

FOREST STATISTICS OF WESTERN KENTUCKY

 **CENTRAL STATES**
FOREST EXPERIMENT STATION
Columbus 15, Ohio

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FOREST STATISTICS OF WESTERN KENTUCKY

By

THE FOREST SURVEY ORGANIZATION
Central States Forest Experiment Station

in cooperation with

THE DIVISION OF FORESTRY RELATIONS
Tennessee Valley Authority

THE DIVISION OF FORESTRY
Kentucky Department of Conservation

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FOREWARD

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 ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which 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 the formulation of both private and public policies for use of land suitable for forest production.

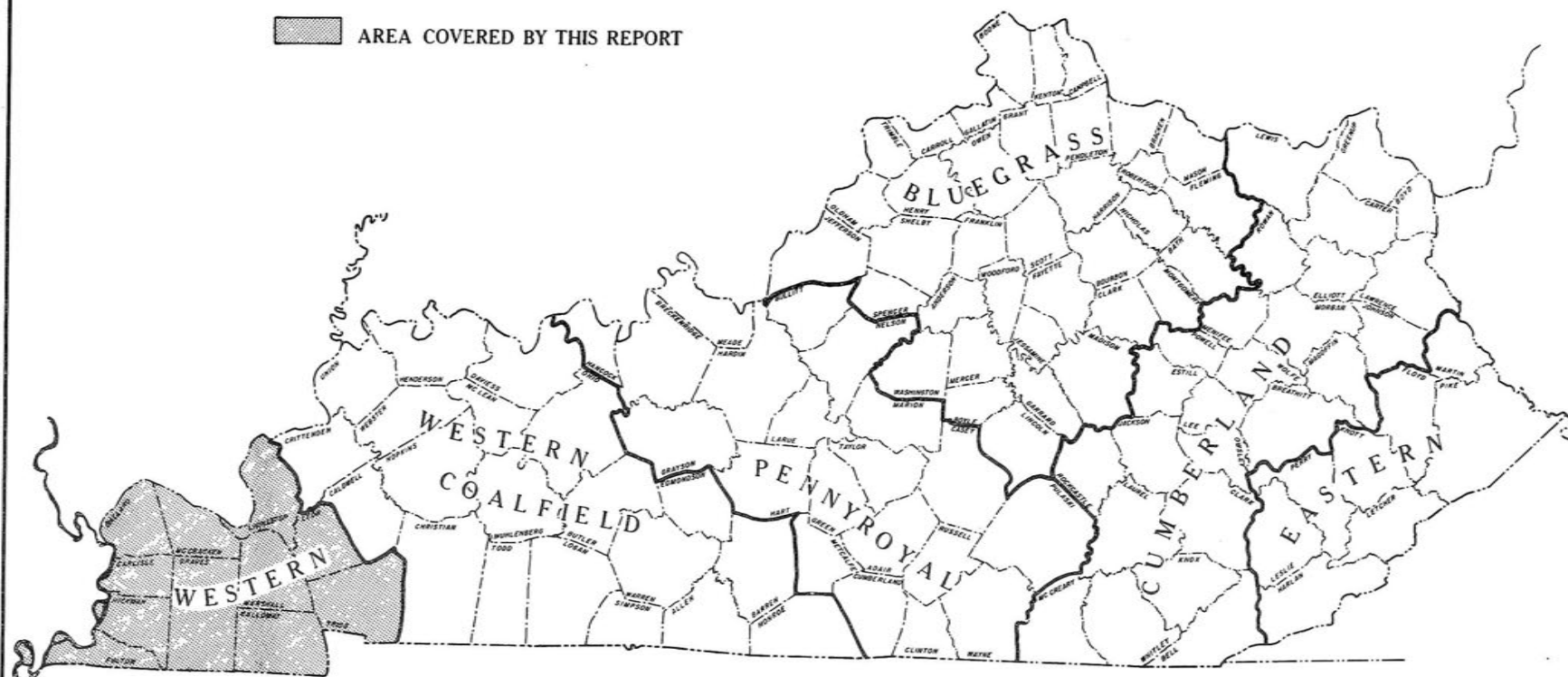
The Forest Survey is conducted in the various regions by the forest experiment stations of the Forest Service. In Kentucky the project is directed by the Central States Forest Experiment Station with headquarters in Columbus, Ohio.

