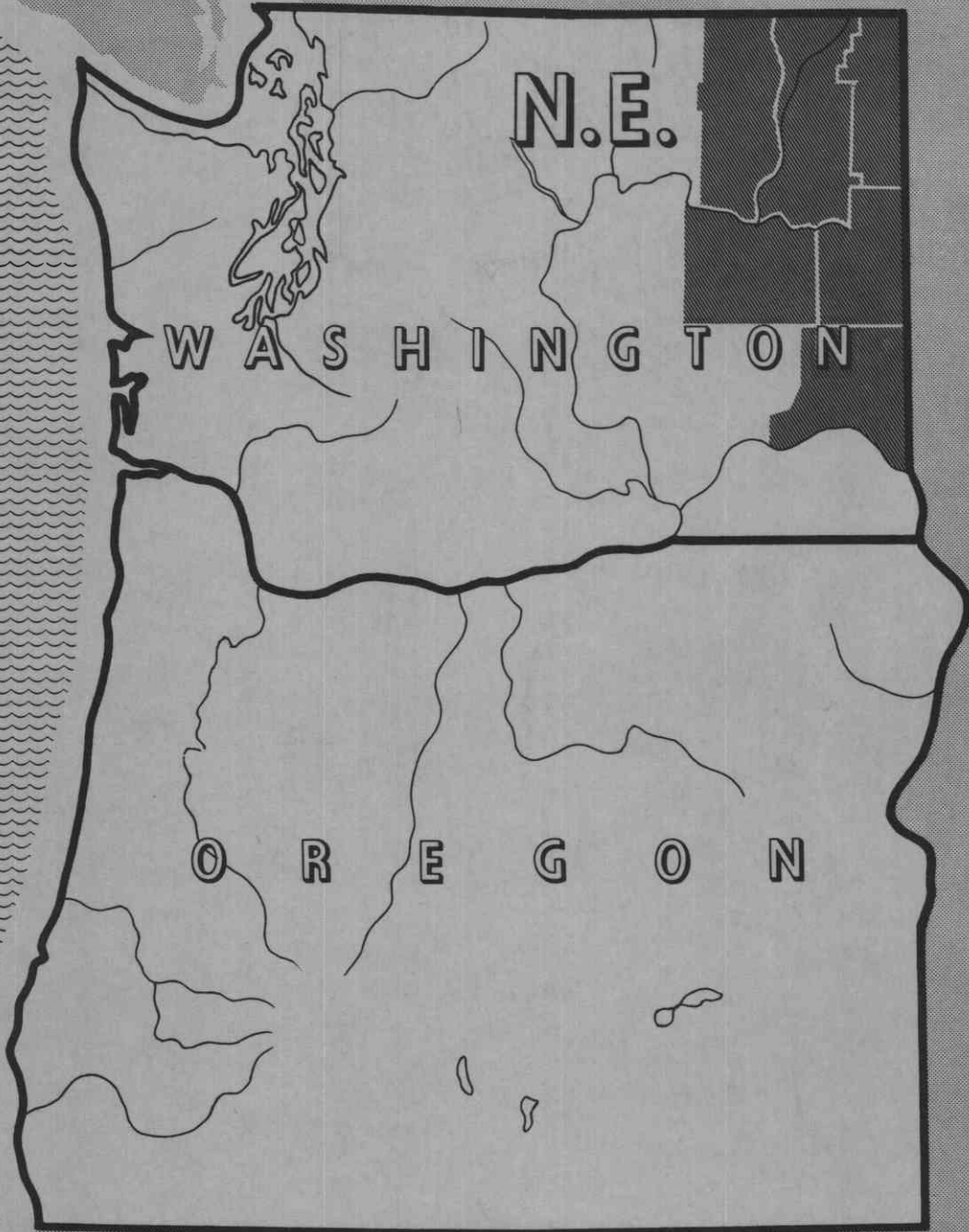


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Forest Statistics for



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



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PREPARED BY
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FOREST STATISTICS FOR NORTHEAST WASHINGTON

by

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PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
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FOREST SERVICE

U.S. DEPARTMENT OF AGRICULTURE

PREFACE

This publication summarizes the results of the third inventory of six northeast Washington counties: Ferry, Lincoln, Pend Oreille, Spokane, Stevens, and Whitman. The collection of field data was made during the years 1957 to 1961 in three separate inventory projects.^{1/}

The original inventory of Pend Oreille, Spokane, and Stevens Counties was made in 1934 and 1935 by the Northern Rocky Mountain Forest and Range Experiment Station. Results of this inventory appear in survey reports: "Forest Statistics, Pend Oreille County, Washington," March 1937, Forest Survey Release No. 2; "Forest Statistics, Spokane County, Washington," May 1937, Forest Survey Release No. 4; and "Forest Statistics, Stevens County, Washington," June 1937, Forest Survey Release No. 5.

