FOREST STATISTICS OF EASTERN KENTUCKY

CENTRAL STATES
FOREST EXPERIMENT STATION
Columbus 15, Ohio
PHILIP A. BRIEGLEB, DIRECTOR

FOREST SURVEY RELEASE NO. 12

JULY 1952

FOREST STATISTICS OF EASTERN KENTUCKY

By

THE FOREST SURVEY ORGANIZATION
CENTRAL STATES FOREST EXPERIMENT STATION

These people helped to collect and compile data and to prepare this report:

R. K. Winters, Chief, Division of Forest Economics

Field Inventory

M. E. Becker, Supervisor; E. F. Youngblood, W. B. Metcalf, R. A. Harmon, J. M. Smith, T. A. Harrington, G. N. Semmens, P. L. Thornton

Photo Interpretation

K. E. Moessner, Supervisor; C. E. Jensen, F. D. Brunson

Drafting

R. W. Smith

Statistical Computations

Lake F. Compton, Margaret Peirsol, Julia M. Hummell, Norma J. Crandall, Violet Powell

Stenographic Service

Edith D. Clark

The aerial photographs used in this survey were provided by the Kentucky Department of Conservation, Division of Forestry, H. B. Newland, Director.

CONTENTS

FOREWORD

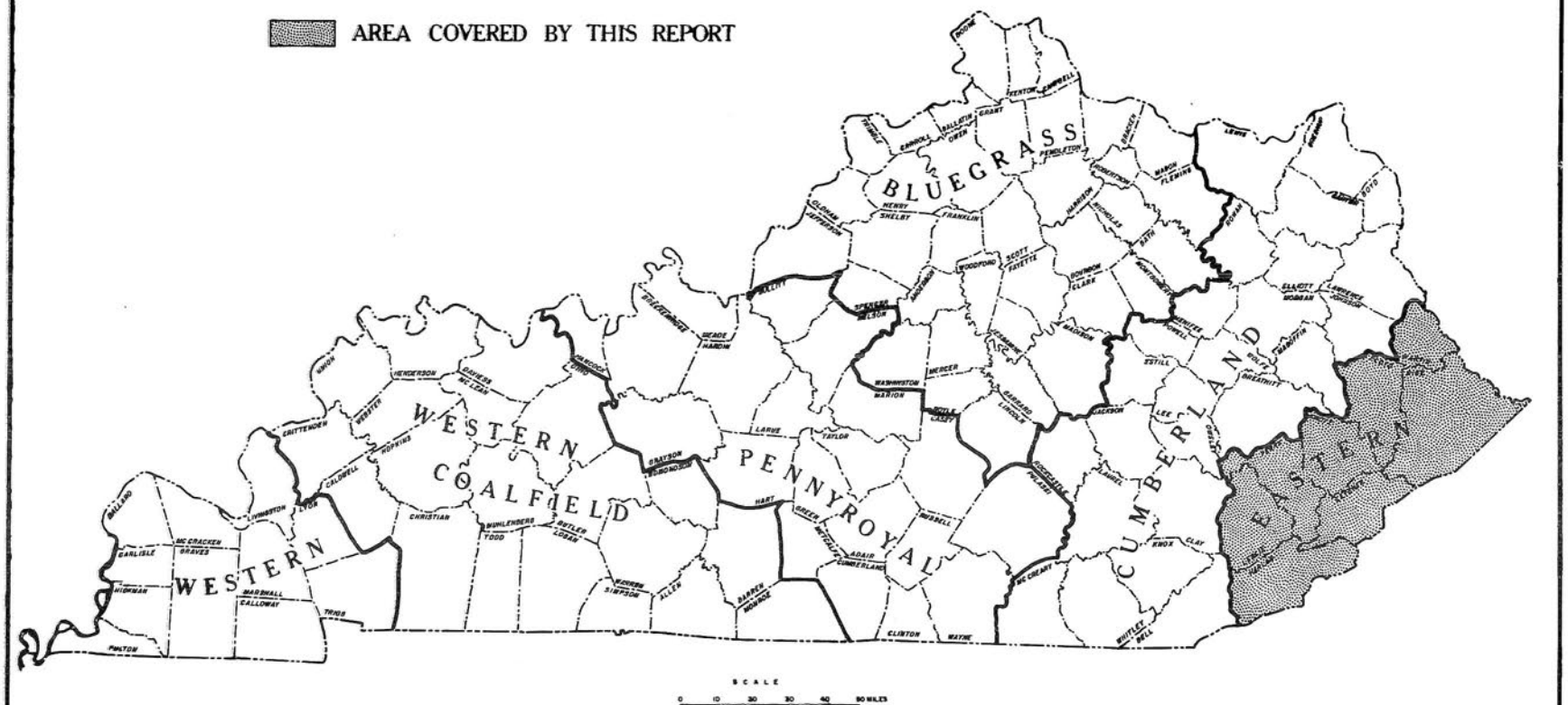
The Forest Survey is a Nation-wide activity of the Forest Service. The fivefold purpose of the Forest Survey is (1) to make a field inventory of the present supply of standing timber; (2) to find out how fast this supply is being increased through growth; (3) to find out how fast it is being diminished through industrial and domestic uses, windfall, fire, disease, and other causes; (4) to determine the present consumption and the probable future trend in requirements for forest products; and (5) to interpret and correlate these findings with existing and anticipated economic conditions, as an aid in formulating both private and public policies for use of land suitable for forest production.

