in the forest industries and a similar portion of the total population was directly dependent upon them for a livelihood.

In common with the lumber industry throughout the Douglas fir region production of sawlogs and lumber in the county fell off sharply during the three years following 1929. In 1933, however, sawlog production increased and reached 60 percent of the average annual production during the peak years 1925 to 1929, but it has not again approached this volume and in 1938 was but 33 percent of the average of the peak years. The production of lumber by the county's mills since 1929 followed a similar trend although it has been maintained at a fairly high level through the importation of logs from neighboring counties. Several sawmills have ceased operations since 1929 although the total capacity is still large. In 1938 there were 19 active sawmills with a capacity of approximately 2 million board feet per 8-hour day. The capacity of the pulp plants had been increased to 760 tons per 24-hour day through the construction of a new plant in 1936 and the enlargement of the two existing plants. Also there were 48 shingle mills, 2 plywood plants, and some 10 or 12 woodworking plants active during the year.

What has been the effect of this more than three-fourths of a century of logging on the forests of the county? The answer to this question is revealed by data obtained in the inventory phase of the forest survey.

Inventory

Forest Land

The county has a total land area of 1,327,027 acres, a little over half of which, 676,452 acres, lies within the boundaries of the Mount Baker and Snoqualmie National Forests (figure 1). The forests of this half occupy the rough mountainous eastern part of the county and have as yet been but little exploited. The forests of the other half, the western half of the county, occupying the broad river valleys, level bench lands, and rolling foothills, have furnished the bulk of the raw material for the county's lumbering operations.

The forest survey classified 1,062,664 acres or 80 percent of the county's total land area as forest land in 1938; the remainder--nonforest land--is cultivated land, cleared pastures, urban areas, brushland, mountain meadows and barrens, and unmeandered water surfaces. The original forest land area has probably been reduced about 130 thousand acres through lumbering and land-clearing operations and subsequent conversion to agricultural and urban use. Table 1 gives the area of all forest cover types, by ownership class, and table 2 the area of the

generalized forest types. Figure 2 graphically shows the relative area of each of the generalized types.

Saw-Timber Stands

The area of coniferous saw timber totals 421 thousand acres, of which only 91 thousand acres is in the western half of the county outside the national forests' boundaries. The largest body of saw timber lies in the central portion in the drainage of the South Fork of the Stillaguamish River (figure 1). Other bodies of considerable extent are located in the drainages of the Sauk and North Fork of the Skykomish Rivers. These areas of saw timber are comprised principally of western hemlock and upper-slope types; no large areas of Douglas fir type remain. Stands in which western hemlock is the predominating species occupy 41 percent of the total saw-timber area; upper-slope types composed of mixed stands of western hemlock, silver fir, Alaska cedar, mountain hemlock, and alpine fir cover 31 percent; and Douglas fir types occupy but 20 percent. Nearly two-fifths of the area of Douglas fir saw timber is occupied by second-growth stands of from 60 to 150 years of age.

Only 22 percent of the acreage of saw timber is privately owned; about 70 percent is national forest and the remainder is principally owned by the State of Washington.

Immature Stands

A total of 252 thousand acres or approximately one-fourth of the county's forest land area is stocked with immature coniferous stands composed of trees less than saw-timber size. As might be expected in a county in which a large acreage of the original forest has been harvested, the bulk of the acreage stocked with these immature stands is cut-over land; only 26 percent of the area is restocked old burns.

Douglas fir was the predominating species in the virgin stands prior to logging and this species continues to predominate in the second-growth stands that have restocked the cut-over lands. Sixty-eight percent of the total area is restocked with Douglas fir types and 24 percent by western hemlock types.

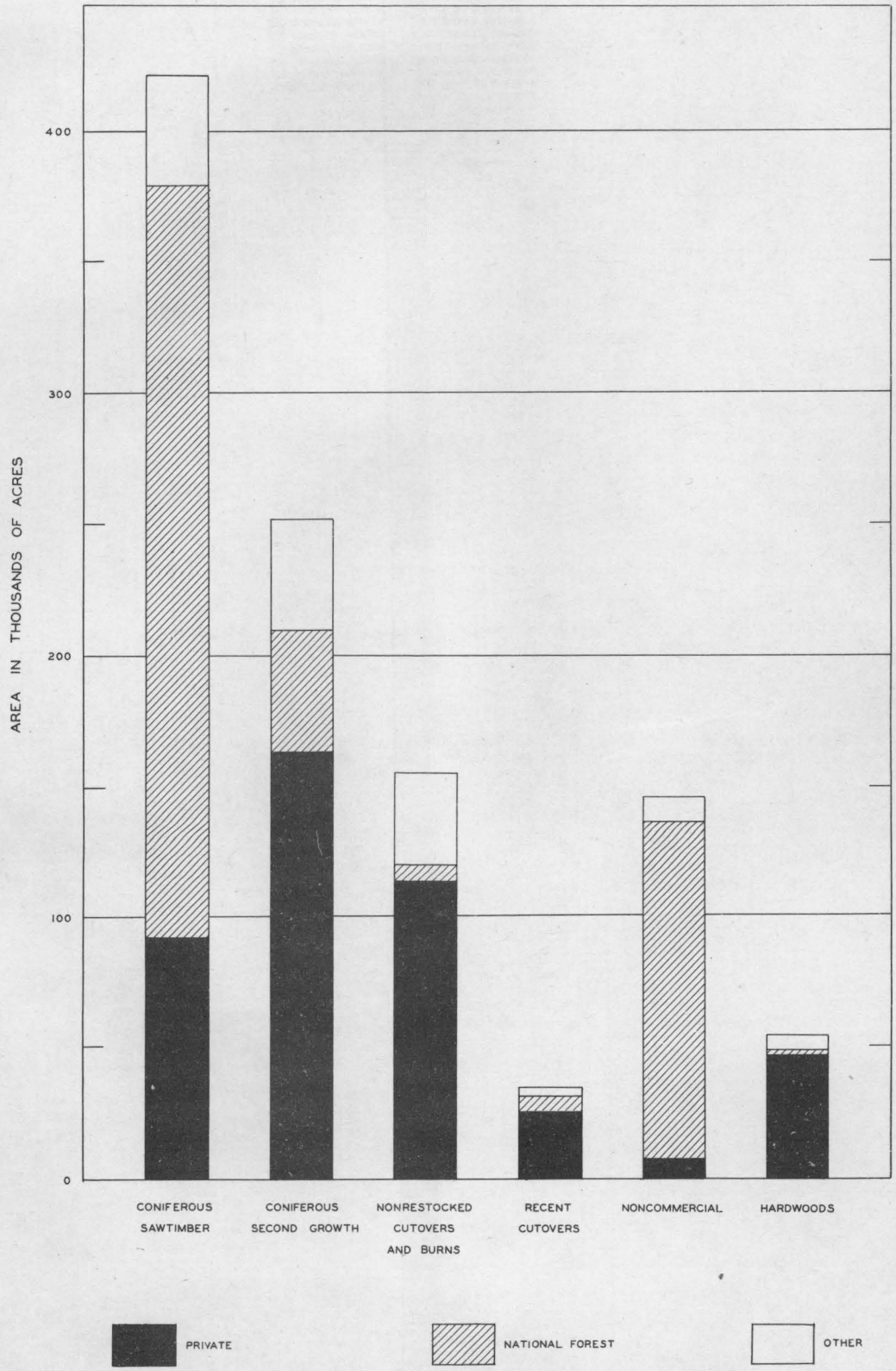
As much of the early-logged land in the western portion of the county has been either cleared or subjected to numerous fires the second-growth stands are found chiefly on the more recently logged areas in the central portion. Nearly 40 percent of the total acreage is occupied by seedling and sapling stands in the 10-year age class and 83 percent is occupied by stands less than 45 years of age. A little less than half of the acreage of Douglas fir second growth is restocked with pole stands--trees from 6 to 20 inches in diameter breast height.