During the same period, the Pacific Northwest Forest and Range Experiment Station inventoried the remaining counties: Ferry, Lincoln, and Whitman. Results of this inventory were published as "Forest Statistics for Ferry County, Washington," April 1937, and "Forest Statistics for Douglas, Lincoln, and Whitman Counties, Washington," January 1936.

The second inventory of northeast Washington was made during the period 1946 to 1948. A report of this inventory was published by the Northern Rocky Mountain Forest and Range Experiment Station as "Forest Resources of Northeast Washington," May 1949, Station Paper No. 21.

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, amended June 25, 1949. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the timber and other forest products on them, to determine rates of forest growth and depletion, to estimate present consumption of timber products and probable future trends in timber requirements, to analyze and make available survey information needed in the formulation of forest policies and programs, and to make resurveys 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 regional Experiment Stations of the U.S. Forest Service. In the States of Oregon and Washington, it is the responsibility of the Pacific Northwest Forest and Range Experiment Station at Portland, Oreg.

^{1/} See "Forest Survey Procedures," p. 23.

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NORTHEAST WASHINGTON'S FOREST RESOURCE IN BRIEF

COMMERCIAL FOREST LAND--

- Covers 3,626,000 acres or 46 percent of the area;
- Has decreased 82,000 acres since 1948; and
- Is 59 percent publicly owned.

GROWING STOCK VOLUME--

- Amounts to 5,429 million cubic feet;
- Is 99 percent softwoods; and
- Is 68 percent publicly owned.

SAWTIMBER VOLUME--

- Totals 19,642 million board feet, International 1/4-inch rule (17,224 million board feet, Scribner rule);
- Is 74 percent publicly owned;
- Is 90 percent in trees less than 29 inches in diameter; and
- Is 32 percent greater than in 1948.

NATIONAL FOREST OWNERSHIP--

- Has 30 percent of the commercial forest area;
- Controls 32 percent of the sawtimber area; and
- Holds 38 percent of the sawtimber volume.

OTHER PUBLIC OWNERSHIP--

- Has 30 percent of the commercial forest area;
- Controls 41 percent of the sawtimber area; and
- Holds 36 percent of the sawtimber volume.

FOREST INDUSTRY OWNERSHIP--

- Has 4 percent of the commercial forest area;
- Controls 4 percent of the sawtimber area; and
- Has 6 percent of the sawtimber volume.

FARMER AND MISCELLANEOUS PRIVATE OWNERSHIP--

- Has 36 percent of the commercial forest area;
- Controls 23 percent of the sawtimber area; and
- Holds 20 percent of the sawtimber volume.

Table 1.--Area by land classes, by county, northeast Washington, 1960

(In acres)

Land class	County						
	Total	Ferry	Lincoln	Pend Oreille	Spokane	Stevens	Whitman
Commercial forest	3,626,000	1,123,000	60,000	812,000	365,000	1,256,000	10,000
Unproductive forest	119,000	63,000	1,000	30,000	2,000	23,000	--
Productive-reserved forest	28,000	--	--	1,000	27,000	--	--
Total forest	3,773,000	1,186,000	61,000	843,000	394,000	1,279,000	10,000
Nonforest	1/4 1,111,000	220,000	1,411,000	57,000	734,000	312,000	1,377,000
All land	2/ 7,884,000	1,406,000	1,472,000	900,000	1,128,000	1,591,000	1,387,000

1/ Includes 14,551 acres of water according to Survey standards of area classification but defined by Bureau of the Census as land.

2/ From U.S. Bureau of the Census, Land and Water Area of the United States, 1960.