The Forest Survey is conducted in the various regions by the forest experiment stations of the Forest Service. In Kentucky the project is directed by the Central States Forest Experiment Station with headquarters in Columbus, Ohio.

This Survey Release presents the more significant preliminary statistics on the forest area and timber volume for the Eastern Kentucky Region. Forest area and timber volume statistics have already been published for the other regions of Kentucky. Later, an analytical report for the state will be published which will interpret statistics on forest area, timber volume, growth, and drain in the light of existing and anticipated economic conditions.

FOREST SURVEY REGIONS IN KENTUCKY

AREA COVERED BY THIS REPORT



SIGNIFICANT FOREST STATISTICS FOR THE

EASTERN REGION OF KENTUCKY

The eight counties of this Forest Survey Region include some of the most rugged terrain in Kentucky. The area is separated from Virginia on the southeast by a crest of the Cumberland Mountains and from West Virginia on the northeast by Tug Fork, a tributary of Big Sandy River. The Region is dissected by many narrow, meandering valleys and knife-like ridges rising 2,000 to 3,500 feet above the valley floors.

Though there are nearly 16,000 farms in these eight counties, the principal industry of the Region is coal mining. Only 14 percent of the land area is listed as cropland in the 1950 Census and most of this is used for pasture. Transportation facilities which developed slowly in this region, due in part to the rugged terrain, have improved considerably as the coal industry developed since 1900.

The lumber industry is also important to this region. In 1947 this area produced nearly 100 million board feet of lumber. Much of this is used by the mines which also use large amounts of round wood for pit props.

The total land area of the Eastern Region is 2,136,000 acres of which about 84 percent (1,802,000 acres) is forested. This is the most heavily forested area of Kentucky. Though the forests of this region are on the most mountainous terrain of Kentucky, and while road systems are still inadequate in much of the area, all of the forest area in this region is considered physically accessible today.

Nearly all of the forest land is privately owned. The 1950 Census shows about 470,000 acres of forest land on farms. It is estimated that lumber and coal companies own in the neighborhood of three-quarters of a million acres of land in tracts of 1,000 acres or more. Only about 16,000 acres of forest land are in federal and state ownership.

Oak-hickory and mixed hardwood types, about equally divided, occupy 93 percent of the forest area in this region. Oak-hickory occupies the ridge tops and upper slopes; mixed hardwoods predominate on the lower slopes and in the coves. Chestnut oak comprises a large portion of the volume in the oak-hickory type. Yellow-poplar, hickory, basswood, beech, and sugar maple are important species in the mixed hardwoods type.

About 65 percent of the forest area is supporting saw-timber stands. Almost all of the saw-timber area is classed as large saw timber. The large saw-timber stands average 5,352 board feet per acre, while the small saw-timber stands average 2,852 board feet per acre.

The total volume of saw timber in the Region is 6.0 billion board feet, of which 87 percent is in large saw-timber stands. Various species of oak make up 48 percent of the volume. Chestnut oak is the most important single species in terms of volume. Next in importance is black oak, followed by hickory, beech, and yellow-poplar. About 46 percent of the saw-timber volume is in trees 20 inches d.b.h. and larger.