Second-growth stands on old burns are found principally inside the national forests and are of the older age classes.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON.

FROM INVENTORY PHASE OF FOREST SURVEY

FIGURE 2. GENERALIZED FOREST TYPES BY OWNERSHIP CLASS (FROM TABLE 2)



In density of stocking the second-growth stands of the county are about average for the Douglas fir region; 16 percent were classified by the survey as well stocked, 59 percent as medium stocked, and 25 percent as poorly stocked.

Table 3 shows the distribution of the coniferous second-growth types by age class and degree of stocking, and figure 3 graphically shows this distribution.

Hardwoods

In general the hardwood stands in the county are found on the moist rich soils in the river bottoms and along the lower slopes of stream courses. The bulk of the area of hardwoods is occupied by second-growth stands, mostly of red alder under 20 years of age and occurring on cut-over land. Northern black cottonwood stands are found only on the bottomlands of the Snoqualmie and Stillaguamish Rivers and their larger tributaries, and bigleaf maple usually occurs in mixture with red alder. In addition to the stands in which they form the type, both red alder and bigleaf maple occur as understory trees in a large portion of the coniferous stands, particularly those that occupy the lower slopes. Approximately one-fourth of the acreage of hardwoods in the county is occupied by stands in which the trees are of merchantable size. About half of the merchantable stands are of red alder, the remainder are composed of red alder in mixture with northern black cottonwood or bigleaf maple or both. Of the total volume of merchantable alder about 20 percent is found in understory trees in coniferous stands while 80 percent of the maple volume is so found.

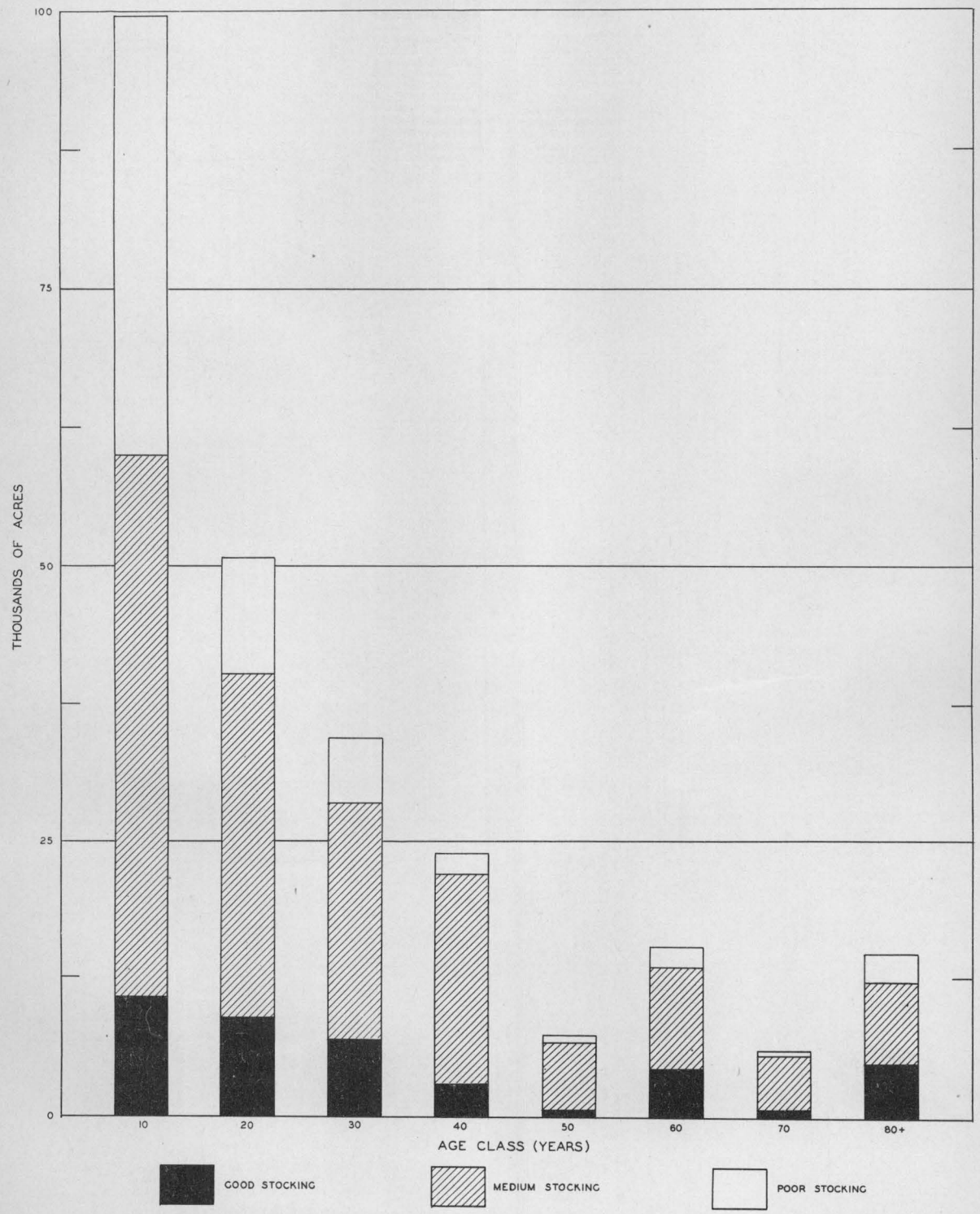
Red alder also restocks large acreages of the drier bench lands in the western half of the county soon after logging and slash fires have denuded them. However, the soil on these benches is of a porous gravelly character and the young trees seldom live more than 5 or 10 years, being killed by drought during the summer months or by recurring fires. This occupation of the land even for a comparatively short time enriches the soil through deposit of vegetative material and also furnishes a temporary cover crop for coniferous seedlings, but it is too transitory to justify classification as a hardwood forest.