Table 2.--Area of commercial forest land, by county and
ownership classes, northeast Washington, 1960

(In acres)

County	All ownerships	National Forest	Other public	Forest industry	Farmer and miscel- laneous private
Ferry	1,123,000	381,000	598,000	10,000	134,000
Lincoln	60,000	--	--	--	60,000
Pend Oreille	812,000	486,000	45,000	48,000	233,000
Spokane	365,000	--	29,000	23,000	313,000
Stevens	1,256,000	208,000	395,000	80,000	573,000
Whitman	10,000	--	--	--	10,000
All counties	3,626,000	1,075,000	1,067,000	161,000	1,323,000

Table 3.--Area of commercial forest land, by stand-size and
ownership classes, northeast Washington, 1960

(In acres)

Stand-size class	: : All : ownerships :	: : National : Forest :	: : Other : public :	: : Forest : industry :	: Farmer and : miscel- : laneous : private
Sawtimber stands	1,948,000	623,000	793,000	89,000	443,000
Poletimber stands	1,023,000	180,000	168,000	56,000	619,000
Sapling and seed- ling stands	529,000	253,000	77,000	12,000	187,000
Nonstocked areas	126,000	19,000	29,000	4,000	74,000
All classes	3,626,000	1,075,000	1,067,000	161,000	1,323,000

Table 4.--Area of commercial forest land, by stocking classes
of growing-stock trees and by stand-size classes,
northeast Washington, 1960

(In acres)

Stocking class	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked stands
70 percent or more	1,987,000	1,042,000	644,000	301,000	--
40 to 70 percent	1,027,000	584,000	286,000	157,000	--
10 to 40 percent	486,000	322,000	93,000	71,000	--
Less than 10 percent	126,000	--	--	--	126,000
All classes	3,626,000	1,948,000	1,023,000	529,000	126,000

Table 5.--Area of commercial forest land, by forest types and ownership classes, northeast Washington, 1960

(In acres)

Type	All ownerships	Public ownerships	Private ownerships
Douglas-fir	1,413,000	898,000	515,000
Ponderosa pine	1,163,000	664,000	499,000
Western white pine	75,000	63,000	12,000
Lodgepole pine	427,000	233,000	194,000
Grand fir	53,000	11,000	42,000
Subalpine fir	3,000	1,000	2,000
Engelmann spruce	47,000	44,000	3,000
Western hemlock	36,000	31,000	5,000
Western redcedar	24,000	10,000	14,000
Western larch	234,000	129,000	105,000
Black cottonwood ^{1/}	18,000	5,000	13,000
Other hardwoods	7,000	5,000	2,000
Nonstocked	126,000	48,000	78,000
All types	3,626,000	2,142,000	1,484,000

^{1/} Includes quaking aspen.

Table 6.--Area of noncommercial forest land, by forest types,
northeast Washington, 1960

(In acres)

Type	:	:	:	:
	:	All areas	:	Productive- reserved areas
	:		:	Unproductive areas
	:		:	
Douglas-fir		12,000		12,000
Ponderosa pine		6,000		6,000
Western white pine		(1/)		--
Lodgepole pine		5,000		5,000
True fir—mountain hemlock		1,000		1,000
Grand fir		1,000		1,000
Western larch		(1/)		--
Hardwoods		1,000		1,000
Nonstocked		2,000		2,000
Noncommercial rocky		119,000		--
				119,000
All types		147,000		28,000
				119,000

1/ Less than 500 acres.

Table 7.--Volume of growing stock and sawtimber on commercial
forest land by counties, northeast Washington, 1960

County	Growing stock	Sawtimber (International 1/4-inch rule)	Sawtimber (Scribner rule)
	<u>Million cu. ft.</u>	<u>Million bd. ft.</u>	<u>Million bd. ft.</u>
Ferry	1,944	8,121	7,236
Lincoln	36	102	89
Pend Oreille	1,372	4,836	4,163
Spokane	387	1,110	958
Stevens	1,677	5,423	4,735
Whitman	13	50	43
Total	5,429	19,642	17,224

Table 8.--Volume of timber on commercial forest land, by class
of timber and by softwoods and hardwoods, northeast
Washington, 1960

Class of timber	All species	Softwoods	Hardwoods
----- <u>Million cubic feet</u> -----			
Sawtimber trees:			
Saw-log portion	3,389	3,373	16
Upper-stem portion	255	254	1
Total	3,644	3,627	17
Poletimber trees	1,785	1,745	40
All growing-stock trees	5,429	5,372	57
Sound cull trees:			
Sawtimber-size	12	12	--
Poletimber-size	12	6	6
Total	24	18	6
Rotten cull trees:			
Sawtimber-size	152	152	--
Poletimber-size	--	--	--
Total	152	152	--
Salvable dead trees:			
Sawtimber-size	151	150	1
Poletimber-size	--	--	--
Total	151	150	1
Total, all timber	5,756	5,692	64