A higher proportion of the hardwood saw-timber volume is in high-quality logs in this region than elsewhere in Kentucky. The white oak group, which includes chestnut oak, shows up best with nearly 32 percent of its volume in grade 1 and 2 logs. The other hardwoods group, which includes a considerable amount of large hickory, yellow-poplar, blackgum, basswood, and beech, has about 23 percent of its volume in grade 1 and 2 logs. This is the high-quality timber wanted by most wood-using industries. The volume and growth of high-quality timber in this region should be increased through proper management and cutting practices.

The growing stock in this region averages 660 cubic feet per acre. This indicates an understocked condition. The area should be supporting two or three times as much volume per acre. Steps should be taken to encourage young timber in this region. Improved cutting practices and more adequate protection of the forests from fire and grazing would help a great deal.

Table 1.--Forest and nonforest area by county, 1951

County	Total land area[1/]	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Floyd	257	191	74	66	26
Harlan	300	273	91	27	9
Knott	228	191	84	37	16
Leslie	264	242	92	22	8
Letcher	217	178	82	39	18
Martin	148	132	89	16	11
Perry	219	173	79	46	21
Pike	503	422	84	81	16
All counties	2,136	1,802	84	334	16

1/ Source: Area of United States 1950, U. S. Bureau of the Census.

Table 2.--Commercial forest area by ownership class, 1951

Ownership class	Commercial forest area	
	Thousand acres	Percent
Federal:		
National forest	0	0.
Other	9	0.5
Total	9	0.5
State	7	0.4
County and Municipal	(1/)	--
Private	1,786	99.1
All ownerships	1,802	100.0

1/ Less than 500 acres.

Table 3.--Commercial forest area by forest type and stand-size class, 1951

Forest type	Total		Large saw-timber stands	Small saw-timber stands	Pole-timber stands	Seedling and sapling stands	Non-stocked stands
	Thousand acres	Percent	Thousand acres				
Pine	3	0.2	--	3	--	--	--
Oak-pine	58	3.2	15	19	8	16	--
Oak-hickory	800	44.4	516	112	120	52	--
White oak	3	.2	--	3	--	--	--
Beech-maple	57	3.1	44	6	4	3	--
Mixed hardwoods	878	48.7	400	46	164	239	29
Bottomland	3	.2	3	--	--	--	--
All types	1,802		978	189	296	310	29
Percent		100.0	54.3	10.5	16.4	17.2	1.6

Table 4.--Saw-timber volume on commercial forest area by species and stand-size class, 1951

Species	Total		Large saw-timber stands	Small saw-timber stands	Pole-timber stands	Seedling and sapling stands 1/
	Million bd. ft.	Percent	Million board feet			
Shortleaf pine	95	1.6	37	45	7	6
Virginia pine	17	.3	--	8	--	9
Hemlock	54	.9	48	4	1	1
Post-oak group	6	.1	6	--	--	--
Chestnut oak	1,259	20.9	1,124	99	29	7
White oak	316	5.2	258	32	26	(2/)
Black oak	894	14.8	773	88	23	10
Northern red oak	408	6.7	365	35	7	1
Other red oaks	12	.2	12	--	--	--
Hickory	728	12.1	622	79	14	13
Ash	58	1.0	55	3	--	--
Elm	6	.1	1	3	2	--
Yellow-poplar	548	9.1	452	68	27	1
Basswood	381	6.3	348	25	8	--
Blackgum	252	4.2	232	7	11	2
Sugar maple	164	2.7	158	6	--	--
Soft maple	68	1.1	51	4	13	--
Sycamore	5	.1	1	2	2	--
Beech	585	9.7	540	22	7	16
Black walnut	38	.6	29	1	6	2
Other hardwoods	141	2.3	122	8	6	5
Total	6,035		5,234	539	189	73
Percent		100.0	86.7	8.9	3.1	1.3

1/ Includes the volume on nonstocked areas.
2/ Less than 0.5 million board feet.

Table 5.--Saw-timber volume on commercial forest area by species and tree-diameter class, 1951