Deforested Lands

Nonrestocked forest land in the county was classified by the revision survey into two types--nonrestocked cutovers logged prior to January 1, 1930, and deforested burns.

Areas cut over prior to 1930 and now nonrestocked total 153 thousand acres--one of the most significant figures disclosed by the inventory of the county's forests. While this acreage represents only about 15 percent of the total forest land area, it is 28 percent of the estimated area of 550 thousand acres that has been cut over in the county since logging operations began.

FIGURE 3. AGE CLASS AND STOCKING OF IMMATURE CONIFEROUS STANDS (FROM TABLE 4)



The larger areas of this idle forest land are concentrated principally in the western portion of the county in the districts of more intensive land use and are partly the result of widespread attempts to create agricultural land, either cultivated fields or stump pastures. Following logging and the original slashing fire many of these areas were subdivided in small tracts either by the owner or land promoters and a land settlement campaign initiated. These campaigns usually resulted in a few tracts being sold, generally to wage earners with little capital. Clearing methods invariably employed fire which in many cases escaped to surrounding logged-off land. Much of the nonrestocked cut-over area in the county is comprised of areas logged between 1905 and 1920. A large number of these areas have been burned over several times since the original slashing fire following logging. Any coniferous reproduction that came in after logging was killed and usually there were no longer seed trees within reseeding distance. The organic material in the thin top soil has been destroyed and alder reproduction, willows and the annual vegetative growth have not been given an opportunity to build up the soil. All that remains is the mineral soil which is chiefly of gravelly or sandy character with little or no water-holding capacity. Coniferous seedlings cannot survive the dry summer months on such soils and the land, being of small value for agricultural purposes, has remained idle for many years.

Eighty-four percent of the acreage of nonrestocked cutovers cut prior to 1930 are either privately or county owned, and the bulk of the former is tax delinquent. However, cutting has been mainly on private lands.

The area of deforested burns in the county is small, only 2,768 acres. Practically all areas of this type are on steep rocky slopes originally forested with timber of low quality.

Recent Cut-Over Lands

As of July 1, 1938, the acreage of recent cutovers cut since 1930 totaled 34 thousand acres. Most of these areas are of comparatively small extent and sources of seed for regeneration are not too distant. And while no thorough examination to determine if the areas were restocked was made by the survey, it is reasonable to expect that satisfactory restocking is taking place on the areas that have been free from reburns since the original slashing fire.

Noncommercial Forest Land

This category includes all areas occupied by subalpine forests, inferior tree growth on steep rocky sites or sterile soils below the altitudinal range of subalpine forests, and lodgepole pine type.

The area of subalpine forests is large, totaling 128 thousand acres, all of which is located in the high mountainous eastern portion of the county.

Areas of noncommercial forests on rocky and sterile sites total 18 thousand acres and are situated principally within the national forests.

The lodgepole pine type covers only 393 acres.

Site Quality of Forest Land

The survey classified all commercial conifer forest land in the county as to its site quality or productive capacity. This classification is summarized in table 4.

The areas of better site quality occur chiefly in the western half of the county; all of the area in site I and nearly 90 percent of that in site II is so located. Originally the area of site II was no doubt considerably greater in this part of the county; a large portion of the level uplands, now cut over, were probably of site II. Repeated fires on these areas, however, have so reduced the humus content of the soil as to lower the site quality a class. Some of the level bench lands in the southwestern part of the county are of site IV; the soil is of a rather coarse gravelly nature from which all organic material has been depleted since the land was logged. Most of the area occupied by coniferous second-growth stands is of sites II and III.

The forest lands of the eastern half of the county, practically all within the boundaries of the national forests, are predominately of sites III and IV. A small acreage of site II is found in the river bottoms and on the lower slopes below 2,000 feet elevation. Site III is usually found on the lower slopes up to 3,500 feet. Above this elevation the bulk of the land supporting commercial tree growth is of site IV. All the area of site V is located in this rough mountainous section of the county.