This Survey Release presents the more significant preliminary statistics on the forest area and timber volume for the western region of Kentucky. Similar reports for the remainder of the state will be published as soon as statistical tabulations are completed. Later, an analytical report for the state will be published which will interpret forest area, timber volume, growth, and drain statistics in the light of existing and anticipated economic conditions.

The field data for this report were collected in cooperation with the TVA Division of Forestry Relations, the Kentucky Division of Forestry, and the Kentucky Extension Service.

LOCATION OF FOREST SURVEY REGIONS IN KENTUCKY

 AREA COVERED BY THIS REPORT



SCALE
0 10 20 30 40 50 MILES

SIGNIFICANT FOREST STATISTICS FOR WESTERN KENTUCKY

The western Kentucky region includes the Jackson Purchase area between the Tennessee and Mississippi Rivers and the three counties bordering the Tennessee River on the east. The terrain is a low, rolling plain with short, steep hills along the breaks of the Tennessee and Cumberland Rivers. Elevations above sea level range from 300 feet bordering the Mississippi River to 600 feet in the eastern counties.

Agriculture is the principal industry of the region; corn, tobacco, and wheat are the principal crops. The Kentucky Lake, formed by the construction of Kentucky Dam across the Tennessee River, is the largest lake in the TVA system and, in addition to its flood-control and transportation value, provides opportunity for a large-scale recreational development.

The total land area of the western Kentucky region is 2,199,000 acres of which 725,000 acres or 33 percent is forested.^{1/} The southwestern counties of Graves, Hickman, and Fulton have the lowest proportion of forest land, 20-25 percent. In the rougher eastern counties over half of the land is forested.

Nearly 90 percent of the commercial forest land in the region is privately owned and is chiefly farm woodlands. The principal public ownerships are the Kentucky Woodland Wildlife Refuge, administered by the U. S. Fish and Wildlife Service, the TVA areas bordering Kentucky Lake, and the Camp Campbell Military Reservation.

The oak-hickory type predominates in the region and occupies nearly 60 percent of the commercial forest area. The mixed-hardwood type, consisting of upland stands in which hardwood species other than oaks predominate, makes up 12 percent of the area. The bottomland-hardwood type, occurring on the alluvial bottoms of the major streams, accounts for 16 percent of the forest area.

Stands with sufficient volume to be classified as saw-timber stands occur on slightly over half of the commercial forest area. Pole-timber stands occupy 34 percent and seedling and sapling stands 14 percent of the area.

The total volume of saw timber in the region is 1.7 billion board feet. The several species of oak make up over half (57 percent) of the total volume. Other important species are hickory, with 9 percent of the volume and sweetgum with 8 percent. Nearly 90 percent of the board-foot volume is in saw-timber stands. The remaining volume is in scattered saw-timber trees in pole-timber and seedling and sapling stands. Forty percent of the volume is in trees 12-14 inches d.b.h., and 28 percent is in trees 20 inches d.b.h. or larger.

^{1/} For an explanation of technical terms used, see page 16.

The proportion of the saw-timber volume in high-quality logs is very low. Less than 10 percent is in grade 1 and 2 logs which produce the high-quality material required by the veneer, furniture, and cooperage industries. This condition is partly due to the large proportion of small saw-timber trees in the stand. The practice of removing only the best trees in a stand and leaving the less desirable ones also contributes to this condition.

The volume of forest growing stock is 482 million cubic feet. Of this total, 271 million cubic feet is in the sawlog portion of saw-timber trees and 211 million cubic feet is in trees of pole-timber size. In addition to the growing stock there is 261 million cubic feet of wood in the tops and limbs of saw-timber trees and in the sound portion of cull trees.

The average volume of saw timber per acre on all commercial forest land in the region is 2,349 board feet. Large saw-timber stands averaged 5,402 board feet per acre, and those classified as small saw timber averaged 2,832 board feet per acre. The average volume per acre of growing stock on commercial forest land was 666 cubic feet.