Species	Total	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28-30 inches	32 inches and larger
	Million board feet							
Shortleaf pine	95	13	62	6	14	--	--	--
Virginia pine	17	5	12	--	--	--	--	--
Hemlock	54	6	21	19	--	8	--	--
Post-oak group	6	--	2	4	--	--	--	--
Chestnut oak	1,259	--	183	237	287	291	171	90
White oak	316	--	98	93	38	41	31	15
Black oak	894	--	254	383	185	72	--	--
Northern red oak	408	--	66	126	61	77	15	63
Other red oaks	12	--	3	3	6	--	--	--
Hickory	728	--	258	163	173	80	--	54
Ash	58	--	13	33	12	--	--	--
Elm	6	--	6	--	--	--	--	--
Yellow-poplar	548	--	136	225	78	91	18	--
Basswood	381	--	69	183	103	26	--	--
Blackgum	252	--	64	59	61	55	13	--
Sugar maple	164	--	24	36	43	38	--	23
Soft maple	68	--	23	23	22	--	--	--
Sycamore	5	--	5	--	--	--	--	--
Beech	585	--	96	127	146	100	98	18
Black walnut	38	--	16	12	10	--	--	--
Other hardwoods	141	--	51	35	22	5	--	28
All species	6,035	24	1,462	1,767	1,261	884	346	291
Percent	100.0	0.4	24.2	29.3	20.9	14.7	5.7	4.8

Table 6.--Hardwood saw-timber volume by species group and log grade, 1951

Species group	Volume	Log grade 1		Log grade 2		Log grade 3	
	Million bd. ft.	Million bd. ft.	Percent	Million bd. ft.	Percent	Million bd. ft.	Percent
White oaks[1]	1,581	248	15.7	252	15.9	1,081	68.4
Red oaks[2]	1,314	65	5.0	137	10.4	1,112	84.6
Other hardwoods	2,974	303	10.2	378	12.7	2,293	77.1
All hardwoods	5,869	616	10.5	767	13.1	4,486	76.4

1/ Includes white oak, chestnut oak, and post-oak group.
2/ Includes black oak, northern red oak, and other red oaks.

Table 7.--Total cubic volume of sound wood on commercial forest area by species and class of material, 1951

Species	Total	Growing stock			Tops and limbs 1/	Cull trees 2/
		Total	Saw-timber trees	Pole-timber trees		
	Million cubic feet					
Shortleaf pine	19.1	19.0	16.4	2.6	--	0.1
Virginia pine	6.2	5.9	3.2	2.7	--	.3
Hemlock	11.9	11.8	9.8	2.0	--	.1
Post-oak group	2.4	1.5	.9	.6	.5	.4
Chestnut oak	394.7	216.4	187.5	28.9	105.0	73.3
White oak	119.7	73.8	47.7	26.1	26.7	19.2
Black oak	276.9	168.8	137.9	30.9	77.2	30.9
Northern red oak	119.4	71.5	61.5	10.0	34.4	13.5
Other red oaks	7.3	3.7	1.9	1.8	.1	2.5
Hickory	237.9	152.9	111.9	41.0	62.7	22.3
Ash	21.3	14.6	9.2	5.4	5.2	1.5
Elm	7.6	4.3	.9	3.4	.5	2.8
Yellow-poplar	165.1	111.4	83.9	27.5	47.0	6.7
Basswood	119.5	70.7	57.1	13.6	32.0	16.8
Sweetgum	(3/)	(3/)	--	(3/)	--	--
Blackgum	77.6	45.0	40.4	4.6	22.6	10.0
Sugar maple	67.2	31.6	23.8	7.8	13.4	22.2
Soft maple	57.5	23.7	10.4	13.3	5.9	27.9
Sycamore	3.8	3.3	.9	2.4	.5	(3/)
Beech	321.1	97.5	84.9	12.6	47.5	176.1
Black walnut	12.7	8.8	6.0	2.8	3.3	.6
Other hardwoods	94.2	53.6	21.7	31.9	12.1	28.5
Noncommercial species	14.7	--	--	--	--	14.7
All species 4/	2,157.8	1,189.8	917.9	271.9	497.6	470.4
Percent	100.0	55.1	42.5	12.6	23.1	21.8

1/ Merchantable hardwood saw-timber trees only.
2/ Includes sound portion of tops and limbs of cull trees.
3/ Less than 0.05 million cubic feet.
4/ Does not include volume of standing dead chestnut estimated to be 70.3 million cubic feet.