Saw-Timber Volume

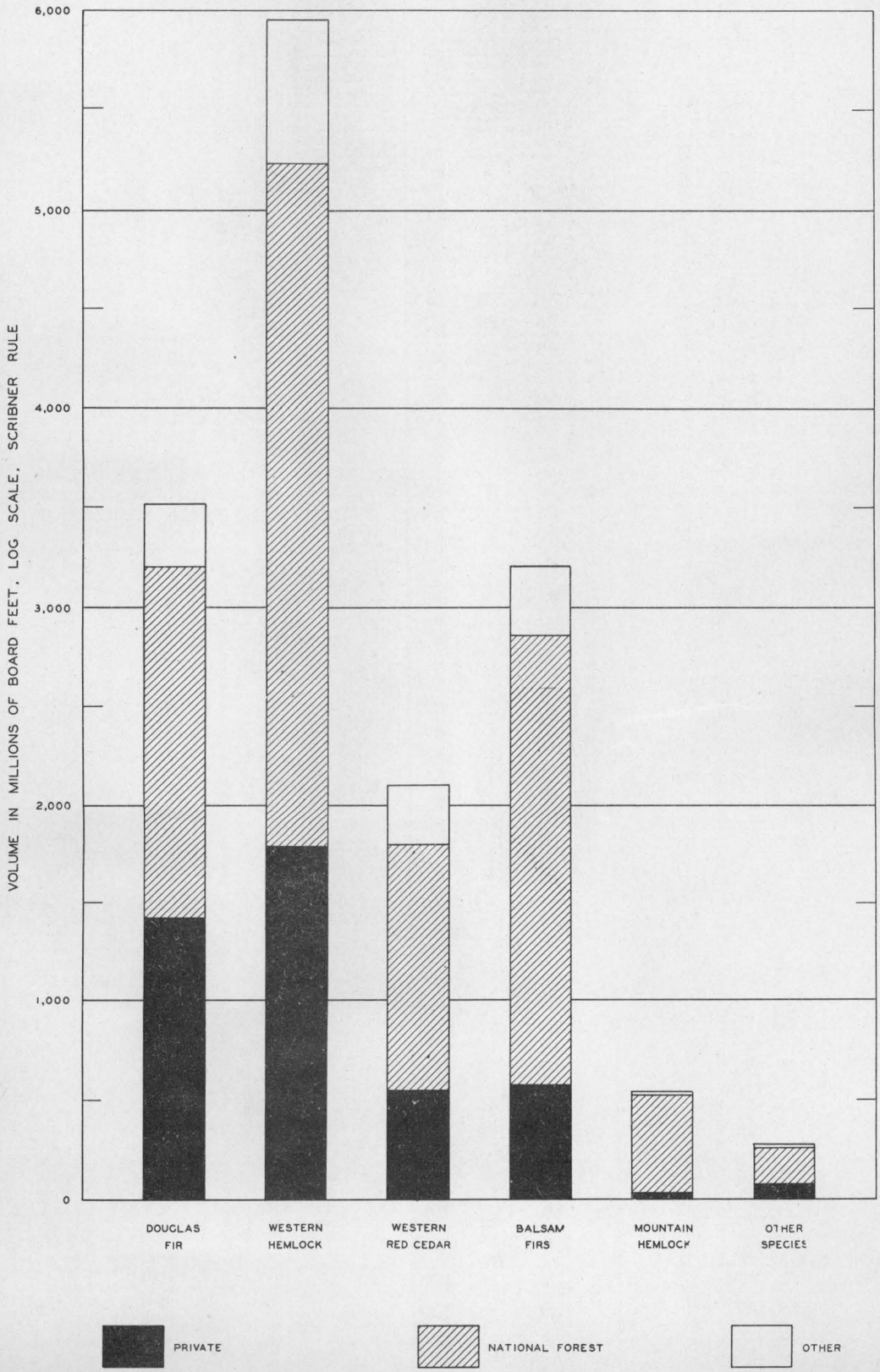
The survey shows the county's saw-timber volume to be 15.5 billion board feet, log scale, Scribner rule (table 5). This volume, divided among 12 conifers and 3 hardwoods, is predominately of species suitable for pulp manufacture. Approximately 63 percent of the total is of the so-called pulp species--western hemlock, Sitka spruce, mountain hemlock, the balsam firs, and northern black cottonwood. Douglas fir, the species that maintained the lumber industry of the county for such a long time, comprises only 23 percent of the total volume and western red cedar, the backbone of the shingle industry, comprises 13 percent. Figure 4 shows the distribution of the saw-timber volume by species and ownership class.

Distribution of the remaining saw-timber volume in the county is also illuminating. In the more accessible western half of the county where logging has been concentrated a total of only 4.4 billion board

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON

FROM INVENTORY PHASE OF FOREST SURVEY

FIGURE 4. DISTRIBUTION OF SAW-TIMBER VOLUME BY SPECIES AND OWNERSHIP CLASS (FROM TABLE 5)



feet, or 28 percent of the county's total volume, remains. However, a greater portion of the Douglas fir volume, 36 percent, is in this part of the county. The data also show that the saw-timber types in the area outside the national forests carry a considerably greater volume per acre than do those inside the national forest. Although only 22 percent of the area of all saw-timber types lies outside, 28 percent of the total volume is so located. A somewhat similar ratio holds true of the Douglas fir saw-timber types and volume.

Twenty-eight percent of the county's saw-timber volume is privately owned; 60 percent is in Federal ownership in the national forest; and most of the remainder is in State ownership.

Depletion

The second step in the analysis of Snohomish County's forest resources is to determine the rate at which they are being depleted.

Of the agencies of depletion that have been active in the county, cutting for commodity production has caused the bulk of the drain. Fire in recent years has killed only a comparatively small volume of saw timber, most of which has been salvaged; there is record of only one severe windstorm that caused an abnormal loss of timber recently, and the average annual loss through forest insects is of minor importance.

Cutting Depletion

In determining the rate of drain on the forests through cutting it was thought best to compile the average annual cut over a recent period of years that might be considered representative. The bulk of the saw-timber volume removed from the forests is taken out as sawlogs. Statistics of sawlog production in the county are available for the years 1925 to 1938, inclusive, but since the first five of these years constitute a period of peak production and the next three years one of subnormal production, the years 1933 to 1938, inclusive, were chosen as being more representative of current logging activity in the county. The average annual production of sawlogs during this 6-year period was approximately 197 million board feet.