Table 1.--Forest and nonforest area by county, 1948

County	: Total : land : area/	:	Forest area	:	Nonforest area
	<u>Thousand acres</u>		<u>Thousand acres</u>	<u>Percent</u>	<u>Thousand acres</u> <u>Percent</u>
Ballard	166		46	28	120 72
Calloway	246		75	30	171 70
Carlisle	125		33	26	92 74
Fulton	131		33	25	98 75
Graves	358		72	20	286 80
Hickman	159		35	22	124 78
Livingston	204		78	38	126 62
Lyon	161		86	53	75 47
McCracken	161		43	27	118 73
Marshall	195		68	35	127 65
Trigg	293		156	53	137 47
All counties	2,199		725	33	1,474 67

1/ Source: Area of United States 1940, U. S. Bureau of the Census, except for Calloway, Lyon, Marshall, and Trigg Counties. The land area of these counties was reduced by TVA to provide for the area flooded by Kentucky Lake.

Table 2.--Commercial forest area by ownership class, 1948

Ownership class	Commercial forest area ^{1/}	
	<u>Thousand acres</u>	<u>Percent</u>
Federal:		
National forest	0	0.0
Other	79	10.9
Total	79	10.9
State	(2/)	--
Private	645	89.1
All ownerships	724	100.0

^{1/} Does not include 1,000 acres of forest land reserved from commercial timber use for state park purposes.

^{2/} Less than 500 acres.

Table 3.--Commercial forest area by forest type and stand-size class, 1948

Forest type	:	:	:	:	:	:	Seedling ^{1/} and sapling area
	Total	Large saw- timber area	Small saw- timber area	Pole- timber area			
	Thousand acres	Percent	- - - - -	Thousand acres	- - - - -		
Cedar-hdwd.	28	3.9	--	--	12	16	
Oak-hickory	428	59.1	71	135	154	68	
White oak	33	4.6	11	12	10	--	
Mixed hdwd.	95	13.1	21	25	38	11	
Bottomland hdwd.	140	19.3	71	30	35	4	
All types	724		174	202	249	99	
Percent		100.0	24.0	27.9	34.4	13.7	

^{1/} Includes 12,000 acres classified as nonstocked forest area.

Table 4.--Saw-timber volume by species and stand-size class, 1948

Species	Total	Large saw- timber area	Small saw- timber area	Pole- timber area	Seedling and sapling area
	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million board feet</u>		
Redcedar and cypress	31	1.8	17	10	4
White oak	248	14.6	117	99	27
Post-oak group	162	9.5	76	66	19
Black oak	242	14.2	109	101	24
Northern red oak	68	4.0	54	12	2
Other red oaks	241	14.2	136	78	27
Hickory	159	9.4	73	61	20
Elm	63	3.7	45	13	3
Soft maple	43	2.5	38	4	1
Sugar maple	13	.8	1	9	2
Sycamore	43	2.5	29	12	1
Ash	30	1.8	18	10	2
Yellow-poplar	37	2.2	19	12	6
Cottonwood	56	3.3	49	3	3
Sweetgum	128	7.5	72	41	15
Blackgum	19	1.1	8	10	1
Beech	21	1.2	10	11	--
Black Walnut	12	.7	6	5	1
Other hardwoods	85	5.0	63	15	7
All species	1,701		940	572	165
Percent		100.0	55.3	33.6	9.7

Table 5.--Saw-timber volume by species and tree-diameter class, 1948

Species	: Total	: 12-14	: 16-18	: 20-22	: 24-26	: 28 inches
	: inches	: inches	: inches	: inches	: inches	: larger
	----- Million board feet -----					
Redcedar and cypress	31	1/9	10	5	7	---
White oak	248	130	66	29	8	15
Post-oak group	162	70	53	26	11	2
Black oak	242	99	78	43	18	4
Northern red oak	68	17	24	24	---	3
Other red oaks	241	85	71	46	24	15
Hickory	159	85	52	8	14	---
Elm	63	24	22	8	4	5
Soft maple	43	10	13	9	3	8
Sugar maple	13	9	1	1	---	2
Sycamore	43	13	17	7	2	4
Ash	30	14	11	5	---	---
Yellow-poplar	37	10	10	11	6	---
Cottonwood	56	15	12	16	10	3
Sweetgum	128	46	43	26	10	3
Blackgum	19	9	9	1	---	---
Beech	21	6	4	5	6	---
Black walnut	12	4	6	2	---	---
Other hardwoods	85	36	25	20	4	---
All species	1,701	691	527	292	127	64
Percent	100.0	40.6	31.0	17.2	7.5	3.7

1/ Includes 1 million board feet in 10-inch redcedar and cypress trees.