Table 8.--Cubic volume of growing stock on commercial forest area by species and stand-size class, 1951

Species	Total		Large saw-timber stands	Small saw-timber stands	Pole-timber stands	Seedling and sapling stands[1]
	Million cu. ft.	Percent	Million cubic feet			
Shortleaf pine	19.0	1.6	6.5	9.9	1.6	1.0
Virginia pine	5.9	.5	.1	2.8	--	3.0
Hemlock	11.8	1.0	10.6	.7	.4	.1
Post-oak group	1.5	.1	1.3	--	.2	--
Chestnut oak	216.4	18.2	183.1	20.1	11.4	1.8
White oak	73.8	6.2	51.9	11.6	9.4	.9
Black oak	168.8	14.2	129.2	16.8	19.1	3.7
Northern red oak	71.5	6.0	61.5	7.2	2.6	.2
Other red oaks	3.7	.3	3.4	.3	--	--
Hickory	152.9	12.8	120.8	20.1	8.8	3.2
Ash	14.6	1.2	13.0	.9	.7	--
Elm	4.3	.4	2.6	1.4	.3	--
Yellow-poplar	111.4	9.4	79.7	16.7	13.9	1.1
Basswood	70.7	5.9	62.8	6.0	1.8	.1
Sweetgum	(2/)	--	(2/)	--	--	--
Blackgum	45.0	3.8	39.7	2.0	2.5	.8
Sugar maple	31.6	2.7	29.4	1.8	.1	.3
Soft maple	23.7	2.0	16.9	2.4	3.7	.7
Sycamore	3.3	.3	.3	.5	2.1	.4
Beech	97.5	8.2	86.6	6.1	2.1	2.7
Black walnut	8.8	.7	5.2	.4	2.4	.8
Other hardwoods	53.6	4.5	38.1	6.2	6.7	2.6
All species	1,189.8		942.7	133.9	89.8	23.4
Percent		100.0	79.2	11.3	7.5	2.0

1/ Includes the volume on nonstocked areas.
2/ Less than 0.05 million cubic feet.

Table 9.--Cubic volume of growing stock on commercial forest area by stand-size class and tree-diameter class, 1951

Stand-size class	Total	6-8 inches	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28-30 inches	32 inches and larger
	Million cubic feet								
Large saw-timber stands	942.7	89.8	65.8	152.4	243.1	174.9	127.7	47.5	41.5
Small saw-timber stands	133.9	24.4	24.5	61.4	16.6	5.2	--	1.8	--
Pole-timber stands	89.8	40.4	19.8	21.0	7.3	1.3	--	--	--
Seedling and sapling stands 1/	23.4	7.4	4.9	4.9	2.3	3.9	--	--	--
All classes	1,189.8	162.0	115.0	239.7	269.3	185.3	127.7	49.3	41.5
Percent	100.0	13.6	9.7	20.2	22.6	15.6	10.7	4.1	3.5

1/ Includes the volume on nonstocked areas.

Table 10.--Average volume per acre by stand-size class, 1951

Stand-size class	Average volume per acre	
	Board feet	Cubic feet[1]
Large saw-timber stands	5,352	963.9
Small saw-timber stands	2,852	708.5
Pole-timber stands	639	303.4
Seedling and sapling stands[2]	215	69.0
All classes	3,349	660.3

1/ Growing stock only.
2/ Includes the volume on nonstocked areas.

FOREST SURVEY PROCEDURE

The inventory of the forest resources of the Eastern Kentucky Region was made during the period January 1951 to June 1951. The sampling procedure used involved an office study of aerial photographs and a field examination of systematically selected forest and nonforest plots.

The proportion of forest land in each county was obtained by placing a transparent template marked with uniformly spaced dots over aerial photographs and by counting the number of dots falling on forest and nonforest areas. The percentage of forest dots in a county, multiplied by the total area gave a preliminary estimate of the forest area. This was later adjusted after field examination indicated the number of plots that had changed from forest to nonforest since the aerial photos were taken and vice versa.

The locations of systematically selected dots falling on forest land were marked on the photographs. The acre surrounding each marked dot was examined under a stereoscope and was classified by stand-size class on the basis of the height, crown width, and density of trees on the plot. Plots to be examined in the field were systematically drawn from those classified under the stereoscope. This selection was weighted, giving the most weight to the larger stand-size classes. In addition, several nonforest plots were selected for field examination to measure the movement of open land to forest since the photographs were taken.

The locations of the selected field plots were marked on the photographs, which were then sent to the field. Crews of two men each located these points on the ground. On forest land, a 1/5-acre plot was established for which species, size, quality, and growth of trees were recorded.