Other material cut from trees of saw-timber size includes split pulpwood, fuel wood, shingle bolts, veneer blocks, piling, and fence posts. Although statistics on the volume of material cut in such form are not available for recent years, a study made in 1930[3/] showed that the total volume of all of these products amounted to 18 million board feet. Probably the only one of the products being cut in a greater volume at present is pulpwood. A considerable portion of the pulpwood requirements of the local pulp mills during recent years has been sup-

3/ Johnson, Herman M. THE PRODUCTION AND CONSUMPTION OF MINOR TIMBER PRODUCTS IN OREGON AND WASHINGTON. Office report, Pac. NW. For. Exp. Sta. 1931.

plied by cordwood cut in the county, although some of it has come from second-growth trees less than saw-timber size. The study of 1930 showed that material cut from trees less than saw-timber size amounted to 3.1 million cubic feet annually. Approximately 39 percent was in the form of fuel wood, about 30 percent in pulpwood, 29 percent in poles and piling, and the remainder in hewed ties and fence posts.

In all, cutting depletion in the county during recent years has averaged between 215 and 220 million board feet annually.

Fire Depletion

In the study of depletion of timber by fire in the county, made in connection with the survey, the average annual drain due to fire was determined from an analysis of past fire records. For the area outside the national forests records of fires occurring during the period 1926 to 1930 were used; for the area within the national forests records of fires during the period 1924 to 1931 were used.

Outside the national forests there was a total of 90 fires of 50 acres or more in extent and a total of 46,652 acres burned over during the 5-year period studied. The largest fire was of 6,300 acres. As might be expected, recent cutover areas and nonrestocked old cutover areas were the most inflammable. Of the total acreage burned over 54 percent was of recent cutover areas, logged between 1920 and 1932, inclusive, and 32 percent was of nonrestocked cutover areas logged prior to 1920. Only 15 percent of the total area was occupied by coniferous saw-timber stands and 3 percent by coniferous second-growth stands. The amount of merchantable timber killed was estimated at 15,972 thousand board feet, of which 15,925 thousand board feet was salvaged. Figured on an annual basis the average annual acreage burned over during the 5-year period was 9,330 acres and only about 9 thousand board feet of merchantable timber killed and not salvaged.

Within the national forests there was a total of only 10 fires over 10 acres in extent and a total area burned over of 1,782 acres during the 8-year period. The largest fire was of 700 acres. Of the area burned over, approximately 52 percent was occupied by coniferous second-growth stands less than saw-timber size and 29 percent by coniferous saw timber. Sixteen percent was of recent cut-over land and the remainder was occupied by subalpine forests. The volume of merchantable timber killed amounted to 2,581 thousand board feet, none of which was salvaged due to the inaccessibility of the timber. Computed on an annual basis the area burned over averaged 223 acres and the amount of saw timber killed averaged 40 thousand board feet.

Although these annual averages of area burned over and timber killed are based on comparatively short periods, they probably give a fairly reliable estimate of fire damage to saw-timber stands during recent years. However, damage to second-growth stands and loss resulting from the reburning of cut-over areas are difficult to estimate.

Present condition of a considerable part of the cut-over areas in the western portion of the county clearly indicates that burning and reburning is chiefly responsible for poorly or nonstocked areas.

Forest Growth

With the inventory and depletion phases of the forest survey analyzed, the next step is to determine the rate at which the county's forests are being replenished. Data used in this study of growth were gathered at the time of the original survey in 1932. However, there has been little change in the amount of growing stock of the forests during the elapsed 6 years.

Analysis of the growth data shows the area of growing stands in the county to be 297 thousand acres or 28 percent of the total area of forest land. Of this area a total of 249 thousand acres was occupied by coniferous types and 48 thousand acres by hardwood types. In this study only stands less than about 160 years in age were considered as contributing net growth. While there is some growth in all older stands--mature or overmature--on the whole growth is generally offset by mortality and decay and no net volume increment results.

The current annual volume increment, which may be defined as the volume increment accumulating during a specified year--in this case 1933, in coniferous trees was computed to be 48 million board feet or 18 million cubic feet. Growth in board feet was computed for all trees 15.6 inches or more in diameter breast height in 32-foot logs to a 12-inch top, Scribner rule, and in cubic feet for trees 3.6 inches or more in diameter breast height. The board-foot specifications used are slightly more intensive than the utilization standard now prevailing in the lumber industry. The current annual growth of hardwoods was computed to be about 2 million board feet or 2 million cubic feet. Growth in hardwoods was computed for trees 11.6 inches or more in diameter breast height in 8-foot logs to a 10-inch top.

If all the forest lands in the county capable of producing commercial timber were stocked with growing stands and producing to 75 percent of capacity, it is estimated that the average annual growth would approximate 260 million board feet or 90 million cubic feet. This estimate of possible future growth, known as potential annual growth, could only be obtained through intensive forest management of all commercial forest lands.

Trends in the Forest Situation

Comparison of the two inventories made in connection with the survey of Snohomish County's forest resources--the original in 1932 and the revision in 1938--reveals several marked trends in the county's forest economy.

The net volume reduction of merchantable saw timber through cutting has averaged approximately 225 million board feet annually during the elapsed 6 years. Approximately 44 percent of the total depletion during this period, however, was of Douglas fir although this species comprised less than 12 percent of the total saw-timber volume in 1932. Present inventory of Douglas fir volume amounts to 1.4 billion board feet--about 9 percent of total volume of all species. The bulk of the Douglas fir cut was from stands of large old growth (trees 40 inches or more d.b.h.) in private ownership.

Approximately 14 percent of the total of 115 thousand acres of old cut-over land, logged prior to 1920, that was nonrestocked in 1932 became restocked during the 6-year period. Of the 94 thousand acres classified by the original survey as recent cut-over land, logged since 1920, 4 thousand acres had been cut between 1930 and 1932, inclusive, and was still classified as recent cut over in the revision inventory. Careful examination of the 90 thousand acres cut between 1920 and 1929, inclusive, showed 37 thousand acres restocked and 53 thousand acres nonrestocked.