Table 6.--Hardwood saw-timber volume by species group and percentage distribution in log grades, 1948

Species group	Volume	Log grade		
		1	2	3
	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>		
White oaks ^{1/}	410	1.0	3.2	95.8
Red oaks ^{2/}	551	5.5	5.6	88.9
Other hardwoods	709	4.4	6.9	88.7
All hardwoods	1,670	3.9	5.6	90.5

^{1/} Includes white oak and post-oak group.

^{2/} Includes black oak, northern red oak, and other red oaks.

Table 7.--Total cubic volume of sound wood by species
and class of material, 1948

Species	Growing stock					
	Total		Saw-timber:	Pole-timber:	Tops &	Cull
	Total		trees	trees	limbs	trees
<u>Million cubic feet</u>						
Redcedar and cypress	10.2	9.2	1/7.7	1.5	--	1.0
White oak	98.6	68.1	38.8	29.3	27.4	3.1
Post-oak group	68.4	43.9	25.9	18.0	18.6	5.9
Black oak	100.3	64.8	38.4	26.4	27.4	8.1
Northern red oak	23.1	14.7	10.6	4.1	7.5	.9
Other red oaks	86.6	56.6	38.1	18.5	27.1	2.9
Hickory	81.5	60.4	25.5	34.9	18.2	2.9
Elm	41.9	24.7	10.0	14.7	7.1	10.1
Soft maple	27.5	15.0	6.7	8.3	4.8	7.7
Sugar maple	7.4	4.1	2.0	2.1	1.5	1.8
Sycamore	15.3	9.9	6.7	3.2	4.7	.7
Ash	19.6	13.2	5.0	8.2	3.6	2.8
Yellow-poplar	12.1	7.9	5.6	2.3	4.0	.2
Cottonwood	16.3	10.0	8.8	1.2	6.2	.1
Sweetgum	48.3	31.4	20.1	11.3	14.2	2.7
Blackgum	16.3	8.7	3.2	5.5	2.3	5.3
Beech	8.2	3.7	3.1	.6	2.4	2.1
Black walnut	5.0	3.4	1.9	1.5	1.4	.2
Other hardwoods	54.5	32.6	13.4	19.2	9.5	12.4
Noncommercial species	1.7	--	--	--	--	1.7
All species	742.8	482.3	271.5	210.8	187.9	72.6
Percent	100.0	64.9	36.5	28.4	25.3	9.8

1/ Includes tops of saw-timber softwood trees to a minimum diameter of 4 inches inside bark.

Table 8.--Cubic volume of growing stock by species
and stand-size class, 1948

Species	Total	Large saw- timber area	Small saw- timber area	Pole- timber area	Seedling and sapling area	
	<u>Million</u> <u>cu. ft.</u>	<u>Percent</u>	- - - -	<u>Million cubic feet</u>	- - - - -	
Redcedar and cypress	9.2	1.9	3.9	3.0	2.2	0.1
White oak	68.1	14.1	23.8	31.1	12.2	1.0
Post-oak group	43.9	9.1	13.9	18.8	10.6	.6
Black oak	64.8	13.4	19.9	25.0	18.4	1.5
Northern red oak	14.7	3.1	9.5	3.8	1.4	--
Other red oaks	56.6	11.7	24.3	18.7	13.3	.3
Hickory	60.4	12.5	21.0	22.4	15.7	1.3
Elm	24.7	5.1	12.8	6.8	4.1	1.0
Soft maple	15.0	3.1	8.8	3.2	3.0	--
Sugar maple	4.1	.9	.4	2.5	.9	.3
Sycamore	9.9	2.1	5.5	2.4	1.5	.5
Ash	13.2	2.7	7.2	3.8	2.2	--
Yellow-poplar	7.9	1.6	3.3	2.6	1.8	.2
Cottonwood	10.0	2.1	8.4	.6	.9	.1
Sweetgum	31.4	6.5	13.9	9.9	7.5	.1
Blackgum	8.7	1.8	2.8	3.8	2.0	.1
Beech	3.7	.8	1.7	1.9	.1	--
Black walnut	3.4	.7	1.1	1.3	.8	.2
Other hardwoods	32.6	6.8	14.7	6.7	10.0	1.2
All species	482.3		196.9	168.3	108.6	8.5
Percent		100.0	40.8	34.9	22.5	1.8