Table 9.--Volume of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, northeast Washington, 1960

Timber and ownership classes	All species	Softwoods	Hardwoods
	<u>Million</u> <u>cu. ft.</u>	<u>Million</u> <u>cu. ft.</u>	<u>Million</u> <u>cu. ft.</u>
Growing stock:			
National Forest ^{1/}	1,881	1,876	5
Other public	1,804	1,788	16
Forest industry	301	297	4
Farmer and miscellaneous private	1,443	1,411	32
All ownerships	5,429	5,372	57
	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>
Sawtimber (International 1/4-inch rule):			
National Forest ^{1/}	7,449	7,434	15
Other public	7,110	7,068	42
Forest industry	1,209	1,202	7
Farmer and miscellaneous private	3,874	3,846	28
All ownerships	19,642	19,550	92
Sawtimber (Scribner rule):			
National Forest ^{1/}	6,448	6,433	15
Other public	6,361	6,320	41
Forest industry	1,065	1,059	6
Farmer and miscellaneous private	3,350	3,323	27
All ownerships	17,224	17,135	89

^{1/} Data for National Forest based on National Forest working circle inventories.

Table 10.--Volume of growing stock on commercial forest land by species
and diameter classes, northeast Washington, 1960

Species	Diameter class (inches at breast height)										
	All	5.0-	7.0-	9.0-	11.0-	13.0-	15.0-	17.0-	19.0-	29.0-	39.0 and
	Classes	6.9	8.9	10.9	12.9	14.9	16.9	18.9	28.9	38.9	larger
----- Million cubic feet -----											
Softwoods:											
Douglas-fir	1,774	139	193	192	248	212	182	135	383	77	13
Ponderosa pine	1,245	61	67	88	120	128	120	110	391	145	15
Western white pine	148	4	15	21	56	37	14	(1/)	1	--	--
Lodgepole pine	595	139	197	128	72	44	11	4	--	--	--
Grand fir	280	35	38	47	44	36	30	15	33	2	--
Subalpine fir	83	12	18	6	33	11	1	1	1	--	--
Engelmann spruce	193	35	12	16	75	49	1	2	3	--	--
Western hemlock	104	6	9	4	63	19	2	1	--	--	--
Western redcedar	134	12	17	11	22	27	17	12	13	3	--
Western larch	816	58	74	91	122	115	104	83	145	22	2
Total	5,372	501	640	604	855	678	482	363	970	249	30
Hardwoods:											
Quaking aspen	20	5	6	4	2	2	1	--	--	--	--
Western paper birch	23	11	6	3	1	2	(1/)	--	--	--	--
Black cottonwood	12	1	(1/)	2	2	2	(1/)	(1/)	4	1	--
Other hardwoods	2	2	--	--	--	--	--	--	--	--	--
Total	57	19	12	9	5	6	1	--	4	1	--
All species	5,429	520	652	613	860	684	483	363	974	250	30

^{1/}
Less than 500,000 cubic feet.

Table 11.--Volume of sawtimber on commercial forest land, by species and diameter
classes, northeast Washington, 1960 (International 1/4-inch rule)

Species	Diameter class (inches at breast height)							
	All	11.0-	13.0-	15.0-	17.0-	19.0-	29.0-	39.0 and
	classes	12.9	14.9	16.9	18.9	28.9	38.9	larger
----- Million board feet -----								
Softwoods:								
Douglas-fir	6,304	1,129	1,051	784	669	2,077	467	127
Ponderosa pine	5,780	559	607	607	591	2,325	975	116
Western white pine	625	264	97	91	164	9	--	--
Lodgepole pine	620	314	223	64	19	--	--	--
Grand fir	910	204	201	167	102	222	14	--
Subalpine fir	148	87	38	12	5	6	--	--
Engelmann spruce	755	421	304	8	7	15	--	--
Western hemlock	455	241	120	94	--	--	--	--
Western redcedar	495	89	136	93	80	80	15	2
Western larch	3,458	553	615	609	536	976	157	12
Total	19,550	3,861	3,392	2,529	2,173	5,710	1,628	257
Hardwoods:								
Quaking aspen	28	13	11	4	--	--	--	--
Western paper birch	7	2	4	1	--	--	--	--
Black cottonwood	57	9	13	(1/)	3	28	4	--
Total	92	24	28	5	3	28	4	--
All species	19,642	3,885	3,420	2,534	2,176	5,738	1,632	257

^{1/} Less than 500,000 board feet.

Table 12.--Volume of sawtimber on commercial forest land, by species and diameter

classes, northeast Washington, 1960 (Scribner rule)

Species	Diameter class (inches at breast height)										
	All	11.0-	13.0-	15.0-	17.0-	19.0-	21.0-	23.0-	25.0-	27.0-	29.0- and larger
classes	12.9	14.9	16.9	18.9	20.9	22.9	24.9	26.9	28.9	30.9	32.9
----- Million board feet -----											
Softwoods:											
Douglas-fir	5,599	925	885	675	597	1,918	478				121
Ponderosa pine	5,119	459	510	522	522	2,128	869				109
Western white pine	531	217	82	78	146	8					--
Lodgepole pine	517	257	188	55	17	--					--
Grand fir	787	167	169	144	90	204	13				--
Subalpine fir	124	72	32	10	4	6					--
Engelmann spruce	628	346	256	7	6	13					--
Western hemlock	380	198	101	81	--	--					--
Western redcedar	427	73	114	80	71	73	14				2
Western larch	3,023	452	517	525	474	896	147				12
Total	17,135	3,166	2,854	2,177	1,927	5,246	1,521				244
Hardwoods:											
Quaking aspen	27	12	11	4	--	--					--
Western paper birch	7	2	4	1	--	--					--
Black cottonwood	55	9	12	(1/)	3	27	4				--
Total	89	23	27	5	3	27	4				--
All species	17,224	3,189	2,881	2,182	1,930	5,273	1,525				244

1/ Less than 500,000 board feet.

Table 13.--Volume of salvable dead sawtimber-size trees
on commercial forest land, by softwoods and
hardwoods, northeast Washington, 1960

Species group	Volume	
	International 1/4-inch rule	Scribner rule
	----- <u>Million board feet</u> -----	
Softwoods	537	467
Hardwoods	7	7
All species	544	474

Table 14.--Annual mortality of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, northeast Washington, 1960

Ownership class	Growing stock			Sawtimber (International 1/4-inch rule)			Sawtimber (Scribner rule)		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	--- Million cu. ft. ---			--- Million bd. ft. ---			--- Million bd. ft. ---		
National Forest	12	12	--	55	55	(1/)	48	48	--
Other public	9	9	--	35	34	1	31	30	1
Forest industry	1	1	--	3	3	--	2	2	--
Farmer and miscellaneous private	6	6	--	17	16	1	15	14	1
All ownerships	28	28	(1/)	110	108	2	96	94	2

1/
Less than 500,000 board feet.

Table 15.--Number of growing-stock trees on commercial forest
land, by diameter classes and by softwoods and
hardwoods, northeast Washington, 1960

Diameter class (inches d.b.h.)	All species	Softwoods	Hardwoods
5.0 - 6.9	156,498,000	152,015,000	4,483,000
7.0 - 8.9	88,209,000	86,554,000	1,655,000
9.0 - 10.9	47,179,000	46,457,000	722,000
11.0 - 12.9	35,968,000	35,702,000	266,000
13.0 - 14.9	21,609,000	21,372,000	237,000
15.0 - 16.9	10,959,000	10,934,000	25,000
17.0 - 18.9	6,165,000	6,156,000	9,000
19.0 - 28.9	9,403,000	9,353,000	50,000
29.0 - 38.9	1,064,000	1,060,000	4,000
39.0 and larger	68,000	68,000	--
All classes	377,122,000	369,671,000	7,451,000

Table 16.--Number of cull and salvable dead trees on
commercial forest land, by diameter groups
and by softwoods and hardwoods, northeast
Washington, 1960

Diameter class (inches d.b.h.)	Cull trees	Salvable dead trees
Softwoods:		
5.0 - 10.9	10,723,000	--
11.0 - 18.9	11,379,000	5,886,000
19.0 and larger	1,821,000	1,040,000
Total	23,923,000	6,926,000
Hardwoods:		
5.0 - 10.9	1,280,000	--
11.0 - 18.9	--	12,000
19.0 and larger	--	12,000
Total	1,280,000	24,000
All species	25,203,000	6,950,000

Table 17.--Timber harvest by ownership class, northeast Washington,1950-60 (Scribner rule)

Year ^{1/}	Private	State	National Forest	Other public	Total
----- <u>Thousand board feet</u> -----					
1950	42,323		41,839	48,119	132,281
1951	111,839		42,267	48,185	202,291
1952	107,333		50,798	54,599	212,730
1953	117,287		35,783	58,434	211,504
1954	134,874		52,112	50,990	237,976
1955	151,564	5,733	49,814	59,567	266,678
1956	156,018	508	65,390	73,568	295,484
1957	130,780	2,504	66,245	54,196	253,725
1958	127,175	899	73,564	72,725	274,363
1959	139,798	2,291	86,007	105,433	333,529
1960	134,727	3,293	68,584	69,894	276,498

^{1/} For the years 1950-54, data for private and State ownerships were not separated.

ACCURACY OF THE 1960 REINVENTORY DATA

Forest Area and Timber Volume

Estimates of forest land area for National Forest and Indian ownerships were obtained from the most recent inventories. These estimates were based on complete enumeration by means of a forest type map, thus no sampling error was involved. Volume estimates for these areas and both volume and area estimates for the remaining portion of the six-county area were derived by sampling and thus have sampling errors. Sampling errors were calculated for total commercial and noncommercial forest land and total board-foot and cubic-foot volume only. In all cases an effort was made to hold errors due to techniques or judgment to a minimum by close supervision and frequent checks of all phases of the work.

Table 18 presents the estimated sampling errors as a percent of the total estimate at the 68-percent and 95-percent probability levels.

Table 18. -- Sampling error of estimates of forest area
and timber volume

Item	Estimated total	Sampling error in percent	
		68-percent probability	95-percent probability
Commercial forest land	3,626,000 acres	0.9	1.7
Noncommercial forest land	147,000 acres	1.9	3.6
Volume (Scribner)	17,224 million board feet	3.3	6.4
Volume	5,429 million cubic feet	2.6	5.0

The sampling error of a portion of the total area or volume estimate may be approximated by obtaining its proportion of the total estimate and referring to figure 1, page 20. The multiplying factor applied to the percent sampling error of the total estimate will give an approximation of the sampling error of the portion.

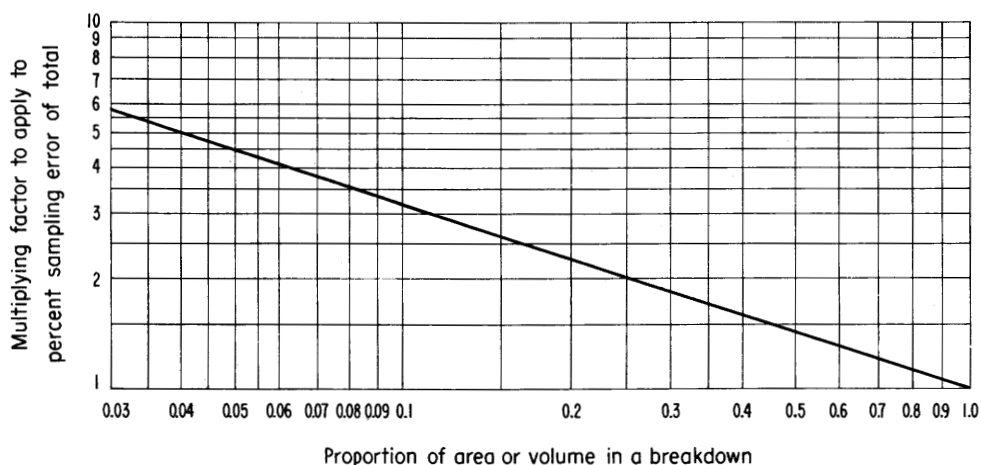


Figure 1.--Ratio of sampling error of an area or volume breakdown to sampling error of total area or volume.

For example, assume that the sampling error reported for a total is ± 5 percent, and an estimate of the sampling error for an item which is only 0.25 of this total is desired. Reading from figure 1, the multiplying factor for a proportion of 0.25 is 2. The estimated sampling error for the item is then 2 times ± 5 percent, the sampling error of the total, or ± 10 percent.

DIFFERENCES IN RESULTS OF INVENTORIES

Tables 19 and 20 show area and volume estimates for the 1960 and 1946-48 inventories. Some of the differences between forest-area and timber-volume estimates for the two inventories are due to physical changes, such as cutting and growth of stands, restocking of deforested area, and the shift of forest land to other uses such as urban development. Some of the differences are due to changes in the inventory procedures used, some to the changes in the standards of utilization recognized, and some to changes in Forest Survey standards and definitions. These variations make it difficult to draw meaningful conclusions from the comparison of the two sets of statistics.

It seems likely, however, that the change in the area of commercial forest land since 1948 is largely due to physical changes such as urban development, withdrawal of forest land for powerline and highway rights-of-way, and for agricultural and industrial uses.

The considerable increase in volume, however, is mostly due to better estimates resulting from improved inventory techniques and, to some extent, the effect of changed utilization standards.

Table 19.--Comparison of forest-area statistics for
northeast Washington
(In acres)

Land-use class	:	1946-48	:	1960
	:	reinventory	:	reinventory
Commercial forest	:	3,708,000	:	3,626,000
Noncommercial forest:				
Productive-reserved		7,000		28,000
Unproductive		215,000		119,000
Total noncommercial forest		222,000		147,000
Total forest		3,930,000		3,773,000
Nonforest		4,016,000		4,111,000
All land		<u>1/</u> 7,946,000		<u>2/</u> 7,884,000

1/ From U.S. Bureau of the Census, Land and Water Area of the United States, 1940. This figure includes the area of Franklin D. Roosevelt Lake behind Grand Coulee Dam and other areas of water which have since been removed from the Bureau of the Census figures for land area.

2/ From U.S. Bureau of the Census, Land and Water Area of the United States, 1960.

Table 20.--Comparison of timber-volume statistics fornortheast Washington

(In million board feet, International 1/4-inch rule)

Species	: : : : :	: : : : :	: : : : :
		1946-48 reinventory	1960 reinventory
Softwoods:			
Douglas-fir		4,696	6,304
Ponderosa pine		5,582	5,780
Western white pine		418	625
Lodgepole pine		420	620
Grand fir		329	910
Subalpine fir		61	148
Engelmann spruce		156	755
Western hemlock		261	455
Western redcedar		373	495
Western larch		2,533	3,458
Total		14,829	19,550
Hardwoods:			
Black cottonwood		52	57
Other		10	35
Total		62	92
All species		14,891	19,642

FOREST SURVEY PROCEDURES

This inventory contains the data from a group of separate subinventories: the Spokane Indian Reservation, 1957; the Colville National Forest, 1957; the Kaniksu National Forest, 1961; the Colville Indian Reservation, 1958; the remaining area outside the National Forests and Indian reservations, 1960.

The Colville and Kaniksu National Forests were inventoried by National Forest personnel of Forest Service Region 1. All other units were inventoried by the Pacific Northwest Forest and Range Experiment Station.

The Indian reservations and the National Forest inventory designs were similar in that they both used a forest type map prepared from aerial photos to obtain area statistics and a field sample for volume estimates. In contrast, the remaining area was inventoried with a two-stage sampling design using photo and field plots to obtain both area and volume estimates.

The basic field sample of the Indian reservations and the remaining area outside the National Forests consisted of field plots located on systematic grids with intervals of 1.7 and 3.4 miles, respectively. In the area outside the National Forest and Indian reservations, these field plots were supplemented by a systematic grid of photo plots. All the photo plots and field plot locations were examined on aerial photographs and classified into one of three land-use classes: Nonforest, noncommercial forest, or commercial forest land.

The field plots, consisting of a cluster of three 1/5-acre circular subplots spaced at 6-chain intervals, were located, established, and measured in the field. These plots provided a check on the accuracy of the photo interpretation of land-use class and were combined with the photo plots to provide an adjusted estimate of the proportion of area by land-use classes. The field plots also provided data on ownership, forest type, stocking, etc., for use in subdividing the adjusted gross commercial forest land area into area by ownership class, forest type, stand-size class, and stocking class.

Tree measurement data obtained on the field plots, expanded by the total adjusted acreage of commercial forest land represented by each field plot, provided estimates of volume and mortality by species and size class as well as by ownership.

DEFINITION OF TERMS

Land Area

Total Land Area

Includes dry land and unmeandered water surfaces.

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 in reinventory was 10 acres where type maps were used and 1 acre where sampling procedures were used.

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.

Types

Commercial Forest Land Type

Forest land is typed on the basis of the predominant species, as indicated by cubic volume for sawtimber and poletimber stands and number of trees for sapling and seedling stands, or on the basis of forest condition, such as nonstocked cutover or burned-over land. Where none of the indicated species comprise 50 percent or more of a given stand, the stand is classified on the basis of plurality of cubic volume or number of trees. In classifying forest land by type, the minimum area recognized is 1 acre.

Noncommercial Forest Land Types

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

Unproductive. Forest land incapable of yielding crops of industrial wood products (usually sawtimber) because of adverse site conditions.

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

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

Nonforest Land Types

Vegetative. Cultivated land, stump pasture, grass, or brush on non-forest land.

Nonvegetative. Includes barrens and towns.

Unmeandered water. Includes unmeandered streams and lakes, and tideflats.

Tree Classes

Sawtimber Tree

Tree of commercial species, 11.0 inches d.b.h. and larger, that contains at least one 16-foot coniferous saw log or one 8-foot hardwood saw log to a variable top diameter never less than 8.0 inches inside the bark. Also, 25 percent or more of the gross board-foot volume must be free from rot or defect.

Poletimber Tree

Tree of commercial species, 5.0 to 10.9 inches d.b.h., in which 25 percent or more of the gross cubic-foot volume is free from rot and defect.

Sapling and Seedling Trees

Live trees of commercial species, less than 5.0 inches d.b.h., and of good form and vigor.

Cull Tree

Live tree of sawtimber or poletimber size that is unmerchantable for saw logs, now or prospectively, because of defect, rot, or species.

Sound cull tree. Live tree of sawtimber or poletimber size that contains 25 percent or more of sound volume but will not make at least one merchantable saw log, now or prospectively, because of roughness, poor form, or species.

Rotten cull tree. Live tree of sawtimber or poletimber size in which less than 25 percent of the total volume is sound.

Mortality Tree

Tree which has died from natural causes and which was not a cull tree at the time of death.

Salvable Dead Tree

Standing or down dead tree that contains 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 of sawtimber trees having a minimum per-acre net volume of 1,500 board feet (International 1/4-inch rule).

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

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

Poletimber Stand

Stand failing to meet sawtimber stand specifications but at least 10 percent stocked with poletimber and larger (5.0 inches d.b.h. and larger) trees and with at least half the minimum stocking in poletimber trees.

Sapling and Seedling Stand

Stand not qualifying as either a sawtimber or poletimber stand but at least 10 percent stocked with trees of commercial species and with at least half the minimum stocking in sapling and seedling trees.

Nonstocked Area

An area less than 10 percent stocked with present or potential growing-stock trees.

Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. "Degree 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. Stocking may be measured in terms of number of trees, volume, basal area, cover canopy, or other criterion or combination of criteria.

Well-Stocked Stand

A stand that is 70 percent or more stocked with present or potential growing-stock trees.

Medium-Stocked Stand

A stand that is 40 to 69 percent stocked with present or potential growing-stock trees.

Poorly Stocked Stand

A stand that is 10 to 39 percent stocked with present or potential growing stock trees.

Nonstocked Area

An area less than 10 percent stocked with present or potential growing-stock trees.

Timber Volume

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees of commercial species:

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

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.

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.

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 Federal Lands

Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and miscellaneous Federal agencies.

State, County, and Municipal Lands

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 northeast Washington include:

Softwoods:

Douglas-fir (Pseudotsuga menziesii)
Engelmann spruce (Picea engelmannii)
Grand fir (Abies grandis)
Lodgepole pine (Pinus contorta)
Ponderosa pine (Pinus ponderosa)
Subalpine fir (Abies lasiocarpa)
Western hemlock (Tsuga heterophylla)
Western larch (Larix occidentalis)
Western redcedar (Thuja plicata)
Western white pine (Pinus monticola)

Hardwoods:

Black cottonwood (Populus trichocarpa)
Quaking aspen (Populus tremuloides)
Red alder (Alnus rubra)
Western paper birch (Betula papyrifera var. commutata)

RECENT FOREST SURVEY REPORTS

<u>Number</u>	<u>Title</u>	<u>Date</u>
PNW-1	1961 Washington Log Production	January 1963
146	1961 Oregon Log Production	December 1962 (rev.)
145	Forest Statistics for Clallam County, Washington	July 1962
144	Forest Statistics for Jefferson County, Washington	June 1962
143	Forest Statistics for King County, Washington	June 1962
142	Forest Statistics for Island and Kitsap Counties, Washington, 1959; San Juan County, Wash- ington, 1960	May 1962
141	Forest Statistics for Pierce County, Washington	May 1962
140	1960 Washington Log Production	March 1962
139	Forest Statistics for Okanogan County, Washington	March 1962
138	1960 Oregon Log Production	January 1962
137	Forest Statistics for Grant County, Oregon	November 1960
136	Forest Statistics for Southeast Washington	July 1960

Available from:

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