The area of deforested burn was reduced from 3,708 acres to 2,768 acres, indicating no new burns and partial restocking of the old.

The area of agricultural land shrunk some 3 thousand acres between inventories, indicating that no extensive clearing of cut-over land had taken place. The shrinkage in area was probably due to a more intensive classification of stump-pasture land in the revision inventory.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON
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TABLE 1. AREA, IN ACRES, OF ALL FOREST COVER TYPES, BY OWNERSHIP CLASS
DATA CORRECTED TO JULY 1, 1938

SURVEY TYPE NO.	TYPE DEFINITION	PRIVATE	STATE, AVAILABLE FOR CUTTING	COUNTY	MUNICIPAL	INDIAN, TRIBAL AND ALLOTMENTS	FEDERAL: PUBLIC DOMAIN, AVAILABLE FOR CUTTING	FEDERAL: NATIONAL FOREST, AVAILABLE FOR CUTTING	FEDERAL: NATIONAL FOREST, RESERVED FROM CUTTING	FEDERAL: STATE SELECTION 1/	TOTAL
	DOUGLAS FIR: FOREST CONTAINING 60% OR MORE OF DOUGLAS FIR										
6	DOUGLAS FIR, LARGE OLD GROWTH: MORE THAN 40" D.B.H.	14,905	3,385	285				24,432	73		43,080
7	DOUGLAS FIR, SMALL OLD GROWTH: 22 TO 40" D.B.H.	1,905	420	180				8,417	152		11,074
8	DOUGLAS FIR, LARGE SECOND GROWTH: 22 TO 40" D.B.H.	13,710	1,235	495	20		350	14,730			30,540
9	DOUGLAS FIR, SMALL SECOND GROWTH: 6 TO 20" D.B.H.	56,485	1,665	2,965	115	3,070	30	11,101			75,431
10	DOUGLAS FIR SEEDLINGS AND SAPLINGS: LESS THAN 6" D.B.H.	63,385	6,125	11,040	900	1,925	30	11,073	1,996		96,474
	SITKA SPRUCE: FOREST CONTAINING 50% OR MORE OF SITKA SPRUCE										
11	SITKA SPRUCE, LARGE: MORE THAN 24" D.B.H.							40			40
12	SITKA SPRUCE, SMALL: 6 TO 24" D.B.H.	590		310							900
	WESTERN HEMLOCK: FOREST CONTAINING 50% OR MORE OF WESTERN HEMLOCK										
14	WESTERN HEMLOCK, LARGE: MORE THAN 20" D.B.H.	36,860	17,845	810				106,172	6,765	440	168,892
15	WESTERN HEMLOCK, SMALL: 6 TO 20" D.B.H.	20,035	1,800	1,755	110		40	2,136			25,876
16	WESTERN HEMLOCK SEEDLINGS AND SAPLINGS: LESS THAN 6" D.B.H.	18,570	3,595	5,585	105	320		6,790	44		35,009
	WESTERN RED CEDAR: FOREST CONTAINING 40% OR MORE OF WESTERN RED CEDAR										
17	WESTERN RED CEDAR, LARGE: MORE THAN 24" D.B.H.	8,585	6,870	85	115			21,686	60	375	37,776
19	WESTERN RED CEDAR, SMALL: 24" OR LESS D.B.H.	2,650	80	375				525			3,630
	FIR-MOUNTAIN HEMLOCK: FOREST CONTAINING 50% OR MORE OF NOBLE FIR, SILVER FIR, OR MOUNTAIN HEMLOCK, OR A COMBINATION OF THESE SPECIES										
23	FIR-MOUNTAIN HEMLOCK, LARGE: 16" OR MORE D.B.H.	15,810	9,175	440				96,204	8,188	105	129,922
24	FIR-MOUNTAIN HEMLOCK, SMALL: LESS THAN 16" D.B.H.	1,545		25				11,923	750		14,243
	LODGEPOLE PINE: FORESTS CONTAINING 50% OR MORE OF LODGEPOLE PINE										
26	LODGEPOLE PINE, SMALL: LESS THAN 12" D.B.H.							326	67		393
	LOWLAND WHITE FIR: FOREST CONTAINING 50% OR MORE OF LOWLAND WHITE FIR										
29	LOWLAND WHITE FIR, LARGE: MORE THAN 20" D.B.H.	70				55					125
	HARDWOODS: FOREST CONTAINING 50% OR MORE OF HARDWOODS										
31.5	HARDWOODS, LARGE: 12" OR MORE D.B.H.	11,920	340	275		940		410	33		13,918
31	HARDWOODS, SMALL: LESS THAN 12" D.B.H.	34,480	1,110	1,620	115	1,075	5	1,481			39,886
33	SUBALPINE: FORESTS AT UPPER LIMITS OF TREE GROWTH, USUALLY UNMERCHANTABLE	4,365	6,380					97,704	18,840	465	127,754
	NONRESTOCKED CUTOVER: CLEAR CUT AREA NOT SATISFACTORILY RESTOCKED										
35	CLEAR CUT PRIOR TO 1920	76,420	3,700	8,345	435	9,305	20	1,292			99,517
35A	CLEAR CUT FROM 1920 TO 1929, INCLUSIVE	36,660	5,265	7,770	200		10	3,325			53,230
36	RECENT CUTOVER: CLEAR CUT SINCE BEGINNING OF 1930	25,115	2,505	945	30			5,709			34,304
	DEFORESTED AREA: NONRESTOCKED AREA DEFORESTED OTHERWISE THAN BY CUTTING										
37	DEFORESTED BURN	400	205	75	10			1,297	781		2,768
38	NONCOMMERCIAL ROCKY AREAS	2,930	2,965	30		65		11,440	192	260	17,882
	TOTAL FOREST TYPES	447,395	74,665	43,410	2,155	16,755	485	438,213	37,941	1,645	1,062,664
	NONFOREST LAND: CULTIVATED, GRASS, BRUSH, BARRENS, URBAN AREAS, AND UNMEANDERED WATER SURFACES										
2	GRASS, BRUSH, BARRENS, URBAN AREAS, AND UNMEANDERED WATER SURFACES	16,810	10,330	595	15	490		99,080	23,398	2,755	153,473
3	CULTIVATED AREAS	108,235	1,205	445		750	125	130			110,890
	TOTAL	572,440	86,200	44,450	2,170	17,995	610	537,423	61,339	4,400	1,327,027

1/ FEDERALLY-OWNED LAND OPEN FOR SELECTION AND ACQUISITION BY THE STATE OF WASHINGTON.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON
FROM INVENTORY PHASE OF FOREST SURVEY

TABLE 2. AREA, IN ACRES, OF GENERALIZED FOREST TYPES, BY OWNERSHIP CLASS
DATA CORRECTED TO JULY 1, 1938

TYPE DEFINITION		PRIVATE	STATE, AVAILABLE FOR CUTTING	COUNTY	MUNICIPAL	INDIAN, TRIBAL AND TRUST ALLOTMENTS	FEDERAL				TOTAL
							PUBLIC DOMAIN, AVAILABLE FOR CUTTING	NATIONAL FOREST AVAILABLE FOR CUTTING	NATIONAL FOREST RESERVED FROM CUTTING	STATE SELECTION 1/	
HARDWOODS: RED ALDER, BIGLEAF MAPLE, AND NORTHERN BLACK COTTONWOOD											
SURVEY TYPES 31 AND 31.5		46,400	1,450	1,895	115	2,015	5	1,891	33		53,804
CONIFERS MORE THAN ABOUT 20" D.B.H.											
SURVEY TYPES 6, 7, 8, 11, 14, 17, 23, AND 29		91,845	38,930	2,295	135	55	350	271,681	15,238	920	421,449
CONIFERS 6 TO 20" OR 6 TO 24" D.B.H.	ON CUTOVER AREAS	61,465	1,065	2,470	115	3,070	70	50			68,305
SURVEY TYPES 9, 12, AND 15	ON OLD BURNS	15,645	2,400	2,560	110			13,187			33,902
	TOTAL	77,110	3,465	5,030	225	3,070	70	13,237			102,207
CONIFERS 0 TO 6" D.B.H.	ON CUTOVER AREAS	78,980	8,815	16,195	1,005	2,245		7,585			114,825
SURVEY TYPES 10 AND 16	ON OLD BURNS	2,975	905	430			30	10,278	2,040		16,658
	TOTAL	81,955	9,720	16,625	1,005	2,245	30	17,863	2,040		131,483
CONIFERS 0 TO 16" OR 0 TO 24" D.B.H.	ON CUTOVER AREAS	2,650	30	375				475			3,530
SURVEY TYPES 19 AND 24	ON OLD BURNS	1,545	50	25				11,973	750		14,343
	TOTAL	4,195	80	400				12,448	750		17,873
NONCOMMERCIAL AREAS											
SURVEY TYPES 26, 33, AND 38		7,295	9,345	30		65		109,470	19,099	725	146,029
RECENT CUTOVER AREAS: CLEAR CUT SINCE BEGINNING OF 1930											
SURVEY TYPE 36		25,115	2,505	945	30			5,709			34,304
NONRESTOCKED CUTOVER AREAS AND DEFORESTED BURNS											
SURVEY TYPES 35, 35A, AND 37		113,480	9,170	16,190	645	9,305	30	5,914	781		155,515
TOTAL FOREST TYPES		447,395	74,665	43,410	2,155	16,755	485	438,213	37,941	1,645	1,062,664
NONFOREST LAND											
SURVEY TYPES 2 AND 3		125,045	11,535	1,040	15	1,240	125	99,210	23,398	2,755	264,363
TOTAL		572,440	86,200	44,450	2,170	17,995	610	537,423	61,339	4,400	1,327,027

1/ FEDERALLY-OWNED LAND OPEN FOR SELECTION AND ACQUISITION BY THE STATE OF WASHINGTON.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON
FROM INVENTORY PHASE OF FOREST SURVEY

TABLE 3. AREA, IN ACRES, OF CERTAIN IMMATURE CONIFEROUS FOREST TYPES, BY AGE CLASS AND DEGREE OF STOCKING
DATA CORRECTED TO JULY 1, 1938

AGE CLASS (YEARS)	DEGREE OF STOCKING	TYPE NUMBER AND NAME							TOTAL
		10 DOUGLAS FIR SEEDLINGS AND SAPLINGS	16 WESTERN HEMLOCK SEEDLINGS AND SAPLINGS	9 DOUGLAS FIR, SMALL SECOND GROWTH	12 SITKA SPRUCE, SECOND GROWTH	15 WESTERN HEMLOCK, SECOND GROWTH	19 WESTERN RED CEDAR, SMALL	24 FIR-MOUNTAIN HEMLOCK, SMALL	
10	GOOD	7,435	3,174				25		10,634
	MEDIUM	33,304	15,349				550		49,203
	POOR	29,485	7,375				2,760	37	39,657
	TOTAL	70,224	25,898				3,335	37	99,494
20	GOOD	3,146	2,391	1,130			50	2,097	8,814
	MEDIUM	15,379	4,545	3,160		250	135	7,886	31,355
	POOR	7,365	675	1,075		160		1,294	10,569
	TOTAL	25,890	7,611	5,365		410	185	11,277	50,738
30	GOOD	80	850	4,665		250		1,007	6,852
	MEDIUM	145	370	16,495		4,065	60	455	21,590
	POOR			4,240		1,645		30	5,915
	TOTAL	225	1,220	25,400		5,960	60	1,492	34,357
40	GOOD	135		2,678		20			2,833
	MEDIUM		280	14,380		2,855		1,413	18,928
	POOR			930		1,110			2,040
	TOTAL	135	280	17,988		3,985		1,413	23,801
50	GOOD			431		140			571
	MEDIUM			4,715		1,200	50		5,965
	POOR			410	115	225			750
	TOTAL			5,556	115	1,565	50		7,286
60	GOOD			4,025		295			4,320
	MEDIUM			7,224		1,823		24	9,071
	POOR			1,432		425			1,857
	TOTAL			12,681		2,543		24	15,248
70	GOOD			150		625			775
	MEDIUM			1,117		3,655			4,772
	POOR			360		30			390
	TOTAL			1,627		4,310			5,937
80	GOOD			2,518	645	185			3,348
	MEDIUM			1,538	100	2,725			4,363
	POOR			275		1,300			1,575
	TOTAL			4,331	745	4,210			9,286
90	GOOD								
	MEDIUM					865			865
	POOR					225			225
	TOTAL					1,090			1,090
100 AND OVER	GOOD			1,425					1,425
	MEDIUM			1,058		1,015			2,073
	POOR				40	788			828
	TOTAL			2,483	40	1,803			4,326
TOTAL ALL AGES	GOOD	10,796	6,415	17,022	645	1,515	75	3,104	39,572
	MEDIUM	48,828	20,544	49,687	100	18,453	795	9,778	148,185
	POOR	36,850	8,050	8,722	155	5,908	2,760	1,361	63,806
	TOTAL	96,474	35,009	75,431	900	25,876	3,630	14,243	251,563

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON
FROM INVENTORY PHASE OF FOREST SURVEY

TABLE 4. AREA OF FOREST LAND, BY SITE QUALITY
DATA CORRECTED TO JULY 1, 1938

SITE CLASSIFICATION			AREA IN ACRES	AREA IN PERCENTAGE OF--		
TYPE	SITE QUALITY CLASS 1/			COMMERCIAL CONIFER FOREST LAND	TOTAL FOREST LAND	TOTAL AREA
COMMERCIAL CONIFER	DOUGLAS FIR AND SPRUCE-HEMLOCK	I	2,589	0.3	0.2	0.2
		II	238,141	27.6	22.4	17.9
		III	360,663	41.8	33.9	27.2
		IV	235,553	27.3	22.2	17.8
		V	25,885	3.0	2.5	1.9
TOTAL COMMERCIAL CONIFER			862,831	100.0	81.2	65.0
LODGEPOLE PINE			393			
NONCOMMERCIAL ROCKY AREAS			17,882		1.7	1.4
SUBALPINE			127,754		12.0	9.6
HARDWOOD			53,804		5.1	4.1
TOTAL OTHER THAN COMMERCIAL CONIFER			199,833		100.0	15.1
ALL FOREST TYPES			1,062,664			
NONFOREST TYPES			264,363			19.9
GRAND TOTAL			1,327,027			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 BOTH DOUGLAS FIR AND SPRUCE-HEMLOCK 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.

FOREST STATISTICS FOR SNOHOMISH COUNTY, WASHINGTON
FROM INVENTORY PHASE OF FOREST SURVEY

TABLE 5. VOLUME OF TIMBER BY SPECIES AND OWNERSHIP CLASS
DATA CORRECTED TO JULY 1, 1938

TREES 16" AND MORE IN D.B.H.[1]
THOUSANDS OF BOARD FEET, LOG SCALE, SCRIBNER RULE

SURVEY SYMBOL	SPECIES	PRIVATE	STATE, AVAILABLE FOR CUTTING	COUNTY	MUNICIPAL	INDIAN, TRIBAL AND TRUST ALLOTMENTS	FEDERAL: PUBLIC DOMAIN, AVAILABLE FOR CUTTING	FEDERAL: NATIONAL FOREST AVAILABLE FOR CUTTING	FEDERAL: NATIONAL FOREST RESERVED FROM CUTTING	FEDERAL: STATE SELECTION[2]	TOTAL
DA	LARGE OLD-GROWTH DOUGLAS FIR	850,374	173,782	4,674	625			1,021,864	1,272	3,026	2,055,617
DB	SMALL OLD-GROWTH DOUGLAS FIR	88,263	17,345	3,668				357,059	18,405		484,740
DC	LARGE SECOND-GROWTH DOUGLAS FIR	342,488	34,646	27,017	288		20,881	338,818			764,138
DD	SMALL SECOND-GROWTH DOUGLAS FIR	131,062	14,732	14,427		6,024	214	33,171			199,630
SA	LARGE SITKA SPRUCE	24,525	3,628	229				7,761	103		36,246
SB	SMALL SITKA SPRUCE	3,460		28							3,488
HA	LARGE WESTERN HEMLOCK	1,426,245	585,832	27,449	1,355			2,974,995	112,806	13,994	5,142,676
HB	SMALL WESTERN HEMLOCK	347,756	87,603	21,497	56	112	477	326,268	12,534		796,303
MH	MOUNTAIN HEMLOCK	24,839	16,706					473,364	11,125	1,040	527,074
C	WESTERN RED CEDAR, LIVE	504,343	230,676	4,915	2,565			1,064,670	27,311	7,178	1,841,658
KC	WESTERN RED CEDAR, DEAD	30,431	68,753	51	253			147,662	900	1,304	249,357
YC	ALASKA CEDAR	5,908	2,370					99,172	5,064	1,151	113,665
W	WESTERN WHITE PINE	6,352	2,568	19				55,671	5,660	270	70,540
LP	LODGEPOLE PINE							148			148
WF	LOWLAND WHITE FIR	1,335				1,100		5,418	458		8,311
NF	NOBLE FIR	377						492			869
A	SILVER FIR	560,740	338,435	14,888				2,135,352	118,591	8,123	3,176,129
AF	ALPINE FIR							622			622
RA	RED ALDER	21,799	533	320		3,050		1,294			26,996
BC	NORTHERN BLACK COTTONWOOD	7,717	354	35		120		3,732	124		12,082
OM	BIGLEAF MAPLE	6,567	397	145		445		571			8,125
	TOTAL	4,384,584	1,578,360	119,362	5,142	10,851	21,572	9,048,104	314,353	36,086	15,518,414

1/ TREES OF HARDWOOD SPECIES TAKEN FROM 12" AND MORE D.B.H.
2/ FEDERALLY-OWNED LAND OPEN FOR SELECTION AND ACQUISITION BY THE STATE OF WASHINGTON.