Table 9.--Cubic volume of growing stock by stand-size class
and tree-diameter class, 1948

Stand-size class	: Total	: 6-8	: 10	: 12-14	: 16-18	: 20-22	: 24-26	: 28 inches and larger
	: inches	: inches	: inches	: inches	: inches	: inches	: inches	: inches
	----- Million cubic feet -----							
Large saw-timber area	196.9	26.4	23.9	33.1	54.2	35.2	16.9	7.2
Small saw-timber area	168.3	39.4	35.0	63.8	21.2	6.3	1.2	1.4
Pole-timber area	108.6	52.2	29.8	16.3	6.6	2.5	.4	.8
Seedling and sapling area	8.5	3.2	1.4	2.3	1.0	—	.6	—
All classes	482.3	121.2	90.1	115.5	83.0	44.0	19.1	9.4
Percent	100.0	25.1	18.7	24.0	17.2	9.1	4.0	1.9

Table 10.--Average volume per acre by stand-size class, 1948

Stand-size class	Average volume per acre	
	<u>Board feet</u>	<u>Cubic feet</u> ^{1/}
Large saw-timber area	5,402	1,131.6
Small saw-timber area	2,832	833.2
Pole-timber area	663	436.1
Seedling and sapling area	276	97.7
All classes	2,349	666.2

^{1/} Growing stock only.

Table 11.--Commercial forest area by county, major physiographic site, and stand-size class, 1948

County	:		Upland		:		Bottomland	
	: Total:		: Saw-timber:		Other:		: Saw-timber:	
	:	: Total :	area	:	areas:	Total :	area	: areas
-----Thousand acres-----								
Ballard	46	21	11		10	25	20	5
Calloway	75	69	30		39	6	4	2
Carlisle	33	15	8		7	18	14	4
Fulton	33	15	8		7	18	14	4
Graves	72	67	29		38	5	4	1
Hickman	35	16	9		7	19	15	4
Livingston	78	72	31		41	6	5	1
Lyon	86	79	35		44	7	5	2
McCracken	43	19	11		8	24	19	5
Marshall	68	63	28		35	5	4	1
Trigg	155	143	63		80	12	9	3
All counties	724	579	263		316	145	113	32

Table 12.--Saw-timber volume by county, major physiographic site, and species group, 1948

County	Upland					Bottomland			
	Total	White	Red	Other		Total	White	Red	Other
	Total	oak	oak	species		Total	oak	oak	species
----- Million board feet -----									
Ballard	159	53	16	18	19	106	10	23	73
Calloway	147	125	39	47	39	22	4	6	12
Carlisle	114	38	11	13	14	76	7	17	52
Fulton	114	38	11	13	14	76	7	16	53
Graves	141	120	38	45	37	21	3	7	11
Hickman	121	41	13	13	15	80	7	17	56
Livingston	152	130	41	49	40	22	3	7	12
Lyon	168	143	45	54	44	25	4	7	14
McCracken	149	50	15	17	18	99	9	21	69
Marshall	133	113	36	43	34	20	3	6	11
Trigg	303	258	81	98	79	45	7	14	24
All counties	1,701	1,109	346	410	353	592	64	141	387

FOREST SURVEY PROCEDURE

The inventory of the forest resources of western Kentucky was made during the period May to November 1948. A sampling procedure was used involving an office study of aerial photographs and a field examination of randomly 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 the dots in a county that were forest, multiplied by the total area gave a preliminary estimate of the forest area. This was later adjusted after field examination.

The location of a selected number of dots falling on forest land was marked on the photographs. The acre surrounding each marked dot was examined under 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 randomly drawn from those classified under stereoscope. In making this selection the greatest weight was given to the stand-size classes containing the heaviest timber volume. In addition, a number of nonforest plots was selected for field examination to measure the movement of open land to forest since the date of photography.

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 on which forest conditions were described and the species, size, quality, and growth of trees were recorded.

The TVA Division of Forestry Relations, the Kentucky Division of Forestry, and the Kentucky Extension Service provided field personnel and equipment for intensifying the sampling in western Kentucky to provide more accurate forest area and timber volume data for this area.

Approximately 15,360 dots were counted on aerial photographs for forest area determination. Stereoscopic examinations were made of 969 forest plots to determine stand-size class, and 496 plots were examined on the ground. These photo and field examinations provided the basic data for computations of forest area and timber volume statistics for the region.