The following tabulation gives the number of dots and plots examined for the Eastern Region:

Number of photo dots counted for forest-area determination	13,817
Number of forest plots stereoscopically examined on photos	2,244
Number of forest plots field examined	463
Number of nonforest plots field examined	93

ACCURACY OF DATA

Statistical analysis of forest area and timber volume data shows the following sampling errors[1/] for the Eastern Region:

Forest area		Growing stock volume	
(M acres)	(Percent)	(Million cu. ft.)	(Percent)
±16.2	±0.9	±41.6	±3.5

These estimates of sampling error do not include errors resulting from the development and application of volume tables and cull factors, or from mistakes in measurement or judgment. All phases of field and office work were closely supervised to keep these errors to a minimum. Since the percentage error increases with each subdivision of the total, small acreages or volumes may have large errors and may therefore indicate only relative magnitudes.

1/ At one standard error; that is, the chances are two out of three that the calculated acreages and volumes do not differ from the totals that would have been obtained by 100-percent measurement by more than the errors shown here.

EXPLANATION OF TERMS USED

Forest land.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. To qualify as forest, an area must (1) be at least 100 feet wide; (2) be at least 1 acre in area; (3) have a sufficient number of trees to provide 10 percent crown coverage; or (4) lacking 10 percent crown coverage, be likely to remain in forest use.

Commercial forest land.--Forest land bearing or capable of bearing timber of commercial character (usually saw timber) and economically available now or prospectively for commercial use and not withdrawn from such use.

Reserved forest land.--Forest land withdrawn from timber utilization through statute, ordinance, or administrative order.

Noncommercial forest land.--Forest land incapable of yielding usable wood products because of adverse site conditions, or so physically inaccessible as to be permanently unavailable economically, and not withdrawn for specified purposes.

Forest types

Pine.--Stands in which pine species comprise at least 60 percent of the dominant and codominant trees.

Redcedar-hardwoods.--Stands in which redcedar comprises at least 20 percent of the dominant and codominant trees.

Oak-pine.--Stands in which pine species comprise 20-60 percent of the dominant and codominant trees.

Oak-hickory.--Hardwood stands in which oaks and hickories comprise at least 60 percent of the dominant and codominant trees.

White oak.--Hardwood stands in which white oak (Quercus alba) comprises at least 60 percent of the dominant and codominant trees.

Beech-maple.--Hardwood stands in which beech and sugar maple comprise at least 60 percent of the dominant and codominant trees.

Mixed hardwoods.--Stands of mixed hardwood species not qualifying for other hardwood types. Principal species include yellow-poplar, elm, maple, basswood, ash, beech, hemlock, and black locust in mixture with oaks and hickories.

Bottomland.--Stands on the alluvial bottoms of rivers and streams. The principal species include sycamore, willow, elm, blackgum, sweetgum, soft maple, oaks, hickory, cottonwood, and cypress.

Tree classes

Saw-timber tree.--A live softwood (coniferous) tree at least 9.0 inches d.b.h. or live hardwood tree of commercial species at least 11.0 inches d.b.h., with a sound butt log at least 8 feet long, or with at least half of the gross volume of the tree in sound material.

Pole-timber tree.--A live tree of commercial species at least 5.0 inches d.b.h. but less than saw-timber size that is now merchantable or gives promise of becoming merchantable.

Seedling and sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull tree.--A live tree at least 5.0 inches d.b.h. that does not qualify as a saw-timber or pole-timber tree because of species, poor form, limbiness, rot, or other defect.

Volume estimates

Board-foot volume includes the sound volume of sawlogs in merchantable saw-timber trees to a minimum top d.i.b. of 6 inches for softwoods and 8 inches for hardwoods. Volume deductions have been made for rot, crook, and other defects. Board-foot volumes are shown in the International 1/4-inch log rule, which approximates green lumber tally.

Cubic-foot volume

Total volume includes the sound wood inside bark in both sound and cull living trees 5.0 inches d.b.h. and larger, from the stump to a minimum top diameter of 4.0 inches inside bark. It includes the upper stems of softwood trees and the upper stems and limbs of hardwoods.

Growing stock includes the volume of sound wood inside bark in (1) the sawlog portion of hardwood saw-timber trees to a minimum top d.i.b. of 8 inches, (2) the stem

of softwood saw-timber trees to a minimum top d.i.b. of 4.0 inches, and (3) pole-timber trees to a minimum top d.i.b. of 4.0 inches.

Stand-size class

Large saw timber.--Stands having a minimum net volume of 1500 board feet per acre in saw-timber trees, with more than half of this volume in trees 15.0 inches d.b.h. and larger.

Small saw timber.--Stands having a net volume of 1500 board feet per acre in saw-timber trees, with at least half of this volume in trees smaller than 15.0 inches d.b.h.