ACCURACY OF DATA

Forest area.--Statistical analysis of the forest area data for the western Kentucky region shows a sampling error of ± 2.0 percent of the commercial forest area or $\pm 14,000$ acres, at a level of one standard deviation. The error of estimate increases with each subdivision of the total forest area; therefore, small tabular acreages may have large errors and indicate only relative magnitudes.

Timber volume.--The sampling error of the total board-foot volume in the region is ± 4.8 percent or ± 82 million board feet. This does not include the errors of volume tables, cull factors, or other phases of the inventory work for which satisfactory methods of measuring accuracy have not been developed. All phases of field work and computations were closely supervised to keep these errors at a minimum. Again the error of estimate increases with each subdivision of the total volume and small volumes indicate only relative magnitudes.

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 one 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 and economically available now or prospectively for commercial use and not withdrawn from such use.

Reserved forest land.--Forest land that has been 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.

Forest types

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

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

White oak.--Stands in which white oak (*Quercus alba*) comprises 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 elm, maple, basswood, and black walnut in mixture with oaks and hickories.

Bottomland hardwoods.--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 trees 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 at least 5.0 inches d.b.h. but less than saw-timber size that gives promise of becoming a saw-timber tree.

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 volume of that portion of saw-timber trees merchantable for sawlogs. 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 saw-timber trees, (2) the upper stem of softwood saw-timber trees to a minimum top diameter of 4.0 inches inside bark, and (3) pole-timber trees to a minimum top diameter of 4.0 inches inside bark.

Stand-size class

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

Pole timber.--Stands failing to meet the saw-timber stand specifications, 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

Grade 1.--Logs at least 14.0 inches in diameter inside bark with five-sixths of the surface on the three best faces clear of defect in not more than two cuttings. Lumber from such logs will normally grade at least 60 percent No. 1 common and better.

Grade 2.--Logs at least 12 inches in diameter inside bark with two-thirds of the surface on the three best faces clear of defect in not more than three cuttings. Lumber from such logs will normally grade at least 35 percent No. 1 common and better.

Grade 3.--Merchantable logs at least 8.0 inches in diameter inside bark which do not meet the requirements of higher grades. Such logs will normally produce less than 35 percent No. 1 common and better lumber or will be suitable only for ties or timbers.

Physiographic sites

Bottomland.--Forest land on flood plains at least 250 feet wide.

Upland.--Forest land on slopes and plateaus above the flood plain.

Species listed

Redcedar	- <u>Juniperus virginiana</u>
Cypress	- <u>Taxodium distichum</u>
White oak	- <u>Quercus alba</u>
Post-oak group includes:	
Post oak	- <u>Quercus stellata</u>
Swamp white oak	- <u>Quercus bicolor</u>
Swamp chestnut oak	- <u>Quercus prinus</u>
Overcup oak	- <u>Quercus lyrata</u>
Bur oak	- <u>Quercus macrocarpa</u>
Chinquapin oak	- <u>Quercus muehlenbergii</u>
Chestnut oak	- <u>Quercus montana</u>
Black oak includes:	
Black oak	- <u>Quercus velutina</u>
Scarlet oak	- <u>Quercus coccinea</u>
Northern red oak includes:	
Northern red oak	- <u>Quercus borealis</u>
Swamp red oak	- <u>Quercus falcata var. pagodaefolia</u>
Other red oaks include:	
Southern red oak	- <u>Quercus falcata</u>
Pin oak	- <u>Quercus palustris</u>
Willow oak	- <u>Quercus phellos</u>
Water oak	- <u>Quercus nigra</u>
Shingle oak	- <u>Quercus imbricaria</u>
Hickory	- <u>Carya species</u>
Elm	- <u>Ulmus species</u>

Species listed (continued)

Soft maple includes:

Red maple
Silver maple
Boxelder
Sugar maple
Sycamore
Ash
Yellow-poplar
Cottonwood
Sweetgum
Blackgum

- Acer rubrum
- Acer saccharinum
- Acer negundo
- Acer saccharum
- Platanus occidentalis
- Fraxinus species
- Liriodendron tulipifera
- Populus deltoides
- Liquidambar styraciflua
- (Nyssa sylvatica
- Nyssa aquatica
- Fagus grandifolia
- Juglans nigra

Beech

Black walnut

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.

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