Pole timber.--Stands with less than 1500 net board feet per acre but at least 10 percent stocked with pole-timber and larger trees and with at least half the minimum stocking in pole-timber trees.

Seedlings and saplings.--Stands not qualifying either for saw timber or pole timber but having at least 300 seedlings and saplings of commercial species per acre.

Nonstocked.--Commercial forest land not qualifying for any other class.

Hardwood log grades[2/]

Grade 1.--Butt logs at least 14.0 inches (upper logs at least 16 inches) in diameter inside bark at the small end. Minimum length of butt logs is 10 feet; 8 feet for upper logs. Five-sixths of the surface on the three best faces must be clear of defect. Two clear cuttings are allowed on any face, but the minimum length of cuttings is 7 feet for butt logs and 5 feet for upper logs. Cull deductions including sweep cannot exceed 25 percent for butt logs and 40 percent for upper logs. Such logs will normally yield at least 65 percent No. 1 common and better lumber.

Grade 2.--Logs at least 12 inches in diameter inside bark at the small end. Minimum length is 8 feet. Two-thirds of the surface on the three best faces must be clear of defect. Three clear cuttings are allowed on any face, but

---

2/ The hardwood log grades used are essentially those published as "Interim Sawlog Grades for Southern Hardwoods," by C. R. Lockard and R. D. Carpenter, Southern Forest Experiment Station, 1946. Persons interested in detailed specifications should consult this publication.

the minimum length of cuttings is 3 feet. Cull deductions including sweep cannot exceed 50 percent. Such logs for most species will normally yield more than 40 percent No. 1 common and better lumber.

Grade 3.--Logs at least 8 inches in diameter inside bark at the small end. Minimum length is 8 feet. Minimum standards require that these logs be at least 50 percent sound and qualify at least for manufacture of local-use lumber or railroad ties and timbers. Such logs for most species in Kentucky will normally yield 20 to 25 percent No. 1 common and better lumber.

SPECIES LISTED

Softwoods

Shortleaf pine includes:	
Shortleaf pine	- *Pinus echinata*
Pitch pine	- *Pinus rigida*
White pine	- *Pinus strobus*
Virginia pine	- *Pinus virginiana*
Other softwoods include:	
Cypress	- *Taxodium distichum*
Redcedar	- *Juniperus virginiana*
Hemlock	- *Tsuga canadensis*

Hardwoods

Post oak group includes:	
Post oak	- *Quercus stellata*
Swamp white oak	- *Quercus bicolor*
Swamp chestnut oak	- *Quercus prinus*
Overcup oak	- *Quercus lyrata*
Bur oak	- *Quercus macrocarpa*
Chinquapin oak	- *Quercus muehlenbergii*
Chestnut oak	- *Quercus montana*
White oak	- *Quercus alba*
Black oak includes:	
Black oak	- *Quercus velutina*
Scarlet oak	- *Quercus coccinea*
Northern red oak includes:	
Northern red oak	- *Quercus borealis*
Swamp red oak	- *Quercus falcata* var. *pagodaefolia*
Other red oaks include:	
Southern red oak	- *Quercus falcata*
Pin oak	- *Quercus palustris*
Willow oak	- *Quercus phellos*
Water oak	- *Quercus nigra*
Shingle oak	- *Quercus imbricaria*
Hickory	- *Carya* spp.
Elm	- *Ulmus* spp.
Soft maple includes:	
Red maple	- *Acer rubrum*
Silver maple	- *Acer saccharinum*
Boxelder	- *Acer negundo*
Sugar maple	- *Acer saccharum*
Sycamore	- *Platanus occidentalis*
Ash	- *Fraxinus* spp.
Yellow-poplar	- *Liriodendron tulipifera*

Basswood	- *Tilia* spp.
Cottonwood	- *Populus deltoides*
Sweetgum	- *Liquidambar styraciflua*
Blackgum	- *Nyssa sylvatica*
Blackgum (Swamp)	- *Nyssa aquatica*
Beech	- *Fagus grandifolia*
Black walnut	- *Juglans nigra*
Other hardwoods	- include all other commercial hardwood species

Noncommercial species include species that do not normally have commercial value such as hawthorn, redbud, hornbeam, hophornbeam, alder, and serviceberry.

TERRITORY SERVED BY THE

CENTRAL STATES FOREST EXPERIMENT STATION

FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE