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FOREST SURVEY RELEASE 73

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FOREST STATISTICS FOR ALABAMA

A REPORT OF THE SOUTHERN FOREST SURVEY

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THE SOUTHERN FOREST SURVEY

The Southern Forest Survey, an activity of the Southern Forest Experiment Station, covers the seven States of the Station's territory--Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

This Survey is a part of the nation-wide Forest Survey authorized by the McSweeney-McNary Forest Research Act of 1928. Its five-fold purpose is (1) to take inventory of the supply of standing timber and other forest products; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies; (4) to estimate the present requirements and the probable future trend in the requirements for timber and other forest products; and (5) to correlate these findings with existing and anticipated economic conditions, in order that policies may be formulated for the effective use of lands suitable for forest production.

Large-scale cooperative assistance enabled the Southern Forest Survey to complete the reinventory of Alabama's forests almost two years ahead of schedule. Cooperation from the Alabama Forest Products Association and other groups who helped expedite the Survey is gratefully acknowledged.

The following organizations each furnished one or more foresters who served as chiefs of cruising parties: Division of Forestry, Alabama Department of Conservation; Alabama Power Co.; Coosa River Newsprint Co.; Courtaulds (Ala.) Inc.; Gulf States Paper Corp.; Hollingsworth and Whitney Co.; International Paper Co.; St. Regis Paper Co.; and the Division of Forestry Relations, Tennessee Valley Authority.

The following organizations and individuals provided assistant cruisers or monies to hire assistant cruisers: Allison Lumber Co., Inc.; American National Bank (Union Springs, Ala.); Anthony Lumber Co.; A. B. Carroll Lumber Co.; Castleberry Lumber Co.; E. B. Chancey Lumber Co.; Clancy Lumber Co., Inc.; Dixie Yellow Pine Co.; Dixon Lumber Co.; First National Bank (Clanton, Ala.); First National Bank (Union Springs, Ala.); Halcyon Hill; Russell Johnson (Wetumpka, Ala.); E. O. Majors (Tallassee, Ala.); T. L. McKee and Sons; Miller and Co., Inc.; T. R. Miller Mill Co.; National Gypsum Co.; Pate and Hodge Lumber Co.; Peoples Savings Bank (Clanton, Ala.); Scotch Lumber Co. Inc.; Cecil H. Smith and Son; M. W. Smith Lumber Co.; W. T. Smith Lumber Co.; Stremming Veneer Co., Inc.; Tallassee Lumber Co.; A. R. Taylor (Clanton, Ala.); and Vredenburg Sawmill Co.

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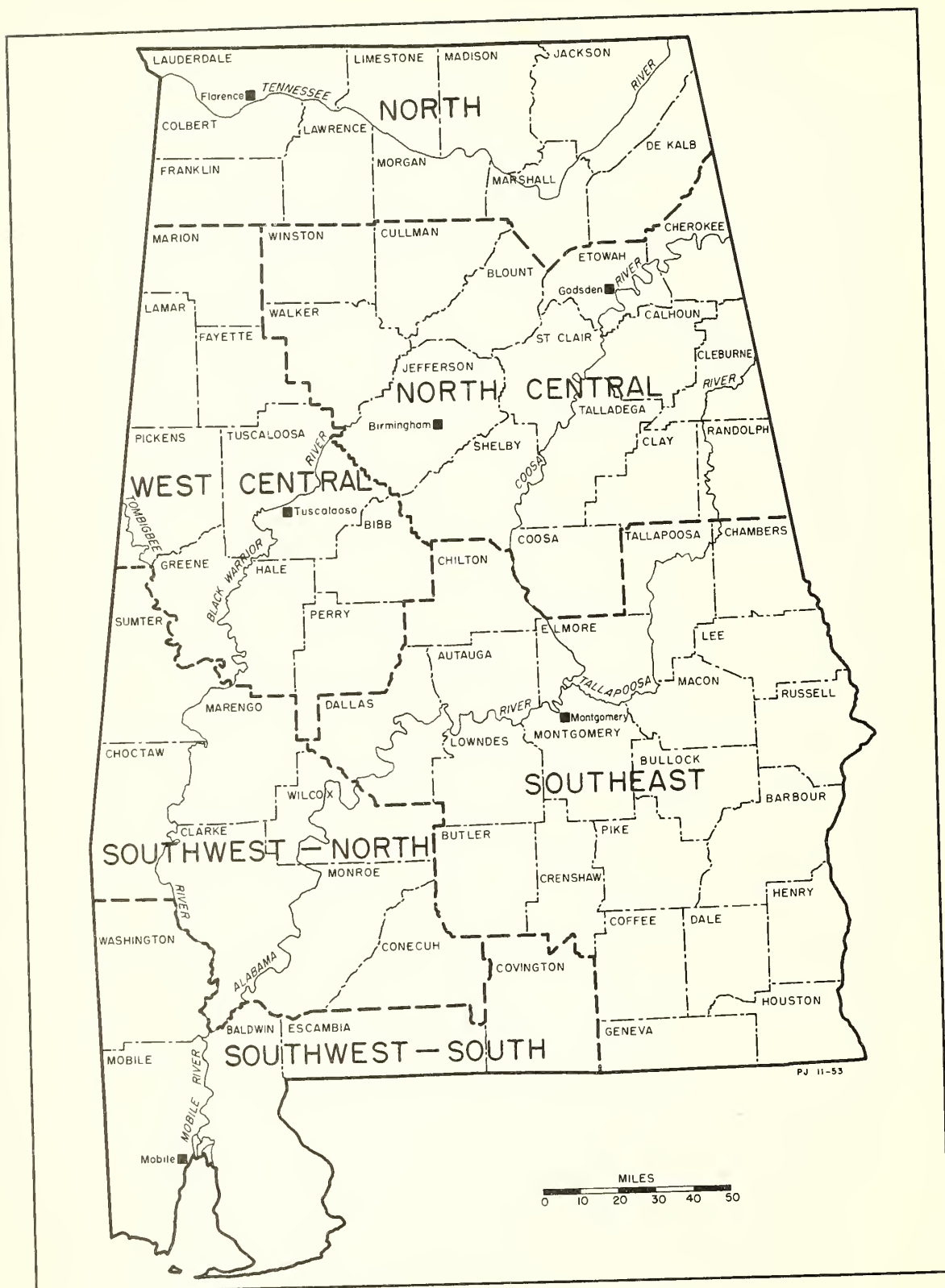


Figure 1.--Forest Survey regions in Alabama.

FOREST STATISTICS FOR ALABAMA

This report summarizes data on forest acreage, timber volume, growth, and drain^{1/} collected by the Southern Forest Survey in Alabama. It is primarily the product of the new Forest Survey of the State, made between 1951 and 1953, but it also draws on the first Forest Survey of 1935-36 to show the changes in forest conditions during the intervening 17 years.^{2/}

In the discussion of highlights that follows, the six Survey regions of the State (fig. 1) have been grouped into three. The West Central, North Central, and North regions are referred to as the North; the two southwestern regions are termed the Southwest.

To make valid comparisons between the two Surveys, both sets of data must conform to the same standards. In this report the findings of the first Survey have been adjusted to those of the Resurvey. The reasons for and nature of these adjustments are discussed on page 15.

Highlights of the Forest Situation

Forest acreage up 10 percent

Of the 32.7 million acres of land in Alabama, 64 percent is forested. Present commercial forest area totals 20.8 million acres--10 percent more than in 1935-36. Alabama's increase in forest acreage follows the general trend of farm land abandonment in the southern uplands.

^{1/} Technical terms are defined on pages 40-45.

^{2/} Survey dates by region were: North, 1936 and 1951; North Central, 1936 and 1952; West Central, 1935 and 1951; Southeast, 1935 and 1953; Southwest, 1935 and 1953.

Increases in forest acreage have taken place quite generally over the State, except in the 10 northernmost counties and the 3 counties in the extreme Southwest. The largest increases in forest area--over 40 percent in some instances--have occurred through the central and Piedmont counties.

North Alabama, the most heavily industrialized section of the State, has 62 percent of its land area in forest. The coal and iron ore mines that feed Birmingham's steel industry are important wood users. Two of Alabama's 7 wood-pulp mills are also in the region--at Coosa Pines and Tuscaloosa.

Southeast Alabama, though 56 percent forested, is characterized by a largely agricultural economy. Cotton, livestock, and peanuts are the major income sources for the farm population.

Southwest Alabama has the highest proportion of forest land--75 percent. Mobile, chief city in the region, is the center for the State's pulpwood industry.

More than 95 percent of Alabama's commercial forest land is privately held. Virtually all the remaining acreage is in State and Federal ownership.

Softwood acreage up 6 percent; hardwood up 19 percent

The longleaf-slash type, which distinguishes the lower Coastal Plain, dominates 3 million acres of forest land (fig. 2). Longleaf also occurs in the North Central region; but here much of its former acreage was taken over by loblolly or shortleaf pines as the old-growth longleaf was logged off. North of the longleaf region, the loblolly-shortleaf type covers about 8 million acres, and on an additional 3 million acres southern pines are heavily mixed with hardwoods--oaks, gums, hickories, and others.

The area classed as upland hardwood occupies 4 million acres; seven-tenths of this acreage is in North Alabama. Bottomland hardwoods, primarily in the Southwest and secondarily along rivers and streams throughout the State, aggregate 2.4 million acres.

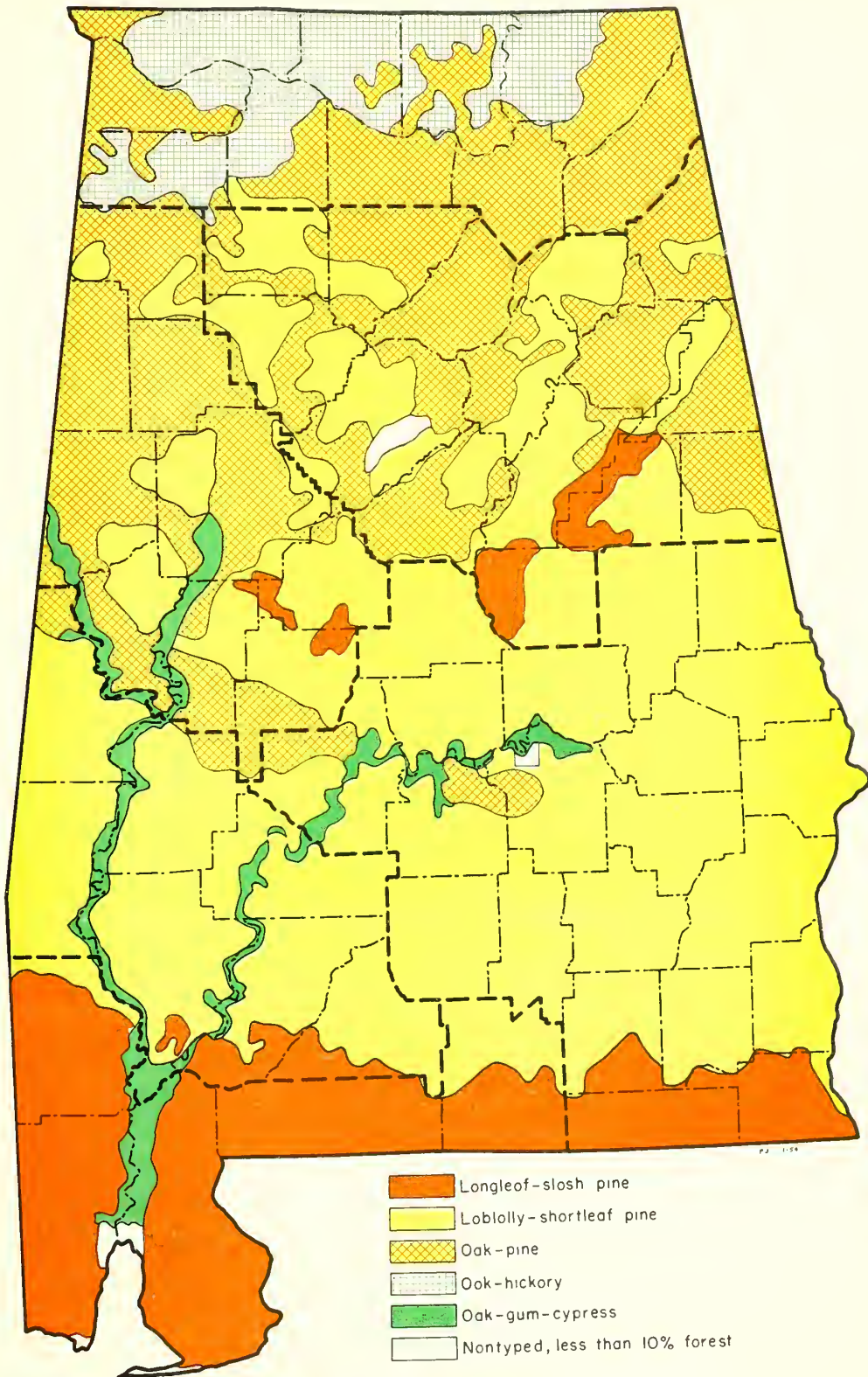


Figure 2.--Major forest types in Alabama.

The acreages in the major forest types have changed considerably during the past 17 years (table 1). Softwood types (largely pine and mixed pine-hardwood) have risen about 870 thousand acres. This is a 6-percent increase.

Table 1. -- Commercial forest land by forest-type group (1951-53) and change between Surveys

Region	All types	Change	Softwood ^{1/}	Change	Bottom-land hardwood	Change	Upland hardwood	Change
	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>
North	9,648.5	+ 9	6,115.2	+ 1	694.2	+ 4	2,839.1	+32
Southeast	5,032.9	+18	3,566.1	+17	814.9	+19	651.9	+23
Southwest	6,074.8	+ 5	4,741.7	+ 6	865.3	+17	467.8	-14
Total	20,756.2	+10	14,423.0	+ 6	2,374.4	+13	3,958.8	+23

^{1/} Includes mixed pine-hardwood types.

Upland hardwoods declined in the Southwest but increased considerably in the North and Southeast. For the State as a whole, the acreage in this type has risen 23 percent. Bottomland hardwoods are up 13 percent. Heavy pine cutting on bottomland sites--branch heads, swamps, and river bottoms--appears to have shifted a considerable softwood acreage into the bottomland hardwood category.

The acreage increase of all hardwood types is 19 percent. Thus, while softwood acreage increased, hardwood acreage increased even faster. The net effect of these changes is that the proportion of the forest area in softwood types shrank from 72 to 69 percent. The more rapid expansion of the hardwood forest results partly from the timber industry's preference for pine in cutting pine-hardwood mixtures and partly from the natural aggressiveness of the residual hardwoods.

Poletimber stands predominate

Alabama's timber stands--29 percent sawtimber, 53 percent poletimber, 17 percent seedling and sapling, and 1 percent nonstocked--have a disproportionately large area in small trees (fig. 3). The disparity is greatest in the North region and in the pine-hardwood type

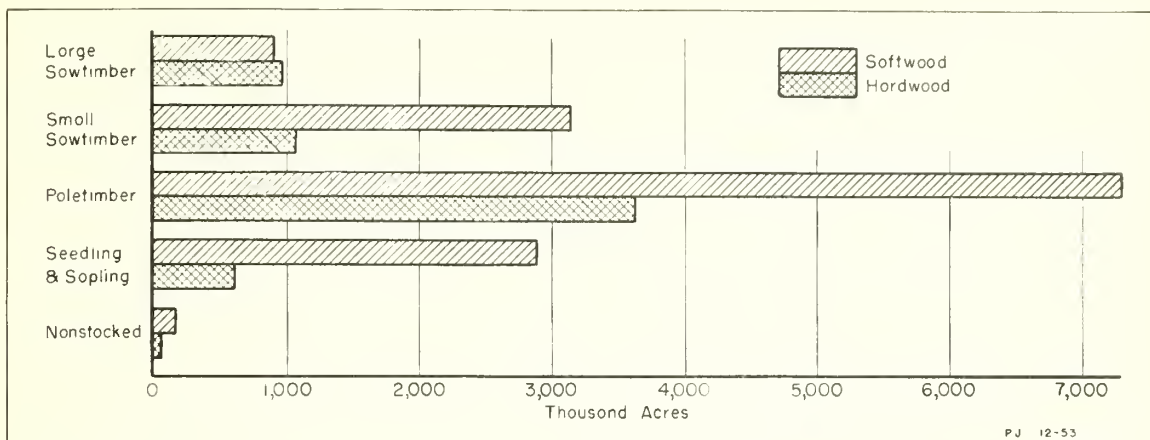


Figure 3. --Forest area by stand size and forest-type group, 1951-53.

throughout the State. Forty-five percent of the bottomland hardwood type, however, is in sawtimber stands. The Southwest has 39 percent of its forest area in sawtimber; Southeast 30 percent; North 23 percent.

Three-fifths of forest well stocked

Sixty-three percent of Alabama's forest land can be considered well stocked (fig. 4). That is, it has at least 70 percent of the number of good trees (including well-established seedlings) required to occupy the site fully for best growth. This is a higher proportion of well-stocked forest than has been found in other Mid-South States that have been surveyed since 1946. Twenty-eight percent of the forest acreage is medium stocked--40 to 69 percent of full stocking. Eight percent is poorly (10 to 39 percent) stocked, and only 1 percent is nonstocked. The Southwest region has both the best and the poorest stocking--the best in the north section, the poorest in the south. Of the major forest types, bottomland hardwoods are the best stocked, the pine type poorest.

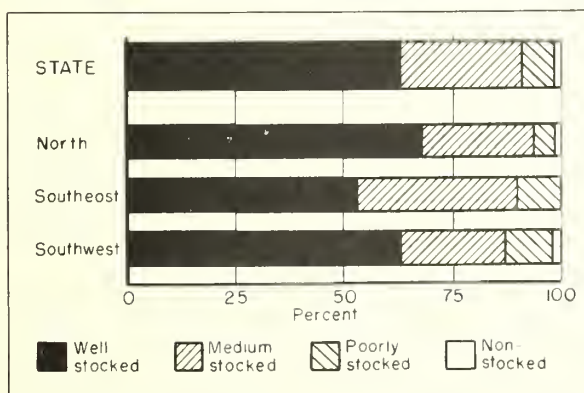


Figure 4. --Degree of stocking by region, 1951-53.

Full utilization of the timber-producing capacity of Alabama's forests is impeded by an accumulation of culls--trees too rotten or limby for any foreseeable use. About one-fifth of the basal area of all live trees 2

inches d.b.h. and larger is in cull trees. This wasted growing space is heaviest in the hardwood types. Although the north section of the Southwest has the smallest proportion of cull basal area, the cull element in none of the Survey regions deviates markedly from the State average.

Softwood growing stock down 5 percent; hardwood up 6 percent

Growing stock volume in Alabama's forests amounts to 11.7 billion cubic feet--about 560 cubic feet per acre. Softwoods make up

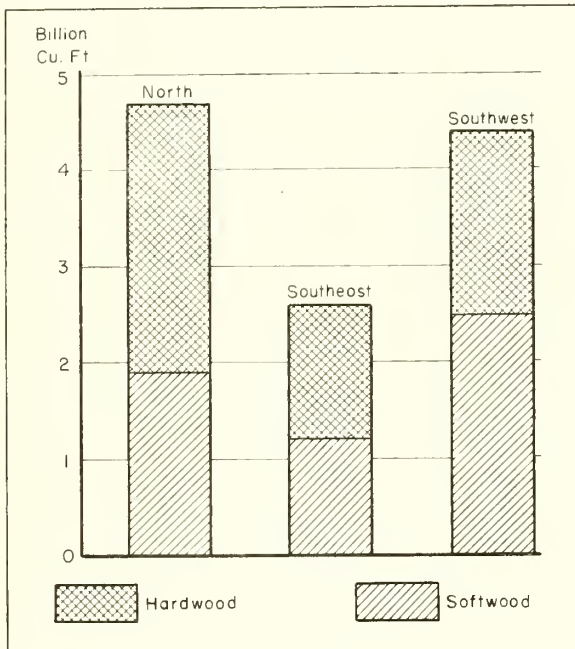


Figure 5. --Growing stock by region, 1951-53.

5.6 billion; hardwoods 6.1 billion. In North Alabama growing stock is 40 percent softwood; in Southeast 47 percent; in Southwest 57 percent (fig. 5). Seven-tenths of the softwood volume and six-tenths of the hardwood is in sawtimber trees (fig. 6).

Important changes in growing stock volume have occurred since the initial Survey in the middle 1930's. Softwood has declined 5 percent (table 2). Hardwood has increased 6 percent. The real significance of these figures, however, lies in the marked change in the numbers of trees in the different size classes between Surveys (fig. 7).

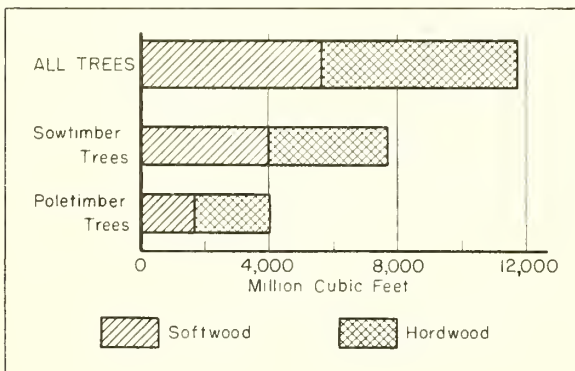


Figure 6. --Growing stock in pole-timber and sawtimber trees, 1951-53.

In North Alabama the change is typical of that found in most upland areas of other southern States that have been resurveyed since 1946. Softwoods--virtually all pines--have been cut heavily in all sizes 10 inches and larger in d.b.h. The rate of depletion is greatest in the bigger tree sizes. Though large hardwoods have

Table 2. --Growing stock volume (1951-53) and change between Surveys

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million cu. ft.	Percent	Million cu. ft.	Percent
North	1,895.4	-26	2,849.9	- 2
Southeast	1,218.2	- 9	1,395.4	+ 7
Southwest	2,502.5	+25	1,851.0	+22
Total	5,616.1	- 5	6,096.3	+ 6

also been reduced in numbers, hardwoods have been cut less heavily than softwoods.

Growing stock changes in North Alabama pose a serious--but not insurmountable--problem to the region's wood-using industries. Although volume has declined, there has been a large increase in the number of small growing stock trees. These trees are the key to North Alabama's forest future. Much of the increase is in low-value species such as hickory; but a substantial part is in desirable species--southern pines, yellow-poplar, and white oaks. This young timber offers a happy opportunity to rebuild the depleted growing stock. Much depends on the extent to which forest managers take advantage of the new growth.

In Southeast Alabama the impact of timber cutting has also been heavy, but not to the same extent as in the North region. As figure 7 indicates,

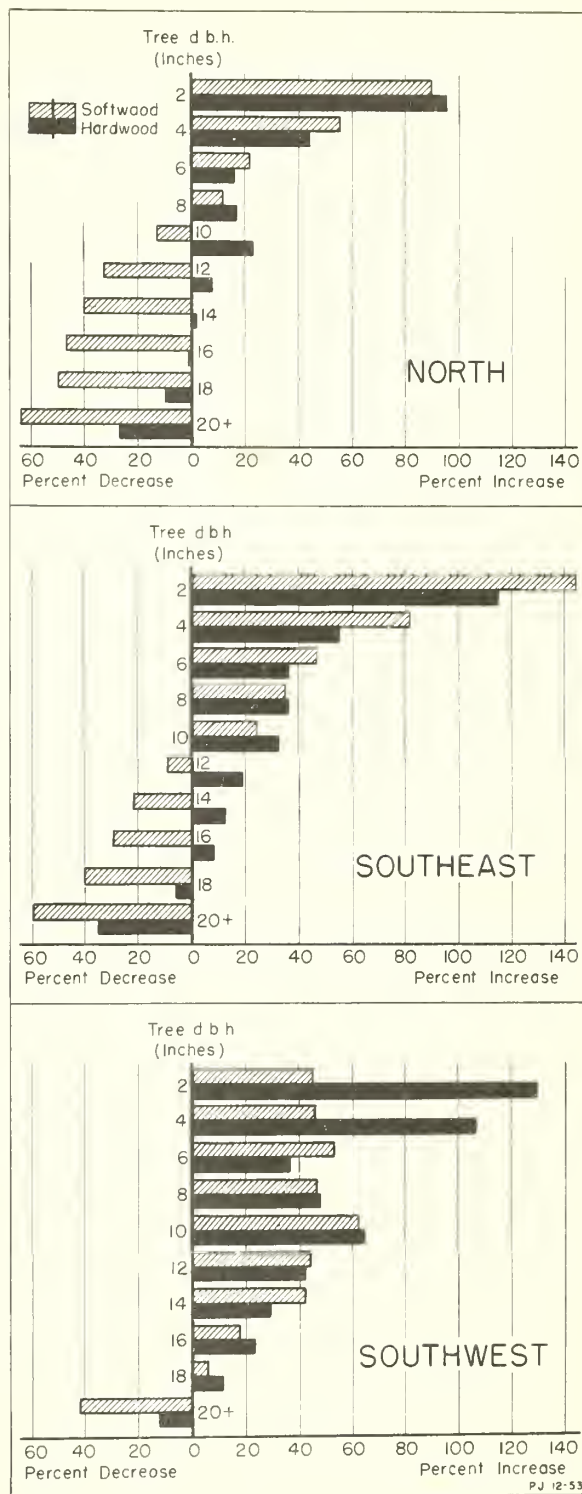


Figure 7. --Change in number of live trees between Surveys.

the reduction in the number of trees extends down through the 12-inch class in softwoods and the 18-inch class in hardwoods. Below 18 inches, hardwoods have increased considerably. In the bottomland type, which makes up a greater portion of the forest acreage in the Southeast than in other regions, this hardwood increase is favorable.

In the Southwest the stand tables indicate a greatly improved situation between Surveys. Softwoods in all tree sizes through 18 inches have increased in number--more than 40 percent in most tree sizes. The considerable pine increase, especially in sawtimber trees, resulted in a 25-percent increase in softwood growing stock. Only softwoods 20 inches and larger--chiefly old-growth and mature second-growth trees--have been reduced in numbers.

Part of the gain in numbers of small softwoods in the Southwest, of course, is associated with the 6-percent regional increase in softwood acreage between Surveys. But the prime factor in the softwood increase is that on much of the forest acreage, timber stands are being improved--by good cutting practice, by hardwood control in the uplands, and by intensified fire protection. Some owners have also adopted the practice of harvesting less than growth in order to build up their stock of growing timber.

Non-growing stock 1.9 billion cubic feet

Alabama's forests also contain much timber that, under current utilization practices, finds little commercial use. Of this, 70 percent is in cull trees, 26 percent is in limbs of sawtimber-size hardwoods, and 4 percent is in salvable dead trees. Hardwoods (mainly red and white oaks) total 1.8 billion cubic feet; softwoods (chiefly southern pines) 0.1 billion. Most of the volume is suitable for fuelwood and other farm-use products. Sound volume in cull trees alone is more than 10 times the 1951 output of wood for domestic farm use.

Cull-tree volume in species generally acceptable for pulping (pines and soft-textured hardwoods) totals some 480 million cubic feet --almost 5 times the 1951 pulpwood harvest.

Sawtimber volume down 12 percent

Alabama's sawtimber volume totals 38.2 billion board feet, of which two-fifths is in the Southwest region (fig. 8). Twenty-two billion board feet, 57 percent, is softwood.

Softwoods make up a greater portion of the sawtimber volume than of the growing stock. Loblolly pine, comprising 30 percent of the sawtimber volume, is the leading softwood species (fig. 9). Other southern pines--chiefly short-leaf--follow with 26 percent. All other softwoods make up 1 percent. Among hardwoods, red and white oaks lead with 16 percent of the total sawtimber volume. Sweet-, black-, and tupelo gum add up to 12 percent; hickories to 5 percent; and all other hardwoods to 10 percent.

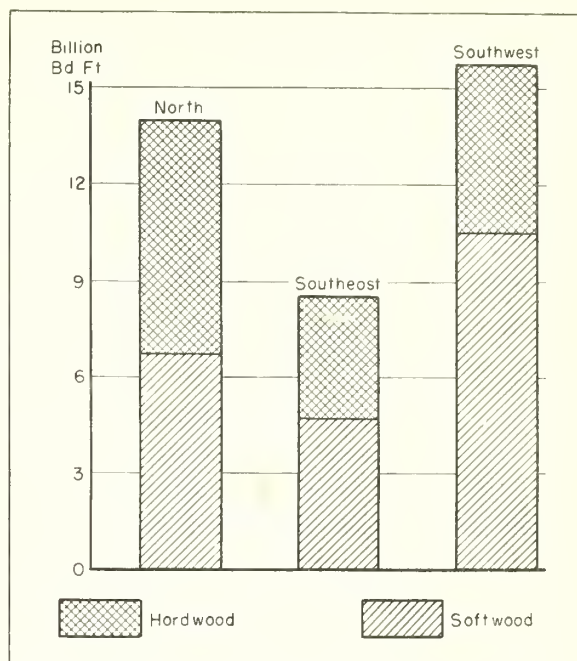


Figure 8.--Sawtimber volume by region, 1951-53.

Sawtimber volume dropped 5.4 billion board feet or 12 percent between Surveys.

This decline was felt in all of the State except the Southwest. There, total sawtimber volume increased 13 percent: 16 percent in softwoods and 7 percent in hardwoods (table 3).

Further expression of the improved situation in the Southwest is found in average volumes per acre--sawtimber volume now averages 2,600 board feet per acre; at the time of the first Survey it averaged 2,400 board feet. In contrast, North Alabama, which averaged 2,200

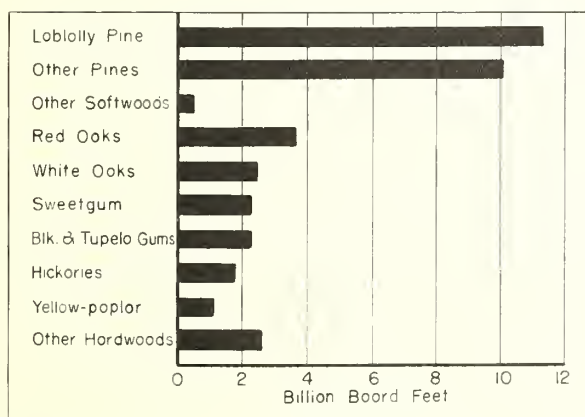


Figure 9.--Sawtimber volume by species, 1951-53.

Table 3.--Sawtimber volume (1951-53) and change between Surveys

Region	Softwood		Hardwood	
	Volume Million bd. ft.	Change Per- cent	Volume Million bd. ft.	Change Per- cent
North	6,698.6	-40	7,263.5	-12
Southeast	4,720.8	-23	3,798.1	-8
Southwest	10,509.5	+16	5,220.1	+7
Total	21,928.9	-17	16,281.7	-5

board feet at the time of the initial Survey, now averages 1,400 board feet. Southeast Alabama dropped from 2,400 board feet to 1,700.

For the entire State, average volume plunged from 2,300 board feet per acre to 1,800. Pine types now average 1,800 board feet, while bottomland hardwoods average 3,000 and upland hardwoods 1,400. Sawtimber stands of all forest types average 4,600 board feet per acre.

Large-tree quality good

Alabama's softwood sawtimber volume is about equally divided between 10- and 12-inch trees and those 14 inches and larger; only 11 percent is in trees 20 inches d. b. h. and larger (table 4). Of the hardwood sawtimber volume, 54 percent is in 14- to 18-inch trees; and the volume in 12-inch trees is almost as much as that in trees over 18 inches.

Table 4. -- Sawtimber volume by log grade and tree diameter, 1951-53

Species group and d. b. h. class (inches)	All grades	Grade 1	Grade 2	Other grades
- - - - - <u>Million board feet</u> - - - - -				
Softwood:				
10 to 12	10,593.7	33.7	218.5	10,341.5
14 to 18	8,979.3	28.0	1,856.5	7,094.8
20 and up	<u>2,355.9</u>	<u>396.0</u>	<u>546.6</u>	<u>1,413.3</u>
Total	<u><u>21,928.9</u></u>	<u><u>457.7</u></u>	<u><u>2,621.6</u></u>	<u><u>18,849.6</u></u>
Hardwood:				
12	3,642.9	...	27.3	3,615.6
14 to 18	8,775.9	249.8	2,055.2	6,470.9
20 and up	<u>3,862.9</u>	<u>1,328.1</u>	<u>1,025.6</u>	<u>1,509.2</u>
Total	<u><u>16,281.7</u></u>	<u><u>1,577.9</u></u>	<u><u>3,108.1</u></u>	<u><u>11,595.7</u></u>
All classes	38,210.6	2,035.6	5,729.7	30,445.3

Log quality is partly a function of tree size; the proportion of good-quality logs--grades 1 and 2--mounts rapidly with increasing tree diameter. In hardwoods 20 inches d.b.h. and larger, six-tenths of the volume is in good-quality logs; in 14- to 18-inch trees about one-quarter. But in the 12-inch class, virtually all of the volume is in low-grade sawlogs--small factory lumber logs, or logs that would yield chiefly ties and construction lumber.

As for softwoods, grade 1 and 2 logs comprise 40 percent of the sawtimber volume in trees 20 inches d.b.h. and larger; 21 percent of the volume in 14- to 18-inch trees; and 2 percent in 10- and 12-inch trees.

Of the total sawtimber volume, about three-tenths of the hardwood and one-seventh of the softwood is in grades 1 and 2. The low grade of much of Alabama's timber is due to the prevailing small sizes of sawtimber trees. Many of these trees will develop into better quality timber if permitted to grow to larger sizes.

Hardwood sawtimber stands are of higher average quality than softwood. More than half of the hardwood sawtimber area has at least four grade 2 or better logs per acre, while only one-third of the softwood sawtimber area does.

Net annual growth 769 million cubic feet; sawtimber growth 2.8 billion board feet

Alabama's forests are now growing 769 million cubic feet annually in growing stock trees, including 2.8 billion board feet of sawtimber. Statewide, more than three-fifths of the sawtimber growth is softwood; but in pole timber-size trees--the future sawtimber supply--two-thirds of the growth is hardwood. More than four-fifths of the softwood growth and three-fifths of the hardwood is sawtimber.

Annual net growth on growing stock averages 37 cubic feet per acre (about 0.5 cord) for the State. It varies from 24 cubic feet (0.3 cord) for the 10 northernmost counties to 52 cubic feet (0.7 cord) in the north section of the Southwest. In softwood types growth is slightly higher than in hardwood types: 38 cubic feet as compared to 35.

Annual net growth of sawtimber totals 133 board feet per acre for all stand-sizes. In sawtimber stands, growth per acre averages more than 300 board feet in softwood types; more than 200 board feet in hardwood types. Region-wide, growth in sawtimber stands ranges

from 138 board feet per acre in the 10 northernmost counties to 335 board feet in the north section of the Southwest.

Total 1951 drain 595 million cubic feet; sawtimber drain 2.5 billion board feet

Commercial- and domestic-use cutting removed 595 million cubic feet from Alabama's growing stock in 1951. Sawlogs made up 63 percent of this volume; pulpwood 15 percent; fuelwood 10 percent; and all other products 12 percent (fig. 10). About one-seventh of the total commodity drain was for domestic farm use.

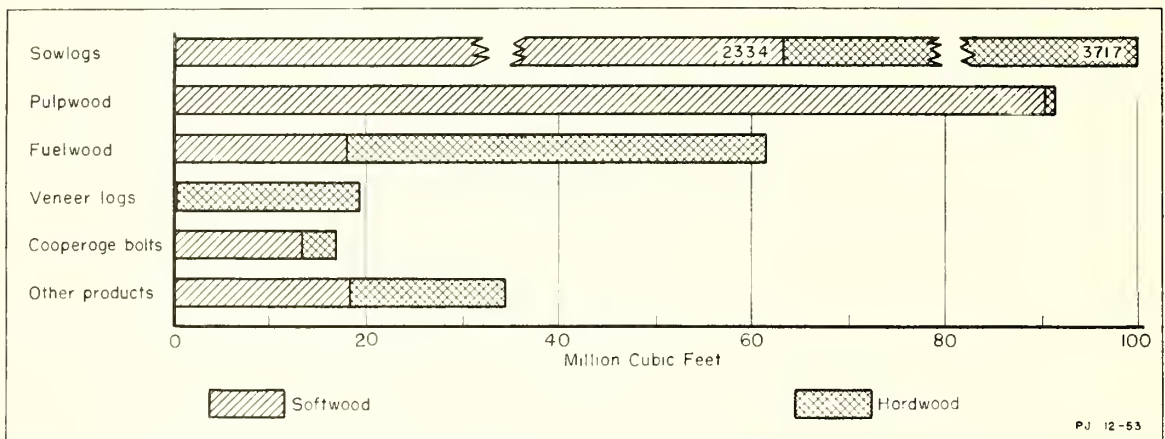


Figure 10. --Commodity drain on growing stock, 1951.

More than four-fifths of the 1951 sawtimber cut consisted of sawlogs and fuelwood. But considerable amounts of hardwood veneer logs, slack cooperage bolts, pine pulpwood, and pine poles were also harvested. Some 60 percent of the total board-footage was southern pine.

Alabama's timber resource supports some 3,000 sawmills, 7 wood-pulp mills, and more than 100 non-lumber establishments-- veneer mills, cooperage plants, handle stock outfits, wood-preserving plants, and others. About 15 of the sawmills produce at least 10 million board feet annually.

Accuracy of the Survey

The 1951-53 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurement of quarter-acre sample plots. In the North, West Central, Southeast, and the two Southwest regions, sample plots were taken in pairs at and near the intersections of a grid of east-west and north-south lines spaced three miles apart. Furthermore, in the river- and branch-bottoms of six^{3/} counties of the Southwest, the number of sample plots was increased to strengthen the volume estimates and additional photo interpretation was done to improve the area estimate. In the North Central region, only 80 percent of the locations (i. e., pairs of plots) as determined from a 3-mile-square grid were sampled.

Accuracy of the estimates may be affected by two types of error. The first type stems from the use of a sample to estimate the whole and from variability of the item being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from human mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting and estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data, using random-sampling formulas, indicates a sampling error of 0.3 percent for the State estimate of total forest area, 1.5 percent for total cubic-foot volume, and 2.1 percent for total board-foot volume. However, because a systematic sample is generally more efficient than a random sample of the same size, these estimates of sampling error may be considered as setting an upper limit of error, rather than as expressing the actual probability of error. As the acreage and volumes for the State are broken down by Survey region, county, forest type, species, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates may be liable on the probability of two chances out of three.

^{3/} Baldwin, Choctaw, Clarke, Mobile, Monroe, and Washington.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Maximum sampling error	Volume sampled	Maximum sampling error	Volume sampled	Maximum sampling error
<u>M acres</u>	<u>Percent</u>	<u>Million cu. ft.</u>	<u>Percent</u>	<u>Million bd. ft.</u>	<u>Percent</u>
21,000	0.3	12,000	1.5	38,000	2.1
10,000	.4	6,000	2.1	20,000	2.9
5,000	.6	3,000	3.0	10,000	4.1
2,000	1.0	1,000	5.1	5,000	5.8
500	1.9	500	7.3	2,000	9.2
100	4.3	100	16.2	300	23.7

Growth estimates are based on radial-growth measurements and mortality data taken on the sample plots. No attempt was made to calculate sampling error in these estimates.

Drain estimates are conversions of production estimates. Production of hewn ties, commercial lumber, poles, piling, and round mine timbers was derived from Alabama Forest Products Severance Tax data. Commercial log and bolt production for other products was obtained by a 100-percent canvass of establishments or producers. Production of wood for fuel, fence posts, farm-use lumber, and miscellaneous domestic use on farms was estimated from an area sample. The data on production of each commodity were converted to drain upon growing stock by using drain-to-production ratios derived from measurements taken on sample cutting areas. The sampling errors to which the State cubic-foot drain estimates are liable, on a probability of two chances out of three, are found in the tabulation to the right.

Commodity	Sampling error of cubic-foot drain
	<u>Percent error</u>
Sawlogs	1.9
Veneer logs	6.4
Cooperage bolts	1.7
Pulpwood	2.4
Fuelwood	13.3
Poles and piling	22.2
Posts	19.5
Hewn ties	6.7
Round mine timbers	6.6
Misc. logs and bolts	13.6
All commodities	2.0

In computing the changes that took place between 1935-36 and 1951-53, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. For example, published estimates from the first Survey were based on a total land area of 32,692,660 acres in Alabama. Since then, more accurate measurement by the U.S. Bureau of the Census has established a revised figure of 32,689,920 acres. Thus, while actual land acreage has changed little, if at all, the estimate of land acreage has decreased, affecting forest-area and timber-volume estimates in like proportion. Again, the lower diameter limit for hardwood sawtimber trees was dropped from 13.0 inches d. b. h. on the first Survey to 11.0 inches on the second Survey, in line with changing utilization practices.

In addition to these major points, a number of procedural differences between the two Surveys had to be taken into account. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before change was computed.

The sampling error in the data on change in forest acreage and timber volume cannot be estimated. In the 1935-36 Survey, sample plots were spaced one-eighth mile apart on lines 10 miles apart. An estimate of sampling error was not made. However, the error in the estimate of the State forest acreage was probably very small, as it is for the second Survey; and the indicated change in total forest acreage may be considered essentially correct. Indicated changes for Survey regions and other portions of the total acreage should be valued in proportion to the magnitude of the item and of the change. Changes in timber volume, because of the possible effect of nonsampling as well as sampling errors, are shown only for major groupings of the data.

Table 5. --Forest and nonforest land by Survey region, 1951-53

Land use	State of Alabama	North	North Central	West Central	Southeast	Southwest-North	Southwest-South
- - - - - Thousand acres - - - - -							
Forest:							
Commercial	20,756.2	1,955.4	4,572.5	3,120.6	5,032.9	3,156.9	2,917.9
Noncommercial:							
Reserved	4.5	2.1	.9	.7	(2/)	...	.8
Unproductive	10.5	...	...	...	...	...	10.5
Total forest	20,771.2	1,957.5	4,573.4	3,121.3	5,032.9	3,156.9	2,929.2
Nonforest ^{1/}	11,918.7	2,541.1	2,021.8	1,274.9	3,999.4	1,218.1	863.4
All land	32,689.9	4,498.6	6,595.2	4,396.2	9,032.3	4,375.0	3,792.6

^{1/} Includes some acres of water according to Survey standards of area classification but defined by the Bureau of Census as land.

^{2/} Negligible.

Table 6. --Commercial forest land by class of ownership, 1951-1953

Class of ownership	Commercial forest	
	Thousand acres	Percent
Private:		
Farm ^{1/}	9,741.7	46.9
Other	10,038.6	48.4
Total private	19,780.3	95.3
Public: ^{2/}		
National forest	616.3	3.0
T. V. A.	55.3	.3
Other federal	153.0	.7
State	148.6	.7
County and municipal	2.7	(3/)
Total public	975.9	4.7
All ownership	20,756.2	100.0

^{1/} Based on 1950 Census of Agriculture.

^{2/} Compiled 1952.

^{3/} Negligible.

Table 7. --Land area and commercial forest by county, 1951-53^{1/}

County	All land	Commercial forest		County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent		Thousand acres	Thousand acres	Percent
Autauga	383.4	242.4	63.2	Jefferson	715.6	505.8	70.7
Baldwin	1,032.3	775.7	75.1	Lamar	387.2	278.8	72.0
Barbour	575.4	340.0	59.1	Lauderdale	440.3	147.8	33.6
Bibb	400.0	326.8	81.7	Lawrence	439.0	194.3	44.3
Blount	409.6	243.6	59.5	Lee	391.7	239.7	61.2
Bullock	393.6	208.2	52.9	Limestone	348.8	88.2	25.3
Butler	494.7	348.8	70.5	Lowndes	458.2	228.7	49.9
Calhoun	390.4	265.6	68.0	Macon	394.2	205.8	52.2
Chambers	382.7	246.5	64.4	Madison	514.0	158.1	30.8
Cherokee	384.0	245.4	63.9	Marengo	625.9	365.5	58.4
Chilton	447.4	318.6	71.2	Marion	475.5	321.0	67.5
Choctaw	587.5	484.4	82.5	Marshall	365.4	148.5	40.6
Clarke	794.2	682.2	85.9	Mobile	798.7	596.4	74.7
Clay	385.9	302.7	78.4	Monroe	662.4	506.8	76.5
Cleburne	367.4	292.1	79.5	Montgomery	505.6	181.6	35.9
Coffee	433.3	242.2	55.9	Morgan	367.4	132.7	36.1
Colbert	394.2	212.0	53.8	Perry	469.8	293.3	63.5
Conecuh	544.0	373.8	68.7	Pickens	567.7	404.2	71.2
Coosa	414.7	331.9	80.0	Pike	430.7	206.3	47.9
Covington	661.8	454.9	68.7	Randolph	371.8	245.0	65.9
Crenshaw	391.0	243.2	62.2	Russell	409.0	211.4	51.7
Cullman	475.5	256.3	53.9	St. Clair	410.2	309.3	75.4
Dale	358.4	193.5	54.0	Shelby	512.0	380.7	74.4
Dallas	624.7	314.2	50.3	Sumter	585.0	354.8	60.6
DeKalb	497.9	230.5	46.3	Talladega	430.0	303.8	63.3
Elmore	401.9	249.3	62.0	Tallapoosa	455.0	323.3	72.2
Escambia	615.7	496.3	80.6	Tuscaloosa	857.6	700.1	81.6
Etowah	355.2	218.4	61.5	Walker	517.8	358.2	69.2
Fayette	401.3	302.2	75.3	Washington	684.1	594.6	86.9
Franklin	412.2	233.3	56.6	Wilcox	576.0	389.4	67.6
Geneva	369.9	159.4	43.1	Winston	405.1	313.7	77.4
Greene	412.8	252.7	61.2				
Hale	424.3	236.5	55.7				
Henry	361.6	201.0	55.6				
Houston	369.9	123.8	33.5				
Jackson	719.4	410.0	57.0				
				All counties	32,689.9	20,756.2	63.5

^{1/} County data on sawtimber volume and growing stock, suitable for combining into county groups, are available as a supplement to this release.

Table 8. --Commercial forest land by stand size and forest type, by Survey region, 1951-1953

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
Thousand acres							Thousand acres					
STATE OF ALABAMA							SOUTHEAST					
Softwood types:												
Pine	11,002.3	723.7	2,649.6	5,216.7	2,247.7	164.6	2,829.9	166.1	646.9	1,268.7	734.8	13.4
Pine-hardwood	3,256.0	176.4	490.6	1,986.4	581.8	20.8	714.7	42.9	120.2	425.7	125.9	...
Other softwood	164.7	8.1	7.7	96.7	52.2	...	21.5	...	...	15.3	6.2	...
Total	14,423.0	908.2	3,147.9	7,299.8	2,881.7	185.4	3,566.1	209.0	767.1	1,709.7	866.9	13.4
Hardwood types:												
Bottomland hardwood	2,374.4	522.2	542.4	1,130.4	172.7	6.7	814.9	102.8	222.5	437.3	52.3	...
Upland hardwood	3,958.8	436.2	534.1	2,482.4	448.7	57.4	651.9	49.7	133.8	367.5	95.1	5.8
Total	6,333.2	958.4	1,076.5	3,612.8	621.4	64.1	1,466.8	152.5	356.3	804.8	147.4	5.8
All types	20,756.2	1,866.6	4,224.4	10,912.6	3,503.1	249.5	5,032.9	361.5	1,123.4	2,514.5	1,014.3	19.2
NORTH							SOUTHWEST - NORTH					
Softwood types:												
Pine	425.3	49.2	102.1	176.9	91.6	5.5	1,853.2	252.1	653.1	734.5	210.6	2.9
Pine-hardwood	257.4	30.5	43.8	137.7	43.1	2.3	437.0	32.1	115.4	233.0	56.5	...
Other softwood	123.6	8.1	5.5	77.9	32.1	...	17.4	...	...	3.5	13.9	...
Total	806.3	87.8	151.4	392.5	166.8	7.8	2,307.6	284.2	768.5	971.0	281.0	2.9
Hardwood types:												
Bottomland hardwood	145.5	26.8	17.2	75.6	23.6	2.3	520.3	125.7	128.3	247.2	17.9	1.2
Upland hardwood	1,003.6	130.7	198.0	606.6	68.3	...	329.0	44.9	52.0	209.7	22.4	...
Total	1,149.1	157.5	215.2	682.2	91.9	2.3	849.3	170.6	180.3	456.9	40.3	1.2
All types	1,955.4	245.3	366.6	1,074.7	258.7	10.1	3,156.9	454.8	948.8	1,427.9	321.3	4.1
NORTH CENTRAL							SOUTHWEST - SOUTH					
Softwood types:												
Pine	2,305.8	128.0	420.8	1,206.2	523.6	27.2	2,204.7	62.2	605.1	961.6	468.7	107.1
Pine-hardwood	977.2	33.5	90.3	637.4	211.7	4.3	227.2	8.9	60.6	107.2	47.7	2.8
Other softwood	...	...	...	...	...	...	2.2	...	2.2	...	...	...
Total	3,283.0	161.5	511.1	1,843.6	735.3	31.5	2,434.1	71.1	667.9	1,068.8	516.4	109.9
Hardwood types:												
Bottomland hardwood	103.7	15.8	16.6	39.4	31.9	...	345.0	135.5	67.1	130.1	12.3	...
Upland hardwood	1,185.8	144.4	76.7	788.9	159.3	16.5	138.8	3.2	13.9	57.3	29.3	35.1
Total	1,289.5	160.2	93.3	828.3	191.2	16.5	483.8	138.7	81.0	187.4	41.6	35.1
All types	4,572.5	321.7	604.4	2,671.9	926.5	48.0	2,917.9	209.8	748.9	1,256.2	558.0	145.0
WEST CENTRAL												
Softwood types:												
Pine	1,383.4	66.1	221.6	868.8	218.4	8.5						
Pine-hardwood	642.5	28.5	60.3	445.4	96.9	11.4						
Other softwood	...	...	...	...	...	...						
Total	2,025.9	94.6	281.9	1,314.2	315.3	19.9						
Hardwood types:												
Bottomland hardwood	445.0	115.6	90.7	200.8	34.7	3.2						
Upland hardwood	649.7	63.3	59.7	452.4	74.3	...						
Total	1,094.7	178.9	150.4	653.2	109.0	3.2						
All types	3,120.6	273.5	432.3	1,967.4	424.3	23.1						

^{1/} Includes areas not classified elsewhere.

Table 9. --Commercial forest land by degree of tree stocking and forest type, by Survey region, 1951-1953

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked
Thousand acres						Thousand acres				
STATE OF ALABAMA						SOUTHEAST				
Softwood types:										
Pine	11,002.3	6,482.9	3,264.1	1,094.0	161.3	2,829.9	1,377.5	1,109.2	329.8	13.4
Pine-hardwood	3,256.0	2,028.8	969.4	237.0	20.8	714.7	328.4	306.4	79.9	...
Other softwood	164.7	68.9	77.5	18.3	...	21.5	3.3	12.4	5.8	...
Total	14,423.0	8,580.6	4,311.0	1,349.3	182.1	3,566.1	1,709.2	1,428.0	415.5	13.4
Hardwood types:										
Bottomland hardwood	2,374.4	1,718.2	534.4	116.3	5.5	814.9	627.6	168.7	18.6	...
Upland hardwood	3,958.8	2,721.3	961.1	219.0	57.4	651.9	287.9	279.2	79.0	5.8
Total	6,333.2	4,439.5	1,495.5	335.3	62.9	1,466.8	915.5	447.9	97.6	5.8
All types	20,756.2	13,020.1	5,806.5	1,684.6	245.0	5,032.9	2,624.7	1,875.9	513.1	19.2
NORTH						SOUTHWEST-NORTH				
Softwood types:										
Pine	425.3	256.5	145.1	18.2	5.5	1,853.2	1,509.5	279.0	61.8	2.9
Pine-hardwood	257.4	150.0	92.1	13.0	2.3	437.0	343.2	70.3	23.5	...
Other softwood	123.6	65.6	52.5	5.5	...	17.4	...	10.4	7.0	...
Total	806.3	472.1	289.7	36.7	7.8	2,307.6	1,852.7	359.7	92.3	2.9
Hardwood types:										
Bottomland hardwood	145.5	72.0	54.7	16.5	2.3	520.3	378.5	124.7	17.1	...
Upland hardwood	1,003.6	724.5	240.6	38.5	...	329.0	262.6	53.5	12.9	...
Total	1,149.1	796.5	295.3	55.0	2.3	849.3	641.1	178.2	30.0	...
All types	1,955.4	1,268.6	585.0	91.7	10.1	3,156.9	2,493.8	537.9	122.3	2.9
NORTH CENTRAL						SOUTHWEST-SOUTH				
Softwood types:										
Pine	2,305.8	1,592.3	552.8	133.5	27.2	2,204.7	870.4	775.7	454.8	103.8
Pine-hardwood	977.2	661.3	284.5	27.1	4.3	227.2	117.6	55.4	51.4	2.8
Other softwood	...	...	...	...	...	2.2	...	2.2	...	...
Total	3,283.0	2,253.6	837.3	160.6	31.5	2,434.1	988.0	833.3	506.2	106.6
Hardwood types:										
Bottomland hardwood	103.7	63.5	32.8	7.4	...	345.0	237.2	69.5	38.3	...
Upland hardwood	1,185.8	942.5	200.8	26.0	16.5	138.8	47.6	24.4	31.7	35.1
Total	1,289.5	1,006.0	233.6	33.4	16.5	483.8	284.8	93.9	70.0	35.1
All types	4,572.5	3,259.6	1,070.9	194.0	48.0	2,917.9	1,272.8	927.2	576.2	141.7
WEST CENTRAL										
Softwood types:										
Pine	1,383.4	876.7	402.3	95.9	8.5					
Pine-hardwood	642.5	428.3	160.7	42.1	11.4					
Other softwood	...	...	...	...	...					
Total	2,025.9	1,305.0	563.0	138.0	19.9					
Hardwood types:										
Bottomland hardwood	445.0	339.4	84.0	18.4	3.2					
Upland hardwood	649.7	456.2	162.6	30.9	...					
Total	1,094.7	795.6	246.6	49.3	3.2					
All types	3,120.6	2,100.6	809.6	187.3	23.1					

Table 10. --Area of sawtimber stands by stand quality and forest type, by Survey region,
1951-1953

Forest type	All qualities	Fair or better	Poor	All qualities	Fair or better	Poor
- - - Thousand acres - - -			- - - Thousand acres - - -			
STATE OF ALABAMA			SOUTHEAST			
Softwood types:						
Pine	3,373.3	1,035.6	2,337.7	813.0	202.9	610.1
Pine-hardwood	667.0	281.2	385.8	163.1	57.7	105.4
Other softwood	15.8	13.6	2.2	...	...	...
Total	<u>4,056.1</u>	<u>1,330.4</u>	<u>2,725.7</u>	<u>976.1</u>	<u>260.6</u>	<u>715.5</u>
Hardwood types:						
Bottomland hardwood	1,064.6	588.7	475.9	325.3	73.3	252.0
Upland hardwood	970.3	503.1	467.2	183.5	11.8	171.7
Total	<u>2,034.9</u>	<u>1,091.8</u>	<u>943.1</u>	<u>508.8</u>	<u>85.1</u>	<u>423.7</u>
All types	<u>6,091.0</u>	<u>2,422.2</u>	<u>3,668.8</u>	<u>1,484.9</u>	<u>345.7</u>	<u>1,139.2</u>
NORTH			SOUTHWEST - NORTH			
Softwood types:						
Pine	151.3	65.0	86.3	905.2	321.0	584.2
Pine-hardwood	74.3	44.5	29.8	147.5	55.4	92.1
Other softwood	13.6	13.6	...	...	...	...
Total	<u>239.2</u>	<u>123.1</u>	<u>116.1</u>	<u>1,052.7</u>	<u>376.4</u>	<u>676.3</u>
Hardwood types:						
Bottomland hardwood	44.0	29.7	14.3	254.0	160.0	94.0
Upland hardwood	328.7	219.1	109.6	96.9	39.4	57.5
Total	<u>372.7</u>	<u>248.8</u>	<u>123.9</u>	<u>350.9</u>	<u>199.4</u>	<u>151.5</u>
All types	<u>611.9</u>	<u>371.9</u>	<u>240.0</u>	<u>1,403.6</u>	<u>575.8</u>	<u>827.8</u>
NORTH CENTRAL			SOUTHWEST - SOUTH			
Softwood types:						
Pine	548.8	229.7	319.1	667.3	112.9	554.4
Pine-hardwood	123.8	66.2	57.6	69.5	7.4	62.1
Other softwood	...	...	...	2.2	...	2.2
Total	<u>672.6</u>	<u>295.9</u>	<u>376.7</u>	<u>739.0</u>	<u>120.3</u>	<u>618.7</u>
Hardwood types:						
Bottomland hardwood	32.4	28.7	3.7	202.6	171.8	30.8
Upland hardwood	221.1	164.1	57.0	17.1	2.2	14.9
Total	<u>253.5</u>	<u>192.8</u>	<u>60.7</u>	<u>219.7</u>	<u>174.0</u>	<u>45.7</u>
All types	<u>926.1</u>	<u>488.7</u>	<u>437.4</u>	<u>958.7</u>	<u>294.3</u>	<u>664.4</u>
WEST CENTRAL						
Softwood types:						
Pine	287.7	104.1	183.6			
Pine-hardwood	88.8	50.0	38.8			
Other softwood	...	...	...			
Total	<u>376.5</u>	<u>154.1</u>	<u>222.4</u>			
Hardwood types:						
Bottomland hardwood	206.3	125.2	81.1			
Upland hardwood	123.0	66.5	56.5			
Total	<u>329.3</u>	<u>191.7</u>	<u>137.6</u>			
All types	<u>705.8</u>	<u>345.8</u>	<u>360.0</u>			

Table 11. --Basal area per acre of growing stock and cull trees by forest-type group and Survey region, 1951-53

Forest-type group	State	North	North Central	West Central	Southeast	Southwest-North	Southwest-South
-----Square feet-----							
Softwoods:							
2- and 4-inch good trees ^{1/}	12.7	14.0	12.8	15.4	11.9	15.7	7.9
Growing stock	32.5	32.6	29.7	32.2	28.4	45.3	30.2
2- and 4-inch poor trees	2.8	3.8	2.7	2.2	2.4	2.7	4.0
Cull trees	5.3	6.6	6.0	4.6	4.7	5.8	4.9
All trees	53.3	57.0	51.2	54.4	47.4	69.5	47.0
Bottomland hardwood:							
2- and 4-inch good trees ^{1/}	12.1	13.7	14.9	9.4	13.3	9.6	14.6
Growing stock	54.7	39.2	35.5	59.0	48.7	55.6	74.7
2- and 4-inch poor trees	5.0	4.9	5.2	5.5	5.0	4.6	4.6
Cull trees	16.5	11.2	12.5	16.2	17.0	16.2	19.8
All trees	88.3	69.0	68.1	90.1	84.0	86.0	113.7
Upland hardwood:							
2- and 4-inch good trees ^{1/}	10.8	10.1	10.5	11.2	11.8	14.5	3.6
Growing stock	34.0	39.2	31.6	34.0	30.6	40.8	15.8
2- and 4-inch poor trees	3.8	4.6	3.3	2.7	3.5	4.1	8.9
Cull trees	10.2	10.7	9.8	8.1	11.5	10.9	12.0
All trees	58.8	64.6	55.2	56.0	57.4	70.3	40.3
All types:							
2- and 4-inch good trees ^{1/}	12.2	12.0	12.3	13.6	12.2	14.6	8.5
Growing stock	35.3	36.5	30.3	36.4	31.9	46.5	34.7
2- and 4-inch poor trees	3.3	4.3	2.9	2.8	2.9	3.2	4.3
Cull trees	7.5	9.0	7.1	7.0	7.6	8.0	7.0
All trees	58.3	61.8	52.6	59.8	54.6	72.3	54.5

^{1/} Includes only sound, well-formed trees.

Table 12. --Total volume by class of timber and species, by Survey region, 1951-53

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
-----Thousand cords-----							
STATE OF ALABAMA							
Softwood:							
Loblolly pine	35,104	34,745	24,757	2,075	7,913	...	359
Shortleaf pine	17,573	17,418	9,153	859	7,406	...	155
Longleaf pine	12,017	11,952	7,492	754	3,706	...	65
Slash pine	5,904	5,877	4,123	371	1,383	...	27
Other pines	3,402	3,318	2,227	185	906	...	84
Other softwoods	1,656	1,570	1,130	108	332	...	86
Total	75,656	74,880	48,882	4,352	21,646	...	776
Hardwood:							
Red oaks	25,694	19,525	8,605	3,853	7,067	2,509	3,660
White oaks	18,063	14,512	5,981	2,708	5,823	1,266	2,285
Hickories	13,235	11,120	4,408	1,856	4,856	777	1,338
Yellow-poplar	5,133	4,638	2,483	844	1,311	179	316
Sweetgum	14,918	13,152	5,546	2,120	5,486	420	1,346
Black and tupelo gums	14,958	12,472	5,592	2,249	4,631	554	1,932
Other hardwoods	25,213	15,570	6,148	2,757	6,665	1,543	8,100
Total	117,214	90,989	38,763	16,387	35,839	7,248	18,977
All species	192,870	165,869	87,645	20,739	57,485	7,248	19,753
NORTH							
Softwood:							
Loblolly pine	1,157	1,141	797	73	271	...	16
Shortleaf pine	1,327	1,308	687	63	558	...	19
Other pines	503	480	321	28	131	...	23
Other softwoods	273	249	89	12	148	...	24
Total	3,260	3,178	1,894	176	1,108	...	82
Hardwood:							
Red oaks	3,852	2,969	1,361	612	996	516	367
White oaks	3,554	2,969	1,234	581	1,154	76	509
Hickories	3,125	2,685	1,012	421	1,252	164	276
Yellow-poplar	530	466	274	96	96	27	37
Sweetgum	825	726	342	140	244	28	71
Black and tupelo gums	707	531	263	122	146	28	148
Other hardwoods	2,578	1,649	669	337	643	198	731
Total	15,171	11,995	5,155	2,309	4,531	1,037	2,139
All species	18,431	15,173	7,049	2,485	5,639	1,037	2,221
NORTH CENTRAL							
Softwood:							
Loblolly pine	6,175	6,115	4,286	297	1,532	...	60
Shortleaf pine	4,184	4,149	1,849	146	2,154	...	35
Longleaf pine	1,928	1,911	1,232	97	582	...	17
Other pines	1,359	1,324	836	63	425	...	35
Other softwoods	34	22	16	1	5	...	12
Total	13,680	13,521	8,219	604	4,698	...	159
Hardwood:							
Red oaks	5,070	4,016	1,580	724	1,712	345	709
White oaks	5,079	3,900	1,452	669	1,779	357	822
Hickories	3,870	3,148	1,069	476	1,603	188	534
Yellow-poplar	857	781	427	146	208	30	46
Sweetgum	1,360	1,164	469	194	501	38	158
Black and tupelo gums	827	630	228	111	291	22	175
Other hardwoods	2,607	1,198	400	198	600	128	1,281
Total	19,670	14,837	5,625	2,518	6,694	1,108	3,725
All species	33,350	28,358	13,844	3,122	11,392	1,108	3,884
WEST CENTRAL							
Softwood:							
Loblolly pine	4,647	4,612	2,972	272	1,368	...	35
Shortleaf pine	2,851	2,830	1,219	120	1,491	...	21
Longleaf pine	696	689	503	45	141	...	7
Other pines	245	240	78	11	151	...	5
Other softwoods	213	201	168	15	18	...	12
Total	8,652	8,572	4,940	463	3,169	...	80
Hardwood:							
Red oaks	4,429	3,503	1,536	696	1,271	389	537
White oaks	2,981	2,492	925	455	1,112	205	284
Hickories	2,464	2,157	882	387	888	149	158
Yellow-poplar	533	494	187	73	234	12	27
Sweetgum	3,275	2,978	1,346	485	1,147	81	216
Black and tupelo gums	2,607	2,227	1,045	418	764	83	297
Other hardwoods	3,190	1,852	713	349	790	175	1,163
Total	19,479	15,703	6,634	2,863	6,206	1,094	2,682
All species	28,131	24,275	11,574	3,326	9,375	1,094	2,762

Table 12. --Total volume by class of timber and species, by Survey region, 1951-53 (continued)

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Thousand cords -----							
SOUTHEAST							
Softwood:							
Loblolly pine	10,153	9,986	6,920	630	2,436	...	167
Shortleaf pine	3,887	3,846	2,058	220	1,568	...	41
Longleaf pine	1,428	1,417	828	84	505	...	11
Slash pine	351	351	237	22	92	...	...
Other pines	388	383	230	24	79	...	5
Other softwoods	268	260	211	21	28	...	8
Total	16,475	16,243	10,534	1,001	4,708	...	232
Hardwood:							
Red oaks	5,410	3,858	1,719	763	1,376	515	1,037
White oaks	2,348	1,770	802	343	625	209	369
Hickories	2,016	1,660	763	284	613	143	213
Yellow-poplar	1,779	1,607	853	282	472	55	117
Sweetgum	4,563	3,963	1,620	603	1,740	118	482
Black and tupelo gums	4,205	3,606	1,545	610	1,445	124	481
Other hardwoods	6,927	4,369	1,745	718	1,906	355	2,203
Total	27,248	20,827	9,047	3,603	8,177	1,519	4,902
All species	43,723	37,070	19,581	4,604	12,885	1,519	5,134
SOUTHWEST-NORTH							
Softwood:							
Loblolly pine	11,547	11,496	8,738	704	2,054	...	51
Shortleaf pine	5,005	4,969	3,159	290	1,520	...	36
Longleaf pine	1,315	1,309	970	87	252	...	6
Slash pine	253	253	148	13	92	...	...
Other pines	780	775	619	52	104	...	5
Other softwoods	272	267	215	19	33	...	5
Total	19,172	19,069	13,849	1,165	4,055	...	103
Hardwood:							
Red oaks	5,026	3,836	1,790	780	1,266	511	679
White oaks	3,167	2,612	1,143	497	972	300	255
Hickories	1,561	1,352	619	257	476	112	97
Yellow-poplar	873	797	466	154	177	33	43
Sweetgum	3,937	3,482	1,408	564	1,510	115	340
Black and tupelo gums	1,919	1,648	722	290	636	67	204
Other hardwoods	5,794	3,886	1,600	713	1,573	440	1,468
Total	22,277	17,613	7,748	3,255	6,610	1,578	3,086
All species	41,449	36,682	21,597	4,420	10,665	1,578	3,189
SOUTHWEST-SOUTH							
Softwood:							
Loblolly pine	1,425	1,395	1,044	99	252	...	30
Shortleaf pine	319	316	181	20	115	...	3
Longleaf pine	6,650	6,626	3,959	441	2,226	...	24
Slash pine	5,300	5,273	3,738	336	1,199	...	27
Other pines	127	116	93	7	16	...	11
Other softwoods	596	571	431	40	100	...	25
Total	14,417	14,297	9,446	943	3,908	...	120
Hardwood:							
Red oaks	1,907	1,343	619	278	446	233	331
White oaks	934	769	425	163	181	119	46
Hickories	199	118	63	31	24	21	60
Yellow-poplar	561	493	276	93	124	22	46
Sweetgum	958	839	361	134	344	40	79
Black and tupelo gums	4,693	3,836	1,789	698	1,349	230	627
Other hardwoods	4,117	2,616	1,021	442	1,153	247	1,254
Total	13,369	10,014	4,554	1,839	3,621	912	2,443
All species	27,786	24,311	14,000	2,782	7,529	912	2,563
^{1/} Sound volume in dead trees considered salvable is not included.							

^{1/} Sound volume in dead trees considered salvable is not included. This volume is as follows:

Region	Softwood	Hardwood
Thousand cords		
North	55	104
North Central	137	144
West Central	51	122

Region	Softwood	Hardwood
Thousand cords		
Southeast	80	43
Southwest-North	69	81
Southwest-South	43	49
Total	435	543

Table 13. --Total volume by class of timber and species, by Survey region, 1951-53

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
Million cubic feet							
STATE OF ALABAMA							
Softwood:							
Loblolly pine	2,632.8	2,605.9	1,856.8	155.7	593.4	...	26.9
Shortleaf pine	1,317.9	1,306.3	686.4	64.4	555.5	...	11.6
Longleaf pine	901.3	896.5	561.9	56.6	278.0	...	4.8
Slash pine	442.8	440.8	309.3	27.8	103.7	...	2.0
Other pines	255.1	248.8	167.1	13.8	67.9	...	6.3
Other softwoods	124.3	117.8	84.7	8.1	25.0	...	6.5
Total	5,674.2	5,616.1	3,666.2	326.4	1,623.5	...	58.1
Hardwood:							
Red oaks	1,721.6	1,308.2	576.6	258.1	473.5	168.1	245.3
White oaks	1,210.2	972.3	400.8	181.4	390.1	84.8	153.1
Hickories	886.8	745.0	295.3	124.3	325.4	52.1	89.7
Yellow-poplar	343.9	310.7	166.4	56.5	87.8	12.0	21.2
Sweetgum	999.5	881.2	371.5	142.1	367.6	28.1	90.2
Black and tupelo gums	1,002.2	835.6	374.6	150.7	310.3	37.2	129.4
Other hardwoods	1,689.2	1,043.3	411.9	184.8	446.6	103.3	542.6
Total	7,853.4	6,096.3	2,597.1	1,097.9	2,401.3	485.6	1,271.5
All species	13,527.6	11,712.4	6,263.3	1,424.3	4,024.8	485.6	1,329.6
NORTH							
Softwood:							
Loblolly pine	86.8	85.6	59.8	5.5	20.3	...	1.2
Shortleaf pine	99.5	98.1	51.5	4.7	41.9	...	1.4
Other pines	37.7	36.0	24.1	2.1	9.8	...	1.7
Other softwoods	20.5	18.7	6.7	.9	11.1	...	1.8
Total	244.5	238.4	142.1	13.2	83.1	...	6.1
Hardwood:							
Red oaks	258.1	198.9	91.2	41.0	66.7	34.6	24.6
White oaks	238.1	198.9	82.7	38.9	77.3	5.1	34.1
Hickories	209.4	179.9	67.8	28.2	83.9	11.0	18.5
Yellow-poplar	35.5	31.2	18.4	6.4	6.4	1.8	2.5
Sweetgum	55.3	48.7	22.9	9.4	16.4	1.9	4.7
Black and tupelo gums	47.4	35.6	17.6	8.2	9.8	1.9	9.9
Other hardwoods	172.7	110.5	44.8	22.6	43.1	13.2	49.0
Total	1,016.5	803.7	345.4	154.7	303.6	69.5	143.3
All species	1,261.0	1,042.1	487.5	167.9	386.7	69.5	149.4
NORTH CENTRAL							
Softwood:							
Loblolly pine	463.1	458.6	321.4	22.3	114.9	...	4.5
Shortleaf pine	313.8	311.2	138.7	10.9	161.6	...	2.6
Longleaf pine	144.6	143.3	92.4	7.3	43.6	...	1.3
Other pines	101.9	99.3	62.7	4.7	31.9	...	2.6
Other softwoods	2.6	1.7	1.2	.1	.4	...	.9
Total	1,026.0	1,014.1	616.4	45.3	352.4	...	11.9
Hardwood:							
Red oaks	339.7	269.1	105.9	48.5	114.7	23.1	47.5
White oaks	340.3	261.3	97.3	44.8	119.2	23.9	55.1
Hickories	259.3	210.9	71.6	31.9	107.4	12.6	35.8
Yellow-poplar	57.4	52.3	28.6	9.8	13.9	2.0	3.1
Sweetgum	91.1	78.0	31.4	13.0	33.6	2.5	10.6
Black and tupelo gums	55.4	42.2	15.3	7.4	19.5	1.5	11.7
Other hardwoods	174.7	80.3	26.8	13.3	40.2	8.6	85.8
Total	1,317.9	994.1	376.9	168.7	448.5	74.2	249.6
All species	2,343.9	2,008.2	993.3	214.0	800.9	74.2	261.5
WEST CENTRAL							
Softwood:							
Loblolly pine	348.5	345.9	222.9	20.4	102.6	...	2.6
Shortleaf pine	213.8	212.2	91.4	9.0	111.8	...	1.6
Longleaf pine	52.2	51.7	37.7	3.4	10.6	...	.5
Other pines	18.4	18.0	5.9	.8	11.3	...	.4
Other softwoods	16.0	15.1	12.6	1.1	1.4	...	.9
Total	648.9	642.9	370.5	34.7	237.7	...	6.0
Hardwood:							
Red oaks	296.8	234.7	102.9	46.6	85.2	26.1	36.0
White oaks	199.7	167.0	62.0	30.5	74.5	13.7	19.0
Hickories	165.1	144.5	59.1	25.9	59.5	10.0	10.6
Yellow-poplar	35.7	33.1	12.5	4.9	15.7	.8	1.8
Sweetgum	219.4	199.5	90.2	32.5	76.8	5.4	14.5
Black and tupelo gums	174.7	149.2	70.0	28.0	51.2	5.6	19.9
Other hardwoods	213.7	124.1	47.8	23.4	52.9	11.7	77.9
Total	1,305.1	1,052.1	444.5	191.8	415.8	73.3	179.7
All species	1,954.0	1,695.0	815.0	226.5	653.5	73.3	185.7

Table 13. --Total volume by class of timber and species, by Survey region, 1951-53 (continued)

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
Million cubic feet							
SOUTHEAST							
Softwood:							
Loblolly pine	761.5	749.0	519.0	47.3	182.7	...	12.5
Shortleaf pine	291.5	288.4	154.3	16.5	117.6	...	3.1
Longleaf pine	107.1	106.3	62.1	6.3	37.9	...	.8
Slash pine	26.3	26.3	17.8	1.6	6.9	...	...
Other pines	29.1	28.7	21.0	1.8	5.9	...	.4
Other softwoods	20.1	19.5	15.8	1.6	2.1	...	.6
Total	1,235.6	1,218.2	790.0	75.1	353.1	...	17.4
Hardwood:							
Red oaks	362.5	258.5	115.2	51.1	92.2	34.5	69.5
White oaks	157.3	118.6	53.7	23.0	41.9	14.0	24.7
Hickories	135.1	111.2	51.1	19.0	41.1	9.6	14.3
Yellow-poplar	119.2	107.7	57.2	18.9	31.6	3.7	7.8
Sweetgum	305.7	265.5	108.5	40.4	116.6	7.9	32.3
Black and tupelo gums	281.7	241.2	103.5	40.9	96.8	8.3	32.2
Other hardwoods	464.1	292.7	116.9	48.1	127.7	23.8	147.6
Total	1,825.6	1,395.4	606.1	241.4	547.9	101.8	328.4
All species	3,061.2	2,613.6	1,396.1	316.5	901.0	101.8	345.8
SOUTHWEST-NORTH							
Softwood							
Loblolly pine	866.0	862.2	655.4	52.8	154.0	...	3.8
Shortleaf pine	375.4	372.7	236.9	21.8	114.0	...	2.7
Longleaf pine	98.6	98.2	72.8	6.5	18.9	...	.4
Slash pine	19.0	19.0	11.1	1.0	6.9	...	...
Other pines	58.5	58.1	46.4	3.9	7.8	...	.4
Other softwoods	20.4	20.0	16.1	1.4	2.5	...	.4
Total	1,437.9	1,430.2	1,038.7	87.4	304.1	...	7.7
Hardwood:							
Red oaks	336.7	257.0	119.9	52.3	84.8	34.2	45.5
White oaks	212.2	175.0	76.6	33.3	65.1	20.1	17.1
Hickories	104.6	90.6	41.5	17.2	31.9	7.5	6.5
Yellow-poplar	58.5	53.4	31.2	10.3	11.9	2.2	2.9
Sweetgum	263.8	233.3	94.3	37.8	101.2	7.7	22.8
Black and tupelo gums	128.6	110.4	48.4	19.4	42.6	4.5	13.7
Other hardwoods	388.2	260.4	107.2	47.8	105.4	29.5	98.3
Total	1,492.6	1,180.1	519.1	218.1	442.9	105.7	206.8
All species	2,930.5	2,610.3	1,557.8	305.5	747.0	105.7	214.5
SOUTHWEST-SOUTH							
Softwood:							
Loblolly pine	106.9	104.6	78.3	7.4	18.9	...	2.3
Shortleaf pine	23.9	23.7	13.6	1.5	8.6	...	.2
Longleaf pine	498.8	497.0	296.9	33.1	167.0	...	1.8
Slash pine	397.5	395.5	230.4	25.2	89.9	...	2.0
Other pines	9.5	8.7	7.0	.5	1.2	...	.8
Other softwoods	44.7	42.8	32.3	3.0	7.5	...	1.9
Total	1,081.3	1,072.3	708.5	70.7	293.1	...	9.0
Hardwood:							
Red oaks	127.8	90.0	41.5	18.6	29.9	15.6	22.2
White oaks	62.6	51.5	28.5	10.9	12.1	8.0	3.1
Hickories	13.3	7.9	4.2	2.1	1.6	1.4	4.0
Yellow-poplar	37.6	33.0	18.5	6.2	8.3	1.5	3.1
Sweetgum	64.2	56.2	24.2	9.0	23.0	2.7	5.3
Black and tupelo gums	314.4	257.0	119.8	46.8	90.4	15.4	42.0
Other hardwoods	275.8	175.3	68.4	29.6	77.3	16.5	84.0
Total	895.7	670.9	305.1	123.2	242.6	61.1	163.7
All species	1,977.0	1,743.2	1,013.6	193.9	535.7	61.1	172.7

^{1/} Sound volume in dead trees considered salvable is not included. This volume is as follows:

Region	Softwood	Hardwood
Million cubic feet		
North	4.1	7.0
North Central	10.3	9.6
West Central	3.8	8.2

Region	Softwood	Hardwood
Million cubic feet		
Southeast	6.0	2.9
Southwest-North	5.2	5.4
Southwest-South	3.2	3.3
Total	32.6	36.4

Table 14. --Growing stock by species and Survey region, 1951-53

Species	State of Alabama	North	North Central	West Central	Southeast	Southwest-North	Southwest-South
----- Million cubic feet -----							
Softwood:							
Loblolly pine	2,605.9	85.6	458.6	345.9	749.0	862.2	104.6
Shortleaf pine	1,306.3	98.1	311.2	212.2	288.4	372.7	23.7
Longleaf pine	896.5	...	143.3	51.7	106.3	98.2	497.0
Slash pine	440.8	...	...	...	26.3	19.0	395.5
Virginia pine	159.8	36.0	99.3	17.7	6.7	0.1	...
Other pines	89.0	...	...	0.3	22.0	58.0	8.7
Cypress	80.0	...	...	13.8	16.4	17.4	32.4
Other softwoods	37.8	18.7	1.7	1.3	3.1	2.6	10.4
Total	5,616.1	238.4	1,014.1	642.9	1,218.2	1,430.2	1,072.3
Hardwood:							
Black, scarlet, and southern red oaks	646.3	120.9	205.6	110.9	82.5	92.1	34.3
Cherrybark, Shumard, and northern red oaks	185.9	59.7	35.0	35.4	20.7	32.1	3.0
Water oaks	476.0	18.3	28.5	88.4	155.3	132.8	52.7
White oak	433.7	99.2	115.8	65.0	63.0	72.2	18.5
Other white oaks	538.6	99.7	145.5	102.0	55.6	102.8	33.0
Pecan	32.1	.2	.7	1.6	...	16.0	13.6
Other hickories	745.0	179.9	210.9	144.5	111.2	90.6	7.9
Sweetgum	881.2	48.7	78.0	199.5	265.5	233.3	56.2
Black and tupelo gums	835.6	35.6	42.2	149.2	241.2	110.4	257.0
Cottonwood	17.8	.2	.1	2.0	8.9	3.9	2.7
Willow	28.7	1.5	3.1	5.9	10.6	6.5	1.1
Soft maples	108.4	10.0	17.9	22.3	31.7	14.4	12.1
Yellow-poplar	310.7	31.2	52.3	33.1	107.7	53.4	33.0
Sweetbay and magnolia	249.9	1.6	1.5	21.5	83.8	48.0	93.5
Elms	140.5	23.8	13.9	15.8	35.8	38.5	12.7
Ash	126.5	18.9	10.7	12.9	32.8	31.8	19.4
Beech	93.1	16.9	13.3	11.1	20.0	29.8	2.0
Sycamore	31.1	2.0	2.2	2.5	10.4	11.9	2.1
Hackberry	75.8	3.2	2.0	10.1	17.9	31.0	11.6
Other hardwoods	139.4	32.2	14.9	18.4	40.8	28.6	4.5
Total	6,096.3	803.7	994.1	1,052.1	1,395.4	1,180.1	670.9
All species	11,712.4	1,042.1	2,008.2	1,695.0	2,613.6	2,610.3	1,743.2

Table 15. --Distribution of growing stock by species within each forest type, 1951-53

Species	All types	Pine	Pine- hard- wood	Other soft- wood	Bottom- land hardwood	Upland hard- wood
----- Percent -----						
Softwood:						
Loblolly pine	22.2	38.9	14.2	0.7	2.1	2.4
Shortleaf pine	11.2	18.6	10.9	...	.1	2.3
Longleaf pine	7.7	14.3	2.5	...	.1	.5
Slash pine	3.8	6.6	1.8	.5	.8	.1
Other pines	2.1	2.8	3.8	.2	.6	.8
Cypress	.7	.1	(1/)	...	3.3	(1/)
Other softwoods	.3	.1	.3	42.6	.1	.3
Total	48.0	81.4	33.5	44.0	7.1	6.4
Hardwood:						
Black, scarlet and southern red oaks	5.5	2.9	11.1	...	0.3	15.2
Cherrybark, Shumard and northern red oaks	1.6	.3	1.2	6.8	2.0	5.1
Water oaks	4.1	1.2	4.7	1.2	11.8	3.3
White oak	3.7	1.4	7.0	...	1.5	10.8
Other white oaks	4.6	2.0	7.7	8.9	3.9	10.8
Pecan	.3	(1/)	...	...	1.4	(1/)
Other hickories	6.3	2.0	10.0	19.1	3.0	20.2
Sweetgum	7.5	3.9	8.6	1.0	16.4	7.7
Black and tupelo gums	7.1	2.0	5.1	.5	23.8	4.8
Cottonwood	.2	(1/)	.2	...	.5	(1/)
Willow	.2	(1/)	.2	...	.9	.1
Maples	1.1	.2	1.3	3.1	2.6	1.8
Yellow-poplar	2.7	1.0	4.4	.7	3.5	5.2
Sweetbay and magnolia	2.1	.8	2.2	1.2	6.6	1.1
Elms	1.2	.2	.7	5.1	3.8	1.5
Ash	1.1	.2	.4	5.3	3.6	1.3
Beech	.8	.2	.8	...	1.2	2.2
Sycamore	.3	(1/)	.2	...	.9	.3
Hackberry	.6	(1/)	(1/)	.2	3.2	.1
Other hardwoods	1.0	.3	.7	2.9	2.0	2.1
Total	52.0	18.6	66.5	56.0	92.9	93.6
All species	100.0	100.0	100.0	100.0	100.0	100.0

1/ Negligible.

Table 16. --Growing stock by species and stand size, by Survey region, 1951-1953

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas 1/
Million cubic feet						
STATE OF ALABAMA						
Softwood:						
Loblolly pine	2,605.9	666.5	1,154.1	726.3	58.5	0.5
Shortleaf pine	1,306.3	121.9	567.9	572.9	43.1	.5
Longleaf pine	896.5	55.5	480.8	316.9	41.0	2.3
Slash pine	440.8	66.7	237.7	124.1	12.0	.3
Other pines	248.8	71.0	98.0	74.6	5.0	.2
Other softwoods	117.8	57.2	38.7	19.4	2.5	...
Total	5,616.1	1,038.8	2,577.2	1,834.2	162.1	3.8
Hardwood:						
Red oaks	1,308.2	351.2	340.1	577.9	37.6	1.4
White oaks	972.3	250.0	243.1	455.1	23.7	.4
Hickories	745.0	152.9	175.1	397.4	19.4	.2
Yellow-poplar	310.7	83.6	123.6	99.6	3.9	...
Sweetgum	881.2	228.0	280.9	353.4	18.7	.2
Black and tupelo gums	835.6	255.7	296.8	274.1	8.6	.4
Other hardwoods	1,043.3	344.2	325.8	353.3	19.7	.3
Total	6,096.3	1,665.6	1,785.4	2,510.8	131.6	2.9
All species	11,712.4	2,704.4	4,362.6	4,345.0	293.7	6.7
NORTH						
Softwood types:						
Loblolly pine	85.6	29.8	29.7	25.1	1.0	...
Shortleaf pine	98.1	13.3	49.2	32.2	3.4	2/
Longleaf pine	...	...	...	...	...	...
Slash pine	...	...	...	...	...	...
Other pines	36.0	6.4	21.3	7.6	.7	...
Other softwoods	18.7	4.0	3.4	10.6	.7	...
Total	238.4	53.5	103.6	75.5	5.8	...
Hardwood:						
Red oaks	198.9	51.6	67.3	78.6	1.4	...
White oaks	198.9	55.8	60.4	79.8	2.9	...
Hickories	179.9	33.3	49.0	95.2	2.4	...
Yellow-poplar	31.2	11.4	10.0	9.5	.3	...
Sweetgum	48.7	12.9	14.1	20.5	1.1	.1
Black and tupelo gums	35.6	13.3	6.3	14.9	1.1	...
Other hardwoods	110.5	40.9	20.6	47.3	1.7	...
Total	803.7	219.2	227.7	345.8	10.9	.1
All species	1,042.1	272.7	331.3	421.3	16.7	.1
NORTH CENTRAL						
Softwood types:						
Loblolly pine	458.6	121.9	172.3	146.3	17.8	.3
Shortleaf pine	311.2	17.0	99.0	182.9	12.1	.2
Longleaf pine	143.3	12.7	66.9	57.2	6.3	.2
Slash pine	...	...	...	...	...	...
Other pines	99.3	21.8	39.3	34.5	3.7	...
Other softwoods	1.7	1.3	.2	.1	.1	...
Total	1,014.1	174.7	377.7	421.0	40.0	.7
Hardwood:						
Red oaks	269.1	51.4	51.1	152.6	13.4	.6
White oaks	261.3	65.2	43.4	143.4	8.9	.4
Hickories	210.9	33.6	39.8	129.4	8.1	...
Yellow-poplar	52.3	20.7	13.5	16.2	1.9	...
Sweetgum	78.0	26.6	12.7	34.1	4.6	...
Black and tupelo gums	42.2	9.2	8.7	22.5	1.8	...
Other hardwoods	80.3	28.3	11.3	36.4	4.3	...
Total	994.1	235.0	180.5	534.6	43.0	1.0
All species	2,008.2	409.7	558.2	955.6	83.0	1.7
WEST CENTRAL						
Softwood:						
Loblolly pine	345.9	67.3	120.8	149.9	7.8	.1
Shortleaf pine	212.2	8.3	64.1	133.9	5.9	...
Longleaf pine	51.7	5.3	21.6	19.8	5.0	...
Other pines	18.0	.1	2.3	15.0	.4	.2
Other softwoods	15.1	6.8	7.2	.5	.6	...
Total	642.9	87.8	216.0	319.1	19.7	.3
Hardwood:						
Red oaks	234.7	68.7	44.8	114.0	7.2	...
White oaks	167.0	31.5	32.7	97.2	5.6	...
Hickories	144.5	30.0	24.3	84.4	5.8	2/
Yellow-poplar	33.1	9.2	10.1	13.3	.5	...
Sweetgum	199.5	72.6	50.9	73.1	2.9	...
Black and tupelo gums	149.2	48.3	49.8	49.1	2.0	...
Other hardwoods	124.1	46.8	28.0	45.5	3.8	...
Total	1,052.1	307.1	240.6	476.6	27.8	2/
All species	1,695.0	394.9	456.6	795.7	47.5	.3

All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas 1/
Million cubic feet					
SOUTHEAST					
749.0	152.2	347.2	225.9	23.7	...
288.4	26.4	126.3	116.5	19.0	.2
106.3	10.2	49.4	40.6	6.0	.1
26.3	3.8	10.6	10.4	1.5	...
28.7	8.4	11.9	8.3	.1	...
19.5	12.1	4.0	3.2	.2	...
1,218.2	213.1	549.4	404.9	50.5	.3
SOUTHWEST-NORTH					
862.2	281.6	421.9	153.0	5.7	...
372.7	52.6	218.3	99.3	2.5	...
98.2	22.4	50.0	24.2	1.6	...
19.0	5.3	7.4	6.3	...	...
58.1	28.8	21.9	7.3	.1	...
20.0	11.1	5.9	2.9	.1	...
1,430.2	401.8	725.4	293.0	10.0	...
SOUTHWEST-SOUTH					
257.0	88.2	77.3	87.4	4.1	...
175.0	50.5	60.5	62.7	1.3	...
90.6	26.8	27.5	35.8	.5	...
53.4	22.6	20.7	9.9	.2	...
233.3	54.3	80.0	96.0	3.0	...
110.4	32.9	40.2	36.7	.6	...
260.4	86.5	92.0	80.1	1.8	...
1,180.1	361.8	398.2	408.6	11.5	...
2,610.3	763.6	1,123.6	701.6	21.5	...
SOUTHWEST-SOUTH					
104.6	13.7	62.2	26.1	2.5	.1
23.7	4.3	11.0	8.1	.2	.1
497.0	4.9	292.9	175.1	22.1	2.0
395.5	57.6	219.7	107.4	10.5	.3
8.7	5.5	1.3	1.9	...	...
42.8	21.9	18.0	2.1	.8	...
1,072.3	107.9	605.1	320.7	36.1	2.5
SOUTHWEST-SOUTH					
90.0	34.5	22.6	30.4	1.7	.8
51.5	26.0	10.2	14.9	.4	...
7.9	1.0	2.9	3.6	.4	...
33.0	3.7	19.9	9.3	.1	...
56.2	22.5	12.5	20.8	.4	...
257.0	110.0	96.0	49.5	1.1	.4
175.3	67.8	65.5	40.2	1.5	.3
670.9	265.5	229.6	168.7	5.6	1.5
1,743.2	373.4	834.7	489.4	41.7	4.0

1/ Includes areas not classified elsewhere.

2/ Negligible

Table 17. --Average volume per acre of growing stock by forest type and Survey region,
1951-53

Forest type	State	North	North Central	West Central	South- east	South- west- North	South- west- South
----- Cubic feet -----							
Softwood types:							
Pine	538	549	460	467	447	866	502
Pine-hardwood	451	434	356	424	447	654	580
Other softwood	251	285	...	...	126	11	1,500
Total	515	471	429	453	445	819	510
Hardwood types:							
Bottomland hardwood	960	580	546	1,018	868	980	1,357
Upland hardwood	507	576	458	498	488	637	241
Total	677	576	465	710	699	848	1,036
All types	564	533	439	543	519	827	597

Table 18. --Average volume per acre of growing stock by stand size and forest type, 1951-53

Forest type	All stand sizes	Large saw- timber	Small saw- timber	Pole- timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Cubic feet -----						
Softwood types:						
Pine	538	1,537	1,037	360	78	29
Pine-hardwood	451	1,376	915	369	78	2/
Other softwood	251	914	974	247	50	...
Total	515	1,500	1,018	361	78	26
Hardwood types:						
Bottomland hardwood	960	1,647	1,299	605	177	15
Upland hardwood	507	1,104	852	414	88	31
Total	677	1,400	1,077	474	113	30
All types	564	1,449	1,033	398	84	27

^{1/} Includes areas not classified elsewhere.

^{2/} Negligible.

Table 19. --Sawtimber volume by species and tree diameter, by Survey region, 1951-1953

Species	All diameter classes	10 - 12 inches 1/	14 - 18 inches	20 - 24 inches	26 inches and up	All diameter classes	10 - 12 inches 1/	14 - 18 inches	20 - 24 inches	26 inches and up	
- - - - - Million board feet - - - - -						- - - - - Million board feet - - - - -					
STATE OF ALABAMA						SOUTHEAST					
Softwood:											
Loblolly pine	11,306.7	4,538.5	4,967.5	1,417.1	383.6	3,142.1	1,409.5	1,241.1	344.5	147.0	
Shortleaf pine	3,989.8	2,657.5	1,251.2	81.1	...	887.5	621.7	244.9	20.9	...	
Longleaf pine	3,294.4	2,033.7	1,157.1	92.9	10.7	363.3	211.8	146.5	5.0	...	
Slash pine	1,856.6	852.3	929.7	74.6	...	107.6	40.9	63.7	3.0	...	
Other pines	964.4	395.5	418.4	150.5	...	125.9	48.3	52.6	25.0	...	
Other softwoods	517.0	116.2	255.4	91.9	53.5	94.4	17.5	67.3	9.6	...	
Total	21,928.9	10,593.7	8,979.3	1,908.1	447.8	4,720.8	2,349.7	1,816.1	408.0	147.0	
Hardwood:											
Red oaks	3,686.0	718.9	1,891.0	653.7	422.4	736.8	131.5	395.8	139.5	70.0	
White oaks	2,541.3	599.0	1,234.5	432.0	275.8	340.2	78.8	187.4	54.5	19.5	
Hickories	1,810.2	451.3	1,042.5	241.4	75.0	322.6	51.1	198.1	54.7	18.7	
Yellow-poplar	1,057.1	183.7	612.8	171.7	88.9	361.3	76.8	233.4	32.3	18.8	
Sweetgum	2,316.2	596.8	1,347.8	308.0	63.6	671.3	204.8	374.7	54.3	37.5	
Black and tupelo gums	2,308.2	522.8	1,265.1	407.5	112.8	636.7	201.0	363.3	52.1	20.3	
Other hardwoods	2,562.7	570.4	1,382.2	451.6	158.5	729.2	175.5	412.5	101.5	39.7	
Total	16,281.7	3,642.9	8,775.9	2,665.9	1,197.0	3,798.1	919.5	2,165.2	488.9	224.5	
All species	38,210.6	14,236.6	17,755.2	4,574.0	1,644.8	8,518.9	3,269.2	3,981.3	896.9	371.5	
NORTH						SOUTHWEST-NORTH					
Softwood:											
Loblolly pine	367.6	120.4	180.8	59.2	7.2	4,020.0	1,461.5	1,834.2	600.5	123.8	
Shortleaf pine	302.4	192.7	103.8	5.9	...	1,403.3	786.1	576.2	41.0	...	
Longleaf pine	...	...	...	...	...	441.8	213.5	196.9	31.4	...	
Slash pine	...	...	...	...	...	68.3	20.4	47.9	...	...	
Other pines	133.4	56.5	76.9	...	...	289.9	70.0	114.0	105.9	...	
Other softwoods	39.7	20.6	9.4	9.7	...	99.5	13.3	48.1	32.3	5.8	
Total	843.1	390.2	370.9	74.8	7.2	6,322.8	2,564.8	2,817.3	811.1	129.6	
Hardwood:											
Red oaks	577.7	131.1	298.3	79.8	68.5	767.3	130.6	420.2	165.8	50.7	
White oaks	521.2	121.5	242.1	84.1	73.5	489.4	105.9	228.3	96.1	59.1	
Hickories	406.3	113.8	237.3	48.5	6.7	263.2	56.9	143.4	36.6	26.3	
Yellow-poplar	119.1	11.6	53.3	37.3	16.9	201.4	30.8	120.5	30.2	19.9	
Sweetgum	145.1	26.9	78.2	29.9	10.1	585.6	151.9	364.0	63.2	6.5	
Black and tupelo gums	105.2	17.5	59.8	27.9	...	301.5	60.6	173.9	47.6	19.4	
Other hardwoods	280.2	38.3	128.7	73.7	39.5	671.0	155.8	360.4	128.7	26.1	
Total	2,154.8	460.7	1,097.7	381.2	215.2	3,279.4	692.5	1,810.7	568.2	208.0	
All species	2,997.9	850.9	1,468.6	456.0	222.4	9,602.2	3,257.3	4,628.0	1,379.3	337.6	
NORTH CENTRAL						SOUTHWEST-SOUTH					
Softwood:											
Loblolly pine	1,948.9	798.9	852.9	249.1	48.0	475.1	184.9	247.3	20.4	22.5	
Shortleaf pine	796.1	597.9	191.2	7.0	...	78.4	50.8	21.3	6.3	...	
Longleaf pine	549.5	322.0	186.8	40.7	...	1,712.5	1,179.2	521.9	11.4	...	
Slash pine	...	...	...	...	...	1,680.7	791.0	818.1	71.6	...	
Other pines	342.1	184.6	137.9	19.6	...	42.2	11.1	31.1	...	...	
Other softwoods	7.0	1.2	5.8	...	...	197.8	47.8	97.6	25.8	26.6	
Total	3,643.6	1,904.6	1,374.6	316.4	48.0	4,186.7	2,264.8	1,737.3	135.5	49.1	
Hardwood:											
Red oaks	671.9	159.6	359.9	126.0	26.4	272.4	37.5	99.3	40.3	95.3	
White oaks	610.9	162.5	340.8	87.0	20.6	190.0	25.5	45.0	40.1	79.4	
Hickories	431.8	129.8	258.5	43.5	...	25.5	5.8	14.7	5.0	...	
Yellow-poplar	179.4	23.9	111.5	33.2	10.8	119.5	19.4	47.6	35.0	17.5	
Sweetgum	197.1	49.7	99.4	48.0	...	153.4	29.7	88.6	25.6	9.5	
Black and tupelo gums	91.9	21.2	48.4	22.3	...	753.4	131.1	398.7	198.2	25.4	
Other hardwoods	163.9	43.8	92.0	28.1	...	426.5	97.4	232.4	65.1	31.6	
Total	2,346.9	590.5	1,310.5	388.1	57.8	1,940.7	346.4	926.3	409.3	258.7	
All species	5,990.5	2,495.1	2,685.1	704.5	105.8	6,127.4	2,611.2	2,663.6	544.8	307.8	
WEST CENTRAL											
Softwood:											
Loblolly pine	1,353.0	563.3	611.2	143.4	35.1						
Shortleaf pine	522.1	408.3	113.8	...	...						
Longleaf pine	227.3	107.2	105.0	4.4	10.7						
Other pines	30.9	25.0	5.9	...	...						
Other softwoods	78.6	15.8	27.2	14.5	21.1						
Total	2,211.9	1,119.6	863.1	162.3	66.9						
Hardwood:											
Red oaks	659.9	128.6	317.5	102.3	111.5						
White oaks	389.6	104.8	190.9	70.2	23.7						
Hickories	360.8	93.9	190.5	53.1	23.3						
Yellow-poplar	76.4	21.2	46.5	3.7	5.0						
Sweetgum	563.7	133.8	342.9	87.0	...						
Black and tupelo gums	419.5	91.4	221.0	59.4	47.7						
Other hardwoods	291.9	59.6	156.2	54.5	21.6						
Total	2,761.8	633.3	1,465.5	430.2	232.8						
All species	4,973.7	1,752.9	2,328.6	592.5	299.7						

1/ Hardwood sawtimber volume not tallied in trees under 11.0 inches d. b. h.

Table 20. --Sawtimber volume by species and stand size, by Survey region, 1951-1953

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas 1/
Million board feet						
STATE OF ALABAMA						
Softwood:						
Loblolly pine	11,306.7	3,873.3	5,295.2	1,971.5	165.7	1.0
Shortleaf pine	3,989.8	614.3	2,205.8	1,084.6	84.1	1.0
Longleaf pine	3,294.4	320.0	1,916.3	903.6	147.4	7.1
Slash pine	1,856.6	362.0	1,086.0	366.2	41.4	1.0
Other pines	964.4	369.9	391.7	187.6	15.2	...
Other softwoods	517.0	310.3	167.3	31.4	8.0	...
Total	21,928.9	5,849.8	11,062.3	4,544.9	461.8	10.1
Hardwood:						
Red oaks	3,686.0	1,388.5	983.9	1,212.2	98.9	2.5
White oaks	2,541.3	963.5	684.0	846.6	46.0	1.2
Hickories	1,810.2	531.4	490.8	744.3	43.0	0.7
Yellow-poplar	1,057.1	358.6	465.0	225.4	8.1	...
Sweetgum	2,316.2	882.5	790.2	603.3	40.2	...
Black and tupelo gums	2,308.2	1,003.5	763.3	524.4	16.2	.8
Other hardwoods	2,562.7	1,100.2	816.2	605.8	40.2	.3
Total	16,281.7	6,228.2	4,993.4	4,762.0	292.6	5.5
All species	38,210.6	12,078.0	16,055.7	9,306.9	754.4	15.6
NORTH						
Softwood:						
Loblolly pine	367.6	162.9	136.4	66.5	1.8	...
Shortleaf pine	302.4	62.4	187.4	51.6	1.0	...
Longleaf pine	...	...	...	...	...	...
Slash pine	...	...	...	...	...	...
Other pines	133.4	25.7	97.0	10.0	.7	...
Other softwoods	39.7	19.7	8.4	11.2	.4	...
Total	843.1	270.7	429.2	139.3	3.9	...
Hardwood:						
Red oaks	577.7	193.1	206.1	176.2	2.3	...
White oaks	521.2	212.9	160.8	143.3	4.2	...
Hickories	406.3	97.9	143.7	158.9	5.8	...
Yellow-poplar	119.1	52.6	42.3	24.2	...	...
Sweetgum	145.1	48.0	48.2	45.8	3.1	...
Black and tupelo gums	105.2	49.3	17.0	37.7	1.2	...
Other hardwoods	280.2	138.7	45.2	94.5	1.8	...
Total	2,154.8	792.5	663.3	680.6	18.4	...
All species	2,997.9	1,063.2	1,092.5	819.9	22.3	...
NORTH CENTRAL						
Softwood types:						
Loblolly pine	1,948.9	724.2	776.5	382.5	65.3	.4
Shortleaf pine	796.1	72.1	377.7	318.6	27.4	.3
Longleaf pine	549.5	76.7	255.5	191.1	25.1	1.1
Slash pine	...	...	...	...	...	...
Other pines	342.1	104.1	137.6	86.5	13.9	...
Other softwoods	7.0	5.1	1.3	.3	.3	...
Total	3,643.6	982.2	1,548.6	979.0	132.0	1.8
Hardwood:						
Red oaks	671.9	207.1	127.3	301.4	35.3	.8
White oaks	610.9	242.6	112.7	238.8	15.6	1.2
Hickories	431.8	98.6	100.2	218.1	14.9	...
Yellow-poplar	179.4	91.4	52.9	28.2	6.9	...
Sweetgum	197.1	105.6	30.4	54.3	6.8	...
Black and tupelo gums	91.9	28.2	21.3	38.3	4.1	...
Other hardwoods	163.9	83.9	15.8	56.2	8.0	...
Total	2,346.9	857.4	460.6	935.3	91.6	2.0
All species	5,990.5	1,839.6	2,009.2	1,914.3	223.6	3.8
WEST CENTRAL						
Softwood:						
Loblolly pine	1,353.0	382.6	576.6	371.0	22.8	...
Shortleaf pine	522.1	40.0	235.5	234.2	12.4	...
Longleaf pine	227.3	31.6	101.6	69.8	24.3	...
Other pines	30.9	...	5.5	25.4	...	...
Other softwoods	78.6	38.5	36.9	...	3.2	...
Total	2,211.9	492.7	956.1	700.4	62.7	...
Hardwood:						
Red oaks	659.9	269.2	133.5	237.1	20.1	...
White oaks	389.6	120.3	95.2	164.3	9.8	...
Hickories	360.8	113.0	67.7	164.1	16.0	...
Yellow-poplar	76.4	27.1	23.1	25.7	.5	...
Sweetgum	563.7	314.7	122.1	120.2	6.7	...
Black and tupelo gums	419.5	196.5	136.9	82.8	3.3	...
Other hardwoods	291.9	141.9	59.5	79.9	10.6	...
Total	2,761.8	1,182.7	638.0	874.1	67.0	...
All species	4,973.7	1,675.4	1,594.1	1,574.5	129.7	...
SOUTHEAST						
	3,142.1	878.2	1,593.0	621.7	49.2	...
	887.5	131.5	489.4	227.0	38.9	.7
	363.3	56.2	182.1	106.2	18.8	...
	107.6	21.2	46.0	30.3	8.1	...
	125.9	48.5	48.4	29.0	...	...
	94.4	66.2	21.2	6.3	.7	...
	4,720.8	1,201.8	2,382.1	1,020.5	115.7	.7
	736.8	226.2	222.7	261.4	26.5	...
	340.2	83.9	117.4	125.8	13.1	...
	322.6	114.6	92.2	109.9	5.2	.7
	361.3	67.5	193.9	99.2	.7	...
	671.3	135.9	340.3	183.5	11.6	...
	636.7	159.7	265.5	206.6	4.9	...
	729.2	244.3	307.7	163.0	14.2	...
	3,798.1	1,032.1	1,539.7	1,149.4	76.2	.7
	8,518.9	2,233.9	3,921.8	2,169.9	191.9	1.4
SOUTHWEST-NORTH						
	4,020.0	1,648.2	1,913.5	441.3	17.0	...
	1,403.3	284.7	877.4	237.1	4.1	...
	441.8	128.0	229.1	79.4	5.3	...
	68.3	30.0	30.8	7.5	...	...
	289.9	161.6	98.4	29.3	.6	...
	99.5	63.6	28.4	7.1	.4	...
	6,322.8	2,316.1	3,177.6	801.7	27.4	...
	767.3	342.2	229.9	182.0	13.2	...
	489.4	182.8	163.5	139.8	3.3	...
	263.2	103.6	77.0	82.4	.2	...
	201.4	104.4	71.6	25.4	...	...
	585.6	187.2	215.6	172.5	10.3	...
	301.5	125.0	90.4	84.8	1.3	...
	671.0	268.8	242.6	155.3	4.3	...
	3,279.4	1,314.0	1,090.6	842.2	32.6	...
	9,602.2	3,630.1	4,268.2	1,643.9	60.0	...
SOUTHWEST-SOUTH						
	475.1	77.2	299.2	88.5	9.6	.6
	78.4	23.6	38.4	16.1	.3	...
	1,712.5	27.5	1,148.0	457.1	73.9	6.0
	1,680.7	310.8	1,007.2	328.4	33.3	1.0
	42.2	30.0	4.8	7.4	...	...
	197.8	117.2	71.1	6.5	3.0	...
	4,186.7	586.3	2,568.7	904.0	120.1	7.6
	272.4	150.7	64.4	54.1	1.5	1.7
	190.0	121.0	34.4	34.6	...	...
	25.5	3.7	10.0	10.9	.9	...
	119.5	15.6	81.2	22.7	...	...
	153.4	91.1	33.6	27.0	1.7	...
	753.4	444.8	232.2	74.2	1.4	.8
	426.5	222.6	145.4	56.9	1.3	.3
	1,940.7	1,049.5	601.2	280.4	6.8	2.8
	6,127.4	1,635.8	3,169.9	1,184.4	126.9	10.4

1/ Includes areas not classified elsewhere.

Table 21. --Sawtimber volume by species and Survey region, 1951-53

Species	State	North	North Central	West Central	Southeast	Southwest- North	Southwest- South
----- Million board feet -----							
Softwood:							
Loblolly pine	11,306.7	367.6	1,948.9	1,353.0	3,142.1	4,020.0	475.1
Shortleaf pine	3,989.8	302.4	796.1	522.1	887.5	1,403.3	78.4
Longleaf pine	3,294.4	...	549.5	227.3	363.3	441.8	1,712.5
Slash pine	1,856.6	...	...	...	107.6	68.3	1,680.7
Virginia pine	526.0	133.4	342.1	30.6	19.9	...	...
Other pines	438.4	...	...	.3	106.0	289.9	42.2
Cypress	415.8	...	...	75.6	85.9	94.4	159.9
Other softwoods	101.2	39.7	7.0	3.0	8.5	5.1	37.9
Total	21,928.9	843.1	3,643.6	2,211.9	4,720.8	6,322.8	4,186.7
Hardwood:							
Black, scarlet and southern red oaks	1,623.0	335.5	477.3	260.7	232.7	241.0	75.8
Cherrybark, Shumard and northern red oaks	662.0	193.1	118.0	135.2	86.4	117.8	11.5
Water oaks	1,401.0	49.1	76.6	264.0	417.7	408.5	185.1
White oak	1,265.6	280.7	327.8	158.9	217.3	210.3	70.6
Other white oaks	1,275.7	240.5	283.1	230.7	122.9	279.1	119.4
Pecan	124.0	.7	3.0	6.9	...	57.1	56.3
Other hickories	1,810.2	406.3	431.8	360.8	322.6	263.2	25.5
Sweetgum	2,316.2	145.1	197.1	563.7	671.3	585.6	153.4
Black and tupelo gums	2,308.2	105.2	91.9	419.5	636.7	301.5	753.4
Cottonwood	64.1	.6	...	3.6	36.4	15.4	8.1
Willow	51.7	.9	4.2	11.6	17.8	16.1	1.1
Soft maples	204.4	22.2	32.7	41.7	64.5	24.4	18.9
Yellow-poplar	1,057.1	119.1	179.4	76.4	361.3	201.4	119.5
Sweetbay and magnolia	505.7	4.9	.6	41.7	166.7	106.7	185.1
Elms	370.4	53.0	26.3	40.2	100.7	104.0	46.2
Ash	326.7	55.8	25.1	33.2	79.6	72.9	60.1
Beech	344.3	66.1	51.0	40.1	73.7	105.0	8.4
Sycamore	105.7	3.9	9.4	7.4	38.4	42.2	4.4
Hackberry	215.7	5.6	1.2	30.5	61.8	83.2	33.4
Other hardwoods	250.0	66.5	10.4	35.0	89.6	44.0	4.5
Total	16,281.7	2,154.8	2,346.9	2,761.8	3,798.1	3,279.4	1,940.7
All species	38,210.6	2,997.9	5,990.5	4,973.7	8,518.9	9,602.2	6,127.4

Table 22. --Average sawtimber volume per acre by forest type and Survey region, 1951-53

Forest type	State	North	North Central	West Central	South-east	Southwest-North	Southwest-South
Board feet							
Softwood types:							
Pine	1,936	1,869	1,534	1,439	1,609	3,461	1,819
Pine-hardwood	1,293	1,215	917	1,092	1,302	2,127	1,934
Other softwood	614	675	...	...	307	...	5,045
Total	1,776	1,477	1,350	1,329	1,539	3,183	1,833
Hardwood types:							
Bottomland hardwood	3,023	1,702	1,423	3,235	2,570	3,224	4,557
Upland hardwood	1,370	1,554	1,189	1,297	1,434	1,765	678
Total	1,990	1,572	1,208	2,085	2,065	2,659	3,444
All types	1,841	1,533	1,310	1,594	1,693	3,042	2,100

Table 23. --Average sawtimber volume per acre by stand size and forest type, 1951-53

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
Board feet						
Softwood types:						
Pine	1,936	7,793	4,121	814	214	72
Pine-hardwood	1,293	5,814	3,099	788	168	...
Other softwood	614	3,951	3,026	422	96	...
Total	1,776	7,374	3,959	802	203	64
Hardwood types:						
Bottomland hardwood	3,023	6,704	4,008	1,253	504	...
Upland hardwood	1,370	4,310	2,654	821	184	64
Total	1,990	5,614	3,336	956	273	58
All types	1,841	6,471	3,801	853	215	63

^{1/} Includes areas not classified elsewhere.

Table 24 --Softwood sawtimber volume by log grade and stand quality, by species group and Survey region, 1951-53

Species group and Survey region	All grades	Grade 1	Grade 2	Grade 3			Grade 4		
				Total	In fair and better stands	In poor stands	Total	In fair and better stands	In poor stands
Million board feet									
Species group:									
Loblolly pine	11,306.7	329.5	1,357.3	3,713.4	1,163.6	2,549.8	5,906.5	1,505.4	4,401.1
Shortleaf pine	3,989.8	9.0	371.2	1,575.2	412.8	1,162.4	2,034.4	484.3	1,550.1
Longleaf pine	3,294.4	12.7	377.2	1,456.8	200.6	1,256.2	1,447.7	243.4	1,204.3
Slash pine	1,856.6	15.4	314.5	946.6	286.2	660.4	580.1	174.3	405.8
Other pines	964.4	20.3	69.3	290.5	136.0	154.5	584.3	214.7	369.6
Other softwoods ^{1/}	517.0	70.8	132.1	175.3	170.3	5.0	138.8	125.9	12.9
Total	21,928.9	457.7	2,621.6	8,157.8	2,369.5	5,788.3	10,691.8	2,748.0	7,943.8
Survey region:									
North	843.1	38.6	121.0	317.4	108.0	209.4	366.1	151.2	214.9
North Central	3,643.6	64.6	575.4	1,204.9	395.4	809.5	1,798.7	593.2	1,205.5
West Central	2,211.9	37.6	268.8	723.5	234.8	488.7	1,182.0	327.3	854.7
Southeast	4,720.8	136.9	397.2	1,875.7	441.1	1,434.6	2,311.0	376.7	1,934.3
Southwest-North	6,322.8	145.3	782.4	2,013.6	760.7	1,252.9	3,381.5	1,007.5	2,374.0
Southwest-South	4,186.7	34.7	476.8	2,022.7	429.5	1,593.2	1,652.5	292.1	1,360.4
Total	21,928.9	457.7	2,621.6	8,157.8	2,369.5	5,788.3	10,691.8	2,748.0	7,943.8

^{1/} All redcedar sawlogs were graded as No. 1.

Table 25. --Hardwood sawtimber volume by log class and stand quality, by species group and Survey region, 1951-53

Species group and Survey region	All classes	Standard lumber logs					Tie and timber logs		
		Grade 1	Grade 2	Grade 3			Total	In fair and better stands	In poor stands
				Total	In fair and better stands	In poor stands			
----- Million board feet -----									
Species group:									
Red oaks	3,686.0	338.8	545.8	1,684.9	607.4	1,077.5	1,116.5	321.6	794.9
White oaks	2,541.3	281.4	583.1	1,145.7	450.6	695.1	531.1	133.7	397.4
Hickories	1,810.2	159.5	372.6	913.1	269.0	644.1	365.0	86.1	278.9
Yellow-poplar	1,057.1	131.5	172.7	454.4	174.7	279.7	298.5	107.3	191.2
Sweetgum	2,316.2	172.6	395.8	1,026.2	411.3	614.9	721.6	183.8	537.8
Black and tupelo gums	2,308.2	262.9	530.1	1,140.6	546.3	594.3	374.6	94.1	280.5
Other hardwoods	2,562.7	231.2	508.0	1,176.1	464.1	712.0	647.4	159.4	488.0
Total	16,281.7	1,577.9	3,108.1	7,541.0	2,923.4	4,617.6	4,054.7	1,086.0	2,968.7
Survey region:									
North	2,154.8	304.8	541.7	1,111.8	495.5	616.3	196.5	89.7	106.8
North Central	2,346.9	166.5	531.8	1,312.2	470.9	841.3	336.4	120.4	216.0
West Central	2,761.8	316.8	539.6	1,504.7	598.1	906.6	400.7	153.9	246.8
Southeast	3,798.1	116.5	400.1	1,556.9	332.1	1,224.8	1,724.6	322.7	1,401.9
Southwest-North	3,279.4	366.7	643.1	1,355.6	653.4	702.2	914.0	272.0	642.0
Southwest-South	1,940.7	306.6	451.8	699.8	373.4	326.4	482.5	127.3	355.2
Total	16,281.7	1,577.9	3,108.1	7,541.0	2,923.4	4,617.6	4,054.7	1,086.0	2,968.7

Table 26. --Net annual growth of sawtimber and growing stock by species and class of timber, by Survey region, 1951-53

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
----- Million cubic feet -----						
----- Million board feet -----						
STATE OF ALABAMA						
Sawtimber trees	572.5	364.8	207.7	2,769.6	1,863.7	905.9
Poletimber trees	196.1	65.8	130.3	...	...	...
Total	768.6	430.6	338.0	2,769.6	1,863.7	905.9
NORTH						
Sawtimber trees	33.7	12.3	21.4	149.1	58.5	90.6
Poletimber trees	13.8	3.5	10.3	...	...	...
Total	47.5	15.8	31.7	149.1	58.5	90.6
NORTH CENTRAL						
Sawtimber trees	87.3	58.4	28.9	420.3	295.0	125.3
Poletimber trees	43.6	18.8	24.8	...	...	...
Total	130.9	77.2	53.7	420.3	295.0	125.3
WEST CENTRAL						
Sawtimber trees	90.8	53.0	37.8	397.6	238.3	159.3
Poletimber trees	37.9	14.4	23.5	...	...	...
Total	128.7	67.4	61.3	397.6	238.3	159.3
SOUTHEAST						
Sawtimber trees	140.9	85.9	55.0	706.1	458.0	248.1
Poletimber trees	53.5	16.0	37.5	...	...	...
Total	194.4	101.9	92.5	706.1	458.0	248.1
SOUTHWEST - NORTH						
Sawtimber trees	132.1	91.4	40.7	668.1	489.3	178.8
Poletimber trees	30.8	9.2	21.6	...	...	...
Total	162.9	100.6	62.3	668.1	489.3	178.8
SOUTHWEST - SOUTH						
Sawtimber trees	87.7	63.8	23.9	428.4	324.6	103.8
Poletimber trees	16.5	3.9	12.6	...	...	...
Total	104.2	67.7	36.5	428.4	324.6	103.8

Table 27. -- Net annual growth per acre of sawtimber and growing stock, by forest-type and stand-size group, by Survey region, 1951-1953

Stand-size group	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
		Cubic feet			Board feet	
STATE OF ALABAMA						
Sawtimber	60	64	52	271	303	206
Poletimber	33	34	30	93	103	75
Other stand sizes	12	11	14	27	29	19
Total	37	38	35	133	143	111
NORTH						
Sawtimber	34	46	27	138	192	104
Poletimber	23	26	21	58	67	52
Other stand sizes	9	9	7	9	9	11
Total	24	28	22	76	91	66
NORTH CENTRAL						
Sawtimber	52	62	26	228	273	109
Poletimber	27	30	21	69	78	48
Other stand sizes	11	9	22	25	27	19
Total	29	31	22	92	106	56
WEST CENTRAL						
Sawtimber	66	70	60	278	310	240
Poletimber	38	40	32	93	102	76
Other stand sizes	19	20	16	40	44	26
Total	41	42	39	127	131	120
SOUTHEAST						
Sawtimber	65	64	66	279	295	248
Poletimber	35	32	39	104	107	97
Other stand sizes	11	11	11	30	31	27
Total	39	36	45	140	140	142
SOUTHWEST - NORTH						
Sawtimber	68	72	56	335	368	235
Poletimber	43	46	37	130	143	101
Other stand sizes	19	20	10	41	44	17
Total	52	55	43	212	233	152
SOUTHWEST - SOUTH						
Sawtimber	60	56	72	286	283	293
Poletimber	34	32	42	113	114	107
Other stand sizes	6	6	3	18	20	8
Total	36	33	50	147	141	176

Table 28. --Commodity drain on sawtimber and growing stock in species groups, by commodity and Survey region, 1951

Commodity	Growing stock			Sawtimber		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	- - Million cubic feet - -			- - Million board feet - -		
STATE OF ALABAMA						
Sawlogs	371.7	233.4	138.3	1,859.8	1,219.4	640.4
Veneer logs	19.3	.1	19.2	105.7	.4	105.3
Cooperage bolts	17.0	13.4	3.6	86.0	69.7	16.3
Pulpwood	91.3	90.2	1.1	127.6	125.2	2.4
Fuelwood	61.6	18.0	43.6	223.6	84.1	139.5
Piling	2.6	2.6	...	12.7	12.7	...
Poles	9.4	9.4	...	45.6	45.6	...
Posts	8.5	2.6	5.9	14.8	.4	14.4
Hewn ties	4.0	.4	3.6	17.9	2.3	15.6
Round mine timbers	4.6	2.2	2.4	2.6	2.6	...
Miscellaneous products	5.3	1.0	4.3	13.8	.7	13.1
Total	595.3	373.3	222.0	2,510.1	1,563.1	947.0
SOUTHEAST						
Sawlogs	108.4	63.0	45.4	540.0	329.4	210.6
Veneer logs	4.7	.1	4.6	25.7	.4	25.3
Cooperage bolts	.3	.3	(1/)	1.7	1.7	(1/)
Pulpwood	27.4	27.2	.2	38.2	37.7	.5
Fuelwood	17.2	3.5	13.7	60.0	16.0	44.0
Piling	.3	.3	...	1.3	1.3	...
Poles	.9	.9	...	4.2	4.2	...
Posts	2.4	.7	1.7	4.2	.2	4.0
Hewn ties	2.5	.2	2.3	11.1	1.2	9.9
Round mine timbers	...	...	...	...	...	...
Miscellaneous products	1.1	.2	.9	2.6	.1	2.5
Total	165.2	96.4	68.8	689.0	392.2	296.8
NORTH						
Sawlogs	25.8	13.9	11.9	127.8	72.7	55.1
Veneer logs	1.0	...	1.0	5.3	...	5.3
Cooperage bolts	1.8	...	1.8	7.7	...	7.7
Pulpwood	.7	.7	...	.9	.9	...
Fuelwood	12.3	3.4	8.9	44.7	16.4	28.3
Piling	...	...	...	...	...	...
Poles	.2	.2	...	.8	.8	...
Posts	1.8	.4	1.4	3.6	.1	3.5
Hewn ties	.1	...	.1	.2	...	.2
Round mine timbers	...	...	...	...	...	...
Miscellaneous products	1.2	.1	1.1	3.7	(1/)	3.7
Total	44.9	18.7	26.2	194.7	90.9	103.8
SOUTHWEST-NORTH						
Sawlogs	88.0	56.4	31.6	440.8	294.8	146.0
Veneer logs	6.3	...	6.3	34.6	...	34.6
Cooperage bolts	7.6	6.9	.7	38.9	35.4	3.5
Pulpwood	16.7	16.5	.2	23.4	23.0	.4
Fuelwood	8.0	1.7	6.3	27.8	7.8	20.0
Piling	2.0	2.0	...	9.9	9.9	...
Poles	3.8	3.8	...	18.6	18.6	...
Posts	.9	.3	.6	1.5	(1/)	1.5
Hewn ties	1.0	.2	.8	4.6	.9	3.7
Round mine timbers	...	...	...	...	...	...
Miscellaneous products	1.9	.3	1.6	6.0	.5	5.5
Total	136.2	88.1	48.1	606.1	390.9	215.2
NORTH-CENTRAL						
Sawlogs	62.6	45.0	17.6	316.4	235.1	81.3
Veneer logs	.6	...	.6	3.3	...	3.3
Cooperage bolts	5.7	5.3	.4	29.5	27.8	1.7
Pulpwood	10.3	10.3	(1/)	14.4	14.4	(1/)
Fuelwood	15.1	6.4	8.7	57.9	29.8	28.1
Piling	(1/)	(1/)	...	(1/)	(1/)	...
Poles	.3	.3	...	1.6	1.6	...
Posts	1.9	.7	1.2	3.0	.1	2.9
Hewn ties	.1	...	.1	.4	...	.4
Round mine timbers	3.1	1.5	1.6	1.7	1.7	...
Miscellaneous products	.4	.2	.2	.4	.1	.3
Total	100.1	69.7	30.4	428.6	310.6	118.0
SOUTHWEST-SOUTH						
Sawlogs	33.9	24.3	9.6	171.4	126.8	44.6
Veneer logs	5.3	...	5.3	29.1	...	29.1
Cooperage bolts	...	...	...	...	...	...
Pulpwood	22.4	22.3	.1	31.1	30.9	.2
Fuelwood	4.1	1.9	2.2	16.0	9.0	7.0
Piling	.3	.3	...	1.4	1.4	...
Poles	3.6	3.6	...	17.3	17.3	...
Posts	.5	.2	.3	.8	(1/)	.8
Hewn ties	.3	(1/)	.3	1.4	.2	1.2
Round mine timbers	.9	.4	.5	.5	.5	...
Miscellaneous products	.2	.1	.1	(1/)	(1/)	(1/)
Total	71.5	53.1	18.4	269.0	186.1	82.9
WEST-CENTRAL						
Sawlogs	53.0	30.8	22.2	263.4	160.6	102.8
Veneer logs	1.4	...	1.4	7.7	...	7.7
Cooperage bolts	1.6	.9	.7	8.2	4.8	3.4
Pulpwood	13.8	13.2	.6	19.6	18.3	1.3
Fuelwood	4.9	1.1	3.8	17.2	5.1	12.1
Piling	(1/)	(1/)	...	.1	.1	...
Poles	.6	.6	...	3.1	3.1	...
Posts	1.0	.3	.7	1.7	(1/)	1.7
Hewn ties	(1/)	...	(1/)	.2	...	.2
Round mine timbers	.6	.3	.3	.4	.4	...
Miscellaneous products	.5	.1	.4	1.1	(1/)	1.1
Total	77.4	47.3	30.1	322.7	192.4	130.3

1/ Negligible.

Table 29. --Commodity drain of sawtimber and growing stock by species, 1951

Species	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.
Softwood:		
Pines	371.2	1,555.7
Other	2.1	7.4
Total	<u>373.3</u>	<u>1,563.1</u>
Hardwood:		
Oaks	82.1	321.8
Other firm-textured		
hardwoods	22.8	86.8
Sweetgum	54.6	245.0
Black and tupelo gums	28.3	132.6
Yellow-poplar	26.6	124.5
Other soft-textured		
hardwoods	7.6	36.3
Total	<u>222.0</u>	<u>947.0</u>
All species	595.3	2,510.1

Table 30. --Commodity drain on sawtimber and growing stock, by species group and class of timber, by Survey region, 1951

Class of timber	Growing stock			Sawtimber		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
STATE OF ALABAMA						
Sawtimber trees	491.4	295.7	195.7	2,510.1	1,563.1	947.0
Poletimber trees	103.9	77.6	26.3	...	...	...
Total	595.3	373.3	222.0	2,510.1	1,563.1	947.0
NORTH						
Sawtimber trees	38.8	17.0	21.8	194.7	90.9	103.8
Poletimber trees	6.1	1.7	4.4	...	...	...
Total	44.9	18.7	26.2	194.7	90.9	103.8
NORTH CENTRAL						
Sawtimber trees	82.8	58.2	24.6	428.6	310.6	118.0
Poletimber trees	17.3	11.5	5.8	...	...	...
Total	100.1	69.7	30.4	428.6	310.6	118.0
WEST CENTRAL						
Sawtimber trees	63.4	36.4	27.0	322.7	192.4	130.3
Poletimber trees	14.0	10.9	3.1	...	...	...
Total	77.4	47.3	30.1	322.7	192.4	130.3
SOUTHEAST						
Sawtimber trees	135.9	74.4	61.5	689.0	392.2	296.8
Poletimber trees	29.3	22.0	7.3	...	...	...
Total	165.2	96.4	68.8	689.0	392.2	296.8
SOUTHWEST-NORTH						
Sawtimber trees	117.7	73.4	44.3	606.1	390.9	215.2
Poletimber trees	18.5	14.7	3.8	...	...	...
Total	136.2	88.1	48.1	606.1	390.9	215.2
SOUTHWEST-SOUTH						
Sawtimber trees	52.8	36.3	16.5	269.0	186.1	82.9
Poletimber trees	18.7	16.8	1.9	...	...	...
Total	71.5	53.1	18.4	269.0	186.1	82.9

Table 31. -- Change in commercial forest land between Surveys by forest-type group and Survey region, 1935-36 and 1951-53

Survey region	Change between Surveys			
	All types	Soft-wood ^{1/}	Bottom-land hdwd.	Upland hardwood
	<u>Percent</u>			
North	- 7	- 20	- 16	+ 10
North Central	+ 14	+ 5	(2/)	+ 48
West Central	+ 15	+ 7	+ 14	+ 52
Southeast	+ 18	+ 17	+ 19	+ 23
Southwest-North	+ 14	+ 16	+ 15	+ 3
Southwest-South	- 3	- 2	+ 18	- 38
Total	+ 10	+ 6	+ 13	+ 23

^{1/} Includes mixed pine-hardwood types.

^{2/} Negligible.

Table 32. -- Change in growing stock between Surveys by species group and Survey region, 1935-36 and 1951-53

Survey region	Change between Surveys		
	All species	Soft-wood	Hard-wood
	<u>Percent</u>		
North	- 19	- 31	- 14
North Central	- 20	- 31	- 4
West Central	(1/)	- 14	+ 12
Southeast	- 1	- 9	+ 7
Southwest-North	+ 20	+ 24	+ 15
Southwest-South	+ 30	+ 27	+ 36
Total	+ 1	- 5	+ 6

^{1/} Negligible.

Table 33. --Change in sawtimber volume between Surveys by species group and Survey region, 1935-36 and 1951-53

Survey region	Change between Surveys		
	All species	Soft-wood	Hard-wood
	- - - - - Percent - - - - -		
North	- 21	- 34	- 14
North Central	- 38	- 46	- 19
West Central	- 18	- 31	- 2
Southeast	- 17	- 23	- 8
Southwest-North	+ 8	+ 14	- 3
Southwest-South	+ 22	+ 18	+ 32
Total	- 12	- 17	- 5

Table 34. --Total number of live trees ^{1/} by species group and Survey region (1951-53) and change between Surveys (1935-36 and 1951-53)

Diameter class (inches)	Softwood		Hardwood		Softwood		Hardwood	
	Thousand trees	Percent change	Thousand trees	Percent change	Thousand trees	Percent change	Thousand trees	Percent change
STATE OF ALABAMA					SOUTHEAST			
2-4	2,392,324	+78	6,568,793	+99	616,684	+125	1,542,750	+102
6-8	583,273	+33	770,027	+27	131,540	+43	160,090	+37
10-12	181,663	+10	265,463	+29	43,037	+11	62,662	+27
14-18	49,159	-18	101,009	+8	11,149	-27	24,348	+8
20 and up	4,487	-55	17,871	-25	1,116	-60	3,908	-35
Total	3,210,906	+59	7,723,163	+82	803,526	+90	1,793,758	+87
NORTH					SOUTHWEST-NORTH			
2-4	146,365	+11	756,607	+42	390,912	+74	1,173,208	+156
6-8	35,541	-21	94,058	-3	100,165	+50	135,747	+51
10-12	7,388	-37	33,540	(2/)	39,459	+51	46,961	+54
14-18	2,089	-32	13,046	-6	13,721	+28	19,995	+21
20 and up	176	-50	2,652	-26	1,664	-32	3,845	-25
Total	191,559	(2/)	899,903	+32	545,921	+65	1,379,756	+130
NORTH CENTRAL					SOUTHWEST-SOUTH			
2-4	618,947	+96	1,331,776	+108	230,630	+14	736,636	+89
6-8	131,930	+20	167,554	+23	91,686	+51	88,867	+26
10-12	33,924	-20	47,883	+12	37,647	+59	29,036	+57
14-18	7,596	-51	16,022	-6	9,678	+18	10,911	+29
20 and up	695	-69	2,443	-31	388	-64	2,302	+15
Total	793,092	+63	1,565,678	+86	370,029	+25	867,752	+77
WEST CENTRAL								
2-4	388,786	+95	1,027,816	+97				
6-8	92,411	+42	123,711	+27				
10-12	20,208	-13	45,381	+41				
14-18	4,926	-32	16,687	+8				
20 and up	448	-58	2,721	-24				
Total	506,779	+71	1,216,316	+81				

1/ Includes both cull and growing stock trees.

2/ Negligible.

Definitions of Terms

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land or (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or physical inaccessibility.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous are loblolly pine (Pinus taeda); shortleaf pine (P. echinata); longleaf pine (P. palustris); and slash pine (P. caribaea).

Hardwoods. Broadleaved species, of which the most numerous genera or species are the oaks (Quercus spp.); hickories, except pecans (Carya spp.); and sweetgum (Liquidambar styraciflua).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Longleaf-slash pine. Forests in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. (Common associates include other southern pines, oak, and gum.)

Loblolly-shortleaf pine. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. (Common associates include oak, hickory, and gum.)

White-red-jack pine. Forests in which 50 percent or more of the stand is eastern white pine, red pine, or jack pine, singly or in combination. (Common associates include hemlock, aspen, birch, and maple.)

Spruce-fir. Forests in which 50 percent or more of the stand is spruce or true firs, singly or in combination. (Common associates include white cedar, tamarack, maple, birch, and hemlock.)

Oak-pine. Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25 - 49 percent of the stand. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory. Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include yellow-poplar, elm, maple, and black walnut.)

Maple-beech-birch. Forests in which 50 percent or more of the stand is maple, beech, or yellow birch, singly or in combination. (Common associates include hemlock, elm, basswood and white pine.)

Oak-gum-cypress. Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood. Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. (Common associates include willow, sycamore, beech, and maple.)

In the detailed tables in this report, the types listed above have been grouped into five major forest types. Following is a list of these major groupings together with the types contained in each:

Pine. Consists of longleaf-slash pine type and loblolly-shortleaf pine type.

Pine-hardwood. Same as oak-pine type.

Other softwood. Forests in which redcedar, white cedar, or hemlock comprise at least 25 percent of the stand. In the national standard forest types, the redcedar is included with oak-hickory, the white cedar with spruce-fir, and hemlock with white-red-jack pine.

Upland hardwood. Consists of oak-hickory type and maple-beech-birch type.

Bottomland hardwood. Consists of oak-gum-cypress type and elm-ash-cottonwood type.

Class of Timber

Sawtimber tree. A live tree of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contains at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter. Cedar logs must have sound heartwood.
- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber tree. A live tree of commercial species between 5.0 inches d.b.h. and sawtimber size, but straight and clear enough to become a sawtimber tree in the future.

Seedling and sapling tree. Live, well-established seedlings and trees of commercial species less than 5.0 inches in d.b.h., sound and of good form.

Cull tree. A live tree 5.0 inches or larger in d.b.h., which is unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a net volume of at least 1,500 board feet per acre and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber. Stands which have a net volume of at least 1,500 board feet per acre in sawtimber trees, but which do not meet the specifications for large sawtimber.

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

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, in merchantable sawlogs in sawtimber trees.

Growing stock. Net volume in cubic feet of sawtimber and poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside bark.

Total volume. Net volume in cubic feet of sawtimber trees, poletimber trees, cull trees, and salvable dead trees from stump to a minimum 4.0-inch top inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D. b. h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d. b. h.

Growth

Net annual growth of sawtimber. The change during the inventory year in net board-foot volume of sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during the inventory year in net cubic-foot volume of the growing stock on commercial forest land resulting from natural causes.

Drain

Commodity drain on sawtimber. The board-foot volume of sawtimber trees removed from commercial forest land during a specified year as timber products and logging waste.

Commodity drain on growing stock. The cubic-foot volume of sawtimber and poletimber trees removed from commercial forest land during a specified year as timber products and logging waste.

Softwood Log Grades ^{4/}

Softwood log grades are based on the value yield per unit outturn of yard lumber. ^{5/} The value of lumber yield may be expressed relative to the value of No. 2 Common lumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Common lumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber. ^{6/} Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade-2 or better logs are present per acre.

Poor. A stand in which fewer than four grade-2 or better logs are present per acre.

^{4/} For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Experiment Station, 18 pp. 1953.

^{5/} Except for redcedar; all redcedar sawlogs were graded as No. 1.

^{6/} For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U.S. Forest Products Laboratory D1737. 1949.

Standard Tables

The 10 tables that follow will be found in all Forest Survey State reports in order that forest statistics for a group of States can be easily compared or compiled.

Table I. -- Land area, by major classes of land, Alabama, 1951-1953

Class of land	Area
	<u>Thousand acres</u>
Forest:	
Commercial	20,756.2
Noncommercial:	
Reserved from commercial timber use	4.5
Unproductive for timber use	10.5
Total	<u>20,771.2</u>
Nonforest: <u>1/</u>	<u>11,918.7</u>
Total, all classes	<u>32,689.9</u>

1/ Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. -- Commercial forest land area, by ownership and stand-size classes, Alabama, 1951-1953

Ownership class	Total	Saw-timber stands	Pole-timber stands	Seedling and sapling stands ^{1/}
	- - - -	<u>Thousand acres</u>		- - - -
Federally owned or managed:				
National forest	616.3	241.3	275.0	100.0
Indian	...	...	...	...
Other	<u>208.3</u>	<u>71.8</u>	<u>109.4</u>	<u>27.1</u>
Total	824.6	313.1	384.4	127.1
State, county, and municipal ^{2/}	151.3	60.6	68.5	22.2
Private	<u>19,780.3</u>	<u>5,717.3</u>	<u>10,459.7</u>	<u>3,603.3</u>
All ownerships	20,756.2	6,091.0	10,912.6	3,752.6

^{1/} Nonstocked and other areas included with seedling and sapling stands.

^{2/} Separation of State, county, and municipal not available.

Table III. -- Area of commercial forest land, by major forest types, Alabama, 1951-53

Forest type	Thousand acres
White-red-jack pine	2.6
Spruce-fir	2.2
Longleaf-slash pine	2,995.8
Loblolly-shortleaf pine	8,006.5
Oak-pine	3,256.0
Oak-hickory	4,087.9
Oak-gum-cypress	2,330.8
Elm-ash-cottonwood	43.6
Maple-beech-birch	<u>30.8</u>
Total	20,756.2

Table IV. -- Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, Alabama, 1951-53

Stand-size class	Sawtimber	Growing stock
	<u>Million board feet</u>	<u>Million cubic feet</u>
Sawtimber stands	28,133.7	7,067.0
Poletimber stands	9,306.9	4,345.0
Seedling and sapling stands	754.4	293.7
Nonstocked and other areas not elsewhere classified	<u>15.6</u>	<u>6.7</u>
Total	38,210.6	11,712.4

Table V. -- Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, Alabama, 1951-1953

Ownership class	Sawtimber	Growing stock
	<u>Million bd. ft.</u>	<u>Million cu. ft.</u>
Federally owned or managed:		
National Forest	1,565.3	415.3
Indian	...	...
Other	<u>368.9</u>	<u>112.3</u>
Total	1,934.2	527.6
State, county, and municipal ^{1/}	327.8	102.7
Private ^{2/}	<u>35,948.6</u>	<u>11,082.1</u>
All ownerships	38,210.6	11,712.4

^{1/} Separation between State, county, and municipal not available.

^{2/} Separation between farm, industrial, and other private ownership classes not available.

Table VI. -- Net volume of live sawtimber and growing stock on commercial forest land, by species, Alabama, 1951-53

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Longleaf and slash pines	5,151.0	1,337.3
Shortleaf and loblolly pines	15,296.5	3,912.2
Other southern yellow pines	964.4	248.8
Hemlock	19.4	3.5
Cypress	415.8	80.0
Other eastern softwoods	81.8	34.3
Total	<u>21,928.9</u>	<u>5,616.1</u>
Hardwoods:		
White oaks (<u>Q. alba</u> and <u>prinus</u>)	1,418.9	484.2
Red oaks (<u>Q. borealis</u> and <u>falcata</u> var. <u>pagodaefolia</u>)	561.0	155.1
Other white oaks	1,122.4	488.1
Other red oaks	3,125.0	1,153.1
Yellow birch	11.1	4.8
Sugar maple	47.9	19.8
Soft maples	204.4	108.4
Beech	344.3	93.1
Sweetgum	2,316.2	881.2
Tupelo and blackgum	2,308.2	835.6
Ash	326.7	126.5
Hickory	1,934.2	777.1
Cottonwood	64.1	17.8
Basswood	73.1	21.9
Yellow-poplar	1,057.1	310.7
Black walnut	20.1	8.6
Other eastern hardwoods	1,347.0	610.3
Total	<u>16,281.7</u>	<u>6,096.3</u>
All species	38,210.6	11,712.4

Table VII. --Net volume of live sawtimber on commercial forest land, by diameter-class groups and species, Alabama, 1951-53

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
	----- Million board feet -----						
Southern yellow pines	5, 313.1	5, 164.4	4, 029.5	2, 803.6	1, 890.8	2, 210.5	21, 411.9
Other eastern softwoods	50.7	65.5	94.6	103.8	57.0	145.4	517.0
White oaks (<u>Q. alba</u> and <u>prinus</u>)	...	297.1	294.3	254.7	193.3	379.5	1, 418.9
Other white oaks	...	301.9	218.6	153.2	120.4	328.3	1, 122.4
Red oaks (<u>Q. borealis</u> and <u>falcata</u> var. <u>pagodaefolia</u>)	...	75.4	106.4	101.3	70.6	207.3	561.0
Other red oaks	...	643.5	647.7	549.5	415.5	868.8	3, 125.0
Sugar maple	...	14.7	11.5	10.1	2.3	9.3	47.9
Beech	...	32.6	43.2	30.7	58.6	179.2	344.3
Sweetgum	...	596.8	581.0	425.1	341.7	371.6	2, 316.2
Tupelo and blackgum	...	522.8	507.1	446.1	311.9	520.3	2, 308.2
Yellow-poplar	...	183.7	203.8	241.7	167.3	260.6	1, 057.1
Other eastern hardwoods	...	974.4	975.9	727.7	564.7	738.0	3, 980.7

Table VIII. --Net volume of all timber on commercial forest land, by class of material and species group, Alabama, 1951-53

Class of material	Total	Softwoods	Hardwoods
- - - - <u>Million cubic feet</u> - - - - -			
Growing stock:			
Sawtimber trees:			
Sawlog portion	6,263.3	3,666.2	2,597.1
Upper stem portion	1,424.3	326.4	1,097.9
Total	7,687.6	3,992.6	3,695.0
Poletimber trees	4,024.8	1,623.5	2,401.3
Total growing stock	11,712.4	5,616.1	6,096.3
Other material:			
Sound cull trees	945.4	52.8	892.6
Rotten cull trees	384.2	5.3	378.9
Hardwood limbs	485.6	...	485.6
Salvable dead trees	69.0	32.6	36.4
Total other material	1,884.2	90.7	1,793.5
Total, all timber	13,596.6	5,706.8	7,889.8

Table IX. --Net annual growth, annual mortality, and commodity drain on live sawtimber and growing stock on commercial forest land, by species groups, Alabama, 1951

Item	Sawtimber			Growing stock		
	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
	<u>Million board feet</u>			<u>Million cubic feet</u>		
Net annual growth	2,769.6	1,863.7	905.9	768.6	430.6	338.0
Annual mortality	229.3	131.6	97.7	82.3	38.6	43.7
Commodity drain						
Timber products	2,422.4	1,531.1	891.3	509.3	341.8	167.5
Logging waste	87.7	32.0	55.7	86.0	31.5	54.5
Total commodity drain	2,510.1	1,563.1	947.0	595.3	373.3	222.0

Table X. -- Total output of timber products and commodity drain on live sawtimber and growing stock, Alabama, 1951

Product	Volume of products cut ^{1/}			Commodity drain on sawtimber			Commodity drain on growing stock		
	Standard unit	Number	M cu. ft.	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
	Million board feet								
Sawlogs	MBM ^{2/}	1, 944, 733	310, 875	1, 859. 8	1, 219. 4	640. 4	371. 7	233. 4	138. 3
Veneer logs and bolts	MBM ^{2/}	95, 775	13, 408	105. 7	. 4	105. 3	19. 3	. 1	19. 2
Cooperage logs and bolts	MBM ^{2/}	86, 254	13, 882	86. 0	69. 7	16. 3	17. 0	13. 4	3. 6
Pulpwood bolts	Std. cords ^{3/}	1, 406, 207	106, 061	127. 6	125. 2	2. 4	91. 3	90. 2	1. 1
Fuelwood	Std. cords ^{3/}	1, 203, 296	90, 365	223. 6	84. 1	139. 5	61. 6	18. 0	43. 6
Piling	M linear feet	3, 087	2, 220	12. 7	12. 7	...	2. 6	2. 6	...
Poles	M pieces	401	7, 960	45. 6	45. 6	...	9. 4	9. 4	...
Posts	M pieces	16, 766	10, 831	14. 8	. 4	14. 4	8. 5	2. 6	5. 9
Hewn ties	M pieces	337	2, 366	17. 9	2. 3	15. 6	4. 0	. 4	3. 6
Mine timbers	M cu. ft.	4, 260	4, 269	2. 6	2. 6	...	4. 6	2. 2	2. 4
Miscellaneous ^{4/}	M cu. ft.	5, 414	5, 414	13. 8	. 7	13. 1	5. 3	1. 0	4. 3
Total		567, 651		2, 510. 1	1, 563. 1	947. 0	595. 3	373. 3	222. 0

^{1/} Includes material from both growing stock and other miscellaneous sources.

^{2/} International 1/4-inch rule.

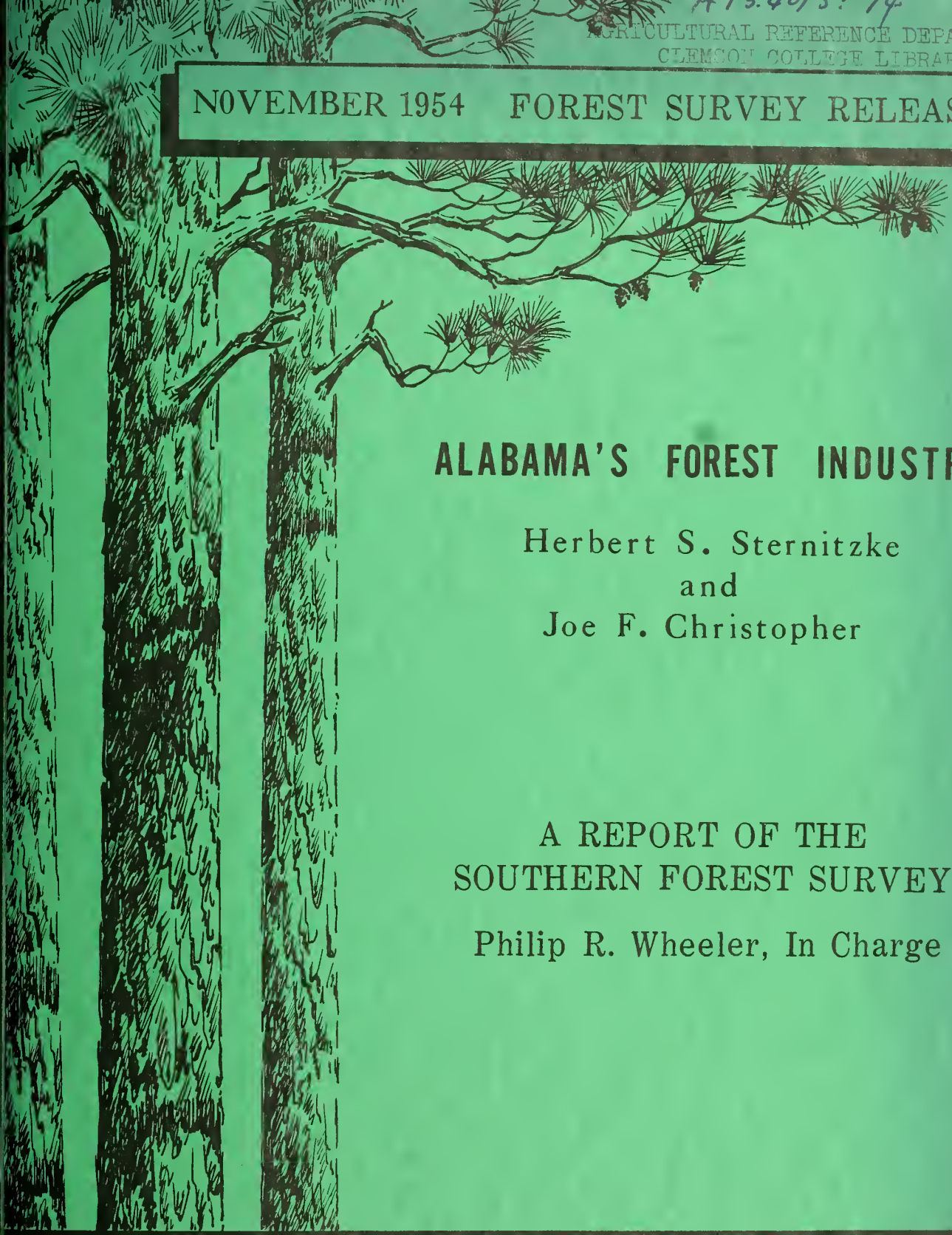
^{3/} Rough wood basis.

^{4/} Includes shuttle blocks, excelsior, handle stock, etc.





NOVEMBER 1954 FOREST SURVEY RELEASE 74



ALABAMA'S FOREST INDUSTRY

Herbert S. Sternitzke
and
Joe F. Christopher

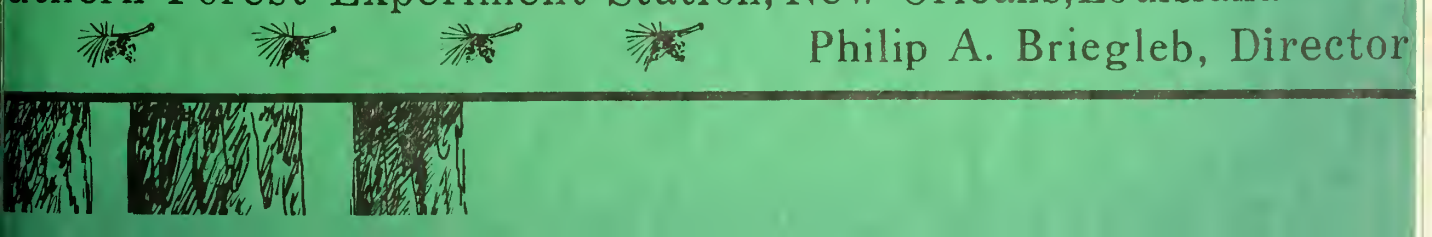
A REPORT OF THE
SOUTHERN FOREST SURVEY

Philip R. Wheeler, In Charge



Southern Forest Experiment Station, New Orleans, Louisiana

Philip A. Briegleb, Director



THE SOUTHERN FOREST SURVEY

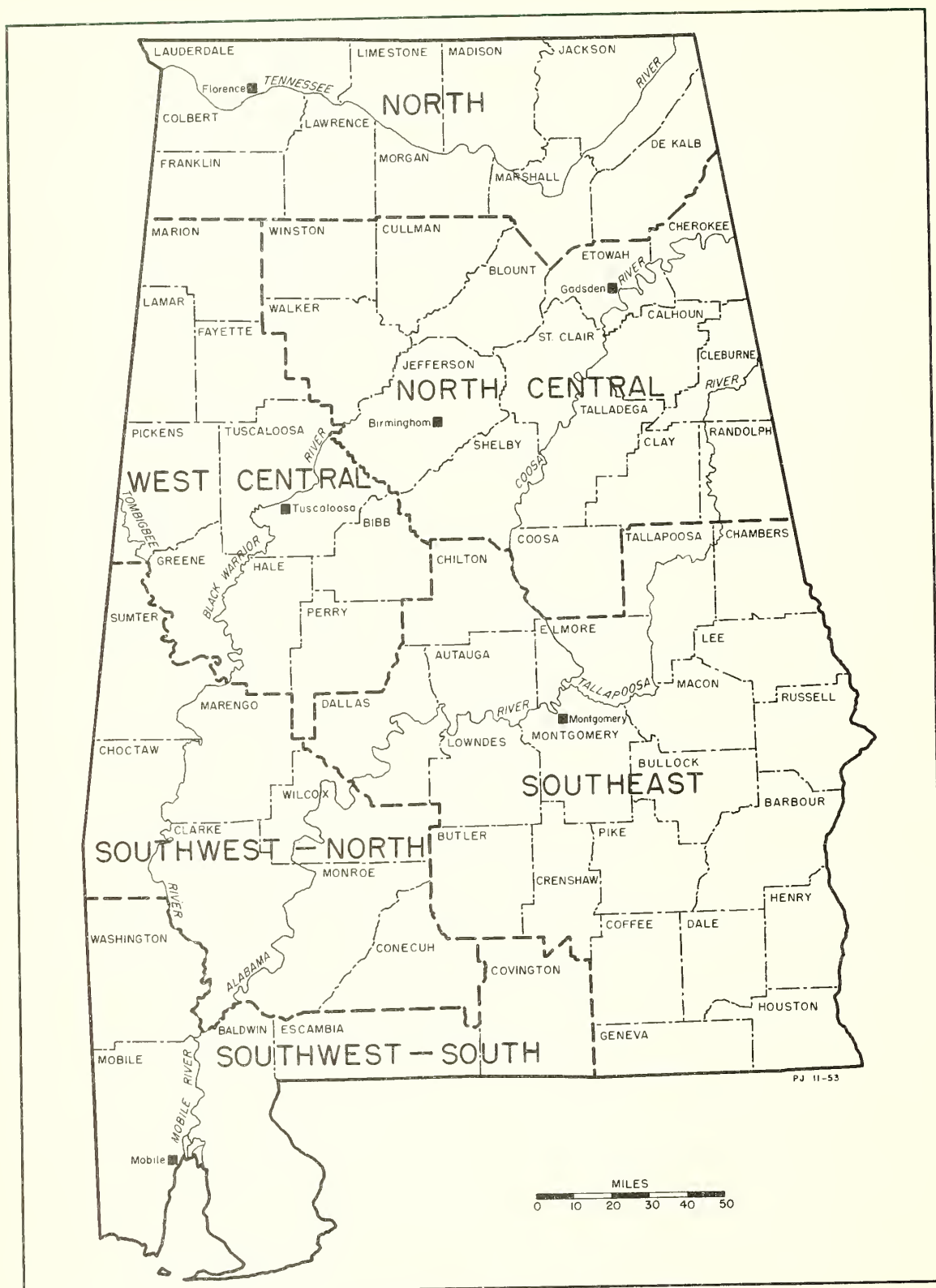
The Southern Forest Survey, an activity of the Southern Forest Experiment Station, covers the seven States of the Station's territory--Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. This Survey is a part of the nation-wide Forest Survey authorized by the McSweeney-McNary Forest Research Act of 1928. Its five-fold purpose is (1) to take inventory of the supply of standing timber and other forest products; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which this supply is being diminished through industrial and local use, and by fire, insects, disease, and other agencies; (4) to estimate the present requirements and the probable future trend in the requirements for timber and other forest products; and (5) to correlate these findings with existing and anticipated economic conditions, in order that policies may be formulated for the effective use of lands suitable for forest production.

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Forest Survey regions in Alabama.

ALABAMA'S FOREST INDUSTRY

Herbert S. Sternitzke and Joe F. Christopher
Southern Forest Experiment Station

Alabama is known as the Cotton State. But much of Alabama's economy is also tied to timber; the manufacture of products derived from the State's forests is a leading source of income. In value added by manufacture, forest industries are outranked only by metal industries and textiles. Conversion of raw timber products into finished items also furnishes a livelihood to some 50,000 workers--one in every five persons employed in Alabama's manufacturing industries.

Output of Timber Products Nearly 570 Million Cubic Feet

Production of timber commodities in 1951 ^{1/} totaled 568 million cubic feet--368 million of softwood, 200 million of hardwood.

Sawlogs are still the chief product of Alabama's forests, taking almost three-fifths of the softwood output and half the hardwood (table 1). Pine pulpwood and fuelwood also rank high. These three products account for 90 percent of the timber output. Numerous other items, notably hardwood veneer logs, slack cooperage bolts, pine poles and piling, mine timbers, and hardwood fence posts make up the rest.

Alabama leads Mid-South's lumber production. --Alabama produces about one-quarter of the yearly cut of lumber in the Mid-South, i. e., in Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

In 1951 the production of sawlogs for lumber (including sawn crossties) from Alabama's forests was almost 2 billion board feet. Softwood totaled 1.3 billion; hardwood, 0.7 billion. Virtually all of the softwood was southern pine, but some redcedar and cypress was also cut. Oak, gum, and yellow-poplar made up nine-tenths of the hardwood output.

^{1/} Data on 1951 timber production were compiled as one phase of the new Forest Survey of Alabama.

Table 1. -- Output of round and split timber, 1951

Product	All species	Softwood	Hardwood
	- - - - -	<u>Percent</u>	- - - - -
Sawlogs	55	57	50
Veneer	2	(<u>1/</u>)	7
Cooperage	2	3	1
Pulpwood	19	29	(<u>1/</u>)
Fuelwood	16	6	34
Poles and piling	2	3	...
Posts	2	1	4
All other	<u>2</u>	<u>1</u>	<u>4</u>
Total	100	100	100

1/ Negligible.

The larger part of the lumber cut in Alabama has always been pine (fig. 1). Prior to 1942, hardwood seldom accounted for more than one-sixth of the total annual lumber output. But during World War II, hardwood production mounted rapidly. Since 1944, hardwood has made up about three-tenths of the State's annual lumber production. That Alabama's present lumber cut has approached the peaks of the 1920's is due in part to the big boost in hardwood manufacture.

Pulpwood cut hits new high. -- The most significant feature of Alabama's wood-using industry in recent years has been the great increase in pulpwood production. From less than 300,000 cords in 1938, production rose to 1.4 million cords in 1951--an average increase of 86,000 cords a year (fig. 2).

A new development likely to modify the pattern of pulpwood procurement somewhat is the use of coarse sawmill waste for pulp chips. A half dozen or more installations for producing chips from bark-free material are now operating in Alabama and more are in prospect.

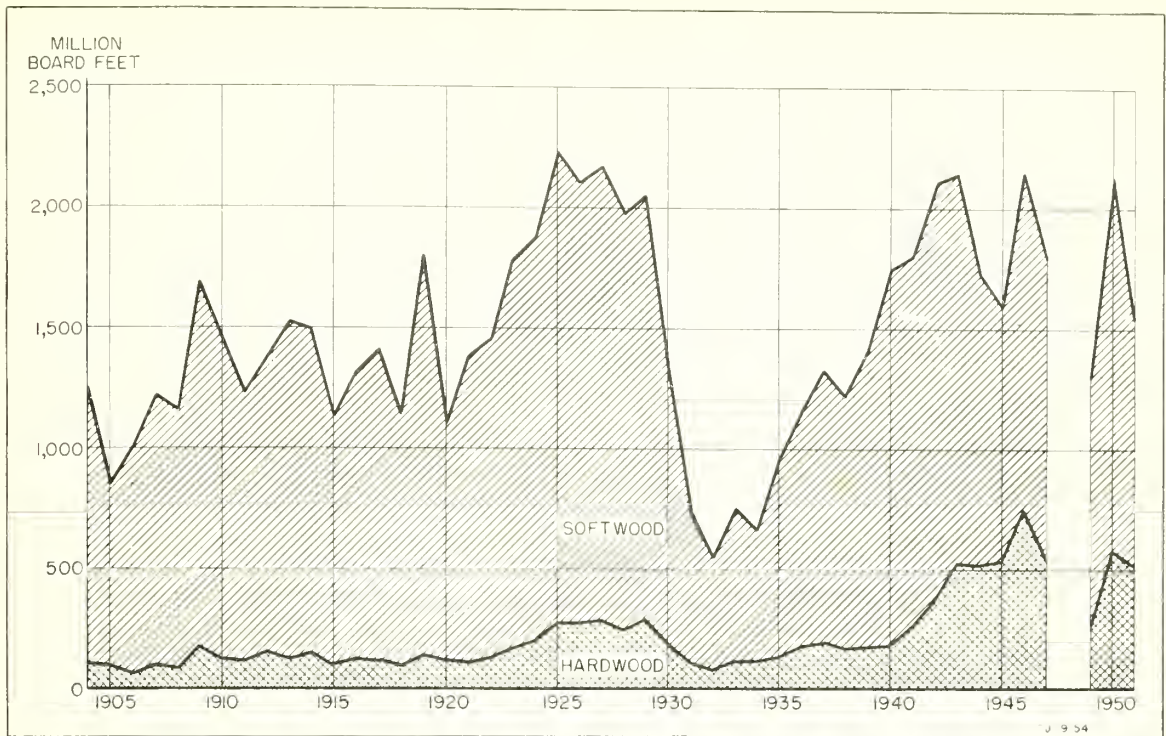


Figure 1. --Lumber production in Alabama.

Veneer output growing.

--Veneer manufacture is a growing industry in Alabama. The 1951 veneer log output was 60 percent greater than reported by the initial Forest Survey in 1937; the number of veneer mills has increased by one-third.

Alabama's forests supplied 96 million board feet of veneer logs during 1951, a little more than 2 percent of the total timber output. Virtually all of the production was hardwood--chiefly sweetgum, black and tupelo gums, and yellow-poplar.

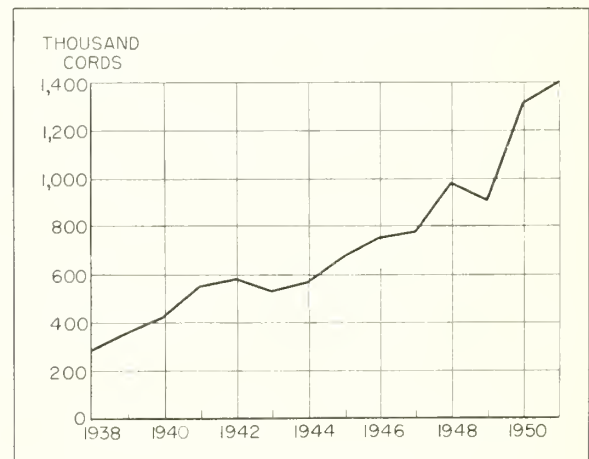


Figure 2. --Pulpwood production in Alabama.

The industry's 42 active plants are concentrated in the southern part of the State (fig. 3). Most of the veneer produced is for packaging (such as fruit crates), but some commercial and face veneers are also manufactured.

Cooperage production climbs. --Cooperage logs and bolts cut in Alabama totaled 86 million board feet in 1951. Tight cooperage, all white oak, made up 7 percent of the production. Southern pine provided nine-tenths of the slack cooperage; hardwood cut for slack cooperage was mainly yellow-poplar.

Most tight cooperage outfits are in north Alabama, in the valley of the Tennessee River. Slack cooperage plants are concentrated in the Southwest and North Central regions; they largely turn out heading and staves for hardware kegs.

Although the cooperage industry has faced increasing competition from other forms of containers in recent decades, the 1951 production in Alabama was more than double the 1937 output.

Hardwood mine prop use increases. --Over 4 million cubic feet of round timbers were cut for mine props in 1951.

Regionwide, mine prop production is greatest in the North Central region (the territory around Birmingham), which accounted for two-thirds of the 1951 output. Almost all of the props are for underground coal mines; supporting the overburden with metal pins, a relatively new practice, has virtually eliminated wood props in ore mines.

The proportion of hardwood props used by Alabama mines has increased markedly. It is estimated that in 1945 two-thirds to three-quarters of the total volume of props was pine. Of the 1951 output, over half was hardwood.

Fuelwood a major product. --Wood for fuel is still a major product in terms of volume, but its use has been decreasing. The 1.2 million cords cut in 1951 accounted for 16 percent of Alabama's total output of timber; in 1937, the Forest Survey estimated fuelwood production at 4.6 million cords.

All other products cut in 1951 furnished only 5 percent of Alabama's timber output. Of these, fence posts and pine poles were the leading items.

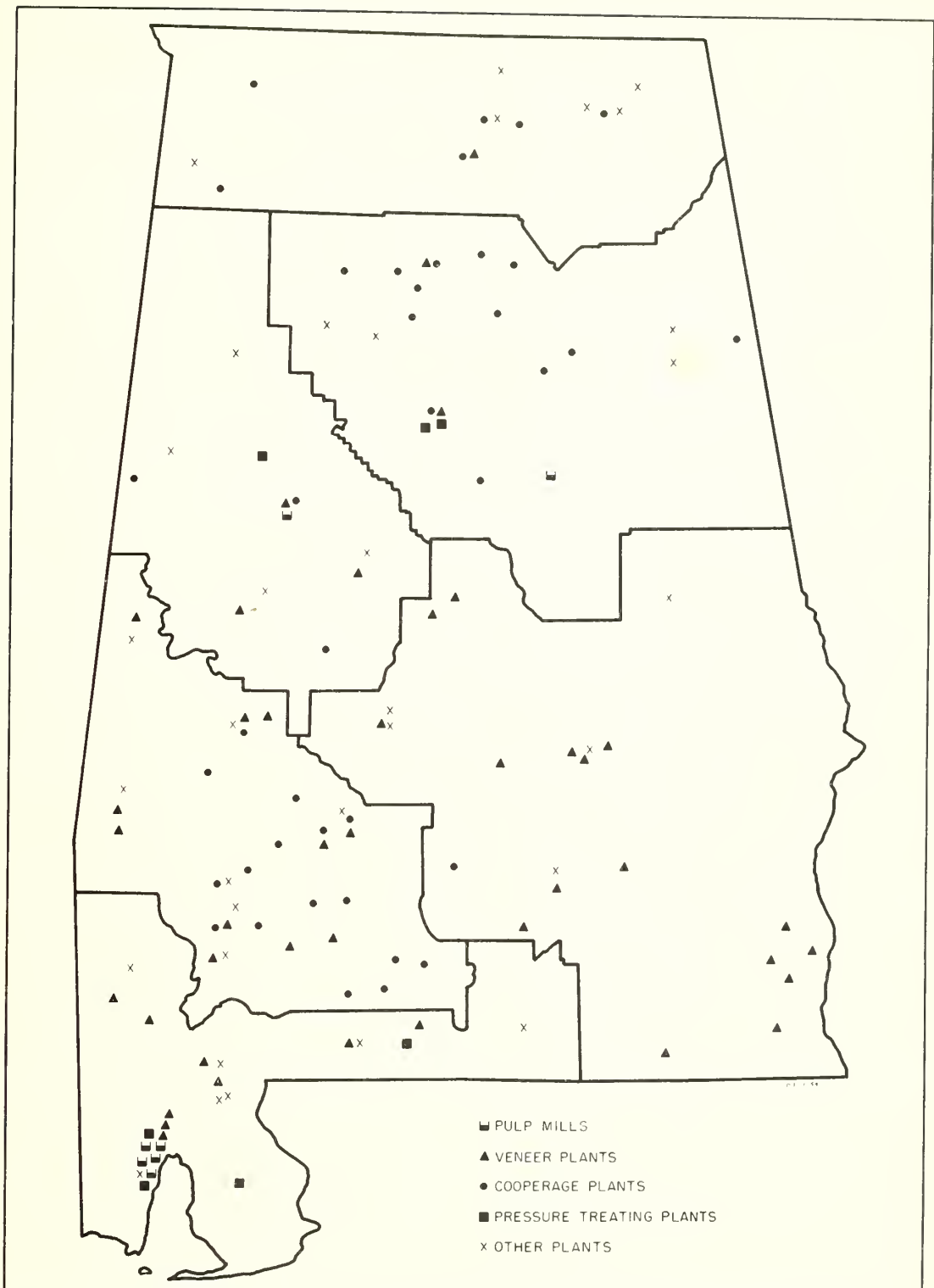


Figure 3.--Location of non-lumber plants that process raw forest products, 1951.

Gum Naval Stores Output Declines

Crude gum production in 1951 totaled 59,000 barrels. Baldwin and Washington counties together provided almost 70 percent of the total.

Production of gum naval stores has dropped considerably since the middle nineteen-thirties. This is partially reflected in the smaller number of turpented pines. When the initial Forest Survey of the naval stores region (Southwest-South Alabama) was made in 1935, 17 million trees were found on which some turpentine work had been done; when the 1953 resurvey was made, only 6 million trees were faced.

Stump Removal for Wood Naval Stores Hits Peak

Removal of resinous stumpwood of old-growth longleaf and slash pines for wood naval stores averaged 162,000 tons annually from 1946 to 1952, according to Alabama severance tax data. In 1951, the peak year, 231,000 tons were removed from the ground.

Alabama's stumpwood supply is estimated at roughly 10 million tons. At the present rate of use, therefore, it appears that the remaining tonnage is enough for many more years of operation.

Table 2.--Total log and bolt production by Survey region, 1951

Product	Standard unit	State of Alabama	North	North Central	West Central	Southeast	South-west - North	South-west - South
Softwood:								
Sawlogs	MBM ^{1/}	1,284,618	76,594	247,672	169,140	347,130	310,529	133,553
Veneer	MBM ^{1/}	507	...	...	...	507	...	...
Cooperage	MBM ^{1/}	72,905	...	29,052	5,042	1,759	37,052	...
Pulpwood	Std. cords ^{2/}	1,392,180	10,358	159,856	203,428	419,887	255,914	342,737
Fuelwood	Std. cords ^{2/}	294,692	57,371	104,364	17,935	55,882	27,457	31,683
Piling	M linear feet	3,087	...	10	32	308	2,400	337
Poles	M pieces	401	7	14	27	37	164	152
Posts	M pieces	5,295	743	1,437	665	1,422	523	505
Hewn ties	M pieces	45	...	...	...	24	17	4
Mine timbers	M cu. ft.	2,049	...	1,356	274	...	...	419
Misc. products	M cu. ft.	1,952	130	420	134	542	542	184
Hardwood:								
Sawlogs	MBM ^{1/}	660,115	56,698	83,878	106,046	217,063	150,533	45,897
Veneer	MBM ^{1/}	95,268	4,825	3,025	6,981	22,889	31,264	26,284
Cooperage	MBM ^{1/}	13,349	5,472	1,480	3,015	14	3,368	...
Pulpwood	Std. cords ^{2/}	14,027	...	43	7,084	2,980	2,491	1,429
Fuelwood	Std. cords ^{2/}	908,604	184,434	182,463	78,663	286,597	130,542	45,905
Piling	M linear feet	...	...	...	...	...	...	...
Poles	M pieces	...	...	...	...	...	...	...
Posts	M pieces	11,471	2,815	2,285	1,413	3,152	1,162	644
Hewn ties	M pieces	292	4	7	4	185	70	22
Mine timbers	M cu. ft.	2,220	...	1,468	297	...	...	455
Misc. products	M cu. ft.	3,462	1,071	436	401	690	778	86

^{1/} International 1/4-inch rule.^{2/} Rough wood basis.

Table 3.--Total log and bolt production by Survey region, 1951

Species group and product	State of Alabama	North	North Central	West Central	Southeast	South-west - North	South-west - South
-----Thousand cubic feet-----							
Softwood:							
Sawlogs	210,934	12,577	40,668	27,773	56,998	50,989	21,929
Veneer	70	...	...	...	70	...	...
Cooperage	11,971	...	4,770	828	289	6,084	...
Pulpwood	104,970	781	12,053	15,338	31,660	19,296	25,842
Fuelwood	22,220	4,326	7,869	1,352	4,214	2,070	2,389
Piling	2,220	...	7	23	222	1,726	242
Poles	7,960	139	278	536	734	3,256	3,017
Posts	3,421	480	928	430	919	338	326
Hewn ties	316	...	...	...	169	119	28
Mine timbers	2,049	...	1,356	274	...	...	419
Misc. products	1,952	130	420	134	542	542	184
Total	368,083	18,433	68,349	46,688	95,817	84,420	54,376
Hardwood:							
Sawlogs	99,941	8,584	12,699	16,055	32,863	22,791	6,949
Veneer	13,338	676	424	977	3,204	4,377	3,680
Cooperage	1,911	789	211	430	2	479	...
Pulpwood	1,091	...	3	551	232	194	111
Fuelwood	68,145	13,832	13,685	5,900	21,494	9,791	3,443
Poles and piling	...	...	...	...	...	...	...
Posts	7,410	1,819	1,476	913	2,036	750	416
Hewn ties	2,050	28	49	28	1,299	492	154
Mine timbers	2,220	...	1,468	297	...	...	455
Misc. products	3,462	1,071	436	401	690	778	86
Total	199,568	26,799	30,451	25,552	61,820	39,652	15,294
All products	567,651	45,232	98,800	72,240	157,637	124,072	69,670

Table 4.--Cooperage bolt production by county, 1951

County	All species	County	All species
Million bd. ft. (International 1/4-inch log rule)			
Autauga	...	Jackson	2.4
Baldwin	...	Jefferson	.3
Barbour	...	Lamar	.1
Bibb	...	Lauderdale	.5
Blount	7.4	Lawrence	.3
Bullock	...	Lee	...
Butler	1.8	Limestone	.2
Calhoun	...	Lowndes	...
Chambers	...	Macon	...
Cherokee	...	Madison	1.2
Chilton	...	Marengo	5.4
Choctaw	...	Marion	(1/)
Clarke	12.1	Marshall	.1
Clay	...	Mobile	...
Cleburne	2.2	Monroe	3.5
Coffee	...	Montgomery	...
Colbert	(1/)	Morgan	.3
Conecuh	9.6	Perry	2.8
Coosa	...	Pickens	.3
Covington	...	Pike	...
Crenshaw	...	Randolph	...
Cullman	14.3	Russell	...
Dale	...	Saint Clair	2.6
Dallas	...	Shelby	2.5
DeKalb	.2	Sumter	...
Elmore	...	Talladega	...
Escambia	...	Tallapoosa	2.5
Etowah	...	Tuscaloosa	...
Fayette	.1	Walker	(1/)
Franklin	.3	Washington	...
Geneva	...	Wilcox	9.8
Greene	2.3	Winston	1.2
Hale	...	Total	86.3
Henry	...		
Houston	...		

1/ Negligible.

Table 5.--Sawlog production by county, 1951

County	All species	Softwood	Hardwood
Million bd. ft. (International 1/4-inch log rule)			
Autauga	14.2	9.4	4.8
Baldwin	47.1	30.7	16.4
Barbour	44.7	30.1	14.6
Bibb	29.8	22.8	7.0
Blount	18.5	16.5	2.0
Bullock	17.2	9.3	7.9
Butler	67.9	46.0	21.9
Calhoun	8.4	7.3	1.1
Chambers	17.5	11.4	6.1
Cherokee	19.1	12.1	7.0
Chilton	24.1	18.8	5.3
Choctaw	77.5	57.5	20.0
Clarke	109.9	71.2	38.7
Clay	19.1	12.6	6.5
Cleburne	14.1	9.9	4.2
Coffee	24.7	14.3	10.4
Colbert	10.9	6.7	4.2
Conecuh	36.5	28.3	8.2
Coosa	30.5	22.0	8.5
Covington	35.0	24.3	10.7
Crenshaw	53.2	25.3	27.9
Cullman	22.8	19.0	3.8
Dale	19.9	10.1	9.8
Dallas	58.1	31.9	26.2
DeKalb	20.2	16.2	4.0
Elmore	28.3	22.2	6.1
Escambia	30.4	24.5	5.9
Etowah	12.3	8.6	3.7
Fayette	28.1	17.5	10.6
Franklin	21.5	11.2	10.3
Geneva	13.7	8.6	5.1
Greene	19.7	14.9	4.8
Hale	22.4	15.3	7.1
Henry	18.1	10.3	7.8
Houston	17.4	9.9	7.5

Table 5.--Sawlog production by county, 1951 (continued)

County	All species	Softwood	Hardwood
Million bd. ft. (International 1/4-inch log rule)			
Jackson	29.9	12.7	17.2
Jefferson	44.0	32.3	11.7
Lamar	22.9	11.6	11.3
Lauderdale	8.9	3.3	5.6
Lawrence	13.8	9.2	4.6
Lee	18.9	13.1	5.8
Limestone	2.1	1.2	.9
Lowndes	17.3	11.5	5.8
Macon	13.5	8.8	4.7
Madison	6.6	1.7	4.9
Marengo	68.2	33.9	34.3
Marion	22.4	14.2	8.2
Marshall	8.9	7.1	1.8
Mobile	27.2	22.9	4.3
Monroe	70.4	47.7	22.7
Montgomery	22.5	12.4	10.1
Morgan	10.5	7.3	3.2
Perry	21.8	17.4	4.4
Pickens	50.8	24.7	26.1
Pike	31.6	13.8	17.8
Randolph	12.6	9.3	3.3
Russell	17.1	12.5	4.6
St. Clair	17.2	12.7	4.5
Shelby	26.7	20.1	6.6
Sumter	38.4	26.8	11.6
Talladega	15.1	11.9	3.2
Tallapoosa	24.3	17.4	6.9
Tuscaloosa	57.2	30.7	26.5
Walker	39.3	31.4	7.9
Washington	39.7	31.1	8.6
Wilcox	60.2	45.2	15.0
Winston	31.9	22.0	9.9
Total	1,944.7	1,284.6	660.1

Table 6.--Veneer log production by county, 1951

County	All species	Softwood	Hardwood
Million bd. ft. (International 1/4-inch log rule)			
Autauga	0.4	...	0.4
Baldwin	10.2	...	10.2
Barbour	...	...	...
Bibb	1.4	...	1.4
Blount	(1/)	...	(1/)
Bullock	.3	...	.3
Butler	...	...	...
Calhoun	...	...	...
Chambers	...	...	...
Cherokee	.2	...	.2
Chilton	1.1	...	1.1
Choctaw	5.7	...	5.7
Clarke	8.1	...	8.1
Clay	.1	...	.1
Cleburne	.1	...	.1
Coffee	...	...	...
Colbert	(1/)	...	(1/)
Conecuh	1.9	...	1.9
Coosa	.1	...	.1
Covington	1.1	...	1.1
Crenshaw	1.9	.1	1.8
Cullman	.1	...	.1
Dale	...	...	...
Dallas	1.6	...	1.6
DeKalb	(1/)	...	(1/)
Elmore	.8	...	.8
Escambia	5.3	...	5.3
Etowah	(1/)	...	(1/)
Fayette	.4	...	.4
Franklin	(1/)	...	(1/)
Geneva	.7	...	.7
Greene	.6	...	.6
Hale	1.3	...	1.3
Henry	4.6	(1/)	4.6
Houston	.9	...	.9

Table 6.--Veneer log production by county, 1951 (continued)

County	All species	Softwood	Hardwood
	Million bd. ft. (International 1/4-inch log rule)		
Jackson	1.5	...	1.5
Jefferson	.6	...	.6
Lamar	(1/)	...	(1/)
Lauderdale	.4	...	.4
Lawrence	.5	...	.5
Lee	...	...	...
Limestone	1.3	...	1.3
Lowndes	2.5	...	2.5
Macon	.8	...	.8
Madison	.2	...	.2
Marengo	.8	...	.8
Marion	(1/)	...	(1/)
Marshall	(1/)	...	(1/)
Mobile	2.1	...	2.1
Monroe	3.5	...	3.5
Montgomery	7.1	...	7.1
Morgan	.9	...	.9
Perry	.9	...	.9
Pickens	.5	...	.5
Pike	.7	.4	.3
Randolph	(1/)	...	(1/)
Russell	(1/)	...	(1/)
Saint Clair	(1/)	...	(1/)
Shelby	1.2	...	1.2
Sumter	3.8	...	3.8
Talladega	.2	...	.2
Tallapoosa	(1/)	...	(1/)
Tuscaloosa	1.9	...	1.9
Walker	.3	...	.3
Washington	7.6	...	7.6
Wilcox	7.5	...	7.5
Winston	.1	...	.1
Total	95.8	0.5	95.3

1/ Negligible.

Table 7.--Pulpwood production by county, 1951

County	All species	Softwood	Hardwood
- - - - - <u>Standard cords</u> - - - - -			
Autauga	1,688	1,688	...
Baldwin	131,615	131,367	248
Barbour	14,498	14,498	...
Bibb	31,647	30,738	909
Blount	13,869	13,869	...
Bullock	18,030	18,030	...
Butler	38,606	38,114	492
Calhoun	5,031	5,031	...
Chambers	30,372	30,372	...
Cherokee	2,443	2,443	...
Chilton	11,715	9,476	2,239
Choctaw	41,334	40,763	571
Clarke	49,314	49,154	160
Clay	11,772	11,772	...
Cleburne	4,861	4,861	...
Coffee	26,265	26,265	...
Colbert	116	116	...
Conecuh	15,511	15,362	149
Coosa	28,990	28,990	...
Covington	26,215	26,073	142
Crenshaw	12,164	12,164	...
Cullman	3,564	3,564	...
Dale	10,401	10,401	...
Dallas	27,807	27,603	204
DeKalb	1,950	1,950	...
Elmore	36,676	36,676	...
Escambia	31,248	30,387	861
Etowah	7,286	7,286	...
Fayette	40,930	35,896	5,034
Franklin	1,256	1,256	...
Geneva	6,457	6,457	...
Greene	9,690	9,645	45
Hale	16,968	16,834	134
Henry	8,030	8,030	...
Houston	6,038	6,038	...

Table 7.--Pulpwood production by county, 1951 (continued)

County	All species	Softwood	Hardwood
	<u>Standard cords</u>		
Jackson	342	342	...
Jefferson	3,841	3,841	...
Lamar	5,468	4,874	594
Lauderdale	...	...	...
Lawrence	133	133	...
Lee	37,068	37,068	...
Limestone	14	14	...
Lowndes	23,591	23,558	33
Macon	23,536	23,536	...
Madison	128	128	...
Marengo	40,905	40,352	553
Marion	9,970	9,715	255
Marshall	5,250	5,250	...
Mobile	85,292	85,227	65
Monroe	48,832	48,226	606
Montgomery	33,004	33,004	...
Morgan	1,169	1,169	...
Perry	16,927	16,854	73
Pickens	17,985	17,945	40
Pike	17,728	17,728	...
Randolph	11,235	11,235	...
Russell	11,801	11,789	12
St. Clair	17,342	17,342	...
Shelby	22,778	22,778	...
Sumter	22,076	21,874	202
Talladega	10,124	10,124	...
Tallapoosa	27,392	27,392	...
Tuscaloosa	60,927	60,927	...
Walker	13,812	13,812	...
Washington	69,796	69,683	113
Wilcox	40,433	40,183	250
Winston	2,951	2,908	43
Total	1,406,207	1,392,180	14,027

Table 8.--Fuelwood production by county, 1951

County	All species	Softwood	Hardwood
	- - - - -	<u>Standard cords</u>	- - - - -
Autauga	10,668	1,741	8,927
Baldwin	18,574	7,584	10,990
Barbour	17,920	2,924	14,996
Bibb	6,112	1,098	5,014
Blount	19,652	6,921	12,731
Bullock	9,798	1,599	8,199
Butler	17,902	2,921	14,981
Calhoun	32,707	12,207	20,500
Chambers	9,164	1,495	7,669
Cherokee	16,683	6,226	10,457
Chilton	17,126	2,794	14,332
Choctaw	19,223	3,340	15,883
Clarke	24,319	4,226	20,093
Clay	13,239	4,941	8,298
Cleburne	11,955	4,462	7,493
Coffee	17,014	2,776	14,238
Colbert	17,339	4,114	13,225
Conecuh	19,724	3,428	16,296
Coosa	10,813	4,036	6,777
Covington	13,505	5,515	7,990
Crenshaw	15,545	2,536	13,009
Cullman	31,495	11,091	20,404
Dale	11,844	1,933	9,911
Dallas	25,038	4,085	20,953
DeKalb	32,733	7,766	24,967
Elmore	19,814	3,233	16,581
Escambia	11,448	4,675	6,773
Etowah	30,088	11,229	18,859
Fayette	7,282	1,307	5,975
Franklin	15,539	3,687	11,852
Geneva	17,679	2,885	14,794
Greene	9,924	1,888	8,036
Hale	12,175	2,317	9,858
Henry	15,375	2,509	12,866
Houston	20,367	3,323	17,044

Table 8.--Fuelwood production by county, 1951 (continued)

County	All species	Softwood	Hardwood
	- - - - -	<u>Standard cords</u>	- - - - -
Jackson	28,527	6,768	21,759
Jefferson	21,110	7,434	13,676
Lamar	10,019	1,906	8,113
Lauderdale	24,435	5,797	18,638
Lawrence	23,087	5,478	17,609
Lee	14,685	2,396	12,289
Limestone	24,513	5,816	18,697
Lowndes	13,342	2,177	11,165
Macon	18,464	3,013	15,451
Madison	24,436	5,798	18,638
Marengo	24,090	4,186	19,904
Marion	13,263	2,380	10,883
Marshall	27,238	6,463	20,775
Mobile	25,751	10,515	15,236
Monroe	22,931	3,985	18,946
Montgomery	23,127	3,774	19,353
Morgan	23,958	5,684	18,274
Perry	10,450	1,988	8,462
Pickens	12,706	2,418	10,288
Pike	15,263	2,490	12,773
Randolph	16,173	6,036	10,137
Russell	13,547	2,211	11,336
St. Clair	16,478	5,803	10,675
Shelby	18,250	6,427	11,823
Sumter	24,454	4,250	20,204
Talladega	27,648	10,319	17,329
Tallapoosa	18,797	3,067	15,730
Tuscaloosa	14,667	2,633	12,034
Walker	9,048	3,186	5,862
Washington	8,310	3,394	4,916
Wilcox	23,258	4,042	19,216
Winston	11,488	4,046	7,442
Total	1,203,296	294,692	908,604

Table 9.--Pole and piling production by county, 1951

County	All species	Softwood	Hardwood
<u>Thousand pieces</u>			
Autauga	1	1	...
Baldwin	27	27	...
Barbour	...	...	...
Bibb	2	2	...
Blount	...	...	...
Bullock	...	...	...
Butler	23	23	...
Calhoun	1	1	...
Chambers	...	...	...
Cherokee	...	...	...
Chilton	1	1	...
Choctaw	2	2	...
Clarke	96	96	...
Clay	...	...	...
Cleburne	...	...	...
Coffee	...	...	...
Colbert	1	1	...
Conecuh	15	15	...
Coosa	2	2	...
Covington	6	6	...
Crenshaw	2	2	...
Cullman	...	...	...
Dale	...	...	...
Dallas	(1/)	(1/)	...
DeKalb	...	...	...
Elmore	2	2	...
Escambia	28	28	...
Etowah	...	...	...
Fayette	...	...	...
Franklin	...	...	...
Geneva	6	6	...
Greene	...	...	...
Hale	...	...	...
Henry	...	...	...
Houston	...	...	...

Table 9.--Pole and piling production by county, 1951 (continued)

County	All species	Softwood	Hardwood
- - - - - <u>Thousand pieces</u> - - - - -			
Jackson	...	...	...
Jefferson	4	4	...
Lamar	...	...	...
Lauderdale	...	...	...
Lawrence	...	...	...
Lee	...	...	...
Limestone	...	...	...
Lowndes	6	6	...
Macon	...	...	...
Madison	...	...	...
Marengo	11	11	...
Marion	...	...	...
Marshall	6	6	...
Mobile	31	31	...
Monroe	59	59	...
Montgomery	1	1	...
Morgan	...	...	...
Perry	24	24	...
Pickens	1	1	...
Pike	...	...	...
Randolph	...	...	...
Russell	...	...	...
Saint Clair	...	...	...
Shelby	5	5	...
Sumter	27	27	...
Talladega	...	...	...
Tallapoosa	3	3	...
Tuscaloosa	1	1	...
Walker	...	...	...
Washington	68	68	...
Wilcox	13	13	...
Winston	2	2	...
Total	477	477	...

1/ Negligible.

Table 10.--Post production (round and split) by county, 1951

County	All species	Softwood	Hardwood
- - - - - <u>Thousand pieces</u> - - - - -			
Autauga	155	53	102
Baldwin	297	151	146
Barbour	220	64	156
Bibb	117	35	82
Blount	366	137	229
Bullock	147	43	104
Butler	221	64	157
Calhoun	189	71	118
Chambers	191	55	136
Cherokee	218	81	137
Chilton	271	86	185
Choctaw	204	63	141
Clarke	222	69	153
Clay	169	63	106
Cleburne	130	49	81
Coffee	266	77	189
Colbert	164	34	130
Conecuh	218	68	150
Coosa	187	108	79
Covington	306	120	186
Crenshaw	207	60	147
Cullman	599	224	375
Dale	151	44	107
Dallas	348	100	248
DeKalb	545	113	432
Elmore	333	149	184
Escambia	166	61	105
Etowah	288	107	181
Fayette	200	61	139
Franklin	225	47	178
Geneva	213	61	152
Greene	208	63	145
Hale	227	69	158
Henry	180	52	128
Houston	268	77	191

Table 10.--Post production (round and split) by county, 1951 (continued)

County	All species	Softwood	Hardwood
- - - - - Thousand pieces - - - - -			
Jackson	385	80	305
Jefferson	259	97	162
Lamar	206	62	144
Lauderdale	352	73	279
Lawrence	320	66	254
Lee	159	46	113
Limestone	346	72	274
Lowndes	220	72	148
Macon	204	66	138
Madison	388	82	306
Marengo	297	92	205
Marion	289	88	201
Marshall	469	99	370
Mobile	250	125	125
Monroe	242	75	167
Montgomery	239	77	162
Morgan	364	77	287
Perry	244	109	135
Pickens	267	81	186
Pike	229	66	163
Randolph	239	89	150
Russell	145	42	103
St. Clair	153	57	96
Shelby	171	64	107
Sumter	237	74	163
Talladega	242	98	144
Tallapoosa	207	68	139
Tuscaloosa	320	97	223
Walker	336	126	210
Washington	130	48	82
Wilcox	265	82	183
Winston	176	66	110
Total	16,766	5,295	11,471

Table 11.--Hewn tie production by county, 1951

County	All species	Softwood	Hardwood
- - - - - Thousand pieces - - - - -			
Autauga	1	...	1
Baldwin	2	...	2
Barbour	...	...	...
Bibb	1	...	1
Blount	...	...	...
Bullock	7	1	6
Butler	6	1	5
Calhoun	...	...	...
Chambers	...	...	...
Cherokee	...	...	...
Chilton	2	1	1
Choctaw	23	5	18
Clarke	27	6	21
Clay	...	...	...
Cleburne	...	...	...
Coffee	1	...	1
Colbert	...	...	...
Conecuh	2	...	2
Coosa	1	...	1
Covington	9	...	9
Crenshaw	156	17	139
Cullman	...	...	...
Dale	6	...	6
Dallas	4	1	3
DeKalb	...	...	...
Elmore	...	...	...
Escambia	3	...	3
Etowah	...	...	...
Fayette	...	...	...
Franklin	2	...	2
Geneva	2	...	2
Greene	...	...	...
Hale	...	...	...
Henry	...	...	...
Houston	...	...	...

Table 11.--Hewn tie production by county, 1951 (continued)

County	All species	Softwood	Hardwood
- - - - - <u>Thousand pieces</u> - - - - -			
Jackson	1	...	1
Jefferson	1	...	1
Lamar	1	...	1
Lauderdale	1	...	1
Lawrence	...	...	...
Lee	...	...	...
Limestone	...	...	...
Lowndes	1	...	1
Macon	1	...	1
Madison	...	...	...
Marengo	27	4	23
Marion	1	...	1
Marshall	...	...	...
Mobile	...	...	...
Monroe	3	1	2
Montgomery	7	1	6
Morgan	...	...	...
Perry	...	...	...
Pickens	...	...	...
Pike	14	2	12
Randolph	...	...	...
Russell	...	...	...
Saint Clair	1	...	1
Shelby	1	...	1
Sumter	2	1	1
Talladega	...	...	...
Tallapoosa	1	...	1
Tuscaloosa	1	...	1
Walker	1	...	1
Washington	12	4	8
Wilcox	3	...	3
Winston	2	...	2
Total	337	45	292

Table 12.--Round mine timbers production by county, 1951

County	All species	Softwood	Hardwood
	- - - - - Thousand pieces - - - - -		
Baldwin	211	101	110
Bibb	74	36	38
Escambia	15	7	8
Jefferson	2,177	1,045	1,132
Marion	386	185	201
Mobile	323	155	168
Shelby	1	...	1
Tuscaloosa	69	33	36
Walker	438	211	227
Washington	260	125	135
Total	3,954	1,898	2,056

Table 13.--Production of miscellaneous products^{1/} by county, 1951

County	All species	Softwood	Hardwood
- - - - - <u>Thousand cu. ft.</u> - - - - -			
Autauga	30	17	13
Baldwin	72	41	31
Barbour	45	27	18
Bibb	29	8	21
Blount	84	36	48
Bullock	30	18	12
Butler	67	27	40
Calhoun	76	54	22
Chambers	55	23	32
Cherokee	45	21	24
Chilton	55	32	23
Choctaw	166	35	131
Clarke	96	37	59
Clay	42	17	25
Cleburne	44	30	14
Coffee	55	33	22
Colbert	35	6	29
Conecuh	66	36	30
Coosa	33	12	21
Covington	69	53	16
Crenshaw	47	25	22
Cullman	122	58	64
Dale	31	18	13
Dallas	173	43	130
DeKalb	112	20	92
Elmore	53	32	21
Escambia	43	30	13
Etowah	59	28	31
Fayette	61	13	48
Franklin	46	8	38
Geneva	44	26	18
Greene	42	14	28
Hale	47	15	32
Henry	37	22	15
Houston	55	33	22

Table 13.--Production of miscellaneous products^{1/} by county, 1951
(continued)

County	All species	Softwood	Hardwood
	- - - - - Thousand cu. ft. - - - - -		
Jackson	340	14	326
Jefferson	53	25	28
Lamar	51	14	37
Lauderdale	72	13	59
Lawrence	74	12	62
Lee	32	19	13
Limestone	80	13	67
Lowndes	141	26	115
Macon	40	24	16
Madison	119	14	105
Marengo	282	51	231
Marion	85	19	66
Marshall	121	17	104
Mobile	40	36	4
Monroe	50	41	9
Montgomery	118	28	90
Morgan	202	13	189
Perry	58	13	45
Pickens	97	17	80
Pike	47	28	19
Randolph	49	23	26
Russell	29	17	12
Saint Clair	31	15	16
Shelby	35	17	18
Sumter	288	40	248
Talladega	59	34	25
Tallapoosa	48	24	24
Tuscaloosa	65	21	44
Walker	88	33	55
Washington	46	24	22
Wilcox	372	302	70
Winston	36	17	19
Total	5,414	1,952	3,462

^{1/} Includes handle stock, miscellaneous dimension stock, shuttle blocks, excelsior, and miscellaneous domestic products.

Table 14.--Crude gum production by county, 1951

County	Barrels ^{1/}
Baldwin	14,796
Covington	4,233
Escambia	1,665
Geneva	441
Houston	1,958
Mobile	7,179
Monroe	2,460
Washington	26,070
Total	58,802

^{1/} Units of 400 pounds.

Table 15.--Stumpwood removal by county, 1951

County	Tons
Baldwin	14,267
Choctaw	9,623
Clarke	12,082
Conecuh	17,082
Covington	1,300
Escambia	32,954
Mobile	39,291
Monroe	17
Washington	104,746
Total	231,362

Table 16.--Annual cut of sawtimber^{1/} by county, 1951

County	All species	Softwood	Hardwood
Million bd. ft. (International 1/4-inch log rule)			
Autauga	16.4	9.7	6.7
Baldwin	75.5	46.4	29.1
Barbour	47.4	30.7	16.7
Bibb	34.4	25.0	9.4
Blount	30.4	25.7	4.7
Bullock	20.7	11.0	9.7
Butler	76.8	52.7	24.1
Calhoun	15.4	11.0	4.4
Chambers	21.4	14.0	7.4
Cherokee	22.2	13.5	8.7
Chilton	28.8	19.7	9.1
Choctaw	90.3	59.8	30.5
Clarke	149.1	96.6	52.5
Clay	22.2	14.4	7.8
Cleburne	18.6	13.1	5.5
Coffee	29.3	16.8	12.5
Colbert	14.0	7.7	6.3
Conecuh	53.0	39.4	13.6
Coosa	34.5	24.9	9.6
Covington	41.4	27.8	13.6
Crenshaw	65.6	27.0	38.6
Cullman	42.7	34.6	8.1
Dale	22.6	11.1	11.5
Dallas	65.7	34.0	31.7
DeKalb	26.4	17.8	8.6
Elmore	35.1	25.5	9.6
Escambia	43.7	30.6	13.1
Etowah	18.8	12.1	6.7
Fayette	33.1	20.3	12.8
Franklin	24.4	11.9	12.5
Geneva	18.6	10.3	8.3
Greene	24.7	15.5	9.2
Hale	26.8	16.7	10.1
Henry	25.9	11.2	14.7
Houston	22.1	10.9	11.2

Table 16.--Annual cut of sawtimber^{1/} by county, 1951 (continued)

County	All species	Softwood	Hardwood
	Million bd. ft. (International 1/4-inch log rule)		
Jackson	41.6	14.0	27.6
Jefferson	49.8	35.0	14.8
Lamar	24.8	12.0	12.8
Lauderdale	14.6	4.8	9.8
Lawrence	18.9	10.3	8.6
Lee	24.1	16.4	7.7
Limestone	8.7	2.8	5.9
Lowndes	25.5	14.4	11.1
Macon	19.4	11.3	8.1
Madison	13.4	3.3	10.1
Marengo	84.4	43.3	41.1
Marion	25.5	15.3	10.2
Marshall	15.5	9.7	5.8
Mobile	45.4	36.4	9.0
Monroe	90.6	61.3	29.3
Montgomery	37.8	16.0	21.8
Morgan	17.2	8.6	8.6
Perry	31.0	23.9	7.1
Pickens	54.3	25.9	28.4
Pike	36.3	15.8	20.5
Randolph	16.6	11.6	5.0
Russell	19.9	13.5	6.4
St. Clair	24.0	17.7	6.3
Shelby	35.6	25.9	9.7
Sumter	52.7	31.8	20.9
Talladega	21.4	15.2	6.2
Tallapoosa	29.6	20.2	9.4
Tuscaloosa	68.1	37.8	30.3
Walker	41.6	32.2	9.4
Washington	63.0	44.9	18.1
Wilcox	86.0	58.7	27.3
Winston	34.8	23.7	11.1
Total	2,510.1	1,563.1	947.0

^{1/} The board-foot volume of live sawtimber trees removed from commercial forest land during a specified year as timber products and logging residue. Softwood sawtimber trees are at least 9.0 inches in diameter at breast height; hardwoods, 11.0 inches.

Table 17.--Annual cut of growing stock^{1/} by county, 1951

County	All species	Softwood	Hardwood
- - - - - Million cubic feet - - - - -			
Autauga	3.6	2.0	1.6
Baldwin	21.7	15.4	6.3
Barbour	10.5	6.6	3.9
Bibb	8.5	6.3	2.2
Blount	7.0	5.7	1.3
Bullock	5.2	3.0	2.2
Butler	17.6	12.1	5.5
Calhoun	3.8	2.5	1.3
Chambers	6.0	4.2	1.8
Cherokee	4.9	2.8	2.1
Chilton	6.6	4.3	2.3
Choctaw	20.2	13.5	6.7
Clarke	32.6	21.1	11.5
Clay	5.2	3.4	1.8
Cleburne	4.1	2.8	1.3
Coffee	7.5	4.5	3.0
Colbert	3.1	1.5	1.6
Conecuh	11.6	8.4	3.2
Coosa	8.4	6.2	2.2
Covington	9.8	6.7	3.1
Crenshaw	14.4	5.8	8.6
Cullman	9.2	7.0	2.2
Dale	5.4	2.7	2.7
Dallas	15.2	8.0	7.2
DeKalb	6.1	3.7	2.4
Elmore	9.1	6.8	2.3
Escambia	10.2	7.4	2.8
Etowah	4.6	2.8	1.8
Fayette	8.7	5.6	3.1
Franklin	5.3	2.4	2.9
Geneva	4.3	2.3	2.0
Greene	5.6	3.5	2.1
Hale	6.3	4.0	2.3
Henry	5.8	2.6	3.2
Houston	5.1	2.4	2.7

Table 17.--Annual cut of growing stock^{1/} by county, 1951 (continued)

County	All species	Softwood	Hardwood
- - - - - Million cubic feet - - - - -			
Jackson	9.3	2.8	6.5
Jefferson	12.8	8.0	4.8
Lamar	5.6	2.6	3.0
Lauderdale	3.5	1.0	2.5
Lawrence	4.2	2.0	2.2
Lee	6.8	4.9	1.9
Limestone	2.2	.6	1.6
Lowndes	6.5	3.9	2.6
Macon	5.3	3.3	2.0
Madison	3.3	.7	2.6
Marengo	19.7	10.3	9.4
Marion	6.3	3.6	2.7
Marshall	3.9	2.2	1.7
Mobile	13.7	11.4	2.3
Monroe	20.7	14.2	6.5
Montgomery	9.5	4.7	4.8
Morgan	4.0	1.8	2.2
Perry	7.2	5.5	1.7
Pickens	12.2	5.9	6.3
Pike	8.5	3.9	4.6
Randolph	4.1	2.8	1.3
Russell	4.8	3.2	1.6
St. Clair	5.8	4.3	1.5
Shelby	8.4	6.1	2.3
Sumter	12.0	7.2	4.8
Talladega	5.1	3.5	1.6
Tallapoosa	7.5	5.2	2.3
Tuscaloosa	17.0	10.3	6.7
Walker	9.5	7.1	2.4
Washington	16.1	12.2	3.9
Wilcox	19.4	13.4	6.0
Winston	7.2	4.7	2.5
Total	595.3	373.3	222.0

^{1/} The cubic-foot volume of live sawtimber and poletimber trees removed from commercial forest land during a specified year as timber products and logging residue. Poletimber trees are at least 5.0 inches in diameter at breast height.





APRIL 1955

FOREST SURVEY RELEASE 75

FORESTS OF LOUISIANA, 1953-54

HIGHLIGHTS

Louisiana's forest area totals 16 million acres, about the same as in 1934-35.

Acreage in softwood forests is up 2 percent since 1934-35, hardwood acreage is down 4 percent.

Growing stock volume totals 12 billion cubic feet. Softwood volume has increased 11 percent, hardwood has increased 2 percent.

Sawtimber volume is 45 billion board feet. Softwood has risen 12 percent, hardwood has declined 6 percent.

Timber growth is 716 million cubic feet annually, the 1953 cut was 366 million cubic feet.



thern Forest Experiment Station, New Orleans, Louisiana
Forest Service, U. S. Dept. of Agriculture

FOREWORD

The Forest Survey of Louisiana is a part of the national inventory being conducted by the U. S. Forest Service. The purposes of the Survey are (1) to take inventory of the supply of standing timber and other forest products, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies.

The Southern Forest Experiment Station is responsible for the Survey in Louisiana, Alabama, Arkansas, Mississippi, Oklahoma, Tennessee, and Texas. This activity is under the direction of Philip R. Wheeler, chief of the Division of Forest Economics.

Large-scale cooperative assistance made it possible to complete the Louisiana Survey 2-1/2 years sooner than would have been possible with Federal funds alone. Cooperation in the form of manpower, equipment use, cash, or aerial photography was received from the following organizations:

Louisiana Forestry Commission	Crosby Chemicals, Inc.
Gaylord Container Corp.	First National Bank of De Ridder
International Paper Co.	J. A. Bentley Lumber Co.
Brown Paper Mill Co.	Guaranty Bank and Trust Co. of Alexandria
The Crossett Co.	Long-Bell Lumber Co.
Southern Advance Bag and Paper Co.	Hillyer-Deutsch-Edwards, Inc.
A. J. Hodges Industries, Inc.	Rathborne Land and Lumber Co.
Olin-Mathieson Chemical Corp.	Union Producing Co.
Central Louisiana Electric Co.	Louisiana Wildlife and Fisheries Commission
Louisiana Power and Light Co.	General Air Transport, Inc.
American Creosote Works, Inc.	United States Coast Guard
Frank W. Bennett and Associates	United States Air Force

The very material aid of these organizations, and of the individuals in them, is gratefully acknowledged.

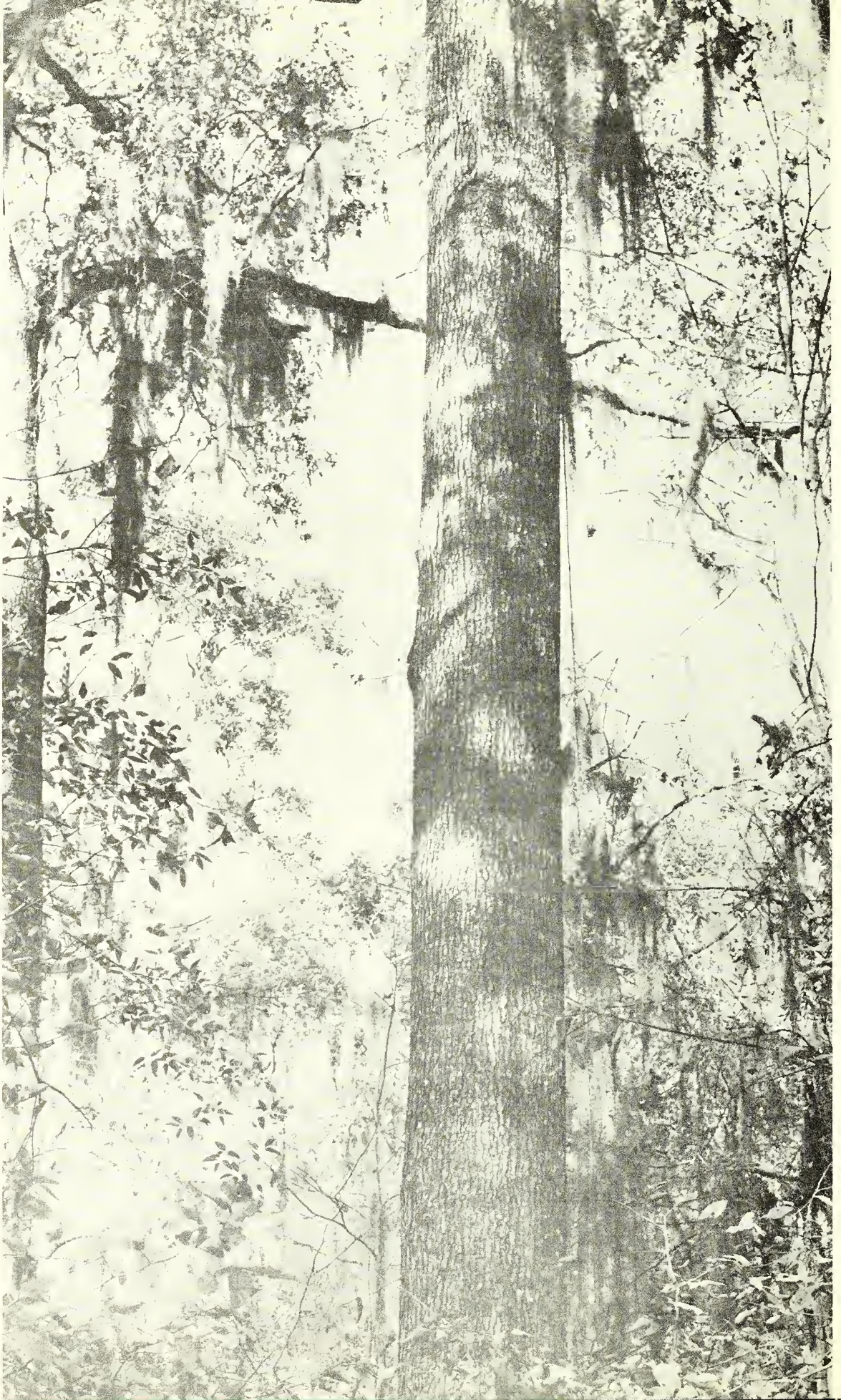
PHILIP A. BRIEGLEB, Director
Southern Forest Experiment Station

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Louisiana
has
more
hardwood
sawtimber
than
any
other
State.

(Photo
by
Elemore
Morgan)



FORESTS OF LOUISIANA, 1953 - 54

This report is the product of the new Forest Survey of Louisiana, made in 1953 and 1954. It shows the current status of the timber resource and discusses the changes that have occurred since the first Forest Survey of 1934-35. It briefly defines the forest problems that remain and the steps needed to achieve timber abundance.

The 18 to 20 years that elapsed between the two Surveys were eventful for Louisiana forestry. A vast body of fast-growing young timber replaced the virgin stands, most of which had already been cut over by the mid-thirties. Many large sawmills shut down and portable mills--which can operate in timber of smaller size--became more numerous. Pulpwood production almost doubled as Louisiana joined other southern states in a tremendous enlargement of the pulp and paper industry. Today, Louisiana's eight pulp mills consume more pine annually than do her several hundred sawmills.

What impact have these changes had upon the forest resource? The new Survey shows that Louisiana's timber, both pine and hardwood, is now growing almost twice as fast as it is being cut. Though large sawtimber trees are fewer in number, the total sawtimber supply, as well as the total growing stock, is greater now than 20 years ago. In fact, volume on the average forest acre in Louisiana is substantially more than in any other mid-South state that has been resurveyed.

To a considerable extent, the increase in Louisiana's supply of standing timber during the interval between Surveys reflects the inherent productivity of the forest in a region with favorable growing conditions. But it is also an indication of the increasing number of landowners who recognize that timber is a profitable crop and who are putting their forests under better management.



Figure 1.--Forest Survey regions in Louisiana.

THE FOREST RESOURCE

Forest Acreage

Forest acreage about same as in 1934-35.--Louisiana is 56 percent forested. Commercial forest area 1/ totals 16 million acres, virtually the same as in 1934-35. Reversion to forest of abandoned upland farms, where cotton has proved too hard a taskmaster, has been balanced by extensive land clearing on the fertile bottomlands--primarily in the Delta but also along major streams elsewhere in the State.

Much of Louisiana's cotton crop is now raised on the rich alluvial soils of the North Delta (fig. 1). Although clearing and draining the land has reduced the forested area by 11 percent during the past two decades, the North Delta remains 61 percent forested.

The South Delta is the least forested--only 29 percent, or 6 percent less than in 1935. A natural prairie extends through the western part of the region; in this prairie the only forest lands are in belts bordering the streams. Moreover, the entire coastal strip is a marshy, low-lying area up to 30 or more miles wide.

In the Northwest, center of Louisiana's pulp industry, forests cover 70 percent of the land. Here, reversion of abandoned farmland to forest increased woodland acreage 14 percent since 1935.

Southwest and Southeast Louisiana, locally known as the Piney Woods, have a greater proportion of their areas in forests than the other regions--72 percent each. Forest-area changes in both of these regions during the past 19 years were in the nature of small reductions.

Ninety-five percent of the commercial forest acreage is privately held. The bulk of the public ownership is in the Kisatchie National Forest in central Louisiana.

Softwood acreage up 2 percent; hardwood down 4 percent.--The forests of Louisiana fall into two broad categories. Hardwood forests are found principally on the alluvial flood plains; softwood forests

1/ Technical terms are defined on pages 55-60.

occupy most of the uplands. Though area in softwood types has increased somewhat, hardwood types still occupy slightly more than half of the forest land.

Forests of loblolly-shortleaf pine, the principal softwood type, cover 4 million acres. The longleaf-slash pine type, which characterizes the lower Coastal Plain, occupies 2 million acres. On an additional 1.8 million acres, southern pines are heavily mixed with hardwood--oak, gum, hickory, and others.

In the Delta region and in belts of varying width along waterways throughout the State, bottomland hardwoods (oak-gum-cypress and elm-ash-cottonwood) make up 6.6 million acres. Oak-hickory forests dominate 1.6 million acres in the uplands (fig. 2).

Within the past 20 years there has been some shift of acreages in the major types (table 1). For the whole of Louisiana the area in softwood types (both pine and pine-hardwood) increased nearly 170 thousand acres. This is a net gain of 2 percent--i.e., conversion of pine areas to hardwood as a result of heavy pine cutting in oak-pine mixtures was overbalanced by reversion of abandoned fields to pine forests.

Table 1. --Commercial forest land by forest-type group (1953-54) and change between Surveys

Region	All types	Change	Softwood ^{1/}	Change	Oak-hickory	Change	Bottom-land hardwood ^{2/}	Change
	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>	<u>Thd. acres</u>	<u>Per-cent</u>
North Delta	2,171.3	-11	168.3	+11	70.2	+78	1,932.8	-14
South Delta	2,819.6	-6	97.7	+29	70.8	+55	2,651.1	-8
Northwest	4,169.8	+14	2,785.4	+18	656.2	+50	728.2	-15
Southwest	4,874.5	-2	3,525.3	-4	576.1	+85	773.1	-24
Southeast	2,002.8	-4	1,257.3	-12	228.6	+116	516.9	-8
Total	16,038.0	-1	7,834.0	+2	1,601.9	+71	6,602.1	-13

^{1/} Includes loblolly-shortleaf pine, longleaf-slash pine, and oak-pine types.

^{2/} Includes oak-gum-cypress and elm-ash-cottonwood types.

The area of Louisiana's hardwood forests receded. As has just been noted, there was some expansion of hardwood forests in the uplands. But this increase was overshadowed by extensive clearing of

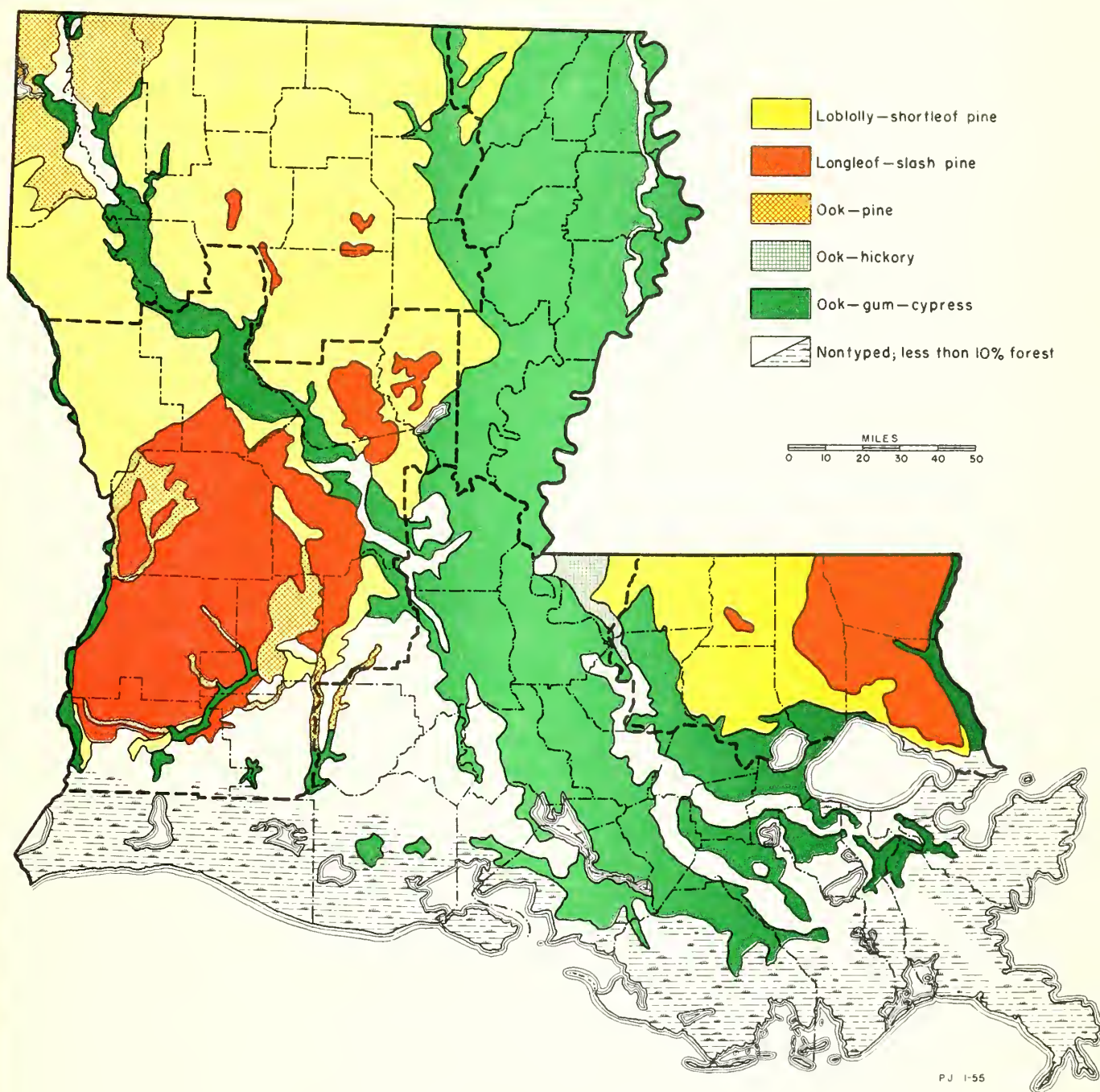


Figure 2 --Major forest types in Louisiana.

hardwood lands in the bottoms. The net result of these changes is that the acreage of all hardwood types has dropped almost 4 percent since 1934-35.

Almost half the stands are sawtimber size.--Sawtimber stands--areas with a net volume of at least 1,500 board feet per acre, International 1/4-inch rule--make up 46 percent of Louisiana's commercial forest acreage. This is a greater proportion of sawtimber area than has been found in other mid-South states that have been reinventoried by the Southern Forest Survey.

Some two-fifths of the softwood acreage and half the hardwood is in sawtimber stands (fig. 3). Most of the remaining acreage is in poletimber.

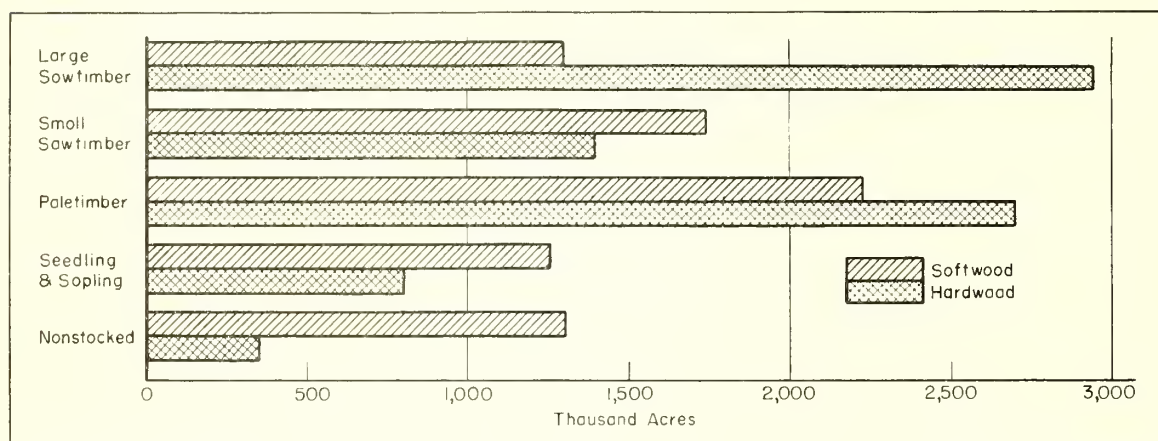


Figure 3. --Forest area by stand size and forest-type group, 1953-54.

Half the forest well stocked.--Tree stocking, as measured by the Survey, reflects the extent to which growing space is effectively utilized by sound, well formed trees of commercial species.

Fifty percent of the forest land is well stocked in the sense that it contains at least 70 percent of the number of good trees (including established seedlings) required for full stocking (fig. 4). Twenty-seven percent is medium stocked--40 to 69 percent of full stocking. Fourteen percent is poorly (10 to 39 percent) stocked, and 9 percent is non-stocked.

The loblolly-shortleaf pine type is the best stocked; longleaf-slash pine the poorest--it includes more than one million acres of cut-over land, mainly in the Southwest.

Fuller use of available growing space in Louisiana's forests is impeded by an accumulation of culls--trees too rotten or limby to be merchantable. About one-fourth of the basal area of all live trees 5 inches d.b.h. and larger is in culls. Although the Northwest has the smallest proportion of cull basal area, the cull element in none of the Survey regions deviates markedly from the State average.

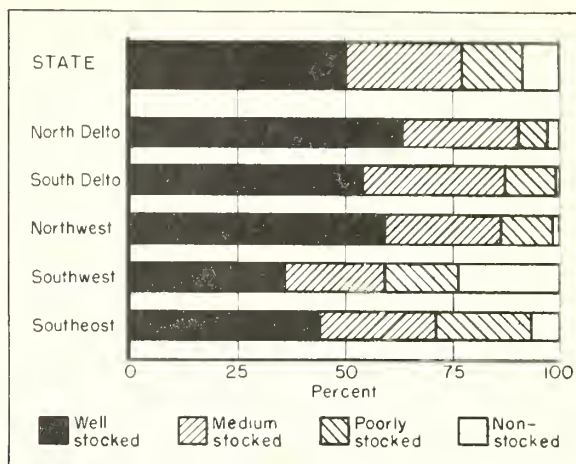


Figure 4.--Degree of stocking by region, 1953-54.

Timber Volume

Softwood growing stock increases 11 percent.--Louisiana's present stock of softwood timber totals 4.3 billion cubic feet--11 percent more than in 1934-35 (table 2). Part of this increase is attributable to better public fire protection in the pine belt, which reduced tree mortality, especially in the smaller sizes. The growing up to merchantable size of extensive forest plantations and of volunteer pine stands on abandoned farmlands played a part too. Finally, many of the large and a few of the small landowners began to harvest their timber conservatively and to supplement public fire protection with private measures.

Examination of the marked change in numbers of trees by diameter classes helps reveal the significance of the softwood volume increase (fig. 5). These changes only show the overall shifts that have occurred between Surveys--i.e., the net result of accretion of growing stock on some properties and of depletion on others.

Table 2.--Growing stock volume (1953-54) and change between Surveys

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million cu. ft.	Percent	Million cu. ft.	Percent
North Delta	108.8	- 7	1,702.1	-22
South Delta	439.2	+35	2,466.1	+24
Northwest	1,596.1	+ 6	1,524.0	+ 6
Southwest	1,400.2	+13	1,511.8	+12
Southeast	764.5	+ 8	601.6	- 8
Total	4,308.8	+11	7,805.6	+ 2

Large increases in 2- to 6-inch softwoods in Northwest Louisiana indicate that a bigger pulpwood supply is imminent there; part of the gain in numbers of small softwoods is, of course, associated with the 18-percent regional increase in softwood acreage between Surveys.

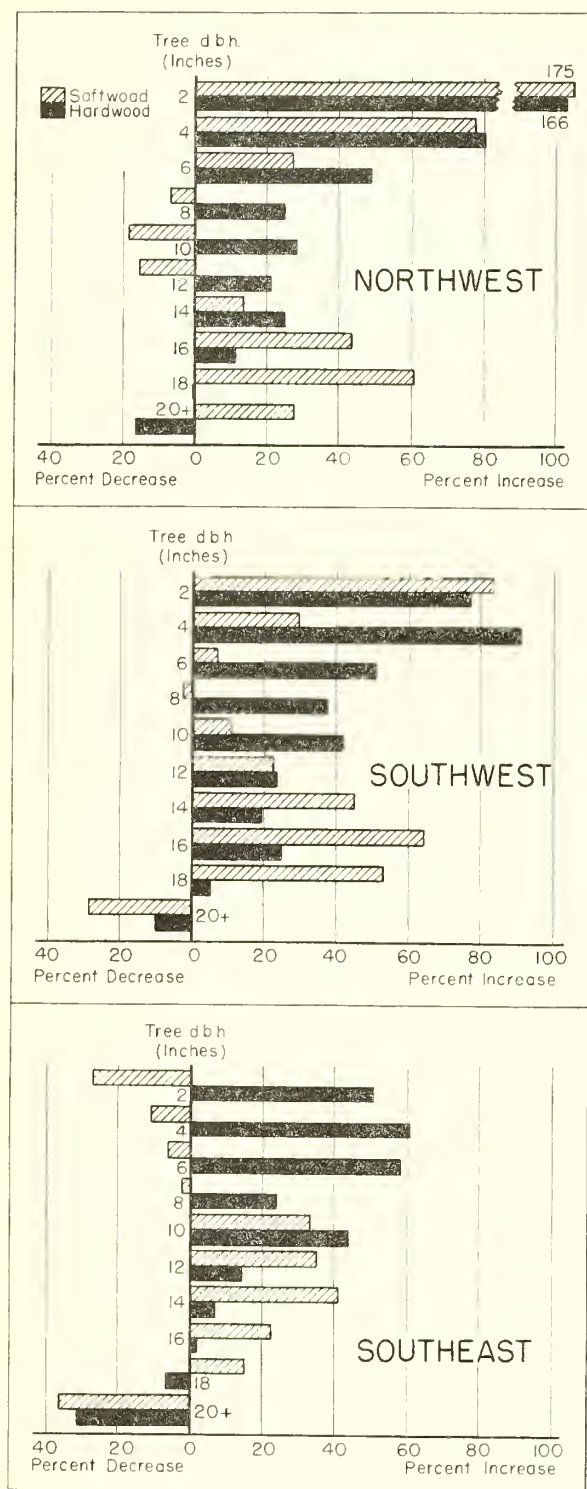


Figure 5. --Change in number of live trees between Surveys, up-land regions.

Heavy cutting in sizes suitable for pulping has reduced softwood numbers in the 8- to 12-inch classes. Diameters above 12 inches have increased in number; a major portion of this timber is found on the big industrial holdings that are building up their softwood growing stock.

Southwest Louisiana had been heavily cut over just previous to the initial Survey; present stand tables indicate considerable improvement over conditions 19 years ago. Here again small softwoods have increased in number, with promise of early pulpwood volume. Most of the gains in 10- to 18-inch trees were concentrated on the better loblolly pine lands in the northern part of the region. Only 20-inch and larger softwoods show a big decline. Many landowners are cutting this large timber to sustain production while they are building up volume in the small and middle diameters.

In the Florida Parishes of Southeast Louisiana, considerable acreage is under management. At the time of the first Survey much of the softwood in this area was in young timber. By 1953, many of the small trees had grown up to swell the ranks of the 10- to 18-inch classes. And the fewer small trees characteristic of stands under management is reflected in the drop-off of sizes below 10 inches.

Hardwood growing stock increases slightly. --Hardwood

growing stock in Louisiana's forests amounts to 7.8 billion cubic feet (fig. 6). This is about 2 percent more than at the time of the initial Survey. Seven-tenths of the State's present hardwood volume occurs on bottomland sites, where desirable hardwood species generally prevail.

In the North Delta the extensive land clearing between Surveys has accentuated declines in hardwood sawtimber trees (fig. 7). But in the South Delta, where forest acreage reductions were smaller, the number of hardwoods in all diameter classes increased substantially--more than 25 percent in most sawtimber sizes. Though logging chances are not easy in the South Delta, the region

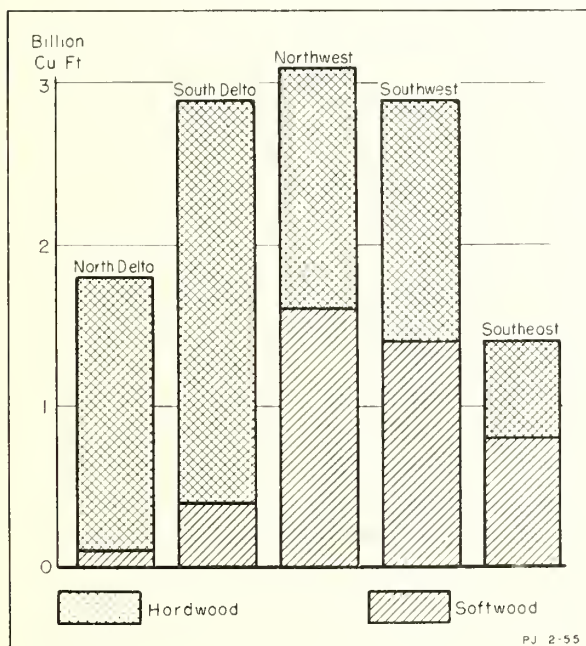


Figure 6.--Growing stock by region, 1953-54.

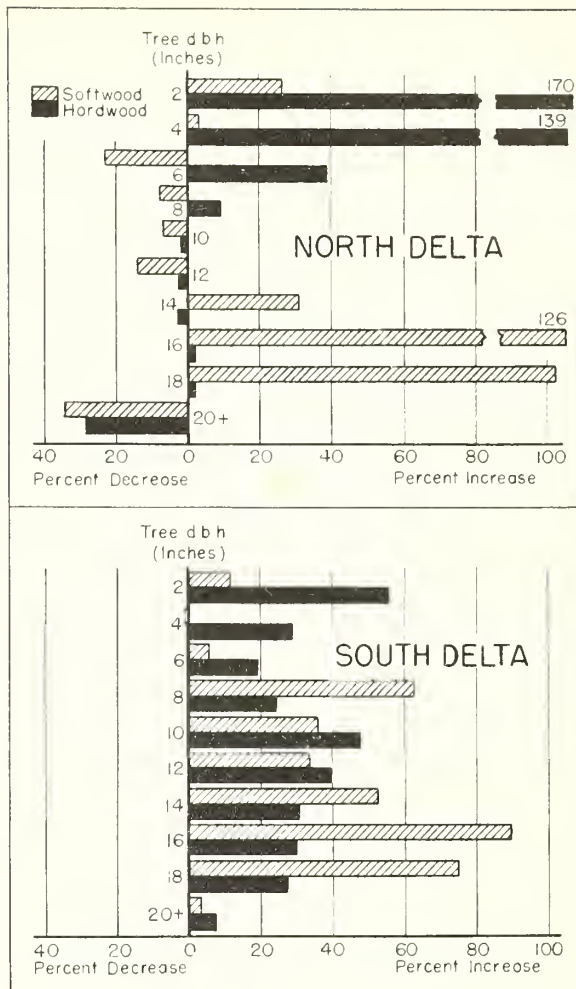


Figure 7.--Change in number of live trees between Surveys, Delta regions.

offers a considerable source of pulpwood: over half the region's hardwood volume is in cottonwood, willow, gums, and other soft-textured species.

In Southeast Louisiana, three-fifths of the hardwood volume is in bottomland stands along the Pearl River, the Mississippi River, and elsewhere. As in the South Delta, much of the South-

east's increase in number of hardwoods has no doubt taken place on hardwood sites. In the uplands, on the other hand, extensive tree-girdling programs on industrial holdings have helped check hardwood increases on areas best suited to pine management. But on many small holdings in the Southeast, removal of cull and low-value upland hardwoods still is a sizeable problem.

Changes in hardwood numbers are somewhat similar in the Northwest and Southwest regions. Improved fire protection in these pine regions has contributed to a build-up in 2- and 4-inch hardwoods; hardwoods in the middle diameters have increased too. Much of the hardwood in these regions occurs on pine sites, and its removal appears to be a big job.

Softwood sawtimber volume up 12 percent; hardwood down 6 percent.--Louisiana's supply of standing sawtimber totals 45.4 billion board feet, of which 20.3 billion is softwood (fig. 8).

Loblolly pine, comprising 27 percent of the sawtimber volume, is the leading softwood species (fig. 9). Other southern pines--chiefly shortleaf--follow with 12 percent. Cypress and other softwoods make up 6 percent. Among hardwoods, red and white oaks lead with 17 percent of the total sawtimber volume. Sweet-, black-, and tupelo gum add up to 16 percent; pecan to 5 percent; and all other hardwoods to 17 percent.

Between Surveys, softwood sawtimber volume climbed 2.2 billion board feet, a 12-percent increase (table 3). Improvement was widespread over the State; in the upland regions, where southern pine predominates, increases ranged from 8 percent in the Southeast to 14 percent in the Southwest.

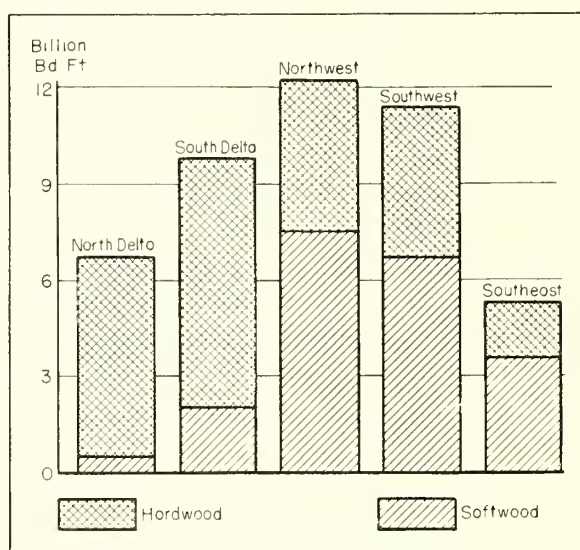


Figure 8.--Sawtimber volume by region, 1953-54.

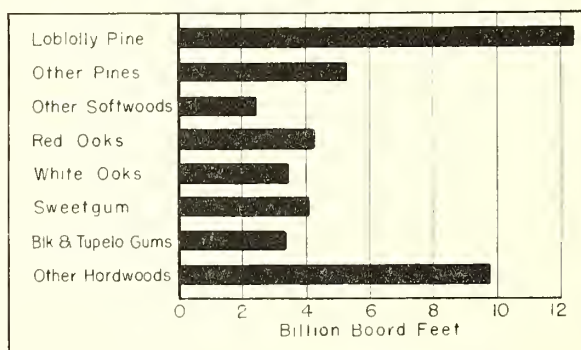


Figure 9.--Sawtimber volume by species, 1953-54.

Hardwood sawtimber volume has dropped 6 percent since the initial Survey. This decline resulted partly from considerable land clearing in the bottomlands and partly from heavy logging of big trees. Despite the Statewide decline, hardwood sawtimber registered a 21-percent increase in the South Delta.

As table 4 indicates, there have been a few important changes in the proportion of total hardwood sawtimber volume by major species groups between Surveys. Among white oaks there has been a significant drop in relative amount. The "other firm-textured" category, which includes ash, elm, hackberry, and many lesser species, has notably increased.

Average sawtimber volume per acre has risen noticeably. The Statewide average is now more than 2,830 board feet per acre ^{2/}; at the time of the first Survey it was 2,775 board feet. Pine types now average 2,755 board feet; oak-gum-cypress, 3,174 board feet; and oak-hickory, 1,984 board feet. For sawtimber stands alone, volume averages 5,246 board feet per acre.

Big-tree quality good. -- Timber quality is partly a function of tree size; the proportion of good-quality logs--grades 1 and 2--mounts rapidly with increasing tree diameter (table 5). In hardwoods 20 inches d.b.h. and larger, over half the volume is in good-quality logs; in 14- to 18-inch trees, about one-quarter. But in the 12-inch class virtually

Table 3. --Sawtimber volume (1953-54) and change between Surveys

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million bd. ft.	Percent	Million bd. ft.	Percent
North Delta	564.5	- 7	6,159.8	-28
South Delta	1,973.5	+21	7,791.9	+21
Northwest	7,520.1	+ 9	4,745.9	- 3
Southwest	6,679.1	+14	4,706.4	+ 2
Southeast	3,561.9	+ 8	1,696.5	-24
Total	20,299.1	+12	25,100.5	- 6

Table 4. --Distribution of hardwood sawtimber volume by species, 1934-35 and 1953-54

Species group	1934-35	1953-54
	- - Percent - -	
Sweetgum	16.2	16.2
Black and tupelo gums	14.5	13.5
Other soft-textured hardwoods	10.2	9.8
Red oaks	17.1	17.0
White oaks	16.3	14.1
Pecan and hickory	10.7	11.2
Other firm-textured hardwoods	15.0	18.2
	100.0	100.0

^{2/} Comparable resurvey volumes for neighboring States are: Arkansas, 1,903 board feet; Alabama, 1,841 board feet; and Mississippi, 1,776 board feet per acre.

Table 5. --Sawtimber volume by log grade and tree diameter,
1953-54

Species group and d. b. h. class (inches)	All grades	Grade 1	Grade 2	Other grades
- - - Million board feet - - -				
Softwood:				
10 to 12	6,695.0	1.1	156.7	6,537.2
14 to 18	10,292.3	6.4	2,157.3	8,128.6
20 and up	3,311.8	424.3	771.6	2,115.9
Total	20,299.1	431.8	3,085.6	16,781.7
Hardwood:				
12	3,660.8	...	30.2	3,630.6
14 to 18	12,416.7	385.7	2,524.9	9,506.1
20 and up	9,023.0	2,555.9	2,245.1	4,222.0
Total	25,100.5	2,941.6	4,800.2	17,358.7
All classes	45,399.6	3,373.4	7,885.8	34,140.4

all the volume is in low-grade logs--small factory lumber logs, or logs that would yield chiefly crossties and construction lumber.

As for softwoods, grade 1 and 2 logs comprise 36 percent of the sawtimber volume in trees 20 inches d.b.h. and larger; 21 percent of the volume in 14- to 18-inch trees; and 2 percent in 10- and 12-inch trees.

Of the total sawtimber volume, three-tenths of the hardwood and one-sixth of the softwood is in grades 1 and 2. The low grade of much of Louisiana's timber is due to the prevailing small size of second-growth sawtimber trees. These trees, from which the harvests of the future must come, will improve in quality as they grow larger.

Timber Growth and Cut

Net annual growth 716 million cubic feet; sawtimber growth 2.8 billion board feet. --Louisiana's forests are growing 716 million cubic feet annually in growing-stock trees, including 2.8 billion board feet of sawtimber. Nearly nine-tenths of the softwood growth and three-fourths of the hardwood growth is on sawtimber trees.

Partly because of the liquidation of the slow-growing virgin timber, the current growth rate is about a third higher than when the first Survey was made. Annual net growth on growing stock now averages 5.9 percent, or 45 cubic feet per acre. It varies from 36 cubic feet in the Southwest to 57 cubic feet in the South Delta. In softwood types growth is slightly higher than in hardwood types: 46 cubic feet as compared to 43.

Annual net growth of sawtimber averages 175 board feet per acre for all stand sizes. In sawtimber stands, growth per acre averages 367 board feet in softwood types, 220 board feet in hardwood types. Regionwide, growth in sawtimber stands ranges from 180 board feet per acre in the North Delta to 372 board feet in the Southeast.

Total timber cut 366 million cubic feet; sawtimber cut 1.4 billion board feet. --Louisiana's timber is growing faster than it is being cut; annual net growth of both sawtimber and growing stock is almost double the 1953 harvest.

Timber cutting removed 366 million cubic feet from Louisiana's growing stock in 1953. Sawlogs and pulpwood together made up more than three-fourths of this volume; fuelwood, hardwood veneer logs, and pine poles and piling provided most of the remainder (fig. 10). Slightly over half the cubic footage cut was hardwood.

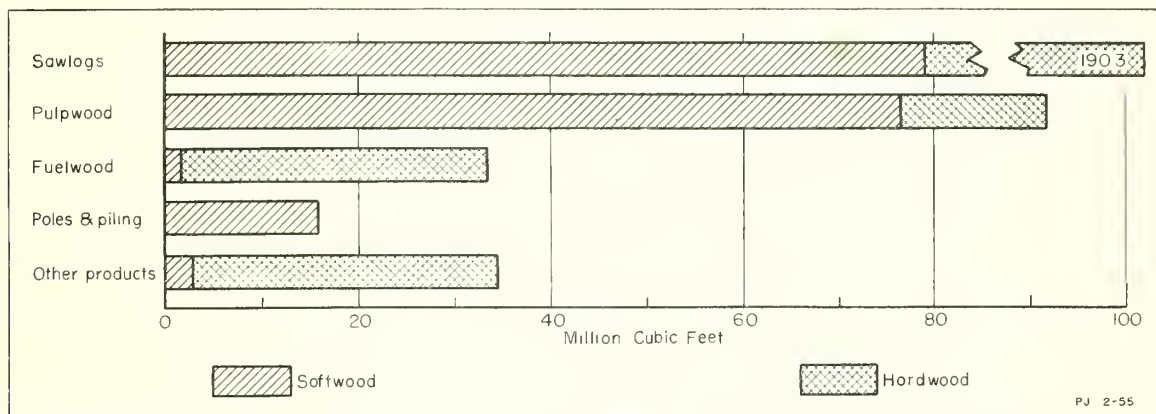
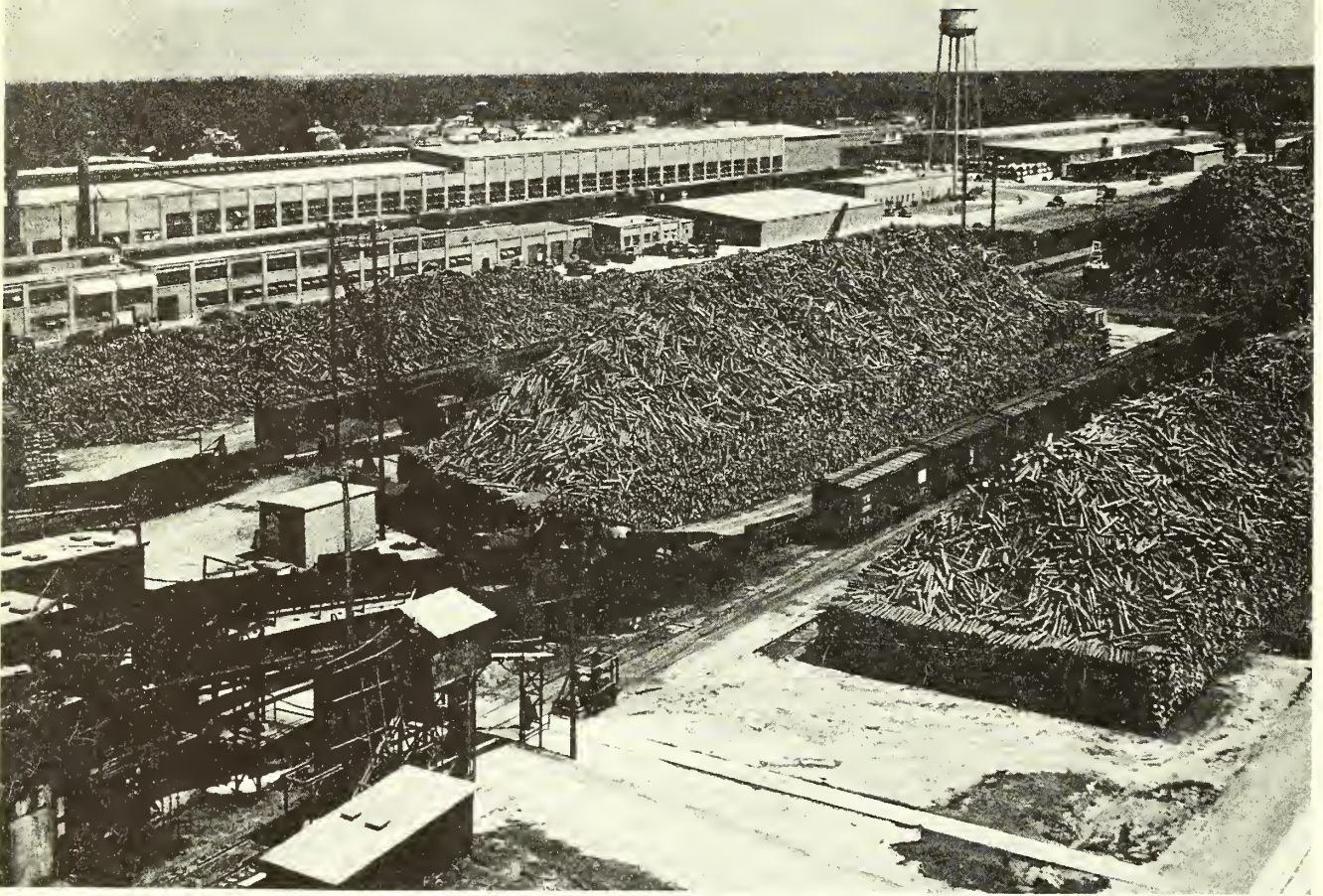


Figure 10. --Annual cut of growing stock, 1953.

Current timber growth and cut cannot be exactly compared with estimates from the first Survey. But analysis of available data, with due allowance for differing standards, provides a rough measure of what has been happening to Louisiana's timber supply. In 1937 the Survey estimated that the sawtimber cut exceeded the growth; this was the peak year of lumber production in Louisiana for the post-depression period. As the State's remaining old-growth was cut, many large sawmills ceased operating and lumber production declined. The increase in second-growth acreage under management also tended to depress timber output; numerous industrial landowners began to adopt the practice of cutting less than growth in order to improve stocking. Sometime between surveys, apparently in the mid-1940's, the cut gradually dropped below growth and Louisiana's timber supply began to build up.



Louisiana's eight pulp mills use more pine annually than do her several hundred sawmills. (Photo by Elemore Morgan)

FOREST INDUSTRY

Forest industry is a mainstay of Louisiana's economy. In 1953, the industry accounted for about 26 percent of all employees in manufacturing industries and for about 20 percent, or some \$235 million, of the total value added by manufacture.

Louisiana's output of forest products feeds some 530 primary wood-using establishments distributed across the State--sawmills, pulp mills, veneer plants, cooperage plants, and others. In addition, 27 plants treat wood products with chemical preservatives. There is also considerable use of wood on farms for fuel, posts, and miscellaneous timbers (table 6).

Over half of logs cut for lumber are hardwood.--At least four-fifths of Louisiana's lumber output is from mills cutting more than 3 million board feet annually. About 18 of these mills manufacture more than 10 million each (fig. 11).

In 1953, production of logs for lumber (including sawn cross-ties) from Louisiana's forests amounted to 957 million board feet. Hardwood totaled 524 million, softwood 433 million. Oak and gum made up seven-tenths of the hardwood. Most of the softwood was southern pine, but some cypress was cut too.

1953 was the first year that the hardwood lumber cut exceeded the softwood cut (fig. 12). However, the proportion of hardwood has been gradually increasing. Since 1944 it has averaged about 45 percent of the State's lumber output.

Pulpwood cut hits new high.--The most notable trend in Louisiana's forest industry in recent years has been the big increase in pulpwood production--chiefly pine for sulfate pulp. In 1937 pulpwood accounted for 17 percent of the State's total softwood output; in 1953 it

Table 6.--Distribution of timber output by round or split product, 1953

Product	All species	Softwood	Hardwood
	- - - Percent - - -		
Sawlogs	43	40	46
Pulpwood	30	50	9
Veneer	3	...	6
Cooperage	(1/)	...	(1/)
Fuelwood	16	1	33
Poles and piling	4	8	(1/)
Posts	1	1	1
All other	3	(1/)	5
Total	100	100	100

1/ Negligible.



Figure 11.--Location of primary wood-using plants in Louisiana,1953.

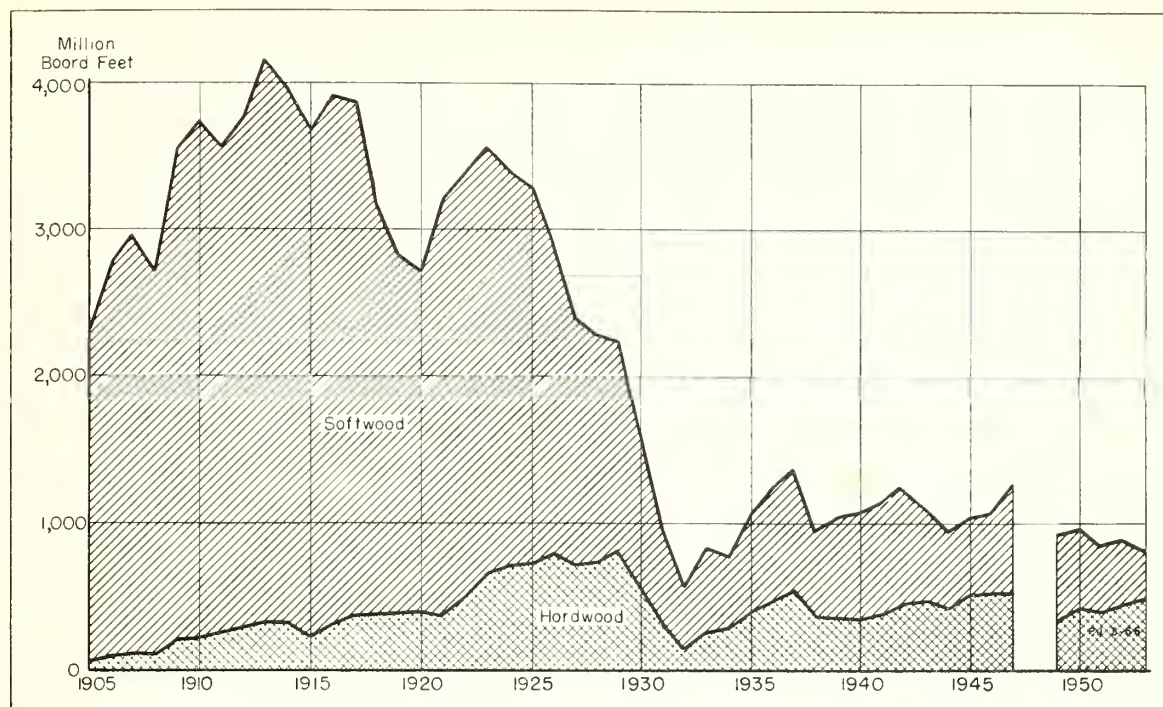


Figure 12. --Lumber production in Louisiana, 1905-53.

made up 50 percent. Pulpwood comprised 62 percent of the Northwest's softwood output in 1953; 40 percent in the Southwest; and 47 percent in the Southeast.

In 1953, for the third straight year, pulpwood output in the State topped one million cords (fig. 13).

Use of mechanical log barkers and slab chippers for converting sawmill residues to pulp chips is likely to modify somewhat the future pulpwood-procurement pattern. Louisiana's supply of softwood sawmill residues suitable for pulping is estimated at 150 to 200 thousand cords annually. At least five Louisiana sawmills have recently installed equipment for producing bark-free pulp chips, and more installations seem certain in the near future.

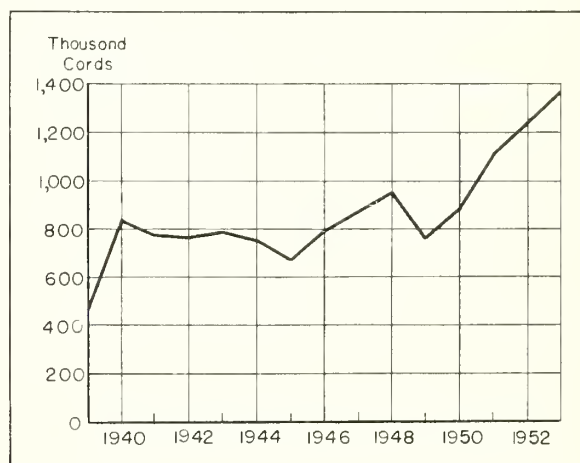


Figure 13. --Pulpwood production in Louisiana, 1939-53.

Veneer production climbs. --Louisiana veneer plants turn out chiefly package veneer, for wire-bound crates and the like. The plants are located with reference to available supplies of soft-textured hardwoods, particularly the gums. The total number of Louisiana's veneer plants in 1953 was the same as reported by the Forest Survey in 1937--15 mills--but veneer log output increased 36 percent.

Louisiana's forests supplied 68 million board feet of veneer logs during 1953, nearly 3 percent of the total timber production. All the veneer was hardwood; three-fifths was sweet-, black-, and tupelo gum.

Cooperage output declines. --The keen competition facing the cooperage industry from other forms of containers is partially reflected in the decline of cooperage production. The 1953 output of cooperage logs and bolts was 90 percent less than in 1937. Active plants also declined in number--from 33 to 7. Most cooperage outfits are in the Delta, where hardwoods of suitable quality are available.

Cooperage logs and bolts cut in Louisiana totaled 5.5 million board feet in 1953. Tight cooperage, largely white oak, made up 56 percent of the production. Sweetgum provided nine-tenths of the slack cooperage.

Fuelwood a major product. --Wood for fuel is still a major product in terms of volume, but its use has been decreasing. The 761 thousand cords cut in 1953 accounted for 16 percent of Louisiana's total output of timber. In 1937, the Forest Survey estimated fuelwood production at 2.4 million cords, or 34 percent of the timber output.

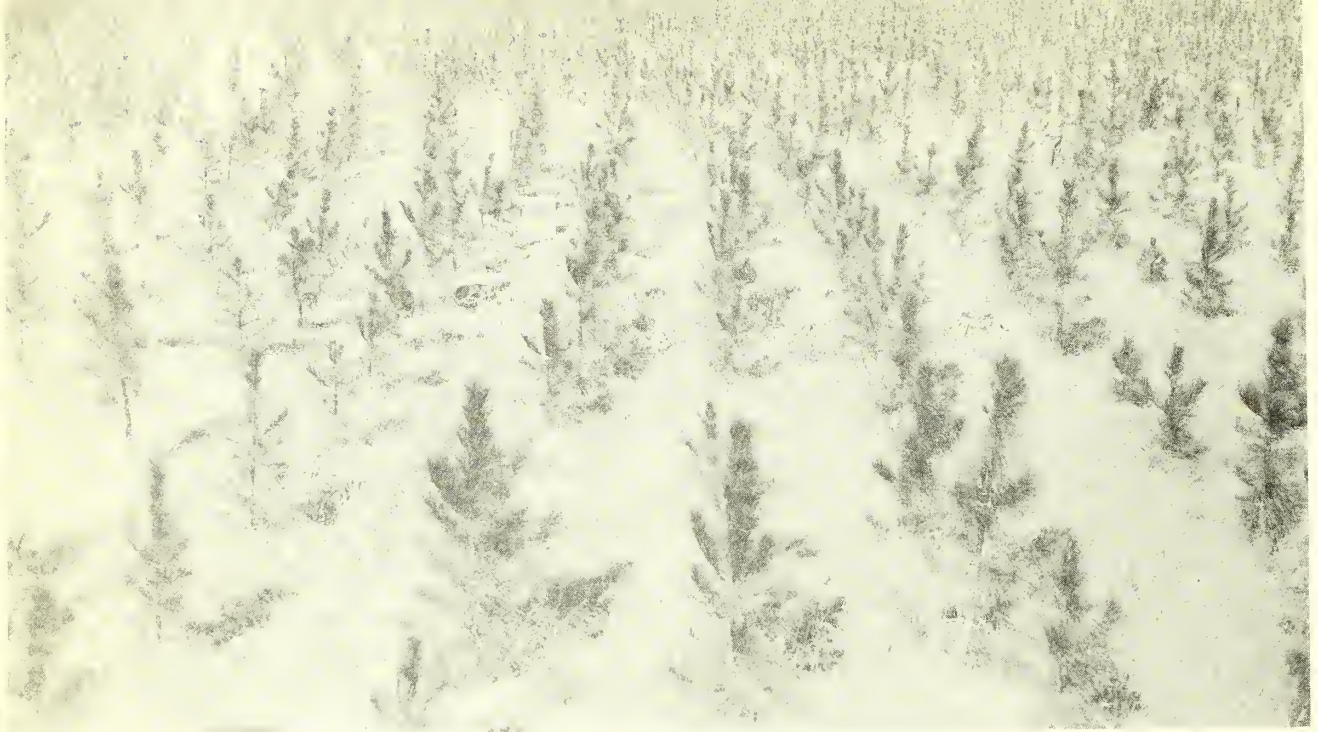
All other products cut in 1953 furnished only 8 percent of Louisiana's timber output. Of these, pine poles and piling were the leading items.

Resinous stumpwood use increases. --Removal of resinous stumpwood of old-growth longleaf and slash pines for wood naval stores totaled 411 thousand tons in 1953; nearly 10 thousand tons of old-growth topwood were also used. In 1937 stumpwood removal was estimated at 90 thousand tons plus 19 thousand tons of topwood. Wood naval stores plants increased during this period from 3 to 7.

Most of the stumpwood pulled in Louisiana is used within the State, but Mississippi firms also draw some tonnage.

Louisiana's supply of resinous stumpwood is estimated by the Forest Survey at 5.1 million tons, assuming "push-dozer" removal. At the time of the initial Survey, tonnage was roughly 7.5 million, on a "blasting" basis.

Three-fourths of the total stumpwood supply, some 3.8 million tons, is estimated to be presently available. Removal of the remaining tonnage, classified as potential, would damage growing timber if done at present.



Planted pines--

Yield pulpwood in two decades.



Photo by
Gaylord Container Corporation

LOUISIANA'S FORESTS AND THE FUTURE

The strides made by forestry in Louisiana during the past two decades are mirrored in the findings of the Forest Survey. The current trend toward increased stocking and timber growth is the best indication that the resource can be improved. But the Survey also shows that the job has just begun; the upward trend must continue if Louisiana is to realize the full potential output of its forest lands.

Much of the improvement has occurred in localities with considerable acreage in large holdings--a development influenced by such pioneers in industrial forestry as the Urania Lumber Company and the Great Southern Lumber Company, now Gaylord Container Corporation. A case in point is the Northwest region. In a 7-parish area in the eastern portion of this region, where 40 percent of the forest land is in large holdings, pine growing stock increased 26 percent in the 19 years between Surveys (fig. 14). But in the rest of the Northwest farm woodlands and other small holdings predominate--here pine growing stock dropped 35 percent.

As figure 14 shows, somewhat comparable increases and decreases are to be noted in the other upland regions. These changes also seem to be associated with size of ownership and interest displayed in improved forest management. They are of course modified by variations in prevailing forest types and degree of stocking, frequency and severity of fire, and, in some parishes, presence at the time of the first Survey of large sawmills still liquidating original-growth timber.

In the Delta, which includes some of the inherently most productive hardwood sites in the South, very little of the forest has been placed under management. At the time of the first Survey the

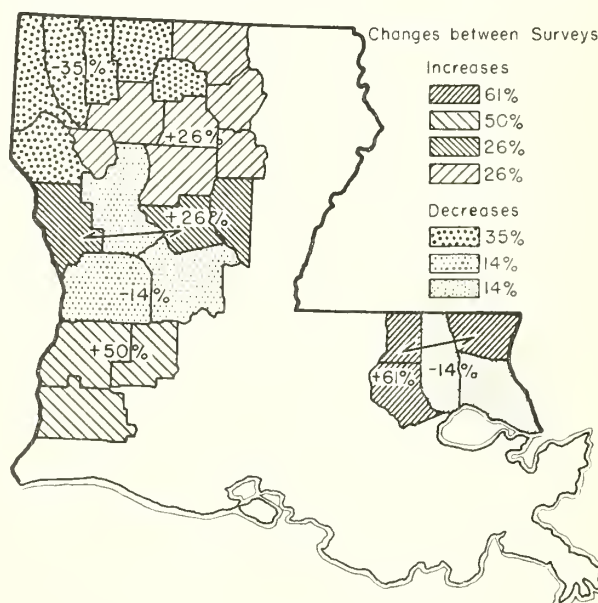


Figure 14.--Pine growing-stock changes between Surveys, by parish groups.

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Photo
by
Elemore
(Morgan)



Delta forests still had a considerable amount of old-growth hardwood. The better part of this remaining old-growth has since been harvested. At present, the heaviest timber stocking is in the belt of parishes--from Madison to St. Charles--that flank the Mississippi River.

In brief, Louisiana's main forest problems are to further build up the stocking of pine timber and to get more of the Delta hardwoods under management. The most necessary measures are (1) to intensify protection from wildfire, (2) to plant the idle acreage in the uplands, (3) to remove the tremendous number of cull hardwoods, and (4) to improve the character of management on small ownerships.

Wildfire still a serious problem. --Louisiana has made outstanding progress in developing an effective fire protection system. The area under organized State protection has gradually been extended to more than 11 million acres and now includes all pine lands. Many of the larger owners have heavily supplemented this public system with measures of their own.

Though fire-protection progress has been substantial, wildfire is still a serious problem. Some 3 million acres, largely North Delta hardwood lands, are without organized public protection. However, landowner interest in the North Delta is increasing and organized protection of this area may soon be feasible. Louisiana has an additional one million forest acres that are not considered to need public protection; these are in the South Delta where the water table is prevailingly high and settlement is sparse.

In areas already under organized protection, there is need for further strengthening of fire fighting forces in order to cope with periods of above-average fire hazard.

But efficient fire-control methods cannot alone reduce serious fire losses. Full cooperation in fire prevention from local residents is also required. Virtually all forest fires in Louisiana are man-caused--either by arson or carelessness--and therefore preventable.

Planting can help. --As one phase of the Forest Survey, a study was made of areas in need of pine planting. Planting and perhaps seeding southern pines offers the surest and quickest way to rebuild depleted stands on upland sites with inadequate pine seed sources.

Louisiana's area of present and potential pine sites--i.e., all the forested uplands except areas in desirable hardwoods such as



Young pines grow rapidly when overtopping cull hardwoods are deadened.

yellow-poplar, cherrybark oak, and magnolia--totals 9 million acres. Though a half million acres have been planted, there still remain nearly 2.8 million acres with both an inadequate pine seed source and inadequate pine stocking. For full stocking of pine, part of this area requires complete planting, part reinforcement planting.

The largest acreage in need of planting is in the longleaf pine belt of the Southwest region. This region contains over half the State's total area in need of pine planting--some 1.6 million acres concentrated in and around Beauregard and Vernon Parishes.

TSI needs loom large. --More than 6 million acres of Louisiana pine sites need timber stand improvement work to eliminate undesirable hardwoods. On many large industrial holdings, intensive hardwood control programs have been under way for several years. But over most of the State, control of weed hardwoods is still a big job.

The Forest Survey classified all pine sites to determine whether a hardwood problem existed--i. e., whether more than one-fifth of the growing space was occupied by hardwoods. Since the nature of control work varies with the size of the hardwoods and the adequacy of pine stocking, these factors were also noted. Hardwood size classes were: small, 2 inches d. b. h. or less; medium, 3 to 9 inches d. b. h.; large, 10 inches d. b. h. or over.

Thirty-two percent of the area in pine sites was found to have no hardwood problem. But 19 percent was encumbered with small hardwoods, 24 percent with medium-size hardwoods, and 25 percent with large hardwoods. Thus, seven-tenths of the acreage in pine sites needs some kind of TSI; in this category 2 million acres are adequately stocked with pine and should be treated before the pines are crowded out.

Control of small hardwoods on pine sites may entail use of mechanical brush cutters, prescribed burning, or perhaps other techniques; medium-size hardwoods will generally require use of sprout-inhibiting chemicals; and large hardwoods will usually need only girdling.

Considerable TSI work is needed on hardwood sites too. Culls and undesirable hardwoods of smaller size make up close to three-tenths of the basal area of all live trees on hardwood sites. These trees occupy growing space that might better be used by thrifty, merchantable hardwoods or by new stands of seedlings.

Future possibilities. --There is little doubt that minimizing wildfire, planting the idle acres, and removing the cull trees would come close to doubling timber growth in Louisiana within the next two decades.

Still further increases could be achieved by strengthening forest research, intensifying protection from insects and disease, improving cutting practices, and making fuller use of harvested trees. In the longleaf pine area, there is the special need for keeping free-ranging woods hogs out of young stock.

Many forest owners, both large and small, are already diligently improving their harvesting and utilization practices, as well as intensifying protection of their timber. In general, the larger owners have been more ready and are better equipped to undertake these jobs than small owners. Since farm woodlands and other small holdings are an important timber source, both the public and the wood-using industries have a big stake in improving their productivity.

ACCURACY OF THE SURVEY

The 1953-54 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurement of quarter-acre sample plots. The sample plots were taken in pairs at and near the intersections of a grid of east-west and north-south lines spaced three miles apart. Furthermore, in all parishes of the Northwest, Southwest, and Southeast regions except four ^{3/}, the number of sample plots was increased where necessary in order to approach a sampling error of plus or minus 10 percent (two chances out of three) for the parish estimates of total growing stock volume. Due to the variability encountered, however, the estimates for total cubic volume in these parishes will be found to vary from about plus or minus 7 percent to 15 percent. In all regions, grouping parishes will greatly strengthen the total volume data and will be necessary to provide reliable estimates of species-group breakdowns of volume. For the latter purpose, groups of parishes containing a million acres or more of forest land are recommended.

Accuracy of the estimates may be affected by two types of error. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from human mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting and estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data, using random-sampling formulas, indicates a sampling error of plus or minus 0.3 percent for the State estimate of total forest area, 1.6 percent for total cubic-foot volume, and 1.9 percent for total board-foot volume. However, because a systematic sample is generally more efficient than a random sample of the same size, these estimates of sampling error may be considered as setting an upper limit of error, rather than as expressing the actual

^{3/} Except for East Baton Rouge, East Feliciana, Evangeline, and Jefferson Davis.

probability of error. As the acreage and volumes for the State are broken down by Survey region, parish, forest type, species, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates may be liable two chances out of three.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Maximum sampling error	Volume sampled	Maximum sampling error	Volume sampled	Maximum sampling error
<u>M acres</u>	<u>Percent</u>	<u>Million cu. ft.</u>	<u>Percent</u>	<u>Million bd. ft.</u>	<u>Percent</u>
16,000	0.3	12,000	1.6	45,000	1.9
10,000	.4	6,000	2.3	20,000	2.9
5,000	.5	3,000	3.2	10,000	4.0
2,000	.9	1,000	5.6	5,000	5.7
500	1.7	500	7.9	2,000	9.0
100	3.8	100	17.6	300	23.4

Growth estimates are based on radial-growth measurements and mortality data taken on the sample plots. No attempt was made to calculate sampling error in these estimates.

Estimates of annual cut are conversions of production estimates. Commercial log and bolt production, other than production from sawmills which cut less than 3 million board feet of lumber in 1953, was obtained by a 100-percent canvass of establishments or producers. Production from the sawmills that cut less than 3 million board feet was estimated from a sample of these mills. Production of wood for fuel, fence-posts, and miscellaneous domestic use on farms was estimated from an area sample. The data on production of each commodity were converted to annual cut of growing stock by using timber cut-to-production ratios derived from measurements taken on sample cutting areas. The sampling error to which the State cubic-foot estimates of annual cut are liable, on a probability of two chances out of three, are found in the tabulation on the following page.

Product	Sampling error of annual cut
	<u>Percent error</u>
Sawlogs	5.0
Veneer	11.4
Cooperage	7.2
Pulpwood	2.2
Fuelwood	29.3
Poles and piling	11.7
Posts	17.2
Hewn ties	6.9
Misc. logs and bolts	<u>6.9</u>
All commodities	<u>3.8</u>

In computing the changes that took place between 1934-35 and 1953-54, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. For example, published estimates from the first Survey were based on a total land area of 29,061,800 acres in Louisiana. Since then, more accurate measurement by the U. S. Bureau of the Census has established a revised

figure of 28,903,700 acres. Thus, while actual land area has changed little, if at all, the lower estimate of land acreage has decreased forest-area and timber-volume estimates in like proportion. Again, the minimum diameter limit for hardwood sawtimber trees was dropped from 13.0 inches d. b. h. on the first Survey to 11.0 inches on the second Survey, in line with changing utilization practices.

In addition to these major points, a number of procedural differences between the two Surveys had to be taken into account. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before the change was computed.

The sampling error in the data on change in forest acreage and timber volume cannot be estimated. In the 1934-35 Survey, sample plots were spaced one-eighth mile apart on lines 10 miles apart. An estimate of sampling error was not made. However, the error in the estimate of the State forest acreage was probably very small, as it is for the second Survey; and the indicated change in total forest acreage may be considered essentially correct. Indicated changes for Survey regions and other portions of the total acreage should be valued in proportion to the magnitude of the item and of the change. Changes in timber volume, because of the possible effect of nonsampling as well as sampling errors, are shown only for major groupings of the data.

Table 7. -- Forest and nonforest land by Survey region, 1953-54

Land use	State of Louisiana	North Delta	South Delta	North-west	South-west	South-east
----- Thousand acres -----						
Forest:						
Commercial	16,038.0	2,171.3	2,819.6	4,169.8	4,874.5	2,002.8
Noncommercial:						
Productive-reserved	84.3	0.4	0.9	0.5	81.7	0.8
Unproductive	6.6	...	6.6	...	...	...
Total forest	<u>16,128.9</u>	<u>2,171.7</u>	<u>2,827.1</u>	<u>4,170.3</u>	<u>4,956.2</u>	<u>2,003.6</u>
Nonforest ^{1/}	<u>12,774.8</u>	<u>1,375.2</u>	<u>6,882.4</u>	<u>1,817.5</u>	<u>1,902.0</u>	<u>797.7</u>
All land	28,903.7	3,546.9	9,709.5	5,987.8	6,858.2	2,801.3

^{1/} Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 8. -- Commercial forest land by class of ownership, 1953-54

Class of ownership	Commercial forest	
	Thousand acres	Percent
Private:		
Farm	3,189.1	19.9
Other	12,000.5	74.8
Total private	<u>15,189.6</u>	<u>94.7</u>
Public:		
National forest	535.8	3.4
Other federal	131.6	.8
State	176.1	1.1
County and municipal	4.9	(1/)
Total public	<u>848.4</u>	<u>5.3</u>
All ownerships	16,038.0	100.0

^{1/} Negligible.

Table 9. -- Land area and commercial forest by parish, 1953-54

Parish	All land	Commercial forest		Parish	All land	Commercial forest	
	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>		<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Acadia	423.7	81.5	19.2	Morehouse	514.6	343.4	66.7
Allen	496.0	351.6	70.9	Natchitoches	830.0	623.4	75.1
Ascension	192.0	94.6	49.3	Orleans	127.4	15.3	12.0
Assumption	228.5	132.6	58.0	Ouachita	410.9	283.1	68.9
Avoyelles	528.6	320.9	60.7	Plaquemines	629.8	24.4	3.9
Beauregard	757.8	679.8	89.7	Point Coupee	361.0	203.6	56.4
Bienville	528.6	376.5	71.2	Rapides	850.5	645.0	75.8
Bossier	538.2	351.9	65.4	Red River	264.3	141.5	53.5
Caddo	570.2	290.3	50.9	Richland	368.6	154.0	41.8
Calcasieu	706.6	264.5	37.4	Sabine	658.6	556.6	84.5
Caldwell	352.0	293.7	83.4	St. Bernard	326.4	23.0	7.0
Cameron	924.1	(1/)	(1/)	St. Charles	194.6	64.0	32.9
Catahoula	468.5	364.3	77.8	St. Helena	268.8	212.9	79.2
Claiborne	490.2	294.6	60.1	St. James	159.4	85.4	53.6
Concordia	453.8	352.8	77.7	St. John the Baptist	144.0	85.4	59.3
DeSoto	571.6	359.8	62.9	St. Landry	595.2	266.3	44.7
East Baton Rouge	295.7	162.2	54.9	St. Martin	461.4	311.5	67.5
East Carroll	276.5	147.4	53.3	St. Mary	387.2	112.3	29.0
East Feliciana	290.6	170.0	58.5	St. Tammany	581.1	429.8	74.0
Evangeline	430.1	216.6	50.4	Tangipahoa	513.9	371.6	72.3
Franklin	414.7	165.9	40.0	Tensas	398.7	246.0	61.7
Grant	428.8	366.5	85.5	Terrebonne	890.2	111.0	12.5
Iberia	376.3	118.0	31.4	Union	579.9	462.8	79.8
Iberville	401.9	274.1	68.2	Vermilion	783.4	1/40.2	1/5.1
Jackson	373.1	311.1	83.4	Vernon	870.4	714.8	82.1
Jefferson	261.8	37.6	14.4	Washington	425.6	290.7	68.3
Jefferson Davis	421.1	87.6	20.8	Webster	400.6	262.5	65.5
Lafayette	181.1	13.0	7.2	West Baton Rouge	128.6	71.4	55.5
Lafourche	740.5	150.7	20.4	West Carroll	227.8	101.6	44.6
LaSalle	408.3	368.1	90.2	West Feliciana	262.4	182.8	69.7
Lincoln	300.2	179.2	59.7	Winn	608.0	562.8	92.6
Livingston	425.6	365.6	85.9	All parishes	28,903.7	16,038.0	55.5
Madison	423.7	295.9	69.8				

1/ Cameron Parish is included in Vermilion.

Table 10.-- Commercial forest land by stand size and forest type, by Survey region, 1953-1954

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}	All stand sizes	Large saw-timber	Small saw-timber	Pole timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Thousand acres -----							----- Thousand acres -----					
STATE OF LOUISIANA							NORTHWEST					
Softwood types:												
Longleaf-slash pine	1,966.8	60.2	146.5	320.6	268.1	1,171.4	69.3	15.8	10.0	29.1	6.3	8.1
Loblolly-shortleaf pine	4,011.5	921.3	1,183.8	1,137.9	673.8	94.7	1,828.4	409.3	477.6	595.1	326.8	19.6
Oak-pine	1,855.7	318.1	411.3	770.3	316.9	39.1	887.7	138.7	197.4	371.5	170.5	9.6
Total	7,834.0	1,299.6	1,741.6	2,228.8	1,258.8	1,305.2	2,785.4	563.8	685.0	995.7	503.6	37.3
Hardwood types:												
Oak-hickory	1,601.9	356.1	246.5	760.1	203.8	35.4	656.2	107.9	111.3	352.9	78.9	5.2
Elm-ash-cottonwood	703.0	190.2	138.0	245.6	103.5	25.7	38.8	4.6	...	23.8	4.6	5.8
Oak-gum-cypress	5,899.1	2,403.1	1,012.8	1,695.4	494.9	292.9	689.4	211.1	98.7	245.2	90.2	44.2
Total	8,204.0	2,949.4	1,397.3	2,701.1	802.2	354.0	1,384.4	323.6	210.0	621.9	173.7	55.2
All types	16,038.0	4,249.0	3,138.9	4,929.9	2,061.0	1,659.2	4,169.8	887.4	895.0	1,617.6	677.3	92.5
NORTH DELTA							SOUTHWEST					
Softwood types:												
Longleaf-slash pine	...	...	...	...	...	...	1,485.1	35.6	73.3	188.6	140.0	1,047.6
Loblolly-shortleaf pine	77.7	42.6	22.1	13.0	...	...	1,489.9	357.0	465.9	387.2	217.6	62.2
Oak-pine	90.6	21.6	22.4	37.2	9.4	...	550.3	128.0	93.8	225.7	83.9	18.9
Total	168.3	64.2	44.5	50.2	9.4	...	3,525.3	520.6	633.0	801.5	441.5	1,128.7
Hardwood types:												
Oak-hickory	70.2	23.7	6.9	29.2	10.4	...	576.1	173.7	77.3	232.9	62.0	30.2
Elm-ash-cottonwood	94.9	38.5	12.5	20.2	17.4	6.3	22.3	5.6	2.7	2.8	8.4	2.8
Oak-gum-cypress	1,837.9	923.1	246.5	456.2	117.0	95.1	750.8	295.1	54.9	250.3	51.3	99.2
Total	2,003.0	985.3	265.9	505.6	144.8	101.4	1,349.2	474.4	134.9	486.0	121.7	132.2
All types	2,171.3	1,049.5	310.4	555.8	154.2	101.4	4,874.5	995.0	767.9	1,287.5	563.2	1,260.9
SOUTH DELTA							SOUTHEAST					
Softwood types:												
Longleaf-slash pine	...	...	...	...	...	...	412.4	8.8	63.2	102.9	121.8	115.7
Loblolly-shortleaf pine	71.7	12.0	17.8	21.4	20.5	...	543.8	100.4	200.4	121.2	108.9	12.9
Oak-pine	26.0	...	9.9	2.7	13.4	...	301.1	29.8	87.8	133.2	39.7	10.6
Total	97.7	12.0	27.7	24.1	33.9	...	1,257.3	139.0	351.4	357.3	270.4	139.2
Hardwood types:												
Oak-hickory	70.8	32.6	12.5	25.7	...	...	228.6	18.2	38.5	119.4	52.5	...
Elm-ash-cottonwood	505.0	132.2	112.2	182.5	73.1	5.0	42.0	9.3	10.6	16.3	...	5.8
Oak-gum-cypress	2,146.1	876.4	506.9	532.6	180.5	49.7	474.9	97.4	105.8	211.1	55.9	4.7
Total	2,721.9	1,041.2	631.6	740.8	253.6	54.7	745.5	124.9	154.9	346.8	108.4	10.5
All types	2,819.6	1,053.2	659.3	764.9	287.5	54.7	2,002.8	263.9	506.3	704.1	378.8	149.7

^{1/} Includes areas not classified elsewhere.

Table 11.--Commercial forest land by degree of tree stocking and forest type, by Survey region, 1953-54

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked
----- Thousand acres -----						----- Thousand acres -----				
STATE OF LOUISIANA						NORTHWEST				
Softwood types:										
Longleaf-slash pine	1,966.8	225.0	250.2	361.8	1,129.8	69.3	32.8	23.1	5.3	8.1
Loblolly-shortleaf pine	4,011.5	2,500.3	919.8	516.5	74.9	1,828.4	1,224.3	388.2	199.3	16.6
Oak-pine	1,855.7	992.3	576.4	250.9	36.1	887.7	520.4	270.7	87.0	9.6
Total	7,834.0	3,717.6	1,746.4	1,129.2	1,240.8	2,785.4	1,777.5	682.0	291.6	34.3
Hardwood types:										
Oak-hickory	1,601.9	784.8	522.2	267.2	27.7	656.2	341.4	232.7	79.2	2.9
Elm-ash-cottonwood	703.0	366.9	214.1	101.6	20.4	38.8	17.9	9.3	5.8	5.8
Oak-gum-cypress	5,899.1	3,162.2	1,798.1	723.9	214.9	689.4	341.9	204.0	104.7	38.8
Total	8,204.0	4,313.9	2,534.4	1,092.7	263.0	1,384.4	701.2	446.0	189.7	47.5
All types	16,038.0	8,031.5	4,280.8	2,221.9	1,503.8	4,169.8	2,478.7	1,128.0	481.3	81.8
NORTH DELTA						SOUTHWEST				
Softwood types:										
Longleaf-slash pine	...	...	...	...	...	1,485.1	97.8	137.9	243.4	1,006.0
Loblolly-shortleaf pine	77.7	67.7	10.0	...	...	1,489.9	832.1	362.1	250.3	45.4
Oak-pine	90.6	56.1	34.5	...	...	550.3	285.6	168.4	80.4	15.9
Total	168.3	123.8	44.5	...	...	3,525.3	1,215.5	668.4	574.1	1,067.3
Hardwood types:										
Oak-hickory	70.2	47.5	15.9	6.8	...	576.1	261.3	196.5	93.5	24.8
Elm-ash-cottonwood	94.9	73.6	15.0	2.8	3.5	22.3	5.5	5.7	8.3	2.8
Oak-gum-cypress	1,837.9	1,140.6	506.3	138.8	52.2	750.8	287.9	245.2	132.5	85.2
Total	2,003.0	1,261.7	537.2	148.4	55.7	1,349.2	554.7	447.4	234.3	112.8
All types	2,171.3	1,385.5	581.7	148.4	55.7	4,874.5	1,770.2	1,115.8	808.4	1,180.1
SOUTH DELTA						SOUTHEAST				
Softwood types:										
Longleaf-slash pine	...	...	...	...	...	412.4	94.4	89.2	113.1	115.7
Loblolly-shortleaf pine	71.7	37.4	29.0	5.3	...	543.8	338.8	130.5	61.6	12.9
Oak-pine	26.0	9.2	10.0	6.8	...	301.1	121.0	92.8	76.7	10.6
Total	97.7	46.6	39.0	12.1	...	1,257.3	554.2	312.5	251.4	139.2
Hardwood types:										
Oak-hickory	70.8	58.7	3.4	8.7	...	228.6	75.9	73.7	79.0	...
Elm-ash-cottonwood	505.0	244.9	178.7	78.9	2.5	42.0	25.0	5.4	5.8	5.8
Oak-gum-cypress	2,146.1	1,167.3	708.8	236.0	34.0	474.9	224.5	133.8	111.9	4.7
Total	2,721.9	1,470.9	890.9	323.6	36.5	745.5	325.4	212.9	196.7	10.5
All types	2,819.6	1,517.5	929.9	335.7	36.5	2,002.8	879.6	525.4	448.1	149.7

Table 12. -- Area of sawtimber stands by stand quality and forest type, by Survey region,
1953-1954

Forest type	All qualities	Fair or better	Poor	All qualities	Fair or better	Poor
- - - Thousand acres - - -				- - - Thousand acres - - -		
STATE OF LOUISIANA				NORTHWEST		
Softwood types:						
Longleaf-slash pine	206.7	64.5	142.2	25.8	13.1	12.7
Loblolly-shortleaf pine	2,105.1	1,051.7	1,043.4	886.9	511.8	375.1
Oak-pine	729.4	311.7	417.7	336.1	146.5	189.6
Total	3,041.2	1,437.9	1,603.3	1,248.8	671.4	577.4
Hardwood types:						
Oak-hickory	602.6	227.9	374.7	219.2	65.8	153.4
Elm-ash-cottonwood	328.2	161.4	166.8	4.6	2.3	2.3
Oak-gum-cypress	3,415.9	1,968.0	1,447.9	309.8	189.4	120.4
Total	4,346.7	2,357.3	1,989.4	533.6	257.5	276.1
All types	7,387.9	3,795.2	3,592.7	1,782.4	928.9	853.5
NORTH DELTA				SOUTHWEST		
Softwood types:						
Longleaf-slash pine	...	...	...	108.9	39.7	69.2
Loblolly-shortleaf pine	64.7	51.7	13.0	822.9	407.2	415.7
Oak-pine	44.0	30.6	13.4	221.8	110.3	111.5
Total	108.7	82.3	26.4	1,153.6	557.2	596.4
Hardwood types:						
Oak-hickory	30.6	7.0	23.6	251.0	112.9	138.1
Elm-ash-cottonwood	51.0	36.1	14.9	8.3	2.8	5.5
Oak-gum-cypress	1,169.6	677.3	492.3	350.0	215.8	134.2
Total	1,251.2	720.4	530.8	609.3	331.5	277.8
All types	1,359.9	802.7	557.2	1,762.9	888.7	874.2
SOUTH DELTA				SOUTHEAST		
Softwood types:						
Longleaf-slash pine	...	...	...	72.0	11.7	60.3
Loblolly-shortleaf pine	29.8	15.4	14.4	300.8	75.6	225.2
Oak-pine	9.9	4.9	5.0	117.6	19.4	98.2
Total	39.7	20.3	19.4	490.4	106.7	383.7
Hardwood types:						
Oak-hickory	45.1	32.6	12.5	56.7	9.6	47.1
Elm-ash-cottonwood	244.4	116.0	128.4	19.9	4.2	15.7
Oak-gum-cypress	1,383.3	845.8	537.5	203.2	39.7	163.5
Total	1,672.8	994.4	678.4	279.8	53.5	226.3
All types	1,712.5	1,014.7	697.8	770.2	160.2	610.0

Table 13.--Basal area per acre of growing stock and cull trees by forest-type group and Survey region, 1953-54

Forest-type group	State of Louisiana	North Delta	South Delta	Northwest	Southwest	Southeast
----- Square feet -----						
Longleaf-slash pine:						
2- and 4-inch good trees ^{1/}	2.5	...	...	9.6	1.5	5.0
Growing stock	11.2	...	...	36.6	8.6	15.9
2- and 4-inch poor trees	1.4	...	...	5.6	1.3	1.0
Cull trees	2.3	...	...	5.5	1.9	3.4
All trees	17.4	...	...	57.3	13.3	25.3
Loblolly-shortleaf pine:						
2- and 4-inch good trees ^{1/}	14.6	21.9	9.6	17.0	12.8	11.0
Growing stock	47.3	55.7	37.6	48.2	45.5	49.7
2- and 4-inch poor trees	2.7	5.3	1.3	2.5	3.2	1.2
Cull trees	6.7	5.5	5.3	6.1	7.0	8.5
All trees	71.3	88.4	53.8	73.8	68.5	70.4
Oak-pine:						
2- and 4-inch good trees ^{1/}	11.2	9.1	9.6	13.1	10.5	7.7
Growing stock	38.7	37.2	31.7	38.5	41.2	35.5
2- and 4-inch poor trees	3.4	4.5	1.3	3.8	3.7	1.7
Cull trees	12.3	11.7	6.7	10.7	13.4	16.0
All trees	65.6	62.5	49.3	66.1	68.8	60.9
All softwood types:						
2- and 4-inch good trees ^{1/}	10.8	15.0	9.6	15.6	7.7	8.2
Growing stock	36.1	45.8	36.0	44.8	29.3	35.2
2- and 4-inch poor trees	2.5	4.9	1.3	3.0	2.5	1.3
Cull trees	7.0	8.8	5.7	7.5	5.8	8.6
All trees	56.4	74.5	52.6	70.9	45.3	53.3
Oak-hickory:						
2- and 4-inch good trees ^{1/}	9.2	12.1	6.4	10.0	9.0	7.3
Growing stock	38.0	38.3	51.9	36.5	41.9	28.2
2- and 4-inch poor trees	4.5	2.1	6.2	4.4	5.4	2.5
Cull trees	15.4	14.1	16.5	12.7	16.7	20.2
All trees	67.1	66.6	81.0	63.6	73.0	58.2
Elm-ash-cottonwood:						
2- and 4-inch good trees ^{1/}	10.8	12.2	10.8	10.4	14.5	4.9
Growing stock	50.1	53.5	51.8	30.8	46.5	41.6
2- and 4-inch poor trees	7.9	8.1	8.5	5.1	8.3	2.9
Cull trees	14.4	10.6	15.4	6.2	2.2	25.5
All trees	83.2	84.4	86.5	52.5	71.5	74.9
Oak-gum-cypress:						
2- and 4-inch good trees ^{1/}	9.2	8.8	8.8	8.6	9.0	13.5
Growing stock	54.3	48.1	67.0	43.2	47.8	46.7
2- and 4-inch poor trees	5.4	4.5	6.3	5.7	5.9	3.8
Cull trees	20.3	16.8	21.8	18.7	22.6	25.8
All trees	89.2	78.2	103.9	76.2	85.3	89.8
All types						
2- and 4-inch good trees ^{1/}	10.0	9.5	9.2	13.5	8.1	9.3
Growing stock	43.7	47.9	62.8	43.1	33.7	37.3
2- and 4-inch poor trees	4.0	4.6	6.5	3.7	3.4	2.0
Cull trees	13.0	15.8	19.9	10.2	9.7	14.4
All trees	70.7	77.8	98.4	70.5	54.9	63.0

^{1/} Includes only sound, well-formed trees.

Table 14. -Total volume by class of timber and species, by Survey region, 1953-1954

Species	All timber ^{1/}	Growing stock				Poletimber trees	Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees					
			Sawlog portions	Upper stems				

----- Thousand cords -----								
STATE OF LOUISIANA								
Softwood:								
Loblolly pine	34,308	34,157	27,229	1,820	5,108	...		151
Shortleaf pine	10,231	10,203	7,661	522	2,020	...		28
Longleaf pine	4,112	4,104	3,086	264	754	...		8
Slash pine	844	824	444	36	344	...		20
Other pines	811	808	652	44	112	...		3
Other softwoods	8,168	7,354	5,641	659	1,054	...		814
Total	58,474	57,450	44,713	3,345	9,392	...		1,024
Hardwood:								
Red oaks	27,291	19,350	9,705	4,543	5,102	3,217		4,724
White oaks	21,128	15,792	8,068	4,029	3,695	2,529		2,807
Sweetgum	22,400	19,219	9,563	3,797	5,859	850		2,331
Black and tupelo gums	20,102	16,991	8,184	3,539	5,268	880		2,231
Other hardwoods	66,170	45,148	22,928	10,410	11,810	6,026		14,996
Total	157,091	116,500	58,448	26,318	31,734	13,502		27,089
All species	215,565	173,950	103,161	29,663	41,126	13,502		28,113
NORTH DELTA								
Softwood:								
Loblolly pine	859	851	704	43	104	...		8
Shortleaf pine	349	349	300	18	31	...		...
Longleaf pine	...	...	...	...	...	...		...
Slash pine	...	...	...	...	...	...		...
Other pines	...	...	...	...	...	...		...
Other softwoods	323	251	208	23	20	...		72
Total	1,531	1,451	1,212	84	155	...		80
Hardwood:								
Red oaks	4,944	3,590	1,906	893	791	630		724
White oaks	6,120	4,615	2,600	1,346	669	861		624
Sweetgum	3,452	3,013	1,604	636	773	155		284
Black and tupelo gums	359	267	158	72	37	25		67
Other hardwoods	18,932	13,919	7,845	3,559	2,515	2,075		2,938
Total	33,807	25,404	14,113	6,506	4,785	3,766		4,637
All species	35,338	26,855	15,325	6,590	4,940	3,766		4,717
SOUTH DELTA								
Softwood:								
Loblolly pine	445	445	325	28	92	...		...
Shortleaf pine	39	39	12	1	26	...		...
Longleaf pine	2/	2/	...	...	2/	...		...
Slash pine	...	...	...	...	...	...		...
Other pines	13	13	11	1	1	...		...
Other softwoods	5,827	5,359	4,088	482	789	...		468
Total	6,324	5,856	4,436	512	908	...		468
Hardwood:								
Red oaks	4,844	3,600	2,121	981	498	675		569
White oaks	1,980	1,434	809	431	194	300		245
Sweetgum	4,305	3,784	2,023	804	957	179		342
Black and tupelo gums	10,844	9,606	4,353	1,869	3,384	401		837
Other hardwoods	25,419	18,383	9,082	4,025	5,276	2,039		4,997
Total	47,392	36,807	18,388	8,110	10,309	3,594		6,991
All species	53,716	42,663	22,824	8,622	11,217	3,594		7,459

Table 14.--Total volume by class of timber and species, by Survey region, 1953-1954 (continued)

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Thousand cords -----							
NORTHWEST							
Softwood:							
Loblolly pine	13,758	13,695	10,728	717	2,250	...	63
Shortleaf pine	6,309	6,293	4,743	311	1,239	...	1
Longleaf pine	489	489	441	28	20	...	...
Slash pine	60	60	...	...	60	...	...
Other pines	...	...	...	...	...	...	...
Other softwoods	834	744	548	64	132	...	90
Total	21,450	21,281	16,460	1,120	3,701	...	169
Hardwood:							
Red oaks	7,626	5,418	2,564	1,190	1,664	811	1,397
White oaks	7,064	5,533	2,729	1,285	1,519	709	822
Sweetgum	6,344	5,431	2,710	1,058	1,663	222	691
Black and tupelo gums	1,709	1,321	728	296	297	94	294
Other hardwoods	8,139	5,043	2,270	1,073	1,700	710	2,386
Total	30,882	22,746	11,001	4,902	6,843	2,546	5,590
All species	52,332	44,027	27,461	6,022	10,544	2,546	5,759
SOUTHWEST							
Softwood:							
Loblolly pine	12,353	12,304	9,952	671	1,681	...	49
Shortleaf pine	3,074	3,063	2,359	169	535	...	11
Longleaf pine	2,537	2,529	1,931	165	433	...	8
Slash pine	215	196	65	7	124	...	19
Other pines	...	...	...	...	...	...	...
Other softwoods	658	577	466	53	58	...	81
Total	18,837	18,669	14,773	1,065	2,831	...	168
Hardwood:							
Red oaks	7,050	4,991	2,410	1,128	1,453	801	1,258
White oaks	4,991	3,613	1,704	851	1,058	545	833
Sweetgum	5,927	5,181	2,481	963	1,737	210	536
Black and tupelo gums	3,257	2,630	1,306	581	743	187	440
Other hardwoods	10,121	6,149	3,031	1,413	1,705	920	3,052
Total	31,346	22,564	10,932	4,936	6,696	2,663	6,119
All species	50,183	41,233	25,705	6,001	9,527	2,663	6,287
SOUTHEAST							
Softwood:							
Loblolly pine	6,893	6,862	5,520	361	981	...	31
Shortleaf pine	460	459	247	23	189	...	1
Longleaf pine	1,086	1,086	714	71	301	...	2/
Slash pine	569	568	379	29	160	...	1
Other pines	798	795	641	43	111	...	3
Other softwoods	526	423	331	37	55	...	103
Total	10,332	10,193	7,832	564	1,797	...	139
Hardwood:							
Red oaks	2,827	1,751	704	351	696	300	776
White oaks	973	597	226	116	255	94	282
Sweetgum	2,372	1,810	745	336	729	84	478
Black and tupelo gums	3,933	3,167	1,639	721	807	173	593
Other hardwoods	3,559	1,654	700	340	614	282	1,623
Total	13,664	8,979	4,014	1,864	3,101	933	3,752
All species	23,996	19,172	11,846	2,428	4,898	933	3,891

1/ Sound volume in dead trees considered salvable is not included. This volume is as follows:

Region	Softwood	Hardwood
Thousand cords		
North Delta	36	240
South Delta	59	93
Northwest	54	158

Region	Softwood	Hardwood
Thousand cords		
Southwest	100	212
Southeast	39	24
Total	288	727

2/ Negligible.

Table 15.-- Total volume by class of timber and species, by Survey region, 1953-1954

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
STATE OF LOUISIANA							
Softwood:							
Loblolly pine	2, 573.1	2, 561.8	2, 042.2	136.5	383.1	...	11.3
Shortleaf pine	767.3	765.2	574.5	39.2	151.5	...	2.1
Longleaf pine	308.5	307.9	231.5	19.8	56.6	...	.6
Slash pine	63.3	61.8	33.3	2.7	25.8	...	1.5
Other pines	60.8	60.6	48.9	3.3	8.4	...	.2
Other softwoods	612.6	551.5	423.1	49.4	79.0	...	61.1
Total	<u>4, 385.6</u>	<u>4, 308.8</u>	<u>3, 353.5</u>	<u>250.9</u>	<u>704.4</u>	<u>...</u>	<u>176.8</u>
Hardwood:							
Red oaks	1, 828.4	1, 296.4	650.3	304.3	341.8	215.5	316.5
White oaks	1, 415.6	1, 058.1	540.5	270.0	247.6	169.4	188.1
Sweetgum	1, 500.8	1, 287.7	640.7	254.4	392.6	57.0	156.1
Black and tupelo gums	1, 346.9	1, 138.4	548.4	237.0	353.0	59.0	149.5
Other hardwoods	4, 433.5	3, 025.0	1, 536.2	697.6	791.2	403.7	1, 004.8
Total	<u>10, 525.2</u>	<u>7, 805.6</u>	<u>3, 916.1</u>	<u>1, 763.3</u>	<u>2, 126.2</u>	<u>904.6</u>	<u>2/1, 815.0</u>
All species	<u>3/14, 910.8</u>	<u>12, 114.4</u>	<u>7, 269.6</u>	<u>2, 014.2</u>	<u>2, 830.6</u>	<u>904.6</u>	<u>1, 891.8</u>
NORTH DELTA							
Softwood:							
Loblolly pine	64.4	63.8	52.8	3.2	7.8	...	0.6
Shortleaf pine	26.2	26.2	22.5	1.4	2.3	...	...
Longleaf pine	...	...	...	...	...	...	...
Slash pine	...	...	...	...	...	...	...
Other pines	...	...	...	...	...	...	...
Other softwoods	24.2	18.8	15.6	1.7	1.5	...	5.4
Total	<u>114.8</u>	<u>108.8</u>	<u>90.9</u>	<u>6.3</u>	<u>11.6</u>	<u>...</u>	<u>6.0</u>
Hardwood:							
Red oaks	331.2	240.5	127.7	59.8	53.0	42.2	48.5
White oaks	410.0	309.2	174.2	90.2	44.8	59.0	41.8
Sweetgum	231.3	201.9	107.5	42.6	51.8	10.4	19.0
Black and tupelo gums	24.1	17.9	10.6	4.8	2.5	1.7	4.5
Other hardwoods	1, 268.5	932.6	525.6	238.5	168.5	139.0	196.9
Total	<u>2, 265.1</u>	<u>1, 702.1</u>	<u>945.6</u>	<u>435.9</u>	<u>320.6</u>	<u>252.3</u>	<u>310.7</u>
All species	<u>2, 379.9</u>	<u>1, 810.9</u>	<u>1, 036.5</u>	<u>442.2</u>	<u>332.2</u>	<u>252.3</u>	<u>316.7</u>
SOUTH DELTA							
Softwood:							
Loblolly pine	33.4	33.4	24.4	2.1	6.9	...	...
Shortleaf pine	2.9	2.9	.9	.1	1.9	...	...
Longleaf pine	2/	2/	...	...	2/	...	...
Slash pine	...	...	...	...	...	...	...
Other pines	1.0	1.0	.8	.1	.1	...	...
Other softwoods	437.0	401.9	306.6	36.1	59.2	...	35.1
Total	<u>474.3</u>	<u>439.2</u>	<u>332.7</u>	<u>38.4</u>	<u>68.1</u>	<u>...</u>	<u>35.1</u>
Hardwood:							
Red oaks	324.5	241.2	142.1	65.7	33.4	45.2	38.1
White oaks	132.7	96.1	54.2	28.9	13.0	20.1	16.5
Sweetgum	288.4	253.5	135.5	53.9	64.1	12.0	22.9
Black and tupelo gums	726.6	643.6	291.7	125.2	226.7	26.9	56.1
Other hardwoods	1, 703.1	1, 231.7	608.5	269.7	353.5	136.6	334.8
Total	<u>3, 175.3</u>	<u>2, 466.1</u>	<u>1, 232.0</u>	<u>543.4</u>	<u>690.7</u>	<u>240.8</u>	<u>468.4</u>
All species	<u>3, 649.6</u>	<u>2, 905.3</u>	<u>1, 564.7</u>	<u>581.8</u>	<u>758.8</u>	<u>240.8</u>	<u>503.5</u>

Table 15. --Total volume by class of timber and species, by Survey region, 1953-1954 (continued)

Species	All timber ^{1/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
NORTHWEST							
Softwood:							
Loblolly pine	1,031.8	1,027.1	804.6	53.8	168.7	...	4.7
Shortleaf pine	473.2	472.0	355.7	23.3	93.0	...	1.2
Longleaf pine	36.7	36.7	33.1	2.1	1.5	...	...
Slash pine	4.5	4.5	...	...	4.5	...	...
Other pines	...	...	...	...	...	...	...
Other softwoods	62.6	55.8	41.1	4.8	9.9	...	6.0
Total	1,608.8	1,596.1	1,234.5	84.0	277.6	...	12.7
Hardwood:							
Red oaks	510.9	363.0	171.8	79.7	111.5	54.3	93.6
White oaks	473.3	370.7	182.8	86.1	101.8	47.5	55.1
Sweetgum	425.1	363.9	181.6	70.9	111.4	14.9	46.3
Black and tupelo gums	114.5	88.5	48.8	19.8	19.9	6.3	19.7
Other hardwoods	545.3	337.9	152.1	71.9	113.9	47.6	159.8
Total	2,069.1	1,524.0	737.1	328.4	458.5	170.6	374.5
All species	3,677.9	3,120.1	1,971.6	412.4	736.1	170.6	387.2
SOUTHWEST							
Softwood:							
Loblolly pine	926.5	922.8	746.4	50.3	126.1	...	3.7
Shortleaf pine	230.5	229.7	176.9	12.7	40.1	...	.8
Longleaf pine	190.3	189.7	144.8	12.4	32.5	...	.6
Slash pine	16.1	14.7	4.9	.5	9.3	...	1.4
Other pines	...	...	...	...	...	...	...
Other softwoods	49.4	43.3	35.0	4.0	4.3	...	6.1
Total	1,412.8	1,400.2	1,108.0	79.9	212.3	...	12.6
Hardwood:							
Red oaks	472.4	334.4	161.5	75.6	97.3	53.7	84.3
White oaks	334.4	242.1	114.2	57.0	70.9	36.5	55.8
Sweetgum	397.1	347.1	166.2	64.5	116.4	14.1	35.9
Black and tupelo gums	218.2	176.2	87.5	38.9	49.8	12.5	29.5
Other hardwoods	678.1	412.0	203.1	94.7	114.2	61.6	204.5
Total	2,100.2	1,511.8	732.5	330.7	448.6	178.4	410.0
All species	3,513.0	2,912.0	1,840.5	410.6	660.9	178.4	422.6
SOUTHEAST							
Softwood:							
Loblolly pine	517.0	514.7	414.0	27.1	73.6	...	2.3
Shortleaf pine	34.5	34.4	18.5	1.7	14.2	...	.1
Longleaf pine	81.5	81.5	53.6	5.3	22.6	...	.4
Slash pine	42.7	42.6	28.4	2.2	12.0	...	.1
Other pines	59.8	59.6	48.1	3.2	8.3	...	.2
Other softwoods	39.4	31.7	24.8	2.8	4.1	...	7.7
Total	774.9	764.5	587.4	42.3	134.8	...	10.4
Hardwood:							
Red oaks	189.4	117.3	47.2	23.5	46.6	20.1	52.0
White oaks	65.2	40.0	15.1	7.8	17.1	6.3	18.9
Sweetgum	158.9	121.3	49.9	22.5	48.9	5.6	32.0
Black and tupelo gums	263.5	212.2	109.8	48.3	54.1	11.6	39.7
Other hardwoods	238.5	110.8	46.9	22.8	41.1	18.9	103.8
Total	915.5	601.6	268.9	124.9	207.8	62.5	251.4
All species	1,690.4	1,366.1	856.3	167.2	342.6	62.5	261.8

^{1/} Sound volume in dead trees considered salvable is not included. This volume is as follows:

Region	Softwood	Hardwood	Region	Softwood	Hardwood
Million cubic feet			Million cubic feet		
North Delta	2.7	16.1	Southwest	7.4	14.2
South Delta	4.5	6.2	Southeast	2.9	1.6
Northwest	4.1	10.6	Total	21.6	48.7

^{2/} Negligible.

Table 16.-- Sawtimber volume and growing stock by species group and parish, 1953-1954

Parish	Growing stock			Sawtimber volume		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	- - - - Million cubic feet - - - -			- - - - - Million board feet - - - -		
Acadia	65.4	15.2	50.2	221.6	52.0	169.6
Allen	241.1	126.6	114.5	937.2	615.6	321.6
Ascension	91.1	13.7	77.4	268.8	60.5	208.3
Assumption	221.5	71.6	149.9	705.8	334.3	371.5
Avoyelles	245.1	19.6	225.5	864.6	75.0	789.6
Beauregard	218.5	106.7	111.8	870.9	494.5	376.4
Bienville	313.3	164.9	148.4	1,292.0	792.7	499.3
Bossier	158.5	66.8	91.7	490.1	265.2	224.9
Caddo	125.4	29.7	95.7	339.4	101.6	237.8
Calcasieu	158.4	61.0	97.4	620.8	284.8	336.0
Caldwell	276.8	141.8	135.0	1,159.7	732.6	427.1
Cameron	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
Catahoula	298.7	30.9	267.8	1,148.2	163.6	984.6
Claiborne	129.2	58.4	70.8	391.0	209.8	181.2
Concordia	375.6	7.2	368.4	1,442.8	41.6	1,401.2
DeSoto	208.5	111.4	97.1	715.0	422.9	292.1
East Baton Rouge	77.9	10.2	67.7	253.2	54.5	198.7
East Carroll	97.6	...	97.6	300.7	...	300.7
East Feliciana	81.0	38.9	42.1	286.9	181.8	105.1
Evangeline	141.9	43.6	98.3	548.0	213.4	334.6
Franklin	108.3	3.9	104.4	372.6	19.5	353.1
Grant	287.5	177.2	110.3	1,181.1	886.3	294.8
Iberia	90.8	13.0	77.8	258.1	48.1	210.0
Iberville	349.6	31.3	318.3	1,154.9	149.7	1,005.2
Jackson	342.1	191.1	151.0	1,520.2	965.5	554.7
Jefferson	17.3	5.7	11.6	60.9	27.8	33.1
Jefferson Davis	59.1	27.3	31.8	235.2	142.4	92.8
Lafayette	6.8	.1	6.7	24.3	.2	24.1
Lafourche	187.4	38.7	148.7	656.7	188.4	468.3
LaSalle	274.4	122.4	152.0	1,083.3	590.6	492.7
Lincoln	97.2	42.3	54.9	328.6	168.3	160.3
Livingston	447.2	260.9	186.3	1,869.5	1,313.0	556.5
Madison	286.5	1.2	285.3	1,067.8	6.4	1,061.4

Table 16.-- Sawtimber volume and growing stock by species group and parish, 1953-1954 (continued)

Parish	Growing stock			Sawtimber volume		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	- - - - Million cubic feet - - - -			- - - - Million board feet - - - -		
Morehouse	259.2	64.4	194.8	994.1	329.5	664.6
Natchitoches	351.4	177.8	173.6	1,312.9	821.9	491.0
Orleans	2.6	1.0	1.6	6.4	1.6	4.8
Ouachita	228.9	66.2	162.7	875.2	319.3	555.9
Plaquemines	10.6	...	10.6	25.7	...	25.7
Point Coupee	243.2	6.9	236.3	955.5	33.8	921.7
Rapides	389.7	137.3	252.4	1,499.9	675.5	824.4
Red River	96.5	51.2	45.3	392.0	246.9	145.1
Richland	81.5	0.5	81.0	284.8	2.7	282.1
Sabine	510.5	290.5	220.0	2,092.9	1,420.6	672.3
St. Bernard	9.1	1.7	7.4	18.5	5.1	13.4
St. Charles	68.6	14.8	53.8	242.9	71.3	171.6
St. Helena	154.1	115.0	39.1	598.4	523.4	75.0
St. James	126.1	21.2	104.9	389.6	98.5	291.1
St. John the Baptist	119.8	23.1	96.7	376.3	116.3	260.0
St. Landry	218.3	25.5	192.8	727.4	109.2	618.2
St. Martin	267.4	52.0	215.4	757.7	226.7	531.0
St. Mary	94.7	16.6	78.1	310.0	71.9	238.1
St. Tammany	228.9	120.0	108.9	866.1	533.9	332.2
Tangipahoa	196.4	94.7	101.7	733.8	438.8	295.0
Tensas	223.9	.4	223.5	829.9	...	829.9
Terrebonne	111.9	32.8	79.1	346.4	136.0	210.4
Union	391.7	214.8	176.9	1,566.7	1,007.2	559.5
Vermilion	1/54.8	1/9.9	1/44.9	1/204.5	1/52.7	1/151.8
Vernon	279.5	129.8	149.7	1,003.3	533.5	469.8
Washington	180.6	124.8	55.8	650.5	516.5	134.0
Webster	154.6	54.2	100.4	525.7	217.5	308.2
West Baton Rouge	100.5	...	100.5	353.8	...	353.8
West Carroll	79.6	.3	79.3	283.4	1.2	282.2
West Feliciana	202.7	24.8	177.9	835.0	114.4	720.6
Winn	597.4	403.3	194.1	2,670.4	2,070.6	599.8
All parishes	12,114.4	4,308.8	7,805.6	45,399.6	20,299.1	25,100.5

1/ Cameron Parish is included in Vermilion.

Table 17. -- Growing stock by species and Survey region, 1953-54

Species	State of Louisiana	North Delta	South Delta	Northwest	Southwest	Southeast
----- Million cubic feet -----						
Softwood:						
Loblolly pine	2,561.8	63.8	33.4	1,027.1	922.8	514.7
Shortleaf pine	765.2	26.2	2.9	472.0	229.7	34.4
Longleaf pine	307.9	...	(1/)	36.7	189.7	81.5
Slash pine	61.8	...	...	4.5	14.7	42.6
Other pines	60.6	...	1.0	...	...	59.6
Cypress	550.2	18.8	401.9	55.5	42.3	31.7
Other softwoods	1.3	...	...	.3	1.0	...
Total	4,308.8	108.8	439.2	1,596.1	1,400.2	764.5
Hardwood:						
Black, scarlet, and southern red oaks	296.1	11.7	5.2	144.8	108.3	26.1
Cherrybark, Shumard, and northern red oaks	125.8	16.3	27.4	35.6	39.5	7.0
Water oaks	874.5	212.5	208.6	182.6	186.6	84.2
White oak (<i>Q. alba</i>)	261.3	18.3	1.1	126.1	104.2	11.6
Other white oaks	796.8	290.9	95.0	244.6	137.9	28.4
Pecan	572.0	295.8	178.8	36.6	58.3	2.5
Other hickories	198.2	15.4	10.1	90.3	75.0	7.4
Sweetgum	1,287.7	201.9	253.5	363.9	347.1	121.3
Black and tupelo gums	1,138.4	17.9	643.6	88.5	176.2	212.2
Cottonwood	87.8	35.9	41.4	9.3	.1	1.1
Willow	477.1	65.3	384.0	10.9	11.9	5.0
Soft maples	121.8	5.4	78.4	11.0	14.3	12.7
Yellow-poplar	15.7	1.0	2.0	.2	1.3	11.2
Sweetbay and magnolia	76.1	3.7	6.8	14.1	31.3	20.2
Elm	397.7	202.5	93.4	54.4	37.0	10.4
Ash	485.9	101.6	265.8	31.7	67.2	19.6
Hackberry	252.3	108.3	120.7	11.5	11.2	.6
Beech	150.4	9.7	4.9	45.8	78.6	11.4
Sycamore	40.1	18.7	11.1	1.6	7.4	1.3
Other hardwoods	149.9	69.3	34.3	20.5	18.4	7.4
Total	7,805.6	1,702.1	2,466.1	1,524.0	1,511.8	601.6
All species	12,114.4	1,810.9	2,905.3	3,120.1	2,912.0	1,366.1

1/ Negligible.

Table 18. -- Distribution of growing stock by species within each forest type, 1953-54

Species	All types	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Elm-ash-cottonwood	Oak-gum-cypress
----- Percent -----							
Softwood:							
Loblolly pine	21.2	7.3	59.2	25.1	6.1	(1/)	0.8
Shortleaf pine	6.4	2.0	18.4	6.8	1.1	.1	(1/)
Longleaf pine	2.5	70.7	1.1	.8	.2	...	(1/)
Slash pine	.5	13.5	.1	.8	...	...	(1/)
Other pines	.5	...	.6	2.1	.8	.3	.1
Other softwoods	4.5	.3	(1/)	.3	.5	4.3	9.6
Total	35.6	93.8	79.4	35.9	8.7	4.7	10.5
Hardwood:							
Black, scarlet and southern red oaks	2.4	3.2	3.3	8.0	6.1	...	.2
Cherrybark, Shumard and northern red oaks	1.0	...	.5	2.1	3.0	(1/)	1.0
Water oaks	7.3	.3	1.2	8.2	11.4	.5	11.4
White oak (<i>Q. alba</i>)	2.2	.1	2.3	6.8	7.6	(1/)	.4
Other white oaks	6.6	.8	3.2	7.4	8.0	.4	9.5
Pecan	4.8	...	(1/)	.2	.9	2.6	10.1
Other hickories	1.6	.3	1.3	4.2	7.2	(1/)	.5
Sweetgum	10.7	1.1	5.4	14.6	19.4	2.1	13.2
Black and tupelo gums	9.4	.3	1.5	4.6	7.7	2.9	17.4
Cottonwood	.7	...	...	...	(1/)	11.7	.3
Willow	3.9	...	(1/)	.1	.1	61.0	2.0
Maple	1.0	(1/)	.2	.5	1.3	1.1	1.8
Yellow-poplar	.1	(1/)	.1	.2	.7	...	.1
Sweetbay and magnolia	.6	(1/)	.3	1.3	3.2	(1/)	.3
Elm	3.3	...	.3	1.4	2.5	1.9	6.3
Ash	4.0	(1/)	.3	1.0	2.0	7.2	7.5
Hackberry	2.1	...	...	(1/)	.3	.8	4.6
Beech	1.2	...	.6	2.8	8.3	(1/)	.3
Sycamore	.3	...	(1/)	.1	.4	2.1	.4
Other hardwoods	1.2	.1	.1	.6	1.2	1.0	2.2
Total	64.4	6.2	20.6	64.1	91.3	95.3	89.5
All species	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Negligible.

Table 19. -- Growing stock by species and stand size, by Survey region, 1953-1954

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million cubic feet -----							----- Million cubic feet -----					
STATE OF LOUISIANA							NORTHWEST					
Softwood:												
Loblolly pine	2,561.8	1,127.2	995.2	374.7	54.7	10.0	1,027.1	504.1	323.7	169.7	28.7	0.9
Shortleaf pine	765.2	267.2	346.6	132.0	18.3	1.1	472.0	187.5	190.5	81.5	12.5	...
Longleaf pine	307.9	51.3	120.7	76.4	20.4	39.1	36.7	19.8	7.9	5.7	.1	3.2
Slash pine	61.8	5.4	29.5	21.8	4.5	.6	4.5	...	...	4.5	...	...
Other pines	60.6	26.8	26.8	5.9	1.1	...	...	...	...	...	...	...
Other softwoods	551.5	268.8	196.5	72.7	9.1	4.4	55.8	20.5	18.4	13.2	3.4	.3
Total	4,308.8	1,746.7	1,715.3	683.5	108.1	55.2	1,596.1	731.9	540.5	274.6	44.7	4.4
Hardwood:												
Red oaks	1,296.4	657.3	293.2	305.0	28.1	12.8	363.0	143.9	99.9	106.6	11.8	.8
White oaks	1,058.1	593.2	206.9	217.9	23.4	16.7	370.7	153.6	104.1	100.1	10.3	2.6
Sweetgum	1,287.7	610.2	303.1	325.3	37.7	5.4	363.9	149.5	91.7	104.4	18.2	.1
Black and tupelo gums	1,138.4	526.6	409.6	188.9	9.5	3.8	88.5	42.7	27.0	17.0	1.7	.1
Other hardwoods	3,025.0	1,801.4	578.4	570.5	50.4	24.3	337.9	152.4	71.6	100.3	9.2	4.4
Total	7,805.6	4,194.7	1,791.2	1,607.6	149.1	63.0	1,524.0	642.1	394.3	428.4	51.2	8.0
All species	12,114.4	5,941.4	3,506.5	2,291.1	257.2	118.2	3,120.1	1,374.0	934.8	703.0	95.9	12.4
NORTH DELTA							SOUTHWEST					
Softwood:												
Loblolly pine	63.8	33.9	21.7	8.1	.1	...	922.8	392.5	366.1	137.7	17.4	9.1
Shortleaf pine	26.2	15.9	9.5	.8	...	...	229.7	61.3	124.4	39.0	3.9	1.1
Longleaf pine	...	...	...	...	...	...	189.7	29.8	64.9	49.0	12.2	33.8
Slash pine	...	...	...	...	...	...	14.7	.1	3.9	10.1	...	.6
Other pines	...	...	...	...	...	...	...	...	...	...	...	...
Other softwoods	18.8	14.7	.2	3.1	.2	.6	43.3	26.2	6.2	8.5	.6	1.8
Total	108.8	64.5	31.4	12.0	.3	.6	1,400.2	509.9	565.5	244.3	34.1	46.4
Hardwood:												
Red oaks	240.5	138.7	49.4	47.9	1.6	2.9	334.4	178.8	63.5	79.1	6.1	6.9
White oaks	309.2	229.5	25.4	36.2	5.7	12.4	242.1	124.1	52.5	58.4	5.8	1.3
Sweetgum	201.9	111.6	44.5	41.4	2.8	1.6	347.1	171.3	68.4	94.6	9.8	3.0
Black and tupelo gums	17.9	7.9	2.4	4.6	1.0	2.0	176.2	94.2	47.3	30.5	2.7	1.5
Other hardwoods	932.6	675.3	108.4	125.6	13.6	9.7	412.0	228.7	76.7	92.7	7.5	6.4
Total	1,702.1	1,163.0	230.1	255.7	24.7	28.6	1,511.8	797.1	308.4	355.3	31.9	19.1
All species	1,810.9	1,227.5	261.5	267.7	25.0	29.2	2,912.0	1,307.0	873.9	599.6	66.0	65.5
SOUTH DELTA							SOUTHEAST					
Softwood:												
Loblolly pine	33.4	7.5	14.7	9.9	1.3	...	514.7	189.2	269.0	49.3	7.2	...
Shortleaf pine	2.9	...	2.8	.1	...	...	34.4	2.5	19.4	10.6	1.9	...
Longleaf pine	2/	...	2/	...	...	...	81.5	1.7	47.9	21.7	8.1	2.1
Slash pine	...	...	...	...	...	...	42.6	5.3	25.6	7.2	4.5	...
Other pines	1.0	1.0	...	...	...	...	59.6	25.8	26.8	5.9	1.1	...
Other softwoods	401.9	196.9	159.0	41.1	3.7	1.2	31.7	10.5	12.7	6.8	1.2	.5
Total	439.2	205.4	176.5	51.1	5.0	1.2	764.5	235.0	401.4	101.5	24.0	2.6
Hardwood:												
Red oaks	241.2	163.4	42.6	27.9	5.9	1.4	117.3	32.5	37.8	43.5	2.7	.8
White oaks	96.1	75.0	10.4	9.6	1.1	...	40.0	11.0	14.5	13.6	.5	.4
Sweetgum	253.5	142.6	63.1	43.2	4.4	.2	121.3	41.2	35.4	41.7	2.5	.5
Black and tupelo gums	643.6	305.0	255.3	81.9	1.2	.2	212.2	76.8	77.6	54.9	2.9	...
Other hardwoods	1,231.7	715.1	280.7	214.2	18.6	3.1	110.8	29.9	41.0	37.7	1.5	.7
Total	2,466.1	1,401.1	652.1	376.8	31.2	4.9	601.6	191.4	206.3	191.4	10.1	2.4
All species	2,905.3	1,606.5	828.6	427.9	36.2	6.1	1,366.1	426.4	607.7	292.9	34.1	5.0

^{1/} Includes areas not classified elsewhere.

2/ Negligible.

Table 20. -- Average volume per acre of growing stock by forest type and Survey region, 1953-54

Forest type	State of Louisiana	North Delta	South Delta	North-west	South-west	South-east
----- Cubic feet -----						
Softwood types:						
Longleaf-slash pine	184	...	...	576	140	274
Loblolly-shortleaf pine	897	1,145	609	891	852	1,040
Oak-pine	656	615	481	634	717	638
Total	<u>661</u>	<u>860</u>	<u>575</u>	<u>801</u>	<u>531</u>	<u>693</u>
Hardwood types:						
Oak-hickory	620	638	1,034	558	706	444
Elm-ash-cottonwood	865	1,104	868	461	731	729
Oak-gum-cypress	905	825	1,089	732	821	765
Total	<u>846</u>	<u>832</u>	<u>1,047</u>	<u>642</u>	<u>770</u>	<u>665</u>
All types	755	834	1,030	748	597	682

Table 21. -- Average volume per acre of growing stock by stand size and forest type, 1953-1954

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Cubic feet -----						
Softwood types:						
Longleaf-slash pine	184	836	915	320	87	43
Loblolly-shortleaf pine	897	1,696	1,248	419	114	46
Oak-pine	<u>556</u>	<u>1,346</u>	<u>942</u>	<u>463</u>	<u>130</u>	<u>92</u>
Total	<u>661</u>	<u>1,570</u>	<u>1,148</u>	<u>420</u>	<u>112</u>	<u>45</u>
Hardwood types:						
Oak-hickory	620	1,196	833	438	125	88
Elm-ash-cottonwood	865	1,473	1,217	606	83	93
Oak-gum-cypress	<u>905</u>	<u>1,329</u>	<u>1,120</u>	<u>515</u>	<u>165</u>	<u>184</u>
Total	<u>846</u>	<u>1,323</u>	<u>1,079</u>	<u>502</u>	<u>144</u>	<u>168</u>
All types:	755	1,398	1,117	465	125	71

^{1/} Includes areas not classified elsewhere.

Table 22.--Sawtimber volume by species and tree diameter, by Survey region, 1953-1954

Species	All diameter classes	10 - 12 inches ^{1/}	14 - 18 inches	20 - 24 inches	26 inches and up	All diameter classes	10 - 12 inches ^{1/}	14 - 18 inches	20 - 24 inches	26 inches and up
----- Million board feet -----						----- Million board feet -----				
STATE OF LOUISIANA						NORTHWEST				
Softwood:										
Loblolly pine	12,443.2	3,705.4	6,456.3	2,107.2	174.3	4,928.5	1,290.0	2,549.2	1,002.0	87.3
Shortleaf pine	3,439.9	1,505.9	1,698.0	236.0	...	2,140.9	851.0	1,119.5	170.4	...
Longleaf pine	1,386.7	650.4	652.7	72.2	11.4	206.4	45.9	135.0	25.5	...
Slash pine	198.2	104.6	89.5	4.1	...	...	...	...	...	...
Other pines	302.0	80.4	144.1	64.0	13.5	...	...	...	...	...
Other softwoods	2,529.1	648.3	1,251.7	326.1	303.0	244.3	68.9	117.9	32.3	25.2
Total	20,299.1	6,695.0	10,292.3	2,809.6	502.2	7,520.1	2,255.8	3,921.6	1,230.2	112.5
Hardwood:										
Red oaks	4,263.8	515.1	1,915.5	1,130.6	702.6	1,115.1	157.4	571.6	288.2	97.9
White oaks	3,543.3	430.5	1,415.9	1,088.1	608.8	1,185.4	206.7	541.1	321.9	115.7
Sweetgum	4,068.4	703.9	2,250.6	832.5	281.4	1,152.4	222.0	691.3	185.3	53.8
Black and tupelo gums	3,395.4	589.7	1,841.0	698.8	265.9	313.2	32.4	150.0	89.2	41.6
Other hardwoods	9,829.6	1,421.6	4,993.7	2,354.3	1,060.0	979.8	177.3	509.7	229.3	63.5
Total	25,100.5	3,660.8	12,416.7	6,104.3	2,918.7	4,745.9	795.8	2,463.7	1,113.9	372.5
All species	45,399.6	10,355.8	22,709.0	8,913.9	3,420.9	12,266.0	3,051.6	6,385.3	2,344.1	485.0
NORTH DELTA						SOUTHWEST				
Softwood:										
Loblolly pine	326.4	77.7	160.0	76.9	11.8	4,522.0	1,381.8	2,372.3	706.4	61.5
Shortleaf pine	140.5	35.7	82.5	22.3	...	1,047.9	536.9	470.6	40.4	...
Longleaf pine	...	...	...	...	...	865.1	404.3	411.5	37.9	11.4
Slash pine	...	...	...	...	...	27.7	21.6	6.1	...	...
Other pines	...	...	...	...	...	...	...	...	...	...
Other softwoods	97.6	8.6	47.6	21.9	19.5	216.4	38.2	100.2	29.6	48.4
Total	564.5	122.0	290.1	121.1	31.3	6,679.1	2,382.8	3,360.7	814.3	121.3
Hardwood:										
Red oaks	840.7	103.0	378.2	240.6	118.9	1,055.8	124.1	460.3	274.1	197.3
White oaks	1,158.6	71.3	397.4	441.5	248.4	743.2	112.0	315.9	212.9	102.4
Sweetgum	687.1	103.7	367.4	147.6	68.4	1,052.6	183.8	570.9	205.6	92.3
Black and tupelo gums	68.4	6.6	25.8	19.8	16.2	548.7	77.4	311.2	115.0	45.1
Other hardwoods	3,405.0	367.6	1,622.2	900.6	514.6	1,306.1	190.1	684.1	306.0	125.9
Total	6,159.8	652.2	2,791.0	1,750.1	966.5	4,706.4	687.4	2,342.4	1,113.6	553.0
All species	6,724.3	774.2	3,081.1	1,871.2	997.8	11,385.5	3,070.2	5,703.1	1,927.9	684.3
SOUTH DELTA						SOUTHEAST				
Softwood:										
Loblolly pine	143.8	66.8	45.2	18.1	13.7	2,522.5	889.1	1,329.6	303.8	...
Shortleaf pine	4.8	4.8	...	...	...	105.8	77.5	25.4	2.9	...
Longleaf pine	...	...	...	...	...	315.2	200.2	106.2	8.8	...
Slash pine	...	...	...	...	...	170.5	83.0	83.4	4.1	...
Other pines	5.6	...	1.8	3.8	...	296.4	80.4	142.3	60.2	13.5
Other softwoods	1,819.3	495.8	904.2	212.5	206.8	151.5	36.8	81.8	29.8	3.1
Total	1,973.5	567.4	951.2	234.4	220.5	3,561.9	1,367.0	1,768.7	409.6	16.6
Hardwood:										
Red oaks	951.1	71.5	330.5	272.0	277.1	301.1	59.1	174.9	55.7	11.4
White oaks	358.6	26.8	108.0	87.6	136.2	97.5	13.7	53.5	24.2	6.1
Sweetgum	859.6	134.2	449.1	209.4	66.9	316.7	60.2	171.9	84.6	...
Black and tupelo gums	1,781.4	369.0	935.9	354.1	122.4	683.7	104.3	418.1	120.7	40.6
Other hardwoods	3,841.2	631.0	2,000.7	869.0	340.5	297.5	55.6	177.0	49.4	15.5
Total	7,791.9	1,232.5	3,824.2	1,792.1	943.1	1,696.5	292.9	995.4	334.6	73.6
All species	9,765.4	1,799.9	4,775.4	2,026.5	1,163.6	5,258.4	1,659.9	2,764.1	744.2	90.2

^{1/} Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.

Table 23. --Sawtimber volume by species and stand size, by Survey region, 1953-1954

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
STATE OF LOUISIANA							NORTHWEST					
Softwood:												
Loblolly pine	12,443.2	6,389.0	4,700.1	1,108.4	200.1	45.6	4,928.5	2,867.5	1,520.1	440.8	96.7	3.4
Shortleaf pine	3,439.9	1,464.6	1,552.3	370.8	47.8	4.4	2,140.9	1,036.1	872.5	197.6	34.7	...
Longleaf pine	1,386.7	302.9	536.4	259.3	92.8	195.3	206.4	118.0	39.5	29.2	.2	19.5
Slash pine	198.2	32.1	120.4	18.0	24.2	3.5	...	...	...	...	...	...
Other pines	302.0	154.1	121.0	21.7	5.2	...	...	...	...	...	...	...
Other softwoods	2,529.1	1,396.8	820.0	248.6	39.6	18.1	244.3	110.4	69.7	46.8	16.4	1.0
Total	20,299.1	9,739.5	7,856.2	2,026.8	409.7	266.9	7,520.1	4,132.0	2,501.8	714.4	148.0	23.9
Hardwood:												
Red oaks	4,263.8	2,581.0	903.7	667.6	72.4	39.1	1,115.1	547.8	308.9	224.8	31.7	1.9
White oaks	3,543.3	2,310.8	604.1	490.6	74.0	63.8	1,185.4	591.5	316.1	235.8	31.8	10.2
Sweetgum	4,068.4	2,404.8	891.6	644.3	110.3	17.4	1,152.4	589.2	272.1	238.3	52.8	...
Black and tupelo gums	3,395.4	1,930.3	1,106.0	322.7	27.2	9.2	313.2	174.5	97.5	35.3	5.9	...
Other hardwoods	9,829.6	6,753.1	1,674.4	1,199.9	127.6	74.6	979.8	537.3	212.6	203.5	13.5	12.9
Total	25,100.5	15,980.0	5,179.8	3,325.1	411.5	204.1	4,745.9	2,440.3	1,207.2	937.7	135.7	25.0
All species	45,399.6	25,719.5	13,036.0	5,351.9	821.2	471.0	12,266.0	6,572.3	3,709.0	1,652.1	283.7	48.9
NORTH DELTA							SOUTHWEST					
Softwood:												
Loblolly pine	326.4	186.6	104.4	35.0	.4	...	4,522.0	2,207.1	1,737.6	456.8	78.3	42.2
Shortleaf pine	140.5	93.0	43.4	4.1	...	...	1,047.9	326.0	563.2	145.0	9.3	4.4
Longleaf pine	...	...	...	...	...	...	865.1	175.7	300.3	164.1	58.9	166.1
Slash pine	...	...	...	...	...	...	27.7	.3	14.5	9.4	...	3.5
Other softwoods	97.6	80.5	.4	13.4	...	3.3	216.4	144.1	28.4	31.8	4.1	8.0
Total	564.5	360.1	148.2	52.5	.4	3.3	6,679.1	2,853.2	2,644.0	807.1	150.6	224.2
Hardwood:												
Red oaks	840.7	548.8	164.1	115.9	.4	11.5	1,055.8	670.9	184.1	172.2	10.8	17.8
White oaks	1,158.6	911.9	76.2	100.2	21.7	48.6	743.2	463.7	151.4	107.7	16.9	3.5
Sweetgum	687.1	453.1	143.7	76.4	7.4	6.5	1,052.6	659.3	188.9	162.3	32.3	9.8
Black and tupelo gums	68.4	36.0	7.3	13.9	4.4	6.8	548.7	348.0	130.6	61.4	7.0	1.7
Other hardwoods	3,405.0	2,654.6	352.1	327.1	39.9	31.3	1,306.1	825.7	228.2	208.5	23.6	20.1
Total	6,159.8	4,604.4	743.4	633.5	73.8	104.7	4,706.4	2,967.6	883.2	712.1	90.6	52.9
All species	6,724.3	4,964.5	891.6	686.0	74.2	108.0	11,385.5	5,820.8	3,527.2	1,519.2	241.2	277.1
SOUTH DELTA							SOUTHEAST					
Softwood:												
Loblolly pine	143.8	39.1	71.2	29.4	4.1	...	2,522.5	1,088.7	1,266.8	146.4	20.6	...
Shortleaf pine	4.8	...	4.0	.8	...	...	105.8	9.5	69.2	23.3	3.8	...
Longleaf pine	...	...	...	...	...	...	315.2	9.2	196.6	66.0	33.7	9.7
Slash pine	...	...	...	...	...	...	170.5	31.8	105.9	8.6	24.2	...
Other pines	5.6	5.6	...	...	...	...	296.4	148.5	121.0	21.7	5.2	...
Other softwoods	1,819.3	1,005.3	670.9	125.5	14.4	3.2	151.5	56.5	56.6	31.1	4.7	2.6
Total	1,973.5	1,050.0	746.1	155.7	18.5	3.2	3,561.9	1,344.2	1,816.1	297.1	92.2	12.3
Hardwood:												
Red oaks	951.1	707.8	138.6	73.9	25.1	5.7	301.1	105.7	108.0	80.8	4.4	2.2
White oaks	358.6	302.2	28.0	25.2	3.2	...	97.5	41.5	32.4	21.7	.4	1.5
Sweetgum	859.6	561.9	196.2	88.5	12.3	.7	310.7	141.3	90.7	78.8	5.5	.4
Black and tupelo gums	1,781.4	1,059.8	609.9	107.8	3.2	.7	683.7	312.0	260.7	104.3	6.7	...
Other hardwoods	3,841.2	2,636.5	759.1	389.1	48.3	8.2	297.5	99.0	122.4	71.7	2.3	2.1
Total	7,791.9	5,268.2	1,731.8	684.5	92.1	15.3	1,696.5	699.5	614.2	357.3	19.3	6.2
All species	9,765.4	6,318.2	2,477.9	840.2	110.6	18.5	5,258.4	2,043.7	2,430.3	654.4	111.5	18.5

^{1/} Includes areas not classified elsewhere.

Table 24. --Sawtimber volume by species and Survey region, 1953-54

Species	State of Louisiana	North Delta	South Delta	Northwest	Southwest	Southeast
----- Million board feet -----						
Softwood:						
Loblolly pine	12,443.2	326.4	143.8	4,928.5	4,522.0	2,522.5
Shortleaf pine	3,439.9	140.5	4.8	2,140.9	1,047.9	105.8
Longleaf pine	1,386.7	...	...	206.4	865.1	315.2
Slash pine	198.2	...	...	...	27.7	170.5
Other pines	302.0	...	5.6	...	...	296.4
Cypress	2,524.7	97.6	1,819.3	243.8	212.5	151.5
Other softwoods	4.4	...	...	.5	3.9	...
Total	20,299.1	564.5	1,973.5	7,520.1	6,679.1	3,561.9
Hardwood:						
Black, scarlet and southern red oaks	747.6	31.3	15.6	406.4	249.7	44.6
Cherrybark, Shumard and northern red oaks	464.0	53.1	113.3	117.9	157.5	22.2
Water oaks	3,052.2	756.3	822.2	590.8	648.6	234.3
White oak (<i>Q. alba</i>)	829.8	65.0	.5	418.6	324.1	21.6
Other white oaks	2,713.5	1,093.6	358.1	766.8	419.1	75.9
Pecan	2,157.8	1,158.6	668.4	120.5	203.8	6.5
Other hickories	656.8	54.6	47.1	283.0	248.0	24.1
Sweetgum	4,068.4	687.1	859.6	1,152.4	1,052.6	316.7
Black and tupelo gums	3,395.4	68.4	1,781.4	313.2	548.7	683.7
Cottonwood	341.7	179.7	148.9	10.3	...	2.8
Willow	1,520.1	255.7	1,193.3	25.2	37.2	8.7
Soft maple	244.5	20.6	160.2	22.0	16.2	25.5
Yellow-poplar	55.0	2.3	7.2	.6	4.7	40.2
Sweetbay and magnolia	252.3	17.2	37.0	45.5	94.0	58.6
Elm	1,344.9	742.1	321.5	142.4	111.5	27.4
Ash	1,412.3	312.1	755.9	84.1	214.5	45.7
Hackberry	768.2	349.2	358.7	27.3	31.0	2.0
Beech	565.7	38.9	20.6	178.1	282.7	45.4
Sycamore	162.9	89.0	37.3	3.4	31.3	1.9
Other hardwoods	347.4	185.0	85.1	37.4	31.2	8.7
Total	25,100.5	6,159.8	7,791.9	4,745.9	4,706.4	1,696.5
All species	45,399.6	6,724.3	9,765.4	12,266.0	11,385.5	5,258.4

Table 25. -- Average sawtimber volume per acre by forest type and Survey region, 1953-54

Forest type	State of Louisiana	North Delta	South Delta	North-west	South-west	South-east
----- Board feet -----						
Softwood types:						
Longleaf-slash pine	735	...	...	2,442	580	1,004
Loblolly-shortleaf pine	3,918	5,272	2,381	3,896	3,679	4,652
Oak-pine	2,382	2,392	1,465	2,248	2,615	2,428
Total	2,755	3,721	2,137	3,335	2,208	2,923
Hardwood types:						
Oak-hickory	1,984	2,051	4,249	1,688	2,308	1,297
Elm-ash-cottonwood	2,726	4,575	2,546	809	2,493	2,602
Oak-gum-cypress	3,174	3,003	3,714	2,667	2,954	2,480
Total	2,903	3,044	3,511	2,151	2,670	2,124
All types	2,831	3,097	3,463	2,942	2,336	2,626

Table 26. -- Average sawtimber volume per acre by stand size and forest type, 1953-54

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and other sapling	Nonstocked and other areas ^{1/}
----- Board feet -----						
Softwood types:						
Longleaf-slash pine	735	4,658	3,838	818	384	202
Loblolly-shortleaf pine	3,918	8,638	5,327	1,063	335	157
Oak-pine	2,382	5,943	3,574	1,195	392	371
Total	2,755	7,794	4,788	1,074	360	204
Hardwood types:						
Oak-hickory	1,984	4,857	2,755	902	376	218
Elm-ash-cottonwood	2,726	6,121	3,437	1,039	151	268
Oak-gum-cypress	3,174	5,283	3,499	1,190	558	648
Total	2,903	5,286	3,362	1,095	459	577
All types	2,831	6,053	4,153	1,086	398	284

^{1/} Includes areas not classified elsewhere.

Table 27. -- Softwood sawtimber volume by log grade and stand quality, by species group and Survey region, 1953-1954

Species group and Survey region	All grades	Grade 1	Grade 2	Grade 3			Grade 4		
				Total	In fair and better stands	In poor stands	Total	In fair and better stands	In poor stands
----- Million board feet -----									
Species group:									
Loblolly pine	12,443.2	262.1	1,719.3	4,836.5	2,411.4	2,425.1	5,625.3	2,282.1	3,343.2
Shortleaf pine	3,439.9	20.5	660.0	1,301.0	783.8	517.2	1,458.4	752.0	706.4
Longleaf pine	1,386.7	9.1	172.7	401.2	88.2	313.0	803.7	153.9	649.8
Slash pine	198.2	0.9	47.9	74.6	36.7	37.9	74.8	16.9	57.9
Other pines	302.0	8.8	40.7	141.9	48.3	93.6	110.6	24.4	86.2
Other softwoods	2,529.1	130.4	445.0	1,295.5	749.2	546.3	658.2	325.8	332.4
Total	20,299.1	431.8	3,085.6	8,050.7	4,117.6	3,933.1	8,731.0	3,555.1	5,175.9
Survey region:									
North Delta	564.5	25.3	144.7	219.3	160.9	58.4	175.2	131.2	44.0
South Delta	1,973.5	89.5	336.5	1,083.0	675.5	407.5	464.5	270.9	193.6
Northwest	7,520.1	157.6	1,357.3	2,879.5	1,637.8	1,241.7	3,125.7	1,502.9	1,622.8
Southwest	6,679.1	128.8	870.1	2,127.8	1,022.8	1,105.0	3,552.4	1,358.3	2,194.1
Southeast	3,561.9	30.6	377.0	1,741.1	620.6	1,120.5	1,413.2	291.8	1,121.4
Total	20,299.1	431.8	3,085.6	8,050.7	4,117.6	3,933.1	8,731.0	3,555.1	5,175.9

Table 28.-- Hardwood sawtimber volume by log class and stand quality, by species group and Survey region, 1953-1954

Species group and Survey region	All classes	Standard lumber logs					Tie and timber logs		
		Grade 1	Grade 2	Grade 3			Total	In fair and better stands	In poor stands
				Total	In fair and better stands	In poor stands			
----- Million board feet -----									
Species group:									
Red oaks	4,263.8	491.5	688.8	1,918.4	893.7	1,024.7	1,165.1	515.8	649.3
White oaks	3,543.3	434.0	577.1	1,571.7	774.2	797.5	960.5	393.2	567.3
Sweetgum	4,068.4	389.7	679.2	1,974.4	965.3	1,009.1	1,025.1	419.2	605.9
Black and tupelo gums	3,395.4	340.0	880.5	1,807.6	1,019.1	788.5	367.3	210.2	157.1
Other hardwoods	9,829.6	1,286.4	1,974.6	4,885.5	2,671.9	2,213.6	1,683.1	679.9	1,003.2
Total	25,100.5	2,941.6	4,800.2	12,157.6	6,324.2	5,833.4	5,201.1	2,218.3	2,982.8
Survey region:									
North Delta	6,159.8	1,007.8	1,264.1	2,785.5	1,603.7	1,181.8	1,102.4	427.3	675.1
South Delta	7,791.9	1,030.1	1,752.2	4,027.7	2,455.4	1,572.3	981.9	556.0	425.9
Northwest	4,745.9	331.8	638.0	2,255.2	1,035.9	1,219.3	1,520.9	648.3	872.6
Southwest	4,706.4	498.4	838.3	2,146.4	1,083.2	1,063.2	1,223.3	535.1	688.2
Southeast	1,696.5	73.5	307.6	942.8	146.0	796.8	372.6	51.6	321.0
Total	25,100.5	2,941.6	4,800.2	12,157.6	6,324.2	5,833.4	5,201.1	2,218.3	2,982.8

Table 29.-- Net annual growth of sawtimber and growing stock by species and class of timber, by Survey region, 1953-1954

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
----- Million cubic feet ----- ----- Million board feet -----						
STATE OF LOUISIANA						
Sawtimber trees	569.2	267.6	301.6	2,809.4	1,495.6	1,313.8
Poletimber trees	146.8	42.2	104.6	...	...	...
Total	716.0	309.8	406.2	2,809.4	1,495.6	1,313.8
NORTH DELTA						
Sawtimber trees	68.2	6.4	61.8	308.0	35.8	272.2
Poletimber trees	19.9	.8	19.1	...	...	...
Total	88.1	7.2	80.9	308.0	35.8	272.2
SOUTH DELTA						
Sawtimber trees	134.5	19.2	115.3	592.8	101.2	491.0
Poletimber trees	26.2	1.4	24.8	...	...	...
Total	160.7	20.6	140.1	592.8	101.2	491.6
NORTHWEST						
Sawtimber trees	155.3	104.4	50.9	804.9	575.7	229.2
Poletimber trees	46.7	21.4	25.3	...	...	...
Total	202.0	125.8	76.2	804.9	575.7	229.2
SOUTHWEST						
Sawtimber trees	141.2	90.0	51.2	728.1	504.5	223.6
Poletimber trees	32.9	11.8	21.1	...	...	...
Total	174.1	101.8	72.3	728.1	504.5	223.6
SOUTHEAST						
Sawtimber trees	70.0	47.6	22.4	375.6	278.4	97.2
Poletimber trees	21.1	6.8	14.3	...	...	...
Total	91.1	54.4	36.7	375.6	278.4	97.2

Table 30. --Net annual growth per acre of sawtimber and growing stock, by forest-type and stand-size group, by Survey region, 1953-1954

Stand-size group	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
- - - - - Cubic feet - - - - - Board feet - - -						
STATE OF LOUISIANA						
Sawtimber	61	72	53	281	367	220
Poletimber	43	48	39	123	152	98
Other stand sizes	13	13	15	35	38	28
Total	45	46	43	175	198	153
NORTH DELTA						
Sawtimber	46	65	45	180	278	172
Poletimber	38	54	37	97	195	87
Other stand sizes	16	17	16	36	11	37
Total	41	58	39	142	238	134
SOUTH DELTA						
Sawtimber	68	73	68	285	320	284
Poletimber	48	66	48	126	270	121
Other stand sizes	19	27	18	25	38	24
Total	57	55	57	210	210	210
NORTH WEST						
Sawtimber	62	73	38	311	369	176
Poletimber	46	54	34	129	154	88
Other stand sizes	21	25	13	54	65	28
Total	48	57	32	193	233	112
SOUTHWEST						
Sawtimber	59	66	45	284	332	193
Poletimber	42	46	36	134	159	93
Other stand sizes	9	8	12	30	31	26
Total	36	36	36	149	158	126
SOUTHEAST						
Sawtimber	74	88	51	372	470	199
Poletimber	38	37	40	105	118	92
Other stand sizes	13	13	11	29	31	21
Total	45	49	40	188	227	121

1/ Negligible.

Table 31.--Annual cut of sawtimber and growing stock by species, 1953

Species	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.
Softwood:		
Pines	165.9	557.8
Cypress	10.0	49.0
Other	(1/)	(1/)
Total	<u>175.9</u>	<u>605.8</u>
Hardwood:		
Oaks	70.1	320.0
Other firm-textured		
hardwoods	33.5	138.6
Black and tupelo gums	28.3	121.0
Sweetgum	26.8	113.4
Other soft-textured		
hardwoods	31.0	128.3
Total	<u>189.7</u>	<u>821.3</u>
All species	365.6	1,428.1

1/ Negligible.

Table 32.-Annual cut of sawtimber and growing stock, by species group and class of timber, by Survey region, 1953

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
Million cubic feet			Million board feet			
STATE OF LOUISIANA						
Sawtimber trees	287.6	119.3	168.3	1,428.1	606.8	821.3
Poletimber trees	78.0	56.6	21.4	...	...	...
Total	365.6	175.9	189.7	1,428.1	606.8	821.3
NORTH DELTA						
Sawtimber trees	45.0	4.1	40.9	220.6	20.9	199.7
Poletimber trees	5.9	1.2	4.7	...	...	...
Total	50.9	5.3	45.6	220.6	20.9	199.7
SOUTH DELTA						
Sawtimber trees	43.7	4.8	38.9	215.4	25.4	190.0
Poletimber trees	5.8	0.6	5.2	...	...	...
Total	49.5	5.4	44.1	215.4	25.4	190.0
NORTHWEST						
Sawtimber trees	76.0	41.4	34.6	373.8	206.0	167.8
Poletimber trees	32.7	27.3	5.4	...	...	...
Total	108.7	68.7	40.0	373.8	206.0	167.8
SOUTHWEST						
Sawtimber trees	70.6	40.1	30.5	356.6	207.1	149.5
Poletimber trees	17.9	14.7	3.2	...	...	...
Total	88.5	54.8	33.7	356.6	207.1	149.5
SOUTHEAST						
Sawtimber trees	52.3	28.9	23.4	261.7	147.4	114.3
Poletimber trees	15.7	12.8	2.9	...	...	...
Total	68.0	41.7	26.3	261.7	147.4	114.3

Table 33.--Change in commercial forest land between Surveys by forest-type group and Survey region, 1934-35 and 1953-54

Survey region	Change between Surveys			
	All types	Softwood ^{1/}	Bottomland hardwood ^{2/}	Oak-hickory
	----- Percent -----			
North Delta	- 11	+ 11	- 14	+ 78
South Delta	- 6	+ 29	- 8	+ 55
Northwest	+ 14	+ 18	- 15	+ 50
Southwest	- 2	- 4	- 24	+ 85
Southeast	- 4	- 12	- 8	+ 116
Total	- 1	+ 2	- 13	+ 71

1/ Includes longleaf-slash pine, loblolly-shortleaf pine, and oak-pine types.

2/ Includes oak-gum-cypress and elm-ash-cottonwood types.

Table 34.--Change in growing stock between Surveys by species group and Survey region, 1934-35 and 1953-54

Survey region	Change between Surveys		
	All species	Softwood	Hardwood
	----- Percent -----		
North Delta	- 22	- 7	- 22
South Delta	+ 26	+ 35	+ 24
Northwest	+ 6	+ 6	+ 6
Southwest	+ 12	+ 13	+ 12
Southeast	+ 1	+ 8	- 8
Total	+ 5	+ 11	+ 2

Table 35.--Change in sawtimber volume between Surveys by species group and Survey region, 1934-35 and 1953-54

Survey region	Change between Surveys		
	All species	Softwood	Hardwood
	----- Percent -----		
North Delta	- 27	- 7	- 28
South Delta	+ 23	+ 33	+ 21
Northwest	+ 4	+ 9	- 3
Southwest	+ 8	+ 14	+ 2
Southeast	- 4	+ 8	- 24
Total	+ 1	+ 12	- 6

Table 36. -- Total number of live trees^{1/} by species group and Survey region (1953-54) and change between Surveys (1934-35 and 1953-54)

Diameter class (inches)	Softwood		Hardwood	
	Thousand trees	Percent change	Thousand trees	Percent change
STATE OF LOUISIANA				
2-4	1,122,522	+ 59	5,182,297	+ 94
6-8	265,767	+ 8	681,122	+ 34
10-12	107,654	+ 5	269,446	+ 28
14-18	53,742	+ 41	149,554	+ 14
20 and up	7,495	- 12	46,606	- 16
Total	1,557,180	+ 41	6,329,025	+ 77

NORTH DELTA

2-4	20,384	+ 18	846,957	+163
6-8	4,268	- 17	98,275	+ 27
10-12	1,923	- 10	41,761	- 2
14-18	1,452	+ 69	30,998	(2/)
20 and up	398	- 35	12,752	- 28
Total	28,425	+ 9	1,030,743	+110

SOUTH DELTA

2-4	61,558	+ 7	1,153,974	+ 50
6-8	29,000	+ 26	201,663	+ 21
10-12	13,441	+ 35	85,420	+ 44
14-18	7,431	+ 66	42,761	+ 30
20 and up	1,291	+ 4	12,768	+ 8
Total	112,721	+ 17	1,496,586	+ 44

Softwood		Hardwood	
Thousand trees	Percent change	Thousand trees	Percent change
NORTHWEST			
553,570	+138	1,543,277	+148
116,675	+ 14	152,822	+ 40
36,187	- 18	58,588	+ 25
18,679	+ 28	30,167	+ 15
2,748	+ 27	8,421	- 16
727,859	+ 84	1,793,275	+120

SOUTHWEST

338,689	+ 65	1,201,386	+ 80
75,520	+ 3	154,129	+ 46
36,542	+ 16	57,027	+ 34
17,465	+ 52	30,553	+ 18
1,993	- 29	8,835	- 10
470,209	+ 45	1,451,930	+ 70

SOUTHEAST

148,321	- 23	436,703	+ 53
40,304	- 5	74,233	+ 45
19,561	+ 34	26,650	+ 31
8,715	+ 31	15,075	+ 2
1,065	- 37	3,830	- 32
217,966	- 16	556,491	+ 48

^{1/} Includes both cull and growing stock trees.

^{2/} Negligible.

DEFINITIONS OF TERMS

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forestland (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous are loblolly pine (Pinus taeda); shortleaf pine (P. echinata); longleaf pine (P. palustris); slash pine (P. caribaea); and cypress (Taxodium distichum).

Hardwoods. Broadleaved species, of which the most numerous are the oaks (Quercus spp.) and sweetgum (Liquidambar styraciflua).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Longleaf-slash pine. Forests in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. (Common associates include other southern pines, oak, and gum.)

Loblolly-shortleaf pine. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. (Common associates include oak, hickory, and gum.)

Oak-pine. Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25 - 49 percent of the stand. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory. Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress. Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood. Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. (Common associates include willow, sycamore, beech, and maple.)

Class of Timber

Sawtimber trees. Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.

- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees. Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees. Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees. Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees. Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees. Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 boardfeet, International 1/4-inch rule, and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, but which do not meet the specifications for large sawtimber.

Poletimber. Stands failing to meet the sawtimber stand specification, 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.

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock. Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside 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 inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d.b.h.

Growth

Net annual growth of sawtimber. The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Cut

Annual cut of sawtimber. The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Annual cut of growing stock. The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Output

Timber products output. The volume of timber products cut from both growing stock and other sources.

Softwood Log Grades^{4/}

Softwood log grades are based on the value yield per unit outturn of yard lumber. The value of lumber yield may be expressed relative to the value of No. 2 Commonlumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Commonlumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber.^{5/} Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade-2 or better logs are present per acre.

Poor. A stand in which fewer than four grade-2 or better logs are present per acre.

^{4/} For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Experiment Station, 18 pp. 1953.

^{5/} For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory D1737. 1949.

STANDARD TABLES

The 10 tables that follow will be found in all Forest Survey State reports in order that forest statistics for a group of States can be easily compared or compiled.

Table I. -- Land area, by major classes of land, Louisiana
1953-54

Class of land	Area
	<u>Thousand acres</u>
Forest:	
Commercial	16,038.0
Noncommercial:	
Productive-reserved	84.3
Unproductive	6.6
Total	16,128.9
Nonforest ^{1/}	12,774.8
Total, all classes	28,903.7

^{1/} Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. -- Commercial forest land area, by ownership class,
Louisiana, 1953-54

Ownership class	Area
	<u>Thousand acres</u>
Federally owned or managed:	
National forest	535.8
Indian	...
Bureau of Land Management	4.3
Other	127.3
Total	667.4
State	176.1
County and municipal	4.9
Private:	
Farm	3,189.1
Industrial and other	12,000.5
Total	15,189.6
All ownerships	16,038.0

Table III. -- Area of commercial forest land, by major forest
types, Louisiana, 1953-54

Forest type	Thousand acres
Longleaf-slash pine	1,966.8
Loblolly-shortleaf pine	4,011.5
Oak-pine	1,855.7
Oak-hickory	1,601.9
Oak-gum-cypress	5,899.1
Elm-ash-cottonwood	703.0
Total	16,038.0

Table IV.--Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, Louisiana, 1953-54

Stand-size class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Sawtimber stands	38,755.5	9,447.9
Poletimber stands	5,351.9	2,291.1
Seedling and sapling stands	821.2	257.2
Nonstocked and other areas not elsewhere classified	471.0	118.2
Total	45,399.6	12,114.4

Table V.--Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, Louisiana, 1953-54

Ownership class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Federally owned or managed:		
National forest	1,574.9	373.6
Indian	...	...
Bureau of Land Management	10.0	2.7
Other	283.9	77.5
Total	1,868.8	453.8
State	487.0	134.0
County and municipal	7.4	2.1
Private:		
Farm	6,667.4	1,960.9
Industrial and other	36,369.0	9,563.6
Total	43,036.4	11,524.5
All ownerships	45,399.6	12,114.4

Table VI.--Net volume of live sawtimber and growing stock on commercial forest land, by species, Louisiana, 1953-54

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Longleaf and slash pines	1,584.9	369.7
Shortleaf and loblolly pines	15,883.1	3,327.0
Other southern yellow pines	302.0	60.6
Cypress	2,524.7	550.2
Other eastern softwoods	4.4	1.3
Total	20,299.1	4,308.8
Hardwoods:		
White oaks (<i>Q. alba</i> and <i>michauxii</i>)	992.7	303.8
Red oaks (<i>Q. rubra</i> , <i>shumardii</i> , and <i>falcata</i> var. <i>pagodaefolia</i>)	464.0	125.8
Other white oaks	2,550.6	754.3
Other red oaks	3,799.8	1,170.6
Sugar maple	9.4	3.8
Soft maples	244.5	121.8
Beech	565.7	150.4
Sweetgum	4,068.4	1,287.7
Tupelo and blackgum	3,395.4	1,138.4
Ash	1,412.3	485.9
Hickory	2,814.6	770.2
Cottonwood	341.7	87.8
Basswood	13.8	4.0
Yellow-poplar	55.0	15.7
Black walnut	.5	.2
Other eastern hardwoods	4,372.1	1,385.2
Total	25,100.5	7,805.6
All species	45,399.6	12,114.4

Table VII.--Net volume of live sawtimber on commercial forest land, by diameter class groups and species, Louisiana, 1953-54

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
----- Million board feet -----							
Southern yellow pines	2,595.6	3,451.1	3,653.8	3,113.5	2,273.3	2,682.7	17,770.0
Other eastern softwoods	249.5	398.8	458.3	412.9	380.5	629.1	2,529.1
White oaks (<u>Q. alba</u> and <u>michauxii</u>)	...	171.1	181.8	185.1	140.9	312.8	992.7
Other white oaks	...	259.4	277.4	319.2	310.5	1,384.1	2,550.6
Red oaks (<u>Q. rubra</u> , <u>falcata</u> var. <u>pagodaefolia</u> and <u>shumardii</u>)	...	46.7	85.7	75.7	83.0	172.9	464.0
Other red oaks	...	468.4	573.6	570.9	526.6	1,660.3	3,799.8
Sugar maple	...	2.7	3.0	2.7	1.0	...	9.4
Beech	...	61.7	92.8	98.7	105.4	207.1	565.7
Sweetgum	...	703.9	879.4	729.3	641.9	1,113.9	4,068.4
Tupelo and blackgum	...	589.7	683.8	651.8	505.4	964.7	3,395.4
Yellow-poplar	...	11.3	14.8	9.2	7.8	11.9	55.0
Other eastern hardwoods	...	1,345.9	1,572.5	1,598.6	1,487.2	3,195.3	9,199.5

Table VIII.--Net volume of all timber on commercial forest land, by class of material and species group, Louisiana, 1953-54

Class of material	Total	Softwoods	Hardwoods
----- Million cubic feet -----			
Growing stock:			
Sawtimber trees:			
Sawlog portion	7,269.6	3,353.5	3,916.1
Upper stem portion	2,014.2	250.9	1,763.3
Total	9,283.8	3,604.4	5,679.4
Poletimber trees	2,830.6	704.4	2,126.2
Total growing stock	12,114.4	4,308.8	7,805.6
Other material:			
Sound cull trees	1,261.7	34.8	1,226.9
Rotten cull trees	630.1	42.0	588.1
Hardwood limbs	904.6	...	904.6
Salvable dead trees	70.3	21.6	48.7
Total other material	2,866.7	98.4	2,768.3
Total, all timber	14,981.1	4,407.2	10,573.9

Table IX.--Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, Louisiana, 1953

Item	Sawtimber			Growing stock		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
----- Million board feet -----						
Net annual growth	2,809.4	1,495.6	1,313.8	716.0	309.8	406.2
Annual mortality	272.9	122.3	150.6	81.2	28.0	53.2
Annual cut						
Timber products	1,354.7	596.1	758.6	303.2	164.3	138.9
Logging residues	73.4	10.7	62.7	62.4	11.6	50.8
Total annual cut	1,428.1	606.8	821.3	365.6	175.9	189.7

Table X. --Output of timber products and annual cut of live sawtimber and growing stock. Louisiana, 1953

Product	Output of timber products					Annual cut of sawtimber			Annual cut of growing stock		
	Volume in standard units		Roundwood volume								
	Standard units	Number	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
			Thousand cubic feet			Thousand board feet			Thousand cubic feet		
Sawlogs	MBM ^{1/}	957,052	148,995	71,610	77,385	952,831	411,980	540,851	190,341	78,914	111,427
Veneer logs and bolts	MBM ^{1/}	68,000	9,520	...	9,520	75,131	...	75,131	13,727	...	13,727
Cooperage logs and bolts	MBM ^{1/}	5,453	782	...	782	6,806	...	6,806	1,527	...	1,527
Pulpwood	Std. cords ^{2/}	^{3/} 1,375,500	104,184	88,894	15,290	139,560	105,980	33,580	91,605	76,404	15,201
Fuelwood	Std. cords ^{2/}	^{4/} 761,395	57,115	2,120	54,995	109,005	7,925	101,080	33,320	1,692	31,628
Piling	M linear feet	7,524	5,891	5,831	60	33,764	33,404	360	6,919	6,859	60
Poles	M pieces	505	7,716	7,716	...	44,203	44,203	...	9,076	9,076	...
Posts	M pieces	6,776	4,384	2,590	1,794	8,263	1,127	7,136	4,002	2,432	1,570
Hewn ties	M pieces	402	2,822	295	2,527	21,429	2,181	19,248	4,874	402	4,472
Miscellaneous ^{5/}	M cu. ft.	^{6/} 5,352	5,352	128	5,224	37,134	...	37,134	10,248	111	10,137
Total			346,761	179,184	167,577	1,428,126	606,800	821,326	365,639	175,890	189,749

^{1/} International 1/4-inch rule.^{2/} Rough wood basis.^{3/} Not including 0.2 million cubic feet of wood from mill residues used for pulp.^{4/} Not including 64.0 million cubic feet of wood from mill residues used for domestic and industrial fuel.^{5/} Includes handle stock, furniture stock, chemical wood, etc.^{6/} Not including 2.5 million cubic feet of mill residues used for miscellaneous products.



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1954 PULPWOOD PRODUCTION IN THE SOUTH

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PREFACE

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act. The Southeastern Forest Experiment Station, Asheville, North Carolina, is responsible for the work in Virginia, North Carolina, South Carolina, Georgia, and Florida. The Southern Forest Experiment Station, New Orleans, Louisiana, directs the work in Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

The work of the Survey is divided into five major phases:

1. Inventory. Determination of the extent, location, and condition of forest lands, and the quantity, species, and quality of timber on these lands.
2. Growth. Determination of the current rate of timber growth.
3. Drain. Determination of the amount of industrial and domestic wood used, and the total loss resulting from fire, insects, disease, suppression, and other causes.
4. Requirements. Determination of the current and probable future requirements for forest products by all classes of consumers.
5. Policies and plans. Analysis of the relation of these findings to one another and to other economic factors as a basis for public and private policies and plans of forest land use and management.

ACKNOWLEDGMENT

The statistics presented herein are based upon reports furnished by the wood procurement officials representing 71 mills located in, or drawing wood from the South. Reports showed either production by county or by shipping points which were used to assign production to counties. County data are approximate, but totals for small groups of counties should have little error.

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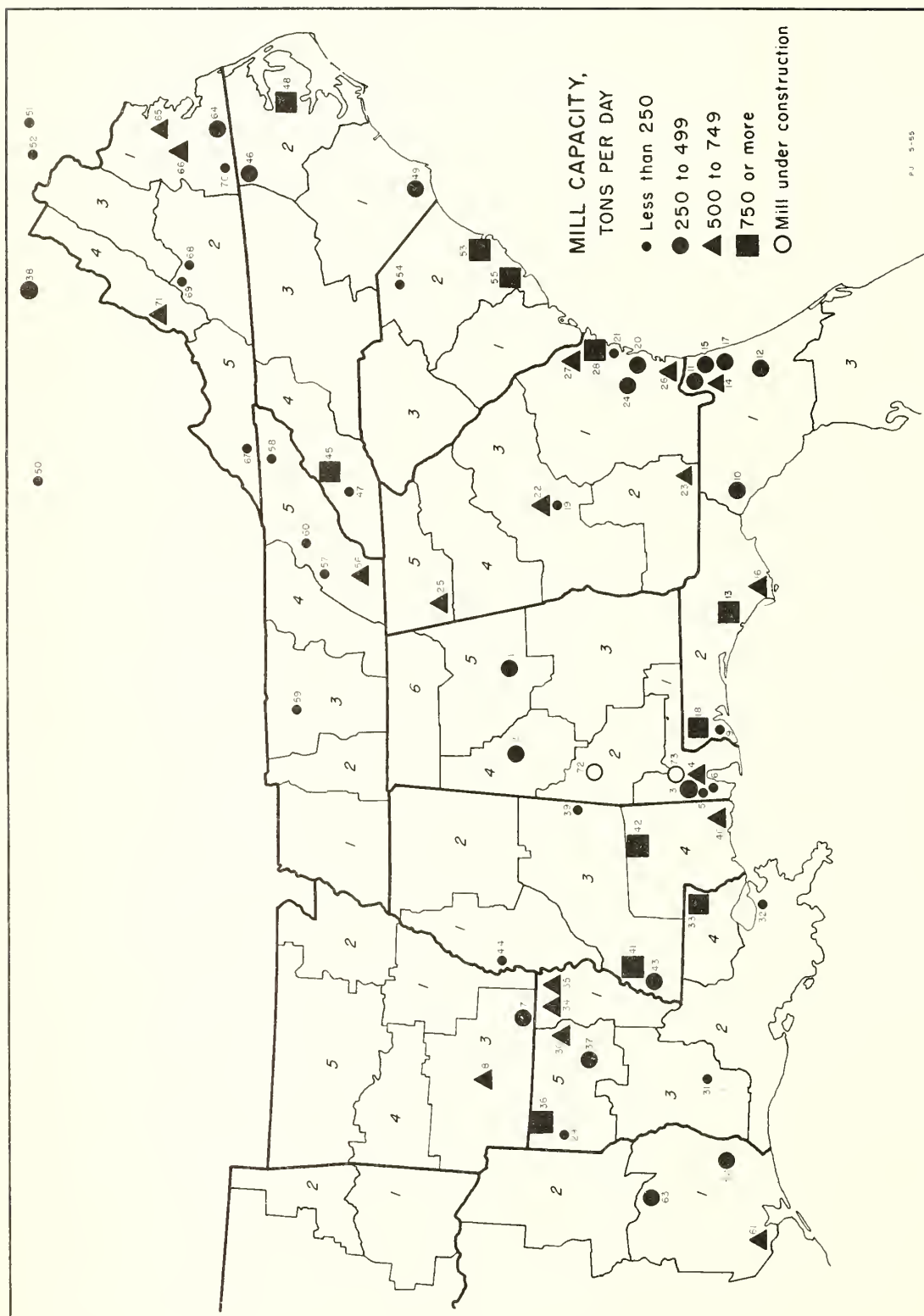


Figure 1.—Pulp mills drawing wood from the South, 1954. Numbered areas are Forest Survey regions. Small numbers at mill locations correspond to numbers in tables 16 and 17.

1954 PULPWOOD PRODUCTION IN THE SOUTH

In 1954, pulpwood production in the South was 16,269,600 cords, an increase of 0.9 percent over 1953. It was the largest harvest on record. The cut of pine pulpwood was 14,108,000 cords, of hardwood 2,128,800 cords, and of dead chestnut 32,800 cords. While hardwood production was 11.0 percent more than in 1953, pine was 0.3 percent less, and dead chestnut 46.3 percent less. In 1954, southern wood accounted for 60 percent of domestic pulpwood receipts at all mills in the United States.

Georgia led the South with more than three million cords (fig. 2), 19 percent of the regional total (table 1). Eight other states produced more than a million cords apiece. Clinch County, Georgia, led in county production with 149,590 cords. Baldwin County, Alabama, and Winn and Union Parishes in Louisiana, also cut more than 100,000 cords each.

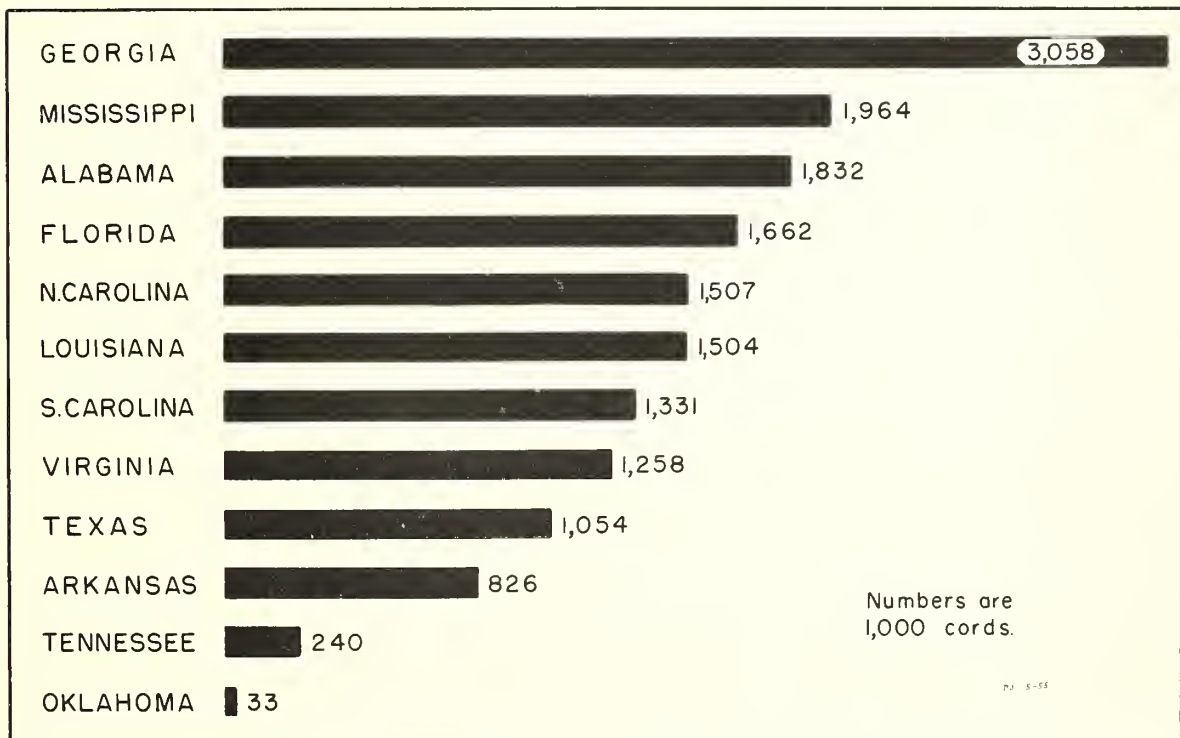


Figure 2.--Pulpwood production in the South, 1954.

Table 1. --Pulpwood production in the South by State and species group,
1953 and 1954

State	1954				1953		
	Change from 1953	Total	Pine	Hard- wood ^{1/}	Total	Pine	Hard- wood ^{2/}
	Percent	----- Thousand cords -----					
Ala.	+ 3.8	1,831.9	1,764.9	67.0	1,765.1	1,726.2	38.9
Ark.	+ 5.8	826.3	725.6	100.7	781.0	673.2	107.8
Fla.	- .8	1,661.6	1,661.2	.4	1,674.9	1,671.2	3.7
Ga.	+ 6.2	3,057.5	2,879.9	177.6	2,879.2	2,748.9	130.3
La.	+ 9.4	1,504.2	1,265.2	239.0	1,375.5	1,179.0	196.5
Miss.	+ 2.1	1,963.8	1,217.4	746.4	1,923.0	1,273.4	649.6
N. C.	- 1.4	1,507.4	1,228.9	278.5	1,528.9	1,263.1	265.8
Okl.	-19.5	33.0	33.0	...	41.0	41.0	...
S. C.	- 8.0	1,330.9	1,160.5	170.4	1,446.2	1,273.4	172.8
Tenn.	+ 2.6	240.3	134.1	106.2	234.2	105.3	128.9
Tex.	-12.9	1,054.3	1,003.6	50.7	1,210.7	1,159.3	51.4
Va.	- .7	1,258.4	1,033.7	224.7	1,267.3	1,033.6	233.7
All	+ .9	16,269.6	14,108.0	2,161.6	16,127.0	14,147.6	1,979.4

^{1/} Includes 32,800 cords of chestnut used for pulp.

^{2/} Includes 61,100 cords of chestnut used for pulp.

In addition to the rough round pulpwood reported above, 126,163 cords of wood residues were obtained from other forest industry plants. Of this total, 80,500 cords were pulp chips made from coarse sawmill waste. Use of veneer cores, pole and piling ends, and cull cross-ties totalled 45,663 cords, with veneer cores making up the largest part of this volume. Production of sawmill chips is expected to increase several fold during 1955 because of additional installations of barking and chipping equipment at sawmills. The amount of pine and hardwoods in each class of residue is shown below in cords:

	Pine	Hardwoods	Total
Sawmill chips	80,500	...	80,500
Veneer cores, etc.	5,258	40,405	45,663
	85,758	40,405	126,163

At the close of 1954, the South had 67 pulp mills, with a total pulping capacity of approximately 32,000 tons per day (table 16). Four additional mills were drawing wood from the region (fig. 1). During the year, new mills went into operation at Jesup, Rome, and Valdosta, Georgia; Perry, Florida; Calhoun, Tennessee; and Evadale, Texas. Plans for two additional mills, to be located at Mobile and Demopolis, Alabama, have been announced.

Table 2.--Pulpwood production in Southeastern Station territory by State and Survey unit, 1954

State	Forest Survey unit ^{1/}	Species group			Total
		Pine	Hardwood	Chestnut	
<u>Number</u>		<u>Standard cords</u>			
Virginia	1	395,150	20,406	...	415,556
	2	398,288	62,246	...	460,534
	3	179,657	43,214	...	222,871
	4	51,210	85,437	...	136,647
	5	9,327	13,444	...	22,771
<u>All units</u>		<u>1,033,632</u>	<u>224,747</u>	<u>...</u>	<u>1,258,379</u>
North Carolina	1	421,700	60,681	...	482,381
	2	280,601	24,210	...	304,811
	3	382,626	37,803	...	420,429
	4	143,997	155,788	...	299,785
<u>All units</u>		<u>1,228,924</u>	<u>278,482</u>	<u>...</u>	<u>1,507,406</u>
South Carolina	1	205,453	52,495	...	257,948
	2	411,749	102,514	...	514,263
	3	543,277	15,400	...	558,677
<u>All units</u>		<u>1,160,479</u>	<u>170,409</u>	<u>...</u>	<u>1,330,888</u>
Georgia	1	1,518,125	124,214	...	1,642,339
	2	412,385	39,947	...	452,332
	3	596,256	2,936	...	599,192
	4	290,192	2,942	...	293,134
	5	62,943	2,433	5,105	70,481
<u>All units</u>		<u>2,879,901</u>	<u>172,472</u>	<u>5,105</u>	<u>3,057,478</u>
Florida	1	1,050,297	273	...	1,050,570
	2	377,480	142	...	377,622
	3	183,925	...	...	183,925
	4	49,500	...	...	49,500
<u>All units</u>		<u>1,661,202</u>	<u>415</u>	<u>...</u>	<u>1,661,617</u>
All States		7,964,138	846,525	5,105	8,815,768

1/ For location of Survey units, see Figure 1.

Table 3.--Pulpwood production in Southern Station territory by State and Survey unit, 1954

State	Forest Survey unit	Species group			Total
		Pine	Hardwood	Chestnut	
Number - - - - - Standard cords - - - - -					
Alabama	1	380,991	356	...	381,347
	2	318,821	11,136	...	329,957
	3	614,351	21,978	...	636,329
	4	179,303	20,005	...	199,308
	5	257,987	13,496	...	271,483
	6	13,459	6	...	13,465
All units		1,764,912	66,977	...	1,831,889
Arkansas	1	16,600	24,786	...	41,386
	2	...	4,245	...	4,245
	3	565,883	65,851	...	631,734
	4	110,542	2,723	...	113,265
	5	32,595	3,047	...	35,642
All units		725,620	100,652	...	826,272
Louisiana	1	24,074	87,787	...	111,861
	2	7,656	7,791	...	15,447
	3	365,648	26,402	...	392,050
	4	278,446	35,169	...	313,615
	5	589,408	81,826	...	671,234
All units		1,265,232	238,975	...	1,504,207
Mississippi	1	15,342	63,710	...	79,052
	2	82,558	56,628	...	139,186
	3	647,322	455,388	...	1,102,710
	4	472,108	170,763	...	642,871
All units		1,217,330	746,489	...	1,963,819
Oklahoma All units		33,022	...	...	33,022
Tennessee	1	643	6,331	...	6,974
	2	1,312	...	8,239	9,551
	3	...	840	6,687	7,527
	4	21,490	25,944	12,766	60,200
	5	110,704	45,360	16	156,080
All units		134,149	78,475	27,708	240,332
Texas	1	587,155	39,716	...	626,871
	2	398,072	8,819	...	406,891
	3	18,334	2,237	...	20,571
All units		1,003,561	50,772	...	1,054,333
All States		6,143,826	1,282,340	27,708	7,453,874

1/ For location of Survey units, see Figure 1.

Table 4.--Pulpwood production in Alabama, 1954

County	Pine	Hardwood	Total
----- Standard cords -----			
Autauga	7,771	19	7,790
Baldwin	132,419	10	132,429
Barbour	22,124	...	22,124
Bibb	29,101	5,116	34,217
Blount	8,333	1,217	9,550
Bullock	27,474	...	27,474
Butler	49,536	633	50,169
Calhoun	14,206	1,994	16,200
Chambers	37,370	321	37,691
Cherokee	10,587	...	10,587
Chilton	21,470	1,360	22,830
Choctaw	52,063	1,478	53,541
Clarke	60,474	2,321	62,795
Clay	13,788	113	13,901
Cleburne	9,597	1,356	10,953
Coffee	22,469	...	22,469
Colbert	679	...	679
Conecuh	30,230	...	30,230
Coosa	39,209	389	39,598
Covington	34,367	...	34,367
Crenshaw	13,370	...	13,370
Cullman	5,605	579	6,184
Dale	9,214	...	9,214
Dallas	30,930	3,474	34,404
DeKalb	2,714	6	2,720
Elmore	41,233	422	41,655
Escambia	39,849	65	39,914
Etowah	13,511	735	14,246
Fayette	18,989	1,475	20,464
Franklin	1,407	...	1,407
Geneva	11,369	...	11,369
Greene	12,514	1,522	14,036
Hale	12,690	2,132	14,822
Henry	21,643	...	21,643
Houston	6,989	...	6,989
Jackson	1,448	...	1,448
Jefferson	12,178	212	12,390
Lamar	2,758	37	2,815
Lauderdale	175	...	175
Lawrence	1,882	...	1,882
Lee	62,560	3,911	66,471
Limestone	16	...	16
Lowndes	27,131	5,745	32,876
Macon	25,030	93	25,123
Madison	16	...	16
Marengo	35,240	4,001	39,241
Marion	2,666	...	2,666
Marshall	2,489	...	2,489
Mobile	93,690	...	93,690
Monroe	56,378	405	56,783
Montgomery	33,569	779	34,348
Morgan	2,633	...	2,633
Perry	23,313	2,455	25,768
Pickens	28,955	1,452	30,407
Pike	45,155	...	45,155
Randolph	29,394	2,730	32,124
Russell	21,658	...	21,658
St. Clair	21,051	846	21,897
Shelby	30,871	1,342	32,213
Sumter	17,644	1,331	18,975
Talladega	15,292	180	15,472
Tallapoosa	76,286	5,221	81,507
Tuscaloosa	48,317	5,796	54,113
Walker	30,808	1,772	32,580
Washington	80,666	281	80,947
Wilcox	66,792	1,600	68,392
Winston	3,557	31	3,588
Total	1,764,912	66,977	1,831,889

Table 5.--Pulpwood production in Arkansas, 1954

County	Pine	Hardwood	Total
----- Standard cords -----			
Arkansas	...	...	...
Ashley	56,852	7,490	64,342
Baxter	1,477	...	1,477
Benton	...	...	...
Boone	...	...	...
Bradley	30,299	5,789	36,088
Calhoun	15,101	455	15,556
Carroll	...	...	...
Chicot	...	4,336	4,336
Clark	53,566	7,031	60,597
Clay	...	...	...
Cleburne	...	...	...
Cleveland	17,670	559	18,229
Columbia	30,816	...	30,816
Conway	291	51	342
Craighead	...	...	...
Crawford	2,505	420	2,925
Crittenden	...	4,245	4,245
Cross	...	...	...
Dallas	41,363	3,740	45,103
Desha	...	10,786	10,786
Drew	25,851	12,420	38,271
Faulkner	4,733	322	5,055
Franklin	755	19	774
Fulton	...	...	...
Garland	33,746	457	34,203
Grant	35,804	2,235	38,039
Greene	...	...	...
Hempstead	26,084	605	26,689
Hot Spring	15,026	644	15,670
Howard	10,626	466	11,092
Independence	144	...	144
Izard	449	...	449
Jackson	...	...	...
Jefferson	13,778	1,538	15,316
Johnson	9,201	1,214	10,415
Lafayette	15,138	...	15,138
Lawrence	...	...	...
Lee	...	3,413	3,413
Lincoln	1,811	1,659	3,480
Little River	15,566	...	15,566
Logan	6,922	...	6,922
Lonoke	...	...	...
Madison	...	...	...
Marion	...	...	...
Miller	11,045	...	11,045
Mississippi	...	...	...
Monroe	1,011	...	1,011
Montgomery	5,303	500	5,803
Nevada	17,993	840	18,833
Newton	...	...	...
Quachita	38,306	6,069	44,375
Perry	4,642	...	4,642
Phillips	...	3,044	3,044
Pike	17,754	2,450	20,204
Poinsett	...	...	...
Polk	16,682	...	16,682
Pope	10,055	1,021	11,076
Prairie	...	...	...
Pulaski	7,310	5	7,315
Randolph	...	...	...
St. Francis	...	...	...
Saline	20,440	1,761	22,201
Scott	7,513	...	7,513
Searcy	...	...	...

Table 5.--Pulpwood production in Arkansas, 1954 (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Sebastian	535	...	535
Sevier	16,932	167	17,099
Sharp	...	...	...
Stone	...	...	...
Union	74,091	14,891	88,982
Van Buren	...	...	...
Washington	...	...	...
White	2,985	...	2,985
Woodruff	...	...	...
Yell	7,449	...	7,449
Total	725,620	100,652	826,272

Table 6.--Pulpwood production in Florida, 1954

County	Pine	Hardwood	Total
----- Standard cords -----			
Alachua	57,870	...	57,870
Baker	86,542	...	86,542
Bay	21,877	...	21,877
Bradford	44,188	...	44,188
Brevard	19,838	...	19,838
Broward	...	...	...
Calhoun	20,864	...	20,864
Charlotte	4,675	...	4,675
Citrus	10,332	...	10,332
Clay	37,754	...	37,754
Collier	5,982	...	5,982
Columbia	50,767	...	50,767
Dade	11,289	...	11,289
De Soto	6,501	...	6,501
Dixie	20,647	...	20,647
Duval	74,686	188	74,874
Escambia	26,055	91	26,146
Flagler	61,950	...	61,950
Franklin	4,087	...	4,087
Gadsden	15,527	...	15,527
Gilchrist	7,638	...	7,638
Glades	5,899	...	5,899
Gulf	14,599	...	14,599
Hamilton	59,159	...	59,159
Hardee	7,828	...	7,828
Hendry	689	...	689
Hernando	6,902	...	6,902
Highlands	11,151	...	11,151
Hillsborough	8,948	...	8,948
Holmes	31,046	...	31,046
Indian River	5,539	...	5,539
Jackson	39,993	...	39,993
Jefferson	18,429	36	18,465
Lafayette	14,249	...	14,249
Lake	8,642	...	8,642
Lee	15,292	...	15,292
Leon	31,794	15	31,809
Levy	25,863	...	25,863
Liberty	27,284	...	27,284
Madison	43,957	...	43,957
Manatee	5,078	...	5,078
Marion	59,453	...	59,453
Martin	4,258	...	4,258
Monroe	...	...	...
Nassau	89,502	85	89,587
Okaloosa	28,049	...	28,049
Okeechobee	6,613	...	6,613
Orange	8,686	...	8,686
Osceola	10,388	...	10,388
Palm Beach	1,416	...	1,416
Pasco	7,804	...	7,804
Pinellas	844	...	844
Polk	26,536	...	26,536
Putnam	53,117	...	53,117
St. Johns	75,785	...	75,785
St. Lucie	6,935	...	6,935
Santa Rosa	45,266	...	45,266
Sarasota	11,325	...	11,325
Seminole	7,808	...	7,808
Sumter	6,227	...	6,227
Suwannee	20,499	...	20,499
Taylor	25,465	...	25,465
Union	65,467	...	65,467
Volusia	75,739	...	75,739
Wakulla	12,228	...	12,228
Walton	13,984	...	13,984
Washington	26,298	...	26,298
Total	1,661,202	415	1,661,617

Table 7. --Pulpwood production in Georgia, 1954

County	Pine	Hardwood	Chestnut	Total
----- Standard cords -----				
Appling	75,279	1,529	...	76,808
Atkinson	38,799	136	...	38,935
Bacon	25,474	564	...	26,038
Baker	3,398	...	...	3,398
Baldwin	10,222	1,007	...	11,229
Banks	1,054	...	...	1,054
Barrow	3,377	16	...	3,393
Bartow	11,167	...	...	11,167
Ben Hill	12,312	1,783	...	14,095
Berrien	34,207	175	...	34,382
Bibb	5,756	...	...	5,756
Bleckley	4,799	690	...	5,489
Brantley	80,616	2,728	...	83,344
Brooks	15,674	21	...	15,695
Bryan	41,572	3,365	...	44,937
Bulloch	47,726	2,899	...	50,625
Burke	6,656	600	...	7,256
Butts	14,323	...	...	14,323
Calhoun	4,288	...	...	4,288
Camden	68,273	8,525	...	76,798
Candler	10,830	...	...	10,830
Carroll	5,606	...	...	5,606
Catoosa	39	...	...	39
Charlton	69,202	105	...	69,307
Chatham	17,061	9,608	...	26,669
Chattahoochee	8,134	...	...	8,134
Chattooga	2,484	...	...	2,484
Cherokee	3,815	...	...	3,815
Clarke	3,277	...	...	3,277
Clay	563	...	...	563
Clayton	7,354	1,078	...	8,432
Clinch	149,479	111	...	149,590
Cobb	3,111	...	...	3,111
Coffee	72,257	1,403	...	73,660
Colquitt	17,519	70	...	17,589
Columbia	8,903	...	...	8,903
Cook	9,980	...	...	9,980
Coweta	18,782	...	...	18,782
Crawford	18,810	...	...	18,810
Crisp	10,102	...	...	10,102
Dade	156	...	...	156
Dawson	20	...	...	20
Decatur	25,581	15,133	...	40,714
De Kalb	3,126	...	...	3,126
Dodge	38,338	2,571	...	40,909
Dooley	3,796	...	...	3,796
Dougherty	10,468	...	...	10,468
Douglas	6,665	...	...	6,665
Early	15,225	4,221	...	19,446
Echols	71,701	...	...	71,701
Effingham	41,189	7,178	...	48,367
Elbert	20,850	1,772	...	22,622
Emanuel	45,457	802	...	46,259
Evans	19,885	182	...	20,067
Fannin	1,711	1,776	5,105	8,592
Fayette	3,497	...	...	3,497
Floyd	14,950	...	...	14,950
Forsyth	...	...	...	...
Franklin	3,308	...	...	3,308
Fulton	4,470	...	...	4,470
Gilmer	2,603	640	...	3,243
Glascok	181	2,628	...	2,809
Glynn	29,224	33,366	...	62,590
Gordon	10,048	...	...	10,048
Grady	19,007	...	...	19,007

Table 7. --Pulpwood production in Georgia, 1954 (continued)

County	Pine	Hardwood	Chestnut	Total
----- Standard cords -----				
Greene	29,022	...	...	29,022
Gwinnett	6,186	16	...	6,202
Habersham	1,871	...	...	1,871
Hall	14,262	...	...	14,262
Hancock	21,128	33	...	21,161
Haralson	3,096	...	...	3,096
Harris	30,809	...	...	30,809
Hart	3,201	...	...	3,201
Heard	1,339	...	...	1,339
Henry	10,831	...	...	10,831
Houston	7,209	...	...	7,209
Irwin	15,110	1,819	...	16,929
Jackson	14,672	...	...	14,672
Jasper	20,423	...	...	20,423
Jeff Davis	58,559	295	...	58,854
Jefferson	7,207	...	...	7,207
Jenkins	9,735	650	...	10,385
Johnson	8,046	...	...	8,046
Jones	27,048	...	...	27,048
Lamar	10,043	...	...	10,043
Lanier	18,906	97	...	19,003
Laurens	26,561	11	...	26,572
Lee	2,465	...	...	2,465
Liberty	47,578	13,784	...	61,362
Lincoln	11,943	...	...	11,943
Long	42,986	1,730	...	44,716
Lowndes	65,278	163	...	65,441
Lumpkin	1	...	...	1
McDuffie	3,376	...	...	3,376
McIntosh	21,053	11,482	...	32,535
Macon	4,274	...	...	4,274
Madison	11,347	16	...	11,363
Marion	6,039	...	...	6,039
Meriwether	32,619	...	...	32,619
Miller	7,421	...	...	7,421
Mitchell	28,489	3,072	...	31,561
Monroe	36,343	287	...	36,630
Montgomery	16,188	1,865	...	18,053
Morgan	16,193	...	...	16,193
Murray	313	17	...	330
Muscogee	6,055	...	...	6,055
Newton	14,623	...	...	14,623
Oconee	6,450	...	...	6,450
Oglethorpe	11,473	...	...	11,473
Paulding	1,927	...	...	1,927
Peach	5,894	...	...	5,894
Pickens	4,852	...	...	4,852
Pierce	26,843	190	...	27,033
Pike	5,288	...	...	5,288
Polk	13,509	...	...	13,509
Pulaski	3,686	34	...	3,720
Putnam	18,135	...	...	18,135
Quitman	4,944	...	...	4,944
Rabun	1,456	...	...	1,456
Randolph	12,451	...	...	12,451
Richmond	3,795	...	...	3,795
Rockdale	4,651	...	...	4,651
Schley	4,389	...	...	4,389
Screven	24,564	1,480	...	26,044
Seminole	14,166	5,006	...	19,172
Spalding	7,262	...	...	7,262
Stephens	2,251	...	...	2,251
Stewart	18,352	...	...	18,352
Sumter	9,009	53	...	9,062
Talbot	20,369	113	...	20,482

Table 7. -- Pulpwood production in Georgia, 1954 (continued)

County	Pine	Hardwood	Chestnut	Total
----- Standard cords -----				
Taliaferro	11,771	...	...	11,771
Tattnall	37,872	...	...	37,872
Taylor	7,030	...	...	7,030
Telfair	64,988	2,641	...	67,629
Terrell	684	...	...	684
Thomas	22,902	2,531	...	25,433
Tift	10,987	260	...	11,247
Toombs	36,546	4,331	...	40,877
Towns	...	...	...	...
Treutlen	16,200	105	...	16,305
Troup	44,452	...	...	44,452
Turner	16,091	341	...	16,432
Twiggs	11,947	...	...	11,947
Union	5	...	...	5
Upson	29,592	...	...	29,592
Walker	537	...	...	537
Walton	3,815	44	...	3,859
Ware	66,710	210	...	66,920
Warren	4,038	...	...	4,038
Washington	23,439	...	...	23,439
Wayne	59,101	8,600	...	67,701
Webster	8,747	...	...	8,747
Wheeler	17,473	1,768	...	19,241
White	...	...	...	...
Whitfield	4,664	...	...	4,664
Wilcox	14,734	1,330	...	16,064
Wilkes	42,499	...	...	42,499
Wilkinson	12,374	119	...	12,493
Worth	31,403	1,297	...	32,700
Total	2,879,901	172,472	5,105	3,057,478

Table 8. -- Pulpwood production in Louisiana, 1954

Parish	Pine	Hardwood	Total
----- Standard cords -----			
Acadia	3,298	438	3,736
Allen	30,708	4,092	34,800
Ascension	...	62	62
Assumption	...	...	...
Avoyelles	2,116	806	2,922
Beauregard	32,568	2,750	35,318
Bienville	62,474	2,227	64,701
Bossier	40,219	5,020	45,239
Caddo	18,394	4,312	22,706
Calcasieu	13,705	21	13,726
Caldwell	24,385	3,075	27,460
Cameron	...	...	...
Catahoula	4,154	13,446	17,600
Claiborne	42,051	21	42,072
Concordia	3	26,313	26,316
De Soto	46,342	...	46,342
East Baton Rouge	35	1,198	1,233
East Carroll	...	3,741	3,741
East Feliciana	13,065	9,055	22,120
Evangeline	10,949	880	11,829
Franklin	1,178	9,299	10,477
Grant	28,383	3,582	31,965
Iberia	...	...	...
Iberville	...	...	...
Jackson	45,891	1,832	47,723
Jefferson	...	...	...
Jefferson Davis	2,138	272	2,410
Lafayette	...	...	...
Lafourche	...	...	...
La Salle	26,760	4,851	31,611
Lincoln	35,803	4,029	39,832
Livingston	82,707	4,074	86,781
Madison	...	7,706	7,706
Morehouse	17,957	6,384	24,341
Natchitoches	73,854	5,148	79,002
Orleans	...	...	...
Ouachita	34,038	4,567	38,605
Plaquemines	...	...	...
Pointe Coupee	...	2,493	2,493
Rapides	50,845	4,556	55,401
Red River	23,534	361	23,895
Richland	374	2,644	3,018
Sabine	70,769	...	70,769
St. Bernard	...	...	...
St. Charles	...	...	...
St. Helena	11,462	336	11,798
St. James	...	...	...
St. John the Baptist	...	...	...
St. Landry	831	18	849
St. Martin	...	...	...
St. Mary	...	...	...
St. Tammany	28,109	561	28,670
Tangipahoa	80,183	6,734	86,917
Tensas	5	16,861	16,866
Terrebonne	...	...	...
Union	74,068	29,428	103,496
Vermilion	...	...	...
Vernon	24,969	250	25,219
Washington	62,885	13,211	76,096
Webster	33,676	8,569	42,245
West Baton Rouge	...	...	...
West Carroll	403	1,393	1,796
West Feliciana	1,411	3,974	5,385
Winn	108,533	18,385	126,918
Total	1,265,232	238,975	1,504,207

Table 9.--Pulpwood production in Mississippi, 1954

County	Pine	Hardwood	Total
- - - - Standard cords - - - -			
Adams	6,988	34,616	41,604
Alcorn	3,632	3,075	6,707
Amite	25,609	23,210	48,819
Attala	21,855	17,908	39,763
Benton	255	3	258
Bolivar	...	8,344	8,344
Calhoun	188	153	341
Carroll	2,066	3,891	5,957
Chickasaw	1,379	919	2,298
Choctaw	11,345	10,713	22,058
Claiborne	6,663	15,969	22,632
Clarke	56,874	14,570	71,444
Clay	924	648	1,572
Coahoma	...	737	737
Copiah	38,484	45,902	84,386
Covington	17,152	12,358	29,510
De Soto	...	...	...
Forrest	37,439	11,740	49,179
Franklin	37,697	30,756	68,453
George	21,342	7,862	29,204
Greene	50,674	7,015	57,689
Grenada	1,967	...	1,967
Hancock	32,364	...	32,364
Harrison	31,971	1,130	33,101
Hinds	15,090	19,315	34,405
Holmes	13,179	18,176	31,355
Humphreys	...	156	156
Issaquena	...	2,961	2,961
Itawamba	...	...	...
Jackson	43,127	52	43,179
Jasper	54,337	31,180	85,517
Jefferson	16,190	31,030	47,220
Jefferson Davis	13,613	5,848	19,461
Jones	41,681	48,601	90,282
Kemper	15,663	3,195	18,858
Lafayette	4,732	2,707	7,439
Lamar	16,235	7,791	24,026
Lauderdale	52,375	11,687	64,062
Lawrence	25,848	16,692	42,540
Leake	24,029	13,529	37,558
Lee	1,693	340	2,033
Leflore	81	4,165	4,246
Lincoln	31,607	19,409	51,016
Lowndes	4,801	211	5,012
Madison	10,235	14,074	24,309
Marion	30,113	13,328	43,441
Marshall	2,930	568	3,498
Monroe	2,713	855	3,568
Montgomery	6,485	9,663	16,148
Neshoba	14,856	8,181	23,037
Newton	36,192	13,979	50,171
Noxubee	11,313	2,036	13,349
Oktibbeha	8,399	4,632	13,031
Panola	...	3,049	3,049
Pearl River	22,191	9,742	31,933
Perry	16,991	8,839	25,830
Pike	24,329	13,389	37,718
Pontotoc	6,479	681	7,160
Prentiss	5,839	886	6,725
Quitman	...	824	824
Rankin	35,457	15,037	50,494
Scott	46,794	19,614	66,408
Sharkey	58	3,481	3,539
Simpson	25,722	9,102	34,824
Smith	13,745	10,642	24,387

Table 9.--Pulpwood production in Mississippi (continued)

County	Pine	Hardwood	Total
- - - - Standard cords - - - -			
Stone	22,998	2,394	25,392
Sunflower	...	35	35
Tallahatchie	148	550	698
Tate	463	1,254	1,717
Tippah	2,725	432	3,157
Tishomingo	1,796	2,967	4,763
Tunica	...	1,459	1,459
Union	4,208	629	4,837
Walthall	15,021	7,661	22,682
Warren	87	9,252	9,339
Washington	15	9,385	9,400
Wayne	33,348	9,710	43,058
Webster	5,446	4,577	10,023
Wilkinson	12,083	30,404	42,487
Winston	13,135	6,654	19,789
Yalobusha	2,093	3,775	5,868
Yazoo	1,774	4,185	5,959
Total	1,217,330	746,489	1,963,819

Table 10.--Pulpwood production in North Carolina, 1954

County	Pine	Hardwood	Total
- - - Standard cords - - -			
Alamance	9,438	116	9,554
Alexander	1,174	...	1,174
Alleghany	21	...	21
Anson	15,876	3,397	19,273
Ashe	...	1,083	1,083
Avery	...	427	427
Beaufort	21,366	112	21,478
Bertie	12,900	676	13,576
Bladen	53,147	11,020	64,167
Brunswick	39,175	9,752	48,927
Buncombe	36,801	45,403	82,204
Burke	22,202	10,625	32,827
Cabarrus	7,019	80	7,099
Caldwell	10,044	1,461	11,505
Camden	...	...	...
Carteret	20,515	...	20,515
Caswell	4,002	...	4,002
Catawba	5,409	18	5,427
Chatham	36,119	3,079	39,198
Cherokee	16,314	9,484	25,798
Chowan	3,373	306	3,679
Clay	...	...	...
Cleveland	5,751	19	5,770
Columbus	34,679	7,885	42,564
Craven	36,653	794	37,447
Cumberland	17,199	2,105	19,304
Currituck	...	...	...
Dare	...	...	...
Davidson	1,390	294	1,684
Davie	5,608	34	5,642
Duplin	27,954	4,129	32,083
Durham	12,826	440	13,266
Edgecombe	6,430	100	6,530
Forsyth	1,197	...	1,197
Franklin	32,426	5,057	37,483
Gaston	6,533	20	6,553
Gates	26,717	2,319	29,036
Graham	1,435	318	1,753
Granville	12,589	458	13,047
Greene	1,704	...	1,704
Guilford	1,879	...	1,879
Halifax	33,666	3,729	37,395
Harnett	7,796	1,430	9,226
Haywood	5,359	14,700	20,059
Henderson	6,578	10,029	16,607
Hertford	29,265	3,519	32,784
Hoke	8,495	1,435	9,930
Hyde	1,250	...	1,250
Iredell	23,506	6,586	30,092
Jackson	4,592	27,543	32,135
Johnston	16,673	680	17,353
Jones	14,460	542	15,002
Lee	12,480	182	12,662
Lenoir	12,711	85	12,796
Lincoln	7,644	16	7,660
McDowell	11,209	4,178	15,387
Macon	...	11,659	11,659
Madison	11,449	3,626	15,075
Martin	15,371	1,309	16,680
Mecklenburg	5,279	200	5,479
Mitchell	914	6,887	7,801
Montgomery	9,457	1,203	10,660
Moore	17,780	2,898	20,678
Nash	4,722	992	5,714
New Hanover	8,647	1,791	10,438

Table 10.--Pulpwood production in North Carolina (continued)

County	Pine	Hardwood	Total
- - - Standard cords - - -			
Northampton	21,852	2,909	24,761
Onslow	40,192	234	40,426
Orange	10,672	1,160	11,832
Pamlico	5,472	135	5,607
Pasquotank	87	...	87
Pender	34,576	4,996	39,572
Perquimans	3,950	...	3,950
Person	6,116	...	6,116
Pitt	5,466	...	5,466
Polk	234	100	334
Randolph	5,235	...	5,235
Richmond	17,116	860	17,976
Robeson	22,409	5,440	27,849
Rockingham	6,245	...	6,245
Rowan	4,965	101	5,066
Rutherford	14,954	10,804	25,758
Sampson	20,543	4,249	24,792
Scotland	3,027	240	3,267
Stanly	2,389	500	2,889
Stokes	245	...	245
Surry	29,872	50	29,922
Swain	6,881	4,991	11,872
Transylvania	13,523	5,773	19,296
Tyrrell	547	...	547
Union	20,614	16	20,630
Vance	9,434	452	9,886
Wake	39,634	1,473	41,107
Warren	32,576	2,149	34,725
Washington	10,592	2,620	13,212
Watauga	...	...	...
Wayne	10,937	728	11,665
Wilkes	9,325	...	9,325
Wilson	2,076	731	2,807
Yadkin	...	...	...
Yancey	...	1,541	1,541
Total	1,228,924	278,482	1,507,406

Table 11.--Pulpwood production in Oklahoma, 1954

County ^{1/}	Pine	Hardwood	Total
- - - Standard cords - - -			
Adair	252	...	252
Atoka	16	...	16
Choctaw	2,660	...	2,660
Haskell	446	...	446
Latimer	1,340	...	1,340
Leflore	11,104	...	11,104
McCurtain	8,377	...	8,377
Pittsburg	119	...	119
Pushmataha	8,708	...	8,708
Total	33,022	...	33,022

^{1/} Counties with no pulpwood production are omitted.

Table 12.--Pulpwood production in South Carolina, 1954

County	Pine	Hardwood	Total
- - - - Standard cords - - - -			
Abbeville	26,420	75	26,495
Aiken	9,108	764	9,872
Allendale	19,214	11,283	30,497
Anderson	23,424	...	23,424
Bamberg	6,352	827	7,179
Barnwell	4,811	923	5,734
Beaufort	12,860	2,706	15,566
Berkeley	74,595	9,156	83,751
Calhoun	5,251	158	5,409
Charleston	28,222	6,269	34,491
Cherokee	7,020	144	7,164
Chester	36,845	1,412	38,257
Chesterfield	18,640	20,450	39,090
Clarendon	12,312	2,031	14,343
Colleton	34,706	5,965	40,671
Darlington	14,866	7,755	22,621
Dillon	7,335	2,165	9,500
Dorchester	31,734	7,762	39,496
Edgefield	21,292	2,311	23,603
Fairfield	83,975	4,730	88,705
Florence	14,125	395	14,520
Georgetown	70,852	24,648	95,500
Greenville	9,805	...	9,805
Greenwood	35,568	327	35,895
Hampton	28,084	4,728	32,812
Horry	45,518	5,380	50,898
Jasper	21,797	8,294	30,091
Kershaw	35,594	6,804	42,398
Lancaster	47,781	265	48,046
Laurens	48,705	91	48,796
Lee	7,261	1,339	8,600
Lexington	11,274	1,666	12,940
McCormick	16,325	...	16,325
Marion	17,177	2,199	19,376
Marlboro	9,312	2,121	11,433
Newberry	32,896	2,091	34,987
Orconee	24,008	52	24,060
Orangeburg	20,262	7,419	27,681
Pickens	5,761	32	5,793
Richland	21,621	6,412	28,033
Saluda	5,918	645	6,563
Spartanburg	25,529	3,390	28,919
Sumter	8,669	815	9,484
Union	56,379	390	56,769
Williamsburg	21,956	4,020	25,976
York	39,320	...	39,320
Total	1,160,479	170,409	1,330,888

Table 13.--Pulpwood production in Tennessee, 1954

County	Pine	Hardwood	Chestnut	Total
- - - - - Standard cords - - - - -				
Anderson	9,098	2,699	...	11,797
Bedford	...	...	425	425
Benton	1,312	...	...	1,312
Bledsoe	...	...	...	...
Blount	9,320	1,670	...	10,990
Bradley	9,615	482	...	10,097
Campbell	1,204	3,689	...	4,893
Cannon	...	...	...	...
Carroll	...	...	...	...
Carter	...	3,031	...	3,031
Cheatham	...	...	...	...
Chester	...	...	...	...
Claiborne	4,354	7,678	...	12,032
Clay	...	...	...	...
Cocke	7,596	3,141	...	10,737
Coffee	...	840	4,849	5,689
Crockett	...	...	...	...
Cumberland	1,325	12,082	...	13,407
Davidson	...	...	...	...
Decatur	...	...	...	...
DeKalb	...	...	...	...
Dickson	...	...	...	...
Dyer	...	...	...	...
Fayette	...	...	...	...
Fentress	2,000	...	...	2,000
Franklin	193	...	310	503
Gibson	...	...	...	...
Giles	...	...	24	24
Grainger	116	603	...	719
Greene	389	187	...	576
Grundy	1,466	645	...	2,111
Hamblen	277	...	...	277
Hamilton	6,254	32	...	6,286
Hancock	...	14	...	14
Hardeman	420	...	...	420
Hardin	...	...	...	...
Hawkins	3,475	829	...	4,304
Haywood	...	...	...	...
Henderson	223	...	...	223
Henry	...	...	...	...
Hickman	...	...	1,170	1,170
Houston	...	...	...	...
Humphreys	...	...	88	88
Jackson	...	...	...	...
Jefferson	680	974	...	1,654
Johnson	...	79	...	79
Knox	7,006	2,905	16	9,927
Lake	...	...	...	...
Lauderdale	...	...	...	...
Lawrence	...	...	6,714	6,714
Lewis	...	...	267	267
Lincoln	...	...	467	467
Loudon	1,191	417	...	1,608
McMinn	15,310	7,043	...	22,353
McNairy	...	...	...	...
Macon	...	...	7	7
Madison	...	159	...	159
Marion	114	84	...	198
Marshall	...	...	...	...
Mauzy	...	...	...	...
Meigs	1,100	221	...	1,321
Monroe	12,188	1,884	...	14,072
Montgomery	...	...	7	7
Moore	...	...	...	...
Morgan	5,266	1,450	...	6,716

Table 13.--Pulpwood production in Tennessee, 1954 (continued)

County	Pine	Hardwood	Chestnut	Total
- - - - - Standard cords - - - - -				
Obion	...	...	...	...
Overton	35	2,010	...	2,045
Perry	...	...	...	...
Pickett	...	...	...	...
Polk	4,208	266	...	4,474
Putnam	106	4,678	6,858	11,642
Rhea	6,633	184	...	6,817
Roane	5,456	3,840	...	9,296
Robertson	...	...	...	...
Rutherford	...	...	31	31
Scott	9,679	346	...	10,025
Sequatchie	102	...	...	102
Sevier	1,463	835	...	2,298
Shelby	...	6,172	...	6,172
Smith	...	...	...	...
Stewart	...	...	...	...
Sullivan	13	1,421	...	1,434
Sumner	...	...	877	877
Tipton	...	...	...	...
Trousdale	...	...	...	...
Unicoi	...	960	...	960
Union	4,962	3,479	...	8,441
Van Buren	...	...	...	...
Warren	...	960	2,811	3,771
Washington	...	486	...	486
Wayne	...	...	...	...
Weakley	...	...	...	...
White	...	...	2,787	2,787
Williamson	...	...	...	...
Wilson	...	...	...	...
Total	134,149	78,475	27,708	240,332

Table 14.--Pulpwood production in Texas, 1954

County ^{1/}	Pine	Hardwood	Total
- - - - - Standard cords - - - - -			
Anderson	14,898	1,736	16,634
Angelina	55,201	768	55,969
Bastrop	814	131	945
Bowie	17,687	...	17,687
Camp	4,156	...	4,156
Cass	26,076	...	26,076
Cherokee	44,313	1,513	45,826
Franklin	4,424	...	4,424
Gregg	14,899	589	15,488
Grimes	15,964	2,096	18,060
Hardin	30,997	1,732	32,729
Harris	12,649	1,172	13,821
Harrison	40,143	54	40,197
Henderson	1,171	10	1,181
Houston	46,269	2,398	48,667
Jasper	56,949	6,124	63,073
Jefferson	553	29	582
Leon	385	...	385
Liberty	48,362	3,765	52,127
Marion	25,002	...	25,002
Montgomery	60,168	5,482	65,650
Morris	8,729	...	8,729
Nacogdoches	51,586	817	52,403
Newton	29,173	2,852	32,025
Orange	16,821	...	16,821
Panola	32,146	331	32,477
Polk	44,361	2,913	47,274
Red River	6,749	...	6,749
Rusk	17,957	924	18,881
Sabine	23,508	1,411	24,919
San Augustine	34,505	710	35,215
San Jacinto	10,647	1,561	12,208
Shelby	48,343	2,271	50,614
Smith	9,831	584	10,415
Titus	1,678	...	1,678
Trinity	31,710	2,014	33,724
Tyler	33,883	584	34,467
Upshur	23,007	...	23,007
Walker	51,399	6,201	57,600
Wood	6,448	...	6,448
Total	1,003,561	50,772	1,054,333

^{1/} Counties with no pulpwood production are omitted.

Table 15.--Pulpwood production in Virginia, 1954

County	Pine	Hardwood	Total
- - - Standard cords - - -			
Accomac	7,747	...	7,747
Albemarle	40,845	3,564	44,409
Alleghany	8,011	26,549	34,560
Amelia	40,198	3,193	43,391
Amherst	37,076	15,526	52,602
Appomattox	15,790	2,878	18,668
Arlington	20	...	20
Augusta	2,953	1,995	4,948
Bath	4,684	20,852	25,536
Bedford	37,462	19,164	56,626
Bland	...	...	...
Botetourt	11,041	9,980	21,021
Brunswick	46,591	5,623	52,214
Buchanan	...	208	208
Buckingham	42,386	14,742	57,128
Campbell	47,740	4,596	52,336
Caroline	2,982	...	2,982
Carroll	15	...	15
Charles City	16,193	...	16,193
Charlotte	35,141	124	35,265
Chesterfield	10,312	1,111	11,423
Clarke	18	...	18
Craig	5,542	5,729	11,271
Culpeper	6,305	2,772	9,077
Cumberland	26,493	1,246	27,739
Dickenson	20	...	20
Dinwiddie	31,360	1,329	32,689
Elizabeth City	19	...	19
Essex	4,781	...	4,781
Fairfax	180	...	180
Fauquier	824	79	903
Floyd	...	48	48
Fluvanna	14,492	6,052	20,544
Franklin	12,722	...	12,722
Frederick	4,498	249	4,747
Giles	10	143	153
Gloucester	23,394	...	23,394
Goochland	24,917	7,599	32,516
Grayson	38	294	332
Greene	811	23	834
Greensville	27,959	1,508	29,467
Halifax	16,316	293	16,609
Hanover	2,181	608	2,789
Henrico	6,200	72	6,272
Henry	7,673	...	7,673
Highland	2,453	4,786	7,239
Isle of Wight	10,264	1,831	12,095
James City	10,713	16	10,729
King and Queen	29,043	...	29,043
King George	2,275	...	2,275
King William	21,633	...	21,633
Lancaster	6,666	...	6,666
Lee	...	3,614	3,614
Loudoun	19	...	19
Louisa	19,736	868	20,604

Table 15.--Pulpwood production in Virginia, 1954 (continued)

County	Pine	Hardwood	Total
- - - Standard cords - - -			
Lunenburg	4,898	202	5,100
Madison	1,331	...	1,331
Mathews	2,488	...	2,488
Mecklenburg	14,420	216	14,636
Middlesex	9,648	...	9,648
Montgomery	3,735	25	3,760
Nansemond	9,673	3,147	12,820
Nelson	18,164	5,165	23,329
New Kent	17,305	595	17,900
Norfolk	5,506	133	5,639
Northampton	...	...	...
Northumberland	2,029	...	2,029
Nottoway	17,066	5,972	23,038
Orange	4,926	1,352	6,278
Page	393	90	483
Patrick	...	...	...
Pittsylvania	28,942	309	29,251
Powhatan	13,740	3,712	17,452
Prince Edward	35,398	5,599	40,997
Prince George	18,973	715	19,688
Prince William	8,112	...	8,112
Princess Anne	209	...	209
Pulaski	801	20	821
Rappahannock	19	...	19
Richmond	9,154	...	9,154
Roanoke	1,199	3	1,202
Rockbridge	8,200	14,236	22,436
Rockingham	1,206	608	1,814
Russell	...	475	475
Scott	...	4,831	4,831
Shenandoah	1,341	26	1,367
Smyth	...	...	...
Southampton	18,491	2,829	21,320
Spotsylvania	641	...	641
Stafford	1,239	214	1,453
Surry	10,724	160	10,884
Sussex	15,409	688	16,097
Tazewell	...	...	...
Warren	1,574	334	1,908
Warwick	3,121	41	3,162
Washington	158	3,512	3,670
Westmoreland	4,368	...	4,368
Wise	...	210	210
Wythe	4,550	64	4,614
York	7,739	...	7,739
Total	1,033,632	224,747	1,258,379

Table 16. --Companies drawing pulpwood from the South, 1954

State and plant location	Name of company and map code ^{1/}	Pulp capacity 24 hrs. ^{2/} Tons	State and plant location	Name of company and map code ^{1/}	Pulp capacity 24 hrs. ^{2/} Tons
ALABAMA			MISSISSIPPI		
Coosa Pines	(1) Coosa River Newsprint Co.	454	Meridian	(39) Flintkote Co.	132
Tuscaloosa	(2) Gulf States Paper Corp.	400	Moss Point	(40) International Paper Co.	615
Mobile	(3) Hollingsworth and Whitney Co.	420	Natchez	(41) International Paper Co.	850
Mobile	(4) International Paper Co.	610	Laurel	(42) Masonite Corp.	800
Mobile	(5) National Gypsum Co.	150	Natchez	(43) Johns-Manville Products Corp.	300
Mobile	(6) Ruberoid Co.	53	Greenville	(44) United States Gypsum Co.	180
ARKANSAS			N. CAROLINA		
Crossett	(7) The Crossett Co.	425	Canton	(45) Champion Paper and Fibre Co.	835
Camden	(8) International Paper Co.	600	Roanoke Rapids	(46) Halifax Paper Co.	350
FLORIDA			Sylva	(47) Mead Corp.	200
Pensacola	(9) Armstrong Cork Co.	130	Plymouth	(48) North Carolina Pulp Co.	900
Perry	(10) The Buckeye Cellulose Corp.	300	Acme	(49) Riegel Carolina Corp.	300
Fernandina	(11) Container Corp. of America	350	OHIO		
Palatka	(12) Hudson Pulp and Paper Corp.	400	Chillicothe	(50) Mead Corp.	125
Panama City	(13) International Paper Co.	1,525	PENNSYLVANIA		
Jacksonville	(14) National Container Corp.	500	York Haven	(51) International Paper Co.	65
Fernandina	(15) Rayonier, Inc.	300	Spring Grove	(52) P. H. Glatfelter Co.	100
Port St. Joe	(16) St. Joe Paper Co.	500	S. CAROLINA		
Jacksonville	(17) St. Regis Paper Co.	370	Georgetown	(53) International Paper Co.	1,870
Pensacola	(18) St. Regis Paper Co.	750	Hartsville	(54) Sonoco Products Co.	80
GEORGIA			Charleston	(55) West Virginia Pulp and Paper Co.	950
Macon	(19) Armstrong Cork Co.	200	TENNESSEE		
Brunswick	(20) Brunswick Pulp and Paper Co.	400	Calhoun	(56) Bowaters Southern Paper Corp.	580
Savannah	(21) Certain-teed Products Corp.	60	Harriman	(57) Mead Corp.	100
Macon	(22) Macon Kraft Co.	600	Kingsport	(58) Mead Corp.	175
Valdosta	(23) National Container Corp.	525	Nashville	(59) Mead Corp.	70
Jesup	(24) Rayonier, Inc.	282	Knoxville	(60) Southern Extract Co.	80
Rome	(25) Rome Kraft Co.	650	TEXAS		
St. Marys	(26) St. Marys Kraft Corp.	500	Pasadena	(61) Champion Paper and Fibre Co.	520
Savannah	(27) Southern Paperboard Corp.	500	Evadale	(62) East Texas Pulp and Paper Co.	315
Savannah	(28) Union Bag and Paper Corp.	1,900	Lufkin	(63) Southland Paper Mills	480
LOUISIANA			VIRGINIA		
Shreveport	(29) Bird and Son	60	Franklin	(64) Camp Manufacturing Co.	400
West Monroe	(30) The Brown Paper Mill Co.	550	West Point	(65) Chesapeake Corp. of Virginia	500
Elizabeth	(31) Calcasieu Paper Co.	200	Hopewell	(66) Continental Can Co.	600
New Orleans	(32) Flintkote Co.	60	Bristol	(67) Mead Corp., Columbian Division	85
Bogalusa	(33) Gaylord Container Corp.	1,175	Lynchburg	(68) Mead Corp., Heald Division	125
Bastrop	(34) International Paper Co. (Bastrop Mill) ^{3/}	525	Big Island	(69) National Container Corp. of Virginia	150
Bastrop	(35) International Paper Co. (Louisiana Mill) ^{3/}	600	Jarratt	(70) Southern Johns-Manville Products Corp.	200
Springhill	(36) International Paper Co.	1,560	Covington	(71) West Virginia Pulp and Paper Co.	725
Hodge	(37) Southern Advance Bag and Paper Co.	325			
MARYLAND					
Luke	(38) West Virginia Pulp and Paper Co.	300			

^{1/} Corresponds to numbers at mill locations in fig. 1.
^{2/} Southern Pulp and Paper Manufacturer, vol. 17, no. 10
(Oct. 1, 1954); and other sources.
^{3/} Listed in earlier reports as one mill.

Table 17. --Pulpmills under construction or announced in the South

State and plant location	Name of company and map code ^{1/}	Pulp capacity 24 hrs. ^{2/} Tons
ALABAMA		
Demopolis	(72) Gulf States Paper Corp.	250
Mobile	(73) International Paper Co.	300

^{1/} Corresponds to number at mill location in fig. 1.
^{2/} Southern Pulp and Paper Manufacturer, and other sources.



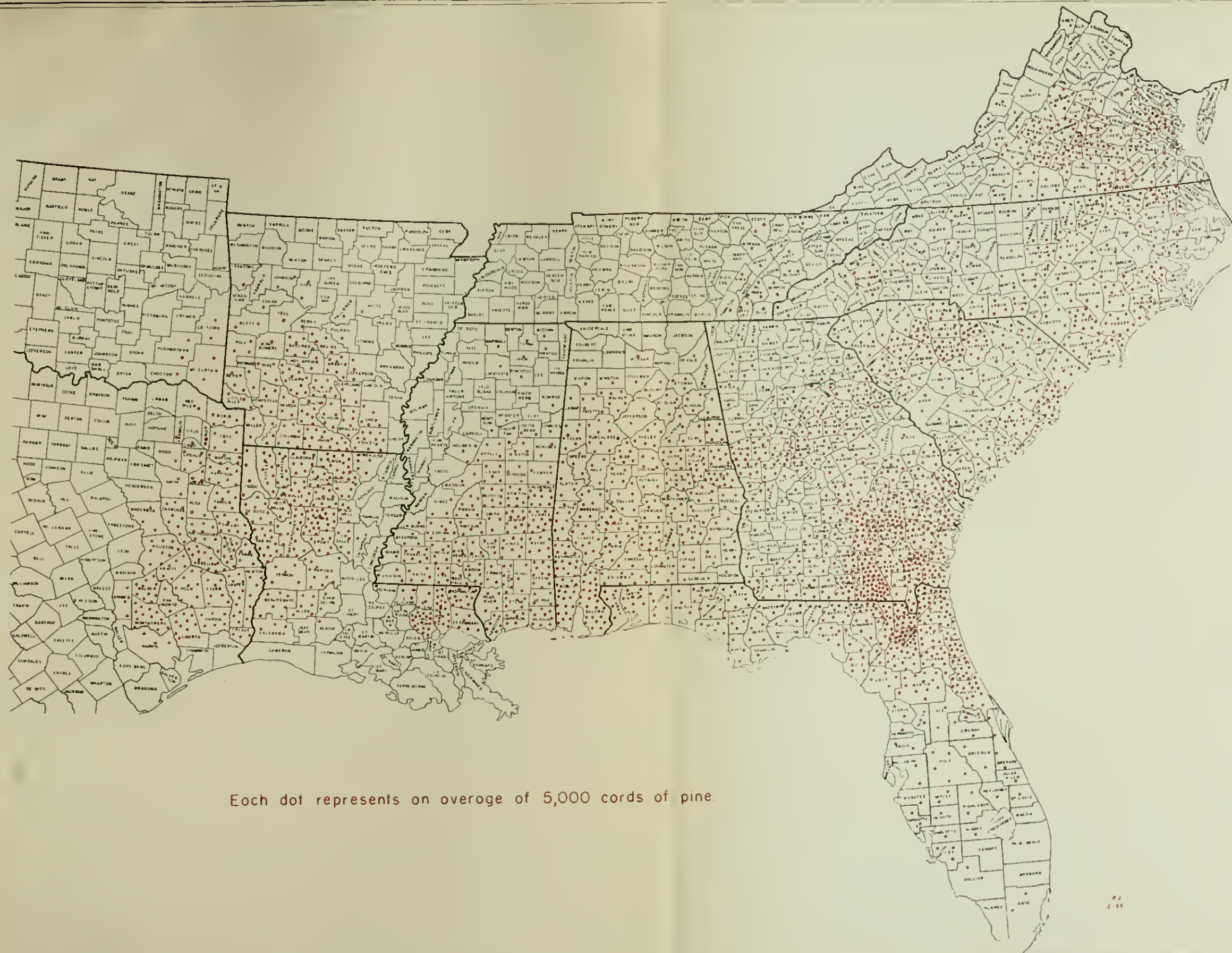


Figure 3.—Pine pulpwood production by county in the South, 1954.



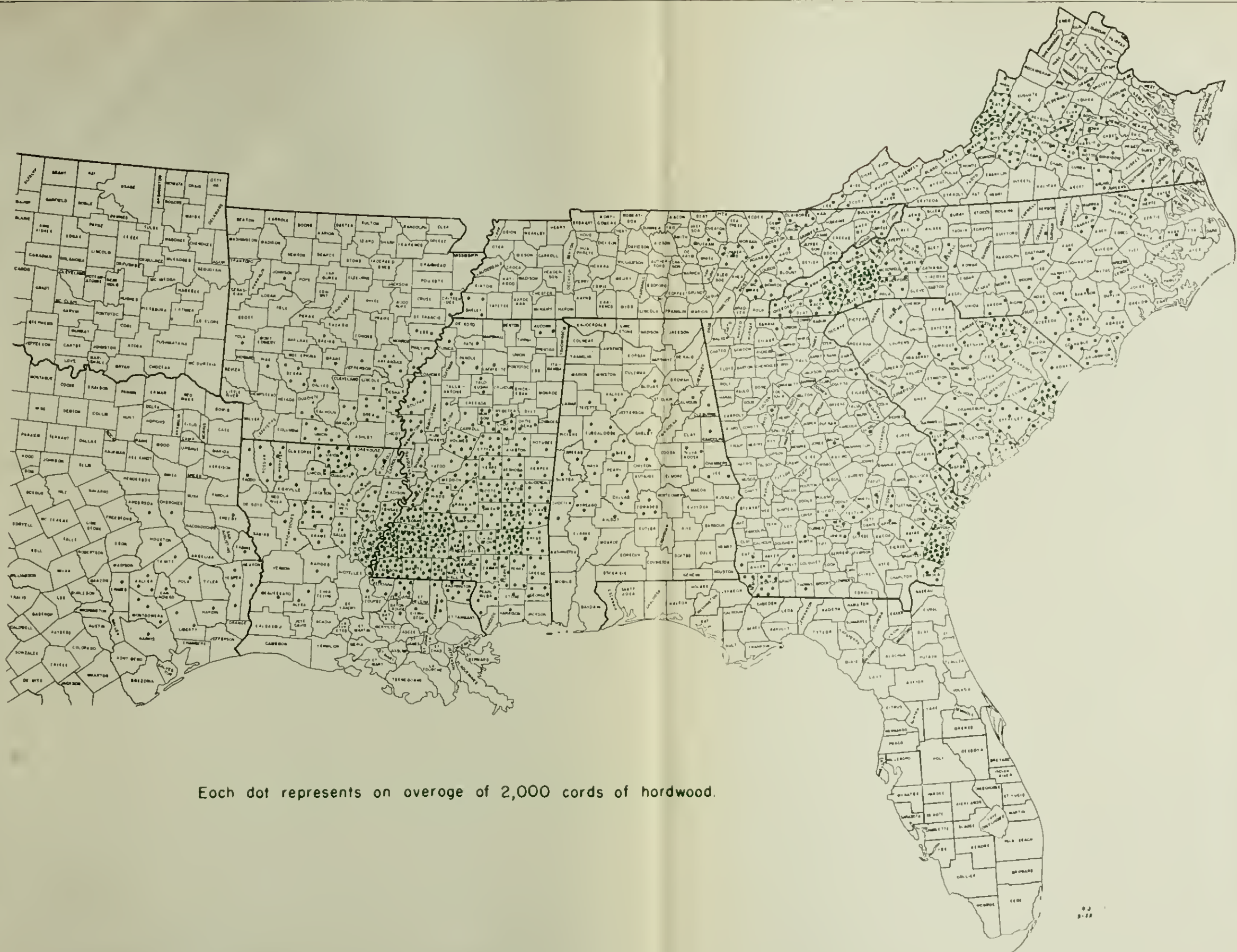


Figure 4—Hordwood pulpwood production by county in the South, 1954.





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FORESTS OF EAST TEXAS, 1953-55

HIGHLIGHTS

Forest area in east Texas totals 11.6 million acres. This is 9 percent more than in 1935.

Acreage of pine and oak-pine forests has increased 7 percent, oak-hickory forests have increased 35 percent, and bottomland hardwoods have declined 5 percent.

Growing stock volume totals 7 billion cubic feet, including 26 billion board feet of sawtimber.

Softwood sawtimber volume has risen 26 percent in the Southeast region but has declined 46 percent in the Northeast. Volume of hardwood sawtimber in both regions is about the same now as in 1935.

Timber growth is 440 million cubic feet annually. The 1954 cut was 302 million cubic feet. Pine sawtimber was overcut in the Northeast.



Southern Forest Experiment Station, New Orleans, Louisiana

Forest Service, U. S. Dept. of Agriculture

FOREWORD

The Forest Survey of east Texas is a part of the national inventory being conducted by the U. S. Forest Service. The purposes of the Survey are (1) to take inventory of the supply of standing timber and other forest products, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies.

The Southern Forest Experiment Station is responsible for the Survey in Texas, Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, and Tennessee. Philip R. Wheeler, chief of the Division of Forest Economics, is in charge of the work.

Large-scale cooperative assistance made it possible to complete the east Texas Forest Survey sooner than would have been possible with Federal funds alone. Cooperation in the form of manpower, equipment use, or aerial photography was received from the following organizations:

Texas Forest Service

Champion Paper and Fibre Company

Southern Pine Lumber Company

International Paper Company

Olin Mathieson Chemical Corporation

The very material aid of these organizations, and of the individuals in them, is gratefully acknowledged.

PHILIP A. BRIEGLEB, Director
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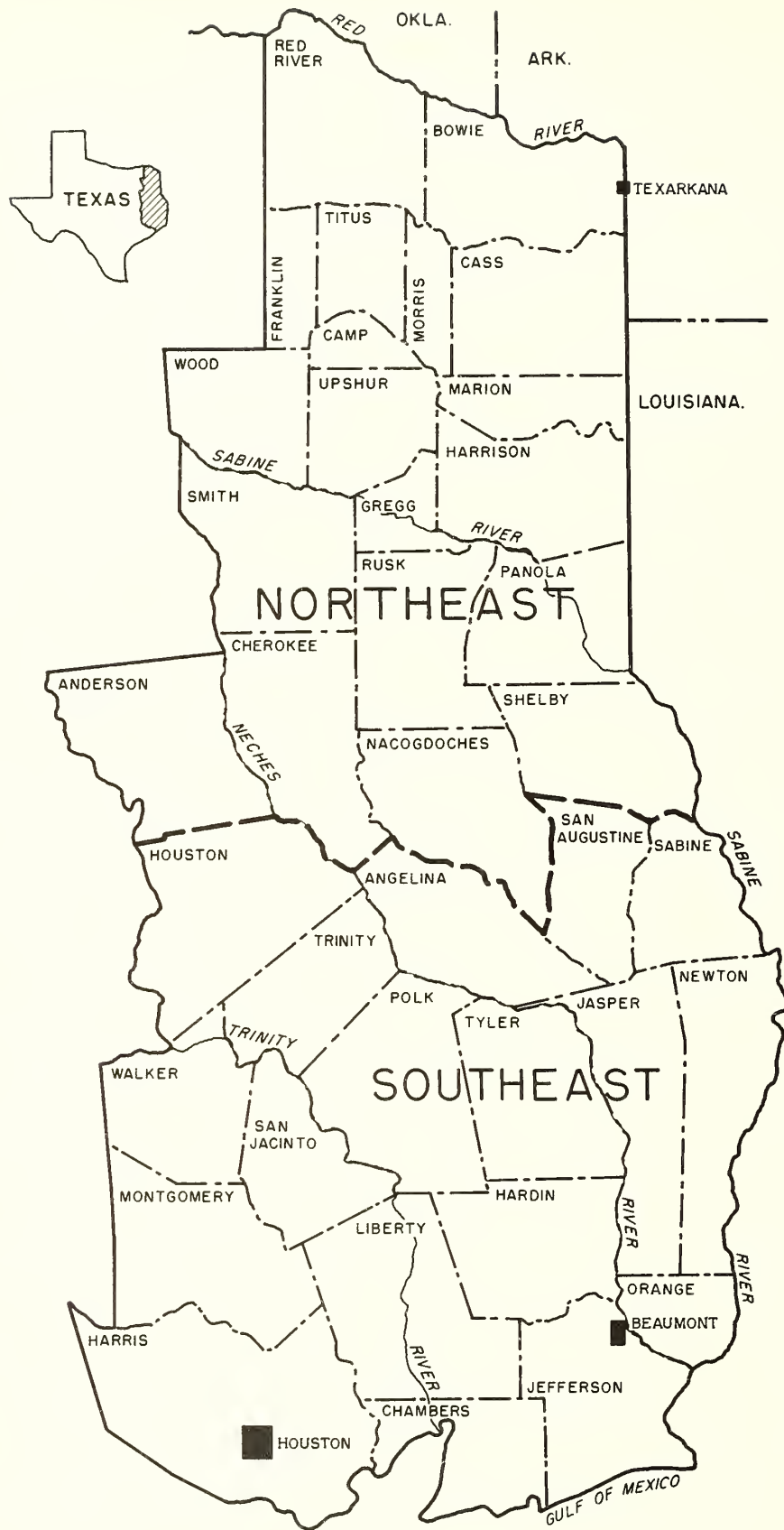


Figure 1.—Forest Survey regions of east Texas.

FORESTS OF EAST TEXAS, 1953-55

This is a report on the forests of east Texas--the amount and kind of timber they contain, the industries they support, and the opportunities for enhancing their productivity. Though primarily the product of the new Forest Survey of east Texas, the report also draws on the first Forest Survey of 1935 to show changes in forest conditions.

During the 20 years between the two Surveys, Texas made the difficult transition from dependence on virgin timber to widespread use of second growth. The rate of use of standing timber fluctuated widely as the Nation experienced both the worst depression and the highest prosperity in its history. Too, the character of the Texas wood-using industry changed markedly. Most notable was the establishment of three multi-million dollar pulp and paper mills. In lumber, there was a shift toward smaller operations adapted to harvesting the volunteer stands that sprang up after the original timber was cut over.

What happened to the forests during these momentous years? The new Survey shows that in Southeast Texas, where nearly half the forest is in big industrial and public holdings, there is a clear trend toward increased stocking and timber growth. Timber supplies are greater today than 20 years ago. With continued expansion of current forestry programs, it appears that this region's wood-using industries can confidently look forward to an increasing resource.

The forestry gains in Southeast Texas have not been duplicated in the region directly northward. For one reason or another, the small landowners who hold most of the forest in the Northeast have not taken advantage of their opportunities. Over-cutting has greatly reduced the stocking of merchantable trees. Fire and grazing have taken toll of promising young growth. Competing low-quality trees have reduced the space available to desirable timber. Further depletion of these forests will make the job of rehabilitation slower and more costly. The small landowner must be convinced of the growth potential of his woodland and helped to get it under management while he still has some timber to work with. Increased effort by both public and private agencies is clearly needed if the region is to share fully in the State's expanding forest economy.

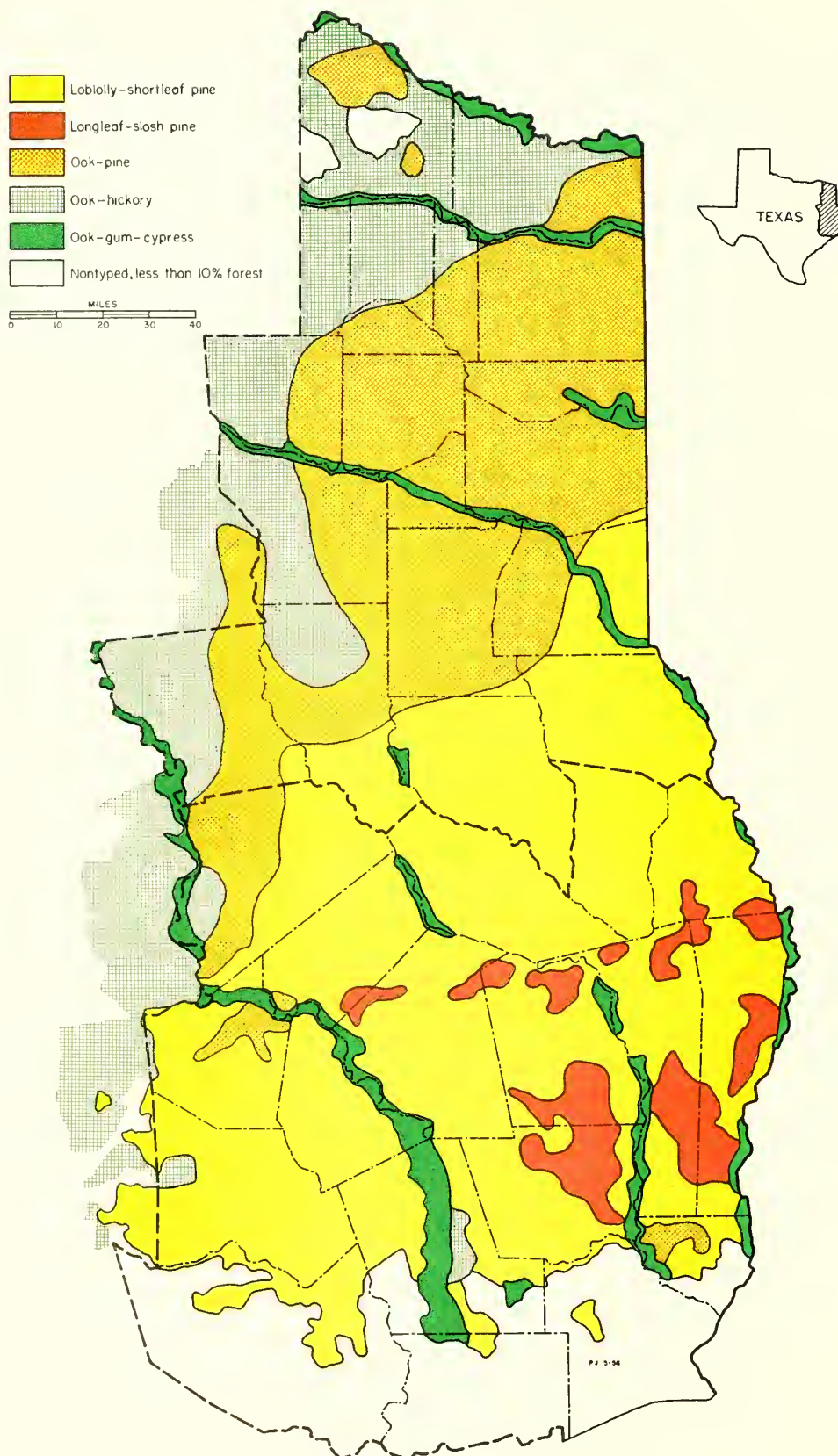


Figure 2.—Major forest types in east Texas.

THE FOREST RESOURCE

Forest Land

Forest acreage has increased. --East Texas is timber country. From the prairies that parallel the Gulf Coast, commercial forests extend 300 miles northward to the Red River. From the Louisiana border, they stretch 80 to 120 miles west, to the point where rainfall becomes generally insufficient to support good commercial stands.

Of the 19 million acres of land in east Texas, 61 percent is in forest^{1/}. Land clearing on the better agricultural soils and for urban and industrial development has reduced forest acreage in some localities during the past two decades. But these declines have been overshadowed by reversion to forest of abandoned farm land. The net result of the shifts in land use is that the present forest area of 11.6 million acres is 9 percent--or almost one million acres--more than in the mid-1930's.

In the northeastern counties about half of the land is in forest, typically in small tracts intermingled with cultivated land (fig. 1). Restocking of open land has increased forest acreage by 14 percent since 1935.

The Southeast, center of the State's pulp and paper industry, is more heavily wooded. Here, forests cover two-thirds of the land. Present forest area is 5 percent greater than in 1935.

Of the commercial forest land in east Texas, large forest industries own 27 percent, farmers 21, and other private owners 45. The remaining 7 percent is held by public agencies.

Softwood types predominate. --Two-thirds of the forest acreage in east Texas is in softwood types. Most extensive is the loblolly-short-leaf pine type, which occupies 5.2 million acres (fig. 2). Forests of longleaf pine, almost entirely in the southeastern counties, cover nearly a half million acres; much of the area formerly in longleaf was taken over by loblolly pine after the old growth was cut. On an additional 2.2 million acres, southern pines are heavily mixed with oak, gum, hickory, and other hardwoods.

^{1/} Definitions of terms will be found on p. 22.

Forests of oak-gum-cypress and elm-ash-cottonwood, occurring along rivers and streams, occupy 1.8 million acres. Oak-hickory stands predominate on 1.9 million acres in the uplands.

Some changes have occurred during the past 20 years in the area occupied by the various timber types (table 1). Land clearing reduced the acreage of bottomland hardwoods. Planting and the reversion of many old fields to pine increased the softwood acreage. But cutting preference for pine converted some mixed oak-pine stands to oak types. The net effect is that the proportion of forest area occupied by softwood types has fallen off in the Northeast region but risen in the Southeast.

Table 1. --Commercial forest land by forest type (1953-55) and change between Surveys

Forest type-group	East Texas		Northeast		Southeast	
	Commercial forest	Change	Commercial forest	Change	Commercial forest	Change
	Thousand acres	Per-cent	Thousand acres	Per-cent	Thousand acres	Per-cent
Softwood ^{1/}	7,836.5	+ 7	2,432.6	+ 2	5,403.9	+ 9
Oak-hickory	1,940.4	+35	1,361.8	+43	578.6	+19
Bottomland hardwood ^{2/}	1,798.9	- 5	775.1	+16	1,023.8	-16
Total	11,575.8	+ 9	4,569.5	+14	7,006.3	+5

^{1/} Includes loblolly-shortleaf pine, longleaf-slash pine, and oak-pine types.

^{2/} Includes oak-gum-cypress and elm-ash-cottonwood types.

Two-fifths of stands are sawtimber size.--Sawtimber stands, the main source of industrial wood, cover 39 percent of the commercial forest area in east Texas. Poletimber stands make up most of the remainder (fig. 3).

There is great variation among timber types in the area occupied by various stand-size classes. Nearly half of the loblolly-shortleaf pine type, for example, is in sawtimber stands. But only 17 percent of the oak-hickory stands are of this size. In other types, the proportion of area in sawtimber ranges between these two extremes.

Regional variations are notable. In the Northeast, only 20 percent of the forest is in sawtimber stands. This contrasts with 51 percent in the Southeast, where good forest management is more common.

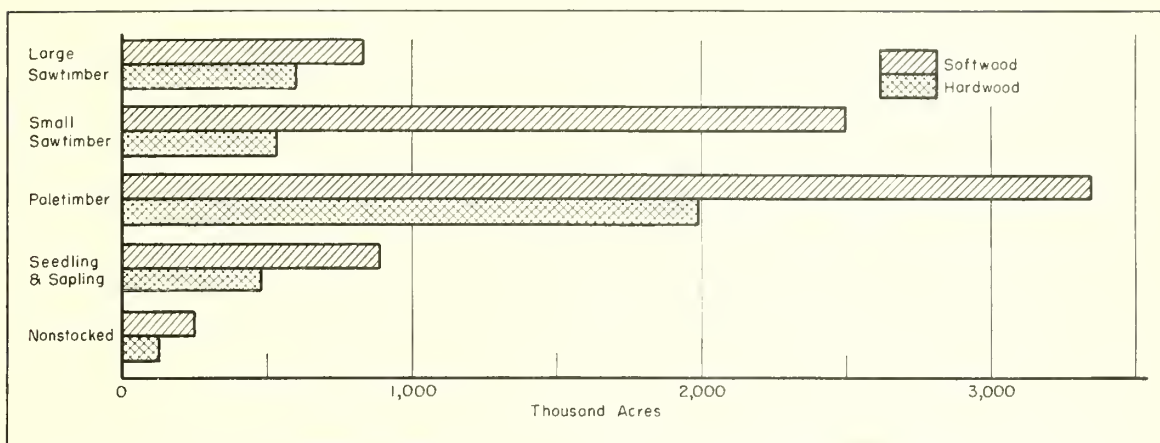


Figure 3. --Forest area by stand size and forest-type group.

Most of the forest is well stocked. --Tree stocking, as measured by the Forest Survey, reflects the extent to which growing space is effectively utilized by sound, well-formed trees of commercial species.

Fifty-nine percent of the forest land is well stocked in the sense that it contains at least 70 percent of the number of good trees (including established seedlings) required for full stocking (fig. 4). Twenty-nine percent is medium-stocked, having 40 to 69 percent of full stocking. Ten percent is poorly (10 to 39 percent) stocked, and 2 percent is non-stocked.

Stocking is best in the southeastern counties and in the loblolly-shortleaf pine type. Conditions are noticeably below par in the longleaf pine type--nearly half of it is nonstocked or poorly stocked.

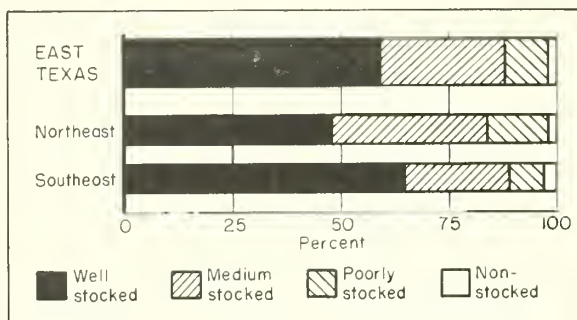


Figure 4. --Degree of stocking by region.

Forest growth is hampered by an accumulation of cull trees. More than one-fifth of the total basal area of all live trees at least 5 inches in d.b.h. is in culls, virtually all hardwoods. Utilizing or deadening those cull hardwoods not essential for wildlife food and cover will enable the forests to produce more merchantable volume than they are currently doing.

Some idea of the job involved in cull hardwood removal may be gained from table 2, which shows the average number of culls per acre

Table 2. --Number of cull hardwood trees per acre by diameter and Survey region, 1953-55

Tree diameter (inches)	East Texas	North- east	South- east
	- - - Number - - -		
2- 4	105	79	121
6-10	14	14	14
12-14	3	4	3
16-18	1	1	1
20+	1	1	1
Total	124	99	140

by tree diameter. Thus, to rid the average stand of all hardwood culls 5.0 inches and larger would mean killing 19 trees per acre, most of them under 11 inches in diameter. Ax-girdling the culls in the average stand would take about one man-hour per acre; machine girdling would require only one-third as much time.

Timber Volume

Growing stock has increased.--Growing stock in east Texas totals 7.3 billion cubic feet--an average of 630 cubic feet or 9 cords per acre. The total is somewhat greater than in 1935. Nearly three-fourths of the growing stock is in the Southeast region.

Important regional changes in growing stock have occurred. As table 3 indicates, softwood volume has risen sharply in the Southeast and declined in the Northeast. Hardwood, on the other hand, has increased in both regions. The increases and decreases in volume are partly explained by marked changes in the size of the timber.

Table 3. --Growing stock volume (1953-55) and change between Surveys

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million cu. ft.	Percent	Million cu. ft.	Percent
Northeast	789.4	-39	1,172.9	+12
Southeast	3,187.9	+23	2,132.0	+11
Total	3,977.3	+2	3,304.9	+11

In the Southeast the stand tables indicate a greatly improved situation between Surveys (fig. 5). Softwoods in all tree sizes through 20 inches have increased in number--more than 20 percent in most size classes. The smaller improvement in 6- to 10-inch trees reflects partly the effect of heavy

cutting for pulpwood on some tracts and partly the fact that on managed holdings less growing space is usually occupied by small trees. Increases above 12 inches are especially noteworthy. Only softwoods over 22 inches declined in number; depletion of this large timber is helping to sustain production while stocking in medium sizes is building up. Among hardwoods, there have been considerable increases in sizes below 20 inches in diameter.

In the Northeast the impact of heavy pine cutting is apparent. Reduction in softwood numbers extends down through the 6-inch class. Though large hardwoods have also been reduced in number, hardwoods have been cut less heavily than softwoods. Most of the hardwood in the Northeast is found in the uplands. Here, pine would be preferable.

Regional changes in timber volume and in number of desirable trees seem to be associated with size of ownership and interest displayed in improved forest management. In the Northeast, for example, the bulk of the forest is on farms or in other small tracts. But in the Southeast, where preferred softwoods increased, nearly half the forest is held by large forest industries (i. e., ownerships of more than 50,000 acres each) and public agencies.

In general, public lands and the holdings of large forest industries are being managed so as to build up growing stock. It is not surprising, therefore, that there is a much heavier concentration of timber on these properties than on other ownerships. On public holdings, growing stock averages about 1,060 cubic feet (15 cords) per acre. Large industrial holdings average 860 cubic feet per acre as compared to less than 500 cubic feet on all other private ownerships.

Softwood sawtimber volume has risen in Southeast.--The volume of sawtimber in east Texas now stands at 26.5 billion board feet, of which nearly half is in trees at least 15.0 inches in d. b. h. (fig. 6).

Southern pines--chiefly loblolly--make up 65 percent of the sawtimber volume. All other softwoods, largely cypress but including

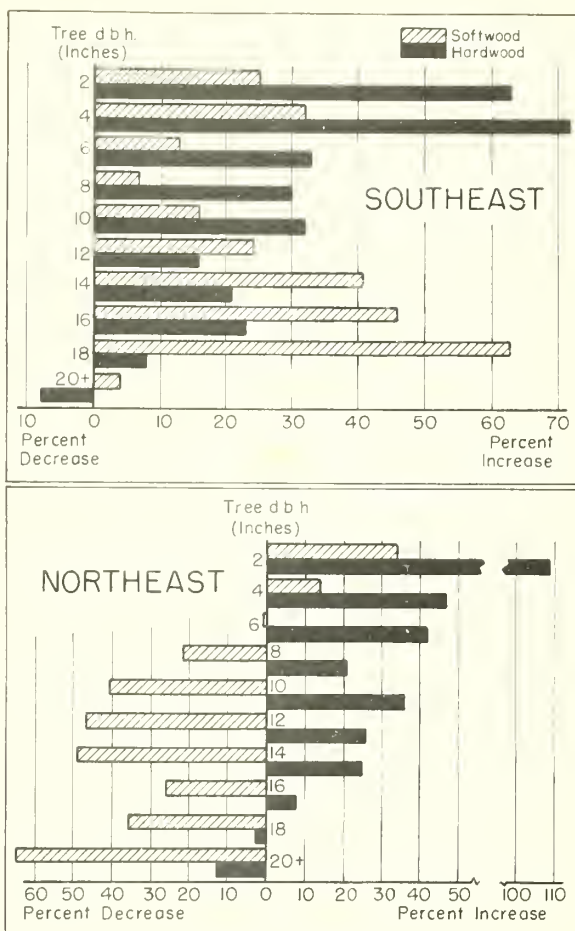


Figure 5.--Change in number of live trees between Surveys by region.

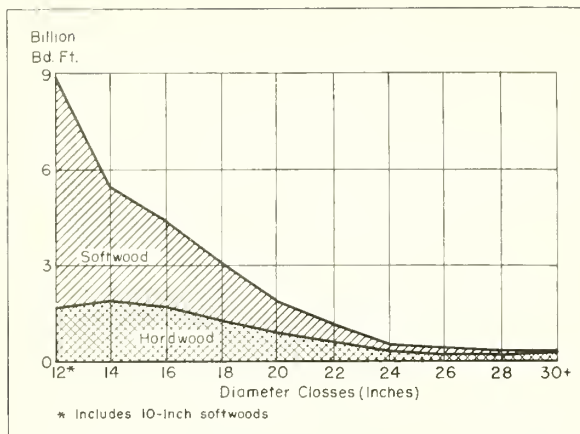


Figure 6.--Distribution of sawtimber volume by diameter class.

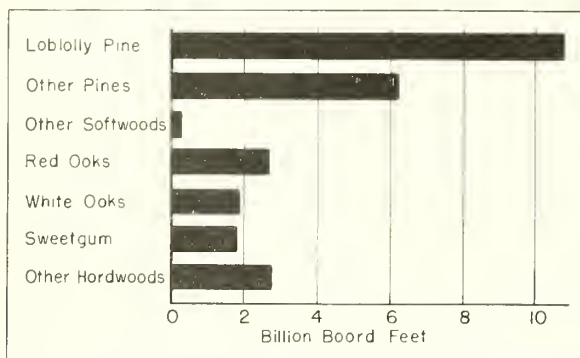


Figure 7.--Sawtimber volume by species.

Table 4.--Sawtimber volume (1953-55) and change between Surveys

Region	Softwood		Hardwood	
	Volume Million bd. ft.	Change Percent	Volume Million bd. ft.	Change Percent
Northeast	2,943.0	-46	2,853.6	+2
Southeast	14,429.9	+26	6,263.4	+2
Total	17,372.9	+2	9,117.0	+2

some redcedar, total barely 1 percent. Among hardwoods, red and white oaks lead with 17 percent of the total sawtimber volume. Sweetgum, blackgum, and tupelo gum add up to 10 percent; pecan and hickory to 2 percent; and all other hardwoods to 5 percent (fig. 7).

Trends in sawtimber volume between Surveys, shown in table 4, generally parallel those in growing stock. Most significant are the striking regional changes in softwood sawtimber. Another point to note is that the smaller regional changes indicated for hardwood sawtimber volume relative to growing stock mean that small hardwoods are increasing at a rate faster than are sawtimber trees.

Further indication of sawtimber trends may be gained from average volumes per acre. Southeast Texas, which averaged 2,660 board feet at the time of the first Survey, now averages 2,950 board feet. In Northeast Texas, average volume plunged from 2,080 board feet per acre to 1,270.

For the whole of east Texas, sawtimber volume now averages 2,290 board feet per acre^{2/}. Pine types average 2,640 board feet, oak-gum-cypress 2,210, and oak-hickory 950. For sawtimber stands alone, volume averages 5,150 board feet per acre in softwood types and 3,450 in hardwood types.

^{2/} Comparable volumes for other Gulf States are: Alabama, 1,840 board feet per acre; Florida, 960; Louisiana, 2,830; and Mississippi, 1,780.

Big trees of higher quality. -- Timber quality as expressed by log grade is related to tree size. In hardwoods 20 inches and larger in diameter, for example, nearly two-fifths of the volume is in good-quality logs (grades 1 and 2); in 14- to 18-inch trees about one-seventh. But in the 12-inch class, virtually all of the volume is in low-grade logs that are of little immediate use to saw and veneer mills.

Among softwoods, much the same situation prevails with respect to tree size and quality (table 5).

One-fifth of the hardwood sawtimber and one-sixth of the softwood is in grades 1 and 2. A fair proportion of the sawtimber grades low simply because it is of small size. These small trees, however, can provide future high quality--i. e., grade will improve with growth.

Table 5. --Sawtimber volume by log grade and tree diameter, 1953-55

Species group and d. b. h. class (inches)	All grades	Grade 1	Grade 2	Lower grades
- - - - Million board feet - - - -				
Softwood:				
10 to 12	7,154.8	0.4	132.7	7,021.7
14 to 18	8,160.5	3.7	1,764.3	6,392.5
20 and up	2,057.6	266.8	524.4	1,266.4
Total	17,372.9	270.9	2,421.4	14,680.6
Hardwood:				
12	1,745.4	...	12.9	1,732.5
14 to 18	4,890.0	69.6	637.2	4,183.2
20 and up	2,481.6	393.2	528.5	1,559.9
Total	9,117.0	462.8	1,178.6	7,475.6
All classes	26,489.9	733.7	3,600.0	22,156.2

Timber Growth and Cut

Net annual growth 440 million cubic feet; sawtimber growth 1.7 billion board feet. --

The forests of east Texas are growing 440 million cubic feet annually. This amounts to an average of 38 cubic feet or about 0.5 cord per acre, which is a growth rate of 6.0 percent. Southern pines make up three-fifths of the total growth.

For sawtimber trees alone, annual net growth averages 149 board feet per acre. Sawtimber stands average 297 board feet of net growth in softwood types and 146 board feet in hardwood types. These figures indicate growth under existing conditions. Management practices leading to better stocking and lower mortality do and will, of course, result in higher increments.

Total timber cut 302 million cubic feet; sawtimber cut 1.5 billion board feet. -- Timber cutting removed 229 million cubic feet of softwood growing stock and 73 million of hardwood from east Texas forests in 1954 (fig. 8). Virtually all of the softwood was pine. Sweetgum, which is being increasingly used for pulpwood, made up 25 percent of the total

hardwood cut; other soft-textured hardwoods such as blackgum accounted for 7 percent; red and white oaks for 62 percent; and other firm-textured hardwoods like hickory about 6 percent.

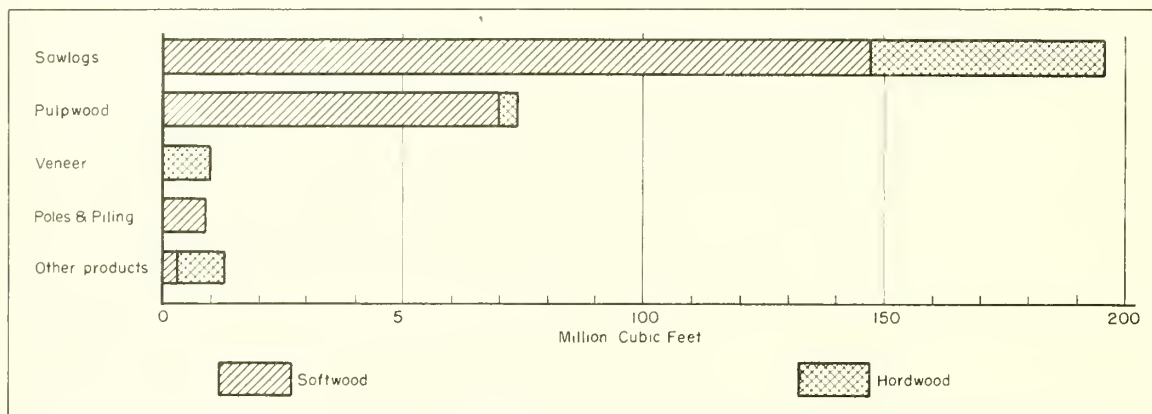


Figure 8. --Annual cut of growing stock.

The most significant relationship of timber cut to growth in east Texas is that of pines 10 inches and larger in diameter (i.e., sawtimber-size trees). Pines of these sizes account for some 70 percent of the total volume of timber cut annually, both softwood and hardwood. Even pulpwood is cut largely from sawtimber-size pine.

It is noteworthy, therefore, that in the Northeast region there is no surplus growth of pine sawtimber with respect to the volume cut. The situation is quite different in Southeast Texas. In this region, pine sawtimber is growing faster than it is being cut. The excess pine growth--together with the long-term upward trend of stocking in the Southeast--augurs a bright future for dependent wood-using plants.

The Pine Fringe

Forests of southern pine extend somewhat beyond the western margin of the Forest Survey regions in east Texas (see type map, page 2). This extension of the pine zone is referred to here as the Pine Fringe.

The Fringe region was not included in the initial Forest Survey of 1935. The new Survey gathered information on timber volumes in the area, but did not estimate timber growth or cut. Included in the Pine Fringe are 21 of the 42 minor civil divisions of the following counties: Grimes, Henderson, Leon, Madison, Van Zandt, and Waller. This area contains all or virtually all of the pine in these counties. Some 60 miles

further west--in and around Bastrop county--is the detached area known as the Lost Pines. This western outpost of southern yellow pines was not examined.

Data on the Fringe forests are included as footnotes to the detailed tables. In brief, commercial forest land in the area amounts to some 600 thousand acres, or 40 percent of the total land. The sawtimber volume is about 749 million board feet, of which one-fourth is pine. It averages 1,260 board feet per acre, considerably less than the 2,290 found in the adjacent forests to the east.

Including stands of mixed oak-pine, the area of pine forests totals some 170 thousand acres. Of the 197 million board feet of pine, over half is in Grimes county alone.

About half of the commercial forest area in the Fringe is occupied by the oak-hickory type. The stands are a part of what is locally called the post oak belt, since this species is the universal dominant of the type. Industrial use of these stands is limited. They supply fence posts, fuelwood, and some lumber.

The remaining Fringe forests are found along rivers and streams. Chief species in these stands are elm, ash, and oak.

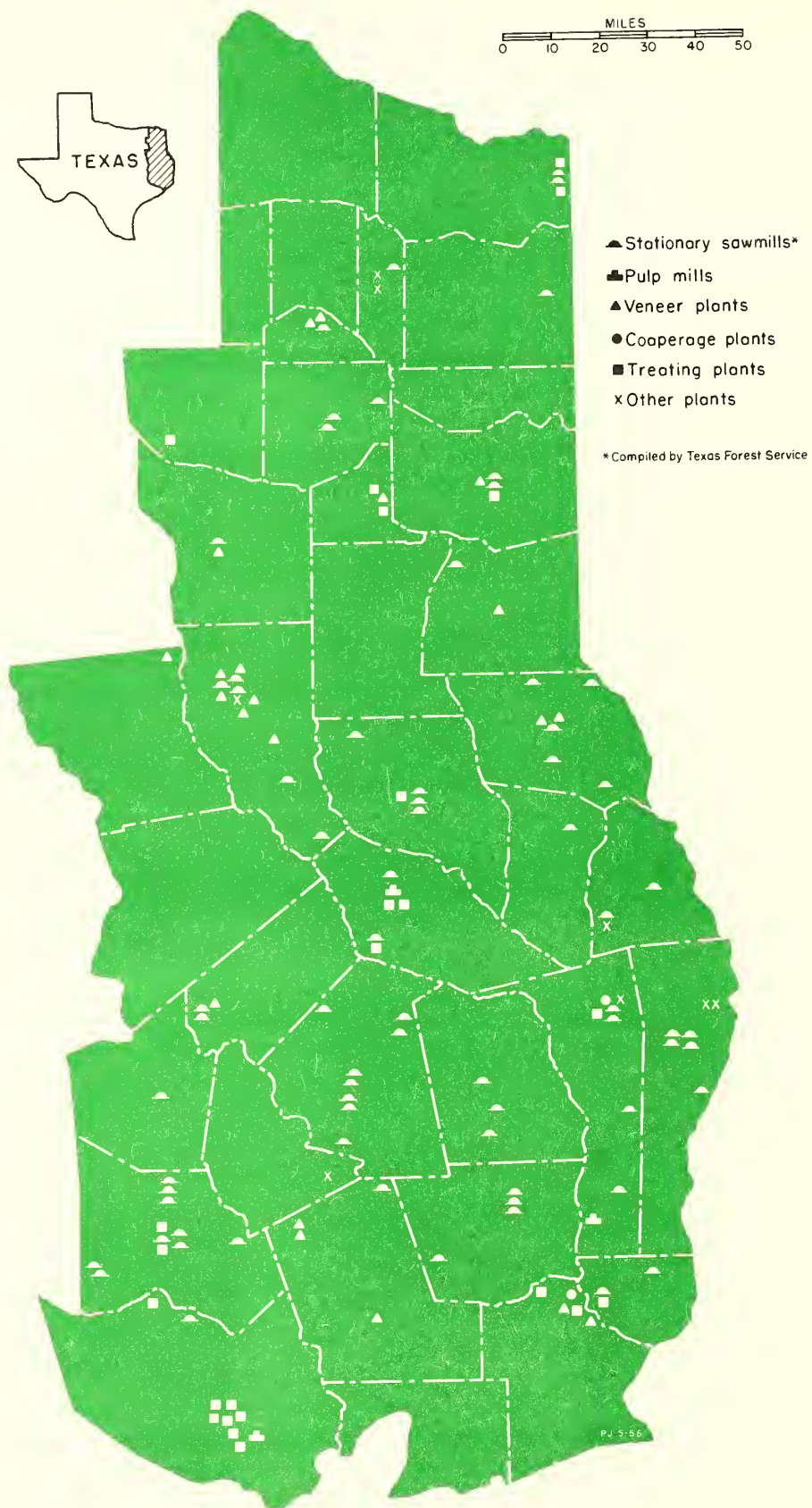


Figure 9—Location of primary wood-using plants in east Texas, 1954.

FOREST INDUSTRY

The 1954 output of timber commodities in east Texas totaled 280 million cubic feet--217 million of softwood, 63 million of hardwood.

Sawlogs are still the chief timber product. Pine pulpwood also ranks high. These two items comprise nearly 90 percent of the total output (table 6). Hardwood veneer logs, pine poles, fuelwood, fence posts, and hewn ties make up most of the rest.

Lumber output mainly pine.--The bulk of the lumber is sawn at mills cutting more than 3 million board feet annually. These mills are largely in the southeastern counties, where timber is most abundant (fig. 9). Portable mills, which multiplied after the old growth was gone, have declined in number during the past few years. Their decline is partially reflected in production statistics--lumber output is now considerably below the peaks of the 1940's (fig. 10).

Table 6.--Output of round and split timber products, 1954

Product	All species	Softwood	Hardwood
		Percent	
Sawlogs	60	62	56
Pulpwood	28	34	6
Veneer	2	(1/)	11
Cooperage	(1/)	...	(1/)
Fuelwood	4	(1/)	18
Poles and piling	3	3	...
Posts	1	1	3
All other	2	(1/)	6
Total	100	100	100

1/ Negligible.

In 1954 the production of logs for lumber (including sawn cross-ties) was 1 billion board feet, of which over three-fourths was softwood. Oak and gum supplied most of the hardwood. Virtually all of the softwood was southern pine.

Pulpwood a major claimant of timber.--As in the rest of the southern pine region, pulpwood production in east Texas increased tremendously during the past two decades (fig. 11). Today, pulpwood accounts for a third of the total softwood output. Recent expansion of the pulp and paper industry in the State and bordering areas points to still further increases in pulpwood output.

Out-of-state mills draw heavily on Texas timber for pulpwood. Of the more than one million cords of round pulpwood cut in Texas during 1954, over 40 percent was shipped to mills in Arkansas and Louisiana.

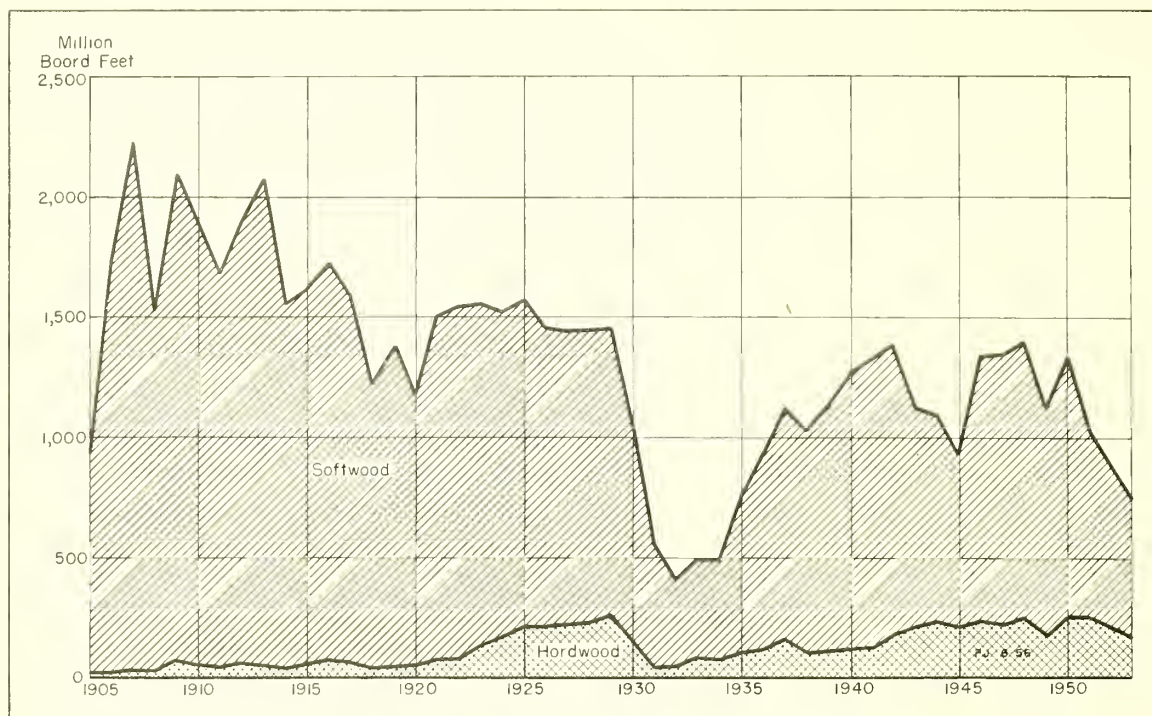


Figure 10. --Lumber production in Texas, 1905-53.

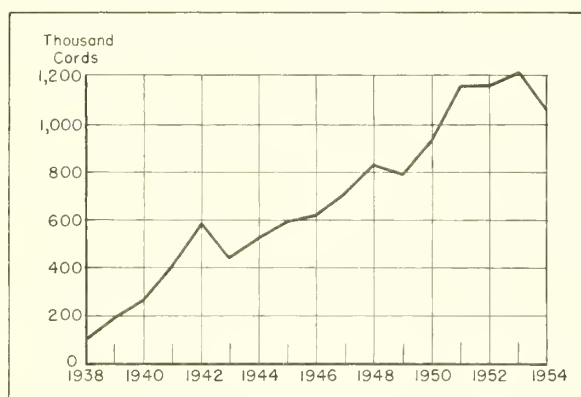


Figure 11. --Pulpwood production in Texas, 1938-54.

Chipped sawmill residues are a new source of raw material for the pulp industry. Although none of the Texas pulp mills reported use of such residues in 1954, at least 5 pine sawmills in the State have recently installed equipment for producing bark-free pulp chips. Installations by other large mills are likely.

Veneer production increases. --Veneer production in east Texas has risen somewhat in the last 20 years. The 21 veneer plants in the region turn out mainly baskets, crates, and other types of packaging; these containers are used largely for transporting truck crops. Small amounts of commercial and face veneers are also produced.

In 1954, the total output of veneer logs in east Texas was 50 million board feet, almost all hardwood. Sweetgum alone accounted for

slightly more than half of the total. Other soft-textured hardwoods provided most of the remainder.

Poles and piling are important. --East Texas is a leading producer of southern pine poles and piling. In all, some 647,000 pines were cut for poles and piling in 1954. This output amounted to 7.4 million cubic feet, of which over 80 percent was cut in the Southeast region.

Practically all of the poles and piling are shipped to Texas wood-preserving plants. Most of the 24 preserving plants in east Texas are of the commercial pressure-type. These plants also treat large quantities of lumber, crossties, fence posts, and miscellaneous items.

Cooperage production declines. --Strong competition from other types of containers has cut deeply into traditional cooperage markets. In 1937, production of cooperage logs and bolts from the forests of east Texas totaled some 6 million board feet; by 1954 output had dropped to only 1.3 million. Almost all of the 1954 cooperage was white oak, locally manufactured into staves for foreign export.

Large numbers of posts harvested. --Nearly a tenth of the Nation's preservative-treated fence posts were produced in east Texas during 1954. Almost all of these 2 million commercial fence posts were pine. Another 3 million posts were cut and used on farms. The farm-cut posts are mainly of white oak species.

Fuelwood use drops sharply. --The long-term trend of fuelwood in east Texas, as elsewhere in the South, is clearly downward. In the late 1930's, for example, fuelwood production in east Texas was about 1,777,000 cords annually. By 1954 it had fallen off to less than 153,000 cords.

All other products cut in 1954 supplied only 2 percent (4.8 million cubic feet) of the total timber output in east Texas. Of this, hewn ties were the leading item.

OPPORTUNITIES FOR IMPROVING FOREST PRODUCTIVITY

During the 20 years between the two Forest Surveys of east Texas, there was more interest in forestry than during any previous period. Indications of progress are numerous. Organized fire protection was extended to over 10 million acres. Total area of forest plantings increased to more than 200,000 acres. Much industrially owned timberland was placed under supervision of professional foresters. Public agencies and some timber operators began making strong efforts to sell better cutting practices to small landowners. Forest research by State and Federal agencies was considerably expanded.

Although substantial progress has been made, increased efforts are needed. The commercial timber belt of east Texas is essentially a pine-producing region. Of the 11.6 million acres of commercial forest land, about 9.5 million appear to be more valuable for pine than hardwood. Yet much of the area is producing at only a fraction of its capacity. Before full production can be achieved, hardwoods must be controlled wherever they are unduly

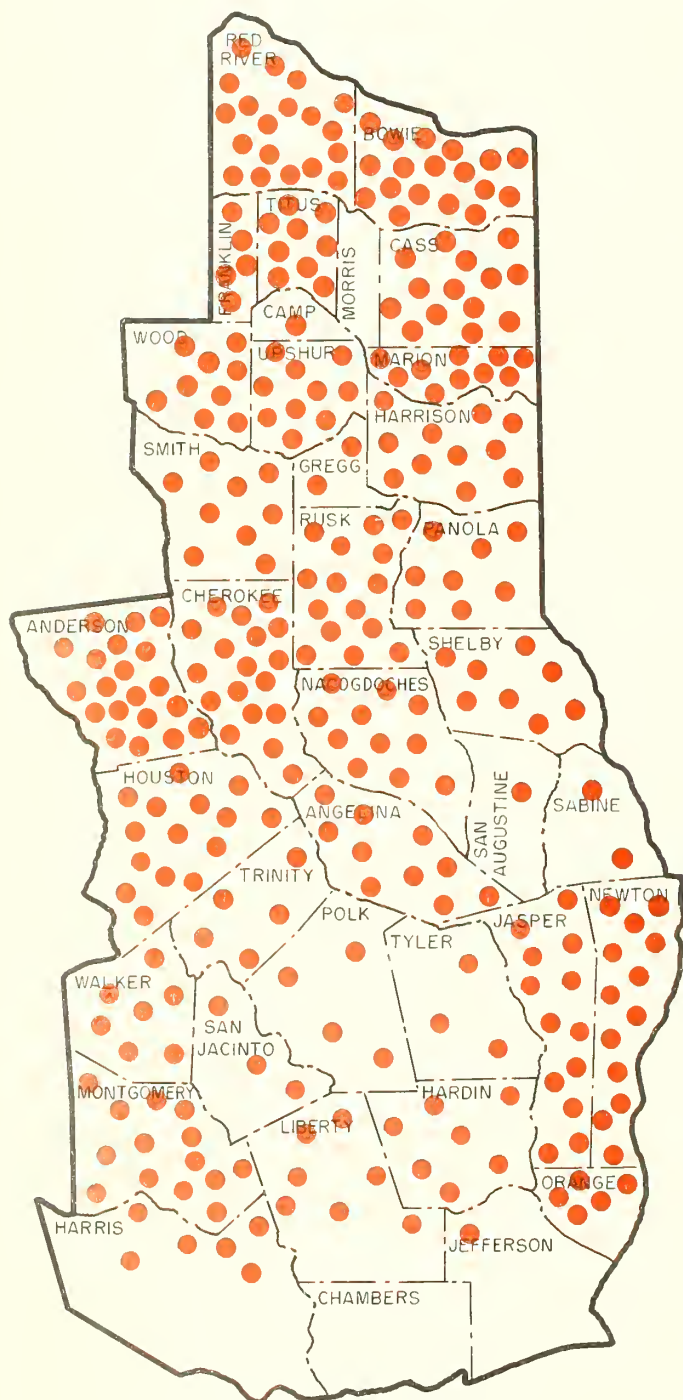


Figure 12.--Plantable pine acreage in east Texas. (Each dot represents an average of 10,000 acres.)

encroaching on pine growth, and pines must be planted on a large acreage where natural reseeding is unlikely. The potential benefits from planting and hardwood control are so great that the Forest Survey collected special data on the size and nature of the jobs.

How much forest planting? -- Potential pineland in east Texas, as defined by the Forest Survey, includes all the forested uplands except areas occupied by desirable hardwoods such as cherrybark oak and magnolia. Of these uplands, the Survey found some 3 million acres with both an inadequate pine seed source and inadequate pine stocking (fig. 12). For full stocking, part of this area requires complete planting, and the rest needs reinforcement planting.

Planting possibilities loom largest in the loblolly-shortleaf pine zone of Northeast Texas, where the forest is largely in farm woodlands and other small holdings. Early income from pine plantations appears assured by rapidly expanding pulpwood markets. This development should help to stimulate greater interest in planting among small woodland owners.

Many of the hazards encountered in natural regeneration of timber stands are avoided in planting. At the same time, greater skill and knowledge are needed to insure plantation success in east Texas than in better-watered portions of the southern pine region^{3/}.

Extent of hardwood control job. -- Improving species composition on sites better suited to pine than to hardwood is a real challenge to Texas landowners and wood-using industries. Some of the hardwoods on pine sites are outright culls. Others are growing stock, having some present or potential marketability. Where pines are more profitable, cull and low-quality hardwoods should be used or controlled.

The Forest Survey classified all pine sites to determine whether a hardwood problem existed--i. e., whether more than a fifth of the growing space was occupied by hardwoods, both cull and sound trees. The size of the hardwoods was also noted, since it influences the nature of the control work. Hardwood size classes were: small, 2 inches in d. b. h. or less; medium, 3 to 9 inches d. b. h.; and large, 10 inches d. b. h. or over.

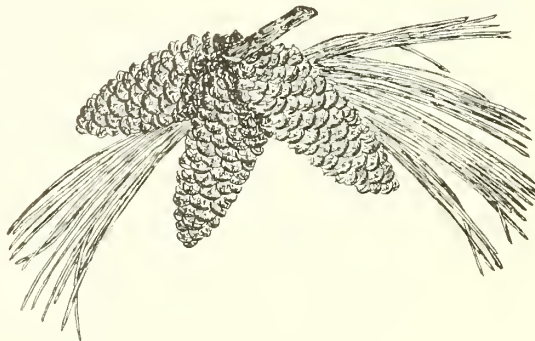
^{3/} Ferguson, E. R., and Stephenson, G. K. Pine regeneration problems in east Texas: a project analysis. South. Forest Expt. Sta. Occas. Paper 144, 72 pp., illus. 1955.

Some 7.5 million acres of pine sites were found to have a hardwood problem. Small hardwoods dominate on 30 percent of this acreage, medium-size trees on 36 percent, and large hardwoods on 34 percent of the acreage. About 2.3 million acres of the total are adequately stocked with pine. These should be treated first, before the pines are crowded out.

Because small hardwoods are usually too numerous to be treated individually, their control may entail mechanical brush cutters, prescribed burning, aerial spraying, or other wholesale means. Medium-size hardwoods will generally require use of a sprout-preventing chemical; large hardwoods can easily be deadened by girdling. Of course, whenever low-value hardwoods can be sold, landowners will be that much money ahead on the pine improvement job.

It should be emphasized that well-balanced timber stand improvement programs recognize the needs for wildlife habitat as well as other nontimber values of the forest.

Other opportunities. --In addition to restocking idle acres and removing weed hardwoods, there are a number of other important measures that can contribute to increasing future timber supplies. These are (1) to strengthen fire protection facilities in order to cope with periods of above-average fire hazard and to extend protection to the more than 1 million forest acres not yet covered, (2) to intensify protection from insects and disease, (3) to make fuller use of harvested trees, and (4) to improve cutting practices, especially on small holdings.



ACCURACY OF THE SURVEY

The 1953-55 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurement of quarter-acre sample plots. In most counties, sample plots were taken in pairs at and near the intersections of a grid of east-west and north-south lines spaced three miles apart. In 17 counties, only 80 percent of the locations (i. e., pairs of plots) as determined from a 3-mile-square grid were sampled.

Accuracy of the estimates may be affected by two types of error. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from human mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting and estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training, good supervision, frequent checks, and emphasis on careful work.

Statistical analysis of the data, using random-sampling formulas, indicates a sampling error of plus or minus 0.4 percent for the estimate of total forest area, 2.6 percent for total cubic foot-volume, and 2.6 percent for total board-foot volume. However, because an equispaced systematic sample is generally more efficient than a random sample of the same size, these estimates of sampling error may be considered as setting an upper limit of error, rather than as expressing the actual probability of error. As the acreage and volume totals are broken down by Survey region, county^{4/}, forest type, species, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates may be liable two chances out of three.

^{4/} County data on timber volume have been included in the report to permit grouping of counties into any desired combinations. For this purpose, groups of counties containing a million acres or more of forest land are recommended.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Maximum sampling error	Volume sampled	Maximum sampling error	Volume sampled	Maximum sampling error
<u>M acres</u>	<u>Percent</u>	<u>Million cu. ft.</u>	<u>Percent</u>	<u>Million bd. ft.</u>	<u>Percent</u>
12,000	0.4	7,000	2.6	26,000	2.6
9,000	.5	6,000	2.9	20,000	3.0
5,000	.6	3,000	4.1	10,000	4.2
2,000	1.0	1,000	7.0	5,000	6.0
500	1.9	500	9.9	2,000	9.5
100	4.3	100	22.2	300	24.4

Growth estimates are based on radial-growth measurements and mortality data taken on sample plots. No attempt was made to calculate sampling error in these estimates.

Estimates of annual cut were based on the number and size of stumps on recently cut inventory plots. Stumps of all trees cut during the 3-year period preceding date of inventory were recorded and the measurements converted into tree volume. Using production indices, the data were then adjusted to annual cut for a specified year. Supplemental studies were made to provide volume cut by product. The sampling errors to which the 1954 estimates of annual cut are liable, on a probability of two chances out of three, are plus or minus 4.3 percent for growing stock and 5.0 percent for sawtimber volume.

In computing the changes that took place between 1935 and 1953-55, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. For example, published estimates from the first Survey were based on a total land area of 18,911,400 acres in east Texas. Since then, more accurate measurement by the U. S. Bureau of the Census has established a revised figure of 19,038,700 acres. Thus, while actual land area has changed little, if at all, the higher estimate of land acreage has affected forest-area and timber-volume estimates in like proportion. Again, the minimum diameter limit for hardwood sawtimber trees was dropped from 13.0 inches d.b.h. on the first Survey to 11.0 inches on the second Survey, in line with changing utilization practices.

In addition to these major points, a number of procedural differences between the two Surveys had to be taken into account. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before the change was computed.

The sampling error in the data on change in forest acreage and timber volume cannot be estimated. In the 1935 Survey, sample plots were spaced one-eighth mile apart on lines 10 miles apart. An estimate of sampling error was not made. However, error in the estimate of total forest acreage was probably very small; and the indicated change in total forest acreage may be considered essentially correct. Indicated changes for Survey regions and other portions of the total acreage should be valued in proportion to the magnitude of the item and of the change. Changes in timber volume, because of the possible effect of nonsampling as well as sampling errors, are shown only for major groupings of the data.

DEFINITION OF TERMS

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous are loblolly pine (Pinus taeda); shortleaf pine (P. echinata); and longleaf pine (P. palustris).

Hardwoods. Broadleaved species of which the most numerous are the oaks (Quercus spp.) and sweetgum (Liquidambar styraciflua).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Longleaf-slash pine. Forests in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. (Common associates include other southern pines, oak, and gum.)

Loblolly-shortleaf pine. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. (Common associates include oak, hickory, and gum.)

Oak-pine. Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25 - 49 percent of the stand. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory. Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress. Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood. Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. (Common associates include willow, sycamore, beech, and maple.)

Class of Timber

Sawtimber trees. Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.

- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees. Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees. Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees. Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees. Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees. Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, but which do not meet the specifications for large sawtimber.

Poletimber. Stands failing to meet the sawtimber stand specification, 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.

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock. Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside 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 inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d.b.h.

Growth

Net annual growth of sawtimber. The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Mortality

Annual mortality. The net volume, excluding salvage, removed from live sawtimber and from growing stock during a specified year through death from natural causes.

Cut

Annual cut of sawtimber. The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Annual cut of growing stock. The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Output

Timber products output. The volume of timber products cut from both growing stock and other sources.

Softwood Log Grades ^{5/}

Softwood log grades are based on the value yield per unit outturn of yard lumber. The value of lumber yield may be expressed relative to the value of No. 2 Common lumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Common lumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber. ^{6/} Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade-2 or better logs are present per acre.

Poor. A stand in which fewer than four grade-2 or better logs are present per acre.

^{5/} For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Experiment Station, 18 pp. 1953.

^{6/} For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory D1737. 1949.

DETAILED TABLES

The following tables present detailed statistics on the forests of east Texas. Supplemental data on the Pine Fringe are in footnotes.

Table 7 . -- Forest and nonforest land^{1/} by Survey region, 1953-55

Land use	East Texas	Northeast	Southeast
- - - Thousand acres - - -			
Forest:			
Commercial	11,575.8	4,569.5	7,006.3
Noncommercial:			
Productive-reserved	5.4	2.1	3.3
Unproductive	74.6	60.6	14.0
Total forest	<u>11,655.8</u>	<u>4,632.2</u>	<u>7,023.6</u>
Nonforest ^{2/}	<u>7,382.9</u>	<u>4,094.8</u>	<u>3,288.1</u>
All land	19,038.7	8,727.0	10,311.7

^{1/} Acreage in the Pine Fringe is as follows:

Land use	Acreage
	Thousand acres
Commercial forest	596.1
Noncommercial forest	33.9
Nonforest	<u>884.0</u>
All land	<u>1,514.0</u>

^{2/} Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 8 . -- Commercial forest land by class of ownership, 1953-55

Class of ownership	Commercial forest	
	Thousand acres	Percent
Private:		
Farm	2,457.4	21.2
Other	8,351.2	72.2
Total private	<u>10,808.6</u>	<u>93.4</u>
Public:		
National forest	655.0	5.7
Other federal	81.4	.7
State	28.7	.2
County and municipal	2.1	(1/)
Total public	<u>767.2</u>	<u>6.6</u>
All ownerships	11,575.8	100.0

^{1/} Negligible.

Table 9.--Land area^{1/} and commercial forest^{1/} by county, 1953-55

County	All land	Commercial forest		County	All land	Commercial forest	
	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>		<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Anderson	683.5	367.2	53.7	Nacogdoches	616.3	409.5	66.4
Angelina	548.5	461.8	84.2	Newton	602.2	571.4	94.9
Bowie	589.4	324.3	55.0	Orange	227.8	145.6	63.9
Camp	121.6	43.5	35.8	Panola	563.2	319.0	56.6
Cass	617.6	336.6	54.5	Polk	700.2	608.9	87.0
Chambers	395.5	37.6	9.5	Red River	661.1	324.0	49.0
Cherokee	674.5	399.0	59.2	Rusk	604.2	312.2	51.7
Franklin	187.5	75.2	40.1	Sabine	361.0	298.7	82.7
Gregg	181.8	88.3	48.6	San Augustine	391.7	290.6	74.2
Hardin	572.8	509.2	88.9	San Jacinto	396.2	316.8	80.0
Harris	1,107.2	285.8	25.8	Shelby	524.2	305.2	58.2
Harrison	570.9	281.3	49.3	Smith	601.0	199.9	33.3
Houston	788.4	501.8	63.6	Titus	267.5	129.5	48.4
Jasper	620.2	544.0	87.7	Trinity	450.6	360.7	80.0
Jefferson	604.8	53.1	8.8	Tyler	593.3	546.4	92.1
Liberty	750.7	505.0	67.3	Upshur	377.0	192.6	51.1
Marion	256.0	184.2	72.0	Walker	503.0	384.3	76.4
Montgomery	697.6	584.6	83.8	Wood	462.7	201.4	43.5
Morris	167.0	76.6	45.9	All counties	19,038.7	11,575.8	60.8

1/ Acreage in the Pine Fringe is as follows:

County	Total land area	Surveyed portion ^{2/}		
		All land	Commercial forest	
	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Grimes	512.6	512.6	190.0	37.1
Henderson	601.6	220.2	74.2	33.7
Leon	703.4	384.4	226.7	59.0
Madison	305.9	191.7	26.3	13.7
Van Zandt	547.2	139.3	42.8	30.7
Waller	324.5	65.8	36.1	54.9
Total	2,995.2	1,514.0	596.1	39.4

2/ In the 6 counties shown, Forest Survey coverage was limited to the 21 (of 42) minor civil divisions containing all or virtually all of the pine in these counties.

Table 10. --Commercial forest land^{1/} by stand size and forest type, by Survey region,
1953-55

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{2/}
----- Thousand acres -----						
EAST TEXAS						
Softwood types:						
Longleaf-slash pine	482.1	26.7	129.0	113.8	80.3	132.3
Loblolly-shortleaf pine	5,198.4	639.9	1,921.5	2,012.2	536.1	88.7
Oak-pine	2,156.0	168.6	452.2	1,227.3	276.6	31.3
Total	7,836.5	835.2	2,502.7	3,353.3	893.0	252.3
Hardwood types:						
Oak-hickory	1,940.4	134.7	192.6	1,160.8	361.4	90.9
Elm-ash-cottonwood	74.6	15.9	8.4	44.2	6.1	...
Oak-gum-cypress	1,724.3	451.9	337.5	789.8	114.1	31.0
Total	3,739.3	602.5	538.5	1,994.8	481.6	121.9
All types	11,575.8	1,437.7	3,041.2	5,348.1	1,374.6	374.2
NORTHEAST						
Softwood types:						
Longleaf-slash pine	9.7	...	...	9.7	...	...
Loblolly-shortleaf pine	1,386.6	93.2	316.5	684.7	248.8	43.4
Oak-pine	1,036.3	22.1	101.7	681.6	205.2	25.7
Total	2,432.6	115.3	418.2	1,376.0	454.0	69.1
Hardwood types:						
Oak-hickory	1,361.8	34.2	98.4	839.9	322.3	67.0
Elm-ash-cottonwood	48.4	3.1	8.4	30.8	6.1	...
Oak-gum-cypress	726.7	150.8	99.4	406.2	57.0	13.3
Total	2,136.9	188.1	206.2	1,276.9	385.4	80.3
All types	4,569.5	303.4	624.4	2,652.9	839.4	149.4
SOUTHEAST						
Softwood types:						
Longleaf-slash pine	472.4	26.7	129.0	104.1	80.3	132.3
Loblolly-shortleaf pine	3,811.8	546.7	1,605.0	1,327.5	287.3	45.3
Oak-pine	1,119.7	146.5	350.5	545.7	71.4	5.6
Total	5,403.9	719.9	2,084.5	1,977.3	439.0	183.2
Hardwood types:						
Oak-hickory	578.6	100.5	94.2	320.9	39.1	23.9
Elm-ash-cottonwood	26.2	12.8	...	13.4	...	...
Oak-gum-cypress	997.6	301.1	238.1	383.6	57.1	17.7
Total	1,602.4	414.4	332.3	717.9	96.2	41.6
All types	7,006.3	1,134.3	2,416.8	2,695.2	535.2	224.8

^{1/} Acreage in the Pine Fringe is as follows:

Forest type	All stand sizes	Saw-timber	Pole-timber	Other areas
----- Thousand acres -----				
Loblolly-shortleaf pine	127.6	39.0	47.2	41.4
Oak-pine	43.0	16.3	22.2	4.5
Oak-hickory	287.7	22.8	202.1	62.8
Bottomland hardwood	137.8	52.0	63.3	22.5
Total	596.1	130.1	334.8	131.2

^{2/} Includes areas not classified elsewhere.

Table 11. --Commercial forest land^{1/} by degree of tree stocking and forest type,
by Survey region, 1953-55

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked
- - - - - Thousand acres - - - - -					
EAST TEXAS					
Softwood types:					
Longleaf-slash pine	482.1	119.7	142.0	95.0	125.4
Loblolly-shortleaf pine	5,198.4	3,552.5	1,119.3	462.3	64.3
Oak-pine	2,156.0	1,250.1	672.5	209.3	24.1
Total	<u>7,836.5</u>	<u>4,922.3</u>	<u>1,933.8</u>	<u>766.6</u>	<u>213.8</u>
Hardwood types:					
Oak-hickory	1,940.4	886.2	725.1	270.2	58.9
Elm-ash-cottonwood	74.6	34.4	34.1	6.1	...
Oak-gum-cypress	1,724.3	927.1	636.9	145.7	14.6
Total	<u>3,739.3</u>	<u>1,847.7</u>	<u>1,396.1</u>	<u>422.0</u>	<u>73.5</u>
All types	11,575.8	6,770.0	3,329.9	1,188.6	287.3
NORTHEAST					
Softwood types:					
Longleaf-slash pine	9.7	2.9	6.8	...	...
Loblolly-shortleaf pine	1,386.6	758.5	368.2	224.2	35.7
Oak-pine	1,036.3	487.1	381.6	146.3	21.3
Total	<u>2,432.6</u>	<u>1,248.5</u>	<u>756.6</u>	<u>370.5</u>	<u>57.0</u>
Hardwood types:					
Oak-hickory	1,361.8	531.7	583.2	208.7	38.2
Elm-ash-cottonwood	48.4	25.3	17.0	6.1	...
Oak-gum-cypress	726.7	360.7	296.1	67.0	2.9
Total	<u>2,136.9</u>	<u>917.7</u>	<u>896.3</u>	<u>281.8</u>	<u>41.1</u>
All types	4,569.5	2,166.2	1,652.9	652.3	98.1
SOUTHEAST					
Softwood types:					
Longleaf-slash pine	472.4	116.8	135.2	95.0	125.4
Loblolly-shortleaf pine	3,811.8	2,794.0	751.1	238.1	28.6
Oak-pine	1,119.7	763.0	290.9	63.0	2.8
Total	<u>5,403.9</u>	<u>3,673.8</u>	<u>1,177.2</u>	<u>396.1</u>	<u>156.8</u>
Hardwood types:					
Oak-hickory	578.6	354.5	141.9	61.5	20.7
Elm-ash-cottonwood	26.2	9.1	17.1	...	...
Oak-gum-cypress	997.6	566.4	340.8	78.7	11.7
Total	<u>1,602.4</u>	<u>930.0</u>	<u>499.8</u>	<u>140.2</u>	<u>32.4</u>
All types	7,006.3	4,603.8	1,677.0	536.3	189.2

^{1/} Acreage in the Pine Fringe is as follows:

Forest type	All stocking	Well stocked	Medium stocked	Poorly and nonstocked
- - - - - Thousand acres - - - - -				
Loblolly-shortleaf pine	127.6	60.6	42.3	24.7
Oak-pine	43.0	21.5	21.5	...
Oak-hickory	287.7	61.6	172.1	54.0
Bottomland hardwood	137.8	52.0	68.8	17.0
Total	<u>596.1</u>	<u>195.7</u>	<u>304.7</u>	<u>95.7</u>

Table 12. --Area of sawtimber stands^{1/} by stand quality and forest type, by Survey region, 1953-55

Forest type	All qualities	Fair or better	Poor
- - - - - Thousand acres - - - - -			
EAST TEXAS			
Softwood types:			
Longleaf-slash pine	155.7	39.2	116.5
Loblolly-shortleaf pine	2,561.4	1,281.1	1,280.3
Oak-pine	620.8	242.8	378.0
Total	<u>3,337.9</u>	<u>1,563.1</u>	<u>1,774.8</u>
Hardwood types:			
Oak-hickory	327.3	92.6	234.7
Elm-ash-cottonwood	24.3	10.5	13.8
Oak-gum-cypress	789.4	397.9	391.5
Total	<u>1,141.0</u>	<u>501.0</u>	<u>640.0</u>
All types	4,478.9	2,064.1	2,414.8
NORTHEAST			
Softwood types:			
Longleaf-slash pine	...	...	...
Loblolly-shortleaf pine	409.7	146.4	263.3
Oak-pine	123.8	31.9	91.9
Total	<u>533.5</u>	<u>178.3</u>	<u>355.2</u>
Hardwood types:			
Oak-hickory	132.6	26.2	106.4
Elm-ash-cottonwood	11.5	4.5	7.0
Oak-gum-cypress	250.2	112.1	138.1
Total	<u>394.3</u>	<u>142.8</u>	<u>251.5</u>
All types	927.8	321.1	606.7
SOUTHEAST			
Softwood types:			
Longleaf-slash pine	155.7	39.2	116.5
Loblolly-shortleaf pine	2,151.7	1,134.7	1,017.0
Oak-pine	497.0	210.9	286.1
Total	<u>2,804.4</u>	<u>1,384.8</u>	<u>1,419.6</u>
Hardwood types:			
Oak-hickory	194.7	66.4	128.3
Elm-ash-cottonwood	12.8	6.0	6.8
Oak-gum-cypress	539.2	285.8	253.4
Total	<u>746.7</u>	<u>358.2</u>	<u>388.5</u>
All types	3,551.1	1,743.0	1,808.1

^{1/} Acreage in the Pine Fringe is as follows:

Forest type	All qualities	Fair or better	Poor
- - Thousand acres - -			
Loblolly-shortleaf pine	39.0	8.5	30.5
Oak-pine	16.3	2.8	13.5
Oak-hickory	22.8	5.9	16.9
Bottomland hardwood	52.0	32.0	20.0
Total	<u>130.1</u>	<u>49.2</u>	<u>80.9</u>

Table 13. -- Basal area per acre^{1/} of growing stock and cull trees by forest-type group and Survey region, 1953-55

Forest-type group	East Texas	Northeast	Southeast
- - - - - Square feet - - - - -			
Longleaf-slash pine:			
2- and 4-inch good trees ^{2/}	4.3	11.6	4.1
Growing stock	20.6	24.2	20.5
2- and 4-inch poor trees	2.4	2.5	2.4
Cull trees	2.2	2.5	2.2
All trees	29.5	40.8	29.2
Loblolly-shortleaf pine:			
2- and 4-inch good trees ^{2/}	13.9	14.6	13.7
Growing stock	45.3	36.6	48.4
2- and 4-inch poor trees	3.1	2.2	3.5
Cull trees	7.0	6.0	7.3
All trees	69.3	59.4	72.9
Oak-pine:			
2- and 4-inch good trees ^{2/}	11.1	10.1	12.0
Growing stock	34.7	27.3	41.6
2- and 4-inch poor trees	3.5	2.6	4.3
Cull trees	12.1	11.9	12.2
All trees	61.4	51.9	70.1
All softwood types:			
2- and 4-inch good trees ^{2/}	12.6	12.7	12.4
Growing stock	40.8	32.6	44.6
2- and 4-inch poor trees	3.2	2.3	3.6
Cull trees	8.1	8.5	7.9
All trees	64.7	56.1	68.5
Oak-hickory:			
2- and 4-inch good trees ^{2/}	8.1	7.7	8.9
Growing stock	28.1	25.4	34.5
2- and 4-inch poor trees	3.5	2.9	4.9
Cull trees	14.1	13.6	15.3
All trees	53.8	49.6	63.6
Elm-ash-cottonwood:			
2- and 4-inch good trees ^{2/}	15.1	20.3	5.5
Growing stock	38.8	35.8	44.5
2- and 4-inch poor trees	5.8	6.0	5.5
Cull trees	12.7	11.4	15.0
All trees	72.4	73.5	70.5
Oak-gum-cypress:			
2- and 4-inch good trees ^{2/}	7.7	6.9	8.3
Growing stock	45.3	38.4	50.3
2- and 4-inch poor trees	5.1	4.1	5.8
Cull trees	20.1	21.7	19.0
All trees	78.2	71.1	83.4
All types:			
2- and 4-inch good trees ^{2/}	11.1	10.4	11.6
Growing stock	39.4	31.4	44.5
2- and 4-inch poor trees	3.5	2.8	4.0
Cull trees	10.9	12.2	10.1
All trees	64.9	56.8	70.2

^{1/} Average basal area per acre in the Pine Fringe is as follows:

All types:	Square feet
2- and 4-inch good trees ^{2/}	5.5
Growing stock	30.9
2- and 4-inch poor trees	5.1
Cull trees	15.6
All trees	57.1

^{2/} Includes only sound, well-formed trees.

Table 14. -- Total volume^{1/} by class of timber and species, by Survey region, 1953-55

Species	All timber ^{2/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Thousand cords -----							
EAST TEXAS							
Softwood:							
Loblolly pine	31,443	31,310	24,037	1,787	5,486	...	133
Shortleaf pine	18,474	18,349	12,166	1,002	5,181	...	125
Longleaf pine	2,452	2,449	1,997	161	291	...	3
Slash pine	94	94	6	1	87	...	(3/)
Other softwoods	989	828	644	68	116	...	161
Total	53,452	53,030	38,850	3,019	11,161	...	422
Hardwood:							
Red oaks	20,367	13,692	6,266	3,394	4,032	2,344	4,331
White oaks	15,170	10,332	4,358	2,427	3,547	1,577	3,261
Sweetgum	11,717	9,736	4,195	1,968	3,573	411	1,570
Black and tupelo gums	4,755	3,787	1,914	898	975	227	741
Other hardwoods	19,811	11,780	4,861	2,549	4,370	1,428	6,603
Total	71,820	49,327	21,594	11,236	16,497	5,987	16,506
All species	125,272	102,357	60,444	14,255	27,658	5,987	16,928
NORTHEAST							
Softwood:							
Loblolly pine	3,321	3,272	2,321	203	748	...	49
Shortleaf pine	7,074	6,980	4,172	368	2,440	...	94
Longleaf pine	5	5	5	(3/)	...	...	...
Slash pine	77	77	3	1	73	...	(3/)
Other softwoods	219	191	123	16	52	...	28
Total	10,696	10,525	6,624	588	3,313	...	171
Hardwood:							
Red oaks	6,782	4,190	1,802	1,034	1,354	813	1,779
White oaks	6,758	4,341	1,616	945	1,780	687	1,730
Sweetgum	4,460	3,551	1,401	687	1,463	145	764
Black and tupelo gums	1,013	769	333	179	257	48	196
Other hardwoods	8,298	4,655	1,694	939	2,022	561	3,082
Total	27,311	17,506	6,846	3,784	6,876	2,254	7,551
All species	38,007	28,031	13,470	4,372	10,189	2,254	7,722
SOUTHEAST							
Softwood:							
Loblolly pine	28,122	28,038	21,716	1,584	4,738	...	84
Shortleaf pine	11,400	11,369	7,994	634	2,741	...	31
Longleaf pine	2,447	2,444	1,992	161	291	...	3
Slash pine	17	17	3	(3/)	14	...	(3/)
Other softwoods	770	637	521	52	64	...	133
Total	42,756	42,505	32,226	2,431	7,848	...	251
Hardwood:							
Red oaks	13,585	9,502	4,464	2,360	2,678	1,531	2,552
White oaks	8,412	5,991	2,742	1,482	1,767	890	1,531
Sweetgum	7,257	6,185	2,794	1,281	2,110	266	806
Black and tupelo gums	3,742	3,018	1,581	719	718	179	545
Other hardwoods	11,513	7,125	3,167	1,610	2,348	867	3,521
Total	44,509	31,821	14,748	7,452	9,621	3,733	8,955
All species	87,265	74,326	46,974	9,883	17,469	3,733	9,206

^{1/} Volume in the Pine Fringe is as follows:

Class of material	Softwood	Hardwood
Thousand cords		
Sawtimber trees	492	2,036
Poletimber trees	177	982
Cull trees	7	1,201
Hardwood limbs	...	391
Salvable dead trees	...	15
Total, all timber	676	4,625

^{2/} Sound volume in dead trees considered salvable is not included. This volume totals 412 thousand cords.^{3/} Negligible.

Table 15. -- Total volume^{1/} by class of timber and species, by Survey region, 1953-55

Species	All timber ^{2/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
EAST TEXAS							
Softwood:							
Loblolly pine	2,358.2	2,348.2	1,802.8	134.0	411.4	...	10.0
Shortleaf pine	1,385.5	1,376.2	912.5	75.1	388.6	...	9.3
Longleaf pine	183.9	183.7	149.8	12.1	21.8	...	.2
Slash pine	7.1	7.1	.4	.1	6.6	...	(3/)
Other softwoods	74.2	62.1	48.3	5.1	8.7	...	12.1
Total	4,008.9	3,977.3	2,913.8	226.4	837.1	...	31.6
Hardwood:							
Red oaks	1,364.6	917.3	419.8	227.4	270.1	157.1	290.2
White oaks	1,016.4	692.3	292.0	162.6	237.7	105.6	218.5
Sweetgum	785.0	652.3	281.1	131.8	239.4	27.5	105.2
Black and tupelo gums	318.5	253.7	128.2	60.2	65.3	15.2	49.6
Other hardwoods	1,327.4	789.3	325.7	170.8	292.8	95.7	442.4
Total	4,811.9	3,304.9	1,446.8	752.8	1,105.3	401.1	1,105.9
All species	8,820.8	7,282.2	4,360.6	979.2	1,942.4	401.1	1,137.5
NORTHEAST							
Softwood:							
Loblolly pine	249.1	245.4	174.1	15.2	56.1	...	3.7
Shortleaf pine	530.5	523.5	312.9	27.6	183.0	...	7.0
Longleaf pine	.4	.4	.4	(3/)	...	...	...
Slash pine	5.8	5.8	.2	.1	5.5	...	(3/)
Other softwoods	16.4	14.3	9.2	1.2	3.9	...	2.1
Total	802.2	789.4	496.8	44.1	248.5	...	12.8
Hardwood:							
Red oaks	454.4	280.7	120.7	69.3	90.7	54.5	119.2
White oaks	452.8	290.9	108.3	63.3	119.3	46.0	115.9
Sweetgum	298.8	237.9	93.9	46.0	98.0	9.7	51.2
Black and tupelo gums	67.8	51.5	22.3	12.0	17.2	3.2	13.1
Other hardwoods	556.0	311.9	113.5	62.9	135.5	37.6	206.5
Total	1,829.8	1,172.9	458.7	253.5	460.7	151.0	505.9
All species	2,632.0	1,962.3	955.5	297.6	709.2	151.0	518.7
SOUTHEAST							
Softwood:							
Loblolly pine	2,109.1	2,102.8	1,628.7	118.8	355.3	...	6.3
Shortleaf pine	855.0	852.7	599.6	47.5	205.6	...	2.3
Longleaf pine	183.5	183.3	149.4	12.1	21.8	...	.2
Slash pine	1.3	1.3	.2	(3/)	1.1	...	(3/)
Other softwoods	57.8	47.8	39.1	3.9	4.8	...	10.0
Total	3,206.7	3,187.9	2,417.0	182.3	588.6	...	18.8
Hardwood:							
Red oaks	910.2	636.6	299.1	158.1	179.4	102.6	171.0
White oaks	563.6	401.4	183.7	99.3	118.4	59.6	102.6
Sweetgum	486.2	414.4	187.2	85.8	141.4	17.8	54.0
Black and tupelo gums	250.7	202.2	105.9	48.2	48.1	12.0	36.5
Other hardwoods	771.4	477.4	212.2	107.9	157.3	58.1	235.9
Total	2,982.1	2,132.0	988.1	499.3	644.6	250.1	600.0
All species	6,188.8	5,319.9	3,405.1	681.6	1,233.2	250.1	618.8

^{1/} Volume in the Pine Fringe is as follows:

Class of material	Softwood	Hardwood
Million cubic feet		
Sawtimber trees	36.9	136.4
Poletimber trees	13.3	65.8
Cull trees	.5	80.5
Hardwood limbs	...	26.2
Salvable dead trees	...	1.0
Total, all timber	50.7	309.9

^{2/} Sound volume in dead trees considered salvable is not included. This volume totals 29 million cubic feet.^{3/} Negligible.

Table 16. --Sawtimber volume^{1/} and growing stock^{1/} by species group and county, 1953-55

County	Growing stock			Sawtimber volume		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
- - - - Million cubic feet - - - -						
Anderson	154.5	40.1	114.4	424.0	164.4	259.6
Angelina	310.9	204.3	106.6	1,233.9	969.9	264.0
Bowie	142.5	26.1	116.4	323.7	86.5	237.2
Camp	11.8	4.5	7.3	34.6	12.4	22.2
Cass	129.5	41.3	88.2	342.0	118.9	223.1
Chambers	22.9	16.2	6.7	88.9	68.7	20.2
Cherokee	161.7	92.5	69.2	487.4	328.0	159.4
Franklin	19.8	4.3	15.5	40.3	4.8	35.5
Gregg	26.9	11.1	15.8	54.6	12.5	42.1
Hardin	411.7	237.5	174.2	1,649.2	1,145.1	504.1
Harris	149.4	77.9	71.5	493.0	284.1	208.9
Harrison	103.6	35.0	68.6	265.3	96.6	168.7
Houston	358.9	225.0	133.9	1,517.7	1,129.4	388.3
Jasper	369.6	219.3	150.3	1,417.4	968.4	449.0
Jefferson	45.3	9.1	36.2	148.2	40.2	108.0
Liberty	431.6	157.8	273.8	1,578.4	749.0	829.4
Marion	64.9	30.9	34.0	190.1	112.9	77.2
Montgomery	381.9	276.2	105.7	1,415.8	1,146.9	268.9
Morris	46.4	4.5	41.9	131.9	22.3	109.6
Nacogdoches	231.7	132.8	98.9	816.8	572.6	244.2
Newton	386.7	224.7	162.0	1,423.2	948.6	474.6
Orange	169.1	92.1	77.0	701.0	459.1	241.9
Panola	172.5	78.4	94.1	548.1	300.7	247.4
Polk	528.7	353.6	175.1	2,118.1	1,570.3	547.8
Red River	148.0	28.8	119.2	435.5	95.5	340.0
Rusk	137.0	71.8	65.2	377.2	223.8	153.4
Sabine	254.5	145.5	109.0	1,002.2	626.7	375.5
San Augustine	254.8	149.4	105.4	1,045.2	705.9	339.3
San Jacinto	288.1	176.9	111.2	1,196.9	837.9	359.0
Shelby	200.6	124.1	76.5	791.2	581.6	209.6
Smith	73.2	21.5	51.7	200.4	64.8	135.6
Titus	29.2	2.3	26.9	46.1	4.9	41.2
Trinity	238.2	171.1	67.1	970.3	774.4	195.9
Tyler	457.9	284.0	173.9	1,738.5	1,268.6	469.9
Upshur	44.4	20.9	23.5	106.0	70.7	35.3
Walker	259.7	167.3	92.4	955.4	736.7	218.7
Wood	64.1	18.5	45.6	181.4	69.1	112.3
All counties	7,282.2	3,977.3	3,304.9	26,489.9	17,372.9	9,117.0

^{1/} Volume in the Pine Fringe is as follows:

County ^{2/}	Growing stock		Sawtimber	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Million cu. ft.		Million bd. ft.	
Grimes	23.3	40.5	106.4	99.6
Henderson	5.7	23.8	17.4	68.0
Leon	3.4	104.1	12.7	284.0
Madison	.3	12.7	...	42.8
Van Zandt	6.5	16.1	27.7	47.0
Waller	11.0	5.0	34.0	9.8
Total	50.2	202.2	198.2	551.2

^{2/} In the 6 counties shown, Forest Survey coverage was limited to the 21 (of 42) minor civil divisions containing all or virtually all of the pine in these counties.

Table 17. --Growing stock^{1/} by species and Survey region, 1953-55

Species	East Texas	Northeast	Southeast
- - - - - Million cubic feet - - - - -			
Softwood:			
Loblolly pine	2,348.2	245.4	2,102.8
Shortleaf pine	1,376.2	523.5	852.7
Longleaf pine	183.7	.4	183.3
Slash pine	7.1	5.8	1.3
Cypress	60.2	13.8	46.4
Other softwoods	1.9	.5	1.4
Total	<u>3,977.3</u>	<u>789.4</u>	<u>3,187.9</u>
Hardwood:			
Black, scarlet, and southern red oaks	314.7	131.3	183.4
Cherrybark, Shumard, and northern red oaks	110.9	20.8	90.1
Water oaks	491.7	128.6	363.1
White oak (<u>Q. alba</u>)	170.1	42.4	127.7
Other white oaks	522.2	248.5	273.7
Pecan	56.3	23.9	32.4
Other hickories	177.2	94.6	82.6
Sweetgum	652.3	237.9	414.4
Black and tupelo gums	253.7	51.5	202.2
Cottonwood	2.9	2.0	.9
Willow	29.1	20.2	8.9
Soft maple	22.6	6.0	16.6
Sweetbay and magnolia	81.1	3.3	77.8
Elm	154.9	66.3	88.6
Ash	104.0	43.2	60.8
Hackberry	44.7	21.3	23.4
Beech	44.8	3.9	40.9
Sycamore	13.2	1.0	12.2
Other hardwoods	58.5	26.2	32.3
Total	<u>3,304.9</u>	<u>1,172.9</u>	<u>2,132.0</u>
All species	7,282.2	1,962.3	5,319.9

^{1/} Volume in the Pine Fringe is as follows:

Species	Volume
	<u>Million</u>
	<u>cubic feet</u>
Loblolly pine	26.9
Shortleaf pine	22.9
Other softwoods	.4
Soft hardwoods	31.5
Oaks	114.9
Other hard hardwoods	55.8
Total	<u>252.4</u>

Table 18 --Distribution of growing stock by species within each forest type, 1953-55

Species	All types	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Elm-ash-cottonwood	Oak-gum-cypress
----- Percent -----							
Softwood:							
Loblolly pine	32.2	9.1	50.4	21.5	3.4	0.3	3.0
Shortleaf pine	18.9	6.0	29.8	12.9	2.4	...	(1/)
Longleaf pine	2.5	79.9	.9	.2	.1	...	...
Slash pine	.1	1.7	.1	...	...	...	...
Other softwoods	.9	...	.1	(1/)	(1/)	.2	4.9
Total	<u>54.6</u>	<u>96.7</u>	<u>81.3</u>	<u>34.6</u>	<u>5.9</u>	<u>.5</u>	<u>7.9</u>
Hardwood:							
Black, scarlet, and southern red oaks	4.4	1.8	3.1	7.3	14.0	(1/)	0.4
Cherrybark, Shumard, and northern red oaks	1.5	...	.6	2.2	2.3	...	3.8
Water oaks	6.8	.1	1.8	8.3	8.2	10.3	22.1
White oak (<u>Q. alba</u>)	2.3	...	1.4	5.3	6.3	...	.7
Other white oaks	7.2	.1	3.1	11.7	22.5	.2	8.8
Pecan	.8	...	(1/)	(1/)	.1	2.3	4.4
Other hickories	2.4	.3	1.1	3.6	10.0	.5	1.9
Sweetgum	9.0	.6	4.6	14.7	13.8	13.5	16.4
Black and tupelo gums	3.5	.2	1.3	4.2	3.9	.9	10.6
Cottonwood	(1/)	...	...	(1/)	...	4.1	.1
Willow	.4	...	.1	.4	.1	34.9	.5
Maple	.4	...	.1	.5	.9	(1/)	1.2
Sweetbay and magnolia	1.1	.2	.4	1.9	1.6	...	2.5
Elm	2.1	...	.5	2.0	3.4	3.4	7.5
Ash	1.4	...	.3	1.0	1.7	9.8	5.5
Hackberry	.6	...	(1/)	.2	.2	4.3	3.3
Beech	.6	...	.1	.9	3.5	...	.3
Sycamore	.2	...	(1/)	.6	(1/)	7.1	.2
Other hardwoods	.7	...	.2	.6	1.6	8.2	1.9
Total	<u>45.4</u>	<u>3.3</u>	<u>18.7</u>	<u>65.4</u>	<u>94.1</u>	<u>99.5</u>	<u>92.1</u>
All species	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Negligible.

Table 19. --Growing stock^{1/} by species and stand size, by Survey region, 1953-55

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{2/}
----- Million cubic feet -----						
EAST TEXAS						
Softwood:						
Loblolly pine	2,348.2	697.9	1,196.5	420.4	28.1	5.3
Shortleaf pine	1,376.2	195.1	814.7	346.2	18.3	1.9
Longleaf pine	183.7	26.5	115.8	26.1	11.1	4.2
Slash pine	7.1	...	.1	3.2	3.8	...
Other softwoods	62.1	19.0	37.9	4.2	1.0	...
Total	3,977.3	938.5	2,165.0	800.1	62.3	11.4
Hardwood:						
Red oaks	917.3	254.0	304.3	339.3	18.6	1.1
White oaks	692.3	148.5	206.3	306.1	26.9	4.5
Sweetgum	652.3	151.8	214.9	261.0	22.5	2.1
Black and tupelo gums	253.7	87.8	90.7	71.5	3.2	.5
Other hardwoods	789.3	253.9	217.6	288.8	23.7	5.3
Total	3,304.9	896.0	1,033.8	1,266.7	94.9	13.5
All species	7,282.2	1,834.5	3,198.8	2,066.8	157.2	24.9
NORTHEAST						
Softwood:						
Loblolly pine	245.4	57.3	92.1	85.1	10.1	0.8
Shortleaf pine	523.5	55.9	241.4	210.0	15.1	1.1
Longleaf pine	.4	...	...	.4	...	...
Slash pine	5.8	...	...	2.2	3.6	...
Other softwoods	14.3	2.4	10.2	1.7	(3/)	(3/)
Total	789.4	115.6	343.7	299.4	28.8	1.9
Hardwood:						
Red oaks	280.7	53.7	65.3	152.6	8.4	0.7
White oaks	290.9	27.0	63.2	180.8	17.5	2.4
Sweetgum	237.9	25.0	68.1	131.0	13.2	.6
Black and tupelo gums	51.5	8.7	10.6	31.6	.6	...
Other hardwoods	311.9	68.9	55.8	170.3	16.3	.6
Total	1,172.9	183.3	263.0	666.3	56.0	4.3
All species	1,962.3	298.9	606.7	965.7	84.8	6.2
SOUTHEAST						
Softwood:						
Loblolly pine	2,102.8	640.6	1,104.4	335.3	18.0	4.5
Shortleaf pine	852.7	139.2	573.3	136.2	3.2	.8
Longleaf pine	183.3	26.5	115.8	25.7	11.1	4.2
Slash pine	1.3	...	.1	1.0	.2	...
Other softwoods	47.8	16.6	27.7	2.5	1.0	...
Total	3,187.9	822.9	1,821.3	500.7	33.5	9.5
Hardwood:						
Red oaks	636.6	200.3	239.0	186.7	10.2	0.4
White oaks	401.4	121.5	143.1	125.3	9.4	2.1
Sweetgum	414.4	126.8	146.8	130.0	9.3	1.5
Black and tupelo gums	202.2	79.1	80.1	39.9	2.6	.5
Other hardwoods	477.4	185.0	161.8	118.5	7.4	4.7
Total	2,132.0	712.7	770.8	600.4	38.9	9.2
All species	5,319.9	1,535.6	2,592.1	1,101.1	72.4	18.7

^{1/} Volume in the Pine Fringe is as follows:

Species	All stand sizes	Saw-timber	Pole-timber	Other areas
----- Million cubic feet -----				
Pine	49.8	28.7	20.2	0.9
Other softwoods	.4	...	.1	.3
Oak	114.9	50.0	58.7	6.2
Other hardwoods	87.3	41.7	42.3	3.3
Total	252.4	120.4	121.3	10.7

^{2/} Includes areas not classified elsewhere.^{3/} Negligible.

Table 20. --Average volume per acre^{1/} of growing stock by forest type and Survey region, 1953-55

Forest type	East Texas	Northeast	Southeast
----- Cubic feet -----			
Softwood types:			
Longleaf-slash pine	373	247	375
Loblolly-shortleaf pine	777	544	861
Oak-pine	<u>517</u>	<u>364</u>	<u>660</u>
Average	<u>680</u>	<u>466</u>	<u>777</u>
Hardwood types:			
Oak-hickory	368	306	513
Elm-ash-cottonwood	587	500	748
Oak-gum-cypress	<u>691</u>	<u>532</u>	<u>807</u>
Average	<u>521</u>	<u>388</u>	<u>700</u>
All types	629	429	759

1/ Average volume per acre in the Pine Fringe is as follows: softwood types, 459 cubic feet per acre; hardwood types, 409 cubic feet per acre; all types, 423 cubic feet per acre.

Table 21. --Average volume^{1/} per acre of growing stock by stand size and forest type, 1953-55

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{2/}
----- Cubic feet -----						
Softwood types:						
Longleaf-slash pine	373	1,015	874	241	90	39
Loblolly-shortleaf pine	777	1,557	1,135	395	112	69
Oak-pine	<u>517</u>	<u>1,193</u>	<u>891</u>	<u>391</u>	<u>110</u>	<u>19</u>
Average	<u>680</u>	<u>1,466</u>	<u>1,078</u>	<u>388</u>	<u>109</u>	<u>47</u>
Hardwood types:						
Oak-hickory	368	859	807	348	85	99
Elm-ash-cottonwood	587	1,245	976	357	...	...
Oak-gum-cypress	<u>691</u>	<u>1,050</u>	<u>1,003</u>	<u>438</u>	<u>254</u>	<u>132</u>
Average	<u>521</u>	<u>1,012</u>	<u>932</u>	<u>384</u>	<u>124</u>	<u>107</u>
All types	629	1,276	1,052	386	114	67

1/ Average volume per acre in the Pine Fringe is as follows:

Forest type	All stand sizes	Saw-timber	Pole-timber	Other areas
----- Cubic feet -----				
Softwood types	459	939	353	41
Hardwood types	<u>409</u>	<u>916</u>	<u>365</u>	<u>103</u>
All types	423	925	362	82

2/ Includes areas not classified elsewhere.

Table 22. --Sawtimber volume^{1/} by species and tree diameter, by Survey region, 1953-55

Species	All diameter classes	10 - 12 inches ^{2/}	14 - 18 inches	20 - 24 inches	26 inches and up
----- Million board feet -----					
EAST TEXAS					
Softwood:					
Loblolly pine	10,806.5	3,718.7	5,258.1	1,532.8	296.9
Shortleaf pine	5,371.0	3,022.3	2,241.3	107.4	...
Longleaf pine	905.0	348.1	499.5	57.4	...
Slash pine	1.9	1.4	...	...	...
Other softwoods	288.5	63.8	161.6	49.0	14.1
Total	<u>17,372.9</u>	<u>7,154.8</u>	<u>8,160.5</u>	<u>1,746.6</u>	<u>311.0</u>
Hardwood:					
Red oaks	2,686.5	428.3	1,306.0	623.2	329.0
White oaks	1,854.4	341.2	1,019.9	381.7	111.6
Sweetgum	1,750.7	394.2	1,016.6	288.2	51.7
Black and tupelo gums	794.2	141.5	452.5	150.3	49.9
Other hardwoods	<u>2,031.2</u>	<u>440.2</u>	<u>1,095.0</u>	<u>347.0</u>	<u>149.0</u>
Total	<u>9,117.0</u>	<u>1,745.4</u>	<u>4,890.0</u>	<u>1,790.4</u>	<u>691.2</u>
All species	26,489.9	8,900.2	13,050.5	3,537.0	1,002.2
NORTHEAST					
Softwood:					
Loblolly pine	1,047.7	366.6	456.5	181.3	43.3
Shortleaf pine	1,836.1	1,020.9	778.8	36.4	...
Longleaf pine	2.1	...	2.1	...	...
Slash pine	1.1	1.1	...	...	...
Other softwoods	<u>56.0</u>	<u>13.3</u>	<u>27.3</u>	<u>15.4</u>	<u>...</u>
Total	<u>2,943.0</u>	<u>1,401.9</u>	<u>1,264.7</u>	<u>233.1</u>	<u>43.3</u>
Hardwood:					
Red oaks	762.6	132.1	381.8	163.8	84.9
White oaks	680.2	160.4	367.1	107.7	45.0
Sweetgum	578.1	161.5	333.5	72.9	10.2
Black and tupelo gums	137.6	30.2	76.8	26.8	3.8
Other hardwoods	<u>695.1</u>	<u>188.9</u>	<u>375.5</u>	<u>114.7</u>	<u>16.0</u>
Total	<u>2,853.6</u>	<u>673.1</u>	<u>1,534.7</u>	<u>485.9</u>	<u>159.9</u>
All species	5,796.6	2,075.0	2,799.4	719.0	203.2
SOUTHEAST					
Softwood:					
Loblolly pine	9,758.8	3,352.1	4,801.6	1,351.5	253.6
Shortleaf pine	3,534.9	2,001.4	1,462.5	71.0	...
Longleaf pine	902.9	348.1	497.4	57.4	...
Slash pine	.8	.8	...	...	...
Other softwoods	<u>232.5</u>	<u>50.5</u>	<u>134.3</u>	<u>33.6</u>	<u>14.1</u>
Total	<u>14,429.9</u>	<u>5,752.9</u>	<u>6,895.8</u>	<u>1,513.5</u>	<u>267.7</u>
Hardwood:					
Red oaks	1,923.9	296.2	924.2	459.4	244.1
White oaks	1,174.2	180.8	652.8	274.0	66.6
Sweetgum	1,172.6	232.7	683.1	215.3	41.5
Black and tupelo gums	656.6	111.3	375.7	123.5	46.1
Other hardwoods	<u>1,336.1</u>	<u>251.3</u>	<u>719.5</u>	<u>232.3</u>	<u>133.0</u>
Total	<u>6,263.4</u>	<u>1,072.3</u>	<u>3,355.3</u>	<u>1,304.5</u>	<u>531.3</u>
All species	20,693.3	6,825.2	10,251.1	2,818.0	799.0

^{1/} Volume in the Pine Fringe is as follows:

Species	All diameter classes	10 - 12 inches ^{2/}	14 - 18 inches	20 inches and up
----- Million board feet -----				
Pine	197.2	76.7	104.2	16.3
Other softwoods	1.0	1.0	...	...
Oak	309.3	67.3	146.0	96.0
Other hardwoods	<u>241.9</u>	<u>39.6</u>	<u>126.2</u>	<u>76.1</u>
Total	<u>749.4</u>	<u>184.6</u>	<u>376.4</u>	<u>188.4</u>

^{2/} Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.

Table 23. --Sawtimber volume^{1/} by species and stand size, by Survey region, 1953-55

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{2/}
----- Million board feet -----						
EAST TEXAS						
Softwood:						
Loblolly pine	10,806.5	3,953.1	5,531.1	1,200.2	98.7	23.4
Shortleaf pine	5,371.0	1,046.5	3,469.5	804.9	44.8	5.3
Longleaf pine	905.0	155.8	566.9	101.9	57.5	22.9
Slash pine	1.9	...	...	1.5	.4	...
Other softwoods	288.5	97.9	175.5	10.3	4.8	...
Total	17,372.9	5,253.3	9,743.0	2,118.8	206.2	51.6
Hardwood:						
Red oaks	2,686.5	940.5	906.7	783.8	51.9	3.6
White oaks	1,854.4	534.4	627.5	596.7	83.4	12.4
Sweetgum	1,750.7	522.4	617.4	533.8	69.1	8.0
Black and tupelo gums	794.2	338.7	269.8	171.1	12.4	2.2
Other hardwoods	2,031.2	835.4	554.9	556.1	68.0	16.8
Total	9,117.0	3,171.4	2,976.3	2,641.5	284.8	43.0
All species	26,489.9	8,424.7	12,719.3	4,760.3	491.0	94.6
NORTHEAST						
Softwood:						
Loblolly Pine	1,047.7	335.7	416.6	258.5	34.5	2.4
Shortleaf pine	1,836.1	306.5	1,036.2	454.8	36.4	2.2
Longleaf pine	2.1	...	...	2.1	...	...
Slash pine	1.1	...	...	1.1	...	...
Other softwoods	56.0	13.9	39.4	2.7	...	...
Total	2,943.0	656.1	1,492.2	719.2	70.9	4.6
Hardwood:						
Red oaks	762.6	198.8	208.1	334.9	18.2	2.6
White oaks	680.2	85.2	203.6	334.1	49.7	7.6
Sweetgum	578.1	83.4	201.4	258.3	33.8	1.2
Black and tupelo gums	137.6	30.7	28.5	76.0	2.4	...
Other hardwoods	695.1	209.8	138.0	301.7	45.6	...
Total	2,853.6	607.9	779.6	1,305.0	149.7	11.4
All species	5,796.6	1,264.0	2,271.8	2,024.2	220.6	16.0
SOUTHEAST						
Softwood:						
Loblolly pine	9,758.8	3,617.4	5,114.5	941.7	64.2	21.0
Shortleaf pine	3,534.9	740.0	2,433.3	350.1	8.4	3.1
Longleaf pine	902.9	155.8	566.9	99.8	57.5	22.9
Slash pine	.8	...	...	.4	.4	...
Other softwoods	232.5	84.0	136.1	7.6	4.8	...
Total	14,429.9	4,597.2	8,250.8	1,399.6	135.3	47.0
Hardwood:						
Red oaks	1,923.9	741.7	698.6	448.9	33.7	1.0
White oaks	1,174.2	449.2	423.9	262.6	33.7	4.8
Sweetgum	1,172.6	439.0	416.0	275.5	35.3	6.8
Black and tupelo gums	656.6	308.0	241.3	95.1	10.0	2.2
Other hardwoods	1,336.1	625.6	416.9	254.4	22.4	16.8
Total	6,263.4	2,563.5	2,196.7	1,336.5	135.1	31.6
All species	20,693.3	7,160.7	10,447.5	2,736.1	270.4	78.6

^{1/} Volume in the Pine Fringe is as follows:

Species	All stand sizes	Saw-timber	Pole-timber	Other areas
----- Million board feet -----				
Pine	197.2	135.4	61.2	.6
Other softwoods	1.0	...	.5	.5
Oak	309.3	175.4	117.9	16.0
Other hardwoods	241.9	145.1	90.9	5.9
Total	749.4	455.9	270.5	23.0

^{2/} Includes areas not classified elsewhere.

Table 24. --Sawtimber volume^{1/} by species and Survey region, 1953-55

Species	East Texas	Northeast	Southeast
- - - - - <u>Million board feet</u> - - - - -			
Softwood:			
Loblolly pine	10,806.5	1,047.7	9,758.8
Shortleaf pine	5,371.0	1,836.1	3,534.9
Longleaf pine	905.0	2.1	902.9
Slash pine	1.9	1.1	.8
Cypress	281.0	56.0	225.0
Other softwoods	7.5	...	7.5
Total	<u>17,372.9</u>	<u>2,943.0</u>	<u>14,429.9</u>
Hardwood:			
Black, scarlet, and southern red oaks	802.4	318.7	483.7
Cherrybark, Shumard, and northern red oaks	376.1	66.6	309.5
Water oaks	1,508.0	377.3	1,130.7
White oak (<u>Q. alba</u>)	562.3	126.9	435.4
Other white oaks	1,292.1	553.3	738.8
Pecan	188.3	73.6	114.7
Other hickories	447.8	203.0	244.8
Sweetgum	1,750.7	578.1	1,172.6
Black and tupelo gums	794.2	137.6	656.6
Cottonwood	7.8	4.6	3.2
Willow	85.6	56.7	28.9
Soft maple	44.9	10.6	34.3
Sweetbay and magnolia	200.5	9.0	191.5
Elm	369.5	133.6	235.9
Ash	282.4	97.6	184.8
Hackberry	106.7	51.0	55.7
Beech	152.7	14.5	138.2
Sycamore	51.6	4.5	47.1
Other hardwoods	93.4	36.4	57.0
Total	<u>9,117.0</u>	<u>2,853.6</u>	<u>6,263.4</u>
All species	26,489.9	5,796.6	20,693.3

^{1/} Volume in the Pine Fringe is as follows:

Species	Volume
	<u>Million</u>
	<u>board feet</u>
Loblolly pine	119.8
Shortleaf pine	77.4
Other softwoods	1.0
Soft hardwoods	95.6
Oaks	309.3
Other hard hardwoods	146.3
Total	<u>749.4</u>

Table 25. --Average sawtimber volume per acre^{1/} of growing stock by forest type and Survey region, 1953-55

Forest type	East Texas	Northeast	Southeast
----- Board feet -----			
Softwood types:			
Longleaf-slash pine	1,732	113	1,766
Loblolly-shortleaf pine	3,160	1,975	3,591
Oak-pine	1,593	939	2,198
Average	2,641	1,526	3,143
Hardwood types:			
Oak-hickory	951	686	1,574
Elm-ash-cottonwood	1,840	1,355	2,737
Oak-gum-cypress	2,211	1,493	2,734
Average	1,550	975	2,315
All types	2,288	1,269	2,954

^{1/} Average volume per acre in the Pine Fringe is as follows: softwood types, 1,598 board feet per acre; hardwood types, 1,120 board feet per acre; all types, 1,257 board feet per acre.

Table 26. --Average sawtimber volume^{1/} per acre by stand size and forest type, 1953-55

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{2/}
----- Board feet -----						
Softwood types:						
Longleaf-slash pine	1,732	5,790	4,098	800	438	194
Loblolly-shortleaf pine	3,160	8,036	4,741	971	366	273
Oak-pine	1,593	5,085	3,120	882	299	19
Average	2,641	7,369	4,415	933	352	200
Hardwood types:						
Oak-hickory	951	3,197	2,629	691	207	333
Elm-ash-cottonwood	1,840	4,629	2,893	891	...	...
Oak-gum-cypress	2,211	3,908	3,376	1,002	896	445
Average	1,550	3,768	3,102	819	368	362
All types	2,288	5,860	4,182	890	357	253

^{1/} Average volume per acre in the Pine Fringe is as follows:

Forest type	All stand sizes	Saw-timber	Pole-timber	Other areas
----- Board feet -----				
Softwood types	1,598	3,729	912	70
Hardwood types	1,120	3,338	781	232
All types	1,257	3,504	808	175

^{2/} Includes areas not classified elsewhere.

Table 27. --Softwood sawtimber volume^{1/} by log grade and stand quality, by species group, and by Survey region, 1953-55

Species group and Survey region	All grades	Grade 1	Grade 2	Grade 3			Grade 4		
				Total	In fair and better stands	In poor stands	Total	In fair and better stands	In poor stands
----- Million board feet -----									
Species group:									
Loblolly pine	10,806.5	242.4	1,555.3	4,382.6	2,142.2	2,240.4	4,626.2	2,073.0	2,553.2
Shortleaf pine	5,371.0	16.0	705.3	2,373.2	1,184.0	1,189.2	2,276.5	936.1	1,340.4
Other pines	906.9	3.0	123.4	370.6	163.0	207.6	409.9	110.5	299.4
Other softwoods	288.5	9.5	37.4	148.8	96.6	52.2	92.8	35.7	57.1
Total	17,372.9	270.9	2,421.4	7,275.2	3,585.8	3,689.4	7,405.4	3,155.3	4,250.1
Survey region:									
Northeast	2,943.0	28.6	325.1	1,162.1	452.1	710.0	1,427.2	399.6	1,027.6
Southeast	14,429.9	242.3	2,096.3	6,113.1	3,133.7	2,979.4	5,978.2	2,755.7	3,222.5
Total	17,372.9	270.9	2,421.4	7,275.2	3,585.8	3,689.4	7,405.4	3,155.3	4,250.1

^{1/} Softwood volume in the Pine Fringe is as follows:

Grade	Volume Million board feet
Grade 1	1.0
Grade 2	13.7
Grade 3	92.2
Grade 4	91.3
Total	198.2

Table 28. --Hardwood sawtimber volume^{1/} by log class and stand quality, by species group, and by Survey region, 1953-55

Species group and Survey region	All classes	Standard lumber logs					Tie and timber logs		
		Grade 1	Grade 2	Grade 3			Total	In fair and better stands	In poor stands
				Total	In fair and better stands	In poor stands			
----- Million board feet -----									
Species group:									
Red oaks	2,686.5	119.9	300.7	1,127.9	446.8	681.1	1,138.0	240.6	897.4
White oaks	1,854.4	86.2	263.9	815.5	265.5	550.0	688.8	148.7	540.1
Sweetgum	1,750.7	65.2	189.3	800.2	297.1	503.1	696.0	181.5	514.5
Black and tupelo gums	794.2	74.2	129.9	396.5	172.2	224.3	193.6	47.9	145.7
Other hardwoods	2,031.2	117.3	294.8	1,036.8	444.9	591.9	582.3	135.7	446.6
Total	9,117.0	462.8	1,178.6	4,176.9	1,626.5	2,550.4	3,298.7	754.4	2,544.3
Survey region:									
Northeast	2,853.6	82.7	292.4	1,391.8	264.0	1,127.8	1,086.7	112.4	974.3
Southeast	6,263.4	380.1	886.2	2,785.1	1,362.5	1,422.6	2,212.0	642.0	1,570.0
Total	9,117.0	462.8	1,178.6	4,176.9	1,626.5	2,550.4	3,298.7	754.4	2,544.3

1/ Hardwood volume in the Pine Fringe is as follows:

All classes	Volume
	Million
	board feet
Grade 1	58.1
Grade 2	92.8
Grade 3	285.5
Tie and timber logs	114.8
Total	551.2

Table 29. --Net annual growth of sawtimber and growing stock by species and class of timber, by Survey region, 1954

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
----- Million cubic feet -----						
----- Million board feet -----						
EAST TEXAS						
Sawtimber trees	348.5	240.4	108.1	1,726.0	1,283.0	443.0
Poletimber trees	91.6	39.5	52.1	...	...	...
Total	440.1	279.9	160.2	1,726.0	1,283.0	443.0
NORTHEAST						
Sawtimber trees	99.7	57.9	41.8	455.6	290.2	165.4
Poletimber trees	40.9	15.4	25.5	...	...	...
Total	140.6	73.3	67.3	455.6	290.2	165.4
SOUTHEAST						
Sawtimber trees	248.8	182.5	66.3	1,270.4	992.8	277.6
Poletimber trees	50.7	24.1	26.6	...	...	...
Total	299.5	206.6	92.9	1,270.4	992.8	277.6

Table 30. --Net annual growth per acre of sawtimber and growing stock, by forest-type and stand-size group, by Survey region, 1954

Stand-size group	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
- - - - <u>Cubic feet</u> - - - - - - - - <u>Board feet</u> - - - - -						
EAST TEXAS						
Sawtimber	55	61	37	259	297	146
Poletimber	32	38	24	95	115	62
Other stand sizes	13	14	9	35	44	17
All stands	38	44	25	149	182	80
NORTHEAST						
Sawtimber	51	65	31	231	311	123
Poletimber	31	37	23	81	104	56
Other stand sizes	13	15	9	27	38	15
All stands	31	39	22	100	135	60
SOUTHEAST						
Sawtimber	56	60	40	266	295	158
Poletimber	34	38	25	108	122	71
Other stand sizes	12	14	7	44	48	26
All stands	43	46	31	181	203	108

Table 31. --Annual cut of sawtimber and growing stock by species, 1954

Species	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.
Softwood:		
Pines	228.3	1,170.0
Other softwoods	.5	2.3
Total	<u>228.8</u>	<u>1,172.3</u>
Hardwood:		
Red oaks	23.0	92.2
White oaks	22.3	90.0
Other hard hardwoods	4.3	17.8
Black and tupelo gums	4.4	21.4
Sweetgum	18.7	81.5
Other soft hardwoods	.7	3.4
Total	<u>73.4</u>	<u>306.3</u>
All species	302.2	1,478.6

Table 32. --Annual cut of sawtimber and growing stock, by species group and class of timber, by Survey region, 1954

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
- - - Million cubic feet - - - - - Million board feet - - -						
EAST TEXAS						
Sawtimber trees	280.2	208.7	71.5	1,478.6	1,172.3	306.3
Poletimber trees	22.0	20.1	1.9	...	...	...
Total	302.2	228.8	73.4	1,478.6	1,172.3	306.3
NORTHEAST						
Sawtimber trees	82.1	56.1	26.0	415.1	308.0	107.1
Poletimber trees	11.4	10.4	1.0	...	...	...
Total	93.5	66.5	27.0	415.1	308.0	107.1
SOUTHEAST						
Sawtimber trees	198.1	152.6	45.5	1,063.5	864.3	199.2
Poletimber trees	10.6	9.7	.9	...	...	...
Total	208.7	162.3	46.4	1,063.5	864.3	199.2

Table 33. --Total number of live trees^{1/} by species group and Survey region (1953-55) and change between Surveys (1935 and 1953-55)

Diameter class (inches)	Softwood		Hardwood	
	Thousand trees	Percent change	Thousand trees	Percent change
EAST TEXAS				
2-4	1,214,036	+ 27	3,449,926	+ 74
6-8	317,324	+ 3	430,260	+ 33
10-12	116,460	- 5	160,961	+ 28
14-18	43,065	+ 16	78,392	+ 17
20 and up	4,119	- 19	18,147	- 9
Total	1,695,004	+ 19	4,137,686	+ 64
NORTHEAST				
2-4	414,720	+ 27	1,240,909	+ 93
6-8	104,604	- 9	181,939	+ 34
10-12	25,965	- 43	69,239	+ 32
14-18	7,309	- 42	29,687	+ 15
20 and up	576	- 65	6,541	- 13
Total	553,174	+ 10	1,528,315	+ 77
SOUTHEAST				
2-4	799,316	+ 27	2,209,017	+ 65
6-8	212,720	+ 10	248,321	+ 32
10-12	90,495	+ 19	91,722	+ 25
14-18	35,756	+ 46	48,705	+ 19
20 and up	3,543	+ 4	11,606	- 8
Total	1,141,830	+ 24	2,609,371	+ 58

^{1/} Includes both cull and growing stock trees.

STANDARD TABLES

Tables identical in format to those that follow will be found in all State reports issued by the Forest Survey. Their purpose is to facilitate compilation of data for various States and regions.

Table I. --Land area, by major classes of land, east Texas,
1953-55

Class of land	Area
	<u>Thousand acres</u>
Forest:	
Commercial	11,575.8
Noncommercial:	
Productive-reserved	5.4
Unproductive	74.6
Total	<u>11,655.8</u>
Nonforest ^{1/}	<u>7,382.9</u>
Total, all classes	<u>19,038.7</u>

^{1/} Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. --Commercial forest land area, by ownership class, east Texas, 1953-55

Ownership class	Area
	<u>Thousand acres</u>
Federally owned or managed:	
National forest	655.0
Indian	3.7
Bureau of Land Management	...
Other	<u>77.7</u>
Total	<u>736.4</u>
State	28.7
County and municipal	2.1
Private:	
Farm	2,457.4
Industrial and other	<u>8,351.2</u>
Total	<u>10,808.6</u>
All ownerships	<u>11,575.8</u>

Table III. --Area of commercial forest land, by major forest types, east Texas, 1953-55

Forest type	Thousand acres
Longleaf-slash pine	482.1
Loblolly-shortleaf pine	5,198.4
Oak-pine	2,156.0
Oak-hickory	1,940.4
Oak-gum-cypress	1,724.3
Elm-ash-cottonwood	<u>74.6</u>
Total	<u>11,575.8</u>

Table IV. --Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, east Texas, 1953-55

Stand-size class	Sawtimber	Growing stock
	<u>Million board feet</u>	<u>Million cubic feet</u>
Sawtimber stands	21,144.0	5,033.3
Poletimber stands	4,760.3	2,066.8
Seedling and sapling stands	491.0	157.2
Nonstocked and other areas not elsewhere classified	94.6	24.9
Total	26,489.9	7,282.2

Table V. --Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, east Texas, 1953-55

Ownership class	Sawtimber	Growing stock
	<u>Million board feet</u>	<u>Million cubic feet</u>
Federally owned or managed:		
National forest	3,462.9	760.1
Indian	12.0	2.5
Bureau of Land Management	...	...
Other	140.9	39.3
Total	3,615.8	801.9
State	86.5	21.4
County and municipal	7.0	1.6
Private:		
Farm	3,120.2	1,065.3
Industrial and other	19,660.4	5,392.0
Total	22,780.6	6,457.3
All ownerships	26,489.9	7,282.2

Table VI. --Net volume of live sawtimber and growing stock on commercial forest land, by species, east Texas, 1953-55

Species	Sawtimber	Growing stock
	<u>Million board feet</u>	<u>Million cubic feet</u>
Softwoods:		
Longleaf and slash pines	906.9	190.8
Shortleaf and loblolly pines	16,177.5	3,724.4
Cypress	281.0	60.2
Other eastern softwoods	7.5	1.9
Total	17,372.9	3,977.3
Hardwoods:		
White oaks (<i>Q. alba</i> and <i>michauxii</i>)	695.9	205.8
Red oaks (<i>Q. rubra</i> , <i>shumardii</i> , and <i>falcata</i> var. <i>pagodaefolia</i>)	376.1	110.9
Other white oaks	1,158.5	486.5
Other red oaks	2,310.4	806.4
Sugar maple	18.3	6.4
Soft maples	44.9	22.6
Beech	152.7	44.8
Sweetgum	1,750.7	652.3
Tupelo and blackgum	794.2	253.7
Ash	282.4	104.0
Hickory	636.1	233.5
Cottonwood	7.8	2.9
Basswood	17.0	5.8
Yellow-poplar	...	.1
Black walnut	6.7	2.4
Other eastern hardwoods	865.3	366.8
Total	9,117.0	3,304.9
All species	26,489.9	7,282.2

Table VII. --Net volume of live sawtimber on commercial forest land, by diameter class groups and species, east Texas, 1953-55

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
----- Million board feet -----							
Southern yellow pines	3,195.8	3,895.2	3,552.3	2,637.2	1,809.4	1,994.5	17,084.4
Other eastern softwoods	19.1	44.7	53.4	60.0	48.2	63.1	288.5
White oaks (<u>Q. alba</u> and <u>michauxii</u>)	...	96.8	143.9	149.8	105.2	200.2	695.9
Other white oaks	...	244.4	257.0	217.9	146.1	293.1	1,158.5
Red oaks (<u>Q. rubra</u> , <u>falcata</u> var. <u>pagodaefolia</u> and <u>shumardii</u>)	...	49.9	65.6	62.8	45.7	152.1	376.1
Other red oaks	...	378.4	423.1	419.1	289.7	800.1	2,310.4
Sugar maple	...	5.2	4.8	4.3	...	4.0	18.3
Beech	...	23.0	38.1	19.5	23.3	48.8	152.7
Sweetgum	...	394.2	431.6	326.4	258.6	339.9	1,750.7
Tupelo and blackgum	...	141.5	170.2	166.8	115.5	200.2	794.2
Other eastern hardwoods	...	412.0	411.9	325.5	267.6	443.2	1,860.2

Table VIII. --Net volume of all timber on commercial forest land, by class of material and species group, east Texas, 1953-55

Class of material	Total	Softwoods	Hardwoods
----- Million cubic feet -----			
Growing stock:			
Sawtimber trees:			
Sawlog portion	4,360.6	2,913.8	1,446.8
Upper stem portion	979.2	226.4	752.8
Total	5,339.8	3,140.2	2,199.6
Poletimber trees	1,942.4	837.1	1,105.3
Total growing stock	7,282.2	3,977.3	3,304.9
Other material:			
Sound cull trees	855.3	28.9	826.4
Rotten cull trees	282.2	2.7	279.5
Hardwood limbs	401.1	...	401.1
Salvable dead trees	29.0	13.1	15.9
Total other material	1,567.6	44.7	1,522.9
Total, all timber	8,849.8	4,022.0	4,827.8

Table IX. --Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, east Texas, 1954

Item	Sawtimber			Growing stock		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
----- Million board feet ----- ----- Million cubic feet -----						
Net annual growth	1,726.0	1,283.0	443.0	440.1	279.9	160.2
Annual mortality	158.9	104.2	54.7	49.5	26.4	23.1
Annual cut						
Timber products	1,449.2	1,157.2	292.0	263.4	211.4	52.0
Logging residues	29.4	15.1	14.3	38.8	17.4	21.4
Total annual cut	1,478.6	1,172.3	306.3	302.2	228.8	73.4

Table X. --Output of timber products and annual cut of live sawtimber and growing stock, east Texas, 1954

Product	Output of timber products					Annual cut of sawtimber			Annual cut of growing stock		
	Volume in standard units		Roundwood volume			Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
	Standard units	Number	Total	Soft-woods	Hard-woods						
			Thousand cubic feet			Thousand board feet			Thousand cubic feet		
Sawlogs	MBM ^{1/}	1,032,027	168,366	133,417	34,949	1,060,887	856,024	204,863	196,091	147,172	48,919
Veneer logs and bolts	MBM ^{1/}	49,999	6,999	51	6,948	55,129	296	54,833	10,074	56	10,018
Cooperage logs and bolts	MBM ^{1/}	1,306	188	...	188	1,825	...	1,825	436	...	436
Pulpwood	Std. cords ^{2/}	^{3/} 1,033,762	78,062	74,286	3,776	281,466	270,204	11,262	73,546	69,792	3,754
Fuelwood	Std. cords ^{2/}	^{4/} 152,502	11,439	112	11,327	3,244	188	3,056	2,479	44	2,435
Piling	M linear feet	1,346	861	861	...	4,977	4,977	...	1,013	1,013	...
Poles	M pieces	617	6,583	6,583	...	38,053	38,053	...	7,743	7,743	...
Posts	M pieces	5,351	3,024	1,431	1,593	5,133	192	4,941	2,810	1,364	1,446
Hewn ties	M pieces	349	2,450	225	2,225	18,612	1,664	16,948	4,244	306	3,938
Miscellaneous ^{5/}	M cu. ft.	^{6/} 2,329	2,329	760	1,569	9,227	670	8,557	3,811	1,311	2,500
Total			280,301	217,726	62,575	1,478,553	1,172,268	306,285	302,247	228,801	73,446

^{1/} International 1/4-inch rule.^{2/} Rough wood basis.^{3/} Not including 6.1 million cubic feet of wood from mill residues used for pulp.^{4/} Not including 61.2 million cubic feet of wood from mill residues used for domestic and industrial fuel.^{5/} Includes mine timbers, handle stock, other miscellaneous dimension stock, etc.^{6/} Not including 2.5 million cubic feet of mill residues used for miscellaneous products.





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FORESTS OF THE MISSISSIPPI DELTA

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FOREWORD

The Forest Survey of the Mississippi Delta is a part of the national inventory being conducted by the U. S. Forest Service. The purposes of the Survey are (1) to take inventory of the supply of standing timber and other forest products, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies.

The Southern Forest Experiment Station is responsible for the Survey in Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. Philip R. Wheeler, chief of the Division of Forest Economics, is in charge of the work.

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Figure 1.--Forest Survey regions in the Mississippi Delta.

FORESTS OF THE MISSISSIPPI DELTA

Herbert S. Sternitzke and John A. Putnam
Southern Forest Experiment Station

This report presents the principal findings of that part of the nationwide Forest Survey conducted in the Mississippi River Delta between 1947 and 1954. The results of an earlier Survey, made in the mid-1930's, are also drawn upon in order to show changes in forest conditions during the intervening years.

As used here, the "Delta" refers to the entire flood plain of the Mississippi River in Arkansas, Louisiana, and Mississippi; not merely to the alluvial deposit at the mouth of the River. Ranging in width from 30 to 120 miles, the Delta encompasses a total land area of some 28 million acres. For convenience in compiling data the Delta boundary in this report follows county lines (fig. 1). Thus, several part-Delta counties are included and a few are excluded.

Forest Land

Forest acreage has declined. --Agriculture, principally the growing of cotton, is well developed in the Mississippi River Delta. But the Delta is an important forest region, too. Its vast forest acreage is occupied almost entirely by hardwoods, cypress being the only softwood of importance.

At the time of reinventory, commercial forests^{1/} covered 10.5 million acres, or 38 percent of the total land area. This is about 12 percent less forest land than in 1935.

^{1/} Definition of terms will be found on p. 15.

All sections of the Delta have experienced some decline in woodland acreage during the past 20 years. The heaviest reduction has occurred in Arkansas. Here, the net decline totaled more than 800,000 acres, a 19-percent drop. Much of the new ground in Arkansas has been devoted to rice production. These rice lands are not especially productive for timber, because their natural drainage is poor. Their conversion to farm land, therefore, has not reduced potential forest productivity in proportion to the acreage reduction.

The least clearing has been done in the southern portion of the Louisiana Delta, where the water table is prevailingly high. Present forest area in Louisiana's South Delta is only 6 percent less than in 1935.

Not all of the land cleared since the Great Depression has been well suited to agricultural use. Already some areas have been abandoned and have reverted to forest. Further shifts from farm to forest are likely. But it is apparent that with the unusually favorable circumstances for agriculture over much of the Delta region, including public participation in flood control and major drainage projects, and with public support of farm prices, the outlook is for further net reduction in forest acreage.

Table 1. --Commercial forest land by forest type, 1947-54

Forest type	Area
	Thousand acres
Mixed bottomland-hardwoods	5,532.7
Cottonwood-willow	810.0
Tupelo-cypress	1,086.7
Overcup oak-bitter pecan	1,358.1
Upland types ^{1/}	1,741.2
Total	10,528.7

^{1/} Includes oak-hickory, pine-hardwood, and pine types.

Hardwoods characterize the Delta forests. --A rich variety of hardwood species occur in the Delta, but their typical association in stands may be conveniently classified into a few broad forest types (table 1).

With minor exceptions, the characteristic species of the widely distributed mixed bottomland-hardwood type are suitable for factory lumber, veneer, or cooperage. This broad type embraces at least two significant subtypes.

The sweetgum-water oaks subtype occurs principally on the modern flood plain formed by the present drainage system. Common associates include green ash, soft elm, hackberry, overcup oak, and pecan. The red oaks-white oaks-other hardwoods subtype is variously characterized by cherrybark oak, cow oak, hickory, white ash, blackgum, and winged elm. This latter type is found mainly on the older soil formations or terraces.

Cottonwood-willow is a fast-growing river-margin type of high utility. Though the two species may be associated, each is commonly found in pure stands. Cottonwood usually grows on the high sandy-loam margins of streams or cut-off lakes, or on old fields. Willow is characteristically found on low banks along rivers or in shallow sloughs and swamps near the rivers.

Tupelo-cypress occurs mainly in the deep swamps and on the fertile but very heavy "buckshot" soils of low, wet flats and deep sloughs. Tupelo is frequently more abundant than cypress in heavily cutover stands of this potentially valuable type. Pure stands of one species or the other prevail in some sections of the Delta. In the swamps around Lake Maurepas and Lake Pontchartrain in Louisiana, swamp blackgum is a component of the type.

Overcup oak-bitter pecan occurs on the lower, poorly drained clay flats of first bottoms and terraces of the larger streams. In the great backwater basins of the Yazoo and Red Rivers, these species are generally of little commercial value. The overcup oak is usually short-boled, limby, and infested with insects. Ring shake is a common defect in bitter pecan. Often associated with these species, however, is a workable nucleus of more desirable species, notably Nuttall oak and green ash. Toward the outer edges of the Delta and especially on the older geologic formations to the north, the overcup oak and pecan tend to be of fair to good quality.

Upland hardwoods of good quality are found on Crowley's Ridge in the Arkansas Delta, and the deep brown loam bluffs that flank the eastern margin of the geologic Delta. These stands are distinguished from corresponding phases of the mixed bottomland oaks largely by the presence of yellow-poplar, beech, or pine. Some lower quality hardwoods, largely upland oaks and hickory, are included in the upland fringes.

Sawtimber stands predominate. --Generally speaking, the Delta has a far greater proportion of merchantable stands than the other two major hardwood regions of the South--the central hardwoods of western Tennessee and northwestern Arkansas, and the Appalachian hardwoods of eastern Tennessee and western North Carolina.

Large sawtimber stands, the main source of industrial wood, make up nearly 3 million acres (fig. 2). The Survey's minimum specifications for large sawtimber stands call for at least 1,500 board feet per acre (International 1/4-inch log rule) and at least half of this volume

in trees 16 inches and larger in diameter. On the average, however, large sawtimber stands in the Delta contain more than 5,000 board feet per acre, of which nearly half is in trees 20 inches and larger. All together, these stands embrace about half of the region's total sawtimber volume.

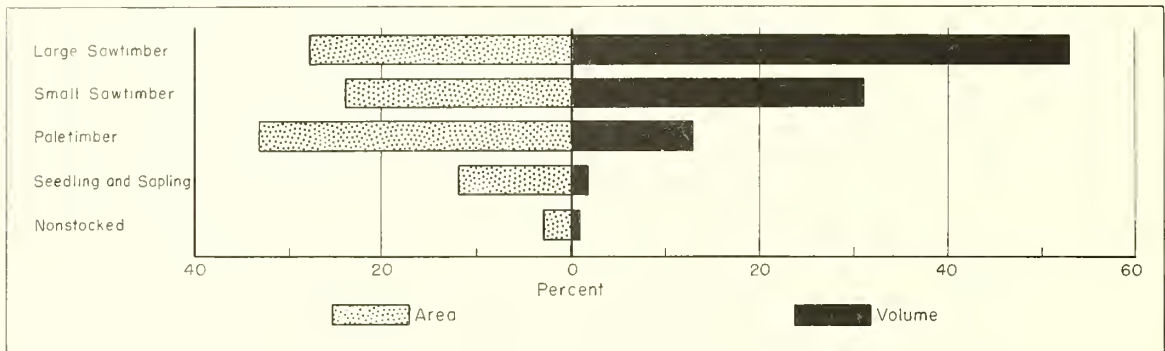


Figure 2. --Commercial forest area and sawtimber volume by stand-size class.

Small sawtimber stands cover 2.5 million acres. They average nearly 3,600 board feet per acre but have only a fifth of their volume in 20-inch and larger trees. Some of the small sawtimber stands are being logged now and more will be as the volume improves and pressure for hardwood sawtimber increases. But of importance is the fact that cutting aimed at stand improvement rather than harvest can greatly enhance productivity. If residual cull and weed trees are deadened after such logging, most small sawtimber stands would be in good shape for future development.

The remaining 5 million acres of Delta forest are mainly young growth. The areas support less than 1,500 board feet per acre. Most of this acreage is made up of poletimber stands. If given adequate protection from fire and premature harvesting, the young-growth areas will eventually contribute to a renovated sawtimber resource.

Timber Volume

Timber stocking has improved.--The volume of growing stock in the Delta--that is, all sound, well-formed trees at least 5.0 inches in d. b. h.--is 8 billion cubic feet (122 million cords). This is about 8 percent less volume than in the mid-1930's. The decline is due partly to extensive land clearing and partly to heavy cutting of large trees.

While total volume has fallen off, timber stocking has improved slightly. On a per-acre basis, growing stock volume is 5 percent greater.

The trend toward improved stocking has been accompanied by changes in the structure of timber stands. Present stands contain more small trees and fewer large trees (fig. 3). The increase in small trees represents a generally promising situation. But for the immediate future at least, the marked decline in trees over 18 inches in diameter means that traditional hardwood industries in the Delta will be faced generally with shortages in both quantity and quality of sawtimber.

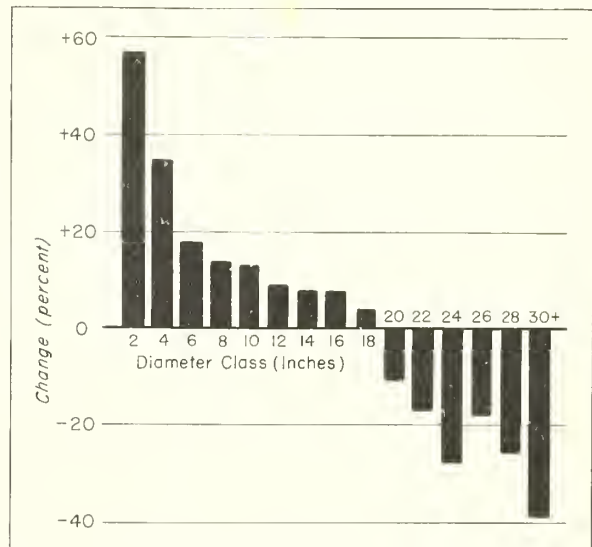


Figure 3.--Change in number of live trees between Surveys.

Cull volume 27 million cords.--Not included in the estimate of growing stock is an additional 1.8 billion cubic feet (27 million cords) of sound volume in cull trees. Because of excessive rot, roughness, or other defects, these trees are unmerchantable either now or prospectively for veneer, factory lumber, or other high-quality products. Most of the volume could, of course, serve for fuelwood or other farm-use products if demand were sufficient. Too, with increasing markets for wood fiber products, some of it can be channelled into pulpwood. For example, cull-tree volume in soft-textured hardwoods generally acceptable for pulping totals 7 million cords. But the quantity of cull is so large and the problem so widespread that investment in girdling or otherwise deadening culls is likely to prove the only effective way of rapidly reducing this tremendous overburden and increasing the growth of more valuable hardwoods on many areas.

Sawtimber volume has declined. --Delta forests support 25 billion board feet (Int. 1/4-inch rule) of hardwood and nearly 4 billion of softwood (figs. 4 and 5). This tally includes hardwoods at least 12 inches in diameter and softwoods not less than 10 inches.

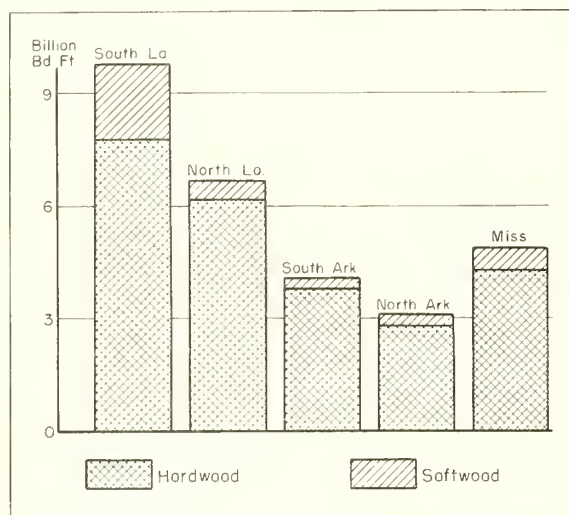


Figure 4. --Sawtimber volume by Delta Survey regions.

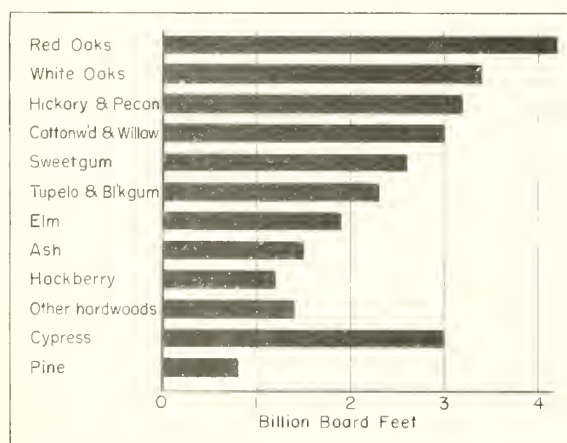


Figure 5. --Sawtimber volume by species.

Table 2. --Distribution of sawtimber volume by species, 1932-35 and 1947-54

Species	1932-35	1947-54
- -Percent- -		
Sweetgum	9.6	9.2
Tupelo and blackgum	10.6	8.1
Water oaks	13.2	11.7
Other red oaks	2.0	3.1
Overcup oak ^{1/}	12.6	8.9
Other white oaks	2.4	3.0
Pecan and hickory	9.4	11.8
Cottonwood and willow	9.2	10.1
Elm	7.4	6.8
Ash	3.6	5.2
Hackberry	3.0	4.0
Other hardwoods	4.9	4.8
Cypress	7.8	10.4
Pine	4.3	2.9
All species	100.0	100.0

^{1/} Includes a small amount of hill post oak.

By and large, industrial hardwoods are cut from trees 16 inches and larger. Volume in these size classes adds up to 17 billion board feet, or some 70 percent of the total hardwood sawtimber.

As table 2 indicates, there have been some changes in the proportion of sawtimber volume by major species groups between Surveys. It should be emphasized that changes must be valued in proportion to the magnitude of the item and of the change. Four changes of significance should be noted. Tupelo has declined, for it is being harvested increasingly, too often by clear cutting. Overcup oak has decreased, too.

Though overcup oak is generally in slack demand, large quantities were cut during World War II. The proportion of pecan and hickory has increased. About 75 percent of the volume in the pecan and hickory group is made up of bitter pecan, which is seldom cut because of inherently low value. The conspicuous increase in proportion of cypress is the result of surprisingly good development of many scattered second-growth stands, especially in south Louisiana.

The net change in sawtimber volume between Surveys amounted to a 14-percent decrease. This decline was felt in all of the Delta except south Louisiana. In Louisiana's South Delta, where there is less logging activity and where woods fires are infrequent, sawtimber volume registered a 23-percent increase.

Further indication of the trend toward improved forest productivity in south Louisiana is found in average volume per acre. Sawtimber volume now averages 3,460 board feet per acre; at the time of the initial Survey, 2,650 board feet. For the Delta as a whole, sawtimber stocking has remained virtually unchanged. It still averages some 2,700 board feet per acre. Mixed bottomland hardwood stands average 2,450 board feet per acre; the cottonwood-willow type, 3,070 board feet; and tupelo-cypress, 4,510 board feet. For sawtimber stands alone, volume averages 4,400 board feet per acre.

Tree size affects quality. --The 25 billion board feet of net volume in Delta hardwoods includes the entire woods run of trees physically utilizable as sawtimber. Much of this total is in trees of small size or low quality, and hence currently suited only for low-value uses such as heavy structural material, crating, crossties, or farm lumber. Among the many industrial uses of hardwoods, the manufacture of standard factory lumber greatly predominates. Requirements of logs for this purpose can, therefore, be taken as criteria for appraising commercial utility of hardwood sawtimber.

About 35 percent, or nearly 9 billion board feet, of the hardwood is in grade-2 or better logs--that is, logs that will yield a substantial proportion of No. 1 Common and better lumber. The remaining 16 billion board feet is of a quality below that normally preferred by Delta hardwood mills. This volume can generally be economically used only when it is cut from trees containing other logs of higher quality or when it can be channelled into products not requiring clear cuttings.

Fully half of the grade-3 and poorer hardwood volume occurs in stands classed as fair or better quality. These stands contain at least four grade-2 or better sawlogs per acre. Although this specification is

rather lenient, it serves to segregate stands that have some volume in grades best suited to industrial use, and which are most likely to be logged. In stands of fair to better quality particularly, it is often feasible to utilize lower grade logs along with the higher grade material.

It has been noted that a fair proportion of the hardwood is of low grade simply because it is of small size. For example, more than 30 percent of the total hardwood sawtimber volume occurs in trees of the 12- to 14-inch diameter classes. Such trees are too small to contain any grade-1 standard logs and seldom yield significant amounts of even grade-2 logs. But many of them can improve in grade and utility if permitted to grow to larger sizes.

Timber Cut and Growth

Lumber is chief claimant of Delta timber. --In 1954, when the latest cutting statistics were compiled, logging removed 261 million cubic feet of growing stock in the Delta (table 3). About 90 percent of this was cut from sawtimber-size trees.

Table 3. --Annual cut and net annual growth of sawtimber and growing stock, 1954

Delta regions	Timber cut		Growth	
	Growing stock	Sawtimber	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.	Million cu. ft.	Million bd. ft.
Louisiana	94.6	404.4	246.7	891.0
Arkansas	86.8	345.1	124.5	403.8
Mississippi	79.5	279.9	59.3	227.7
Total	260.9	1,029.4	430.5	1,522.5

Information from severance-tax reports and other sources suggests that the total annual cut has been relatively stable since 1946. It has varied from a high of about 290 million cubic feet in 1948 to a low of some 240 million cubic feet in 1949. Average annual cut during the past decade has been roughly 280 million cubic feet. Except as noted below, trends for individual products are unavailable.

Sawlogs for lumber products, which make up nearly half of the annual timber cut, are by far the chief industrial use of wood (fig. 6). The production of lumber in the Delta is essentially an undertaking of large operators. In the portion of the Delta lying within the State of Mississippi, for example, it is estimated that fully 90 percent of the lumber is sawn at mills each processing several million board feet annually.

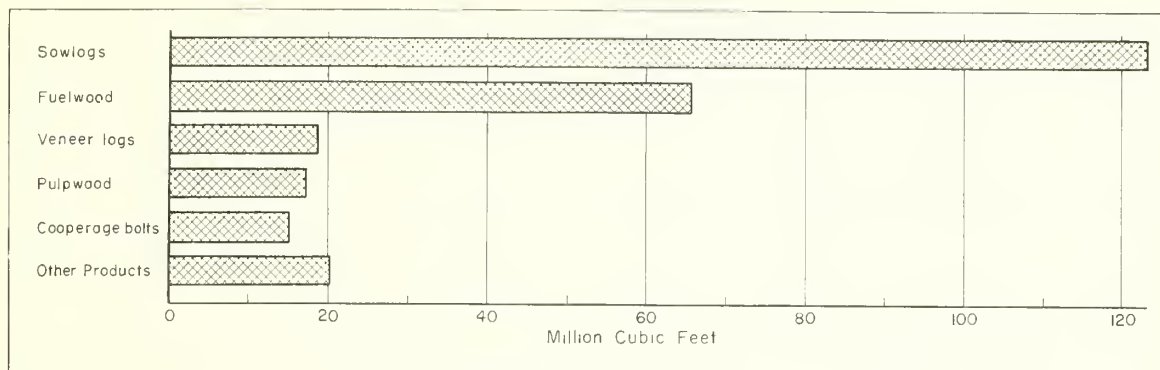


Figure 6. --Annual cut of growing stock.

Though its use is declining, fuelwood accounts for about a quarter of the growing stock cut. The remainder of the annual cut is mainly industrial wood, largely veneer, cooperage, and pulpwood.

A notable trend in recent years has been the marked increase in the amount of hardwood cut for pulp, virtually all of which is soft-textured species such as sweetgum. In 1949 the production of Delta hardwoods for pulp totaled 52 thousand cords. By 1954, hardwood production climbed to 188 thousand cords, and in 1955 it surged to 234 thousand. Further increases in the use of Delta hardwoods for pulp seem certain.

Rapid growth indicates good forestry potential. --As table 3 indicates, both growing stock and sawtimber growth in the Delta exceed the annual cut, except in the Mississippi portion. But all indications suggest that both the quantity and quality of the annual increment of the forest is far below capacity. In fact, it is estimated that present growth amounts to not over a third of the growth potential in terms of volume and probably not more than a sixth in utility and value.

If the Delta forests are to meet the needs of dependent wood-using plants, recent encouraging forestry trends must be greatly accelerated. Even if large-scale remedial measures are widely undertaken within the next few years, timber of the quality, size, and inherent utility for the distinctive hardwood industries is likely to be in short supply for at least a generation. At the same time, it should be recognized that the trend toward improved stocking of young growth offers an opportunity to rebuild the depleted growing stock.

Most second-growth bottomland stands grow about as rapidly as southern pine, in part because they occupy some of the most fertile forest soils. They respond well to cultural measures.

Table 4. --Average ten-year diameter growth, inside bark,
by species and diameter group^{1/}

Species	All diameters	6-12 inches	14-18 inches	20-28 inches	30+ inches
	- - - - - Inches - - - - -				
Pine	2.51	2.47	2.74	3.26	...
Cypress	1.89	1.85	2.10	2.09	0.67
Sweetgum	2.36	2.31	2.59	2.68	2.73
Blackgum	1.53	1.49	1.67	1.84	...
Tupelo gum	2.13	2.09	2.43	2.55	2.15
Cottonwood	3.92	3.43	4.84	5.01	6.96
Willow	3.43	3.22	4.18	4.26	4.10
Water oaks	2.66	2.56	2.99	3.38	3.05
Other red oaks	2.52	2.48	2.56	3.17	5.47
Overcup oak	1.89	1.81	2.22	2.10	1.98
Other white oaks	1.71	1.63	2.18	2.20	2.07
Ash	1.96	1.88	2.37	2.68	2.03
Elm	1.88	1.85	1.93	2.28	3.32
Hackberry	1.99	1.99	1.96	2.22	1.80
Hickory	1.38	1.36	1.62	1.75	1.80
Bitter pecan	2.02	1.99	2.03	2.24	1.89
Sweet pecan	2.31	2.19	2.78	2.44	2.70
Other hardwood	2.30	2.26	2.63	2.55	2.70
All species	2.23	2.15	2.60	2.69	2.82

^{1/} Includes only Arkansas and Louisiana portions of Delta.

Table 5. --Average ten-year diameter growth, inside bark,
by stand size and diameter group^{1/}

Stand-size	All diameters	6-12 inches	14-18 inches	20-28 inches	30+ inches
	- - - - - Inches - - - - -				
Large sawtimber	2.16	2.02	2.47	2.64	2.83
Small sawtimber	2.16	2.04	2.77	2.87	2.54
Poletimber	2.32	2.29	2.60	2.81	2.77
Seedling and sapling	2.95	2.98	2.70	2.96	3.47
Non-stocked and other areas	2.81	2.89	2.60	2.55	2.30
All stand sizes	2.23	2.15	2.60	2.69	2.82

^{1/} Includes only Arkansas and Louisiana portions of Delta.

Tables 4 and 5 summarize growth measurements of several thousand sample trees on Forest Survey plots in the Delta. These data are averages for trees in unmanaged stands, which are relatively understocked. Under management, even though stocking is built up, the stand averages can be materially increased by reducing the proportion of some slow-growing species and by improving stand structure.

The average 10-year diameter increase (inside bark) of trees of all species and sizes is practically 2-1/4 inches. Individual species vary considerably from the average. Cottonwood, willow, red oaks, and water oaks grow conspicuously faster than the average. Hickory, blackgum, overcup oak, and bitter pecan grow more slowly. It is notable and encouraging that in general the desirable species are average or faster growers, whereas the less valuable species are the slower growers.

Opportunities for Enhancing Forest Productivity

The Delta contains one of the most valuable supplies of commercial hardwoods in the Nation. The second-growth and residual old-growth that now characterize the Delta forests are no match, of course, for the original forest in terms of volume or quality. But the natural factors that produced the old growth are still there. The Delta is capable of supplying, on a permanent basis, much more timber than it now does.

Improving productivity of the Delta forests calls for wider application of well-known remedies--better protection from fire and other hazards; removal of cull trees; improved cutting practices to build up the volume and quality of timber growing stock; and intensified timber utilization.

Planting may prove useful for restocking abandoned farmlands and for improving composition of heavily cutover stands. The feasibility of planting cottonwood on properly prepared sites has already been demonstrated. But for other species of hardwoods and for cypress, further study is needed before large-scale planting is feasible on bottomlands.

Forest protection is basic prescription. -- Adequate forest protection is the first step in management of southern hardwood forests.

The numerous fires that damaged Delta forests during the recent dry years emphasized once again that large areas can and do burn over in what is commonly thought of as "swampland."

Wildfire in bottomland hardwoods can kill or damage trees in every stage of development from seedlings to prime sawtimber. Progressive decay and degradation is common in wounded trees that do survive a fire. Recent studies have clearly shown that a single fire in bottomland hardwoods can nullify many years of good forest practices.

Landowners are also faced with disease and insect attacks that are not associated with fire. A disease of widespread occurrence during the past few years, for example, is the blight of sweetgum. Gum blight causes a gradual dying of the tree, usually from the top down. Insect pests such as stem borers and bark scarrers cause timber losses totaling millions of dollars annually through degradation of infested trees. Lowering of the water table in some areas has caused both outright mortality and degradation by insects that attack the weakened trees. While few control measures have yet been formulated for the many agents destructive to bottomland hardwoods, prompt salvage and sanitation cuttings of affected trees can hold losses to a minimum.

Grazing livestock browse and trample bottomland hardwood reproduction. Exclusion of livestock is therefore desirable. Under good forest management, the grazing capacity of Delta hardwoods is low. The trend toward more improved pastures may lessen future dependence upon woodland forage.

Cull hardwood must be removed. -- One in every four trees of poletimber size and larger in the Delta is an outright cull. These rough, malformed, and rotten trees occupy growing space that can profitably be used by thrifty, merchantable trees or by new seedling crops. Worse yet, many are of inferior or weed species; others are of inherently poor form or quality. Leaving them to reproduce their kind deteriorates forest composition and value.

Studies at the Delta Research Center ^{2/} have shown that girdling or poisoning cull hardwoods is a sound investment. Large culls taking up about a seventh of the growing space on a 120-acre experimental tract, for example, were killed at a cost of \$1.20 per acre. Thus, for every seven acres treated, effective growing space was increased by one acre with no increases in taxes or protection costs.

Owners placing Delta hardwoods under management have generally been quick to see the advantage of increasing their effective growing space. But so far, cull hardwoods have been removed from only a small portion of Delta forests.

Improvement cutting is needed. -- While adequate forest protection and cull hardwood removal are important components of management, it is also essential that timber cutting be carried out so as to leave the forest in condition for high, continuous yields of timber.

In addition to cull trees, the typical stand of Delta hardwoods is usually burdened by many trees that contain some merchantable material but whose current or potential value is nevertheless low. It is the aim of improvement cutting to take out these less desirable trees for whatever they may bring, and thus make room for the development of better trees. The decision of whether or not to remove any given tree in an improvement cutting is governed by a number of complex factors such as species, tree size, form and quality, vigor and thrift, and the position and space occupied by the tree in the stand. Such a decision can obviously be arrived at only after a ground survey by a forester skilled in hardwood silviculture and utilization.

Recent experience on the Delta Research Center's experimental forest and on a number of industrial operations suggests that improvement cutting is commercially practical if expertly managed. Although the immediate profit margin may be small, such cutting enhances the future productivity of the residual stand.

Bottomland stands now average 2,900 board feet per acre. Although experimental evidence is meager, it appears that optimum stocking for typically uneven-aged stands of bottomland hardwoods on good sites will be about 10,000 board feet per acre (Int. 1/4-inch rule), midway through a 10-year cutting cycle. In such fully developed and intensively managed stands, trees 28 to 32 inches d. b. h. will be the usual mature sizes, with larger trees occurring commonly. Some 36-inch or larger trees may be grown for special products like face veneer.

^{2/} Maintained at Stoneville, Miss., by South. Forest Expt. Sta. jointly with Miss. Agr. Expt. Sta. and Southern Hardwood Forest Research Group.

Better utilization can help.--Forest industries have already made many adjustments to accommodate their production to the changing timber resource. Additional adjustments leading to the use of smaller and poorer timber and less desired species can extend the resource even further. To illustrate, the increasing demand for pulpwood offers an opportunity to thin young hardwood stands without reducing the inventory for more exacting products. When pulpwood cutting in young stands is done by careful thinning it is an important tool for forest betterment.

Another opportunity lies in the conversion of hardwood mill residues and perhaps low-grade logs into pulp chips and products such as particle board.

Integrated utilization, too, is a promising way of stretching out the resource. This means putting each tree harvested, and each part of each tree, into uses that will insure the greatest net return. Multi-product harvesting usually requires a forester's supervision of cutting and marketing operations.

Intensified research in forest products and marketing can no doubt uncover further opportunities. If all avenues to more effective and complete utilization are fully traveled, the forest situation will be greatly helped.

The forest future.--The Delta includes some of the inherently most productive hardwood sites in the South. But liquidation of old growth during the past half century has left most stands deficient in timber of the quality, size, and utility demanded by the distinctive hardwood industries. Nevertheless the resource is still substantial relative to other major hardwood regions. While Delta forests encompass only 5 percent of the South's commercial forest area, they contain 20 percent of the volume in southern hardwoods 20 inches and larger in diameter. They currently supply more than 10 percent of the South's industrial hardwood.

The Delta is making the difficult transition from dependence on old growth to increased use of second growth. The speed with which landowners improve forest management will largely determine how quickly and how successfully the transition is made. While forest recovery is under way, industry will have to improve its manufacturing and marketing methods further, so as to utilize more low-quality raw material and species now left in the woods. In the long run, a large expansion of forestry efforts will enable the Delta to supply an even greater share of the Nation's future hardwood requirements.

Accuracy of the Survey

The 1947-54 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurement of quarter-acre sample plots. The sample plots were taken in pairs at and near the intersections of a grid of east-west and north-south lines spaced three miles apart.

Accuracy of the estimates may be affected by two types of error. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting or estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data, using random-sampling formulas, indicates a sampling error of plus or minus 0.4 percent for the estimate of total forest area, 1.9 percent for total cubic-foot volume, and 2.3 percent for total board-foot volume. However, because an equispaced systematic sample is generally more efficient than a random sample of the same size, these estimates of sampling error may be considered as setting an upper limit of error, rather than expressing the actual probability of error. As the acreage and volume totals for the Delta are broken down by Survey region, forest type, species, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable two chances out of three.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Maximum sampling error	Volume sampled	Maximum sampling error	Volume sampled	Maximum sampling error
<u>M acres</u>	<u>Percent</u>	<u>Million cu. ft.</u>	<u>Percent</u>	<u>Million bd. ft.</u>	<u>Percent</u>
10,000	0.4	8,000	1.9	29,000	2.3
5,000	.6	5,000	2.5	20,000	2.8
2,000	.9	3,000	3.2	10,000	3.9
500	1.8	1,000	5.5	5,000	5.5
100	4.1	500	7.7	2,000	8.7
50	5.8	100	17.3	300	22.5

Growth estimates were derived from radial-growth measurements and mortality data taken on sample plots.

Estimates of annual cut are based on production surveys and wood utilization studies conducted during the period of forest inventory in the Delta. The data were adjusted to annual cut for a specified year (1954) through use of production indices derived from State severance tax information.

In computing the changes that took place between 1932-35 and 1947-54, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before the change was computed.

The indicated change in total forest acreage between Surveys may be considered essentially correct. Forest acreage changes for Survey regions should be valued in proportion to the magnitude of the item and of the change. Changes in timber volume, because of the possible effect of nonsampling as well as sampling errors, are shown only for major groupings of the data.

Definition of Terms

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous is cypress (Taxodium distichum).

Hardwoods. Broadleaved species, of which the most numerous are the oaks (Quercus spp.) and sweetgum (Liquidambar styraciflua).

Forest Type

In each of the forest types listed in the detailed tables, the type name is derived from the predominating species. Table 13 shows the distribution of cubic volume by species within types.

Class of Timber

Sawtimber trees. Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.
- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees. Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees. Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees. Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees. Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees. Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, and at least half of this volume in sawtimber trees 16 inches and larger in diameter.

Small sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, but which do not meet the specifications for large sawtimber.

Poletimber. Stands failing to meet the sawtimber stand specification, 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.

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock. Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside 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 inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d. b. h.

Growth

Net annual growth of sawtimber. The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Cut

Annual cut of sawtimber. The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Annual cut of growing stock. The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Output

Timber products output. The volume of timber products cut from both growing stock and other sources.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber.^{3/} Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade 2 or better logs are present per acre.

Poor. A stand in which fewer than four grade 2 or better logs are present per acre.

^{3/} For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory D1737. 1949.

DETAILED TABLES

The following tables present detailed statistics on the forests of the Mississippi Delta.

Table 6. --Forest and nonforest land by Survey regions, 1947-54

Land use	Region	Louisiana		Arkansas		Mississippi
		South Delta	North Delta	South Delta	North Delta	Delta
----- <u>Thousand acres</u> -----						
Forest:						
Commercial	10,528.7	2,819.6	2,171.3	2,020.9	1,476.5	2,040.4
Noncommercial:						
Productive-reserved	4.4	.9	.4	...	.3	2.8
Unproductive	6.6	6.6	...	...	...	...
Total forest	<u>10,539.7</u>	<u>2,827.1</u>	<u>2,171.7</u>	<u>2,020.9</u>	<u>1,476.8</u>	<u>2,043.2</u>
Nonforest ^{1/}	<u>17,564.7</u>	<u>6,882.4</u>	<u>1,375.2</u>	<u>2,669.0</u>	<u>3,216.3</u>	<u>3,421.8</u>
All land	28,104.4	9,709.5	3,546.9	4,689.9	4,693.1	5,465.0

^{1/} Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 7. --Commercial forest land by class of ownership, 1947-54

Class of ownership	Commercial forest area	
	Thousand acres	Percent
Private:		
Farm	3,645.0	34.6
Forest industry	1,567.5	14.9
Other	4,899.1	46.5
Total private	<u>10,111.6</u>	<u>96.0</u>
Public:		
National forest	58.9	.6
Other federal	179.8	1.7
State	98.5	.9
County and municipal	79.9	.8
Total public	<u>417.1</u>	<u>4.0</u>
All ownerships	10,528.7	100.0

Table 8. --Commercial forest land by stand size and forest type, by Survey region, 1947-54

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Thousand acres -----							----- Thousand acres -----					
DELTA REGION							ARKANSAS - SOUTH DELTA					
Bottomland types:												
Mixed hardwoods	5,532.7	1,504.3	1,290.9	1,850.1	769.6	117.8	1,214.0	251.8	384.2	436.9	127.3	13.8
Cottonwood-willow	810.0	181.7	254.2	242.8	104.3	27.0	75.1	31.0	28.2	7.2	3.1	5.6
Tupelo-cypress	1,086.7	371.1	397.1	237.5	39.6	41.4	66.8	9.1	27.8	21.4	6.0	2.5
Overcup oak-bitter pecan	1,358.1	632.4	224.9	259.3	142.7	98.8	123.2	59.2	25.4	33.1	5.5	...
Total	8,787.5	2,689.5	2,167.1	2,589.7	1,056.2	285.0	1,479.1	351.1	465.6	498.6	141.9	21.9
Upland types:												
Pine and pine-hardwood	472.6	83.2	133.3	183.9	64.2	8.0	136.3	2.2	49.6	64.6	17.1	2.8
Oak-hickory	1,268.6	197.5	242.5	708.3	96.2	24.1	405.5	17.2	79.2	261.4	37.2	10.5
Total	1,741.2	280.7	375.8	892.2	160.4	32.1	541.8	19.4	128.8	326.0	54.3	13.3
All types	10,528.7	2,970.2	2,542.9	3,481.9	1,216.6	317.1	2,020.9	370.5	594.4	824.6	196.2	35.2
LOUISIANA - SOUTH DELTA							ARKANSAS - NORTH DELTA					
Bottomland types:												
Mixed hardwoods	1,064.9	448.0	186.4	298.4	106.6	25.5	940.2	117.3	231.0	455.7	130.2	6.0
Cottonwood-willow	446.8	121.7	93.6	155.5	71.0	5.0	86.5	...	62.4	19.6	...	4.5
Tupelo-cypress	838.7	287.9	306.4	189.7	33.6	21.1	48.9	21.3	20.2	7.4	...	...
Overcup oak-bitter pecan	300.7	151.0	32.7	71.5	42.4	3.1	47.4	17.5	22.5	4.3	3.1	...
Total	2,651.1	1,008.6	619.1	715.1	253.6	54.7	1,123.0	156.1	336.1	487.0	133.3	10.5
Upland types:												
Pine and pine-hardwood	97.7	12.0	27.7	24.1	33.9	...	12.0	...	3.2	8.8	...	...
Oak-hickory	70.8	32.6	12.5	25.7	...	...	341.5	10.9	36.1	266.9	27.6	...
Total	168.5	44.6	40.2	49.8	33.9	...	353.5	10.9	39.3	275.7	27.6	...
All types	2,819.6	1,053.2	659.3	764.9	287.5	54.7	1,476.5	167.0	375.4	762.7	160.9	10.5
LOUISIANA - NORTH DELTA							MISSISSIPPI - DELTA					
Bottomland types:												
Mixed hardwoods	1,268.3	567.7	209.2	352.6	102.6	36.2	1,045.3	119.5	280.1	306.5	302.9	36.3
Cottonwood-willow	71.0	26.2	9.8	17.5	14.0	3.5	130.6	2.8	60.2	43.0	16.2	8.4
Tupelo-cypress	34.4	16.1	...	8.5	...	9.8	97.9	36.7	42.7	10.5	...	8.0
Overcup oak-bitter pecan	559.1	351.6	40.0	97.8	17.8	51.9	327.7	53.1	104.3	52.6	73.9	43.8
Total	1,932.8	961.6	259.0	476.4	134.4	101.4	1,601.5	212.1	487.3	412.6	393.0	96.5
Upland types:												
Pine and pine-hardwood	168.3	64.2	44.5	50.2	9.4	...	58.3	4.8	8.3	36.2	3.8	5.2
Oak-hickory	70.2	23.7	6.9	29.2	10.4	...	380.6	113.1	107.8	125.1	21.0	13.6
Total	238.5	87.9	51.4	79.4	19.8	...	438.9	117.9	116.1	161.3	24.8	18.8
All types	2,171.3	1,049.5	310.4	555.8	154.2	101.4	2,040.4	330.0	603.4	573.9	417.8	115.3

^{1/} Includes areas not classified elsewhere.

Table 9. --Commercial forest land by degree of tree stocking and forest type, by Survey region, 1947-54

Forest type	All stocked	Well stocked	Medium stocked	Poorly stocked	Non-stocked	All stocked	Well stocked	Medium stocked	Poorly stocked	Non-stocked
----- Thousand acres -----						----- Thousand acres -----				
DELTA REGION						ARKANSAS - SOUTH DELTA				
Bottomland types:										
Mixed hardwoods	5,532.7	2,924.6	2,083.6	442.1	82.4	1,214.0	678.9	477.6	43.7	13.8
Cottonwood-willow	810.0	422.6	253.1	109.8	24.5	75.1	48.7	17.7	3.1	5.6
Tupelo-cypress	1,086.7	606.3	327.4	119.5	33.5	66.8	31.1	27.1	6.1	2.5
Overcup oak-bitter pecan	1,358.1	591.5	567.9	136.2	62.5	123.2	83.0	34.7	5.5	...
Total	8,787.5	4,545.0	3,232.0	807.6	202.9	1,479.1	841.7	557.1	58.4	21.9
Upland types:										
Pine and pine-hardwood	472.6	302.0	133.9	31.5	5.2	136.3	92.5	41.0	...	2.8
Oak-hickory	1,268.6	679.8	472.3	103.6	12.9	405.5	218.4	146.3	30.3	10.5
Total	1,741.2	981.8	606.2	135.1	18.1	541.8	310.9	187.3	30.3	13.3
All types	10,528.7	5,526.8	3,838.2	942.7	221.0	2,020.9	1,152.6	744.4	88.7	35.2
LOUISIANA - SOUTH DELTA						ARKANSAS - NORTH DELTA				
Bottomland types:										
Mixed hardwoods	1,064.9	545.3	389.0	115.7	14.9	940.2	512.9	318.0	103.3	6.0
Cottonwood-willow	446.8	221.0	147.3	76.0	2.5	86.5	25.4	40.2	16.4	4.5
Tupelo-cypress	838.7	506.4	228.4	87.9	16.0	48.9	34.6	11.3	3.0	...
Overcup oak-bitter pecan	300.7	139.5	122.8	35.3	3.1	47.4	29.0	15.3	3.1	...
Total	2,651.1	1,412.2	887.5	314.9	36.5	1,123.0	601.9	384.8	125.8	10.5
Upland types:										
Pine and pine-hardwood	97.7	46.6	39.0	12.1	...	12.0	6.4	5.6	...	...
Oak-hickory	70.8	58.7	3.4	8.7	...	341.5	171.8	148.1	21.6	...
Total	168.5	105.3	42.4	20.8	...	353.5	178.2	153.7	21.6	...
All types	2,819.6	1,517.5	929.9	335.7	36.5	1,476.5	780.1	538.5	147.4	10.5
LOUISIANA - NORTH DELTA						MISSISSIPPI - DELTA				
Bottomland types:										
Mixed hardwoods	1,268.3	879.9	290.1	74.4	23.9	1,045.3	307.6	608.9	105.0	23.8
Cottonwood-willow	71.0	58.6	8.9	...	3.5	130.6	68.9	39.0	14.3	8.4
Tupelo-cypress	34.4	13.3	5.8	8.3	7.0	97.9	20.9	54.8	14.2	8.0
Overcup oak-bitter pecan	559.1	262.4	216.5	58.9	21.3	327.7	77.6	178.6	33.4	38.1
Total	1,932.8	1,214.2	521.3	141.6	55.7	1,601.5	475.0	881.3	166.9	78.3
Upland types:										
Pine and pine-hardwood	168.3	123.8	44.5	...	...	58.3	32.7	3.8	19.4	2.4
Oak-hickory	70.2	47.5	15.9	6.8	...	380.6	183.4	158.6	36.2	2.4
Total	238.5	171.3	60.4	6.8	...	438.9	216.1	162.4	55.6	4.8
All types	2,171.3	1,385.5	581.7	148.4	55.7	2,040.4	691.1	1,043.7	222.5	83.1

Table 10. --Area of sawtimber stands by stand quality and forest type, by Survey region,
1947-54

Forest type	All qualities	Fair or better	Poor	All qualities	Fair or better	Poor
- - - - Thousand acres - - - -				- - - Thousand acres - - -		
DELTA REGION				ARKANSAS - SOUTH DELTA		
Bottomland types:						
Mixed hardwoods	2,795.2	1,464.3	1,330.9	636.0	248.3	387.7
Cottonwood-willow	435.9	220.9	215.0	59.2	34.1	25.1
Tupelo-cypress	768.2	462.8	305.4	36.9	11.5	25.4
Overcup oak- bitter pecan	857.3	582.9	274.4	84.6	50.1	34.5
Total	<u>4,856.6</u>	<u>2,730.9</u>	<u>2,125.7</u>	<u>816.7</u>	<u>344.0</u>	<u>472.7</u>
Upland types:						
Pine and pine-hardwood	216.5	118.1	98.4	51.8	15.5	36.3
Oak-hickory	440.0	227.2	212.8	96.4	33.0	63.4
Total	<u>656.5</u>	<u>345.3</u>	<u>311.2</u>	<u>148.2</u>	<u>48.5</u>	<u>99.7</u>
All types	5,513.1	3,076.2	2,436.9	964.9	392.5	572.4
LOUISIANA - SOUTH DELTA				ARKANSAS - NORTH DELTA		
Bottomland types:						
Mixed hardwoods	634.4	389.5	244.9	348.3	151.6	196.7
Cottonwood-willow	215.3	106.7	108.6	62.4	9.1	53.3
Tupelo-cypress	594.3	354.5	239.8	41.5	30.8	10.7
Overcup oak- bitter pecan	183.7	111.1	72.6	40.0	29.7	10.3
Total	<u>1,627.7</u>	<u>961.8</u>	<u>665.9</u>	<u>492.2</u>	<u>221.2</u>	<u>271.0</u>
Upland types:						
Pine and pine-hardwood	39.7	20.3	19.4	3.2	...	3.2
Oak-hickory	45.1	32.6	12.5	47.0	15.0	32.0
Total	<u>84.8</u>	<u>52.9</u>	<u>31.9</u>	<u>50.2</u>	<u>15.0</u>	<u>35.2</u>
All types	1,712.5	1,014.7	697.8	542.4	236.2	306.2
LOUISIANA - NORTH DELTA				MISSISSIPPI - DELTA		
Bottomland types:						
Mixed hardwoods	776.9	411.8	365.1	399.6	263.1	136.5
Cottonwood-willow	36.0	27.2	8.8	63.0	43.8	19.2
Tupelo-cypress	16.1	9.3	6.8	79.4	56.7	22.7
Overcup oak- bitter pecan	391.6	265.1	126.5	157.4	126.9	30.5
Total	<u>1,220.6</u>	<u>713.4</u>	<u>507.2</u>	<u>699.4</u>	<u>490.5</u>	<u>208.9</u>
Upland types:						
Pine and pine-hardwood	108.7	82.3	26.4	13.1	...	13.1
Oak-hickory	30.6	7.0	23.6	220.9	139.6	81.3
Total	<u>139.3</u>	<u>89.3</u>	<u>50.0</u>	<u>234.0</u>	<u>139.6</u>	<u>94.4</u>
All types	1,359.9	802.7	557.2	933.4	630.1	303.3

Table 11.--Total volume by class of timber and species, by Survey region, 1947-54

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			

----- Million cubic feet -----							
DELTA REGION							
Softwood:							
Cypress	689.0	632.0	492.6	70.6	68.8	...	57.0
Southern pines	1/191.9	189.7	135.2	13.2	41.3	...	2.2
Total	<u>880.9</u>	<u>821.7</u>	<u>627.8</u>	<u>83.8</u>	<u>110.1</u>	<u>...</u>	<u>59.2</u>
Hardwood:							
Red oaks	1,704.4	1,222.3	647.1	280.0	295.2	206.0	276.1
White oaks	1,339.5	966.0	522.2	237.9	205.9	181.4	192.1
Sweetgum	920.5	786.3	415.9	166.4	204.0	51.1	83.1
Tupelo and black gums	964.3	805.8	379.4	161.1	265.3	49.1	109.4
Other hardwoods	5,305.0	3,686.6	1,923.0	827.4	936.2	510.6	1,107.8
Total	<u>10,233.7</u>	<u>7,467.0</u>	<u>3,887.6</u>	<u>1,672.8</u>	<u>1,906.6</u>	<u>998.2</u>	<u>1,768.5</u>
All species	11,114.6	8,288.7	4,515.4	1,756.6	2,016.7	998.2	1,827.7
LOUISIANA - SOUTH DELTA							
Softwood:							
Cypress	436.8	401.9	306.6	36.1	59.2	...	34.9
Southern pines	37.5	37.3	26.1	2.3	8.9	...	.2
Total	<u>474.3</u>	<u>439.2</u>	<u>332.7</u>	<u>38.4</u>	<u>68.1</u>	<u>...</u>	<u>35.1</u>
Hardwood:							
Red oaks	324.5	241.2	142.1	65.7	33.4	45.2	38.1
White oaks	132.7	96.1	54.2	28.9	13.0	20.1	16.5
Sweetgum	288.4	253.5	135.5	53.9	64.1	12.0	22.9
Tupelo and black gums	726.6	643.6	291.7	125.2	226.7	26.9	56.1
Other hardwoods	1,703.1	1,231.7	608.5	269.7	353.5	136.6	334.8
Total	<u>3,175.3</u>	<u>2,466.1</u>	<u>1,232.0</u>	<u>543.4</u>	<u>690.7</u>	<u>240.8</u>	<u>468.4</u>
All species	3,649.6	2,905.3	1,564.7	581.8	758.8	240.8	503.5
LOUISIANA - NORTH DELTA							
Softwood:							
Cypress	24.2	18.8	15.6	1.7	1.5	...	5.4
Southern pines	90.6	90.0	75.3	4.6	10.1	...	.6
Total	<u>114.8</u>	<u>108.8</u>	<u>90.9</u>	<u>6.3</u>	<u>11.6</u>	<u>...</u>	<u>6.0</u>
Hardwood:							
Red oaks	331.2	240.5	127.7	59.8	53.0	42.2	48.5
White oaks	410.0	309.2	174.2	90.2	44.8	59.0	41.8
Sweetgum	231.3	201.9	107.5	42.6	51.8	10.4	19.0
Tupelo and black gums	24.1	17.9	10.6	4.8	2.5	1.7	4.5
Other hardwoods	1,268.5	932.6	525.6	238.5	168.5	139.0	196.9
Total	<u>2,265.1</u>	<u>1,702.1</u>	<u>945.6</u>	<u>435.9</u>	<u>320.6</u>	<u>252.3</u>	<u>310.7</u>
All species	2,379.9	1,810.9	1,036.5	442.2	332.2	252.3	316.7

Table 11. --Total volume by class of timber and species, by Survey region, 1947-54 (continued)

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Poletimber trees		
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
ARKANSAS - SOUTH DELTA							
Softwood:							
Cypress	45.7	36.9	30.1	4.5	2.3	...	8.8
Southern pines	40.4	40.2	23.1	3.2	13.9	...	.2
Total	86.1	77.1	53.2	7.7	16.2	...	9.0
Hardwood:							
Red oaks	375.2	249.2	114.8	47.7	86.7	41.2	84.8
White oaks	293.3	213.5	107.7	44.0	61.8	37.0	42.8
Sweetgum	130.8	107.6	53.5	22.1	32.0	9.9	13.3
Tupelo and black gums	50.6	33.4	16.2	6.6	10.6	4.8	12.4
Other hardwoods	901.7	608.3	305.9	125.8	176.6	92.4	201.0
Total	1,751.6	1,212.0	598.1	246.2	367.7	185.3	354.3
All species	1,837.7	1,289.1	651.3	253.9	383.9	185.3	363.3
ARKANSAS - NORTH DELTA							
Softwood:							
Cypress	70.2	65.9	54.3	8.8	2.8	...	4.3
Southern pines	3.2	3.2	2.1	.3	.8	...	...
Total	73.4	69.1	56.4	9.1	3.6	...	4.3
Hardwood:							
Red oaks	345.6	260.3	126.8	53.0	80.5	39.5	45.8
White oaks	249.0	197.3	94.7	38.6	64.0	29.0	22.7
Sweetgum	59.6	51.8	25.1	10.4	16.3	3.4	4.4
Tupelo and black gums	74.9	51.4	27.0	11.0	13.4	8.7	14.8
Other hardwoods	505.1	348.9	165.4	67.2	116.3	52.9	103.3
Total	1,234.2	909.7	439.0	180.2	290.5	133.5	191.0
All species	1,307.6	978.8	495.4	189.3	294.1	133.5	195.3
MISSISSIPPI - DELTA							
Softwood:							
Cypress	112.1	108.5	86.0	19.5	3.0	...	3.6
Southern pines	20.2	19.0	8.6	2.8	7.6	...	1.2
Total	132.3	127.5	94.6	22.3	10.6	...	4.8
Hardwood:							
Red oaks	327.9	231.1	135.7	53.8	41.6	37.9	58.9
White oaks	254.5	149.9	91.4	36.2	22.3	36.3	68.3
Sweetgum	210.4	171.5	94.3	37.4	39.8	15.4	23.5
Tupelo and black gums	88.1	59.5	33.9	13.5	12.1	7.0	21.6
Other hardwoods	926.6	565.1	317.6	126.2	121.3	89.7	271.8
Total	1,807.5	1,177.1	672.9	267.1	237.1	186.3	444.1
All species	1,939.8	1,304.6	767.5	289.4	247.7	186.3	448.9

1/ Includes a small amount of redcedar.

Table 12.--Growing stock by species and Survey region, 1947-54

Species	Region	Louisiana		Arkansas		Mississippi
		South Delta	North Delta	South Delta	North Delta	Delta
- - - - - <u>Million cubic feet</u> - - - - -						
Softwood:						
Cypress	632.0	401.9	18.8	36.9	65.9	108.5
Southern pines	<u>1/ 189.7</u>	37.3	90.0	40.2	3.2	19.0
Total	<u>821.7</u>	<u>439.2</u>	<u>108.8</u>	<u>77.1</u>	<u>69.1</u>	<u>127.5</u>
Hardwood:						
Water oaks	945.2	208.6	212.5	161.0	184.0	179.1
Other red oaks	277.1	32.6	28.0	88.2	76.3	52.0
Overcup and post oaks	764.8	86.2	263.5	162.5	134.1	118.5
Other white oaks	201.2	9.9	45.7	51.0	63.2	31.4
Sweetgum	786.3	253.5	201.9	107.6	51.8	171.5
Tupelo and black gums	805.8	643.6	17.9	33.4	51.4	59.5
Ash	505.9	265.8	101.6	69.6	30.7	38.2
Cottonwood	209.2	41.4	35.9	64.3	12.4	55.2
Elm	547.8	93.4	202.5	89.5	77.6	84.8
Hackberry	370.2	120.7	108.3	84.0	19.0	38.2
Hickory, except pecans	151.6	10.1	15.4	57.8	38.5	29.8
Soft maple	114.7	78.4	5.4	4.9	18.7	7.3
Bitter pecan	628.8	168.6	250.9	78.6	30.5	100.2
Sweet pecan	110.2	10.2	44.9	29.9	8.0	17.2
Sycamore	69.7	11.1	18.7	16.9	6.9	16.1
Willow	671.2	384.0	65.3	47.3	75.2	99.4
Other hardwoods	307.3	48.0	83.7	65.5	31.4	78.7
Total	<u>7,467.0</u>	<u>2,466.1</u>	<u>1,702.1</u>	<u>1,212.0</u>	<u>909.7</u>	<u>1,177.1</u>
All species	8,288.7	2,905.3	1,810.9	1,289.1	978.8	1,304.6

1/ Includes a small amount of redcedar.

Table 13.-Distribution of growing stock by species within each forest type, 1947-54

Species	All types	Bottomland types				Upland types	
		Mixed hardwoods	Cottonwood-willow	Tupelo-cypress	Overcup oak-bitter pecan	Pine and pine-hardwood	Oak-hickory
----- Percent -----							
Softwood:							
Cypress	7.6	2.6	4.3	34.8	1.8	. . .	(2/)
Southern pines	1/ 2.3	(2/)	.1	. . .	. . .	62.4	1.7
Total	9.9	2.6	4.4	34.8	1.8	62.4	1.7
Hardwood:							
Water oaks	11.5	20.2	.1	.5	6.9	4.5	5.6
Other red oaks	3.3	2.1	(2/)	(2/)	.3	9.9	20.1
Overcup and post oaks	9.3	6.8	.3	.7	33.2	5.4	10.4
Other white oaks	2.4	2.3	. . .	(2/)	(2/)	4.7	12.1
Sweetgum	9.5	16.3	.4	.6	1.7	5.3	15.7
Tupelo and black gums	9.7	1.1	1.3	49.1	.3	.7	3.8
Ash	6.1	9.4	3.2	4.4	5.2	.2	1.9
Cottonwood	2.5	1.3	17.3	.1	.1	. . .	.3
Elm	6.6	12.2	.2	.4	2.9	1.2	4.1
Hackberry	4.5	8.6	.4	.1	2.9	(2/)	.5
Hickory, except pecans	1.8	1.4	. . .	. . .	(2/)	2.9	11.5
Soft maple	1.4	1.7	.6	2.7	.1	.2	.6
Bitter pecan	7.6	4.7	.9	.7	38.5	. . .	.1
Sweet pecan	1.3	2.4	.1	(2/)	1.4	. . .	(2/)
Sycamore	.8	1.4	.7	.1	.2	.1	.8
Willow	8.1	1.6	68.1	5.2	.4	. . .	(2/)
Other hardwoods	3.7	3.9	2.0	.6	4.1	2.5	10.8
Total	90.1	97.4	95.6	65.2	98.2	37.6	98.3
All species	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Includes a small amount of redcedar.

2/ Negligible.

Table 14. --Growing stock by species and stand size, by Survey region, 1947-54

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million cubic feet -----						
DELTA REGION						
Softwood:						
Cypress	632.0	281.6	281.3	57.6	9.7	1.8
Southern pines	<u>2,189.7</u>	<u>60.9</u>	<u>83.6</u>	<u>42.6</u>	<u>2.3</u>	<u>.3</u>
Total	<u>821.7</u>	<u>342.5</u>	<u>364.9</u>	<u>100.2</u>	<u>12.0</u>	<u>2.1</u>
Hardwood:						
Red oaks	1,222.3	467.2	403.8	305.0	37.5	8.8
White oaks	966.0	460.3	247.7	218.4	22.9	16.7
Sweetgum	786.3	342.1	272.0	154.3	15.9	2.0
Tupelo and black gums	805.8	364.8	315.5	118.3	4.0	3.2
Other hardwoods	<u>3,686.6</u>	<u>1,819.0</u>	<u>1,078.9</u>	<u>691.2</u>	<u>69.9</u>	<u>27.6</u>
Total	<u>7,467.0</u>	<u>3,453.4</u>	<u>2,317.9</u>	<u>1,487.2</u>	<u>150.2</u>	<u>58.3</u>
All species	8,288.7	3,795.9	2,682.8	1,587.4	162.2	60.4

LOUISIANA - SOUTH DELTA

Softwood:						
Cypress	401.9	196.9	159.0	41.1	3.7	1.2
Southern pines	<u>37.3</u>	<u>8.5</u>	<u>17.5</u>	<u>10.0</u>	<u>1.3</u>	<u>...</u>
Total	<u>439.2</u>	<u>205.4</u>	<u>176.5</u>	<u>51.1</u>	<u>5.0</u>	<u>1.2</u>
Hardwood:						
Red oaks	241.2	163.4	42.6	27.9	5.9	1.4
White oaks	96.1	75.0	10.4	9.6	1.1	...
Sweetgum	253.5	142.6	63.1	43.2	4.4	.2
Tupelo and black gums	643.6	305.0	255.3	81.9	1.2	.2
Other hardwoods	<u>1,231.7</u>	<u>715.1</u>	<u>280.7</u>	<u>214.2</u>	<u>18.6</u>	<u>3.1</u>
Total	<u>2,466.1</u>	<u>1,401.1</u>	<u>652.1</u>	<u>376.8</u>	<u>31.2</u>	<u>4.9</u>
All species	2,905.3	1,606.5	828.6	427.9	36.2	6.1

LOUISIANA - NORTH DELTA

Softwood:						
Cypress	18.8	14.7	.2	3.1	.2	.6
Southern pines	<u>90.0</u>	<u>49.8</u>	<u>31.2</u>	<u>8.9</u>	<u>.1</u>	<u>...</u>
Total	<u>108.8</u>	<u>64.5</u>	<u>31.4</u>	<u>12.0</u>	<u>.3</u>	<u>.6</u>
Hardwood:						
Red oaks	240.5	138.7	49.4	47.9	1.6	2.9
White oaks	309.2	229.5	25.4	36.2	5.7	12.4
Sweetgum	201.9	111.6	44.5	41.4	2.8	1.6
Tupelo and black gums	17.9	7.9	2.4	4.6	1.0	2.0
Other hardwoods	<u>932.6</u>	<u>675.3</u>	<u>108.4</u>	<u>125.6</u>	<u>13.6</u>	<u>9.7</u>
Total	<u>1,702.1</u>	<u>1,163.0</u>	<u>230.1</u>	<u>255.7</u>	<u>24.7</u>	<u>28.6</u>
All species	1,810.9	1,227.5	261.5	267.7	25.0	29.2

All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million cubic feet -----					
ARKANSAS - SOUTH DELTA					
36.9	6.7	26.0	3.4	.8	...
<u>40.2</u>	<u>.4</u>	<u>25.8</u>	<u>13.8</u>	<u>.2</u>	<u>...</u>
<u>77.1</u>	<u>7.1</u>	<u>51.8</u>	<u>17.2</u>	<u>1.0</u>	<u>...</u>
249.2	58.1	110.7	75.1	5.0	.3
213.5	76.0	81.5	53.5	2.4	.1
107.6	34.0	48.3	24.9	.4	...
33.4	7.1	15.1	11.2	...	...
<u>608.3</u>	<u>247.5</u>	<u>221.9</u>	<u>133.7</u>	<u>4.9</u>	<u>.3</u>
<u>1,212.0</u>	<u>422.7</u>	<u>477.5</u>	<u>298.4</u>	<u>12.7</u>	<u>.7</u>
1,289.1	429.8	529.3	315.6	13.7	.7

ARKANSAS - NORTH DELTA

65.9	24.5	34.5	6.5	.4	...
<u>3.2</u>	<u>.1</u>	<u>.6</u>	<u>2.5</u>	<u>...</u>	<u>...</u>
<u>69.1</u>	<u>24.6</u>	<u>35.1</u>	<u>9.0</u>	<u>.4</u>	<u>...</u>
260.3	46.0	93.7	111.7	8.7	.2
197.3	44.1	56.8	90.2	6.0	.2
51.8	17.5	15.6	17.8	.9	...
51.4	21.1	16.3	13.4	.6	...
<u>348.9</u>	<u>64.3</u>	<u>155.6</u>	<u>118.7</u>	<u>10.3</u>	<u>...</u>
<u>909.7</u>	<u>193.0</u>	<u>338.0</u>	<u>351.8</u>	<u>26.5</u>	<u>.4</u>
978.8	217.6	373.1	360.8	26.9	.4

MISSISSIPPI - DELTA

108.5	38.8	61.6	3.5	4.6	...
<u>19.0</u>	<u>2.1</u>	<u>8.5</u>	<u>7.4</u>	<u>.7</u>	<u>0.3</u>
<u>127.5</u>	<u>40.9</u>	<u>70.1</u>	<u>10.9</u>	<u>5.3</u>	<u>.3</u>
231.1	61.0	107.4	42.4	16.3	4.0
149.9	35.7	73.6	28.9	7.7	4.0
171.5	36.4	100.5	27.0	7.4	.2
59.5	23.7	26.4	7.2	1.2	1.0
<u>565.1</u>	<u>116.8</u>	<u>312.3</u>	<u>99.0</u>	<u>22.5</u>	<u>14.5</u>
<u>1,771.1</u>	<u>273.6</u>	<u>620.2</u>	<u>204.5</u>	<u>55.1</u>	<u>23.7</u>
1,304.6	314.5	690.3	215.4	60.4	24.0

^{1/} Includes areas not classified elsewhere.2/ Includes a small amount of redcedar.

Table 15. --Average volume per acre of growing stock by forest type and Survey region, 1947-54

Forest type	Region	Louisiana		Arkansas		Mississippi
		South Delta	North Delta	South Delta	North Delta	Delta
----- Cubic feet -----						
Bottomland types:						
Mixed hardwoods	715	903	789	627	632	544
Cottonwood-willow	965	863	1, 237	1, 280	956	1, 013
Tupelo-cypress	1, 317	1, 353	698	852	1, 590	1, 410
Overcup oak-bitter pecan	853	853	930	841	1, 153	591
Upland types:						
Pine and pine-hardwood	605	575	860	504	368	331
Oak-hickory	593	1, 034	638	508	496	706
All types	787	1, 030	834	638	663	639

Table 16. --Average volume per acre of growing stock by stand size and forest type, 1947-54

Forest type	All stand sizes	Large saw- timber	Small saw- timber	Pole- timber	Seedling and sapling	Nonstocked and other areas
----- Cubic feet -----						
Bottomland types:						
Mixed hardwoods	715	1,184	894	437	140	151
Cottonwood-willow	965	1,532	1,340	647	84	25
Tupelo-cypress	1,317	1,814	1,507	648	100	133
Overcup oak-bitter pecan	853	1,213	871	413	149	330
Upland types:						
Pine and pine-hardwood	605	1,152	935	360	56	7
Oak-hickory	593	1,093	984	412	108	60
All types	787	1,278	1,055	456	133	190

Table 17.--Growing stock by species and tree diameter, by Survey region, 1947-54

Species	All diameter classes	6 - 8 inches	10 - 12 inches	14 - 18 inches	20 - 24 inches	26 inches and up
----- Million cubic feet -----						
DELTA REGION						
Softwood:						
Cypress	632.0	68.8	144.3	254.8	68.9	95.2
Southern pines	1/ 189.7	41.3	58.8	64.9	20.8	3.9
Total	<u>821.7</u>	<u>110.1</u>	<u>203.1</u>	<u>319.7</u>	<u>89.7</u>	<u>99.1</u>
Hardwood:						
Water Oaks	945.2	121.1	193.0	304.3	194.6	132.2
Other red oaks	277.1	41.5	73.1	104.3	37.7	20.5
Overcup and post oaks	764.8	85.3	116.8	216.2	185.3	161.2
Other white oaks	201.2	30.9	52.7	76.0	26.6	15.0
Sweetgum	786.3	118.2	187.7	312.2	115.0	53.2
Tupelo and black gums	805.8	131.2	254.7	279.8	110.8	29.3
Ash	505.9	86.5	124.1	188.8	74.5	32.0
Cottonwood	209.2	14.6	34.7	95.0	36.3	28.6
Elm	547.8	57.2	118.0	219.7	109.0	43.9
Hackberry	370.2	47.5	98.1	173.7	46.7	4.2
Hickory, except pecans	151.6	40.0	40.6	42.5	18.0	10.5
Soft maple	114.7	36.1	30.9	31.9	12.5	3.3
Bitter pecan	628.8	49.9	96.2	214.3	174.9	93.5
Sweet pecan	110.2	14.8	17.0	35.7	23.4	19.3
Sycamore	69.7	6.1	13.2	23.4	12.0	15.0
Willow	671.2	87.5	208.5	276.1	73.1	26.0
Other hardwoods	307.3	70.0	75.4	95.3	46.1	20.5
Total	<u>7,467.0</u>	<u>1,038.4</u>	<u>1,734.7</u>	<u>2,689.2</u>	<u>1,296.5</u>	<u>708.2</u>
All species	8,288.7	1,148.5	1,937.8	3,008.9	1,386.2	807.3

LOUISIANA - SOUTH DELTA

Softwood:						
Cypress	401.9	59.2	107.7	165.5	35.7	33.8
Southern pines	37.3	8.9	14.7	8.1	3.5	2.1
Total	<u>439.2</u>	<u>68.1</u>	<u>122.4</u>	<u>173.6</u>	<u>39.2</u>	<u>35.9</u>
Hardwood:						
Red oaks	241.2	18.1	32.9	73.0	58.6	58.6
White oaks	96.1	7.9	12.2	25.4	19.6	31.0
Sweetgum	253.5	35.0	63.7	99.6	41.7	13.5
Tupelo and black gums	643.6	108.8	219.7	216.8	73.8	24.5
Other hardwoods	1,231.7	185.7	331.1	456.4	186.1	72.4
Total	<u>2,466.1</u>	<u>355.5</u>	<u>659.6</u>	<u>871.2</u>	<u>379.8</u>	<u>200.0</u>
All species	2,905.3	423.6	782.0	1,044.8	419.0	235.9

LOUISIANA - NORTH DELTA

Softwood:						
Cypress	18.8	1.5	1.8	8.6	3.6	3.3
Southern pines	90.0	10.1	22.2	40.3	15.6	1.8
Total	<u>108.8</u>	<u>11.6</u>	<u>24.0</u>	<u>48.9</u>	<u>19.2</u>	<u>5.1</u>
Hardwood:						
Red oaks	240.5	30.7	47.0	84.5	52.9	25.4
White oaks	309.2	26.1	36.9	93.1	99.2	53.9
Sweetgum	201.9	31.9	46.0	81.2	29.5	13.3
Tupelo and black gums	17.9	1.6	2.7	6.2	4.1	3.3
Other hardwoods	932.6	89.7	171.1	369.4	192.7	109.7
Total	<u>1,702.1</u>	<u>180.0</u>	<u>303.7</u>	<u>634.4</u>	<u>378.4</u>	<u>205.6</u>
All species	1,810.9	191.6	327.7	683.3	397.6	210.7

1/ Includes a small amount of redcedar.

Table 17.-Growing stock by species and tree diameter, by Survey region, 1947-54 (continued)

Species	All diameter classes	6 - 8 inches	10 - 12 inches	14 - 18 inches	20 - 24 inches	26 inches and up
- - - - - Million cubic feet - - - - -						
ARKANSAS - SOUTH DELTA						
Softwood:						
Cypress	36.9	2.3	9.5	19.6	5.5	. . .
Southern pines	40.2	13.9	15.2	10.5	.6	. . .
Total	<u>77.1</u>	<u>16.2</u>	<u>24.7</u>	<u>30.1</u>	<u>6.1</u>	<u>. . .</u>
Hardwood:						
Red oaks	249.2	50.0	70.3	86.1	33.7	9.1
White oaks	213.5	33.6	49.2	66.8	41.3	22.6
Sweetgum	107.6	17.4	28.3	40.2	13.2	8.5
Tupelo and black gums	33.4	6.0	8.6	11.0	6.9	.9
Other hardwoods	608.3	104.9	141.3	226.1	96.2	39.8
Total	<u>1,212.0</u>	<u>211.9</u>	<u>297.7</u>	<u>430.2</u>	<u>191.3</u>	<u>80.9</u>
All species	1,289.1	228.1	322.4	460.3	197.4	80.9
ARKANSAS - NORTH DELTA						
Softwood:						
Cypress	65.9	2.8	16.0	29.5	6.9	10.7
Southern pines	3.2	.8	.9	1.5	. . .	. . .
Total	<u>69.1</u>	<u>3.6</u>	<u>16.9</u>	<u>31.0</u>	<u>6.9</u>	<u>10.7</u>
Hardwood:						
Red oaks	260.3	38.9	77.7	88.8	34.0	20.9
White oaks	197.3	34.9	51.5	63.9	16.8	30.2
Sweetgum	51.8	8.7	14.1	18.2	7.4	3.4
Tupelo and black gums	51.4	7.5	11.2	22.9	9.2	.6
Other hardwoods	348.9	59.6	99.3	128.0	33.3	28.7
Total	<u>909.7</u>	<u>149.6</u>	<u>253.8</u>	<u>321.8</u>	<u>100.7</u>	<u>83.8</u>
All species	978.8	153.2	270.7	352.8	107.6	94.5
MISSISSIPPI DELTA						
Softwood:						
Cypress	108.5	3.0	9.3	31.6	17.2	47.4
Southern pines	19.0	7.6	5.8	4.5	1.1	. . .
Total	<u>127.5</u>	<u>10.6</u>	<u>15.1</u>	<u>36.1</u>	<u>18.3</u>	<u>47.4</u>
Hardwood:						
Red oaks	231.1	24.9	38.2	76.2	53.1	38.7
White oaks	149.9	13.7	19.7	43.0	35.0	38.5
Sweetgum	171.5	25.2	35.6	73.0	23.2	14.5
Tupelo and black gums	59.5	7.3	12.5	22.9	16.8	. . .
Other hardwoods	565.1	70.3	113.9	216.5	118.2	46.2
Total	<u>1,177.1</u>	<u>141.4</u>	<u>219.9</u>	<u>431.6</u>	<u>246.3</u>	<u>137.9</u>
All species	1,304.6	152.0	235.0	467.7	264.6	185.3

Table 18.--Sawtimber volume by species and Survey region, 1947-54

Species	Region	Louisiana		Arkansas		Mississippi
		South Delta	North Delta	South Delta	North Delta	Delta

----- Million board feet -----

Softwood:						
Cypress	2, 987.6	1, 819.3	97.6	181.0	333.3	556.4
Southern pines	<u>1/</u> 825.0	154.2	466.9	137.7	13.4	52.8
Total	<u>3, 812.6</u>	<u>1, 973.5</u>	<u>564.5</u>	<u>318.7</u>	<u>346.7</u>	<u>609.2</u>
Hardwood:						
Water oaks	3, 331.2	822.2	756.3	476.8	582.8	693.1
Other red oaks	900.9	128.9	84.4	258.5	234.6	194.5
Overcup and post oaks	<u>2/</u> 2, 750.9	328.2	1, 015.4	523.6	414.1	469.6
Other white oaks	636.2	30.4	143.2	155.3	181.9	125.4
Sweetgum	2, 648.8	859.6	687.1	341.3	159.8	601.0
Tupelo and black gums	<u>3/</u> 2, 333.0	1, 781.4	68.4	102.5	169.2	211.5
Ash	1, 493.8	755.9	312.1	213.4	70.7	141.7
Cottonwood	850.3	148.9	179.7	259.2	46.3	216.2
Soft elm	1, 175.6	302.9	314.0	174.1	176.4	208.2
Other elms	754.5	18.6	428.1	124.0	60.4	123.4
Hackberry	1, 191.4	358.7	349.2	280.3	68.2	135.0
Hickory, except pecans	404.1	47.1	54.6	124.1	75.5	102.8
Soft maple	262.4	160.2	20.6	13.6	48.5	19.5
Bitter pecan	2, 424.6	634.6	990.9	272.3	105.6	421.2
Sweet pecan	399.5	33.8	167.7	116.0	29.5	52.5
Sycamore	268.7	37.3	89.0	68.5	22.2	51.7
Willow	2, 133.2	1, 193.3	255.7	155.9	265.0	263.3
Other hardwoods	873.0	149.9	243.4	137.3	69.4	273.0
Total	<u>24, 832.1</u>	<u>7, 791.9</u>	<u>6, 159.8</u>	<u>3, 796.7</u>	<u>2, 780.1</u>	<u>4, 303.6</u>
All species	28, 644.7	9, 765.4	6, 724.3	4, 115.4	3, 126.8	4, 912.8

1/ Includes a small amount of redcedar.2/ Overcup oak 96 percent, upland post oak 4 percent.3/ Tupelo gum 90 percent, blackgum 10 percent.

Table 19. --Hardwood sawtimber volume by log class and stand quality, by species group and Survey region, 1947-54

Species group	All classes	Standard lumber logs					Tie and timber logs			
		Grade 1	Grade 2	Total	Grade 3		Total	In fair and better stands	In poor stands	
					In fair and better stands	In poor stands				
----- Million board feet -----										
DELTA REGION										
Water oaks	3,331.2	473.6	693.9	1,597.4	692.4	905.0	566.3	193.2	373.1	
Other red oaks	900.9	72.0	153.6	599.3	196.4	402.9	76.0	25.2	50.8	
Overcup and post oaks	2,750.9	432.3	631.1	1,208.0	618.8	589.2	479.5	191.6	287.9	
Other white oaks	636.2	44.3	158.3	393.1	128.8	264.3	40.5	16.4	24.1	
Sweetgum	2,648.8	292.8	496.4	1,399.8	779.1	620.7	459.8	222.7	237.1	
Tupelo and black gums	2,333.0	224.6	642.9	1,308.2	881.6	426.6	157.3	126.4	30.9	
Ash	1,493.8	216.6	344.7	841.2	491.3	349.9	91.3	44.4	46.9	
Cottonwood	850.3	197.8	186.9	378.2	221.3	156.9	87.4	18.6	68.8	
Elm	1,930.1	231.9	491.4	996.9	523.9	473.0	209.9	90.7	119.2	
Hackberry	1,191.4	62.7	257.9	759.2	453.1	306.1	111.6	50.3	61.3	
Hickory, except pecans	404.1	15.1	121.6	208.2	82.7	125.5	59.2	34.0	25.2	
Soft maple	262.4	26.7	49.8	116.0	73.8	42.2	69.9	31.8	38.1	
Bitter pecan	2,424.6	521.4	626.1	1,084.3	722.5	361.8	192.8	79.0	113.8	
Sweet pecan	399.5	48.2	157.3	149.3	48.5	100.8	44.7	18.7	26.0	
Sycamore	268.7	69.6	74.9	119.6	50.1	69.5	4.6	...	4.6	
Willow	2,133.2	115.3	453.9	1,269.6	646.9	622.7	294.4	139.1	155.3	
Other hardwoods	873.0	56.8	148.5	536.0	279.6	256.4	131.7	62.9	68.8	
Total	24,832.1	3,101.7	5,689.2	12,964.3	6,890.8	6,073.5	3,076.9	1,345.0	1,731.9	
LOUISIANA - SOUTH DELTA										
Red oaks	951.1	238.3	192.8	372.8	231.7	141.1	147.2	78.0	69.2	
White oaks	358.6	79.5	66.6	149.0	80.4	68.6	63.5	30.2	33.3	
Sweetgum	859.6	98.3	184.8	455.9	294.7	161.2	120.6	78.5	42.1	
Tupelo and black gums	1,781.4	163.6	481.8	992.7	713.5	279.2	143.3	121.4	21.9	
Other hardwoods	3,841.2	450.4	826.2	2,057.3	1,135.1	922.2	507.3	247.9	259.4	
Total	7,791.9	1,030.1	1,752.2	4,027.7	2,455.4	1,572.3	981.9	556.0	425.9	
LOUISIANA - NORTH DELTA										
Red oaks	840.7	107.7	166.3	417.9	194.2	223.7	148.8	49.7	99.1	
White oaks	1,158.6	165.1	219.2	464.0	255.3	208.7	310.3	118.6	191.7	
Sweetgum	687.1	84.6	101.2	318.4	148.8	169.6	182.9	70.2	112.7	
Tupelo and black gums	68.4	20.6	23.0	20.7	11.6	9.1	4.1	...	4.1	
Other hardwoods	3,405.0	629.8	754.4	1,564.5	993.8	570.7	456.3	188.8	267.5	
Total	6,159.8	1,007.8	1,264.1	2,785.5	1,603.7	1,181.8	1,102.4	427.3	675.1	
ARKANSAS - SOUTH DELTA										
Red oaks	735.3	64.4	113.8	462.6	124.0	338.6	94.5	14.1	80.4	
White oaks	678.9	107.3	172.7	368.3	133.3	235.0	30.6	7.5	23.1	
Sweetgum	341.3	42.2	57.7	208.6	85.7	122.9	32.8	.6	32.2	
Tupelo and black gums	102.5	13.3	25.2	63.1	17.1	46.0	.9	...	.9	
Other hardwoods	1,938.7	184.0	491.1	1,153.9	459.6	694.3	109.7	25.9	83.8	
Total	3,796.7	411.2	860.5	2,256.5	819.7	1,436.8	268.5	48.1	220.4	
ARKANSAS - NORTH DELTA										
Red oaks	817.4	73.8	156.6	439.7	89.7	350.0	147.3	31.6	115.7	
White oaks	596.0	72.9	164.0	322.5	97.6	224.9	36.6	9.3	27.3	
Sweetgum	159.8	19.0	30.1	88.3	40.0	48.3	22.4	14.3	8.1	
Tupelo and black gums	169.2	10.5	43.1	111.3	56.7	54.6	4.3	2.7	1.6	
Other hardwoods	1,037.7	89.1	278.1	607.6	244.5	363.1	62.9	18.2	44.7	
Total	2,780.1	265.3	671.9	1,569.4	528.5	1,040.9	273.5	76.1	197.4	
MISSISSIPPI - DELTA										
Red oaks	887.6	61.4	218.0	503.7	249.2	254.5	104.5	45.0	59.5	
White oaks	595.0	51.8	166.9	297.3	181.0	116.3	79.0	42.4	36.6	
Sweetgum	601.0	48.7	122.6	328.6	209.9	118.7	101.1	59.1	42.0	
Tupelo and black gums	211.5	16.6	69.8	120.4	82.7	37.7	4.7	2.3	2.4	
Other hardwoods	2,008.5	208.8	563.2	1,075.2	760.7	314.5	161.3	88.7	72.6	
Total	4,303.6	387.3	1,140.5	2,325.2	1,483.5	841.7	450.6	237.5	213.1	

Table 20.--Sawtimber volume by species and stand size, 1947-54

Species	All stand size	Large saw timber	Small saw timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million board feet -----						
DELTA REGION						
Softwood:						
Cypress	2,987.6	1,458.5	1,277.7	201.2	43.7	6.5
Southern pines	2/ 825.0	334.1	373.3	112.4	5.2	. . .
Total	3,812.6	1,792.6	1,651.0	313.6	48.9	6.5
Hardwood:						
Water oaks	3,331.2	1,641.0	1,057.7	499.3	101.9	31.3
Other red oaks	900.9	274.3	340.8	261.4	18.5	5.9
Overcup and post oaks	2,750.9	1,663.1	574.5	375.8	76.2	61.3
Other white oaks	636.2	198.1	233.3	190.4	9.4	5.0
Sweetgum	2,648.8	1,374.3	915.3	308.3	43.7	7.2
Tupelo and black gums	2,333.0	1,291.6	814.5	200.4	15.7	10.8
Ash	1,493.8	965.2	377.3	126.8	12.2	12.3
Cottonwood	850.3	420.3	323.1	99.6	7.3	. . .
Elm	1,930.1	1,072.0	436.2	302.9	83.7	35.3
Hackberry	1,191.4	713.9	295.6	162.6	18.1	1.2
Hickory, except pecans	404.1	173.5	107.8	113.1	7.2	2.5
Soft maple	262.4	134.1	81.9	43.9	2.5	. . .
Bitter pecan	2,424.6	1,642.8	543.6	171.4	35.5	31.3
Sweet pecan	399.5	254.0	72.7	58.3	6.0	8.5
Sycamore	268.7	162.1	73.3	32.2	1.1	. . .
Willow	2,133.2	970.0	892.4	253.8	16.7	.3
Other hardwoods	873.0	458.7	267.9	115.6	20.1	10.7
Total	24,832.1	13,409.0	7,407.9	3,315.8	475.8	223.6
All species	28,644.7	15,201.6	9,058.9	3,629.4	524.7	230.1
LOUISIANA - SOUTH DELTA						
Softwood:						
Cypress	1,819.3	1,005.3	670.9	125.5	14.4	3.2
Southern pines	154.2	44.7	75.2	30.2	4.1	. . .
Total	1,973.5	1,050.0	746.1	155.7	18.5	3.2
Hardwood:						
Red oaks	951.1	707.8	138.6	73.9	25.1	5.7
White oaks	358.6	302.2	28.0	25.2	3.2	. . .
Sweetgum	859.6	561.9	196.2	88.5	12.3	.7
Tupelo and black gums	1,781.4	1,059.8	609.9	107.8	3.2	.7
Other hardwoods	3,841.2	2,636.5	759.1	389.1	48.3	8.2
Total	7,791.9	5,268.2	1,731.8	684.5	92.1	15.3
All species	9,765.4	6,318.2	2,477.9	840.2	110.6	18.5
LOUISIANA - NORTH DELTA						
Softwood:						
Cypress	97.6	80.5	.4	13.4	. . .	3.3
Southern pines	466.9	279.6	147.8	39.1	.4	. . .
Total	564.5	360.1	148.2	52.5	.4	3.3
Hardwood:						
Red oaks	840.7	548.8	164.1	115.9	.4	11.5
White oaks	1,158.6	911.9	76.2	100.2	21.7	48.6
Sweetgum	687.1	453.1	143.7	76.4	7.4	6.5
Tupelo and black gums	68.4	36.0	7.3	13.9	4.4	6.8
Other hardwoods	3,405.0	2,654.6	352.1	327.1	39.9	31.3
Total	6,159.8	4,604.4	743.4	633.5	73.8	104.7
All species	6,724.3	4,964.5	891.6	686.0	74.2	108.0

Table 20.--Sawtimber volume by species and stand size, 1947-54 (continued)

Species	All stand size	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million board feet -----						
ARKANSAS - SOUTH DELTA						
Softwood:						
Cypress	181.0	35.3	127.2	14.4	4.1	...
Southern pines	137.7	1.4	113.8	22.2	.3	...
Total	<u>318.7</u>	<u>36.7</u>	<u>241.0</u>	<u>36.6</u>	<u>4.4</u>	<u>...</u>
Hardwood:						
Red oaks	735.3	207.7	359.8	149.2	16.9	1.7
White oaks	678.9	314.8	228.4	127.0	8.7	...
Sweetgum	341.3	149.2	144.7	46.3	1.1	...
Tupelo and black gums	102.5	32.4	40.5	29.6	...	...
Other hardwoods	1,938.7	962.6	683.7	276.6	15.8	...
Total	<u>3,796.7</u>	<u>1,666.7</u>	<u>1,457.1</u>	<u>628.7</u>	<u>42.5</u>	<u>1.7</u>
All species	4,115.4	1,703.4	1,698.1	665.3	46.9	1.7
ARKANSAS - NORTH DELTA						
Softwood:						
Cypress	333.3	137.6	160.4	33.0	2.3	...
Southern pines	13.4	.5	3.2	9.7	...	...
Total	<u>346.7</u>	<u>138.1</u>	<u>163.6</u>	<u>42.7</u>	<u>2.3</u>	<u>...</u>
Hardwood:						
Red oaks	817.4	190.4	313.0	284.1	29.0	.9
White oaks	596.0	186.5	177.7	210.3	21.5	...
Sweetgum	159.8	73.7	47.3	35.6	3.2	...
Tupelo and black gums	169.2	77.5	53.6	35.2	2.9	...
Other hardwoods	1,037.7	241.9	521.5	241.4	32.9	...
Total	<u>2,780.1</u>	<u>770.0</u>	<u>1,113.1</u>	<u>806.6</u>	<u>89.5</u>	<u>.9</u>
All species	3,126.8	908.1	1,276.7	849.3	91.8	.9
MISSISSIPPI DELTA						
Softwood:						
Cypress	556.4	199.8	318.8	14.9	22.9	...
Southern pines	52.8	7.9	33.3	11.2	.4	...
Total	<u>609.2</u>	<u>207.7</u>	<u>352.1</u>	<u>26.1</u>	<u>23.3</u>	<u>...</u>
Hardwood:						
Red oaks	887.6	260.6	423.0	137.6	49.0	17.4
White oaks	595.0	145.8	297.5	103.5	30.5	17.7
Sweetgum	601.0	136.4	383.4	61.5	19.7	...
Tupelo and black gums	211.5	85.9	103.2	13.9	5.2	3.3
Other hardwoods	2,008.5	471.0	1,155.4	246.0	73.5	62.6
Total	<u>4,303.6</u>	<u>1,099.7</u>	<u>2,362.5</u>	<u>562.5</u>	<u>177.9</u>	<u>101.0</u>
All species	4,912.8	1,307.4	2,714.6	588.6	201.2	101.0

^{1/} Includes areas not classified elsewhere.^{2/} Includes a small amount of redcedar.

Table 21.--Sawtimber volume by species and tree diameter, 1947-54

Species	All diameter classes	10-12 inches ^{2/}	14-18 inches	20-24 inches	26 inches and up
----- Million board feet -----					
DELTA REGION					
Softwood:					
Cypress	2,987.6	652.2	1,373.1	398.3	564.0
Southern pines	1/ 825.0	287.7	381.0	130.8	25.5
Total	3,812.6	939.9	1,754.1	529.1	589.5
Hardwood:					
Water oaks	3,331.2	416.9	1,376.2	908.6	629.5
Other red oaks	900.9	149.5	474.8	177.2	99.4
Overcup and post oaks	2,750.9	222.8	942.1	837.9	748.1
Other white oaks	636.2	104.4	339.3	123.5	69.0
Sweetgum	2,648.8	414.2	1,410.2	562.9	261.5
Tupelo					
and black gums	2,333.0	446.8	1,213.9	526.5	145.8
Ash	1,493.8	225.8	806.0	327.3	134.7
Cottonwood	850.3	82.9	437.9	182.8	146.7
Elm	1,930.1	256.0	971.7	499.0	203.4
Hackberry	1,191.4	205.7	754.3	212.3	19.1
Hickory, except pecans	404.1	74.4	191.7	85.3	52.7
Soft maple	262.4	52.3	135.9	58.7	15.5
Bitter pecan	2,424.6	222.1	951.4	817.5	433.6
Sweet pecan	399.5	34.5	161.8	111.8	91.4
Sycamore	268.7	33.4	104.8	57.0	73.5
Willow	2,133.2	408.1	1,237.3	357.8	130.0
Other hardwoods	873.0	142.0	420.0	212.6	98.4
Total	24,832.1	3,491.8	11,929.3	6,058.7	3,352.3
All species	28,644.7	4,431.7	13,683.4	6,587.8	3,941.8
LOUISIANA - SOUTH DELTA					
Softwood:					
Cypress	1,819.3	495.8	904.2	212.5	206.8
Southern pines	154.2	71.6	47.0	21.9	13.7
Total	1,973.5	567.4	951.2	234.4	220.5
Hardwood:					
Red oaks	951.1	71.5	330.5	272.0	277.1
White oaks	358.6	26.8	108.0	87.6	136.2
Sweetgum	859.6	134.2	449.1	209.4	66.9
Tupelo					
and black gums	1,781.4	369.0	935.9	354.1	122.4
Other hardwoods	3,841.2	631.0	2,000.7	869.0	340.5
Total	7,791.9	1,232.5	3,824.2	1,792.1	943.1
All species	9,765.4	1,799.9	4,775.4	2,026.5	1,163.6
LOUISIANA - NORTH DELTA					
Softwood:					
Cypress	97.6	8.6	47.6	21.9	19.5
Southern pines	466.9	113.4	242.5	99.2	11.8
Total	564.5	122.0	290.1	121.1	31.3
Hardwood:					
Red oaks	840.7	103.0	378.2	240.6	118.9
White oaks	1,158.6	71.3	397.4	441.5	248.4
Sweet gum	687.1	103.7	367.4	147.6	68.4
Tupelo and black gums	68.4	6.6	25.8	19.8	16.2
Other hardwoods	3,405.0	367.6	1,622.2	900.6	514.6
Total	6,159.8	652.2	2,791.0	1,750.1	966.5
All species	6,724.3	774.2	3,081.1	1,871.2	997.8

1/ Includes small amount of redcedar.

2/ Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.

Table 21.--Sawtimber volume by species and tree diameter, 1947-54 (continued)

Species	All diameter classes	10-12 inches	14-18 inches	20-24 inches	21 inches and up
----- Million board feet -----					
ARKANSAS - SOUTH DELTA					
Softwood:					
Cypress	181.0	43.1	105.3	32.6	. . .
Southern pines	137.7	74.9	59.2	3.6	. . .
Total	318.7	118.0	164.5	36.2	. . .
Hardwood:					
Red oaks	735.3	144.3	389.4	158.5	43.1
White oaks	678.9	88.2	295.9	188.8	106.0
Sweetgum	341.3	59.0	180.6	61.5	40.2
Tupelo and black gums	102.5	17.0	49.0	32.4	4.1
Other hardwoods	1,938.7	295.2	1,009.5	445.8	188.2
Total	3,796.7	603.7	1,924.4	887.0	381.6
All species	4,115.4	721.7	2,088.9	923.2	381.6
ARKANSAS - NORTH DELTA					
Softwood:					
Cypress	333.3	69.3	157.7	40.0	66.3
Southern pines	13.4	4.5	8.9	. . .	. . .
Total	346.7	73.8	166.6	40.0	66.3
Hardwood:					
Red oaks	817.4	155.3	402.7	159.4	100.0
White oaks	596.0	93.8	284.0	77.3	140.9
Sweet gum	159.8	28.0	81.4	34.4	16.0
Tupelo and black gums	169.2	22.4	101.6	42.1	3.1
Other hardwoods	1,037.7	179.4	569.1	154.8	134.4
Total	2,780.1	478.9	1,438.8	468.0	394.4
All species	3,126.8	552.7	1,605.4	508.0	460.7
MISSISSIPPI DELTA					
Softwood:					
Cypress	556.4	35.4	158.3	91.3	271.4
Southern pines	52.8	23.3	23.4	6.1	. . .
Total	609.2	58.7	181.7	97.4	271.4
Hardwood:					
Red oaks	887.6	92.3	350.2	255.3	189.8
White oaks	595.0	47.1	196.1	166.2	185.6
Sweet gum	601.0	89.3	331.7	110.0	70.0
Tupelo and black gums	211.5	31.8	101.6	78.1	. . .
Other hardwoods	2,008.5	264.0	971.3	551.9	221.3
Total	4,303.6	524.5	1,950.9	1,161.5	666.7
All species	4,912.8	583.2	2,132.6	1,258.9	938.1

Table 22. --Average sawtimber volume per acre by forest type and Survey region, 1947-54

Forest type	Region	Louisiana		Arkansas		Mississippi
		South	North	South	North	
		Delta	Delta	Delta	Delta	Delta
----- <u>Board feet</u> -----						
Bottomland types:						
Mixed hardwoods	2,455	3,130	2,793	2,069	1,937	2,081
Cottonwood-willow	3,069	2,507	5,155	4,309	3,346	3,093
Tupelo-cypress	4,513	4,422	2,969	3,337	6,755	6,218
Overcup oak-bitter pecan	3,266	3,136	3,562	3,158	4,654	2,442
Upland types:						
Pine and pine-hardwood	2,217	2,137	3,721	1,401	1,050	969
Oak-hickory	1,763	4,249	2,051	1,167	1,267	2,489
All types	2,721	3,463	3,097	2,036	2,118	2,408

Table 23. --Average sawtimber volume per acre by stand size and forest type, 1947-54

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
----- <u>Board feet</u> -----						
Bottomland types:						
Mixed hardwoods	2,445	4,662	2,957	1,051	449	535
Cottonwood-willow	3,069	6,406	4,085	1,058	131	67
Tupelo-cypress	4,513	7,209	4,855	1,168	426	423
Overcup oak-bitter pecan	3,266	4,837	3,215	1,187	567	1,306
Upland types:						
Pine and pine-hardwood	2,217	5,364	3,471	861	112	...
Oak-hickory	1,763	4,391	3,163	839	351	120
All types	2,721	5,118	3,562	1,042	431	726

Table 24. --Change in commercial forest land area, growing stock, and sawtimber volume between Surveys (1932-35 and 1947-54), by Survey region

Survey region	Forest land	Growing stock	Sawtimber volume
----- <u>Percent</u> -----			
Arkansas			
North Delta	- 26	- 11	- 13
South Delta	- 13	- 21	- 28
Louisiana			
North Delta	- 11	- 22	- 27
South Delta	- 6	+ 26	+ 23
Mississippi			
Delta	- 9	- 21	- 29
All regions	- 12	- 8	- 14

STANDARD TABLES

Tables identical in format to those that follow will be found in all State reports issued by the Forest Survey. Their purpose is to facilitate compilation of data for various States and regions.

Table I. --Land area, by major classes of land, Mississippi Delta, 1947-54

Class of land	Area
	Thousand acres
Forest:	
Commercial	10,528.7
Noncommercial:	
Productive-reserved	4.4
Unproductive	6.6
Total	10,539.7
Nonforest ^{1/}	17,564.7
Total, all classes	28,104.4

^{1/} Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. --Commercial forest land area, by ownership class, Mississippi Delta, 1947-54

Ownership class	Area
	Thousand acres
Federally owned or managed:	
National forest	58.9
Indian	...
Bureau of Land Management	5.4
Other	174.4
Total	238.7
State	98.5
County and municipal	79.9
Private:	
Farm	3,645.0
Industrial and other	6,466.6
Total	10,111.6
All ownerships	10,528.7

Table III. --Area of commercial forest land, by major forest types, Mississippi Delta, 1947-54

Forest type ^{1/}	Thousand acres
Loblolly-shortleaf pine	289.6
Oak-pine	183.0
Oak-hickory	1,268.6
Oak-gum-cypress	7,895.4
Elm-ash-cottonwood	892.1
Total	10,528.7

^{1/} The forest types in this table conform with standard types defined by the national Forest Survey. Except in the oak-pine type, the species named make up 50 percent or more of the cubic volume of the standard type. In the oak-pine type, southern pines make up 25 to 49 percent of the volume; the remainder is hardwood, mostly upland oaks.

Table IV. --Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, Mississippi Delta, 1947-54

Stand-size class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Sawtimber stands	24,260.5	6,478.7
Poletimber stands	3,629.4	1,587.4
Seedling and sapling stands	524.7	162.2
Nonstocked and other areas not elsewhere classified	230.1	60.4
Total	28,644.7	8,288.7

Table V. --Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, Mississippi Delta, 1947-54

Ownership class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Federally owned or managed ^{1/}	990.5	191.9
State ^{2/}	459.8	134.9
Private:		
Farm	7,556.3	2,332.8
Industrial and other	19,638.1	5,629.1
Total	27,194.4	7,961.9
All ownerships	28,644.7	8,288.7

^{1/} Separation by managing agency not available.

^{2/} Includes county and municipal.

Table VI. --Net volume of live sawtimber and growing stock on commercial forest land, by species, Mississippi Delta, 1947-54

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Shortleaf and loblolly pines	816.2	184.9
Other southern yellow pines	5.6	1.0
Cypress	2,987.6	632.0
Other eastern softwoods	3.2	3.8
Total	3,812.6	821.7
Hardwoods:		
White oaks (<i>Q. alba</i> and <i>michauxii</i>)	501.0	157.5
Red oaks (<i>Q. rubra</i> , <i>shumardii</i> , and <i>falcata</i> var. <i>pagodaefolia</i>)	507.3	146.9
Other white oaks	2,886.1	808.5
Other red oaks	3,724.8	1,075.4
Sugar maple	13.5	4.5
Soft maples	262.4	114.7
Beech	139.5	33.2
Sweetgum	2,648.8	786.3
Tupelo and blackgum	2,333.0	805.8
Ash	1,493.8	505.9
Hickory	3,228.2	890.6
Cottonwood	850.3	209.2
Basswood	14.8	3.8
Yellow-poplar	80.2	19.4
Black walnut	2.9	1.3
Other eastern hardwoods	6,145.5	1,904.0
Total	24,832.1	7,467.0
All species	28,644.7	8,288.7

Table VII. --Net volume of live sawtimber on commercial forest land, by diameter class groups and species, Mississippi Delta, 1947-54

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
- - - - - Million board feet - - - - -							
Southern yellow pines	129.1	157.8	166.4	122.8	89.4	156.3	821.8
Other eastern softwoods	230.2	422.8	479.0	512.3	384.2	962.3	2,990.8
White oaks (<u>Q. alba</u> and <u>michauxii</u>)	...	86.6	103.1	99.1	71.9	140.3	501.0
Other white oaks	...	240.6	291.4	378.8	337.1	1,638.2	2,886.1
Red oaks (<u>Q. rubra</u> , <u>falcata</u> var. <u>pagodaefolia</u> and <u>shumardii</u>)	...	76.1	106.7	92.8	86.0	145.7	507.3
Other red oaks	...	490.3	548.3	482.1	535.1	1,669.0	3,724.8
Sugar maple	...	4.5	5.5	2.2	1.3	...	13.5
Beech	...	6.4	10.9	22.9	22.0	77.3	139.5
Sweetgum	...	414.2	514.3	462.5	433.4	824.4	2,648.8
Tupelo and blackgum	...	446.8	468.0	407.3	338.6	672.3	2,333.0
Yellow-poplar	...	8.7	12.9	12.7	12.0	33.9	80.2
Other eastern hardwoods	...	1,717.6	2,085.9	2,049.4	1,935.1	4,209.9	11,997.9

Table VIII. --Net volume of all timber on commercial forest land, by class of material and species group, Mississippi Delta, 1947-54

Class of material	Total	Softwoods	Hardwoods
----- Million cubic feet -----			
Growing stock:			
Sawtimber trees:			
Sawlog portion	4,515.4	627.8	3,887.6
Upper stem portion	1,756.6	83.8	1,672.8
Total	6,272.0	711.6	5,560.4
Poletimber trees	2,016.7	110.1	1,906.6
Total growing stock	8,288.7	821.7	7,467.0
Other material			
Sound cull trees	1,071.1	16.0	1,055.1
Rotten cull trees	756.6	43.2	713.4
Hardwood limbs	998.2	...	998.2
Salvable dead trees	40.3	8.0	32.3
Total other material	2,866.2	67.2	2,799.0
Total, all timber	11,154.9	888.9	10,266.0

Table IX. --Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, Mississippi Delta, 1954

Item	Sawtimber			Growing stock		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
----- Million board feet ----- ----- Million cubic feet -----						
Net annual growth	1,522.5	192.7	1,329.8	430.5	40.0	390.5
Annual mortality	171.9	22.9	149.0	55.8	5.3	50.5
Annual cut ^{1/}	1,029.4	104.9	924.5	260.9	23.8	237.1

^{1/} Separation by timber products and logging residues not available.

Table X. --Output of timber products and annual cut of live sawtimber and growing stock,
Mississippi Delta, 1954

Product	Output of timber products			Annual cut	
	Volume in standard units		Roundwood volume ^{1/} —	Sawtimber ^{1/} —	Growing stock ^{1/} —
	Standard units	Number			
			Thousand cubic feet	Thousand board feet	Thousand cubic feet
Sawlogs	MBM ^{2/}	547,300	84,400	565,400	123,300
Veneer logs and bolts	MBM ^{2/}	77,800	13,000	86,000	18,800
Cooperage logs and bolts	MBM ^{2/}	53,800	7,700	68,000	15,300
Pulpwood	Std. cords ^{3/}	252,000	19,000	31,200	17,400
Fuelwood	Std. cords ^{3/}	1,362,000	102,000	209,800	65,900
Piling ^{4/}	M linear feet	1,800	1,300	7,400	1,500
Posts	M pieces	6,400	4,200	10,700	3,700
Miscellaneous ^{5/}	M cu. ft.	12,700	12,700	50,900	15,000
Total			244,300	1,029,400	260,900

^{1/} Product break-down by hardwood and softwood not available. About 90 percent of total is hardwood.

^{2/} International 1/4-inch rule.

^{3/} Rough wood basis.

^{4/} Includes negligible amount of poles.

^{5/} Includes hewn ties, farm timbers, handle stock, and miscellaneous dimension stock.





JUNE 1957

FOREST SURVEY RELEASE 79

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FORESTS OF EAST OKLAHOMA, 1955-56

HIGHLIGHTS

Commercial forest area in east Oklahoma totals 5.6 million acres. Hardwood forest types predominate.

Growing stock volume totals 1.3 billion cubic feet, an average of 3 cords per acre.

Sawtimber volume of 4 billion board feet is equally divided between pine and hardwood. It averages 713 board feet per acre.

Timber growth is 107 million cubic feet annually. The 1955 cut was 29 million cubic feet. Growth of both pine and hardwood sawtimber exceeded the cut.

In the Ouachita Mountain region, softwood sawtimber volume is about the same as in 1936; softwood growing stock has increased by some 15 percent.



Forest Experiment Station, New Orleans, Louisiana

Forest Service, U. S. Dept. of Agriculture

FOREWORD

The Forest Survey of east Oklahoma is a part of the national inventory being conducted by the U. S. Forest Service. The purposes of the Survey are (1) to take inventory of the supply of standing timber and other forest products, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies.

The Southern Forest Experiment Station is responsible for the Survey in Oklahoma, Alabama, Arkansas, Louisiana, Mississippi, Tennessee, and Texas. Philip R. Wheeler, chief of the Division of Forest Economics, is in charge of the work.

Completion of field work in east Oklahoma was speeded by the cooperation of Dierks Forests, Inc., and the Oklahoma Division of Forestry. The assistance of these organizations is gratefully acknowledged.

PHILIP A. BRIEGLEB, Director
Southern Forest Experiment Station

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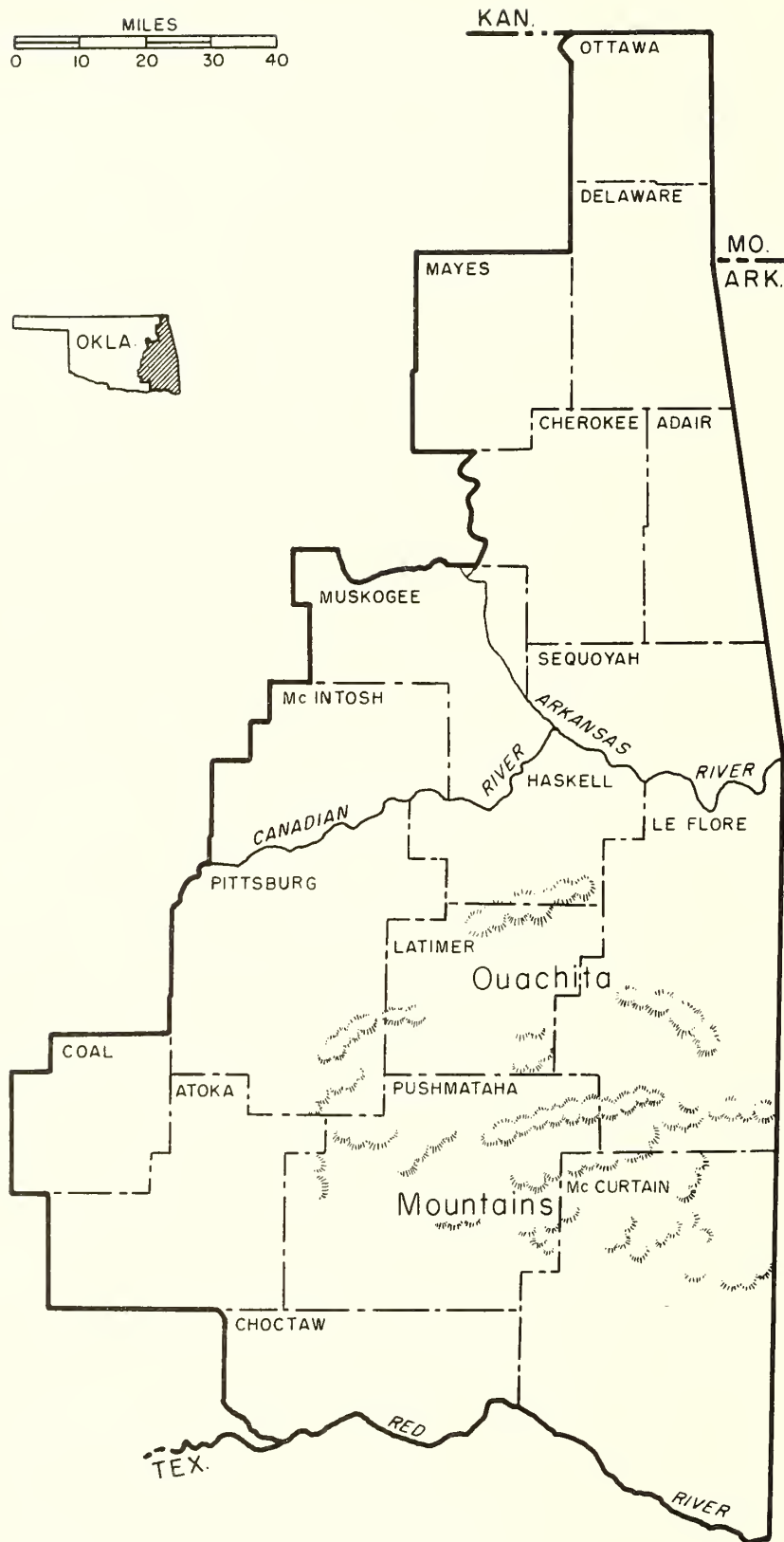


Figure 1.—Counties included in Forest Survey of east Oklahoma.

FORESTS OF EAST OKLAHOMA, 1955-56

This report summarizes the principal findings of that part of the nationwide Forest Survey conducted between 1955 and 1956 in 17 east Oklahoma counties. These counties encompass the main belt of commercial timberland in the State. Five of them, situated in the Ouachita Mountain region, were initially surveyed in 1936. The results of the earlier inventory are drawn upon to show changes in forest conditions in the 5-county area between 1936 and 1956.

The Forest Resource

Forest land predominates. --The 17 east Oklahoma counties shown in figure 1 have a land area of 9.8 million acres. Nearly 60 percent, or 5.7 million acres, is in forest. ^{1/} Practically all of the forest land is physically capable of producing timber of merchantable size, but the best forest sites are in the Ouachita Mountains and along water courses.

A small part of the forest area--less than 120,000 acres--is regarded as noncommercial, either because it is of extremely low inherent productivity or because it is in some form of public ownership that reserves the timber from cutting.

^{1/} Definition of terms will be found on page 14.

South of the Canadian River 64 percent of the land is forested. The most heavily timbered portion is in Latimer, Le Flore, Pushmataha, and McCurtain counties. These counties embrace most of the Ouachita Mountain system in the State; the mountains consist of steep parallel ridges formed by the faulting of thick sandstone layers. Too rough for agriculture in many sections, these four counties contain almost half of the total forest acreage in east Oklahoma. Here, too, is concentrated virtually all of the industrially owned forest land in the State and much of the publicly held forest.

The 8 counties north of the Canadian River, though 49-percent forested, are characterized by a largely agricultural economy. Timber is of secondary interest--most of the volume cut is for nonindustrial use such as fuelwood. The Ozark Plateau, which extends over most of the northeastern counties, is a region of moderate hills with deep, narrow valleys and numerous streams.

Of the commercial forest land in east Oklahoma, wood-using industries own 17 percent, farmers 29, and other private owners 43. The remaining 11 percent is held by public agencies. Much of the forest acreage classified as public consists of lands allotted in trust to individual Indians.

A notable feature of land ownership (as in many parts of the South) is the great number of individuals who own small tracts. More than 75 percent of the privately owned forest land is in holdings of less than 5,000 acres and most of it is in tracts of under 500 acres. With such an ownership pattern, it is apparent that decisions of small woodland owners have an important influence upon the timber resource.

Hardwood types widespread. --Seven out of every ten acres of commercial forest land are in hardwood cover types. Bottomland forests comprise a relatively small area, less than 370,000 acres. But in the uplands, forests characterized by various oaks and hickories form the prevailing cover on 3.7 million acres; black and post oaks together make up close to half of the net cubic volume in this upland type. Shortleaf pine is most extensive in the Ouachita Mountains and, in pure stands or in mixture with various hardwoods, occurs on 1.6 million acres (fig. 2).

Young stands most prevalent. --Stands of predominantly young timber are found on 88 percent of the forest land (fig. 3). About half of this acreage is in poletimber stands. The rest is chiefly seedling and sapling stands that have recently established themselves on abandoned fields or on heavily cut or severely burned areas.

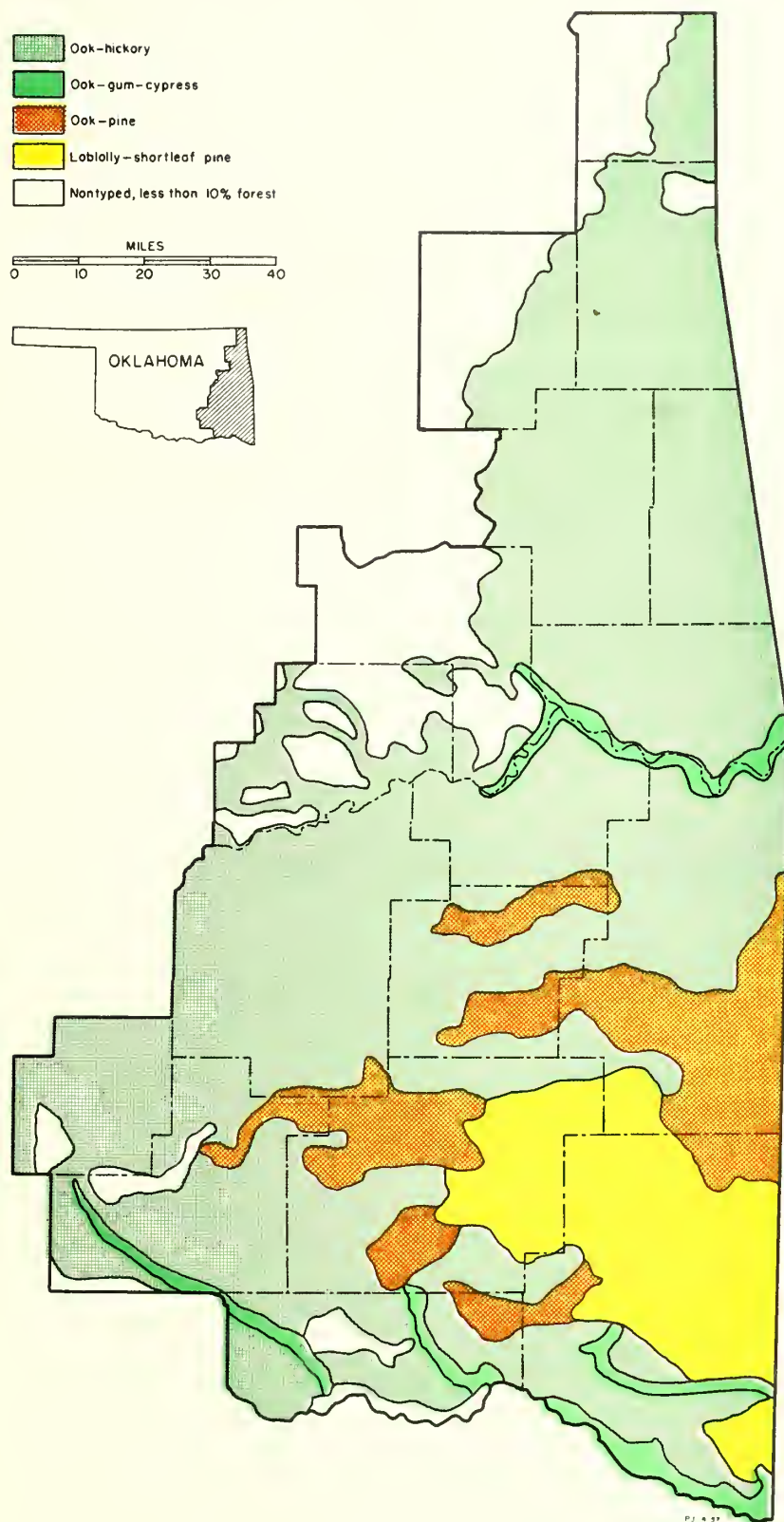


Figure 2.—Major forest types in east Oklahoma.

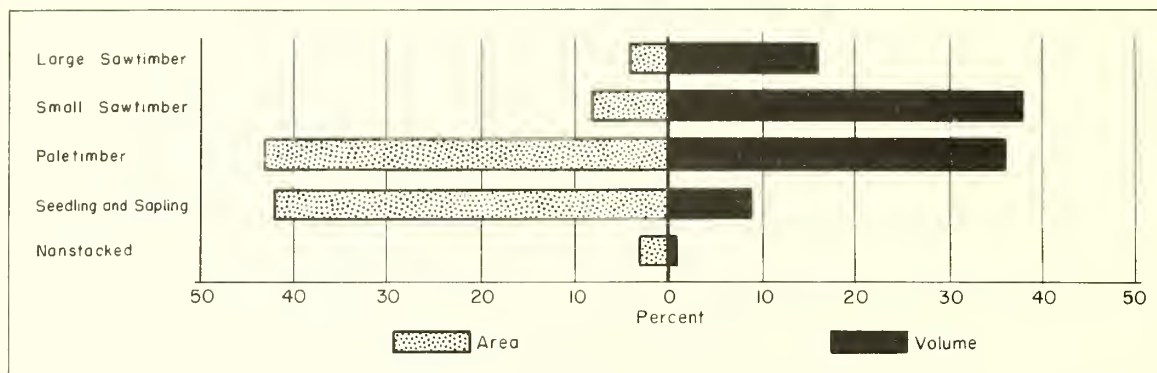


Figure 3.--Commercial forest area and sawtimber volume by stand-size class.

That stands supporting a minimum of 1,500 board feet per acre make up only 12 percent of the forest area reflects to a large extent the impact of past heavy use, as well as relatively low-quality sites. The loblolly-shortleaf pine type has the highest proportion of its area in sawtimber stands--36 percent. The widespread oak-hickory type runs mostly to small stands, only 3 percent of its area being in sawtimber. Regionally, the Ouachita Mountains embrace the great bulk of the sawtimber acreage--over 80 percent.

Nearly half the forest well stocked.--Tree stocking, as measured by the Forest Survey, indicates the extent to which growing space is effectively utilized by sound, well-formed trees of commercial species. The forests of east Oklahoma are comparable in this respect to the adjacent forest regions of Arkansas.

Close to half of the commercial forest land has at least 70 percent of full stocking. As is evident from the preceding discussion, this does not necessarily indicate a heavy stand of merchantable timber, but rather implies that total stocking of trees--both small and large--is good. Another 33 percent of the forest is medium stocked. On the remaining 1.2 million acres stocking ranges from none to 39 percent.

More effective use of growing space is impeded by large numbers of cull hardwoods--one in every two hardwoods of poletimber size or larger is a cull. Though stocking is already low on many areas, little will be gained by leaving this accumulation of cull trees in the woods. Much of the sound volume in cull hardwoods could be used for low-value items such as fuelwood or farm fence posts if demand were sufficient. But the quantity is so large and the problem so widespread that invest-

ment in noncommercial deadening appears to be the only effective way of reducing this overburden and making more growing space available for desired species.

Growing stock exceeds billion cubic feet. --East Oklahoma's commercial forest land supports a growing stock of 1.3 billion cubic feet, an average of 3 cords per acre. Nearly two-fifths of the total is softwood, which is heavily concentrated in the Ouachitas.

Shortleaf pine makes up 96 percent of the softwood volume. Loblolly pine and eastern redcedar account for the rest. Among hardwoods, post oak leads with 27 percent of the volume. All other oaks add up to 28 percent, hickory to 17 percent, and other hardwoods to 28 percent.

Not included in the growing-stock estimate is an additional 864 million cubic feet of sound wood volume that is largely unmerchantable. Of this, 18 percent is in hardwood limbs, 81 percent is in cull trees, and the remainder is in salvable dead trees.

Sawtimber volume 4 billion board feet. --The volume of sawtimber in east Oklahoma now stands at 4 billion board feet, equally divided between softwood and hardwood (fig. 4).

The prevailing small size of hardwood sawtimber trees limits the use that industry can make of them (table 1). To illustrate, 48 percent of the 2 billion board feet of hardwood

Table 1. --Sawtimber volume by log grade and tree diameter, 1955-56

Species group and d. b. h. class (inches)	All grades	Grade 1	Grade 2	Lower grades
----- Million board feet -----				
Softwood:				
10 to 12	1,019.0	...	15.7	1,003.3
14 to 18	912.5	...	229.5	683.0
20 and up	61.2	8.6	14.3	38.3
Total	<u>1,992.7</u>	<u>8.6</u>	<u>259.5</u>	<u>1,724.6</u>
Hardwood:				
12	520.6	...	...	520.6
14 to 18	1,040.0	3.0	165.9	871.1
20 and up	462.8	91.3	132.1	239.4
Total	<u>2,023.4</u>	<u>94.3</u>	<u>298.0</u>	<u>1,631.1</u>
All classes	4,016.1	102.9	557.5	3,355.7

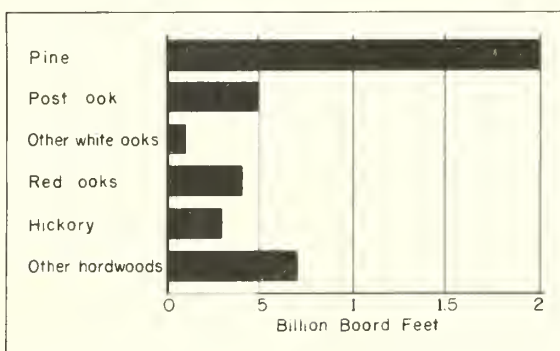


Figure 4. --Sawtimber volume by species.

sawtimber is in trees of the 12- to 14-inch diameter classes. Such trees are too small to yield significant amounts of Grade-2 and better logs--that is, logs that will cut out a substantial proportion of No. 1 Common and Better lumber. This lack of quality restricts the utility of these trees to low-value products such as heavy structural material, crating, crossties, and farm lumber. But many of them can improve in grade and utility if permitted to grow to larger sizes. In hardwoods 20 inches and larger in diameter, for example, nearly half of the volume is in Grade-2 and better logs.

Most of the softwood also grades low, mainly because the trees are small. But in softwoods low grade does not generally prevent profitable cutting, although it limits the output of quality lumber and returns to the timber grower.

Net annual growth 107 million cubic feet; 1955 timber cut 29 million cubic feet.--Fire, insects, disease, and other natural agencies annually kill about 15 million cubic feet of timber in east Oklahoma, of which 37 million board feet is sawtimber. While precise information on mortality by causal agent is not available, it appears that much mortality is drought-induced, especially among red oaks.

When losses from all causes are allowed for, net growth in east Oklahoma forests amounts to 107 million cubic feet of timber annually, including 245 million board feet of sawtimber. In 1955, when the latest cutting statistics were compiled, logging removed 29 million cubic feet of timber, including 115 million board feet of sawtimber. Much of the uncut annual increment is on hardwoods that are too small or too poor in quality to be of commercial use at present.

Net growth of both pine and hardwood sawtimber exceeded the 1955 cut. For sawtimber trees alone, net growth averages some 44 board feet per acre. But in softwood types (chiefly shortleaf pine) net growth is 130 board feet per acre, as compared to 10 board feet in hardwood types.

The notably small board-foot growth in hardwood types is no doubt partly attributable to the relatively low inherent productivity of these sites. But it is an indication, too, that hardwoods of sawtimber size are comparatively few in number. Only 5 percent of the commercial forest acreage in hardwood types has sufficient sawtimber trees to make up 1,500 board feet per acre. The rest of the hardwood acreage supports stands of smaller size that contain few, if any, merchantable

trees. If protected from fire and premature harvesting, however, these young-growth areas could contribute to a renovated sawtimber resource.

It is reasonable to assume that with the application of minimum forestry practices the net annual increment of growing stock in east Oklahoma might eventually be raised from 19 cubic feet per acre to at least 40 cubic feet. Eliminating cull hardwoods alone, for example, would come close to doubling the growing space available for thrifty timber. Under intensive management an even higher average growth is probable. Attaining an increased level of growth would, in the long run, enable the forests to contribute more fully to the local economy.

Sawlogs are chief industrial timber use. -- The output of timber commodities in east Oklahoma is about equally divided between softwood and hardwood. Fuelwood and sawlogs each account for some two-fifths of the total production. Fence posts, pulpwood, veneer logs, cooperage bolts, handle stock, and poles make up most of the rest (fig. 5).

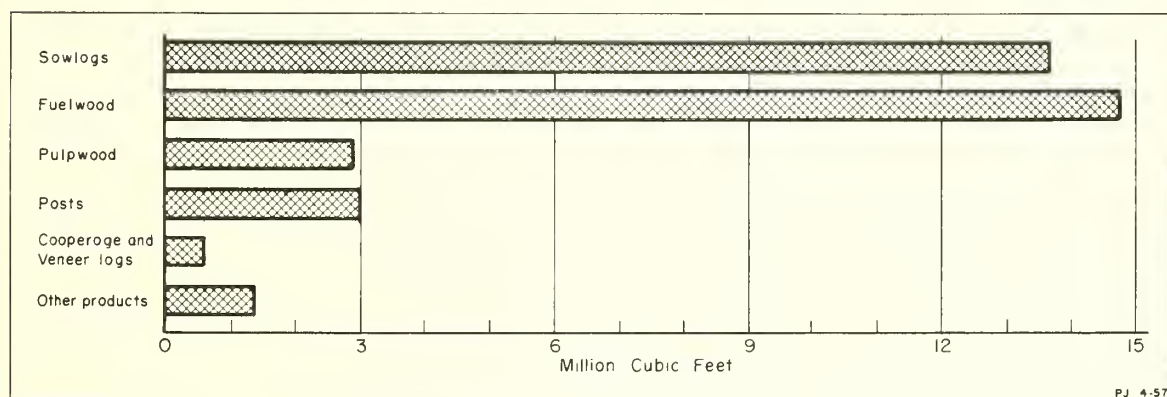


Figure 5. --Output of timber products, 1955.

The bulk of the lumber is sawn at 5 mills, each cutting more than 3 million board feet annually. Though a close count of smaller mills is not available, it is estimated that there are roughly 80. In addition, east Oklahoma's primary forest industries include one semichemical woodpulp mill of 60 tons daily capacity; one tight cooperage plant; 4 handle-stock mills; one charcoal plant; and 12 wood-preserving plants. Most of the preserving plants are of the nonpressure type and treat largely pine fence posts (fig. 6).

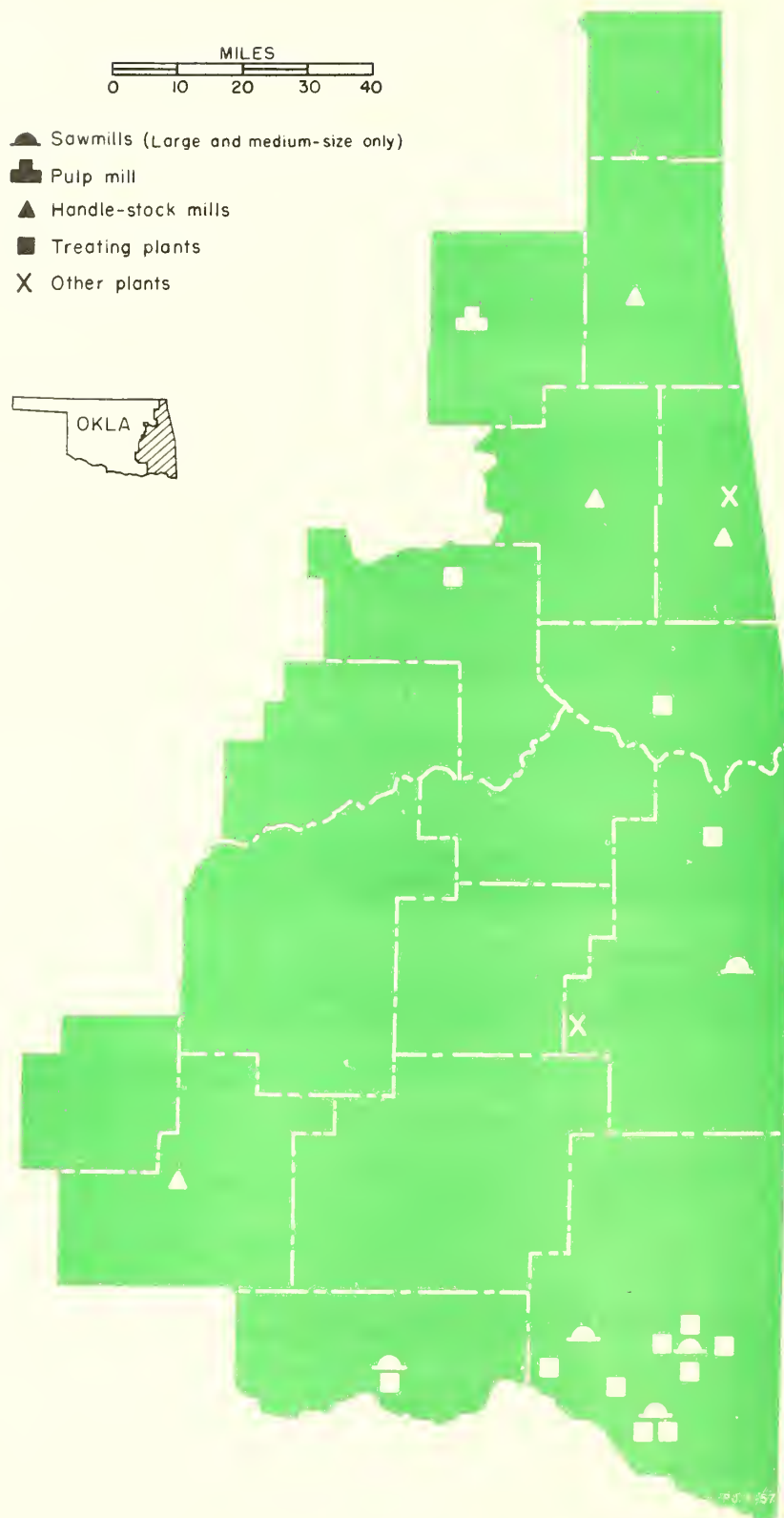


Figure 6.—Location of primary wood-using plants in east Oklahoma,1955

Timber Trends in the Ouachitas

Five counties--Haskell, Latimer, Le Flore, McCurtain, and Pushmataha--in the Ouachita Mountain region were initially inventoried in 1936. Thus, for this portion of Oklahoma, two Forest Surveys are available from which to judge trends in the timber resource. It should be emphasized that trends in the Ouachitas are not indicators of resource changes elsewhere in Oklahoma--both the prevailing timber types and pattern of land ownership differ considerably from the rest of the commercial timber belt. In the 5-county area, shortleaf pine forms the prevailing forest cover; elsewhere upland hardwoods predominate. The 5 counties have a sizable area in national forest and industrial holdings; elsewhere such ownership is negligible.

The resurveyed area is 72 percent forested. Commercial forest land totals nearly 3 million acres, virtually the same as in 1936. The volume of sawtimber is about 3 billion board feet, of which two-thirds is pine. It averages 1,030 board feet per acre, considerably more than the 380 found in the forests over the rest of east Oklahoma.

It will be noted in figures 7 and 8 that numbers of trees by

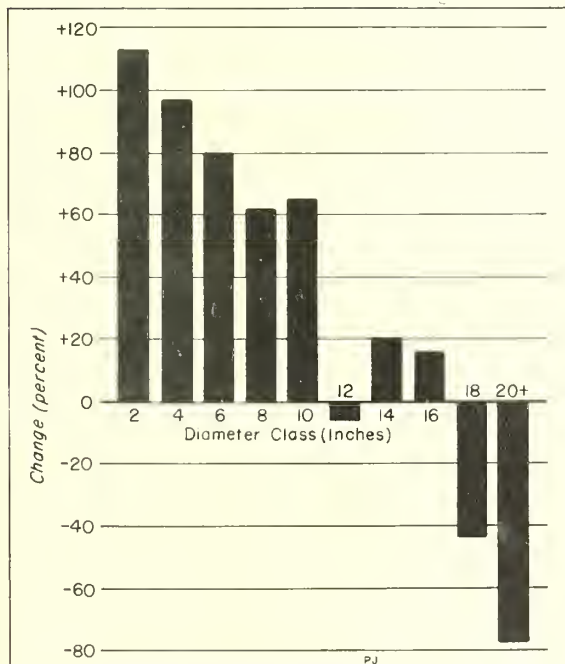


Figure 8.--Change in number of softwood trees between Surveys.

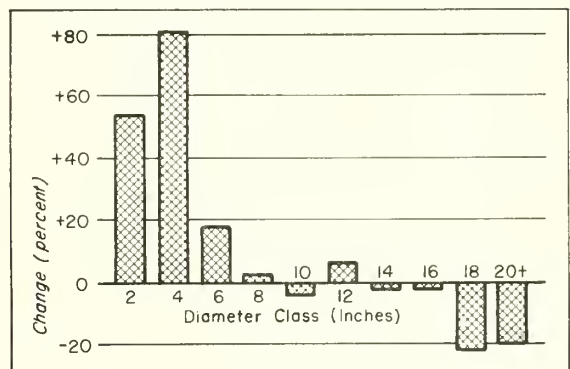


Figure 7.--Change in number of hardwood trees between Surveys.

diameter class changed greatly during the interval between Surveys. Large hardwoods (mostly oaks) declined in number but total hardwood volume is about the same as in 1936. More significant, however, are the indicated changes for softwoods that denote the gradual liquidation of the old-growth pine and a build-up in second-growth volume.

Between 1936 and 1956 there was a decline of some 80 percent in the volume of softwoods (chiefly old-growth pine) 20 inches and larger in diameter. In 1936, trees of these sizes made up about 14 percent of the softwood sawtimber volume. By 1956, only 3 percent was in large trees.

In the middle sizes--i. e., down to 10 inches--numbers of softwoods have increased noticeably in most classes; a major portion of this timber is found on national forest land and industrial holdings.

In smaller diameters softwood increases have been marked--some 100 percent in 2- to 4-inch trees, 70 percent in 6- to 8-inch trees. Despite the increase in percentage of small trees, actual numbers are somewhat less than might be expected. This appears to be due partly to a deficiency of younger age classes at the time of the initial Survey and partly to widespread commercial fence-post cutting in the 4- to 8-inch diameters during the postwar period.

The net effect of changes in stand structure is that the 5-county area has about as much softwood sawtimber today as 20 years ago. Too, volume of softwood growing stock (which includes pines down to 5.0 inches in diameter) has increased by 15 percent.

The build-up in softwood volume reflects to a considerable extent the fact that the managers of the industrial and national forest lands improved the stocking of shortleaf pine. These holdings, though embracing only two-fifths of the commercial forest acreage, support four-fifths of the softwood volume.

Enhancing Forest Productivity

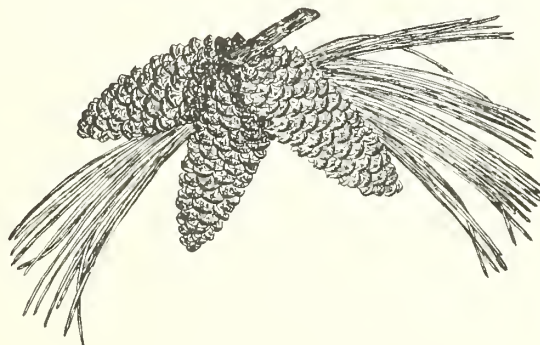
Development of east Oklahoma's timber resources to greater productivity is no small task. Outside of the Ouachita Mountains, present forest stands are characterized by very low levels of growth and stocking of desirable trees. Increased needs for wood by the expanding pulp industry in neighboring States may stimulate wider application of constructive forestry measures that would contribute to increasing future timber supplies. Convincing small landowners of the growth potential of their woodlands is basic to such forward movement.

Of the 5.6 million commercial forest acres in east Oklahoma, the Forest Survey classified 3.7 million as pine sites. This includes all of the forested uplands where pine is present or where there is

evidence that pine was present formerly. More than 2 million acres of pine sites have neither adequate pine stocking nor an adequate pine seed source; planting or direct seeding to pine will be required to make them fully productive. The rest of the pine sites either have sufficient stocking or else have enough seed trees to assure eventual natural restocking to pine. The Survey found, too, that nearly 1.5 million acres of pine sites are rather heavily encumbered with cull hardwoods--that is, a third or more of each acre is dominated by culls.

Adequate fire protection is an essential first step to better forest management. Some 3.9 million acres of forest land, largely in the Ouachitas, are presently under organized protection.

It is evident that greatly increased emphasis on remedial measures such as cull hardwood control, restocking idle acres, and fire protection is needed in order to raise the productivity of the forests of east Oklahoma. This need looms largest on the 4 million acres of commercial forest in private nonindustrial holdings.



Accuracy of the Survey

The 1955-56 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurements of sample plots. The sample plots were taken in pairs at and near the intersections of a grid of lines spaced 4.24 miles apart.

Accuracy of the estimates may be affected by two types of errors. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting or estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data indicates a sampling error of plus or minus 0.7 percent for the estimate of total forest area, 4.2 percent for total cubic-foot volume, and 5.7 percent for total board-foot volume. As the acreage and volume totals for east Oklahoma are broken down by forest type, species, county, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable two chances out of three.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Sampling error	Volume sampled	Sampling error	Volume sampled	Sampling error
<u>M acres</u>	<u>Percent</u>	<u>Million cu. ft.</u>	<u>Percent</u>	<u>Million bd. ft.</u>	<u>Percent</u>
6,000	0.7	1,000	4.8	4,000	5.7
4,000	.8	500	6.8	2,000	8.1
2,000	1.2	200	10.8	500	16.1
500	2.4	100	15.2	300	20.9
100	5.3	50	21.5	200	25.5

County data on timber volume have been included in the report to permit grouping of counties into any desired combinations. For this purpose, groups of counties containing a million acres or more of forest land are recommended.

Growth estimates were derived from radial-growth measurements and mortality data taken on sample plots. No attempt was made to calculate sampling error in these estimates.

Estimates of annual cut are based on studies conducted during the period of forest inventory. The sampling error to which the total cubic-foot estimate of annual cut is liable, on a probability of two chances out of three, is plus or minus 5.6 percent.

In computing the changes that took place between 1935-36 and 1955-56 in the Ouachita Mountain region, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before the change was computed.

Definition of Terms

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous is short-leaf pine (Pinus echinata).

Hardwoods. Broadleaved species, of which the most numerous are the oaks (Quercus spp.).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Loblolly-shortleaf pine. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. (Common associates include oak, hickory, and gum.)

Oak-pine. Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25 - 49 percent of the stand. (Common associates include gum and hickory.)

Oak-hickory. Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include elm, maple, and black walnut.)

Oak-gum-cypress. Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood. Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. (Common associates include willow, sycamore, beech, and maple.)

Class of Timber

Sawtimber trees. Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.

- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees. Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees. Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees. Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees. Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees. Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, but which do not meet the specifications for large sawtimber.

Poletimber. Stands failing to meet the sawtimber stand specification, 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.

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock. Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside 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 inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d.b.h.

Growth

Net annual growth of sawtimber. The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Mortality

Annual mortality. The net volume, excluding salvage, removed from live sawtimber and from growing stock during a specified year through death from natural causes.

Cut

Annual cut of sawtimber. The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Annual cut of growing stock. The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Output

Timber products output. The volume of timber products cut from both growing stock and other sources.

Softwood Log Grades ^{2/}

Softwood log grades are based on the value yield per unit outturn of yard lumber. The value of lumber yield may be expressed relative to the value of No. 2 Common lumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Common lumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber.^{3/} Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade-2 or better logs are present per acre.

Poor. A stand in which fewer than four grade-2 or better logs are present per acre.

^{2/} For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Experiment Station, 18 pp. 1953.

^{3/} For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory D1737. 1949.

Detailed Tables for East Oklahoma

The following tables present detailed statistics on the forests of 17 east Oklahoma counties. Included counties are shown in figure 1, on page ii.

Table 2 . -- Forest and nonforest land, 1955-56

Land use	Commercial forest	
	<u>Thousand acres</u>	<u>Percent</u>
Forest:		
Commercial	5,632.0	57.5
Noncommercial:		
Productive-reserved	35.8	.4
Unproductive	<u>81.2</u>	<u>.8</u>
Total forest	<u>5,749.0</u>	<u>58.7</u>
Nonforest ^{1/}	<u>4,049.4</u>	<u>41.3</u>
All land	9,798.4	100.0

^{1/} Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 3 . -- Commercial forest land by class of ownership, 1955-56

Class of ownership	Commercial forest	
	<u>Thousand acres</u>	<u>Percent</u>
Private:		
Farm	1,636.9	29.1
Other	<u>3,361.8</u>	<u>59.7</u>
Total private	<u>4,998.7</u>	<u>88.8</u>
Public:		
National forest ^{1/}	212.5	3.8
Other federal	357.6	6.3
State ^{2/}	<u>63.2</u>	<u>1.1</u>
Total public	<u>633.3</u>	<u>11.2</u>
All ownerships	5,632.0	100.0

^{1/} Includes other lands administered by the Forest Service.

^{2/} County-owned land included with State.

Table 4.--Land area and commercial forest by county, 1955-56

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Adair	364.2	251.0	68.9
Atoka	634.9	365.1	57.5
Cherokee	500.5	348.7	69.7
Choctaw	501.8	254.3	50.7
Coal	336.6	124.6	37.0
Delaware	460.8	296.6	64.4
Haskell	393.0	182.8	46.5
Latimer	471.7	351.5	74.5
Le Flore	1,008.0	650.9	64.6
McCurtain	1,186.5	917.8	77.4
McIntosh	457.6	145.7	31.8
Mayes	432.6	149.3	34.5
Muskogee	524.8	120.9	23.0
Ottawa	295.0	86.9	29.5
Pittsburg	869.8	412.7	47.4
Pushmataha	910.7	748.2	82.2
Sequoyah	449.9	225.0	50.0
All counties	9,798.4	5,632.0	57.5

Table 5.--Commercial forest land by degree of tree stocking and forest type, 1955-56

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked
- - - - -Thousand acres- - - - -					
Softwood types:					
Loblolly-shortleaf pine	1,061.6	828.1	188.4	45.1	...
Oak-pine	517.1	284.7	149.3	83.1	...
Total	<u>1,578.7</u>	<u>1,112.8</u>	<u>337.7</u>	<u>128.2</u>	<u>...</u>
Hardwood types:					
Oak-hickory	3,686.0	1,265.5	1,443.4	903.8	73.3
Elm-ash-cottonwood	73.1	56.9	5.2	11.0	...
Oak-gum-cypress	294.2	100.2	97.1	86.5	10.4
Total	<u>4,053.3</u>	<u>1,422.6</u>	<u>1,545.7</u>	<u>1,001.3</u>	<u>83.7</u>
All types	5,632.0	2,535.4	1,883.4	1,129.5	83.7

Table 6. --Commercial forest land by stand size and forest type, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
- - - - - Thousand acres - - - - -						
Softwood types:						
Loblolly-shortleaf pine	1,061.6	54.9	323.4	494.0	183.4	5.9
Oak-pine	517.1	11.2	45.9	240.4	219.6	...
Total	<u>1,578.7</u>	<u>66.1</u>	<u>369.3</u>	<u>734.4</u>	<u>403.0</u>	<u>5.9</u>
Hardwood types:						
Oak-hickory	3,686.0	57.7	43.9	1,522.2	1,948.5	113.7
Elm-ash-cottonwood	73.1	31.9	11.7	24.0	5.5	...
Oak-gum-cypress	294.2	47.6	22.3	140.3	43.9	40.1
Total	<u>4,053.3</u>	<u>137.2</u>	<u>77.9</u>	<u>1,686.5</u>	<u>1,997.9</u>	<u>153.8</u>
All types	5,632.0	203.3	447.2	2,420.9	2,400.9	159.7

Table 7. --Area of sawtimber stands by stand quality and forest type, 1955-56

Forest type	All qualities	Fair or better	Poor
- - - - - Thousand acres - - - - -			
Softwood types:			
Loblolly-shortleaf pine	378.3	233.3	145.0
Oak-pine	57.1	22.0	35.1
Total	<u>435.4</u>	<u>255.3</u>	<u>180.1</u>
Hardwood types:			
Oak-hickory	101.6	32.8	68.8
Elm-ash-cottonwood	43.6	38.4	5.2
Oak-gum-cypress	69.9	47.6	22.3
Total	<u>215.1</u>	<u>118.8</u>	<u>96.3</u>
All types	650.5	374.1	276.4

Table 8. --Basal area per acre of growing stock and cull trees by forest-type group, 1955-56

Tree class	All types	Softwood	Hardwood
- - - - - Square feet - - - - -			
2- and 4-inch good trees ^{1/}	7.3	11.7	5.5
Growing stock	20.2	30.1	16.0
2- and 4-inch poor trees	4.7	3.5	5.2
Cull trees	<u>17.1</u>	<u>10.7</u>	<u>19.8</u>
All trees	49.3	56.0	46.5

^{1/} Includes only sound, well-formed trees.

Table 9. --Total volume by class of timber and species, 1955-56

Species	All timber ^{2/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole- timber trees		
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
Shortleaf pine ^{1/}	501.6	494.6	339.7	32.9	122.0	...	7.0
Red oaks	311.8	185.0	72.0	26.9	86.1	34.8	92.0
White oaks	583.7	268.3	97.4	28.0	142.9	62.7	252.7
Hickory	234.7	137.7	57.2	18.1	62.4	18.0	79.0
Sweetgum and blackgum	79.7	58.1	28.0	8.8	21.3	3.3	18.3
Other hardwoods	465.0	172.5	85.3	25.2	62.0	39.0	253.5
All species	2,176.5	1,316.2	679.6	139.9	496.7	157.8	702.5

^{1/} Includes 20.3 million cubic feet of loblolly pine and 1.9 million cubic feet of redcedar.

^{2/} Sound volume in dead trees considered salvable is not included. This volume totals 3.8 million cubic feet.

Table 10. --Total volume by class of timber and species, 1955-56

Species	All timber ^{2/}	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole- timber trees		
			Sawlog portions	Upper stems			
----- Thousand cords -----							
Shortleaf pine ^{1/}	6,688	6,595	4,530	438	1,627	...	93
Red oaks	4,654	2,761	1,075	401	1,285	519	1,374
White oaks	8,712	4,005	1,454	418	2,133	936	3,771
Hickory	3,503	2,056	853	271	932	269	1,178
Sweetgum and blackgum	1,189	867	419	131	317	49	273
Other hardwoods	6,940	2,574	1,273	376	925	581	3,785
All species	31,686	18,858	9,604	2,035	7,219	2,354	10,474

^{1/} Includes 271 thousand cords of loblolly pine and 25 thousand cords of redcedar.

^{2/} Sound volume in dead trees considered salvable is not included. This volume totals 57 thousand cords.

Table 11. --Growing stock by species and stand size, 1955-56

Species	All stand sizes	Large saw- timber	Small saw- timber	Pole- timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million cubic feet -----						
Shortleaf pine ^{2/}	494.6	32.6	275.1	156.7	24.9	5.3
Red oaks	185.0	25.3	21.2	121.6	16.0	.9
White oaks	268.3	10.9	41.1	145.0	68.6	2.7
Hickory	137.7	25.5	13.2	87.6	11.4	...
Sweetgum and blackgum	58.1	9.0	16.8	31.7	.6	...
Other hardwoods	172.5	57.4	28.8	73.3	10.0	3.0
All species	1,316.2	160.7	396.2	615.9	131.5	11.9

^{1/} Includes areas not classified elsewhere.

^{2/} Includes 20.3 million cubic feet of loblolly pine and 1.9 million cubic feet of redcedar.

Table 12. --Average volume per acre of growing stock by stand size and forest type, 1955-56

Forest type	All stand sizes	Large saw- timber	Small saw- timber	Pole- timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Cubic feet -----						
Softwood types:						
Loblolly-shortleaf pine	513	889	946	329	122	(2/)
Oak-pine	188	(2/)	691	202	61	...
Average	407	788	914	288	89	(2/)
Hardwood types:						
Oak-hickory	137	480	599	233	48	37
Elm-ash-cottonwood	929	1,194	1,778	375	...	...
Oak-gum-cypress	344	899	520	297	64	60
Average	166	792	754	240	48	43
All types	234	790	886	254	55	75

^{1/} Includes areas not classified elsewhere.^{2/} Sample too small to be reliable.

Table 13. --Sawtimber volume and growing stock by species, 1955-56

Species	Growing stock	Sawtimber
	Million cubic feet	Million board feet
Softwood:		
Shortleaf pine	472.4	1,885.1
Loblolly pine	20.3	107.6
Redcedar	1.9	...
Total	494.6	1,992.7
Hardwood:		
Black and southern red oaks	137.5	302.9
Cherrybark, Shumard and northern red oaks	28.4	80.4
Water oaks	19.1	62.1
White oak (<u>Q. alba</u>)	45.7	101.8
Post oak	220.4	468.6
Other white oaks	2.2	3.8
Pecan	23.8	94.0
Other hickories	113.9	246.4
Sweetgum	36.0	78.5
Blackgum	22.1	84.3
Elm	63.8	158.6
Ash	30.0	74.1
Hackberry	19.1	50.6
Other hardwoods	59.6	217.3
Total	821.6	2,023.4
All species	1,316.2	4,016.1

Table 14. --Distribution of growing stock by species within each forest type, 1955-56

Species	All types	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Elm-ash-cottonwood	Oak-gum-cypress
----- Percent -----						
Softwood:						
Shortleaf pine	35.9	79.5	31.6	1.7	...	...
Loblolly pine	1.6	3.7	...	...	...	...
Redcedar	.1	.1	.3	.2	...	...
Total	37.6	83.3	31.9	1.9	...	...
Hardwood:						
Black and southern red oaks	10.4	1.8	7.8	23.7	...	...
Cherrybark, Shumard, and northern red oaks	2.2	.8	1.2	3.7	...	4.0
Water oaks	1.5	.3	...	1.3	3.2	8.7
Post oak	16.7	5.8	30.6	31.1	...	2.9
Other white oaks	3.6	3.2	5.4	4.7	...	1.5
Pecan	1.8	...	...	...	9.3	17.3
Other hickories	8.7	1.9	10.8	17.9	.9	2.1
Sweetgum	2.7	1.5	2.0	3.6	3.2	5.3
Black and tupelo gums	1.7	1.2	7.6	1.4	...	.8
Elm	4.8	.2	2.7	6.7	8.4	20.4
Ash	2.3	...	...	1.8	9.3	14.2
Hackberry	1.5	...	...	.6	1.2	15.2
Other hardwoods	4.5	...	...	1.6	64.5	7.6
Total	62.4	16.7	68.1	98.1	100.0	100.0
All species	100.0	100.0	100.0	100.0	100.0	100.0

Table 15. --Growing stock volume by species and county, 1955-56

County	All species	Softwood			Hardwood			
		Total	Southern yellow pines	Other softwoods	Total	Soft hardwoods	Oaks	Other hard hardwoods
----- Million cubic feet -----								
Adair	39.0	4.1	4.1	...	34.9	1.6	27.3	6.0
Atoka	45.7	2.1	2.1	...	43.6	...	30.2	13.4
Cherokee	50.3	5.7	5.7	...	44.6	1.6	30.6	12.4
Choctaw	97.4	...	...	...	97.4	21.3	38.2	37.9
Coal	21.5	...	...	...	21.5	...	5.3	16.2
Delaware	35.3	.3	.3	...	35.0	.6	26.8	7.6
Haskell	45.5	1.1	1.1	...	44.4	21.6	12.6	10.2
Latimer	42.4	17.6	17.6	...	24.8	...	18.7	6.1
Le Flore	166.4	68.5	67.4	1.1	97.9	21.1	48.2	28.6
McCurtain	452.6	279.2	279.2	...	173.4	24.9	93.6	54.9
McIntosh	7.8	...	...	...	7.8	...	4.4	3.4
Mayes	22.6	.7	.7	...	21.9	...	16.7	5.2
Muskogee	29.1	...	...	...	29.1	2.0	7.3	19.8
Ottawa	11.1	...	...	...	11.1	...	6.2	4.9
Pittsburg	28.6	1.2	.7	.5	27.4	...	20.7	6.7
Pushmataha	183.6	111.5	111.2	.3	72.1	5.2	46.8	20.1
Sequoyah	37.3	2.6	2.6	...	34.7	1.7	19.7	13.3
Total	1, 316.2	494.6	492.7	1.9	821.6	101.6	453.3	266.7

Table 16. --Sawtimber volume by species and county, 1955-56

County	All species	Softwood			Hardwood			
		Total	Southern yellow pines	Other softwoods	Total	Soft hardwoods	Oaks	Other hard hardwoods
----- Million board feet -----								
Adair	106.3	12.8	12.8	...	93.5	7.3	61.2	25.0
Atoka	105.2	7.8	7.8	...	97.4	...	66.4	31.0
Cherokee	118.5	16.7	16.7	...	101.8	8.5	48.9	44.4
Choctaw	242.5	...	...	...	242.5	64.6	81.0	96.9
Coal	75.0	...	...	...	75.0	...	17.7	57.3
Delaware	60.0	...	...	...	60.0	...	50.5	9.5
Haskell	149.4	3.4	3.4	...	146.0	85.6	30.7	29.7
Latimer	98.7	42.4	42.4	...	56.3	...	48.5	7.8
Le Flore	532.4	298.0	298.0	...	234.4	72.7	112.1	49.6
McCurtain	1,560.8	1,147.2	1,147.2	...	413.6	69.2	210.1	134.3
McIntosh	15.6	...	...	...	15.6	...	7.9	7.7
Mayes	78.2	3.2	3.2	...	75.0	...	57.3	17.7
Muskogee	86.7	...	...	...	86.7	...	24.8	61.9
Ottawa	29.6	...	...	...	29.6	...	11.1	18.5
Pittsburg	44.8	3.2	3.2	...	41.6	...	35.7	5.9
Pushmataha	608.1	452.8	452.8	...	155.3	13.5	96.1	45.7
Sequoyah	104.3	5.2	5.2	...	99.1	3.6	59.6	35.9
Total	4,016.1	1,992.7	1,992.7	...	2,023.4	325.0	1,019.6	678.8

Table 17. --Sawtimber volume by species and tree diameter, 1955-56

Species	All diameter classes	10-12 inches ^{1/}	14-18 inches	20-24 inches	26 inches and up
----- Million board feet -----					
Shortleaf pine ^{2/}	1,992.7	1,019.0	912.5	61.2	...
Red oaks	445.4	131.1	214.7	67.7	31.9
White oaks	574.2	180.4	276.1	92.4	25.3
Hickory	340.4	73.8	179.6	56.4	30.6
Sweetgum and blackgum	162.8	50.6	91.2	10.9	10.1
Other hardwoods	500.6	84.7	278.4	94.7	42.8
All species	4,016.1	1,539.6	1,952.5	383.3	140.7

^{1/} Hardwood sawtimber volume was not tallied in trees under 11.0 inches d. b. h.^{2/} Includes 107.6 million board feet of loblolly pine.

Table 18. --Sawtimber volume by species and stand size, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million board feet -----						
Shortleaf pine ^{2/}	1,992.7	183.8	1,181.1	501.6	96.9	29.3
Red oaks	445.4	88.0	61.5	250.0	45.9	...
White oaks	574.2	28.1	111.4	252.2	170.8	11.7
Hickory	340.4	94.2	35.4	188.2	22.6	...
Sweetgum and blackgum	162.8	33.9	53.6	72.8	2.5	...
Other hardwoods	500.6	207.3	110.9	161.5	17.0	3.9
All species	4,016.1	635.3	1,553.9	1,426.3	355.7	44.9

^{1/} Includes areas not classified elsewhere.^{2/} Includes 107.6 million board feet of loblolly pine.

Table 19. --Average sawtimber volume per acre by stand size and forest type, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Board feet -----						
Softwood types:						
Loblolly-shortleaf pine	1,966	4,071	3,833	1,008	528	(^{2/})
Oak-pine	516	(^{2/})	2,525	488	128	...
Average	1,491	3,467	3,670	838	310	(^{2/})
Hardwood types:						
Oak-hickory	294	1,818	1,620	446	113	80
Elm-ash-cottonwood	3,373	4,091	7,385	(^{2/})	...	...
Oak-gum-cypress	1,128	3,586	1,834	728	260	165
Average	410	2,960	2,547	481	116	102
All types	713	3,125	3,475	589	148	281

^{1/} Includes areas not classified elsewhere.^{2/} Sample too small to be reliable.

Table 20. --Hardwood sawtimber volume by log class, 1955-56

Log class	Hardwood sawtimber
----- Million board feet -----	
Standard lumber logs:	
Grade 1	94.3
Grade 2	298.0
Grade 3	1,368.0
Total	1,760.3
Tie and timber logs	263.1
All classes	2,023.4

Table 21. --Softwood sawtimber volume by log grade, 1955-56

Log grade	Softwood sawtimber
----- Million board feet -----	
Grade 1	8.6
Grade 2	259.5
Grade 3	977.3
Grade 4	747.3
All grades	1,992.7

Table 22. --Net annual growth of sawtimber and growing stock, by species group and class of timber, 1955

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
- - - Million cubic feet - - - - - Million board feet - - -						
Sawtimber trees	40.5	23.7	16.8	245.1	153.0	92.1
Poletimber trees	66.6	17.0	49.6	...	...	...
Total	107.1	40.7	66.4	245.1	153.0	92.1

Table 23. --Net annual growth per acre of sawtimber and growing stock, by forest-type and stand-size group, 1955

Stand-size group	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
- - - - Cubic feet - - - - - Board feet - - - - -						
Sawtimber	58	69	35	213	289	59
Poletimber	24	54	11	36	89	13
Other stand sizes	4	17	2	7	33	3
All stands	19	49	8	44	130	10

Table 24. --Annual cut of sawtimber and growing stock, by species group and class of timber, 1955

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
Million cubic feet Million board feet						
Sawtimber trees	22.9	12.8	10.1	114.7	68.1	46.6
Poletimber trees	6.0	3.8	2.2	...	...	...
Total	28.9	16.6	12.3	114.7	68.1	46.6

Table 25. --Annual cut of sawtimber and growing stock by species, 1955

Species	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.
Pines ^{1/}	16.6	68.1
Red oaks	4.2	15.8
White oaks	5.4	20.7
Other hard hardwoods	1.5	4.9
Sweetgum	1.0	5.2
Blackgum	.1	...
Other soft hardwoods	.1	...
All species	28.9	114.7

^{1/} Includes a negligible amount of redcedar.

Tables for the Ouachita Region

The following tables present statistics on the forests of the Ouachita Mountain region of east Oklahoma. The counties included are: Haskell, Latimer, Le Flore, McCurtain, and Pushmataha.

Table 26. --Commercial forest land by stand size and forest type, Ouachita region, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Thousand acres -----						
Softwood types:						
Loblolly-shortleaf pine	1,024.3	54.9	323.4	463.2	176.9	5.9
Oak-pine	433.0	11.2	38.4	188.1	195.3	...
Total	<u>1,457.3</u>	<u>66.1</u>	<u>361.8</u>	<u>651.3</u>	<u>372.2</u>	<u>5.9</u>
Hardwood types:						
Oak-hickory	1,245.2	21.7	10.8	528.0	673.8	10.9
Elm-ash-cottonwood	23.6	10.5	6.6	6.5	...	...
Oak-gum-cypress	125.1	30.1	22.3	56.6	10.9	5.2
Total	<u>1,393.9</u>	<u>62.3</u>	<u>39.7</u>	<u>591.1</u>	<u>684.7</u>	<u>16.1</u>
All types	2,851.2	128.4	401.5	1,242.4	1,056.9	22.0

^{1/} Includes areas not classified elsewhere.

Table 27. --Total volume by class of timber and species, Ouachita region, 1955-56

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees	Pole-timber trees			
			Sawlog portions	Upper stems			
----- Million cubic feet -----							
Shortleaf pine ^{1/}	483.7	477.9	330.9	31.9	115.1	...	5.8
Red oaks	116.9	73.4	29.1	12.7	31.6	12.6	30.9
White oaks	290.7	146.5	53.8	15.4	77.3	28.3	115.9
Hickory	104.1	61.4	18.9	6.5	36.0	5.6	37.1
Sweetgum and blackgum	60.0	42.1	21.9	6.3	13.9	3.0	14.9
Other hardwoods	180.3	89.2	46.2	13.5	29.5	13.6	77.5
All species	1,235.7	890.5	500.8	86.3	303.4	63.1	282.1

^{1/} Includes 20.3 million cubic feet of loblolly pine and 1.4 million cubic feet of redcedar.

Table 28. --Growing stock by species and stand size, Ouachita region, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
----- Million cubic feet -----						
Shortleaf pine ^{2/}	477.9	32.6	272.5	144.0	23.5	5.3
Red oaks	73.4	14.3	16.9	38.4	3.8	...
White oaks	146.5	6.5	32.8	70.9	35.9	.4
Hickory	61.4	7.1	10.0	39.4	4.9	...
Sweetgum and blackgum	42.1	8.1	14.0	20.0	...	...
Other hardwoods	89.2	34.7	21.4	30.4	2.7	...
All species	890.5	103.3	367.6	343.1	70.8	5.7

^{1/} Includes areas not classified elsewhere.

^{2/} Includes 20.3 million cubic feet of loblolly pine and 1.4 million cubic feet of redcedar.

Table 29. --Sawtimber volume by species and tree diameter, Ouachita region, 1955-56

Species	All diameter classes	10-12 inches ^{1/}	14-18 inches	20-24 inches	26 inches and up
- - - - - Million board feet - - - - -					
Shortleaf pine ^{2/}	1,943.8	981.7	900.9	61.2	...
Red oaks	181.1	46.4	95.7	15.0	24.0
White oaks	316.4	99.9	171.5	37.0	8.0
Hickory	110.8	35.1	68.0	7.7	...
Sweetgum and blackgum	127.8	34.7	75.0	8.0	10.1
Other hardwoods	269.5	49.0	158.4	47.0	15.1
All species	2,949.4	1,246.8	1,469.5	175.9	57.2

^{1/} Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.

^{2/} Includes 107.6 million board feet of loblolly pine.

Table 30. --Sawtimber volume by species and stand size, Ouachita region, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ^{1/}
- - - - - Million board feet - - - - -						
Shortleaf pine ^{2/}	1,943.8	183.8	1,175.9	457.9	96.9	29.3
Red oaks	181.1	43.8	41.5	87.2	8.6	...
White oaks	316.4	14.4	86.3	116.1	97.0	2.6
Hickory	110.8	21.4	24.2	61.1	4.1	...
Sweetgum and blackgum	127.8	28.7	43.6	55.5	...	...
Other hardwoods	269.5	127.2	87.0	55.3	...	...
All species	2,949.4	419.3	1,458.5	833.1	206.6	31.9

^{1/} Includes areas not classified elsewhere.

^{2/} Includes 107.6 million board feet of loblolly pine.

Table 31. --Average volume per acre of sawtimber and growing stock by forest type, Ouachita region, 1955-56

Forest type	Growing stock	Sawtimber
	Cubic feet	Board feet
Softwood types:		
Loblolly-shortleaf pine	521	1,997
Oak-pine	193	541
Average	424	1,565
Hardwood types:		
Oak-hickory	145	282
Elm-ash-cottonwood	(1/)	(1/)
Oak-gum-cypress	459	1,524
Average	196	480
All types	312	1,034

^{1/} Sample too small to be reliable.

Standard Tables

Tables identical in format to those that follow will be found in all State reports issued by the Forest Survey. Their purpose is to facilitate compilation of data for various States and regions.

Table I. -- Land area, by major classes of land, east Oklahoma, 1955-56

Class of land	Area
	<u>Thousand acres</u>
Forest:	
Commercial	5,632.0
Noncommercial:	
Productive-reserved	35.8
Unproductive	81.2
Total	5,749.0
Nonforest ^{1/}	4,049.4
Total, all classes	9,798.4

^{1/} Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. -- Commercial forest land area, by ownership class, east Oklahoma, 1955-56

Ownership class	Area
	<u>Thousand acres</u>
Federally owned or managed:	
National forest ^{1/}	212.5
Indian	317.0
Bureau of Land Management	6.5
Other	34.1
Total	570.1
State ^{2/}	63.2
Private:	
Farm	1,636.9
Industrial and other	3,361.8
Total	4,998.7
All ownerships	5,632.0

^{1/} Includes other lands administered by the Forest Service.

^{2/} County-owned land included with State.

Table III. -- Area of commercial forest land, by major forest types, east Oklahoma, 1955-56

Forest type	Area
	<u>Thousand acres</u>
Loblolly-shortleaf pine	1,061.6
Oak-pine	517.1
Oak-hickory	3,686.0
Elm-ash-cottonwood	73.1
Oak-gum-cypress	294.2
Total	5,632.0

Table IV. --Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, east Oklahoma, 1955-56

Stand-size class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Sawtimber stands	2,189.2	556.9
Poletimber stands	1,426.3	615.9
Seedling and sapling stands	355.7	131.5
Nonstocked and other areas not elsewhere classified	44.9	11.9
Total	4,016.1	1,316.2

Table V. --Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, east Oklahoma, 1955-56

Ownership class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Federally owned or managed:		
National forest ^{1/}	420.2	108.9
Indian	107.4	42.7
Bureau of Land Management	...	.6
Other	1.6	1.0
Total	529.2	153.2
State ^{2/}	21.7	6.2
Private:		
Farm	677.5	294.4
Industrial and other	2,787.7	862.4
Total	3,465.2	1,156.8
All ownerships	4,016.1	1,316.2

^{1/} Includes other lands administered by the Forest Service.

^{2/} County-owned land included with State.

Table VI. --Net volume of live sawtimber and growing stock on commercial forest land, by species, east Oklahoma, 1955-56

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Shortleaf and loblolly pines	1,992.7	492.7
Other eastern softwoods	...	1.9
Total	1,992.7	494.6
Hardwoods:		
White oak (<i>Q. alba</i>)	101.8	45.7
Red oaks (<i>Q. rubra</i> , <i>shumardii</i> , and <i>falcata</i> var. <i>pagodaefolia</i>)	80.4	28.4
Other white oaks	472.4	222.6
Other red oaks	365.0	156.6
Soft maples	13.1	5.8
Sweetgum	78.5	36.0
Blackgum	84.3	22.1
Ash	74.1	30.0
Hickory	340.4	137.7
Cottonwood	62.5	16.6
Basswood	3.0	1.3
Black walnut	3.1	1.3
Other eastern hardwoods	344.8	117.5
Total	2,023.4	821.6
All species	4,016.1	1,316.2

Table VII. --Net volume of live sawtimber on commercial forest land, by diameter class groups and species, east Oklahoma, 1955-56

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
	----- Million board feet -----						
Southern yellow pines	566.0	453.0	455.7	331.0	125.8	61.2	1,992.7
Other eastern softwoods	...	...	...	...	...	...	...
White oak (<i>Q. alba</i>)	...	43.3	22.2	25.5	7.1	3.7	101.8
Other white oaks	...	137.1	95.0	70.1	56.2	114.0	472.4
Red oaks (<i>Q. rubra</i> , <i>falcata</i> var. <i>pagodaefolia</i> & <i>shumardii</i>)	...	9.1	14.1	30.1	5.7	21.4	80.4
Other red oaks	...	122.0	82.4	51.5	30.9	78.2	365.0
Sweetgum	...	31.3	20.4	10.9	2.9	13.0	78.5
Blackgum	...	19.3	19.1	22.4	15.5	8.0	84.3
Other eastern hardwoods	...	158.5	192.1	164.1	101.8	224.5	841.0

Table VIII. --Net volume of all timber on commercial forest land, by class of material and species group, east Oklahoma, 1955-56

Class of material	Total	Softwoods	Hardwoods
	----- Million cubic feet -----		
Growing stock:			
Sawtimber trees:			
Sawlog portion	679.6	339.7	339.9
Upper stem portion	139.9	32.9	107.0
Total	819.5	372.6	446.9
Poletimber trees	496.7	122.0	374.7
Total growing stock	1,316.2	494.6	821.6
Other material:			
Sound cull trees	578.0	6.6	571.4
Rotten cull trees	124.5	.4	124.1
Hardwood limbs	157.8	...	157.8
Salvable dead trees	3.8	.2	3.6
Total other material	864.1	7.2	856.9
Total, all timber	2,180.3	501.8	1,678.5

Table IX. --Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, east Oklahoma, 1955

Item	Sawtimber			Growing stock		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	----- Million board feet -----			----- Million cubic feet -----		
Net annual growth	245.1	153.0	92.1	107.1	40.7	66.4
Annual mortality	37.3	14.0	23.3	15.1	3.7	11.4
Annual cut						
Timber products	110.8	66.9	43.9	24.9	15.3	9.6
Logging residues	3.9	1.2	2.7	4.0	1.3	2.7
Total annual cut	114.7	68.1	46.6	28.9	16.6	12.3

Table X. --Output of timber products and annual cut of live sawtimber and growing stock, east Oklahoma, 1955

Product	Output of timber products					Annual cut of sawtimber			Annual cut of growing stock		
	Volume in standard units		Roundwood volume								
	Standard units	Number	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
			Thousand cubic feet			Thousand board feet			Thousand cubic feet		
Sawlogs	MBM ^{1/}	82,500	13,720	10,560	3,160	79,900	60,390	19,510	16,070	11,620	4,450
Cooperage logs and bolts ^{2/}	MBM ^{1/}	4,070	570	...	570	4,530	...	4,530	840	...	840
Pulpwood	Std. cords ^{3/}	<u>4</u> /38,070	2,880	2,540	340	3,780	3,030	750	2,520	2,180	340
Fuelwood	Std. cords ^{3/}	<u>5</u> /198,000	14,860	1,030	13,830	14,900	1,860	13,040	4,470	400	4,070
Piling	M linear feet	30	20	20	...	100	100	...	20	20	...
Poles	M pieces	60	420	420	...	2,410	2,410	...	500	500	...
Posts	M pieces	5,130	3,050	2,010	1,040	3,490	270	3,220	2,860	1,920	940
Hewn ties	M pieces	20	170	...	170	1,280	...	1,280	300	...	300
Mine timbers	M pieces	110	60	...	60	...	...	...	70	...	70
Miscellaneous ^{6/}	M cu. ft.	<u>7</u> / 680	680	...	680	4,310	...	4,310	1,290	...	1,290
Total			36,430	16,580	19,850	114,700	68,060	46,640	28,940	16,640	12,300

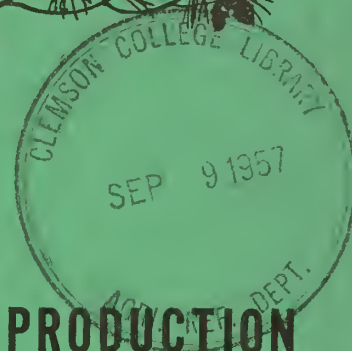
^{1/} International 1/4-inch rule.^{2/} Includes veneer logs and bolts in order not to disclose individual plant data.^{3/} Rough-wood basis.^{4/} Not including negligible amount of wood from mill residues used for pulp.^{5/} Not including 4.9 million cubic feet of wood from mill residues used for domestic and industrial fuel.^{6/} Includes handle stock and other miscellaneous products.^{7/} Not including 0.2 million cubic feet of wood from mill residues used for miscellaneous products.





AUGUST 1957

FOREST SURVEY RELEASE 80



1956 PULPWOOD PRODUCTION IN THE SOUTH

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and
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SOUTHERN FOREST EXPERIMENT STATION
and
SOUTHEASTERN FOREST EXPERIMENT STATION
Asheville, N.C.
in cooperation with
SOUTHERN PULPWOOD CONSERVATION ASSOCIATION
Atlanta, Ga.



Southern Forest Experiment Station, New Orleans, Louisiana
Forest Service, U. S. Dept. of Agriculture

PREFACE

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act. The Southeastern Forest Experiment Station, Asheville, North Carolina, is responsible for the work in Virginia, North Carolina, South Carolina, Georgia, and Florida. The Southern Forest Experiment Station, New Orleans, Louisiana, directs the work in Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

The work of the Survey is divided into five major phases:

1. Inventory. Determination of the extent, location, and condition of forest lands, and the quantity, species, and quality of timber on these lands.
2. Growth and mortality. Determination of the current rate of timber growth, and the total loss resulting from fire, insects, disease, suppression, and other causes.
3. Timber cut. Determination of the amount of industrial and domestic wood used, and the amount removed by land clearing and cultural operations.
4. Requirements. Determination of the current and probable future requirements for forest products by all classes of consumers.
5. Policies and plans. Analysis of the relation of these findings to one another and to other economic factors as a basis for public and private policies and plans of forest land use and management.

ACKNOWLEDGMENT

The statistics presented herein are based upon reports furnished by the wood procurement officials representing 72 mills located in or drawing wood from the South. Reports showed production either by county or by shipping points that were used to assign production to counties. County data are approximate, but totals for small groups of counties should have little error.

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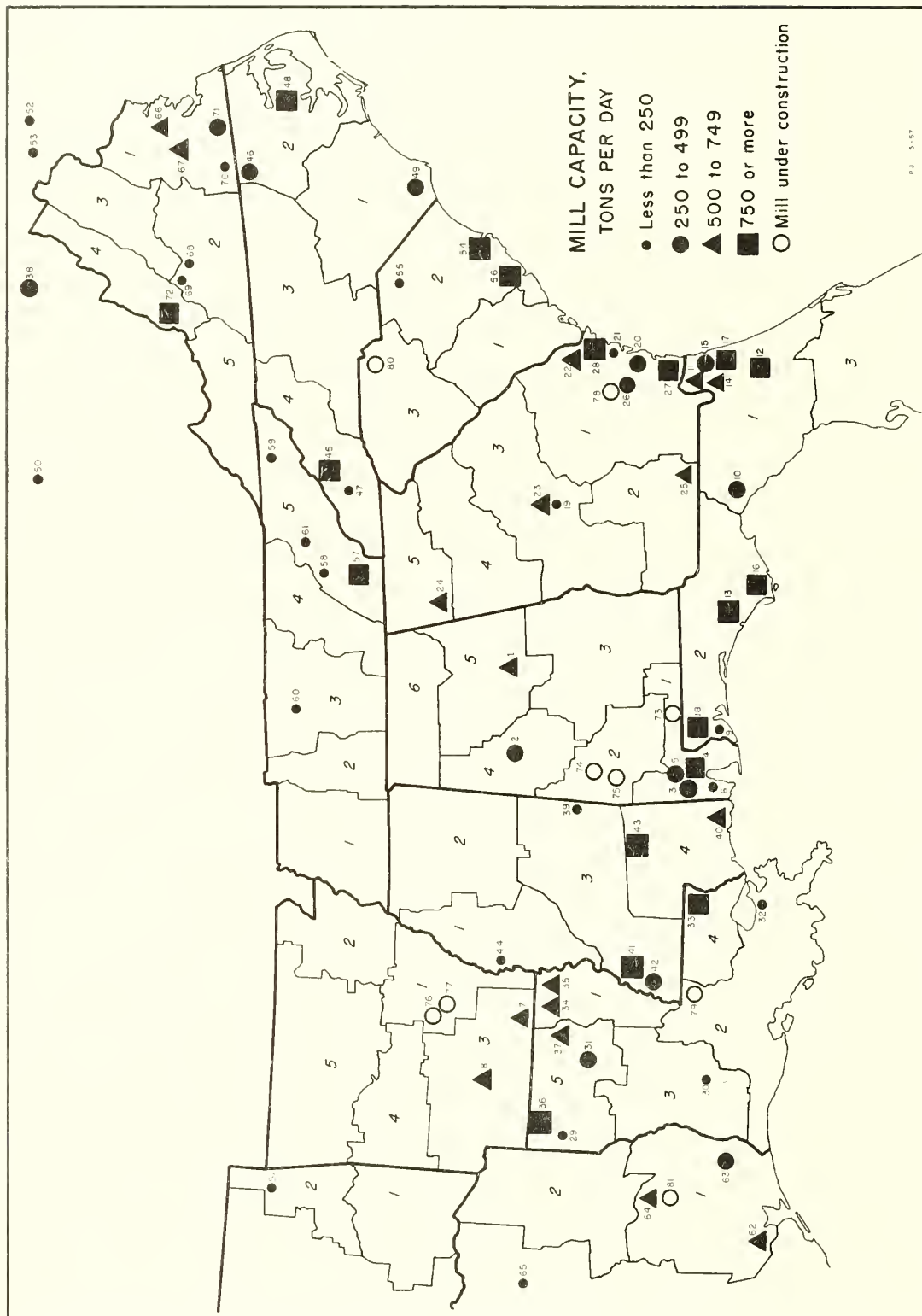


Figure 1.—Pulpmills drawing wood from the South, 1956. Numbered areas are Forest Survey regions. Small numbers at mill locations correspond to numbers in tables 16 and 17.

1956 PULPWOOD PRODUCTION IN THE SOUTH

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Southern Forest Experiment Station

In 1956, for the seventh consecutive year, pulpwood production by the 12 southern States established a new record. The total cut was 20,344,900 cords, an increase of 10.6 percent over 1955. Of this amount, roundwood accounted for 19,685,800 cords and residues from wood-using industries for 659,100 cords. Southern pines made up 86 percent of the 1956 total, and hardwoods 14 percent.

Production now is considerably more than double what it was in 1946, when the first of these annual summaries was issued. As figure 2 shows, the pine harvest has climbed from 7.6 million cords to 17.4 million. The volume of hardwood has risen from 1.2 million cords annually to 2.9 million. Proportionally, the gain in hardwood use has been somewhat faster than that for pine.

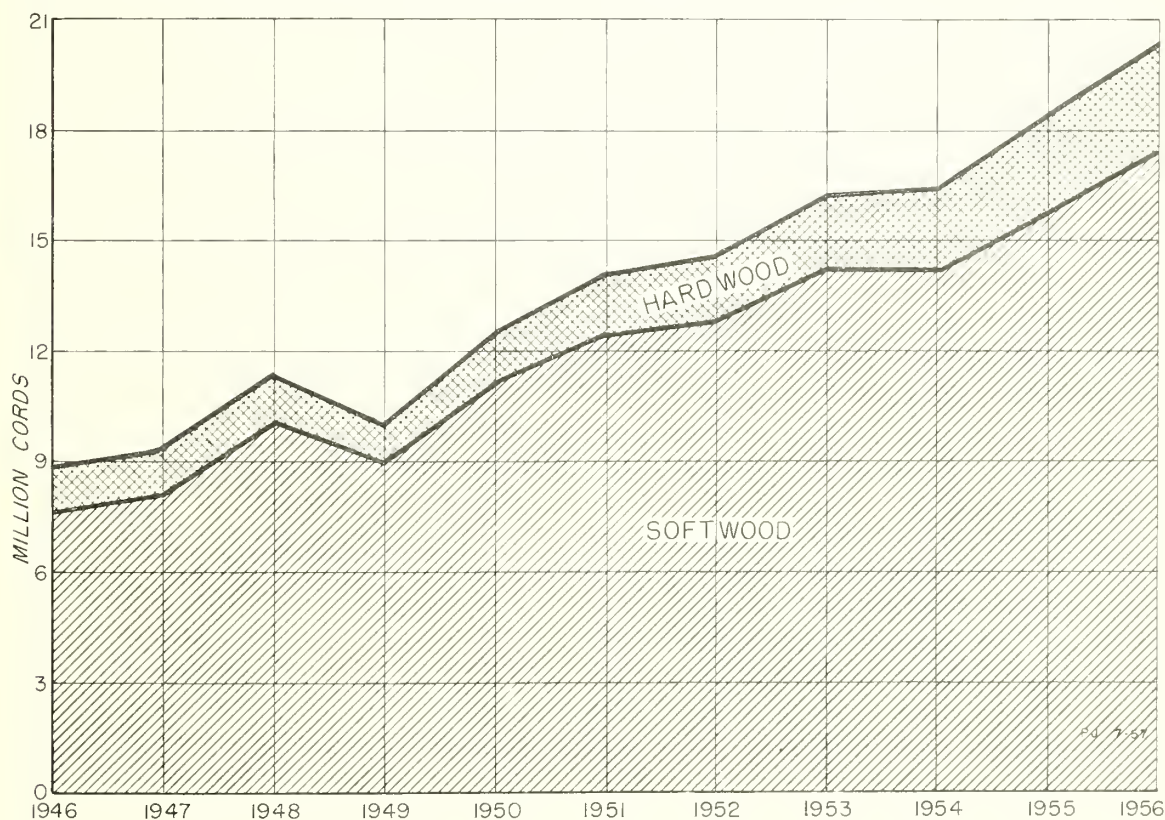


Figure 2. -- Total pulpwood production in the South, 1946-56. (Includes residues.)

Table 1.--Round pulpwood production in the South by State and species group,
1955 and 1956

State	1956				1955		
	Change from 1955	Total	Pine	Hardwood	Total	Pine	Hardwood ^{1/}
	Percent	----- Thousand cords -----					
Ala.	+ 9.0	2,103.0	2,001.3	101.7	1,928.8	1,860.1	68.7
Ark.	+ 6.6	934.7	802.3	132.4	877.0	782.7	94.3
Fla.	+ 6.7	1,950.7	1,950.0	.7	1,828.5	1,826.9	1.6
Ga.	+ 2.4	3,849.9	3,665.0	184.9	3,759.6	3,568.8	190.8
La.	- 4.6	1,574.2	1,289.4	284.8	1,650.1	1,366.6	283.5
Miss.	+ 8.4	2,069.0	1,191.2	877.8	1,908.5	1,028.4	880.1
N. C.	+17.0	1,842.2	1,512.1	330.1	1,574.0	1,273.4	300.6
Okla.	+95.5	74.5	68.5	6.0	38.1	33.7	4.4
S. C.	+19.4	1,806.6	1,582.9	223.7	1,513.3	1,268.7	244.6
Tenn.	+20.1	392.2	244.9	147.3	326.6	220.8	105.8
Tex.	+21.2	1,459.0	1,339.2	119.8	1,203.8	1,119.5	84.3
Va.	+15.9	1,629.7	1,273.2	356.5	1,406.3	1,138.1	268.2
All	+ 9.3	19,685.7	16,920.0	2,765.7	18,014.6	15,487.7	2,526.9

^{1/} Includes 26,100 cords of chestnut used for pulp.

A recent and spectacular development has been the increase in the pulping of residues from sawmills, veneer plants, and other wood-manufacturing industries--material that formerly was burned as waste, or, at best, used for fuel. Wood residues chipped for pulp jumped from 126,000 cords in 1954 to 374,000 cords in 1955. Last year, this material furnished 659,000 cords, or more than 3 percent of the total southern pulpwood production. As the following tabulation indicates, most of this volume was from coarse waste at sawmills and veneer plants:

	Pine	Hardwood	Total
	(thousand cords)		
Sawmill and veneer plant chips	488	46	534
Unchipped veneer cores and cull cross ties		110	110
Pole and piling ends, etc.	15		15
	503	156	659

Use of residues for pulp is almost certain to increase rapidly, for more and more sawmills are installing equipment for converting

their heavy waste to pulp chips. It seems appropriate, therefore, to begin reporting roundwood and residues separately. The Southwide summary tables (tables 2 and 3) have accordingly been rearranged to show pulpwood from both sources. The tables for production by counties (tables 4-15) are restricted to roundwood only.

Georgia was the largest producer of pulpwood in 1956, accounting for nearly 4 million cords (fig. 3), 19 percent of the South's total. Alabama and Mississippi harvested over 2 million cords each, and six other States cut more than 1.5 million cords apiece. Baldwin county, Alabama, led in county production of round pulpwood, with some 193,000 cords. Also in the 100,000-cord bracket were Baker county in Florida, Charlton and Clinch counties in Georgia, Union and Winn parishes in Louisiana, and Fairfield and Georgetown counties in South Carolina.

In 1956, no pulpwood was reported as being taken from blight-killed chestnut. Though the quantity had been steadily declining, some chestnut pulpwood had hitherto been cut each year from the mountain forests of Alabama, Georgia, North Carolina, Tennessee, and Virginia. Now many of the dead trees have been salvaged, and most of those that remain are too heavily damaged by insects or decay to be worth cutting for pulpwood.

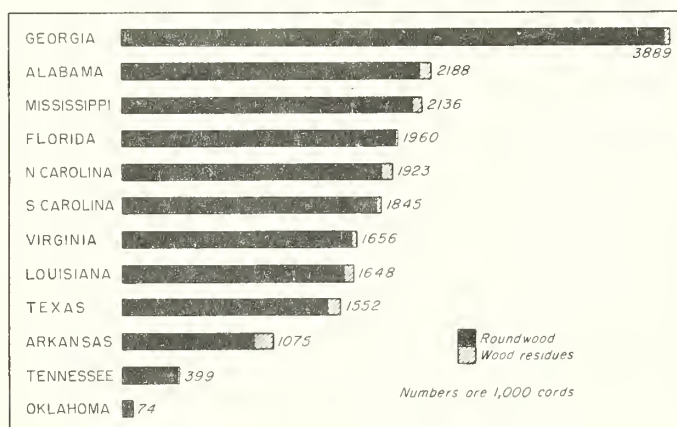


Figure 3.--Pulpwood production in the South, 1956. Roundwood and residues combined.

Pulping capacity in the South continues to rise. The 68 southern mills in operation at the end of 1956 had a daily capacity of 38,000 tons of pulp output--an increase of 12 percent over 1955. In 1946, total southern pulping capacity was 16,000 tons daily. Nine additional mills are under construction or definitely planned (table 17). Four mills outside the region also draw wood from southern forests (fig. 1).

Table 2.--Pulpwood production in Southeastern Station territory
by State and Survey unit, 1956

State and Forest Survey unit ^{1/}		Pine	Hardwood	Total
----- Standard cords -----				
Virginia	1	402,028	49,929	451,957
	2	519,186	91,817	611,003
	3	254,199	57,002	311,201
	4	82,347	137,294	219,641
	5	15,444	20,460	35,904
Roundwood		<u>1,273,204</u>	<u>356,502</u>	<u>1,629,706</u>
Wood residues ^{2/}		<u>22,443</u>	<u>4,158</u>	<u>26,601</u>
All pulpwood		<u>1,295,647</u>	<u>360,660</u>	<u>1,656,307</u>
North Carolina	1	539,081	45,396	584,477
	2	293,603	25,499	319,102
	3	506,905	42,918	549,823
	4	172,482	216,278	388,760
Roundwood		<u>1,512,071</u>	<u>330,091</u>	<u>1,842,162</u>
Wood residues ^{2/}		<u>68,833</u>	<u>11,349</u>	<u>80,182</u>
All pulpwood		<u>1,580,904</u>	<u>341,440</u>	<u>1,922,344</u>
South Carolina	1	275,164	62,741	337,905
	2	448,930	136,296	585,226
	3	858,766	24,674	883,440
Roundwood		<u>1,582,860</u>	<u>223,711</u>	<u>1,806,571</u>
Wood residues ^{2/}		<u>26,443</u>	<u>12,285</u>	<u>38,728</u>
All pulpwood		<u>1,609,303</u>	<u>235,996</u>	<u>1,845,299</u>
Georgia	1	1,704,635	148,556	1,853,191
	2	495,914	22,826	518,740
	3	827,384	7,973	835,357
	4	487,758	605	488,363
	5	149,393	4,898	154,291
Roundwood		<u>3,665,084</u>	<u>184,858</u>	<u>3,849,942</u>
Wood residues ^{2/}		<u>20,452</u>	<u>18,207</u>	<u>38,659</u>
All pulpwood		<u>3,685,536</u>	<u>203,065</u>	<u>3,888,601</u>
Florida	1	1,220,822	439	1,221,261
	2	482,968	302	483,270
	3	218,786	...	218,786
	4	27,336	...	27,336
Roundwood		<u>1,949,912</u>	<u>741</u>	<u>1,950,653</u>
Wood residues ^{2/}		<u>3,823</u>	<u>5,223</u>	<u>9,046</u>
All pulpwood		<u>1,953,735</u>	<u>5,964</u>	<u>1,959,699</u>
All States				
Roundwood		9,983,131	1,095,903	11,079,034
Wood residues ^{2/}		141,994	51,222	193,216
Total		<u>10,125,125</u>	<u>1,147,125</u>	<u>11,272,250</u>

^{1/} For location of Survey units, see Figure 1.

^{2/} Residues included in State totals only.

Table 3.--Pulpwood production in Southern Station territory
by State and Survey unit, 1956

State and Forest Survey unit ^{1/}		Pine	Hardwood	Total
----- Standard cords -----				
Alabama	1	367,712	19,679	387,391
	2	362,201	5,864	368,065
	3	643,766	22,551	666,317
	4	215,721	20,924	236,645
	5	375,382	32,154	407,536
	6	36,546	511	37,057
Roundwood		<u>2,001,328</u>	<u>101,683</u>	<u>2,103,011</u>
Wood residues ^{2/}		<u>59,963</u>	<u>24,416</u>	<u>84,379</u>
All pulpwood		<u>2,061,291</u>	<u>126,099</u>	<u>2,187,390</u>
Arkansas	1	10,749	26,450	37,199
	2	168	697	865
	3	641,305	94,471	735,776
	4	121,199	7,317	128,516
	5	28,937	3,441	32,378
Roundwood		<u>802,358</u>	<u>132,376</u>	<u>934,734</u>
Wood residues ^{2/}		<u>133,159</u>	<u>7,340</u>	<u>140,499</u>
All pulpwood		<u>935,517</u>	<u>139,716</u>	<u>1,075,233</u>
Louisiana	1	28,133	95,817	123,950
	2	12,032	11,542	23,574
	3	330,648	44,508	375,156
	4	294,839	44,439	339,278
	5	623,730	88,530	712,260
Roundwood		<u>1,289,382</u>	<u>284,836</u>	<u>1,574,218</u>
Wood residues ^{2/}		<u>68,388</u>	<u>5,860</u>	<u>74,248</u>
All pulpwood		<u>1,357,770</u>	<u>290,696</u>	<u>1,648,466</u>
Mississippi	1	12,736	121,810	134,546
	2	88,933	93,100	182,033
	3	412,164	228,380	640,544
	4	467,081	185,739	652,820
	5	210,322	248,768	459,090
Roundwood		<u>1,191,236</u>	<u>877,797</u>	<u>2,069,033</u>
Wood residues ^{2/}		<u>6,529</u>	<u>60,173</u>	<u>66,702</u>
All pulpwood		<u>1,197,765</u>	<u>937,970</u>	<u>2,135,735</u>
Oklahoma ^{3/}				
Roundwood		68,535	6,000	74,535
Wood residues ^{2/}		...	...	...
All pulpwood		68,535	6,000	74,535
Tennessee	1	7,675	5,029	12,704
	2	270	12,993	13,263
	3	...	6,939	6,939
	4	53,786	54,226	108,012
	5	183,102	68,136	251,238
Roundwood		<u>244,833</u>	<u>147,323</u>	<u>392,156</u>
Wood residues ^{2/}		<u>...</u>	<u>6,616</u>	<u>6,616</u>
All pulpwood		<u>244,833</u>	<u>153,939</u>	<u>398,772</u>
Texas	1	739,145	94,312	833,457
	2	577,520	16,788	594,308
	3	22,574	8,676	31,250
Roundwood		<u>1,339,239</u>	<u>119,776</u>	<u>1,459,015</u>
Wood residues ^{2/}		<u>93,138</u>	<u>341</u>	<u>93,479</u>
All pulpwood		<u>1,432,377</u>	<u>120,117</u>	<u>1,552,494</u>
All States				
Roundwood		6,936,911	1,669,791	8,606,702
Wood residues ^{2/}		361,177	104,746	465,923
Total		<u>7,298,088</u>	<u>1,774,537</u>	<u>9,072,625</u>

^{1/} For location of Survey units, see Figure 1.

^{2/} Residues included in State totals only.

^{3/} All units.

Table 4. --Round pulpwood production in Alabama, 1956

County	Pine	Hardwood	Total
Standard cords			
Autauga	8,120	330	8,450
Baldwin	186,064	7,028	193,092
Barbour	37,282	...	37,282
Bibb	26,237	3,970	30,207
Blount	9,845	308	10,153
Bullock	33,000	26	33,026
Butler	46,099	749	46,848
Calhoun	16,897	1,381	18,278
Chambers	31,002	1,261	32,263
Cherokee	13,745	3,796	17,541
Chilton	21,962	2,065	24,027
Choctaw	51,462	247	51,709
Clarke	71,336	132	71,468
Clay	37,469	4,051	41,520
Cleburne	25,669	1,403	27,072
Coffee	21,837	...	21,837
Colbert	1,008	...	1,008
Conecuh	35,110	20	35,130
Coosa	31,717	5,965	37,682
Covington	32,014	...	32,014
Crenshaw	23,045	344	23,389
Cullman	14,846	385	15,231
Dale	17,692	...	17,692
Dallas	21,536	1,053	22,589
De Kalb	9,450	511	9,961
Elmore	35,109	1,571	36,680
Escambia	43,492	968	44,460
Etowah	17,933	1,236	19,169
Fayette	25,570	153	25,723
Franklin	4,140	...	4,140
Geneva	12,364	...	12,364
Greene	14,495	1,480	15,975
Hale	15,003	2,595	17,598
Henry	23,637	467	24,104
Houston	7,801	...	7,801
Jackson	5,896	...	5,896
Jefferson	20,310	1,319	21,629
Lamar	10,827	...	10,827
Lauderdale	1,887	...	1,887
Lawrence	863	...	863
Lee	47,990	1,774	49,764
Limestone	2,390	...	2,390
Lowndes	56,543	5,225	61,768
Macon	29,799	102	29,901
Madison	894	...	894
Marengo	30,189	2,488	32,677
Marion	8,195	2	8,197
Marshall	6,742	...	6,742
Mobile	54,123	10,627	64,750
Monroe	80,852	640	81,492
Montgomery	30,655	530	31,185
Morgan	3,276	...	3,276
Perry	30,837	5,092	35,929
Pickens	31,795	1,849	33,644
Pike	34,144	18	34,162
Randolph	31,187	1,977	33,164
Russell	25,319	52	25,371
Saint Clair	30,241	1,556	31,797
Shelby	59,125	3,810	62,935
Sumter	22,377	1,223	23,600
Talladega	33,156	3,618	36,774
Tallapoosa	78,815	6,984	85,799
Tuscaloosa	52,762	5,783	58,545
Walker	31,428	1,347	32,775
Washington	52,019	1,056	53,075
Wilcox	70,875	1,114	71,989
Winston	1,829	2	1,831
Total	2,001,328	101,683	2,103,011

Table 5. --Round pulpwood production in Arkansas, 1956

County	Pine	Hardwood	Total
Standard cords			
Arkansas	...	...	...
Ashley	50,380	26,355	76,735
Baxter	242	...	242
Benton	...	...	...
Boone	794	...	794
Bradley	44,717	8,033	52,750
Calhoun	34,191	237	34,428
Carroll	...	...	...
Chicot	...	10,731	10,731
Clark	51,107	12,316	63,423
Clay	...	...	...
Cleburne	...	...	...
Cleveland	11,508	880	12,388
Columbia	49,427	...	49,427
Conway	129	...	129
Craighead	...	...	...
Crawford	1,159	431	1,590
Crittenden	...	689	689
Cross	...	...	...
Dallas	41,791	4,324	46,115
Desha	...	6,714	6,714
Drew	18,032	15,477	33,509
Faulkner	1,250	448	1,698
Franklin	2,453	217	2,670
Fulton	...	...	...
Garland	16,771	1,117	17,888
Grant	31,844	5,170	37,014
Greene	61	...	61
Hempstead	22,572	1,978	24,550
Hot Spring	29,449	1,135	30,584
Howard	11,062	1,565	12,627
Independence	161	...	161
Izard	64	19	83
Jackson	...	...	...
Jefferson	7,348	722	8,070
Johnson	11,176	954	12,130
Lafayette	28,893	...	28,893
Lawrence	...	...	...
Lee	...	1,367	1,367
Lincoln	2,209	2,346	4,555
Little River	13,959	...	13,959
Logan	11,591	60	11,651
Lonoke	35	...	35
Madison	...	...	...
Marion	...	...	...
Miller	24,034	41	24,075
Mississippi	...	...	...
Monroe	1,157	81	1,238
Montgomery	17,111	2,331	19,442
Nevada	18,105	2,167	20,272
Newton	...	...	...
Ouachita	34,799	3,682	38,481
Perry	9,829	883	10,712
Phillips	...	4,489	4,489
Pike	18,738	2,619	21,357
Poinsett	...	...	...
Polk	14,019	...	14,019
Pope	9,576	988	10,564
Prairie	...	...	...
Pulaski	8,980	397	9,377
Randolph	...	...	...
St. Francis	107	8	115
Saline	25,127	1,866	26,993
Scott	6,450	...	6,450
Searcy	...	...	...

Table 5.--Round pulpwood production in Arkansas, 1956 (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Sebastian	516	...	516
Sevier	19,170	201	19,371
Sharp	...	...	...
Stone	...	...	...
Union	87,527	8,291	95,818
Van Buren	...	...	...
Washington	...	...	...
White	1,933	384	2,317
Woodruff	...	...	...
Yell	10,805	663	11,468
Total	802,358	132,376	934,734

Table 6.--Round pulpwood production in Florida, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Alachua	43,448	...	43,448
Baker	111,514	...	111,514
Bay	16,647	...	16,647
Bradford	68,673	...	68,673
Brevard	25,494	...	25,494
Broward	...	...	...
Calhoun	30,661	...	30,661
Charlotte	1,978	...	1,978
Citrus	8,792	...	8,792
Clay	64,769	...	64,769
Collier	6,642	...	6,642
Columbia	88,958	...	88,958
Dade	921	...	921
De Soto	7,917	...	7,917
Dixie	28,705	...	28,705
Duval	24,630	...	24,630
Escambia	44,284	...	44,284
Flagler	69,401	...	69,401
Franklin	11,192	...	11,192
Gadsden	24,694	...	24,694
Gilchrist	35,166	...	35,166
Glades	1,326	...	1,326
Gulf	29,220	...	29,220
Hamilton	56,520	...	56,520
Hardee	9,750	...	9,750
Hendry	1,918	...	1,918
Hernando	13,098	...	13,098
Highlands	4,757	...	4,757
Hillsborough	13,317	...	13,317
Holmes	21,319	...	21,319
Indian River	5,370	...	5,370
Jackson	38,012	...	38,012
Jefferson	22,907	302	23,209
Lafayette	29,215	...	29,215
Lake	8,805	...	8,805
Lee	9,789	...	9,789
Leon	28,003	...	28,003
Levy	40,285	...	40,285
Liberty	22,954	...	22,954
Madison	58,768	...	58,768
Manatee	5,842	...	5,842
Marion	63,932	...	63,932
Martin	3,201	...	3,201
Monroe	...	...	...
Nassau	89,011	401	89,412
Okaloosa	26,558	...	26,558
Okeechobee	3,646	...	3,646
Orange	11,289	...	11,289
Oceola	12,494	...	12,494
Palm Beach	1,561	...	1,561
Pasco	14,768	...	14,768
Pinellas	413	...	413
Polk	40,912	...	40,912
Putnam	59,547	...	59,547
St. Johns	71,381	19	71,400
St. Lucie	411	...	411
Santa Rosa	99,306	...	99,306
Sarasota	9,167	...	9,167
Seminole	8,031	...	8,031
Sumter	14,513	...	14,513
Suwannee	40,690	...	40,690
Taylor	76,368	19	76,387
Union	44,491	...	44,491
Volusia	55,350	...	55,350
Wakulla	17,165	...	17,165
Walton	19,294	...	19,294
Washington	30,752	...	30,752
Total	1,949,912	741	1,950,653

Table 7. --Round pulpwood production in Georgia, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Appling	89,269	1,807	91,076
Atkinson	52,229	288	52,517
Bacon	36,208	1,476	37,684
Baker	7,941	...	7,941
Baldwin	19,634	334	19,968
Banks	3,133	...	3,133
Barrow	2,456	...	2,456
Bartow	19,366	534	19,900
Ben Hill	11,173	2,279	13,452
Berrien	64,356	676	65,032
Bibb	10,512	353	10,865
Bleckley	5,359	3,235	8,594
Brantley	73,117	6,691	79,808
Brooks	26,246	281	26,527
Bryan	65,127	9,231	74,358
Bulloch	29,898	3,550	33,448
Burke	10,902	367	11,269
Butts	31,049	33	31,082
Calhoun	4,197	...	4,197
Camden	63,851	8,491	72,342
Candler	8,122	...	8,122
Carroll	22,816	99	22,915
Catoosa	1,891	...	1,891
Charlton	100,783	849	101,632
Chatham	31,683	5,971	37,654
Chattahoochee	10,898	...	10,898
Chattooga	4,668	147	4,815
Cherokee	10,937	...	10,937
Clarke	1,580	...	1,580
Clay	3,481	...	3,481
Clayton	9,546	14	9,560
Clinch	183,222	50	183,272
Cobb	5,449	55	5,504
Coffee	49,854	1,709	51,563
Colquitt	21,067	19	21,086
Columbia	21,821	240	22,061
Cook	20,981	...	20,981
Coweta	30,660	...	30,660
Crawford	15,874	21	15,895
Crisp	11,932	...	11,932
Dade	1,621	...	1,621
Dawson	599	...	599
Decatur	44,691	8,242	52,933
De Kalb	9,042	...	9,042
Dodge	24,046	974	25,020
Dooly	22,428	10	22,438
Dougherty	8,237	...	8,237
Douglas	11,290	...	11,290
Early	9,488	1,652	11,140
Echols	57,634	...	57,634
Effingham	37,631	8,048	45,679
Elbert	36,524	32	36,556
Emanuel	38,784	1,030	39,814
Evans	10,420	250	10,670
Fannin	5,142	1,721	6,863
Fayette	5,275	...	5,275
Floyd	22,522	1,693	24,215
Forsyth	840	...	840
Franklin	23,471	...	23,471
Fulton	11,576	...	11,576
Gilmer	10,687	618	11,305
Glascok	2,017	...	2,017
Glynn	42,234	30,110	72,344
Gordon	14,411	159	14,570
Grady	20,795	1,407	22,202

Table 7. --Round pulpwood production in Georgia, 1956 (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Greene	42,159	500	42,659
Gwinnett	19,782	...	19,782
Habersham	8,657	...	8,657
Hall	25,014	...	25,014
Hancock	38,773	350	39,123
Haralson	4,794	277	5,071
Harris	45,325	...	45,325
Hart	6,788	...	6,788
Heard	5,390	...	5,390
Henry	12,424	...	12,424
Houston	21,994	108	22,102
Irwin	15,006	3,048	18,054
Jackson	12,449	...	12,449
Jasper	28,864	41	28,905
Jeff Davis	52,915	1,827	54,742
Jefferson	14,640	621	15,261
Jenkins	6,298	1,050	7,348
Johnson	7,910	34	7,944
Jones	28,739	127	28,866
Lamar	12,995	18	13,013
Lanier	31,681	...	31,681
Laurens	47,228	1,400	48,628
Lee	13,527	...	13,527
Liberty	45,084	13,046	58,130
Lincoln	15,373	...	15,373
Long	43,150	3,952	47,102
Lowndes	56,707	155	56,862
Lumpkin	675	...	675
McDuffie	12,380	200	12,580
McIntosh	26,820	22,006	48,826
Macon	26,409	8	26,417
Madison	12,528	...	12,528
Marion	6,202	...	6,202
Meriwether	54,600	...	54,600
Miller	7,893	...	7,893
Mitchell	31,667	895	32,562
Monroe	37,412	275	37,687
Montgomery	18,592	2,909	21,501
Morgan	19,061	...	19,061
Murray	4,064	...	4,064
Muscogee	10,261	...	10,261
Newton	24,858	...	24,858
Oconee	15,615	...	15,615
Oglethorpe	19,918	...	19,918
Paulding	22,303	3	22,306
Peach	7,591	...	7,591
Pickens	9,146	...	9,146
Pierce	72,728	1,188	73,916
Pike	6,283	...	6,283
Polk	9,922	125	10,047
Pulaski	5,000	134	5,134
Putnam	22,258	...	22,258
Quitman	8,645	...	8,645
Rabun	5,333	...	5,333
Randolph	11,498	...	11,498
Richmond	3,224	34	3,258
Rockdale	4,918	...	4,918
Schley	5,740	...	5,740
Screven	26,590	2,722	29,312
Seminole	15,829	1,247	17,076
Spalding	8,119	...	8,119
Stephens	9,282	...	9,282
Stewart	16,963	...	16,963
Sumter	13,457	...	13,457
Talbot	32,005	...	32,005

Table 7. --Round pulpwood production in Georgia, 1956 (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Taliaferro	8,764	...	8,764
Tattnall	53,949	1,430	55,379
Taylor	13,904	...	13,904
Telfair	46,871	1,652	48,523
Terrell	3,024	...	3,024
Thomas	27,709	1,265	28,974
Tift	10,294	394	10,688
Toombs	25,776	3,766	29,542
Towns	...	...	...
Treutlen	15,611	476	16,087
Troup	49,148	...	49,148
Turner	9,061	229	9,290
Twiggs	20,578	171	20,749
Union	1,970	...	1,970
Upson	29,415	...	29,415
Walker	3,994	26	4,020
Walton	6,820	...	6,820
Ware	98,722	492	99,214
Warren	17,956	200	18,156
Washington	21,305	...	21,305
Wayne	90,529	8,480	99,009
Webster	5,079	...	5,079
Wheeler	30,254	1,601	31,855
White	572	...	572
Whitfield	14,062	...	14,062
Wilcox	8,870	1,012	9,882
Wilkes	31,816	600	32,416
Wilkinson	24,784	3	24,787
Worth	20,099	15	20,114
Total	3,665,084	184,858	3,849,942

Table 8. --Round pulpwood production in Louisiana, 1956

Parish	Pine	Hardwood	Total
----- Standard cords -----			
Acadia	5,744	145	5,889
Allen	21,311	3,711	25,022
Ascension	20	1,755	1,775
Assumption	...	...	...
Avoyelles	1,557	957	2,514
Beauregard	14,536	855	15,391
Bienville	52,554	3,816	56,370
Bossier	37,366	106	37,472
Caddo	27,765	10,377	38,142
Calcasieu	15,306	22	15,328
Caldwell	24,673	5,357	30,030
Cameron	...	...	...
Catahoula	10,411	9,810	20,221
Claiborne	57,006	1,602	58,608
Concordia	3	19,606	19,609
De Soto	62,114	...	62,114
East Baton Rouge	308	2,999	3,307
East Carroll	...	19,289	19,289
East Feliciana	13,809	10,140	23,949
Evangeline	8,419	1,019	9,438
Franklin	762	4,766	5,528
Grant	30,177	4,275	34,452
Iberia	...	...	...
Iberville	14	537	551
Jackson	41,075	1,713	42,788
Jefferson	1,947	...	1,947
Jefferson Davis	5,331	869	6,200
Lafayette	...	...	...
Lafourche	...	...	...
La Salle	27,541	8,242	35,783
Lincoln	35,962	4,275	40,237
Livingston	80,644	13,394	94,038
Madison	...	13,612	13,612
Morehouse	16,925	7,964	24,889
Natchitoches	61,188	11,024	72,212
Orleans	...	...	...
Ouachita	23,245	7,689	30,934
Plaquemines	...	...	...
Pointe Coupee	...	1,196	1,196
Rapides	44,016	14,234	58,250
Red River	18,785	714	19,499
Richland	11	438	449
Sabine	74,534	...	74,534
St. Bernard	...	...	...
St. Charles	...	...	...
St. Helena	18,077	1,938	20,015
St. James	...	...	...
St. John the Baptist	...	...	...
St. Landry	1,089	475	1,564
St. Martin	...	...	...
St. Mary	...	88	88
St. Tammany	43,835	783	44,618
Tangipahoa	50,468	12,354	62,822
Tensas	...	19,568	19,568
Terrebonne	...	...	...
Union	110,374	26,592	136,966
Vermilion	...	...	...
Vernon	28,289	257	28,546
Washington	87,698	2,831	90,529
Webster	30,398	4,612	35,010
West Baton Rouge	...	506	506
West Carroll	21	764	785
West Feliciana	1,661	5,883	7,544
Winn	102,413	21,677	124,090
Total	1,289,382	284,836	1,574,218

Table 9.--Round pulpwood production in Mississippi, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Adams	3,529	23,049	26,578
Alcorn	2,901	1,715	4,616
Amite	14,975	16,702	31,677
Attala	18,680	30,771	49,451
Benton	2,282	191	2,473
Bolivar	...	11,661	11,661
Calhoun	114	2,200	2,314
Carroll	2,064	8,525	10,589
Chickasaw	4,618	6,044	10,662
Choctaw	12,632	10,766	23,398
Claiborne	8,775	22,261	31,036
Clarke	54,165	24,737	78,902
Clay	570	945	1,515
Coahoma	...	1,358	1,358
Copiah	40,822	39,174	79,996
Covington	24,145	11,380	35,525
De Soto	...	3,974	3,974
Forrest	32,554	12,654	45,208
Franklin	34,687	16,298	50,985
George	16,117	1,947	18,064
Greene	32,053	9,037	41,090
Grenada	606	4,154	4,760
Hancock	37,788	322	38,110
Harrison	34,534	1,776	36,310
Hinds	16,264	26,715	42,979
Holmes	10,120	28,542	38,662
Humphreys	...	7,886	7,886
Issaquena	...	7,496	7,496
Itawamba	112	...	112
Jackson	41,516	85	41,601
Jasper	55,037	43,190	98,227
Jefferson	12,643	23,738	36,381
Jefferson Davis	15,251	4,735	19,986
Jones	23,948	45,409	69,357
Kemper	21,367	4,448	25,815
Lafayette	5,076	7,848	12,924
Lamar	19,687	7,099	26,786
Lauderdale	45,716	17,149	62,865
Lawrence	40,871	26,194	67,065
Leake	18,867	15,888	34,755
Lee	1,634	44	1,678
Leflore	678	6,276	6,954
Lincoln	28,698	27,978	56,676
Lowndes	4,638	30	4,668
Madison	7,953	9,276	17,229
Marion	28,433	18,601	47,034
Marshall	2,016	1,297	3,313
Monroe	3,259	947	4,206
Montgomery	1,961	6,892	8,853
Neshoba	16,427	9,312	25,739
Newton	34,256	17,781	52,037
Noxubee	12,577	1,113	13,690
Oktibbeha	7,071	6,543	13,614
Panola	...	3,632	3,632
Pearl River	31,932	13,935	45,867
Perry	23,166	10,092	33,258
Pike	34,261	21,179	55,440
Pontotoc	10,947	3,811	14,758
Prentiss	3,519	1,068	4,587
Quitman	...	1,997	1,997
Rankin	26,502	13,620	40,122
Scott	46,192	14,486	60,678
Sharkey	...	14,390	14,390
Simpson	25,361	16,067	41,428
Smith	15,657	10,944	26,601

Table 9.--Round pulpwood production in Mississippi (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Stone	18,924	5,185	24,109
Sunflower	...	1,079	1,079
Tallahatchie	180	4,071	4,251
Tate	393	1,131	1,524
Tippah	2,727	1,061	3,788
Tishomingo	8,574	2,899	11,473
Tunica	...	2,309	2,309
Union	4,272	973	5,245
Walthall	17,505	8,251	25,756
Warren	963	20,425	21,388
Washington	...	8,024	8,024
Wayne	28,657	9,037	37,694
Webster	3,352	7,569	10,921
Wilkinson	7,715	22,398	30,113
Winston	21,360	8,874	30,234
Yalobusha	3,595	8,841	12,436
Yazoo	795	6,296	7,091
Total	1,191,236	877,797	2,069,033

Table 10.--Round pulpwood production in North Carolina, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Alamance	9,899	966	10,865
Alexander	5,776	...	5,776
Alleghany	22	...	22
Anson	25,149	2,893	28,042
Ashe	...	806	806
Avery	...	1,025	1,025
Beaufort	17,300	607	17,907
Bertie	23,055	2,813	25,868
Bladen	38,846	3,291	42,137
Brunswick	56,371	3,019	59,390
Buncombe	36,875	53,499	90,374
Burke	17,934	7,187	25,121
Cabarrus	17,787	1,961	19,748
Caldwell	11,318	2,146	13,464
Camden	...	...	...
Carteret	23,463	...	23,463
Caswell	1,702	18	1,720
Catawba	7,239	139	7,378
Chatham	24,708	1,365	26,073
Cherokee	29,417	13,211	42,628
Chowan	878	1,273	2,151
Clay	...	...	...
Cleveland	6,491	18	6,509
Columbus	72,714	3,706	76,420
Craven	48,612	3,458	52,070
Cumberland	13,991	1,121	15,112
Currituck	...	...	...
Dare	...	...	...
Davidson	1,924	72	1,996
Davie	6,546	124	6,670
Duplin	42,707	2,602	45,309
Durham	19,954	748	20,702
Edgecombe	3,802	226	4,028
Forsyth	5,830	...	5,830
Franklin	43,018	4,750	47,768
Caston	14,910	2,195	17,105
Gates	18,932	3,696	22,628
Craham	2,091	...	2,091
Cranville	13,446	756	14,202
Greene	2,059	...	2,059
Guilford	13,978	107	14,085
Halifax	47,635	2,046	49,681
Harnett	15,856	944	16,800
Haywood	5,616	19,957	25,573
Henderson	9,988	13,002	22,990
Hertford	19,952	4,682	24,634
Hoke	1,068	135	1,203
Hyde	16,381	...	16,381
Iredell	16,132	2,831	18,963
Jackson	7,788	36,554	44,342
Johnston	12,846	2,277	15,123
Jones	24,167	980	25,147
Lee	13,335	1,012	14,347
Lenoir	19,583	18	19,601
Lincoln	5,520	119	5,639
McDowell	13,074	12,360	25,434
Macon	3,403	19,995	23,398
Madison	7,913	6,595	14,508
Martin	10,738	1,440	12,178
Mecklenburg	15,208	518	15,726
Mitchell	236	7,740	7,976
Montgomery	10,842	1,167	12,009
Moore	17,757	1,114	18,871
Nash	9,490	235	9,725
New Hanover	4,973	449	5,422

Table 10.--Round pulpwood production in North Carolina (contd.)

County	Pine	Hardwood	Total
----- Standard cords -----			
Northampton	19,125	2,729	21,854
Onslow	55,882	110	55,992
Orange	15,629	730	16,359
Pamlico	6,711	280	6,991
Pasquotank	52	...	52
Pender	36,338	11,201	47,539
Perquimans	...	...	...
Person	16,299	18	16,317
Pitt	6,271	128	6,399
Polk	3,924	7,234	11,158
Randolph	7,090	18	7,108
Richmond	22,442	2,192	24,634
Robeson	27,214	5,212	32,426
Rockingham	18,025	...	18,025
Rowan	3,707	447	4,154
Rutherford	27,190	9,248	36,438
Sampson	40,150	4,185	44,335
Scotland	7,079	1,450	8,529
Stanley	12,251	18	12,269
Stokes	3,310	...	3,310
Surry	37,318	146	37,464
Swain	7,589	9,908	17,497
Transylvania	5,642	11,671	17,313
Tyrrell	12,500	...	12,500
Union	22,460	115	22,575
Vance	9,689	171	9,860
Wake	33,884	2,841	36,725
Warren	30,070	1,185	31,255
Washington	5,286	1,245	6,531
Watauga	...	11	11
Wayne	13,703	378	14,081
Wilkes	13,357	...	13,357
Wilson	3,420	641	4,061
Yadkin	...	...	...
Yancey	219	611	830
Total	1,512,071	330,091	1,842,162

Table 11.--Round pulpwood production in Oklahoma, 1956

County ^{1/}	Pine	Hardwood	Total
----- Standard cords -----			
Adair	1,036	...	1,036
Choctaw	1,789	...	1,789
Haskell	3,945	...	3,945
Latimer	3,428	...	3,428
Le Flore	15,774	...	15,774
McCurtain	32,709	...	32,709
Mayes	...	6,000	6,000
Pushmataha	9,854	...	9,854
Total	68,535	6,000	74,535

^{1/} Counties with no pulpwood production are omitted.

Table 12. --Round pulpwood production in South Carolina, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Abbeville	60,510	48	60,558
Aiken	29,545	138	29,683
Allendale	19,189	3,160	22,349
Anderson	48,002	170	48,172
Bamberg	9,919	5,011	14,930
Barnwell	4,864	1,537	6,401
Beaufort	10,931	4,150	15,081
Berkeley	44,093	16,604	60,697
Calhoun	9,212	42	9,254
Charleston	46,032	11,678	57,710
Cherokee	28,514	...	28,514
Chester	69,111	6,060	75,171
Chesterfield	21,385	19,121	40,506
Clarendon	13,896	1,481	15,377
Colleton	44,004	12,160	56,164
Darlington	17,085	15,463	32,548
Dillon	14,481	2,891	17,372
Dorchester	28,114	14,161	42,275
Edgefield	39,459	1,159	40,618
Fairfield	118,705	5,881	124,586
Florence	26,315	3,763	30,078
Georgetown	77,846	24,416	102,262
Greenville	23,938	1,618	25,556
Greenwood	54,843	151	54,994
Hampton	46,677	7,896	54,573
Horry	46,044	3,479	49,523
Jasper	26,385	5,554	31,939
Kershaw	44,639	10,713	55,352
Lancaster	36,968	4,674	41,642
Laurens	46,913	192	47,105
Lee	9,611	2,811	12,422
Lexington	17,930	395	18,325
McCormick	32,271	...	32,271
Marion	11,573	2,138	13,711
Marlboro	5,533	4,029	9,562
Newberry	72,749	3,749	76,498
Oconee	30,188	578	30,766
Orangeburg	28,394	8,537	36,931
Pickens	15,195	63	15,258
Richland	34,941	8,089	43,030
Saluda	19,523	157	19,680
Spartanburg	48,091	3,655	51,746
Sumter	15,335	1,818	17,153
Union	51,880	...	51,880
Williamsburg	20,121	3,530	23,651
York	61,906	791	62,697
Total	1,582,860	223,711	1,806,571

Table 13. --Round pulpwood production in Tennessee, 1956

County	Pine	Hardwood	Total
----- Standard cords -----			
Anderson	10,319	1,787	12,106
Bedford	...	527	527
Benton	14	1,162	1,176
Bledsoe	1,391	...	1,391
Blount	9,924	1,387	11,311
Bradley	11,280	112	11,392
Campbell	6,226	3,826	10,052
Cannon	...	...	...
Carroll	...	848	848
Carter	...	3,094	3,094
Cheatham	...	622	622
Chester	2	...	2
Claiborne	7,063	6,722	13,785
Clay	...	...	...
Cocke	15,620	4,005	19,625
Coffee	...	1,672	1,672
Crockett	...	...	...
Cumberland	10,943	20,180	31,123
Davidson	...	1,271	1,271
Decatur	93	...	93
De Kalb	...	...	...
Dickson	...	242	242
Dyer	...	...	...
Fayette	...	...	...
Fentress	6,164	127	6,291
Franklin	54	306	360
Gibson	...	...	...
Giles	...	...	...
Grainger	1,639	1,285	2,924
Greene	4,778	1,574	6,352
Grundy	2,058	866	2,924
Hamblen	920	...	920
Hamilton	9,836	...	9,836
Hancock	272	164	436
Hardeman	1,440	572	2,012
Hardin	163	...	163
Hawkins	7,051	6,532	13,583
Haywood	...	...	...
Henderson	6,014	838	6,852
Henry	...	1,350	1,350
Hickman	...	3,596	3,596
Houston	...	...	...
Humphreys	...	185	185
Jackson	...	...	...
Jefferson	220	...	220
Johnson	...	702	702
Knox	7,302	2,329	9,631
Lake	...	...	...
Lauderdale	...	...	...
Lawrence	...	3,956	3,956
Lewis	...	4,075	4,075
Lincoln	...	188	188
Loudon	4,679	403	5,082
McMinn	18,252	5,989	24,241
McNairy	219	...	219
Macon	...	...	...
Madison	...	...	...
Marion	2,134	...	2,134
Marshall	...	42	42
Maury	...	374	374
Meigs	3,853	230	4,083
Monroe	20,894	619	21,513
Montgomery	...	14	14
Moore	...	...	...
Morgan	7,334	6,882	14,216

Table 13.--Round pulpwood production in Tennessee (continued)

County	Pine	Hardwood	Total
----- Standard cords -----			
Obion	...	...	...
Overton	451	1,867	2,318
Perry	...	19	19
Pickett	...	...	...
Polk	15,149	4,003	19,152
Putnam	1,199	6,358	7,557
Rhea	7,799	3,539	11,338
Roane	3,029	5,037	8,066
Robertson	...	11	11
Rutherford	...	212	212
Scott	10,263	11,759	22,022
Sequatchie	3,126	...	3,126
Sevier	9,009	693	9,702
Shelby	...	1,421	1,421
Smith	...	...	...
Stewart	...	...	...
Sullivan	113	7,345	7,458
Sumner	...	510	510
Tipton	...	...	...
Trousdale	...	...	...
Unicoi	...	3,162	3,162
Union	6,919	3,376	10,295
Van Buren	521	...	521
Warren	1,379	1,369	2,748
Washington	7,182	4,047	11,229
Wayne	...	...	...
Weakley	...	...	...
White	543	686	1,229
Williamson	...	1,248	1,248
Wilson	...	6	6
Total	244,833	147,323	392,156

Table 14.--Round pulpwood production in Texas, 1956

County ^{1/}	Pine	Hardwood	Total
----- Standard cords -----			
Anderson	18,036	2,810	20,846
Angelina	47,167	197	47,364
Austin	...	973	973
Bastrop	588	...	588
Bowie	14,824	...	14,824
Brazos	...	683	683
Burleson	...	683	683
Camp	6,674	...	6,674
Cass	44,149	...	44,149
Cherokee	54,830	2,495	57,325
Colorado	422	212	634
Fort Bend	...	124	124
Franklin	6,099	...	6,099
Gaines	3	...	3
Gregg	22,647	675	23,322
Grimes	16,444	3,158	19,602
Hardin	52,176	5,500	57,676
Harris	36,353	15,147	51,500
Harrison	65,791	...	65,791
Henderson	3,123	...	3,123
Houston	55,682	2,654	58,336
Jasper	67,177	10,435	77,612
Jefferson	1,194	44	1,238
Leon	1,905	...	1,905
Liberty	52,269	9,144	61,413
Madison	22	...	22
Marion	26,969	...	26,969
Montgomery	71,743	12,522	84,265
Morris	17,653	...	17,653
Nacogdoches	63,749	969	64,718
Newton	50,238	6,022	56,260
Orange	17,042	732	17,774
Panola	54,531	1,263	55,794
Polk	42,933	9,891	52,824
Red River	4,448	...	4,448
Rusk	38,738	1,597	40,335
Sabine	35,668	3,098	38,766
San Augustine	59,770	3,002	62,772
San Jacinto	11,027	2,938	13,965
Shelby	65,120	3,596	68,716
Smith	24,109	1,799	25,908
Terry	2	...	2
Titus	2,222	...	2,222
Trinity	44,397	2,335	46,732
Tyler	47,846	3,974	51,820
Upshur	31,366	1,584	32,950
Van Zandt	21	1,800	1,821
Walker	46,463	6,677	53,140
Waller	44	159	203
Wharton	...	884	884
Wood	15,565	...	15,565
Total	1,339,239	119,776	1,459,015

^{1/} Counties with no pulpwood production are omitted.

Table 15. --Round pulpwood production in Virginia, 1956

County	Pine	Hardwood	Total
	Standard cords		
Accomack	7,997	...	7,997
Albemarle	40,785	9,340	50,125
Alleghany	10,050	50,128	60,178
Amelia	26,656	3,875	30,531
Amherst	40,509	25,612	66,121
Appomattox	22,909	8,035	30,944
Arlington	...	...	...
Augusta	7,408	7,026	14,434
Bath	4,124	27,441	31,565
Bedford	49,218	16,618	65,836
Bland	...	...	...
Botetourt	8,009	11,819	19,828
Brunswick	49,718	5,373	55,091
Buchanan	...	...	...
Buckingham	50,756	31,031	81,787
Campbell	54,221	9,169	63,390
Caroline	18,799	26	18,825
Carroll	1,082	...	1,082
Charles City	11,192	481	11,673
Charlotte	37,025	1,199	38,224
Chesterfield	9,672	124	9,796
Clarke	22	3	25
Craig	5,688	9,770	15,458
Culpeper	13,892	2,746	16,638
Cumberland	37,996	2,872	40,868
Dickenson	...	...	...
Dinwiddie	34,271	4,469	38,740
Elizabeth City	233	...	233
Essex	6,818	...	6,818
Fairfax	7,608	71	7,679
Fauquier	9,669	82	9,751
Floyd	...	...	...
Fluvanna	16,226	5,623	21,849
Franklin	16,383	53	16,436
Frederick	5,975	734	6,709
Giles	58	81	139
Gloucester	14,578	3,000	17,578
Goochland	21,683	5,023	26,706
Grayson	218	...	218
Greene	899	17	916
Greensville	31,195	3,125	34,320
Halifax	42,285	456	42,741
Hanover	5,328	537	5,865
Henrico	4,981	106	5,087
Henry	19,705	5	19,710
Highland	584	5,313	5,897
Isle of Wight	8,125	995	9,120
James City	7,914	280	8,194
King and Queen	19,955	4,000	23,955
King George	1,840	161	2,001
King William	14,407	2,000	16,407
Lancaster	10,248	...	10,248
Lee	20	1,728	1,748
Loudoun	494	...	494
Louisa	18,713	1,344	20,057

Table 15. --Round pulpwood production in Virginia (continued)

County	Pine	Hardwood	Total
	Standard cords		
Lunenburg	16,630	910	17,540
Madison	4,230	...	4,230
Mathews	2,042	...	2,042
Mecklenburg	32,565	1,391	33,956
Middlesex	4,160	1,000	5,160
Montgomery	7,704	...	7,704
Nansemond	8,820	1,761	10,581
Nelson	27,214	5,041	32,255
New Kent	13,773	4,255	18,028
Norfolk	5,686	779	6,465
Northampton	...	...	...
Northumberland	1,728	...	1,728
Nottoway	19,385	6,555	25,940
Orange	21,025	1,521	22,546
Page	918	18	936
Patrick	...	...	...
Pittsylvania	41,465	1,140	42,605
Powhatan	13,671	1,275	14,946
Prince Edward	38,316	7,233	45,549
Prince George	16,382	1,613	17,995
Prince William	19,216	116	19,332
Princess Anne	4,250	196	4,446
Pulaski	168	...	168
Rappahannock	...	...	...
Richmond	9,766	...	9,766
Roanoke	2,368	...	2,368
Rockbridge	13,583	24,372	37,955
Rockingham	13,998	335	14,333
Russell	...	538	538
Scott	189	12,941	13,130
Shenandoah	4,791	80	4,871
Smyth	...	...	...
Southampton	23,684	9,542	33,226
Spotsylvania	9,838	255	10,093
Stafford	2,198	211	2,409
Surry	10,727	1,372	12,099
Sussex	24,976	3,543	28,519
Tazewell	...	...	...
Warren	4,829	255	5,084
Warwick	894	191	1,085
Washington	2,342	4,991	7,333
Westmoreland	5,445	...	5,445
Wise	...	181	181
Wythe	3,663	...	3,663
York	12,424	1,000	13,424
Total	1,273,204	356,502	1,629,706

Table 16. --Companies drawing pulpwood from the South, 1956

State and plant location	Name of company and map code ^{1/}	Pulp capacity, 24 hrs. ^{2/}	State and plant location	Name of company and map code ^{1/}	Pulp capacity, 24 hrs. ^{2/}
		Tons			Tons
ALABAMA			MISSISSIPPI		
Coosa Pines	(1) Coosa River Newsprint Co.	555	Meridian	(39) Flintkote Co.	132
Tuscaloosa	(2) Gulf States Paper Corp.	400	Moss Point	(40) International Paper Co.	615
Mobile	(3) Hollingsworth and Whitney Co.	420	Natchez	(41) International Paper Co.	865
Mobile	(4) International Paper Co.	1,200	Natchez	(42) Johns-Manville Products Corp.	300
Mobile	(5) National Gypsum Co.	300	Laurel	(43) Masonite Corp.	800
Mobile	(6) Ruberoid Co.	53	Greenville	(44) United States Gypsum Co.	180
ARKANSAS			NORTH CAROLINA		
Crossett	(7) The Crossett Co.	620	Canton	(45) Champion Paper and Fibre Co.	835
Camden	(8) International Paper Co.	600	Roanoke Rapids	(46) Halifax Paper Co.	450
FLORIDA			Sylva	(47) Mead Corp.	225
Pensacola	(9) Armstrong Cork Co.	130	Plymouth	(48) North Carolina Pulp Co.	1,450
Foley	(10) The Buckeye Cellulose Corp.	350	Acme	(49) Riegel Carolina Corp.	450
Fernandina	(11) Container Corp. of America	500	OHIO		
Palatka	(12) Hudson Pulp and Paper Corp.	850	Chillicothe	(50) Mead Corp.	210
Panama City	(13) International Paper Co.	1,600	OKLAHOMA		
Jacksonville	(14) Owens-Illinois Glass Co.	500	Pryor	(51) Bestwall Gypsum Co.	60
Fernandina	(15) Rayonier, Inc.	350	PENNSYLVANIA		
Port St. Joe	(16) St. Joe Paper Co.	1,200	York Haven	(52) International Paper Co.	65
Jacksonville	(17) St. Regis Paper Co.	1,500	Spring Grove	(53) P. H. Glatfelter Co.	175
Pensacola	(18) St. Regis Paper Co.	750	SOUTH CAROLINA		
GEORGIA			Georgetown	(54) International Paper Co.	1,870
Macon	(19) Armstrong Cork Co.	200	Hartsville	(55) Sonoco Products Co.	80
Brunswick	(20) Brunswick Pulp and Paper Co.	460	Charleston	(56) West Virginia Pulp and Paper Co.	950
Savannah	(21) Certain-teed Products Corp.	60	TENNESSEE		
Savannah	(22) Continental Can Co.	600	Calhoun	(57) Bowaters Southern Paper Corp.	830
Macon	(23) Georgia Kraft Co.	675	Harriman	(58) Mead Corp.	112
Rome	(24) Georgia Kraft Co.	675	Kingsport	(59) Mead Corp.	200
Valdosta	(25) Owens-Illinois Glass Co.	630	Nashville	(60) Mead Corp.	70
Jesup	(26) Rayonier, Inc.	250	Knoxville	(61) Southern Extract Co.	105
St. Marys	(27) St. Marys Kraft Corp.	800	TEXAS		
Savannah	(28) Union Bag-Camp Paper Corp.	2,000	Pasadena	(62) Champion Paper and Fibre Co.	600
LOUISIANA			Evadale	(63) East Texas Pulp and Paper Co.	315
Shreveport	(29) Bird and Son	60	Lufkin	(64) Southland Paper Mills	720
Elizabeth	(30) Calcasieu Paper Co.	200	Dallas	(65) Ruberoid Co.	40
Hodge	(31) Continental Can Co., Inc.	325	VIRGINIA		
New Orleans	(32) Flintkote Co.	60	West Point	(66) Chesapeake Corp. of Virginia	580
Bogalusa	(33) Gaylord Container Corp.	1,175	Hopewell	(67) Continental Can Co.	600
Bastrop	(34) International Paper Co. (Bastrop Mill)	535	Lynchburg	(68) Mead Corp., Heald Division	125
Bastrop	(35) International Paper Co. (Louisiana Mill)	620	Big Island	(69) Owens-Illinois Glass Co.	150
Springhill	(36) International Paper Co.	1,420	Jarratt	(70) Southern Johns-Manville Products Corp.	200
West Monroe	(37) Olin Mathieson Chemical Corp.	550	Franklin	(71) Union Bag-Camp Paper Corp.	400
MARYLAND			Covington	(72) West Virginia Pulp and Paper Co.	850
Luke	(38) West Virginia Pulp and Paper Co.	325			

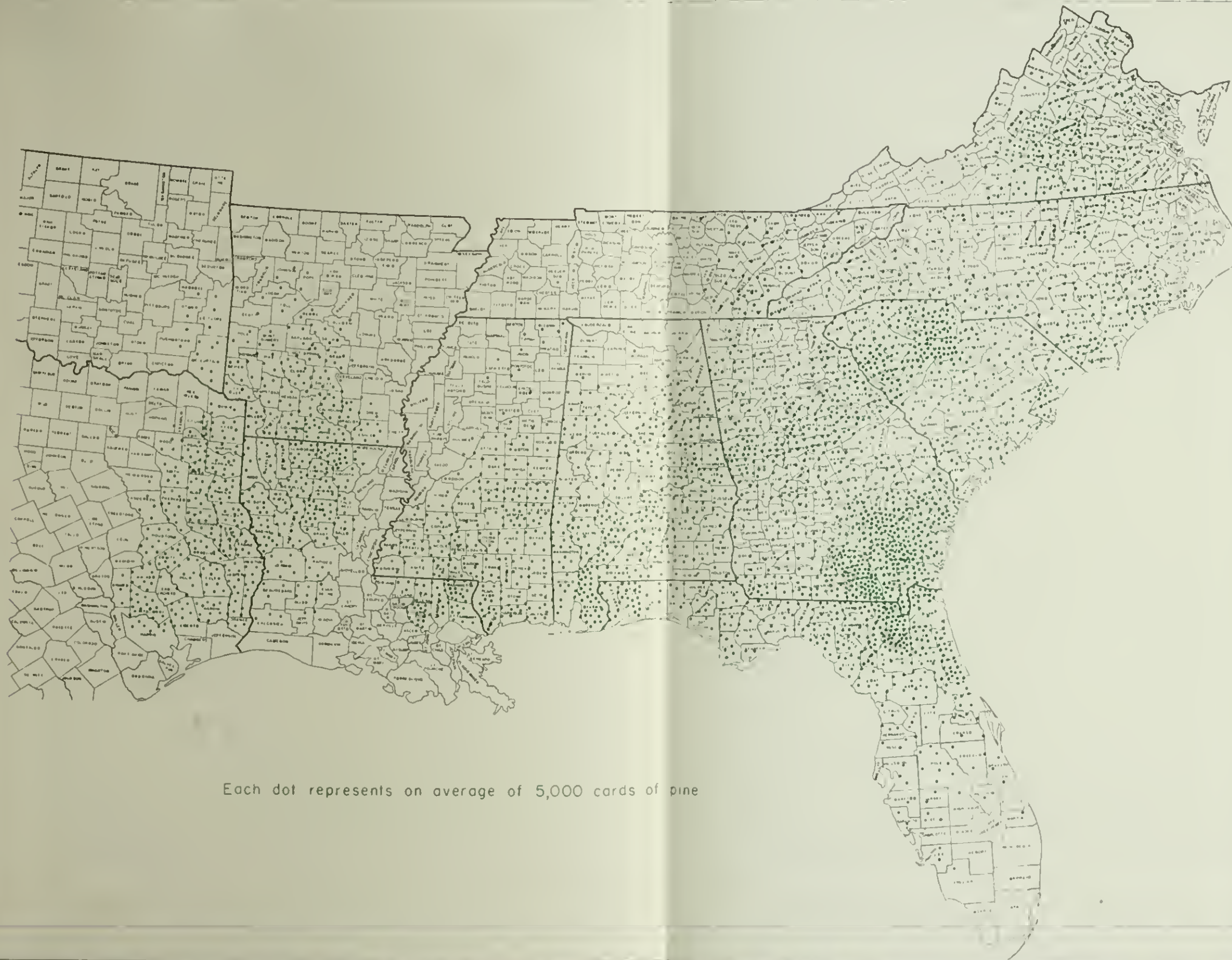
^{1/} Corresponds to numbers at mill locations in figure 1.^{2/} Southern Pulp and Paper Manufacturer, vol. 19, no. 10 (Oct. 1, 1956); and other sources.

Table 17. --Pulpmills under construction or announced in the South

State and plant location	Name of company and map code ^{1/}	Pulp capacity, 24 hrs. ^{2/}
		<u>Tons</u>
ALABAMA		
Brewton	(73) Container Corp. of America	300
Demopolis	(74) Gulf States Paper Corp.	300
Naheola	(75) Marathon Southern Corp.	300
ARKANSAS		
Pine Bluff	(76) Dierks Paper Co.	175
Pine Bluff	(77) International Paper Co.	850
GEORGIA		
Jesup	(78) Rayonier, Inc.	275
LOUISIANA		
St. Francisville	(79) St. Francisville Paper Co.	225
SOUTH CAROLINA		
Rock Hill	(80) Bowaters Southern Paper Corp.	400
TEXAS		
Diboll	(81) Southern Pine Lumber Co.	...

^{1/} Corresponds to number at mill location in figure 1.

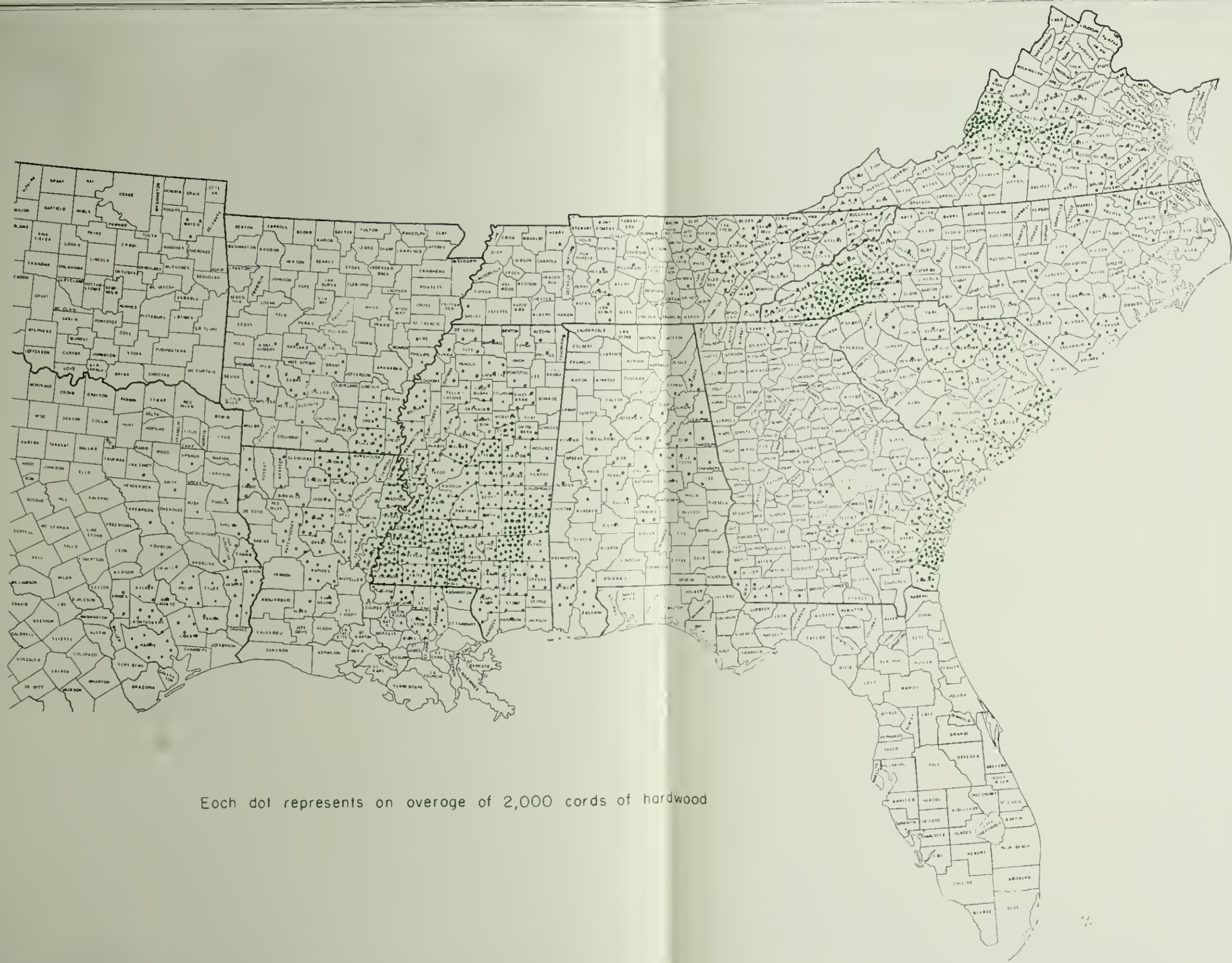
^{2/} Southern Pulp and Paper Manufacturer, and other sources.



Each dot represents on average of 5,000 cords of pine

Figure 4 — Pine pulpwood production by county in the South, 1956





Each dot represents on overage of 2,000 cords of hardwood

Figure 5.—Hordwood pulpwood production by county in the South, 1956.





MISSISSIPPI FORESTS



Acknowledgement

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Anderson-Tully Company
Brookhaven Bank & Trust Company
Chicago Mill and Lumber Company
Citizens Bank of Philadelphia
L. N. Dantzler Lumber Company
A. DeWeese Lumber Company, Inc.
A. K. Dexter
D. L. Fair Lumber Company
Paul R. Farlow
The Flintkate Company
Forestry Suppliers, Inc.
Gaylord Container Corporation
Division of Crown Zellerbach Corporation
Grenada Bank
Gulfport Creasate Company
Hancock Bank
Hallingsworth & Whitney Division
Scott Paper Company
Hood Manufacturing Company
Illinois Central Railroad
International Paper Company

Sam Mabry Lumber Company
Marathan Southern Corporation
Gordon Marks and Company, Inc.
Masonite Corporation
Mississippi Forestry Commission
Mississippi Forest Survey Committee
Mississippi National Forests
Mississippi Products, Inc.
Mississippi Power and Light Company
Mississippi State College
Olin Mathieson Chemical Corporation
Pascagoula-Mass Paint Bank
Peoples Bank of Biloxi
Perry Timber Company
Phillips Lumber Company
Richton Tie & Timber Company
U. S. Gypsum Company
University of Mississippi
Tennessee Valley Authority
Weyerhaeuser Timber Company

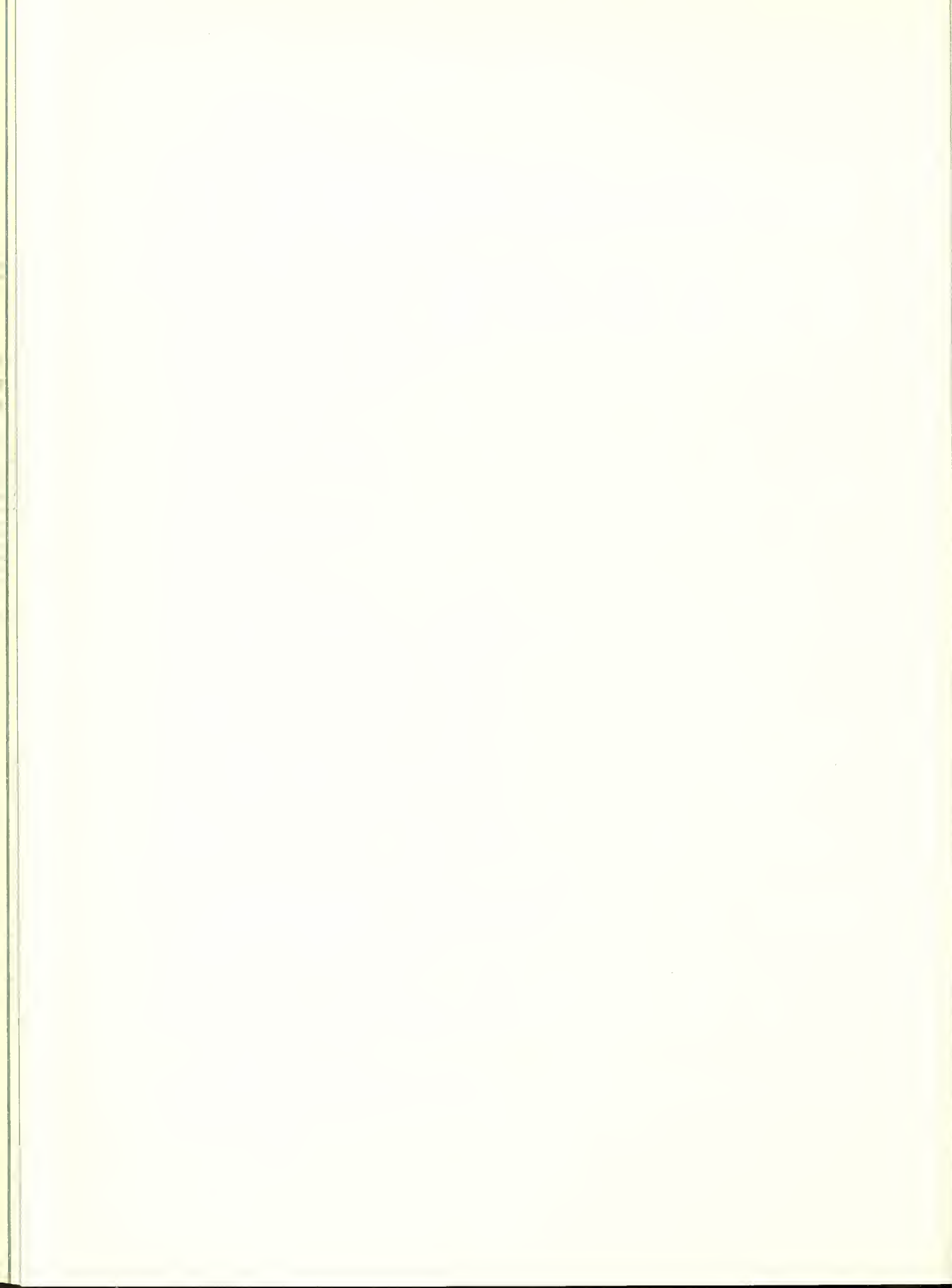
Liaison between cooperators and the Southern Station was provided by the Mississippi Forest Survey Committee, of which JAMES W. CRAIG is general chairman and JOSEPH E. WEATHERLY is secretary-treasurer. Committee members are: R. C. ALLEN, WIRT L. BOND, J. E. BRYAN, JR., W. W. DANNENBERG, D. L. FAIR, JR., ALBERT FANT, E. R. GREEN, W. E. HOUSER, BIRNEY IMES, JR., HOWARD L. JONES, R. E. JONES, D. V. LOGAN, W. E. MARTIN, FRANK McALPIN, M. C. MILLER, L. H. MOLLOY, HAL MOORE, A. W. NELSON, JR., J. S. OLDEN, R. T. PERRY, W. D. PHILLIPS, JOHN PUTNAM, MARION STEPHENS, LAWRENCE TAYLOR, JOHN W. THOMPSON, and BOB TYSON.

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MISSISSIPPI FORESTS



SOUTHERN FOREST EXPERIMENT STATION
New Orleans, Louisiana
Forest Service, U.S. Department of Agriculture
1958



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Figure 1. Forest Survey regions in Mississippi.

Highlights of the Forest Situation

This report presents the principal findings of the third Forest Survey of Mississippi. The survey, which was undertaken as one phase of the nationwide inventory being conducted by the U. S. Forest Service, was designed to provide up-to-date information on the kind, amount, and condition of forest resources; the industries they support; and the possibilities for improving wood production. Comparison with the inventory that was completed in 1948 helps to clarify timber trends.

The decade that elapsed between the 1948 and 1957 surveys witnessed many changes. Shifts in land use and changes in product demand, timber growth, cutting, management, and many other factors importantly affected Mississippi's forest resources. Some of these improved the ability of the forests to supply industry with the kind and volume of timber it needs; others did not.

Reflecting the expansion of the pulp industry, production of pulpwood reached an all-time high. A new multi-million dollar pulp mill was established at Natchez (fig. 1), and existing mills were enlarged. Further expansion of pulping capacity both within the State and in neighboring areas points to new highs in future pulpwood output. Especially noteworthy has been the phenomenal increase in the use of hardwoods for pulp; until quite recently the great bulk of the pulpwood was pine.

The number of sawmills in the State has declined. But mills cutting more than 3 million board feet annually now saw a noticeably larger share of the lumber than they did a decade ago. Such mills are usually better able to take advantage of the efficiencies that result in fuller log use and greater profits. Increasing numbers of the large and medium sawmills, for example, are installing equipment for converting their slabs and edging into pulp chips. Formerly these coarse residues were largely regarded as unavoidable waste.

Mississippi's important veneer industry, sustained partly by foreign and domestic imports, consumed some 17 million more board feet of logs in 1956 than it did 10 years earlier. Increasing numbers of the veneer plants, too, are producing pulp chips from residues.

Reflecting demand for preservatively treated poles, piling, and posts, the number of pressure-type treating plants in the State has increased.

In anticipation of greater long-term demand for timber, pine management programs have

been expanded and intensified in many parts of the State, especially on forest industry lands and public holdings. The programs on industrial ownerships, as those of the pulp companies, stem also from need for assured supplies of raw material to protect heavy capital investments. Both public agencies and forest industries are also sponsoring programs of technical assistance to stimulate better practices on small ownerships. Although management has progressed more rapidly in pine than in hardwoods, there are signs of an upsurge of interest in managing industrial hardwoods.

How have these and other trends affected the forest resources of Mississippi?

In brief, the survey shows that pine sawtimber trees, as well as pines of smaller size, are in measurably greater supply today than 10 years ago. Much of the new growth can be profitably reserved to build up stocking, because the historic turn for the better has taken place at a relatively low level of productivity. But with continued improvement of management programs, the immediate outlook is for further increasing supplies of pine.

A major weak spot in the current forest situation is the lack of effective forestry on lands suitable for growing industrial hardwoods, primarily in the bottomlands and loessial bluffs. The bottomland forests, which largely sustain the State's traditional hardwood-using industries, declined noticeably in volume during the past decade. The decline was heaviest in the larger tree sizes, that is, those most suitable for factory lumber, veneer, and cooperage. Land clearing, excessive cutting, and heavy drought-induced mortality largely contributed to the drop.

The greatest opportunities for realizing the full benefit from Mississippi's forest land are in further improving the stocking of pine timber and in extending management to more forest lands adapted to growing industrial hardwood. The most necessary measures are to reduce the growing space occupied by cull trees wherever they are interfering with thrifty timber; to restock to pine several million acres where natural seeding is unlikely; to reduce losses from fire and other destructive agents; and to improve cutting practices so that more land is left in condition to grow high, continuous yields of timber. In general, these needs are most pressing on farm woodlands and other small holdings—lands that comprise 7 out of every 10 forest acres.



The Forest Resource

TRENDS IN AREA

Forest Area Is Increasing

The area occupied by forests in Mississippi is greater than the combined acreage devoted to all other land uses. South Mississippi, where nearly three acres in every four are in forest,¹ is the most heavily timbered region. The Delta, with its highly developed cotton economy, is the least timbered—only one acre in three is wooded. Elsewhere the extent of forest ranges between these two extremes. All together, forests occupy 57 percent, 17.2 million acres, of the State's total land area.

A noteworthy feature of forest landownership is the preponderance of small holdings. Roughly 80 percent of the privately owned forest land is estimated to be in holdings totaling less than 5,000 acres and most of it is in ownerships of less than 500 acres. Small woodlands are typically held as parts of farms. Large timber holdings, of course, are common among basic wood-using industries such as lumber and pulp companies.

Statewide, wood-using industries own about 15 percent of the forest land area, farmers 43, and other private owners 32. The remaining 10 percent is publicly held.

Forests have gained ground during the past 10 years. The biggest change has been in the northern counties. Here, natural restocking on abandoned fields and extensive planting of open areas within the Yazoo River watershed

increased forest acreage 13 percent. In the central and southwestern regions forest area has increased 7 and 11 percent respectively.

The trend toward conversion of farm lands to forest, at a rate in excess of localized land clearing, has not been general throughout the State. In the Delta, for example, land development has been the dominant factor, and forest acreage has declined 6 percent. Forest acreage has also fallen off in south Mississippi. In this region, clearing for pasture, and perhaps other factors, have reduced the forest area 4 percent.

Statewide, the net result of shifting land-use is that present forest area is 4 percent greater than in 1948, when the previous forest inventory was completed. At this rate, Mississippi's forest area is extending at an average of some 70,000 acres annually.

More Land Growing Pine

The increase of wooded area has been accompanied by notable changes in forest composition (table 1), which partially reflect the results of pine management programs now under way on many properties throughout the State.

The new survey shows that the expansion of hardwood forests at the expense of pine forests—the hardwood “invasion” into a pine economy that has concerned Mississippians for some years—has been reversed. This reversal is largely due to cultural operations aimed at reducing growing space occupied by unwanted hardwoods on areas better suited to growing

Technical terms are defined on pages 17-19.

Table 1. Commercial forest land by forest type (1957) and change since 1948

Region	All types	Change	Soft-wood ₁	Change	Oak-hickory	Change	Bottom-land hardwood ₂	Change
	<i>Thd. acres</i>	<i>Per-cent</i>	<i>Thd. acres</i>	<i>Per-cent</i>	<i>Thd. acres</i>	<i>Per-cent</i>	<i>Thd. acres</i>	<i>Per-cent</i>
North	4,204.0	+13	1,784.1	+74	1,750.9	-18	669.0	+23
Central	3,792.4	+7	2,536.6	+16	777.6	-22	478.2	+36
Southwest	2,746.7	+11	1,458.8	+19	750.4	-15	537.5	+54
South	4,533.4	-4	3,479.9	+19	454.0	-65	599.5	+10
Delta	1,917.1	-6	108.0	+85	337.2	-11	1,471.9	-8
Total	17,193.6	+4	9,367.4	+26	4,070.1	-28	3,756.1	+11

¹ Includes loblolly-shortleaf pine, longleaf-slash pine, and oak-pine types.

² Includes oak-gum-cypress and elm-ash-cottonwood types.

pine. Noncommercial deadening of such hardwoods has been undertaken on at least 175,000 acres annually over the past few years. Of this, more than half was on industrial and public holdings.

During the inter-survey period, 1948-57, area of softwood types (both pine and pine-hardwood) increased some 26 percent, or 1.9 million acres. This increase was general over the State. At the same time, the sizable area dominated by oak and hickory in the uplands declined by 29 percent, or 1.6 million acres. In the bottomlands, on the other hand, the acreage of hardwood forests increased about 11 percent. Along the smaller rivers and streams outside of the Delta, farm acreage is reverting to forest faster than it is being cleared. Within the Delta, the opposite is true.

The effect of the acreage changes in major cover types is that pine forests now make up 54 percent of Mississippi's woodland acreage (fig. 2). In 1948 they occupied only 45 percent.

Stocking Is Better

Ten years ago timber growth on much of the forest area was severely handicapped by sparse stocking of merchantable and potentially merchantable trees, and by large numbers of cull hardwoods (trees unmerchantable now or in the future as a result of defect, rot, or species). Scarcely a third of the forest land was well stocked, in the sense that it supported at least 70 percent of the number of good trees, both large and small, required for full stocking. Today over half—56 percent to be precise—of the total forest area is well stocked, an increase of over 4 million acres. This compares with a 1952 average of 48 percent well-stocked land in the South as a whole. Much of the change is attributable to improved fire protection, which reduced tree mortality, especially in the smaller sizes.

The extent of well-stocked land increased sharply in all parts of the State. But the biggest improvement has been in the southern counties, where the longleaf-slash pine acreage is concentrated. The wide expanse of barren cutover land that has characterized much of this region since the cutting-out of the old-growth is gradually being reduced as management intensifies. In this part of the State the

area in well-stocked stands has more than doubled since 1948.

Along with the general increase in young trees that has taken place in most stands, cull trees (chiefly hardwoods) have declined in number by some 10 percent. Although culls still make up about one-fourth of the basal area in trees of poletimber size and larger, encouraging progress is being made in reducing this overburden and in freeing growing space for thrifty timber.

TRENDS IN STAND STRUCTURE AND VOLUME

More Pine

Softwood growing stock in Mississippi is up 8 percent since 1948 (table 2). The volume now stands at 3.3 billion cubic feet, of which 97 percent is southern pine. The rest is cypress and eastern redcedar (fig. 3).

Table 2. Growing stock volume (1957) and change since 1948

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million cu. ft.	Per-cent	Million cu. ft.	Per-cent
North	412.7	+23	1,017.4	+2
Central	990.1	+15	898.9	-34
Southwest	701.6	-3	769.9	-35
South	1,146.3	+13	791.4	+13
Delta	62.6	-47	798.1	-32
Total	3,313.3	+8	4,275.7	-21

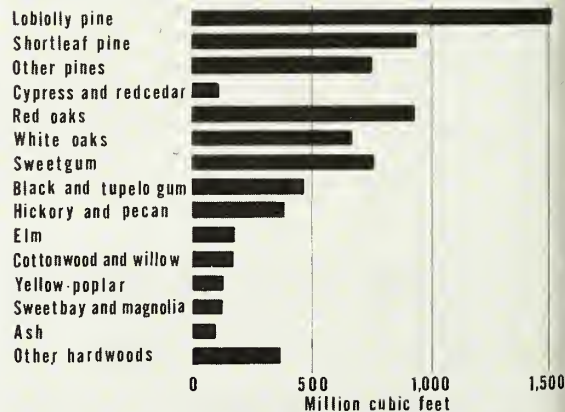


Figure 3. Growing stock by species.

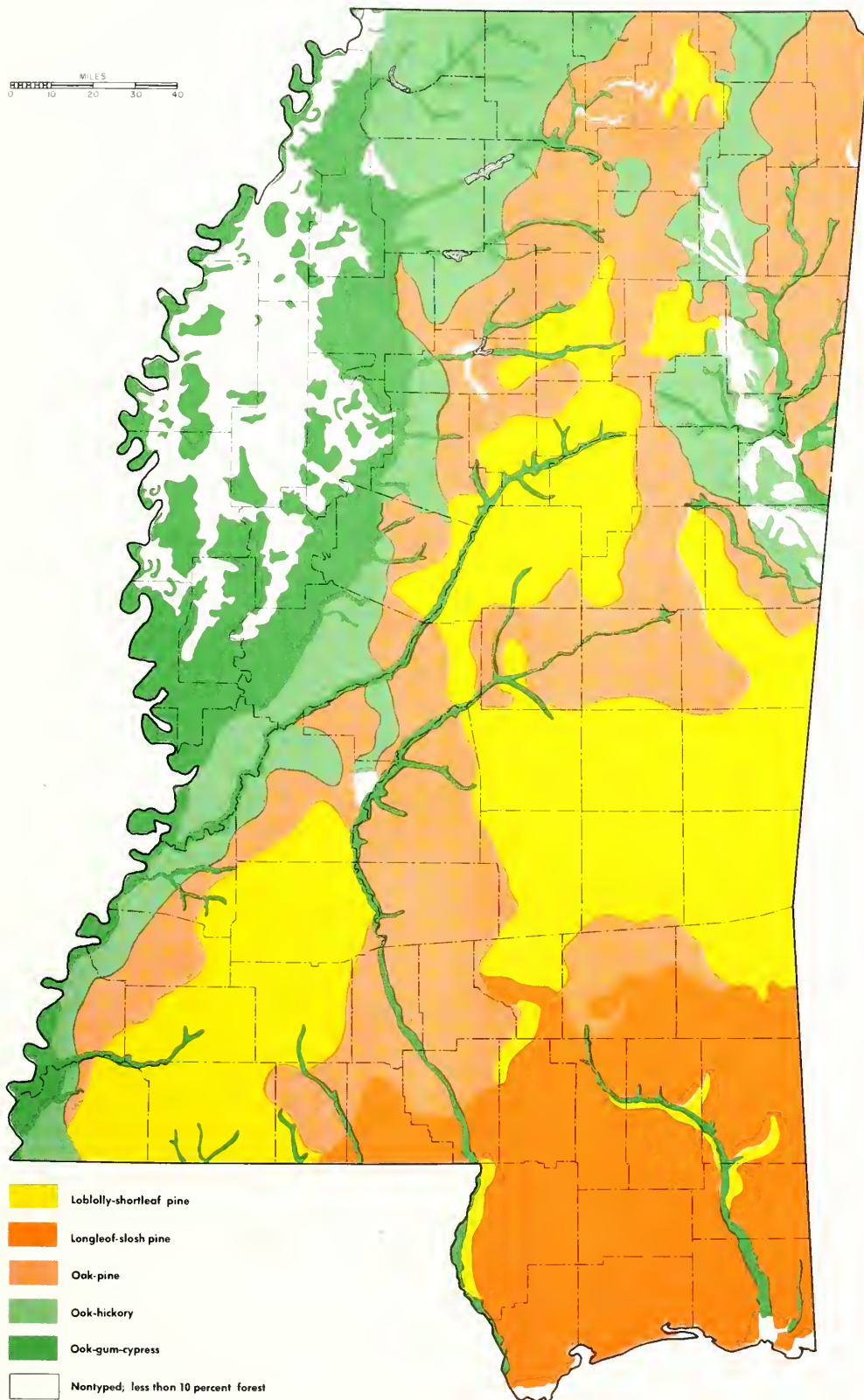


Figure 2. *Major forest types in Mississippi.*

North Mississippi and the Delta exhibit the most contrasting rates of change in softwood volume. The strong upward trend in the North, where the timber had been heavily depleted by 1948, indicates the recuperative powers of the forest when efforts such as fire protection are strengthened and when cutting is lightened. The sharp drop in the Delta is due to continued liquidation of residual cypress.

A bird's-eye view of stand-structure changes may be gained from figures 4 and 5. These changes result from the interaction of many factors. Weak markets for certain products, lumber for example, have eased sawtimber cutting somewhat in recent years. But on the positive side, it is evident that there has been an improvement in pine management almost everywhere in the State.

As figure 4 indicates, the number of 2- and 4-inch softwoods has increased considerably between surveys. These young pines will further improve the growing-stock volume as they reach poletimber size in the next few years. The increase in 6- to 10-inch trees is no less impressive, because considerable pulpwood is harvested from these sizes. The modest upswing in the 12- and 14-inch classes is noteworthy inasmuch as sawmills draw heavily on trees of these sizes. The increase in 16- to 20-inch stems is greater than in the preceding group; more than 50 percent of the soft-

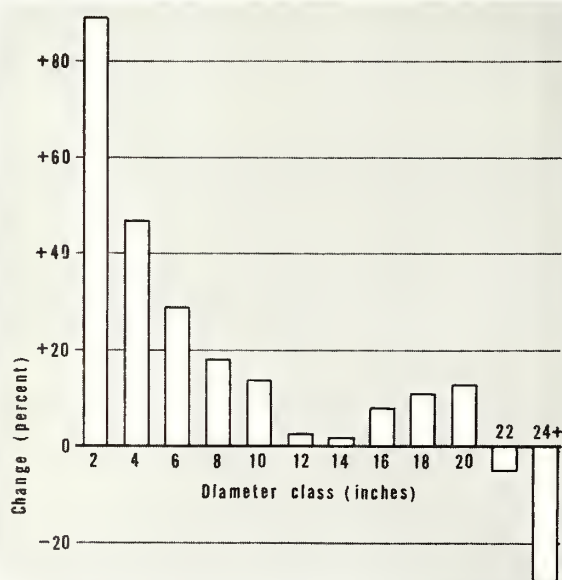


Figure 4. Change in number of softwood growing stock trees between Surveys.

woods in these diameters are concentrated on the 4 million acres in public and industrial holdings that are largely under supervision of professional foresters. Only softwoods 12 inches and larger—chiefly mature second-growth and old-growth relics—have been reduced in numbers.

Figure 5 compares softwood growing stock in 1948 and 1957 by diameter classes. Of the total volume increase, some 257 million cubic feet, over half is in trees 12 inches and larger in diameter.

Trends in sawtimber volume, shown in table 3, generally parallel those in growing stock. The net change in sawtimber volume for all softwoods amounts to a rise of 9 percent, or 1.1 billion board feet. For pine alone, sawtimber volume in Mississippi has increased 12 percent.

Table 3. Sawtimber volume (1957) and change since 1948

Region	Softwood		Hardwood	
	Volume	Change	Volume	Change
	Million bd. ft.	Per- cent	Million bd. ft.	Per- cent
North	1,371.8	+24	2,528.9	-10
Central	3,846.8	+23	2,186.8	-39
Southwest	3,310.8	+3	2,431.1	-41
South	4,735.2	+9	2,063.7	-3
Delta	272.8	-55	2,798.8	-35
Total	13,537.4	+9	12,009.3	-29

Less Hardwood

The big statewide shrinkage in hardwood cover types, 14 percent, was paralleled by declines of 21 percent in hardwood growing stock and 29 percent in hardwood sawtimber.

To interpret these figures it is first essential to note important changes in hardwood volume by location. It is highly significant that in the uplands, which are generally more profitable for growing pine, hardwood growing-stock volume dropped 27 percent. The decline is consistent with the great shift of forest types in the uplands from hardwood back to pine. The progress made in halting hardwood encroachment on pinelands is evident.

Efforts at controlling hardwood encroachment on pine sites have had their most noticeable results on public and forest-industry holdings. For example, growing stock averages

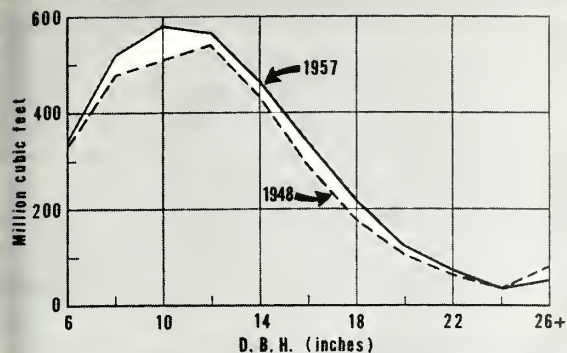


Figure 5. Comparison of softwood growing stock volume by tree diameter, 1948 and 1957.

about 600 cubic feet per acre on publicly held forests in the uplands; and 500 cubic feet on forest-industry holdings. In both of these ownership classes, some three-fourths of the volume is pine. Farm and other private ownerships in the uplands average only 300 cubic feet per acre, about equally divided between pine and hardwood.

It is in the bottomlands that many species of hardwoods reach their best development, and it is these sites that largely sustain the State's traditional hardwood industries. The bulk of the bottomland hardwood acreage lies along the numerous rivers and streams outside of the Delta.

As indicated in figure 6, numbers of hardwoods in all diameters up through 12 inches have increased in the bottoms. This is generally promising. Some of the gain in the smallest diameters, of course, is associated with the statewide increase of forest acreage in the bottomlands.

The decline in large hardwood trees is sizeable. It is due partly to heavy cutting. But it has been accentuated by land clearing in the Delta. It appears that the brunt of the agricultural expansion in this region is being borne by the better hardwood sites, and the forests are being increasingly restricted to areas that flooding, poor drainage, and soil conditions render unsuitable for farming.

Forest type changes in the Delta region seem to confirm this conclusion. To illustrate, total area of bottomland hardwoods in the Delta declined 8 percent during the past decade. During this same period, the acreage of overcup

oak-bitter pecan, a low-value subtype usually found on the least productive bottomland sites, increased 12 percent. Today this refractory subtype accounts for one in every four acres of bottomland hardwoods in the Delta. Ten years ago it made up only one acre in five. Thus, it is likely that forest potential in the Delta bottoms has declined to a greater extent than is suggested by the overall acreage reduction.

From 1952 to 1956 Delta forests especially suffered from a drought such as occurs only once every 25 to 30 years. Available mortality data suggest that as much as three-tenths of the hardwood inventory reduction in the Delta may be the result of drought-induced mortality.

The net effect of the stand-structure changes shown in figure 6 is that the volume of hardwood growing stock on bottomlands in Mississippi fell off some 12 percent. Because large trees declined most heavily, hardwood sawtimber dropped 21 percent in the bottoms.

Hardwood volume in the bottoms is about equally divided between firm-textured species, like oak, and soft-textured species like sweetgum. The volume decline is concentrated among firm-textured species. All together, growing stock volume of firm-textured hardwoods in the bottomlands declined about a

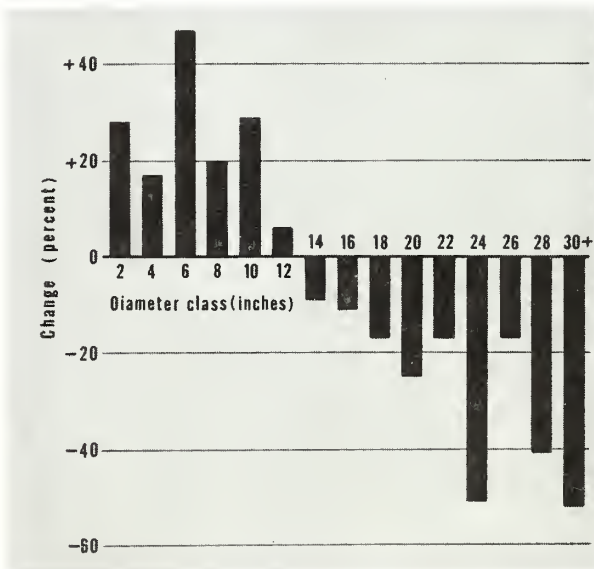


Figure 6. Change in number of hardwood growing stock trees in bottomland types between Surveys.

fifth. Volume in soft-textured hardwoods is nearly the same as in 1948. Thus, soft-textured species make up somewhat more of the hardwood inventory in the bottomlands than they did 10 years ago. This is not an undesirable trend. The soft-textured species found in the bottoms have utility for many purposes. Among other things, they are the prime source of hardwood pulpwood, which is second only to sawlogs (in terms of roundwood volume) among the many industrial hardwood products of Mississippi's forests.

Log Grades Measure Sawtimber Quality

On both the 1948 and 1957 forest surveys, hardwood sawtimber throughout the State was tallied by log grade. Thus, it is possible to assess this segment of the resource in terms of its suitability for standard factory lumber.

These grades take into account the diameter, length, and amount of defects in individual logs. Grades 1 and 2 logs are normally most in demand because they yield much high-quality material.

Between surveys the volume of better-grade logs—that is, grades 1 and 2—declined 52 percent. Volume in logs of lower grade declined 18 percent. The better-grade logs now make up about 23 percent of the hardwood sawtimber volume (table 4), as against some 34 percent in 1948. That even the poorer-grade hardwood has declined measurably is due partly to two things: some of this volume has been removed during timber improvement operations in mixed pine-hardwood stands; and secondly, as better-grade stumpage becomes scarcer, more hardwood sawtimber of poorer quality is being utilized.

Table 4. Sawtimber volume by log grade and tree diameter, 1957

Species group and d.b.h. class (inches)	All grades	Grade 1	Grade 2	Lower grades
— — Million board feet — —				
Softwood:				
10 to 12	5,756.0	15.7	158.0	5,582.3
14 to 18	6,010.2	40.2	1,109.9	4,860.1
20 and up	1,771.2	211.3	332.8	1,227.1
Total	13,537.4	267.2	1,600.7	11,669.5
Hardwood:				
12	2,506.2	1.5	27.3	2,477.4
14 to 18	6,383.5	146.6	1,141.1	5,095.8
20 and up	3,119.6	501.2	915.2	1,703.2
Total	12,009.3	649.3	2,083.6	9,276.4

Grades of pine sawtimber logs were recorded in the latest survey but not in the earlier one. Much of the pine is presently in trees of small size and hence relatively low grade, though this does not generally prevent commercial cutting. Demand is heavy and diversified.

Another expression of wood quality is density, as measured by specific gravity. Export and structural grades of pine lumber have density requirements. Pole strength increases with density. High-density pine yields more pulp than low-density pine. Specific gravity was determined for all pines sampled in Mississippi. Analysis of these data is incomplete, but it appears that pine density increases from north to south within the State. And, it is estimated that there are more than 6.6 million tons of wood, dry weight, to a 4-inch top in round longleaf pine trees in Mississippi.²

TIMBER GROWTH AND CUT

Softwood Growth Is Increasing

Fire, insects, disease, and other natural agencies annually kill about 63 million cubic feet of growing stock, chiefly hardwood. Total mortality is equivalent to slightly over 10 percent of the net annual growth of growing stock. When losses from all causes are allowed for, net annual growth totals 333 million cubic feet of softwood and 269 million of hardwood (fig. 7). This equals 35 cubic feet or 0.5 cord per acre per year, which is a growth rate of 8 percent.

²Upon completion of analyses, a special report on specific gravity relationships in pine will be issued.

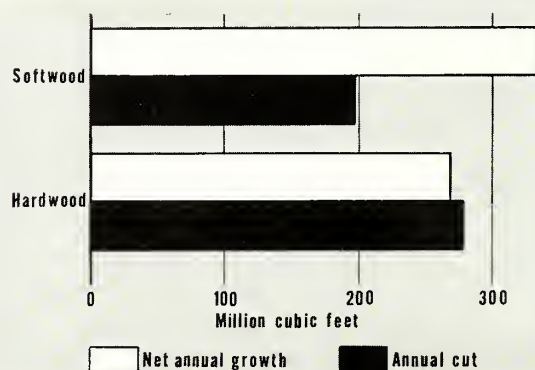


Figure 7. Relationship of growth to annual cut of growing stock.

For sawtimber alone, net annual growth totals 1.3 billion board feet of softwood and 0.8 billion of hardwood. The current growth of softwood sawtimber is some 50 percent greater than at the time of the previous survey. This substantial increase is due partly to the reduction in cut and partly to the increase in number of small trees that annually attain sawtimber size (ingrowth).

Less reassuring is the hardwood situation. Current growth of hardwood sawtimber is 17 percent less than at the time of the prior survey. The trend is desirable to the extent that the reduction of hardwood sawtimber growth has taken place on sites more valuable for pine. But in the Delta, the main producing area of industrial hardwood, growth of hardwood sawtimber is down 35 percent.

In 1948, sawtimber growth for the entire State totaled 110 board feet per acre in softwood types and 92 board feet in hardwood types. Current annual net growth is 154 board feet per acre in softwood types; 88 board feet in hardwood types. Management practices leading to better stocking and lower mortality will, of course, result in measurably higher increments. The possibilities in this respect are suggested by the increased growth per acre achieved in softwood types between surveys. It has been conservatively estimated that the potential growth of Mississippi forest lands is 400 board feet per acre annually.³

Cut Is Mainly Hardwood

All together, logging removed 198 million cubic feet of softwood growing stock and 279 million of hardwood from Mississippi forests in 1956, when the latest cutting statistics were compiled. Virtually all the softwood was pine.

Sweetgum, which is being increasingly used for pulpwood, made up 27 percent of the total hardwood cut; other soft-textured hardwoods accounted for 21 percent; oak for 38 percent; and other firm-textured hardwoods for the remaining 14 percent.

The most significant relationship of timber cut to growth in Mississippi is that of softwoods 12 inches and larger in diameter, and hardwoods 16 inches and up. Trees of these sizes make up about two-thirds of the total cut of softwood and hardwood respectively. Except for pulpwood, products into which industrial hardwood is channelled require larger timber than is usually needed for industrial softwoods.

It is revealing, therefore, that net growth of softwood sawtimber in the above sizes exceeded the 1956 cut by 57 percent. This favorable growth balance, together with the upward trend of softwood inventory, is encouraging. If it can be maintained until pine stocking is built up to a more desirable level it augurs a bright future for dependent wood-using plants. But for hardwoods at least 16 inches in diameter—the sizes most in demand for factory lumber, veneer, and cooperage—the 1956 cut was nearly three times the growth in terms of board-foot volume. In view of the reduction of hardwood inventory that has already taken place, the continuing overcut of large hardwoods indicates that traditional hardwood industries dependent upon local open-market stumpage may be pressed to maintain current production levels, at least in terms of the size and quality of timber presently being used.

³Report of the Temporary Fact-Finding Committee on the Development of Mississippi Resources. 208pp. Illus. Jackson, Miss. 1957.



Forest Products

In 1956 the output of logs, bolts, and other timber products in Mississippi totaled 455 million cubic feet—205 million of softwood, 250 million of hardwood.

Sawlogs are still the leading product. Pulpwood has come up rapidly and now ranks a close second. These two items make up 73 percent of the total output (table 5). Fuelwood accounts for another 17 percent. The balance is largely poles, piling, fence posts, hewn ties, and handle stock.

Table 5. *Output of round and split timber products, 1956*

Product	All species	Softwood	Hardwood
	Percent		
Sawlogs	39	47	33
Pulpwood	34	44	27
Veneer	3		5
Cooperage	1		1
Fuelwood	17	3	29
Poles and piling	2	5	
Posts	2	1	2
All other	2	(1)	3
Total	100	100	100

(1) Negligible.

Sawmills Numerous

Lumber production in Mississippi reached its zenith of 3 billion board feet in 1925. The era of big production ended abruptly in 1929. By then the old growth was about gone; output hit a low of 0.5 billion in 1932. As the Nation climbed out of the Great Depression of the 1930's, lumber production again rose. War-time demands boosted output to nearly 2 billion board feet in 1942. After World War II, it hit a maximum of 1.5 billion in 1946. Since then, output has declined somewhat and now averages about a billion board feet annually.

Sawmills are by far the most numerous primary wood-processing plants in Mississippi. Though a close count is not available, it is estimated that almost 1,000 commercial sawmills are presently operating. Additionally, a few hundred farm rigs are cutting lumber for domestic use. In 1946, nearly 2,000 sawmills were operating in the State. The decline in number of mills is partially reflected in production trends.

As in most States, a relatively few mills

account for the lion's share of the production. About 70 sawmills cut more than 3 million board feet annually; these mills saw two-fifths of the output of softwood sawlogs and more than half of the hardwood.

In 1956 the total harvest of logs for lumber (including sawn crossties) was slightly over a billion board feet, about equally divided between softwood and hardwood. Oak and gum supplied most of the hardwood. Virtually all the softwood was southern pine, though some cypress and redcedar was sawn.

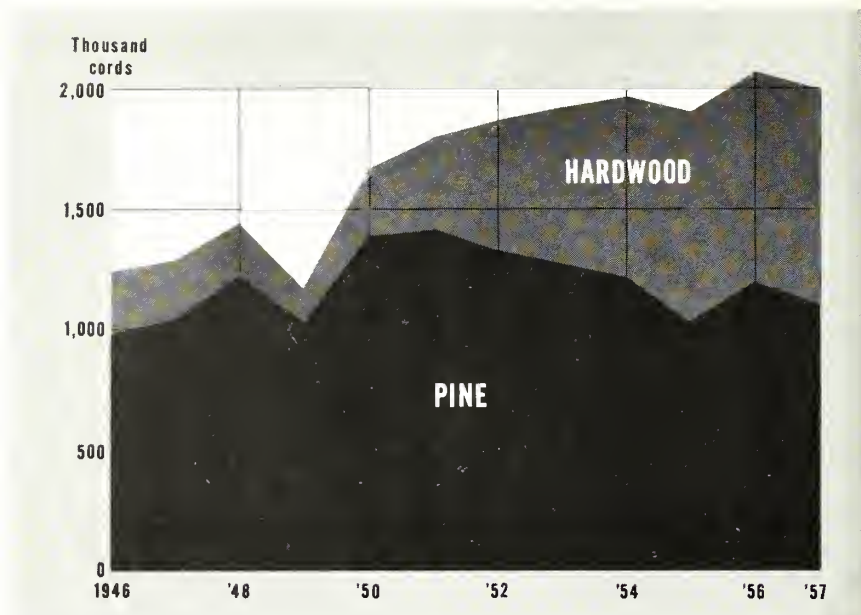
Two Million Cords of Pulpwood

In response to the expansion of the pulp and paper industry, pulpwood production in Mississippi rose from less than 300,000 cords in 1936 to more than 2 million cords in 1956. (Output dipped slightly under 2 million in 1957.) Today pulpwood accounts for a third of the State's total annual roundwood output.

Most notable of all recent pulpwood trends in Mississippi has been the spectacular rise in the use of hardwoods (fig. 8). In the late 1940's, for example, round hardwood pulpwood averaged less than 200,000 cords annually, or 15 percent of the total pulpwood cordage. Production of pulping hardwoods since 1955 has averaged about 880,000 cords annually, or 44 percent of round pulpwood output. It is worth noting that the slight drop in Mississippi's round pulpwood production from 1956 to 1957 was due entirely to a decline in pine; hardwood climbed to a record high of 890,000 cords. About one in every three cords of hardwood pulpwood produced in the entire South is now cut in Mississippi.

Important gains have also been made during the past few years in the use of wood residues, chiefly sawmill slabs and edgings, and veneer cores and trimmings. In 1957 the equivalent of 80,000 cords of pulpwood was produced from pine and hardwood residues in Mississippi. This compares to 67,000 cords in 1956. The residues used in 1957 made up 4 percent of the total pulpwood production. Use of residues is certain to increase. More and more sawmills are installing equipment for converting their coarse waste to pulp chips. In 1955 only

Figure 8. *Production of round pulpwood in Mississippi, 1946-57.*



one sawmill was reported as producing chips; the latest count is 13. Too, in 1958 at least half of the veneer plants are expected to be making pulp chips from veneer cores and from roundup-waste such as trimmings.

Total daily pulping capacity of Mississippi mills totals 2,900 tons. Construction of new facilities in the southern part of the State may boost capacity another 200 tons by 1959. Facilities for pulping both pine and hardwood are also being expanded in neighboring States. At least a portion of the cordage needed to supply out-of-state capacity will be drawn from Mississippi.

Veneer Industry Based On Soft Hardwoods

All veneer manufactured in Mississippi is rotary-cut. Two-fifths of it goes into containers. The rest is largely commercial veneer used, e. g., for plywood and in facing furniture. Logs of somewhat lower quality and smaller minimum diameter can be used for container veneers than for commercial veneers.

The 28 veneer plants get about 70 percent of their raw material from within the State. Output of veneer logs in 1956 totaled 90 million board feet, of which 7 million was shipped out-of-state. About 44 million board feet of veneer logs were imported. The great bulk of the imports were drawn from Alabama, Arkansas, and Louisiana, but some came from as far away as Central America. Thus, Mississippi veneer mills consumed 127 million

board feet of logs in that year, an average of 4.5 million per plant.

Nearly 90 percent of the veneer logs made in Mississippi are from soft-textured hardwoods. In 1956, no pine was reported cut for veneer, whereas in 1946 pine made up 10 percent of the total veneer output. Too, gums and yellow-poplar made up over two-thirds of the veneer output in 1946, but only half in 1956. Other soft-textured hardwoods have largely absorbed the proportionate drop in the above species. The change in usage may be due to limited availability of acceptable timber in species heavily used in the past.

Other Products

Mississippi is a top-ranking producer of southern pine poles and piling. In all, some 704,000 pines were cut for these purposes in 1956. The volume was nearly 10 million cubic feet, of which over 60 percent was cut in south Mississippi. Most poles and piling cut within the State are shipped to local wood-preserving plants. Two-thirds of the 24 plants are of the commercial pressure type (fig. 9), and also treat large quantities of lumber, crossties, and fence posts.

Competition from other types of containers is cutting deeply into traditional slack cooperage markets. Tight cooperage output is strongly affected by erratic demand for bourbon barrels. In 1946 the output of cooperage bolts was 104 million board feet, of which 64 million

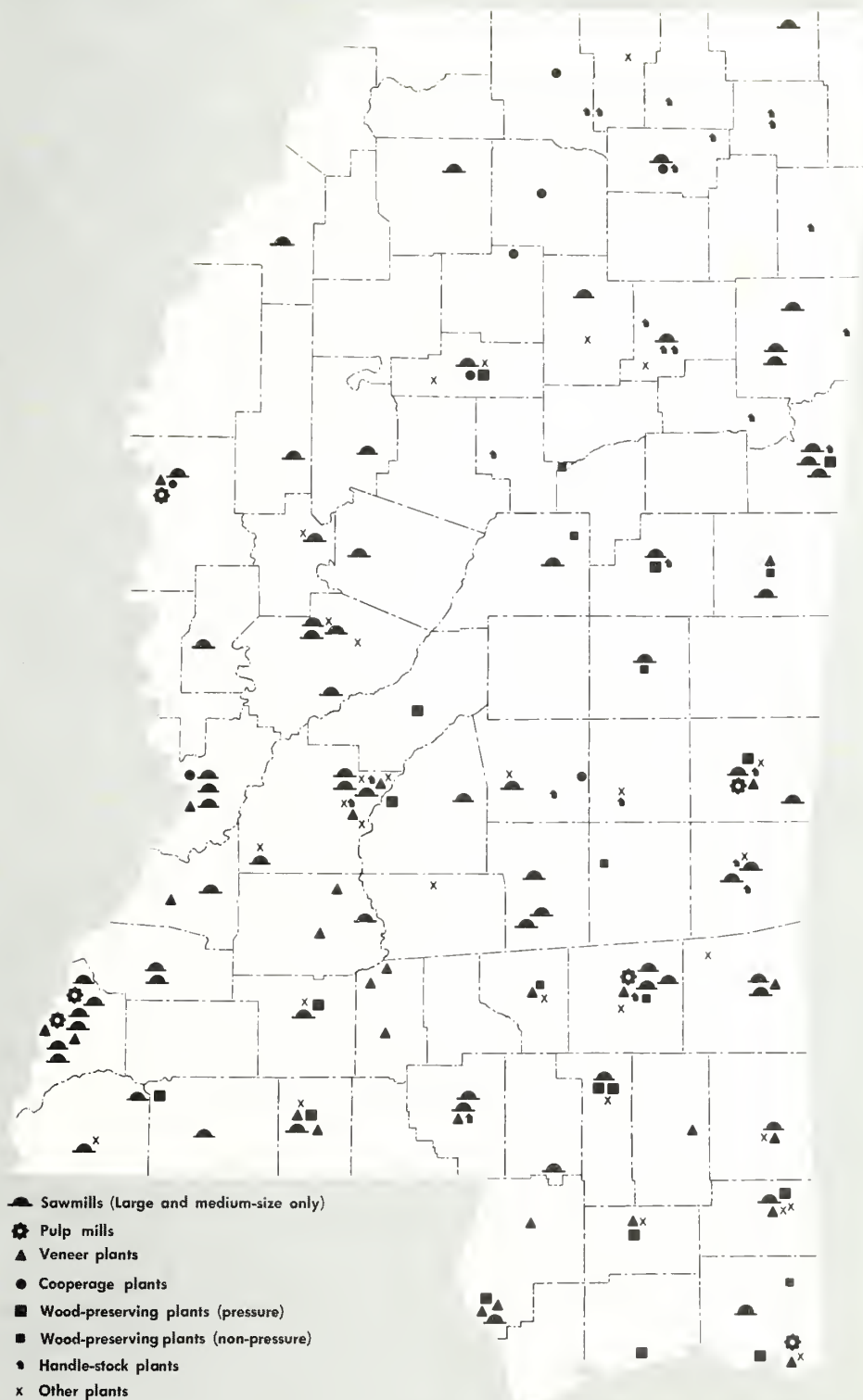


Figure 9. Location of primary wood-using plants in Mississippi, 1956.

was slack. At that time, 27 mills were cutting slack cooperage and 21 tight cooperage. In 1956 the total output of both slack and tight cooperage bolts equaled 19 million board feet. Of the 8 cooperage mills operating in 1956, 5 were cutting slack cooperage.

As in the rest of the South, the use of wood for cooking and heating is trending down. In 1936, for example, fuelwood production in

Mississippi was estimated at 3.7 million cords. By 1946 it had fallen to 2 million cords, and in 1956 totaled scarcely a million cords.

All other products cut in 1956 supplied only 4 percent (15.4 million cubic feet) of the total timber output in Mississippi. Fence posts, hewn ties, and handle stock made up most of this volume.

Improving Forest Productivity

Today the pine resources of Mississippi are better able to sustain the needs of industry than they were 10 years ago. Much of the improved outlook is due to accelerated management programs that have been undertaken on public and forest-industry holdings. As has already been indicated, upland areas in such holdings now support more pine and fewer hardwoods than similar sites in other ownership classes. Pine trends in south Mississippi are another example of the results of these programs; softwood volume (virtually all pine) increased 13 percent in this region since 1948. But in a 10-county group⁴ where public and forest industry holdings together make up more than 40 percent of the forest land, volume of softwood growing stock increased 23 percent. In the remaining seven counties of south Mississippi farm woodlands and other nonindustrial holdings greatly predominate. Here, softwood volume declined 11 percent.

That management of hardwoods has progressed much less than pine is evident from the trends discussed earlier. Educational efforts of both public and private groups, however, are gradually bringing about wider appreciation of the opportunities for managing industrial hardwoods on suitable sites. Too, the recent sharp increase in demand for pulping hardwoods may stimulate management.

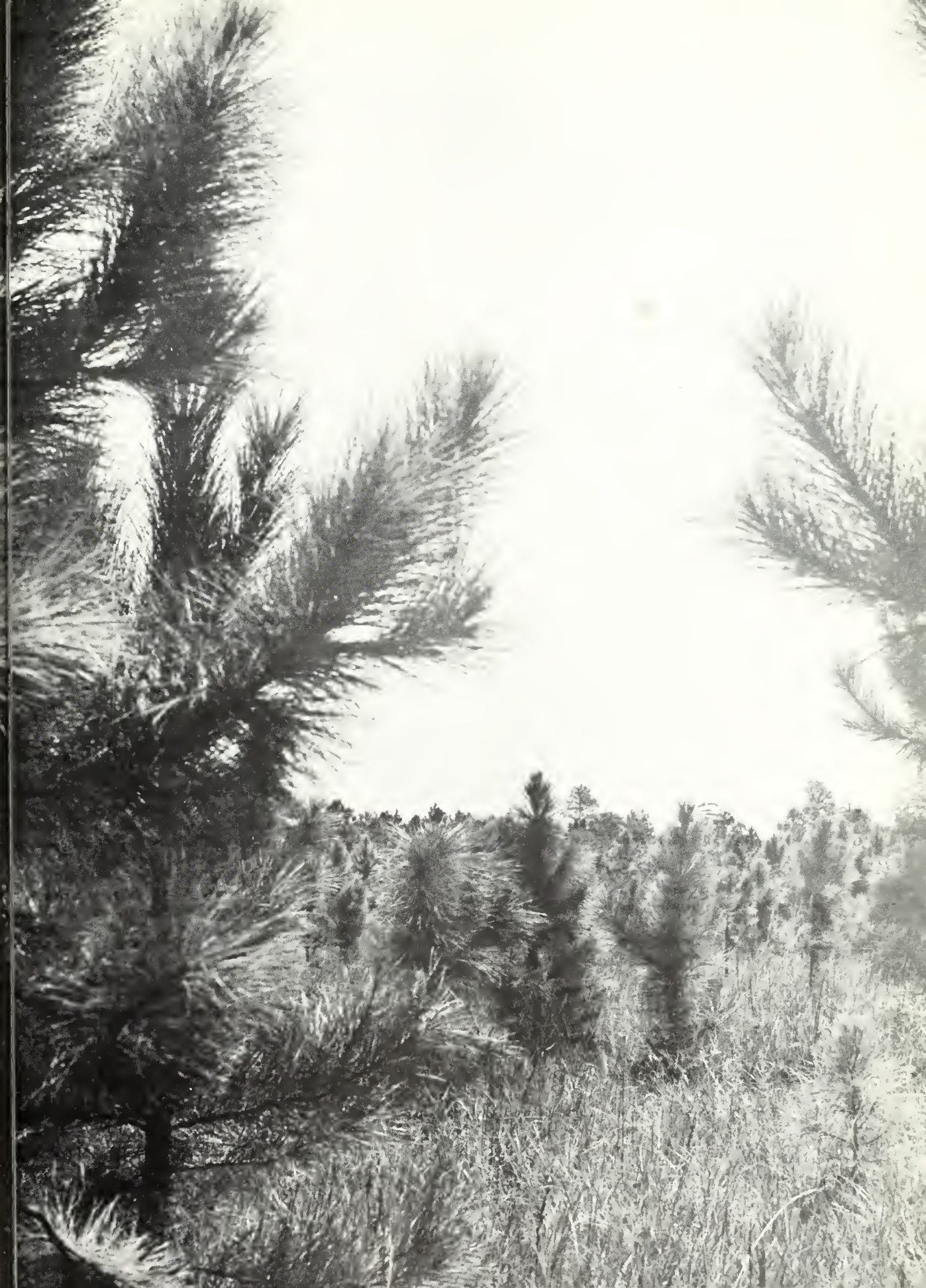
The forests of Mississippi are capable of growing more wood than they now do. It can be reasonably assumed that with application of minimum forestry practices on all commer-

cial timberlands, net annual growth might be raised eventually from 0.5 cord per acre to nearly 1 cord. This would permit the State to enjoy a greater forest industry than it now does. A still higher average growth can probably be attained under intensive management. The prescription basic to such forward movement includes minimizing wildfire, planting idle land, and removing trees that have little or no utility.

As one phase of the Forest Survey, a classification of restocking prospects for pine was made in pine and oak-pine forest types, as well as in certain other upland types where pine is present or was present formerly. In these types, the survey found some 5.7 million acres with both inadequate pine stocking and an inadequate seed source; these acres will require planting or interplanting. Such restocking needs loom larger in north Mississippi than elsewhere in the State. The remaining 6.3 million acres regarded as pine sites either have at least 50 percent stocking of pine or else have enough seed trees to assure eventual natural restocking to pine.

More than 9 million acres of upland pine sites still have a hardwood problem in the sense that 20 percent or more of each acre is occupied by hardwoods. Hardwoods 3 to 9 inches in diameter predominate on close to half of this acreage. To control these trees will require use of sprout-preventing chemicals. About 2.6 million acres of the total is adequately stocked with pine. Treating these areas first will prevent the pines from being crowded out.

⁴George, Greene, Hancock, Harrison, Jackson, Lamar, Pearl River, Perry, Stone, and Wayne counties.



The survey found, too, on the more than 5 million acres suitable for growing industrial hardwoods, that two out of every five acres are noticeably encumbered with cull trees. That is, a sixth or more of each acre is dominated by culls. Removing this material would release established growing stock and create openings for new reproduction.

Adequate fire protection is an essential first step in management. Over 14 million acres of forest land are under organized public protection. Some of the larger owners have heavily supplemented the public system with measures of their own. Last year, the best in Mississippi's fire-control history, some 288 thousand acres were burned. Of these, only 59 thousand were under organized protection.

Several other technical measures could contribute to increasing future timber supplies. These are to strengthen facilities for detecting and insuring prompt action against insect out-

breaks; to aim commercial cutting on hardwood sites at stand improvement; and to make the fullest possible use of harvested timber.

It is apparent that planting, cull hardwood control, and intensified fire protection in the magnitude indicated above will require substantial investment. But potential returns will far exceed costs.

The outlook is mixed. It appears that the downward trend of hardwood inventory will continue for some time before conditions stabilize, and recent production levels may not be reached again for 30 years. On the other hand, if pine inventory continues to build up, and if pine management trends continue to accelerate, softwood production can be nearly doubled within the next 30 years. The future increase in softwood production alone may be counted on to pour added millions of dollars each year into Mississippi's economy.



Appendix

ACCURACY OF THE SURVEY

The data on forest acreage and timber volume in this report were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurements of trees at sample points. The sample points were taken in pairs at and near the intersections of a grid of lines spaced 3 miles apart. Tally trees were selected with a 3.03 diopter prism.

Accuracy of the estimates may be affected by two types of errors. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from mistakes in measurement, judgment, arithmetic, or recording, and limitations of method or equipment. Effects of this second type of error—often referred to as reporting or estimating error—cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data indicates a sampling error of plus or minus 0.3 percent for the estimate of total forest area, 1.4 percent for total cubic volume, and 1.9 percent for total board-foot volume. As the acreage and volume totals for the State are broken down by forest type, species, county, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable two chances out of three.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Sampling error ¹	Volume sampled	Sampling error ²	Volume sampled	Sampling error ²
17,000 M	0.3 %	7,600 MM	1.4 %	26,000 MM	1.9 %
10,000	.4	6,000	1.6	20,000	2.1
5,000	.6	3,000	2.2	10,000	3.0
2,000	.9	1,000	3.8	5,000	4.3
500	1.8	500	5.5	2,000	6.8
100	3.9	100	12.2	300	17.5

¹By random-sampling formula.

²Estimated by use of a procedure described by D. B. DeLury in *Values and Integrals of the Orthogonal Polynomials up to n=26*. Univ. Toronto Press, 33 pp. Toronto, Ont. 1950.

County data on timber volume have been included in the report. Sampling error on growing stock approaches plus or minus 15 percent in counties with 66 million cubic feet of volume. The sampling error for most county estimates of cubic volume will range from plus or minus 8 percent to plus or minus 25 percent. Grouping counties greatly strengthens the total volume data and will be neces-

sary to provide reliable estimates of species-group breakdowns of volume—groupings of a million acres or more of forest land are recommended.

Growth estimates were derived from radial-growth measurements and mortality data taken at sample points. No attempt was made to calculate sampling error in these estimates.

Estimates of annual cut are based on studies conducted during the period of forest inventory. The sampling error to which the total cubic-foot estimate of annual cut is liable, on a probability of two chances out of three, is plus or minus 2.1 percent.

In computing the changes that took place between 1948 and 1957, the data on growing stock volumes from the earlier survey were adjusted to make them as closely comparable as possible to data from the latest survey. This was necessary because of certain basic differences between the two sets of data. In every case, the data from the earlier survey were adjusted to conform to the standards of the latest survey before the change was computed.

DEFINITIONS OF TERMS

Forest Land Class

Forest land.—Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial Forest Land.—Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land.—Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species.—Includes species that normally have value for commercial timber products; excludes so-called weed or non-commercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods.—Coniferous species, of which the most numerous are loblolly pine (*Pinus taeda*); shortleaf pine (*P. echinata*); and longleaf pine

(*P. palustris*).

Hardwoods.—Broadleaved species, of which the most numerous are the oaks (*Quercus* spp.) and sweetgum (*Liquidambar styraciflua*).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Longleaf-slash pine.—Forests in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. Common associates include other southern pines, oak, and gum.

Loblolly-shortleaf pine.—Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. Common associates include oak, hickory, and gum.

Oak-pine.—Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25-49 percent of the stand. Common associates include gum, hickory, and yellow-poplar.

Oak-hickory.—Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25-49 percent in which case the stand would be classified oak-pine. Common associates include yellow-poplar, elm, maple, and black walnut.

Oak-gum-cypress.—Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25-49 percent in which case the stand would be classified oak-pine. Common associates include cottonwood, willow, ash, elm, hackberry, and maple.

Elm-ash-cottonwood.—Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. Common associates include willow, sycamore, beech, and maple.

Class of Timber

Sawtimber trees.—Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log—or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

- (a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.
- (b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees.—Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees.—Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees.—Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees.—Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees.—Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs.—Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber.—Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$ -inch rule, and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber.—Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$ -inch rule, but which do not meet the specifications for large sawtimber.

Poletimber.—Stands failing to meet the sawtimber stand specification, 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.

Seedling and sapling.—Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas.—Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume.—Net volume in board feet, International ¼-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock.—Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside 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 inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Softwood Log Grades

Softwood log grades are based on the value yield per unit outturn of yard lumber. The value of lumber yield may be expressed relative to the value of No. 2 Common lumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Common lumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs. For detailed specifications of log grades, see *Interim log grades for southern pine*, U. S. Forest Service, Southern Forest Experiment Station, 18 pp. 1953.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber. Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent. For detailed specifications of log grades, see *Hardwood log grades for standard lumber: proposals and results*, U. S. Forest Products Laboratory D1737. 1949.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly

on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better.—A stand in which at least four grade-2 or better logs are present per acre.

Poor.—A stand in which fewer than four grade-2 or better logs are present per acre.

Miscellaneous Definitions

Farm ownership.—Private commercial forest land in farms, but excluding lands on which farm operators do not control timber use.

Basal area.—Cross-sectional area, including bark, of trees at breast height, measured in square feet.

D. b. h. (Diameter breast high).—Tree diameter in inches, outside bark, measured at 4-½ feet above ground.

Diameter class.—The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d.b.h.

Net annual growth of sawtimber.—The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock.—The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Annual mortality.—The net volume, excluding salvage, removed from live sawtimber and from growing stock during a specified year through death from natural causes.

Annual cut of sawtimber.—The net board-foot volume of live sawtimber trees cut or killed by logging, and by cultural operations, on commercial forest land during a specified year.

Annual cut of growing stock.—The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging, or by cultural operations, on commercial forest land during a specified year.

Timber products output.—The volume of timber products cut from both growing stock and other sources.

DETAILED TABLES

Table 6. *Forest and nonforest land by Survey region, 1957*

Land use	State of Mississippi	North	Central	Southwest	South	Delta
— — — — — <i>Thousand acres</i> — — — — —						
Forest:						
Commercial	17,193.6	4,204.0	3,792.4	2,746.7	4,533.4	1,917.1
Noncommercial:						
Productive-reserved	31.5	12.4	6.0	6.6	2.9	3.6
Unproductive	...	...	...	...	...	...
Total forest	17,225.1	4,216.4	3,798.4	2,753.3	4,536.3	1,920.7
Nonforest ¹	12,927.2	3,983.3	2,128.6	1,618.5	1,652.5	3,544.3
All land	30,152.3	8,199.7	5,927.0	4,371.8	6,188.8	5,465.0

¹ Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 7. *Commercial forest land by class of ownership, 1957*

Class of ownership	Commercial forest	
	<i>Thousand acres</i>	<i>Percent</i>
Private:		
Farm	7,410.5	43.1
Forest industry	2,514.0	14.6
Other	5,552.2	32.3
Total private	15,476.7	90.0
Public:		
National forest	1,114.9	6.5
Other federal	150.3	.9
State	54.5	.3
County and municipal	397.2	2.3
Total public	1,716.9	10.0
All ownerships	17,193.6	100.0

Table 8. *Land area and commercial forest by county, 1957*

County	All land	Commercial forest		County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent		Thousand acres	Thousand acres	Percent
Adams	286.7	216.8	75.6	Lincoln	375.0	234.4	62.5
Alcorn	259.2	134.3	51.8	Lowndes	325.1	144.4	44.4
Amite	466.6	304.2	65.2	Madison	480.6	197.6	41.1
Attala	463.4	276.4	59.6	Marion	352.0	239.4	68.0
Benton	263.7	174.7	66.2	Marshall	443.6	184.7	41.6
Bolivar	586.9	107.7	18.4	Monroe	492.2	264.7	53.8
Calhoun	369.2	209.1	56.6	Montgomery	257.9	154.0	59.7
Carroll	408.3	213.5	52.3	Neshoba	363.5	199.6	54.9
Chickasaw	323.8	150.4	46.4	Newton	371.2	226.1	60.9
Choctaw	266.9	185.6	69.5	Noxubee	444.8	214.4	48.2
Claiborne	311.0	223.5	71.9	Oktibbeha	290.6	150.8	51.9
Clarke	446.1	332.5	74.5	Panola	436.5	135.3	31.0
Clay	265.0	121.0	45.7	Pearl River	530.0	348.7	65.8
Coahoma	364.8	94.1	25.8	Perry	417.9	327.6	78.4
Copiah	499.9	338.4	67.7	Pike	262.4	142.0	54.1
Covington	266.2	149.1	56.0	Pontotoc	320.6	143.1	44.6
De Soto	283.5	74.7	26.3	Prentiss	267.5	137.0	51.2
Forrest	300.2	210.4	70.1	Quitman	263.7	64.3	24.4
Franklin	363.5	288.2	79.3	Rankin	512.0	359.9	70.3
George	307.8	251.5	81.7	Scott	393.6	253.8	64.5
Greene	465.9	390.4	83.8	Sharkey	279.0	132.1	47.3
Grenada	251.0	165.8	66.1	Simpson	375.7	252.8	67.3
Hancock	310.4	249.3	80.3	Smith	410.9	256.0	62.8
Harrison	374.4	285.4	76.2	Stone	286.7	247.2	86.2
Hinds	561.3	241.9	43.1	Sunflower	443.5	49.3	11.1
Holmes	489.0	222.9	45.6	Tallahatchie	412.2	150.7	36.6
Humphreys	262.4	101.0	38.5	Tate	245.1	68.7	28.0
Issaquena	265.6	160.7	60.5	Tippah	297.0	162.4	54.7
Itawamba	346.2	226.7	65.5	Tishomingo	288.6	195.2	67.6
Jackson	476.2	380.2	79.8	Tunica	293.1	91.4	31.2
Jasper	437.1	288.1	65.9	Union	270.1	122.5	45.4
Jefferson	332.8	231.4	69.5	Walthall	257.9	133.6	51.8
Jefferson Davis	265.0	145.2	54.8	Warren	362.2	233.2	64.4
Jones	451.8	300.5	66.5	Washington	465.9	108.3	23.2
Kemper	484.5	332.3	68.6	Wayne	529.3	434.6	82.1
Lafayette	387.8	236.3	60.9	Webster	266.2	176.5	66.3
Lamar	320.0	248.3	77.6	Wilkinson	432.0	328.3	76.0
Lauderdale	461.4	329.9	71.5	Winston	387.8	244.2	63.0
Lawrence	277.1	192.0	69.3	Yalobusha	282.9	184.2	65.1
Leake	375.0	224.4	59.8	Yazoo	600.4	307.1	51.1
Lee	291.2	88.4	30.4				
Leflore	376.3	94.3	25.1	All counties	30,152.3	17,193.6	57.0

Table 9. Commercial forest land by stand-size and forest type, by Survey region, 1957

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling & sapling	Non-stocked & other areas	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling & sapling	Non-stocked & other areas
— — — Thousand acres — — —							— — — Thousand acres — — —					
STATE OF MISSISSIPPI							SOUTHWEST					
Softwood types:												
Longleaf-slash pine	2,043.9	47.4	363.1	642.1	631.5	359.8	29.6	6.5	17.2	2.7	3.2	...
Loblolly-shortleaf pine	4,596.1	431.3	1,004.4	1,623.2	1,487.7	49.5	963.9	136.7	205.4	350.1	265.2	6.5
Oak-pine	2,727.4	158.0	292.7	1,208.4	1,026.7	41.6	465.3	48.7	46.7	188.9	162.4	18.6
Total	9,367.4	636.7	1,660.2	3,473.7	3,145.9	450.9	1,458.8	191.9	269.3	541.7	430.8	25.1
Hardwood types:												
Oak-hickory	4,070.1	317.1	398.1	1,975.1	1,245.9	133.9	750.4	96.3	85.5	420.8	144.5	3.3
Elm-ash-cottonwood	482.3	135.9	52.2	188.0	88.2	18.0	78.2	17.6	5.9	51.8	2.9	...
Oak-gum-cypress	3,273.8	537.7	419.6	1,457.6	808.5	50.4	459.3	108.0	57.1	176.2	108.3	9.7
Total	7,826.2	990.7	869.9	3,620.7	2,142.6	202.3	1,287.9	221.9	148.5	648.8	255.7	13.0
All types	17,193.6	1,627.4	2,530.1	7,094.4	5,288.5	653.2	2,746.7	413.8	417.8	1,190.5	686.5	38.1
NORTH							SOUTH					
Softwood types:												
Longleaf-slash pine	...	...	...	...	...	...	1,972.8	40.9	337.2	622.5	612.4	359.8
Loblolly-shortleaf pine	955.8	31.4	151.5	343.4	409.4	20.1	958.5	103.8	227.8	286.5	323.0	17.4
Oak-pine	828.3	7.6	49.9	353.5	409.5	7.8	548.6	26.2	61.4	243.1	205.3	12.6
Total	1,784.1	39.0	201.4	696.9	818.9	27.9	3,479.9	170.9	626.4	1,152.1	1,140.7	389.8
Hardwood types:												
Oak-hickory	1,750.9	76.4	150.3	838.7	628.5	57.0	454.0	15.8	16.1	190.3	165.9	65.9
Elm-ash-cottonwood	105.4	17.6	11.1	58.3	16.0	2.4	28.3	...	5.7	19.7	2.9	...
Oak-gum-cypress	563.6	39.4	99.7	251.5	156.6	16.4	571.2	75.2	97.2	278.0	120.8	...
Total	2,419.9	133.4	261.1	1,148.5	801.1	75.8	1,053.5	91.0	119.0	488.0	289.6	65.9
All types	4,204.0	172.4	462.5	1,845.4	1,620.0	103.7	4,533.4	261.9	745.4	1,640.1	1,430.3	455.7
CENTRAL							DELTA					
Softwood types:												
Longleaf-slash pine	41.5	...	8.7	16.9	15.9	...	...	...	...	...	...	...
Loblolly-shortleaf pine	1,658.8	153.9	412.1	636.8	450.5	5.5	59.1	5.5	7.6	6.4	39.6	...
Oak-pine	836.3	70.0	134.7	395.5	233.5	2.6	48.9	5.5	...	27.4	16.0	...
Total	2,536.6	223.9	555.5	1,049.2	699.9	8.1	108.0	11.0	7.6	33.8	55.6	...
Hardwood types:												
Oak-hickory	777.6	51.5	123.2	420.2	177.2	5.5	337.2	77.1	23.0	105.1	129.8	2.2
Elm-ash-cottonwood	7.9	...	2.6	...	2.5	2.8	262.5	100.7	26.9	58.2	63.9	12.8
Oak-gum-cypress	470.3	66.2	84.6	238.3	78.6	2.6	1,209.4	248.9	81.0	513.6	344.2	21.7
Total	1,255.8	117.7	210.4	658.5	258.3	10.9	1,809.1	426.7	130.9	676.9	537.9	36.7
All types	3,792.4	341.6	765.9	1,707.7	958.2	19.0	1,917.1	437.7	138.5	710.7	593.5	36.7

1 Includes areas not classified elsewhere.

Table 10. Commercial forest land by degree of tree stocking and forest type, by Survey region, 1957

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked	All stocking	Well stocked	Medium stocked	Poorly stocked	Non- stocked
— — — Thousand acres — — —						— — — Thousand acres — — —				
STATE OF MISSISSIPPI						SOUTHWEST				
Softwood types:										
Longleaf-slash pine	2,043.9	658.3	586.2	488.0	311.4	29.6	21.6	8.0	.	.
Loblolly-shortleaf pine	4,596.1	2,919.5	1,169.9	467.0	39.7	9,63.9	658.2	221.0	81.4	3.3
Oak-pine	2,727.4	1,314.3	911.4	479.9	21.8	465.3	288.9	118.3	51.9	6.2
Total	9,367.4	4,892.1	2,667.5	1,434.9	372.9	1,458.8	968.7	347.3	133.3	9.5
Hardwood types:										
Oak-hickory	4,070.1	2,361.9	1,030.4	558.4	119.4	750.4	547.9	135.9	63.3	3.3
Elm-ash-cottonwood	482.3	284.5	115.1	77.2	5.5	78.2	41.7	24.0	12.5	.
Oak-gum-cypress	3,273.8	2,062.9	832.3	353.0	25.6	459.3	271.1	133.2	55.0	...
Total	7,826.2	4,709.3	1,977.8	988.6	150.5	1,287.9	860.7	293.1	130.8	3.3
All types	17,193.6	9,601.4	4,645.3	2,423.5	523.4	2,746.7	1,829.4	640.4	264.1	12.8
NORTH						SOUTH				
Softwood types:										
Longleaf-slash pine	.	.	.	.	.	1,972.8	618.1	569.4	473.9	311.4
Loblolly-shortleaf pine	955.8	529.6	301.4	106.4	18.4	958.5	610.1	220.8	115.1	12.5
Oak-pine	828.3	321.4	334.5	164.6	7.8	548.6	231.7	208.8	102.9	5.2
Total	1,784.1	851.0	635.9	271.0	26.2	3,479.9	1,459.9	999.0	691.9	329.1
Hardwood types:										
Oak-hickory	1,750.9	1,005.5	462.8	232.5	50.1	454.0	185.3	97.9	109.9	60.9
Elm-ash-cottonwood	105.4	55.6	30.7	19.1	.	28.3	5.8	19.6	2.9	...
Oak-gum-cypress	563.6	373.4	133.0	45.6	11.6	571.2	345.7	148.9	76.6	...
Total	2,419.9	1,434.5	626.5	297.2	61.7	1,053.5	536.8	266.4	189.4	60.9
All types	4,204.0	2,285.5	1,262.4	568.2	87.9	4,533.4	1,996.7	1,265.4	881.3	390.0
CENTRAL						DELTA				
Softwood types:										
Longleaf-slash pine	41.5	18.6	8.8	14.1	...	...	...	...	...	...
Loblolly-shortleaf pine	1,658.8	1,101.0	393.6	158.7	5.5	59.1	20.6	33.1	5.4	...
Oak-pine	836.3	449.0	238.9	145.8	2.6	48.9	23.3	10.9	14.7	...
Total	2,536.6	1,568.6	641.3	318.6	8.1	108.0	43.9	44.0	20.1	...
Hardwood types:										
Oak-hickory	777.6	497.0	192.9	84.8	2.9	337.2	126.2	140.9	67.9	2.2
Elm-ash-cottonwood	7.9	2.6	...	5.3	.	262.5	178.8	40.8	37.4	5.5
Oak-gum-cypress	470.3	309.9	117.8	42.6	.	1,209.4	762.8	299.4	133.2	14.0
Total	1,255.8	809.5	310.7	132.7	2.9	1,809.1	1,067.8	481.1	238.5	21.7
All types	3,792.4	2,378.1	952.0	451.3	11.0	1,917.1	1,111.7	525.1	258.6	21.7

Table 11. Area of sawtimber stands by stand quality and forest type, by Survey region, 1957

Forest type	All qualities	Fair or better	Poor	All qualities	Fair or better	Poor
Thousand acres				Thousand acres		
STATE OF MISSISSIPPI				SOUTHWEST		
Softwood types:						
Longleaf-slash pine	410.5	96.1	314.4	23.7	11.9	11.8
Loblolly-shortleaf pine	1,435.7	626.0	809.7	342.1	164.1	178.0
Oak-pine	450.7	114.7	336.0	95.4	27.6	67.8
Total	2,296.9	836.8	1,460.1	461.2	203.6	257.6
Hardwood types:						
Oak-hickory	715.2	223.7	491.5	181.8	85.2	96.6
Elm-ash-cottonwood	188.1	131.1	57.0	23.5	17.6	5.9
Oak-gum-cypress	957.3	481.1	476.2	165.1	90.6	74.5
Total	1,860.6	835.9	1,024.7	370.4	193.4	177.0
All types	4,157.5	1,672.7	2,484.8	831.6	397.0	434.6
NORTH				SOUTH		
Softwood types:						
Longleaf-slash pine	...	...	...	378.1	84.2	293.9
Loblolly-shortleaf pine	182.9	77.9	105.0	331.6	138.2	193.4
Oak-pine	57.5	10.8	46.7	87.6	33.5	54.1
Total	240.4	88.7	151.7	797.3	255.9	541.4
Hardwood types:						
Oak-hickory	226.7	62.1	164.6	31.9	16.1	15.8
Elm-ash-cottonwood	28.7	17.9	10.8	5.7	5.7	...
Oak-gum-cypress	139.1	84.0	55.1	172.4	91.6	80.8
Total	394.5	164.0	230.5	210.0	113.4	96.6
All types	634.9	252.7	382.2	1,007.3	369.3	638.0
CENTRAL				DELTA		
Softwood types:						
Longleaf-slash pine	8.7	...	8.7	...	...	...
Loblolly-shortleaf pine	566.0	240.8	325.2	13.1	5.0	8.1
Oak-pine	204.7	42.8	161.9	5.5	...	5.5
Total	779.4	283.6	495.8	18.6	5.0	13.6
Hardwood types:						
Oak-hickory	174.7	14.7	160.0	100.1	45.6	54.5
Elm-ash-cottonwood	2.6	2.6	...	127.6	87.3	40.3
Oak-gum-cypress	150.8	45.9	104.9	329.9	169.0	160.9
Total	328.1	63.2	264.9	557.6	301.9	255.7
All types	1,107.5	346.8	760.7	576.2	306.9	269.3

Table 12. Basal area per acre of growing stock and cull trees by forest type and Survey region, 1957

Forest type	State of Mississippi	North	Central	Southwest	South	Delta
— — — — — Square feet — — — — —						
Longleaf-slash pine:						
2- and 4-inch good trees 1	5.5	.	7.3	4.6	5.5	.
Growing stock	20.3	.	14.0	35.2	20.1	.
2- and 4-inch poor trees	2.2	.	.4	2.9	2.3	...
Cull trees	3.4	...	6.7	4.9	3.3	...
All trees	31.4	...	28.4	47.6	31.2	...
Loblolly-shortleaf pine:						
2- and 4-inch good trees 1	15.9	11.9	18.8	18.7	12.9	9.0
Growing stock	35.8	26.0	38.5	42.6	34.6	25.4
2- and 4-inch poor trees	3.7	4.4	3.4	3.4	3.8	1.5
Cull trees	6.6	7.8	5.7	5.7	7.4	11.7
All trees	62.0	50.1	66.4	70.4	58.7	47.6
Oak-pine:						
2- and 4-inch good trees 1	11.5	11.5	13.6	9.6	8.8	20.5
Growing stock	27.1	23.1	30.0	28.5	27.4	27.5
2- and 4-inch poor trees	5.0	7.3	3.6	4.8	3.4	10.0
Cull trees	10.1	12.2	8.6	9.6	9.9	9.7
All trees	53.7	54.1	55.8	52.5	49.5	67.7
Oak-hickory:						
2- and 4-inch good trees 1	10.1	10.2	11.7	11.3	7.4	6.8
Growing stock	26.9	24.4	32.0	31.6	20.4	27.6
2- and 4-inch poor trees	7.5	7.8	4.5	8.1	5.1	14.4
Cull trees	16.9	19.3	10.1	17.2	12.3	25.3
All trees	61.4	61.7	58.3	68.2	45.2	74.1
Elm-ash-cottonwood:						
2- and 4-inch good trees 1	5.6	5.4	.	7.1	.	6.0
Growing stock	39.3	38.8	32.4	33.1	46.1	40.8
2- and 4-inch poor trees	7.4	5.7	6.1	12.4	.8	7.4
Cull trees	17.3	24.1	27.8	9.9	25.6	15.5
All trees	69.6	74.0	66.3	62.5	72.5	69.7
Oak-gum-cypress:						
2- and 4-inch good trees 1	9.1	7.3	11.5	7.3	12.2	8.2
Growing stock	37.6	36.2	42.3	43.1	49.4	28.9
2- and 4-inch poor trees	8.5	9.7	6.5	8.1	8.0	9.1
Cull trees	20.5	19.5	15.9	21.0	21.6	22.0
All trees	75.7	72.7	76.2	79.5	91.2	68.2
All types:						
2- and 4-inch good trees 1	11.0	10.3	15.1	12.7	8.5	8.0
Growing stock	30.9	26.4	35.5	36.9	28.0	30.1
2- and 4-inch poor trees	5.6	7.2	4.0	6.0	3.7	9.6
Cull trees	12.2	15.4	8.6	12.2	8.3	21.1
All trees	59.7	59.3	63.2	67.8	48.5	68.8

1 Includes only sound, well-formed trees.

Table 13. Total volume by class of timber and species, by Survey region, 1957

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole- timber trees		
			Sawlog portions	Upper stems			
— — — — — Thousand cords — — — — —							
STATE OF MISSISSIPPI							
Softwood:							
Loblolly pine	20,349	20,191	14,443	1,341	4,407		158
Shortleaf pine	12,553	12,469	7,337	746	4,386		84
Longleaf pine	5,507	5,496	3,606	390	1,500		11
Slash pine	3,228	3,205	2,168	200	837		23
Other pines	1,297	1,288	969	106	213		9
Other softwoods	1,743	1,528	1,211	157	160		215
Total	44,677	44,177	29,734	2,940	11,503		500
Hardwood:							
Red oaks	22,911	13,895	5,998	2,235	5,662	2,281	6,735
White oaks	15,623	9,921	4,156	1,559	4,206	1,519	4,183
Hickory	9,057	5,750	2,808	1,012	1,930	864	2,443
Sweetgum	14,216	11,222	4,640	1,575	5,007	453	2,541
Black and tupelo gums	8,847	6,928	3,274	942	2,712	332	1,587
Other hardwoods	28,434	16,101	7,970	2,518	5,613	1,993	10,340
Total	99,088	63,817	28,846	9,841	25,130	7,442	27,829
All species	143,765	107,994	58,580	12,781	36,633	7,442	28,329
NORTH							
Softwood:							
Loblolly pine	1,324	1,311	783	91	437		13
Shortleaf pine	4,087	4,024	2,185	212	1,627		63
Longleaf pine							
Slash pine							
Other pines							
Other softwoods	181	168	104	17	47		13
Total	5,592	5,503	3,072	320	2,111		89
Hardwood:							
Red oaks	6,213	3,574	1,534	557	1,483	583	2,056
White oaks	5,621	3,421	1,297	500	1,624	452	1,748
Hickory	2,607	1,545	609	232	704	194	868
Sweetgum	3,910	2,834	1,078	368	1,388	103	973
Black and tupelo gums	1,390	924	410	116	398	42	424
Other hardwoods	5,881	2,887	1,190	376	1,321	360	2,634
Total	25,622	15,185	6,118	2,149	6,918	1,734	8,703
All species	31,214	20,688	9,190	2,469	9,029	1,734	8,792
CENTRAL							
Softwood:							
Loblolly pine	7,544	7,485	5,144	527	1,841		59
Shortleaf pine	4,884	4,879	2,781	295	1,803		5
Longleaf pine	231	231	124	12	95		
Slash pine							
Other pines	509	506	389	37	80		3
Other softwoods	108	100	75	9	16		8
Total	13,276	13,201	8,513	880	3,808		75
Hardwood:							
Red oaks	4,809	3,060	1,166	403	1,491	430	1,319
White oaks	3,785	2,697	1,050	338	1,309	300	788
Hickory	1,901	1,305	556	213	536	149	447
Sweetgum	3,496	3,009	1,060	330	1,619	85	402
Black and tupelo gums	1,873	1,613	734	206	673	61	199
Other hardwoods	3,014	1,733	749	224	760	175	1,106
Total	18,878	13,417	5,315	1,714	6,388	1,200	4,261
All species	32,154	26,618	13,828	2,594	10,196	1,200	4,336

Table 13. Total volume by class of timber and species, by Survey region, 1957
(Continued)

Species	All timber ¹	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole- timber trees		
			Sawlog portions	Upper stems			
— — — — — Thousand cords — — — — —							
SOUTHWEST							
Softwood:							
Loblolly pine	6,384	6,356	4,808	415	1,133		28
Shortleaf pine	1,877	1,875	1,290	116	469		2
Longleaf pine	308	308	260	28	20		
Slash pine	...	...	...	...	...		...
Other pines	147	147	112	9	26		
Other softwoods	728	669	577	59	33		59
Total	9,444	9,355	7,047	627	1,681		89
Hardwood:							
Red oaks	4,269	2,763	1,355	484	924	465	1,041
White oaks	2,030	1,264	627	230	407	251	515
Hickory	1,445	1,005	528	188	289	167	273
Sweetgum	2,867	2,264	996	322	946	101	502
Black and tupelo gums	916	746	437	133	176	46	124
Other hardwoods	5,576	3,449	1,797	603	1,049	431	1,696
Total	17,103	11,491	5,740	1,960	3,791	1,461	4,151
All species	26,547	20,846	12,787	2,587	5,472	1,461	4,240
SOUTH							
Softwood:							
Loblolly pine	5,004	4,946	3,635	304	1,007		58
Shortleaf pine	1,374	1,372	880	96	396		2
Longleaf pine	4,968	4,957	3,222	350	1,385		11
Slash pine	3,228	3,205	2,168	200	837		23
Other pines	641	635	468	60	107		6
Other softwoods	201	169	139	15	15		32
Total	15,416	15,284	10,512	1,025	3,747		132
Hardwood:							
Red oaks	3,662	2,385	912	301	1,172	315	962
White oaks	1,536	1,136	403	146	587	106	294
Hickory	910	649	379	112	158	88	173
Sweetgum	1,397	1,196	493	145	558	40	161
Black and tupelo gums	4,169	3,328	1,515	424	1,389	155	686
Other hardwoods	5,657	3,118	1,334	421	1,363	221	2,318
Total	17,331	11,812	5,036	1,549	5,227	925	4,594
All species	32,747	27,096	15,548	2,574	8,974	925	4,726
DELTA							
Softwood:							
Loblolly pine	93	93	73	4	16		
Shortleaf pine	331	319	201	27	91		12
Longleaf pine	...	...	...	...	...		...
Slash pine	...	...	...	...	...		...
Other pines	...	...	...	...	...		...
Other softwoods	525	422	316	57	49		103
Total	949	834	590	88	156		115
Hardwood:							
Red oaks	3,958	2,113	1,031	490	592	488	1,357
White oaks	2,651	1,403	779	345	279	410	838
Hickory	2,194	1,246	736	267	243	266	682
Sweetgum	2,546	1,919	1,013	410	496	124	503
Black and tupelo gums	499	317	178	63	76	28	154
Other hardwoods	8,306	4,914	2,900	894	1,120	806	2,586
Total	20,154	11,912	6,637	2,469	2,806	2,122	6,120
All species	21,103	12,746	7,227	2,557	2,962	2,122	6,235

¹ Sound volume in dead trees considered salvable is not included. This volume totals 125 thousand cords.

Table 14. Total volume by class of timber and species, by Survey region, 1957

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole-timber trees		
			Sawlog portions	Upper stems			
— — — — — Million cubic feet — — — — —							
STATE OF MISSISSIPPI							
Softwood:							
Loblolly pine	1,526.2	1,514.3	1,083.2	100.5	330.6	.	11.9
Shortleaf pine	941.4	935.1	550.3	55.9	328.9	.	6.3
Longleaf pine	413.0	412.2	270.4	29.3	112.5	.	.8
Slash pine	242.1	240.4	162.6	15.0	62.8	.	1.7
Other pines	97.3	96.6	72.7	8.0	15.9	...	.7
Other softwoods	130.8	114.7	90.9	11.8	12.0	.	16.1
Total	3,350.8	3,313.3	2,230.1	220.5	862.7	.	37.5
Hardwood:							
Red oaks	1,535.1	931.0	401.9	149.7	379.4	152.8	451.3
White oaks	1,046.7	664.7	278.5	104.4	281.8	101.8	280.2
Hickory	606.9	385.2	188.1	67.8	129.3	57.9	163.8
Sweetgum	952.5	751.9	310.8	105.6	335.5	30.4	170.2
Black and tupelo gums	592.7	464.2	219.4	63.1	181.7	22.3	106.2
Other hardwoods	1,905.0	1,078.7	534.0	168.7	376.0	133.5	692.8
Total	6,638.9	4,275.7	1,932.7	659.3	1,683.7	498.7	1,864.5
All species	9,989.7	7,589.0	4,162.8	879.8	2,546.4	498.7	1,902.0
NORTH							
Softwood:							
Loblolly pine	99.3	98.3	58.7	6.8	32.8	...	1.0
Shortleaf pine	306.5	301.8	163.9	15.9	122.0	...	4.7
Longleaf pine	...	...	...	...	...	...	...
Slash pine	...	...	...	...	...	...	...
Other pines	...	...	...	...	...	...	...
Other softwoods	13.6	12.6	7.8	1.3	3.5	..	1.0
Total	419.4	412.7	230.4	24.0	158.3	...	6.7
Hardwood:							
Red oaks	416.3	239.5	102.8	37.3	99.4	39.1	137.7
White oaks	376.6	229.2	86.9	33.5	108.8	30.3	117.1
Hickory	174.7	103.5	40.8	15.5	47.2	13.0	58.2
Sweetgum	262.0	189.9	72.2	24.7	93.0	6.9	65.2
Black and tupelo gums	93.1	61.9	27.5	7.8	26.6	2.8	28.4
Other hardwoods	394.0	193.4	79.7	25.2	88.5	24.1	176.5
Total	1,716.7	1,017.4	409.9	144.0	463.5	116.2	583.1
All species	2,136.1	1,430.1	640.3	168.0	621.8	116.2	589.8
CENTRAL							
Softwood:							
Loblolly pine	565.8	561.4	385.8	39.5	136.1	...	4.4
Shortleaf pine	366.3	365.9	208.6	22.1	135.2	...	.4
Longleaf pine	17.3	17.3	9.3	.9	7.1	...	...
Slash pine	...	...	...	...	...	...	...
Other pines	38.2	38.0	29.2	2.8	6.0	...	.2
Other softwoods	8.1	7.5	5.6	.7	1.2	...	.6
Total	995.7	990.1	638.5	66.0	285.6	...	5.6
Hardwood:							
Red oaks	322.2	205.0	78.1	27.0	99.9	28.8	88.4
White oaks	253.6	180.7	70.4	22.6	87.7	20.1	52.8
Hickory	127.4	87.4	37.2	14.3	35.9	10.0	30.0
Sweetgum	234.2	201.6	71.0	22.1	108.5	5.7	26.9
Black and tupelo gums	125.5	108.1	49.2	13.8	45.1	4.1	13.3
Other hardwoods	201.9	116.1	50.2	15.0	50.9	11.7	74.1
Total	1,264.8	898.9	356.1	114.8	428.0	80.4	285.5
All species	2,260.5	1,889.0	994.6	180.8	713.6	80.4	291.1

Table 14. *Total volume by class of timber and species, by Survey region, 1957*
(Continued)

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole- timber trees		
			Sawlog portions	Upper stems			
— — — — — Million cubic feet — — — — —							
SOUTHWEST							
Softwood:							
Loblolly pine	478.8	476.7	360.6	31.1	85.0	..	2.1
Shortleaf pine	140.8	140.6	96.7	8.7	35.2	...	.2
Longleaf pine	23.1	23.1	19.5	2.1	1.5	..	...
Slash pine	..	...	...	..	..	..	...
Other pines	11.0	11.0	8.4	.7	1.9	..	...
Other softwoods	54.6	50.2	43.3	4.4	2.5	...	4.4
Total	708.3	701.6	528.5	47.0	126.1	..	6.7
Hardwood:							
Red oaks	286.0	185.1	90.8	32.4	61.9	31.1	69.8
White oaks	136.0	84.7	42.0	15.4	27.3	16.8	34.5
Hickory	96.8	67.3	35.4	12.6	19.3	11.2	18.3
Sweetgum	192.1	151.7	66.7	21.6	63.4	6.8	33.6
Black and tupelo gums	61.4	50.0	29.3	8.9	11.8	3.1	8.3
Other hardwoods	373.6	231.1	120.4	40.4	70.3	28.9	113.6
Total	1,145.9	769.9	384.6	131.3	254.0	97.9	278.1
All species	1,854.2	1,471.5	913.1	178.3	380.1	97.9	284.8
SOUTH							
Softwood:							
Loblolly pine	375.3	370.9	272.6	22.8	75.5	...	4.4
Shortleaf pine	103.0	102.9	66.0	7.2	29.7	...	.1
Longleaf pine	372.6	371.8	241.6	26.3	103.9	...	.8
Slash pine	242.1	240.4	162.6	15.0	62.8	..	1.7
Other pines	48.1	47.6	35.1	4.5	8.0	...	.5
Other softwoods	15.1	12.7	10.5	1.1	1.1	..	2.4
Total	1,156.2	1,146.3	788.4	76.9	281.0	...	9.9
Hardwood:							
Red oaks	245.4	159.8	61.1	20.2	78.5	21.1	64.5
White oaks	102.9	76.1	27.0	9.8	39.3	7.1	19.7
Hickory	61.0	43.5	25.4	7.5	10.6	5.9	11.6
Sweetgum	93.6	80.1	33.0	9.7	37.4	2.7	10.8
Black and tupelo gums	279.3	223.0	101.5	28.4	93.1	10.4	45.9
Other hardwoods	379.0	208.9	89.4	28.2	91.3	14.8	155.3
Total	1,161.2	791.4	337.4	103.8	350.2	62.0	307.8
All species	2,317.4	1,937.7	1,125.8	180.7	631.2	62.0	317.7
DELTA							
Softwood:							
Loblolly pine	7.0	7.0	5.5	0.3	1.2	..	..
Shortleaf pine	24.8	23.9	15.1	2.0	6.8	..	0.9
Longleaf pine	..	...	...	..	...	...	...
Slash pine	...	...	...	..	...	..	...
Other pines	...	...	...	...	...	...	...
Other softwoods	39.4	31.7	23.7	4.3	3.7	..	7.7
Total	71.2	62.6	44.3	6.6	11.7	...	8.6
Hardwood:							
Red oaks	265.2	141.6	69.1	32.8	39.7	32.7	90.9
White oaks	177.6	94.0	52.2	23.1	18.7	27.5	56.1
Hickory	147.0	83.5	49.3	17.9	16.3	17.8	45.7
Sweetgum	170.6	128.6	67.9	27.5	33.2	8.3	33.7
Black and tupelo gums	33.4	21.2	11.9	4.2	5.1	1.9	10.3
Other hardwoods	556.5	329.2	194.3	59.9	75.0	54.0	173.3
Total	1,350.3	798.1	444.7	165.4	188.0	142.2	410.0
All species	1,421.5	860.7	489.0	172.0	199.7	142.2	418.6

1 Sound volume in dead trees considered salvable is not included. This volume totals 9 million cubic feet.

Table 15. *Growing stock by species and Survey region, 1957*

Species	State of Mississippi	North	Central	Southwest	South	Delta
— — — — Million cubic feet — — — —						
Softwood:						
Loblolly pine	1,514.3	98.3	561.4	476.7	370.9	7.0
Shortleaf pine	935.1	301.8	365.9	140.6	102.9	23.9
Longleaf pine	412.2	...	17.3	23.1	371.8	...
Slash pine	240.4	...	...	...	240.4	...
Other pines	96.6	...	38.0	11.0	47.6	...
Other softwoods	114.7	12.6	7.5	50.2	12.7	31.7
Total	3,313.3	412.7	990.1	701.6	1,146.3	62.6
Hardwood:						
Black, scarlet, and southern red oaks	398.2	141.4	85.5	77.5	77.3	16.5
Cherrybark, Shumard, and northern red oaks	117.4	36.7	20.5	36.0	6.4	17.8
Water oaks	415.4	61.4	99.0	71.6	76.1	107.3
White oak (<i>Quercus alba</i>)	295.4	117.9	81.6	46.3	35.6	14.0
Other white oaks	369.3	111.3	99.1	38.4	40.5	80.0
Pecan	98.0	4.7	2.0	21.4	.7	69.2
Other hickories	287.2	98.8	85.4	45.9	42.8	14.3
Sweetgum	751.9	189.9	201.6	151.7	80.1	128.6
Black & tupelo gums	464.2	61.9	108.1	50.0	223.0	21.2
Cottonwood	86.8	6.0	.5	23.0	3.0	54.3
Willow	84.3	20.6	.9	8.2	1.9	52.7
Soft maples	56.5	13.5	13.1	4.8	18.2	6.9
Yellow-poplar	134.9	26.9	27.2	33.9	28.5	18.4
Sweetbay and magnolia	129.3	6.2	4.2	7.9	109.2	1.8
White elm	85.2	15.0	7.2	22.4	1.4	39.2
Other elms	88.9	22.4	16.0	16.2	7.7	26.6
Ash	101.1	30.5	11.3	16.7	9.8	32.8
Hackberry	64.6	10.3	6.8	11.5	4.0	32.0
Beech	67.2	7.5	14.7	34.1	7.3	3.6
Sycamore	68.7	17.5	2.5	18.2	.5	30.0
Other hardwoods	111.2	17.0	11.7	34.2	17.4	30.9
Total	4,275.7	1,017.4	898.9	769.9	791.4	798.1
All species	7,589.0	1,430.1	1,889.0	1,471.5	1,937.7	860.7

Table 16. *Distribution of growing stock by species within each forest type, 1957*

Species	All types	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Bottomland hardwood types		
						Total	Elm-ash cotton-wood	Oak-gum-cypress
Percent								
Softwood:								
Loblolly pine	20.0	2.2	49.2	21.2	3.1	1.1	.	1.3
Shortleaf pine	12.3	0.5	29.1	17.5	2.6	0.1	.	0.1
Longleaf pine	5.4	55.0	1.3	1.8	0.3	0.1	.	0.1
Slash pine	3.2	33.2	0.1	1.3	.	0.5	.	0.6
Other pines	1.3	..	1.8	3.0	0.7	0.6	..	0.7
Other softwoods	1.5	0.5	0.2	0.9	0.3	4.6	1.8	5.1
Total	43.7	91.4	81.7	45.7	7.0	7.0	1.8	7.9
Hardwood:								
Black, scarlet, and southern red oaks	5.2	2.1	3.3	10.5	13.3	0.6	0.2	0.6
Cherrybark, Shumard, and northern red oaks	1.5	..	0.3	1.7	4.1	1.6	..	1.9
Water oaks	5.5	0.5	1.3	5.2	5.8	12.1	2.7	13.8
White oaks (Quercus alba & michauxii)	4.3	(1)	1.8	6.6	12.4	2.0	0.1	2.3
Other white oaks	4.4	0.6	2.4	6.0	7.9	5.0	0.7	5.7
Pecan	1.3	..	0.1	0.1	0.4	4.4	5.2	4.2
Other hickories	3.8	(1)	1.2	4.5	12.1	1.9	0.5	2.1
Sweetgum	10.0	0.6	4.0	8.5	13.8	18.0	5.0	20.3
Black & tupelo gums	6.1	3.0	2.0	4.7	5.6	13.1	0.6	15.3
Cottonwood	1.1	..	(1)	..	0.3	4.0	23.8	0.6
Willow	1.1	..	.	(1)	(1)	4.1	25.1	0.5
Soft maples	0.7	0.2	0.2	0.4	0.7	1.8	1.0	2.0
Yellow-poplar	1.8	0.2	0.6	1.6	4.5	1.8	0.7	2.0
Sweetbay and magnolia	1.7	1.3	0.3	1.4	0.8	4.4	0.1	5.1
Elm	2.3	..	0.2	0.9	3.2	5.6	6.2	5.5
Ash	1.3	..	0.1	0.7	1.2	3.6	7.3	3.0
Hackberry	0.9	..	(1)	(1)	0.2	3.0	3.9	2.8
Beech	0.9	..	0.2	0.6	2.6	0.9	0.4	1.0
Sycamore	0.9	..	(1)	0.2	1.4	2.3	8.4	1.2
Other hardwoods	1.5	0.1	0.3	0.7	2.7	2.8	6.3	2.2
Total	56.3	8.6	18.3	54.3	93.0	93.0	98.2	92.1
All species	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Negligible.

Table 17. *Growing stock by species and stand size, by Survey region, 1957*

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
— — — — — Million cubic feet — — — — —						
STATE OF MISSISSIPPI						
Softwood:						
Loblolly pine	1,514.3	462.9	562.1	393.0	93.1	2.2
Shortleaf pine	935.1	103.8	434.0	316.6	80.4	.3
Longleaf pine	412.2	21.9	186.5	149.8	38.2	15.8
Slash pine	240.4	12.1	131.4	73.2	20.5	3.2
Other pines	96.6	36.9	37.0	17.6	5.1	..
Other softwoods	114.7	71.4	16.2	16.9	7.5	2.7
Total	3,313.3	709.0	1,368.2	967.1	244.8	24.2
Hardwood:						
Red oaks	931.0	197.7	179.1	443.7	105.9	4.6
White oaks	664.7	128.1	162.5	296.7	76.0	1.4
Hickory	385.2	97.7	82.1	168.0	37.2	.2
Sweetgum	751.9	203.5	188.7	281.4	77.5	.8
Black and tupelo gums	464.2	116.1	160.4	166.3	20.9	.5
Other hardwoods	1,078.7	396.7	273.1	336.9	69.6	2.4
Total	4,275.7	1,139.8	1,045.9	1,693.0	387.1	9.9
All species	7,589.0	1,848.8	2,414.1	2,660.1	631.9	34.1
NORTH						
Softwood:						
Loblolly pine	98.3	25.3	17.2	44.7	10.8	0.3
Shortleaf pine	301.8	10.5	132.9	116.0	42.1	.3
Longleaf pine	...	..	...	...	..	...
Slash pine	...	...	...	...	..	...
Other pines	...	...	...	...	...	...
Other softwoods	12.6	4.1	1.5	4.2	2.4	.4
Total	412.7	39.9	151.6	164.9	55.3	1.0
Hardwood:						
Red oaks	239.5	31.1	45.7	126.3	36.1	.3
White oaks	229.2	23.5	58.1	115.3	31.4	.9
Hickory	103.5	5.6	29.6	56.1	12.2	...
Sweetgum	189.9	26.2	56.7	77.1	29.5	.4
Black and tupelo gums	61.9	14.3	22.3	19.1	6.2	...
Other hardwoods	193.4	38.6	61.9	69.7	22.8	.4
Total	1,017.4	139.3	274.3	463.6	138.2	2.0
All species	1,430.1	179.2	425.9	628.5	193.5	3.0
CENTRAL						
Softwood:						
Loblolly pine	561.4	139.1	253.2	148.3	20.8	...
Shortleaf pine	365.9	52.5	171.9	122.9	18.6	..
Longleaf pine	17.3	..	7.9	7.6	1.8	..
Slash pine	..	...	...	...	...	...
Other pines	38.0	14.4	15.2	4.9	3.5	...
Other softwoods	7.5	4.6	..	2.9	...	..
Total	990.1	210.6	448.2	286.6	44.7	...
Hardwood:						
Red oaks	205.0	38.5	58.2	89.1	19.2	...
White oaks	180.7	28.7	57.9	75.8	18.3	...
Hickory	87.4	16.8	24.2	41.6	4.8	...
Sweetgum	201.6	40.3	59.6	88.5	13.0	.2
Black and tupelo gums	108.1	22.4	36.5	44.3	4.9	...
Other hardwoods	116.1	35.1	32.8	44.0	3.5	.7
Total	898.9	181.8	269.2	383.3	63.7	.9
All species	1,889.0	392.4	717.4	669.9	108.4	.9

Table 17. *Growing stock by species and stand size, by Survey region, 1957*
(Continued)

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ¹
— — — — — Million cubic feet — — — — —						
SOUTHWEST						
Softwood:						
Loblolly pine	476.7	182.6	150.8	113.8	29.5	.
Shortleaf pine	140.6	30.1	65.0	37.8	7.7	.
Longleaf pine	23.1	4.7	12.1	3.0	3.3	.
Slash pine	.	.	.	.	.	.
Other pines	11.0	7.1	1.6	2.0	.3	...
Other softwoods	50.2	39.6	6.8	3.0	.8	...
Total	701.6	264.1	236.3	159.6	41.6	..
Hardwood:						
Red oaks	185.1	50.6	35.9	79.7	18.5	.4
White oaks	84.7	23.4	19.4	35.6	6.3	.
Hickory	67.3	18.3	13.0	29.3	6.7	..
Sweetgum	151.7	59.1	32.3	48.1	12.0	.2
Black and tupelo gums	50.0	24.1	8.1	16.2	1.3	.3
Other hardwoods	231.1	101.3	56.0	63.1	10.7	.
Total	769.9	276.8	164.7	272.0	55.5	.9
All species	1,471.5	540.9	401.0	431.6	97.1	.9
SOUTH						
Softwood:						
Loblolly pine	370.9	111.0	141.9	84.5	31.6	1.9
Shortleaf pine	102.9	9.9	50.5	31.7	10.8	..
Longleaf pine	371.8	17.2	166.5	139.2	33.1	15.8
Slash pine	240.4	12.1	131.4	73.2	20.5	3.2
Other pines	47.6	15.4	20.2	10.7	1.3	.
Other softwoods	12.7	5.5	3.3	1.5	2.4	.
Total	1,146.3	171.1	513.8	340.8	99.7	20.9
Hardwood:						
Red oaks	159.8	24.8	29.0	85.8	16.3	3.9
White oaks	76.1	11.1	16.8	38.7	9.5	..
Hickory	43.5	9.9	8.4	21.4	3.8	...
Sweetgum	80.1	22.2	24.6	24.9	8.4	..
Black and tupelo gums	223.0	47.8	86.0	80.5	8.5	.2
Other hardwoods	208.9	40.1	74.8	87.4	6.2	.4
Total	791.4	155.9	239.6	338.7	52.7	4.5
All species	1,937.7	327.0	753.4	679.5	152.4	25.4
DELTA						
Softwood:						
Loblolly pine	7.0	4.9	.	1.7	0.4	.
Shortleaf pine	23.9	.8	13.7	8.2	1.2	.
Longleaf pine	...	...	.	.	...	.
Slash pine	...	...	...	...	...	...
Other pines	...	...	...	...	...	...
Other softwoods	31.7	17.6	4.6	5.3	1.9	2.3
Total	62.6	23.3	18.3	15.2	3.5	2.3
Hardwood:						
Red oaks	141.6	52.7	10.3	62.8	15.8	.
White oaks	94.0	41.4	10.3	31.3	10.5	.5
Hickory	83.5	47.1	6.9	19.6	9.7	.2
Sweetgum	128.6	55.7	15.5	42.8	14.6	.
Black and tupelo gums	21.2	7.5	7.5	6.2	.	.
Other hardwoods	329.2	181.6	47.6	72.7	26.4	.9
Total	798.1	386.0	98.1	235.4	77.0	1.6
All species	860.7	409.3	116.4	250.6	80.5	3.9

¹ Includes areas not classified elsewhere.

Table 18. *Average volume per acre of growing stock by forest type and Survey region, 1957*

Forest type	State of Mississippi	North	Central	Southwest	South	Delta
<i>— Cubic feet —</i>						
Softwood types:						
Longleaf-slash pine	316		238	588	314	
Loblolly-shortleaf pine	544	338	580	657	581	384
Oak-pine	351	256	391	387	397	402
Average	438	300	512	569	401	392
Hardwood types:						
Oak-hickory	355	311	407	420	257	456
Elm-ash-cottonwood	627	544	473	500	654	700
Oak-gum-cypress	531	521	571	623	716	398
Average	446	370	469	498	516	452
All types	441	340	498	536	427	449

Table 19. *Average volume per acre of growing stock by stand size and forest type, 1957*

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ¹
<i>— Cubic feet —</i>						
Softwood types:						
Longleaf-slash pine	316	779	876	345	78	56
Loblolly-shortleaf pine	544	1,467	1,089	382	101	38
Oak-pine	351	1,013	769	355	137	67
Average	438	1,303	986	366	108	55
Hardwood types:						
Oak-hickory	355	956	763	348	119	22
Elm-ash-cottonwood	627	1,211	1,094	357	122	154
Oak-gum-cypress	531	1,025	991	435	164	71
Average	446	1,029	893	384	136	46
All types	441	1,136	954	375	119	52

¹ Includes areas not classified elsewhere.

Table 20. *Growing stock volume by species and county, 1957*

County	All species	Softwood			Hardwood			
		Total	Pine	Other softwoods	Total	Soft hardwoods ₁	Oaks	Other hard hardwoods ₂
— — — — — Million cubic feet — — — — —								
Adams	116.6	29.4	29.4	.	87.2	34.6	26.6	26.0
Alcorn	42.1	9.6	9.0	.6	32.5	9.3	16.2	7.0
Amite	129.8	85.7	85.5	.2	44.1	11.3	27.6	5.2
Attala	68.8	22.1	21.0	1.1	46.7	22.6	15.2	8.9
Benton	60.4	21.7	21.6	.1	38.7	11.8	19.0	7.9
Bolivar	60.1	7.7	..	7.7	52.4	33.0	5.3	14.1
Calhoun	76.2	32.9	32.9	...	43.3	13.5	21.9	7.9
Carroll	67.0	4.0	4.0	...	63.0	23.4	27.2	12.4
Chickasaw	32.4	13.5	13.5	...	18.9	3.0	12.4	3.5
Choctaw	59.1	30.6	30.6	...	28.5	12.5	13.3	2.7
Claiborne	129.4	12.8	12.2	.6	116.6	49.8	28.7	38.1
Clarke	188.9	126.6	126.3	.3	62.3	25.7	27.3	9.3
Clay	73.5	4.4	4.1	.3	69.1	9.2	44.8	15.1
Coahoma	50.8	1.3	...	1.3	49.5	14.1	5.5	29.9
Copiah	174.6	94.9	94.5	.4	79.7	33.5	29.0	17.2
Covington	61.2	15.5	15.5	...	45.7	29.0	10.4	6.3
De Soto	43.2	1.6	...	1.6	41.6	15.8	10.9	14.9
Forrest	82.2	58.1	58.1	..	24.1	16.2	6.0	1.9
Franklin	191.8	134.5	134.5	...	57.3	19.7	23.0	14.6

Table 20. *Growing stock volume by species and county, 1957 (Continued)*

County	All species	Softwood			Hardwood			
		Total	Pine	Other softwoods	Total	Soft hardwoods ₁	Oaks	Other hard hardwoods ₂
— — — — — Million cubic feet — — — — —								
George	125.3	75.3	71.8	3.5	50.0	31.6	9.7	8.7
Greene	141.0	84.5	83.6	.9	56.5	27.7	24.0	4.8
Grenada	51.2	16.2	15.8	.4	35.0	14.9	10.5	9.6
Hancock	74.4	43.6	43.3	.3	30.8	27.8	3.0	..
Harrison	123.4	96.4	96.4	..	27.0	23.0	1.2	2.8
Hinds	82.6	15.2	14.5	.7	67.4	25.2	25.0	17.2
Holmes	82.1	21.6	20.8	.8	60.5	26.0	24.1	10.4
Humphreys	35.8	..	..	..	35.8	6.1	24.7	5.0
Issaquena	84.0	3.1	..	3.1	80.9	15.1	24.1	41.7
Itawamba	76.8	22.0	21.9	.1	54.8	22.8	16.8	15.2
Jackson	159.9	90.3	86.3	4.0	69.6	55.5	9.8	4.3
Jasper	191.2	113.7	111.9	1.8	77.5	41.0	19.8	16.7
Jefferson	165.9	101.3	63.4	37.9	64.6	28.7	16.8	19.1
Jefferson Davis	62.4	23.6	23.6	..	38.8	21.5	10.8	6.5
Jones	115.4	64.2	64.2	..	51.2	22.0	22.9	6.3
Kemper	143.9	69.3	68.2	1.1	74.6	42.7	20.7	11.2
Lafayette	117.5	38.9	38.8	.1	78.6	21.2	45.1	12.3
Lamar	109.9	76.5	76.5	..	33.4	21.5	9.5	2.4
Lauderdale	163.5	91.7	91.7	..	71.8	26.3	30.1	15.4
Lawrence	96.7	43.6	43.6	..	53.1	14.1	26.2	12.8
Leake	95.5	52.4	52.3	.1	43.1	15.6	24.8	2.7
Lee	14.4	5.2	5.2	..	9.2	1.5	4.9	2.8
Leflore	31.0	..	..	..	31.0	9.3	10.6	11.1
Lincoln	112.1	54.2	53.8	.4	57.9	22.0	23.0	12.9
Lowndes	52.3	11.1	6.2	4.9	41.2	15.1	14.7	11.4
Madison	75.5	23.9	22.5	1.4	51.6	16.4	20.9	14.3
Marion	128.2	59.6	59.6	..	68.6	25.2	29.6	13.8
Marshall	73.5	12.8	11.3	1.5	60.7	29.2	23.6	7.9
Monroe	79.7	20.8	20.8	..	58.9	21.3	26.9	10.7
Montgomery	36.9	14.5	14.5	..	22.4	6.0	12.1	4.3
Neshoba	135.4	56.2	56.2	..	79.2	40.6	30.0	8.6
Newton	89.8	37.2	37.2	..	52.6	16.4	26.3	9.9
Noxubee	102.8	52.6	52.3	.3	50.2	9.3	29.1	11.8
Oktibbeha	58.0	25.7	24.1	1.6	32.3	3.1	23.8	5.4
Panola	33.7	.7	..	.7	33.0	14.0	11.5	7.5
Pearl River	156.2	91.0	91.0	..	65.2	53.6	9.7	1.9
Perry	152.4	113.4	112.9	.5	39.0	22.5	14.5	2.0
Pike	77.7	25.0	25.0	..	52.7	20.5	23.9	8.3
Pontotoc	38.7	14.2	14.2	..	24.5	4.5	10.0	10.0
Prentiss	31.8	8.0	7.9	.1	23.8	6.9	13.4	3.5
Quitman	24.6	1.8	..	1.8	22.8	11.2	5.0	6.6
Rankin	188.0	81.7	78.9	2.8	106.3	27.0	57.3	22.0
Scott	140.3	100.7	100.7	..	39.6	14.7	17.6	7.3
Sharkey	49.0	2.5	..	2.5	46.5	9.9	23.7	12.9
Simpson	94.7	41.3	41.3	..	53.4	19.3	23.3	10.8
Smith	132.0	81.8	81.8	..	50.2	24.4	20.7	5.1
Stone	100.7	61.6	60.3	1.3	39.1	28.7	9.9	.5
Sunflower	8.6	2.6	..	2.6	6.0	.6	4.7	.7
Tallahatchie	46.6	8.5	4.7	3.8	38.1	11.5	18.0	8.6
Tate	33.4	.1	..	.1	33.3	14.7	4.7	13.9
Tippah	51.3	14.7	14.7	..	36.6	9.8	19.5	7.3
Tishomingo	79.9	39.2	39.2	..	40.7	17.0	17.4	6.3
Tunica	59.5	2.5	..	2.5	57.0	30.6	4.0	22.4
Union	55.7	19.3	19.3	..	36.4	18.4	11.9	6.1
Walthall	48.8	14.6	12.4	2.2	34.2	24.9	7.3	2.0
Warren	153.5	6.3	3.9	2.4	147.2	67.9	38.2	41.1
Washington	55.3	.5	..	.5	54.8	27.4	10.3	17.1
Wayne	199.6	134.5	134.5	..	65.1	24.3	31.4	9.4
Webster	42.4	18.8	18.8	..	23.6	5.7	13.1	4.8
Wilkinson	215.5	124.7	116.1	8.6	90.8	27.9	25.3	37.6
Winston	154.2	62.8	62.8	..	91.4	33.2	43.5	14.7
Yalobusha	49.0	12.2	11.7	.5	36.8	9.2	23.1	4.5
Yazoo	119.8	4.2	1.5	2.7	115.6	38.6	37.4	39.6
Total	7,589.0	3,313.3	3,198.6	114.7	4,275.7	1,752.6	1,595.7	927.4

¹ Includes cottonwood, sweetgum, yellow-poplar, and the like.² Includes ash, hickory, sycamore, and the like.

Table 21. *Sawtimber volume by species and county, 1957*

County	All species	Softwood			Hardwood			
		Total	Pine	Other softwoods	Total	Soft hardwoods ₁	Oaks	Other hard hardwoods ₂
— Million board feet —								
Adams	493.2	155.2	155.2	.	338.0	141.7	106.6	89.7
Alcorn	102.5	21.1	17.2	3.9	81.4	31.0	26.1	14.3
Amite	501.8	394.6	394.6	.	107.2	23.0	70.9	13.3
Attala	160.3	50.9	45.2	5.7	109.4	43.7	44.5	21.2
Benton	147.3	78.0	78.0	.	69.3	24.6	38.9	5.8
Bolivar	240.7	39.7	..	39.7	201.0	143.3	17.4	40.3
Calhoun	234.6	92.1	92.1	.	142.5	48.7	71.7	22.1
Carroll	176.8	7.5	7.5	.	169.3	44.7	84.0	40.6
Chickasaw	72.1	44.3	44.3	..	27.8	2.9	19.8	5.1
Choctaw	140.7	91.7	91.7	..	49.0	28.1	18.0	2.9
Claiborne	501.8	56.6	53.8	2.8	445.2	220.3	111.6	113.3
Clarke	735.9	597.5	596.0	1.5	138.4	65.5	46.0	26.9
Clay	192.5	19.6	18.0	1.6	172.9	15.7	116.9	40.3
Coahoma	173.6	6.5	..	6.5	167.1	49.0	13.9	104.2
Copiah	701.7	480.2	479.4	.8	221.5	86.7	92.8	42.0
Covington	201.3	63.7	63.7	.	137.6	85.5	28.8	23.3
De Soto	130.3	5.6	.	5.6	124.7	41.8	36.1	46.8
Forrest	280.2	221.1	221.1	.	59.1	37.4	18.6	3.1
Franklin	768.7	606.4	606.4	..	162.3	45.9	67.4	49.0
George	430.2	299.2	281.4	17.8	131.0	87.9	18.4	24.7
Greene	545.7	377.1	372.5	4.6	168.6	89.3	65.6	13.7
Grenada	154.2	51.3	51.3	.	102.9	52.0	28.2	22.7
Hancock	220.8	166.4	166.4	..	54.4	49.6	4.8	..
Harrison	422.1	352.5	352.5	.	69.6	63.8	2.9	2.9
Hinds	258.3	63.4	61.4	2.0	194.9	78.0	78.3	38.6
Holmes	275.6	78.2	75.5	2.7	197.4	90.1	78.6	28.7
Humphreys	110.6	.	.	..	110.6	16.2	76.6	17.8
Issaquena	308.5	16.2	.	16.2	292.3	69.5	82.1	140.7
Itawamba	192.3	40.3	39.9	.4	152.0	77.6	31.3	43.1
Jackson	623.5	349.8	325.7	24.1	273.7	218.8	40.3	14.6
Jasper	755.5	512.2	501.9	10.3	243.3	147.0	48.3	48.0
Jefferson	717.7	521.2	310.6	210.6	196.5	102.0	41.3	53.2
Jefferson Davis	177.3	79.3	79.3	.	98.0	48.4	26.5	23.1
Jones	367.2	260.6	260.6	..	106.6	33.6	52.9	20.1
Kemper	380.2	255.6	255.6	.	124.6	58.7	38.7	27.2
Lafayette	430.5	162.8	162.8	.	267.7	61.7	160.1	45.9
Lamar	388.8	318.4	318.4	..	70.4	52.4	11.3	6.7
Lauderdale	454.2	323.7	323.7	..	130.5	49.0	49.1	32.4
Lawrence	295.9	144.4	144.4	..	151.5	34.8	61.4	55.3
Leake	234.8	155.3	155.3	.	79.5	33.6	40.3	5.6
Lee	51.5	24.3	24.3	.	27.2	3.0	16.9	7.3
Leflore	80.0	.	.	..	80.0	21.3	27.5	31.2
Lincoln	418.5	245.8	244.3	1.5	172.7	70.0	58.9	43.8
Lowndes	128.5	47.6	24.7	22.9	80.9	31.4	25.0	24.5

Table 21. Sawtimber volume by species and county, 1957 (Continued)

County	All species	Softwood			Hardwood			
		Total	Pine	Other softwoods	Total	Soft hardwoods ₁	Oaks	Other hard hardwoods ₂
— — — — — Million board feet — — — — —								
Madison	268.5	112.9	107.1	5.8	155.6	51.7	69.8	34.1
Marion	474.7	271.2	271.2	.	203.5	86.7	78.9	37.9
Marshall	257.2	49.1	43.8	5.3	208.1	88.2	98.4	21.5
Monroe	185.8	85.3	85.3	.	100.5	29.1	48.5	22.9
Montgomery	96.4	48.5	48.5	.	47.9	4.1	29.1	14.7
Neshoba	471.2	220.2	220.2	.	251.0	120.5	103.3	27.2
Newton	245.7	100.2	100.2	.	145.5	44.4	69.7	31.4
Noxubee	342.7	233.0	231.5	1.5	109.7	9.3	69.2	31.2
Oktibbeha	162.0	117.0	111.8	5.2	45.0	2.5	34.1	8.4
Panola	89.5	1.0	.	1.0	88.5	31.9	36.4	20.2
Pearl River	556.2	412.6	412.6	.	143.6	117.9	20.6	5.1
Perry	565.6	482.7	479.9	2.8	82.9	43.3	32.6	7.0
Pike	242.6	86.4	86.4	.	156.2	56.2	69.4	30.6
Pontotoc	101.3	53.8	53.8	.	47.5	6.9	20.8	19.8
Prentiss	53.6	11.7	11.7	.	41.9	10.4	26.6	4.9
Quitman	77.4	11.5	.	11.5	65.9	36.2	10.4	19.3
Rankin	597.7	314.2	297.1	17.1	283.5	51.1	160.2	72.2
Scott	471.4	369.8	369.8	.	101.6	49.2	38.1	14.3
Sharkey	167.8	11.7	.	11.7	156.1	33.9	86.1	36.1
Simpson	312.1	182.5	182.5	.	129.6	51.0	59.7	18.9
Smith	347.7	270.4	270.4	.	77.3	33.9	34.1	9.3
Stone	360.6	265.9	261.3	4.6	94.7	71.7	22.1	.9
Sunflower	26.1	15.1	.	15.1	11.0	2.2	8.8	.
Tallahatchie	145.7	28.7	18.3	10.4	117.0	38.1	49.6	29.3
Tate	80.3	.	.	.	80.3	48.4	4.7	27.2
Tippah	105.9	27.4	27.4	.	78.5	23.6	42.1	12.8
Tishomingo	263.1	138.5	138.5	.	124.6	54.8	52.4	17.4
Tunica	252.5	14.3	.	14.3	238.2	145.4	7.2	85.6
Union	145.4	57.3	57.3	.	88.1	42.0	33.7	12.4
Walthall	156.3	72.1	58.2	13.9	84.2	68.7	11.4	4.1
Warren	597.3	30.7	24.4	6.3	566.6	286.6	136.3	143.7
Washington	206.8	2.5	.	2.5	204.3	109.5	38.4	56.4
Wayne	732.5	598.2	598.2	.	134.3	59.5	53.5	21.3
Webster	99.3	63.1	63.1	.	36.2	8.8	25.2	2.2
Wilkinson	869.1	588.1	545.2	42.9	281.0	78.5	84.6	117.9
Winston	524.2	261.3	261.3	.	262.9	111.1	119.1	32.7
Yalobusha	107.1	32.9	31.9	1.0	74.2	10.0	54.4	9.8
Yazoo	409.0	17.7	6.7	11.0	391.3	116.3	129.8	145.2
Total	25,546.7	13,537.4	12,972.3	565.1	12,009.3	5,052.8	4,274.6	2,681.9

¹ Includes cottonwood, sweetgum, yellow-poplar, and the like.² Includes ash, hickory, sycamore, and the like.

Table 22. Sawtimber volume by species and tree diameter, by Survey region, 1957

Species	All diameter classes	10-12 inches	14-18 inches	20-24 inches	26 inches and up
— — — — — Million board feet — — — — —					
STATE OF MISSISSIPPI					
Softwood:					
Loblolly pine	6,679.6	2,140.8	3,277.7	1,041.4	219.7
Shortleaf pine	3,280.0	1,828.1	1,307.9	133.7	10.3
Longleaf pine	1,611.4	1,008.5	570.2	32.7	...
Slash pine	962.3	575.4	349.1	37.8	...
Other pines	439.0	122.2	234.8	68.3	13.7
Other softwoods	565.1	81.0	270.5	134.7	78.9
Total	13,537.4	5,756.0	6,010.2	1,448.6	322.6
Hardwood:					
Red oaks	2,544.6	517.4	1,344.2	446.8	236.2
White oaks	1,730.0	386.5	922.7	264.3	156.5
Hickory	1,135.7	201.1	537.1	294.6	102.9
Sweetgum	1,934.8	429.1	1,156.4	278.8	70.5
Black and tupelo gums	1,318.2	396.2	713.7	160.1	48.2
Other hardwoods	3,346.0	575.9	1,709.4	737.2	323.5
Total	12,009.3	2,506.2	6,383.5	2,181.8	937.8
All species	25,546.7	8,262.2	12,393.7	3,630.4	1,260.4
NORTH					
Softwood:					
Loblolly pine	358.3	138.3	156.4	44.6	19.0
Shortleaf pine	966.6	581.0	369.2	16.4	...
Longleaf pine	...	...	...	...	...
Slash pine	...	...	...	...	...
Other pines	...	...	...	...	...
Other softwoods	46.9	10.3	19.3	9.6	7.7
Total	1,371.8	729.6	544.9	70.6	26.7
Hardwood:					
Red oaks	647.6	144.1	354.8	106.2	42.5
White oaks	541.8	149.1	316.1	61.7	14.9
Hickory	242.8	66.5	117.7	51.8	6.8
Sweetgum	448.8	110.0	302.7	33.8	2.3
Black and tupelo gums	163.2	51.6	101.6	10.0	...
Other hardwoods	484.7	103.6	293.1	69.4	18.6
Total	2,528.9	624.9	1,486.0	332.9	85.1
All species	3,900.7	1,354.5	2,030.9	403.5	111.8
CENTRAL					
Softwood:					
Loblolly pine	2,347.4	914.5	1,132.0	275.0	25.9
Shortleaf pine	1,228.0	747.2	459.9	14.8	6.1
Longleaf pine	56.5	27.4	25.6	3.5	...
Slash pine	...	...	...	...	...
Other pines	178.8	61.9	65.5	37.7	13.7
Other softwoods	36.1	3.0	18.9	14.2	...
Total	3,846.8	1,754.0	1,701.9	345.2	45.7
Hardwood:					
Red oaks	484.2	128.4	246.8	69.7	39.3
White oaks	436.1	125.2	243.7	54.5	12.7
Hickory	221.6	45.8	123.6	50.0	2.2
Sweetgum	432.7	148.2	217.6	52.3	14.6
Black and tupelo gums	295.5	113.0	134.2	21.1	27.2
Other hardwoods	316.7	79.6	179.2	49.6	8.3
Total	2,186.8	640.2	1,145.1	297.2	104.3
All species	6,033.6	2,394.2	2,847.0	642.4	150.0

Table 22. *Sawtimber volume by species and tree diameter, by Survey region, 1957*
(Continued)

Species	All diameter classes	10-12 inches	14-18 inches	20-24 inches	26 inches and up
— — — — — Million board feet — — — — —					
SOUTHWEST					
Softwood:					
Loblolly pine	2,270.2	541.4	1,129.7	508.7	90.4
Shortleaf pine	604.8	226.5	293.5	80.6	4.2
Longleaf pine	118.2	68.7	38.6	10.9	.
Slash pine	.	.	.	.	.
Other pines	51.2	11.9	29.1	10.2	.
Other softwoods	266.4	29.5	148.4	65.1	23.4
Total	3,310.8	878.0	1,639.3	675.5	118.0
Hardwood:					
Red oaks	584.7	108.1	298.0	108.7	69.9
White oaks	266.9	33.5	152.3	61.3	19.8
Hickory	213.8	26.8	101.2	57.2	28.6
Sweetgum	421.3	80.6	276.9	52.0	11.8
Black and tupelo gums	175.3	39.3	97.2	33.8	5.0
Other hardwoods	769.1	130.4	369.0	183.1	86.6
Total	2,431.1	418.7	1,294.6	496.1	221.7
All species	5,741.9	1,296.7	2,933.9	1,171.6	339.7
SOUTH					
Softwood:					
Loblolly pine	1,667.2	541.6	855.2	198.5	71.9
Shortleaf pine	392.2	218.5	152.9	20.8	..
Longleaf pine	1,436.7	912.4	506.0	18.3	..
Slash pine	962.3	575.4	349.1	37.8	.
Other pines	209.0	48.4	140.2	20.4	.
Other softwoods	67.8	12.2	35.0	12.8	7.8
Total	4,735.2	2,308.5	2,038.4	308.6	79.7
Hardwood:					
Red oaks	384.6	84.4	217.7	56.9	25.6
White oaks	166.0	43.7	86.0	23.2	13.1
Hickory	155.1	29.5	80.4	37.3	7.9
Sweetgum	201.6	49.0	122.2	30.4	.
Black and tupelo gums	612.7	180.5	333.5	82.7	16.0
Other hardwoods	543.7	136.2	338.5	53.0	16.0
Total	2,063.7	523.3	1,178.3	283.5	78.6
All species	6,798.9	2,831.8	3,216.7	592.1	158.3
DELTA					
Softwood:					
Loblolly pine	36.5	5.0	4.4	14.6	12.5
Shortleaf pine	88.4	54.9	32.4	1.1	...
Longleaf pine	..	...	...	...	...
Slash pine	...	...	...	...	...
Other pines	...	...	...	...	...
Other softwoods	147.9	26.0	48.9	33.0	40.0
Total	272.8	85.9	85.7	48.7	52.5
Hardwood:					
Red oaks	443.5	52.4	226.9	105.3	58.9
White oaks	319.2	35.0	124.6	63.6	96.0
Hickory	302.4	32.5	114.2	98.3	57.4
Sweetgum	430.4	41.3	237.0	110.3	41.8
Black and tupelo gums	71.5	11.8	47.2	12.5	.
Other hardwoods	1,231.8	126.1	529.6	382.1	194.0
Total	2,798.8	299.1	1,279.5	772.1	448.1
All species	3,071.6	385.0	1,365.2	820.8	500.6

1 Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.

Table 23. Sawtimber volume by species and stand size, by Survey region, 1957

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
— — — — — Million board feet — — — — —						
STATE OF MISSISSIPPI						
Softwood:						
Loblolly pine	6,679.6	2,637.2	2,703.7	1,071.7	259.1	7.9
Shortleaf pine	3,280.0	507.6	1,934.8	656.5	181.1	...
Longleaf pine	1,611.4	116.6	822.9	458.7	145.4	67.8
Slash pine	962.3	72.5	578.5	217.2	80.1	14.0
Other pines	439.0	198.0	168.1	53.7	19.2	...
Other softwoods	565.1	399.0	74.9	53.2	24.8	13.2
Total	13,537.4	3,930.9	6,282.9	2,511.0	709.7	102.9
Hardwood:						
Red oaks	2,544.6	780.4	569.5	944.1	240.1	10.5
White oaks	1,730.0	473.2	514.1	553.1	183.5	6.1
Hickory	1,135.7	382.8	260.4	384.5	108.0	...
Sweetgum	1,934.8	778.9	547.6	466.4	141.9	...
Black and tupelo gums	1,318.2	463.6	499.6	302.4	50.5	2.1
Other hardwoods	3,346.0	1,613.8	840.1	707.2	182.7	2.2
Total	12,009.3	4,492.7	3,231.3	3,357.7	906.7	20.9
All species	25,546.7	8,423.6	9,514.2	5,868.7	1,616.4	123.8
NORTH						
Softwood:						
Loblolly pine	358.3	148.7	63.3	111.8	33.2	1.3
Shortleaf pine	966.6	56.5	633.5	193.3	83.3	...
Longleaf pine	...	...	...	...	...	...
Slash pine	...	...	...	...	...	...
Other pines	...	...	...	...	...	...
Other softwoods	46.9	21.2	8.2	12.3	5.2	...
Total	1,371.8	226.4	705.0	317.4	121.7	1.3
Hardwood:						
Red oaks	647.6	141.8	178.6	244.7	81.5	1.0
White oaks	541.8	85.7	187.7	189.9	74.7	3.8
Hickory	242.8	17.9	82.1	118.6	24.2	...
Sweetgum	448.8	105.5	194.1	110.5	38.7	...
Black and tupelo gums	163.2	48.5	72.2	29.2	13.3	...
Other hardwoods	484.7	139.4	186.9	106.7	51.7	...
Total	2,528.9	538.8	901.6	799.6	284.1	4.8
All species	3,900.7	765.2	1,606.6	1,117.0	405.8	6.1
CENTRAL						
Softwood:						
Loblolly pine	2,347.4	768.1	1,165.9	367.0	46.4	...
Shortleaf pine	1,228.0	232.6	697.6	244.6	53.2	...
Longleaf pine	56.5	...	27.8	28.7	...	...
Slash pine	...	...	...	...	...	...
Other pines	178.8	79.7	68.6	16.5	14.0	...
Other softwoods	36.1	27.5	...	8.6	...	...
Total	3,846.8	1,107.9	1,959.9	665.4	113.6	...
Hardwood:						
Red oaks	484.2	114.7	164.0	174.9	30.6	...
White oaks	436.1	102.6	176.2	126.1	31.2	...
Hickory	221.6	60.9	62.4	83.4	14.9	...
Sweetgum	432.7	141.5	162.1	112.8	16.3	...
Black and tupelo gums	295.5	95.9	128.2	60.5	10.9	...
Other hardwoods	316.7	148.2	85.5	74.9	6.5	1.6
Total	2,186.8	663.8	778.4	632.6	110.4	1.6
All species	6,033.6	1,771.7	2,738.3	1,298.0	224.0	1.6

Table 23. Sawtimber volume by species and stand size, by Survey region, 1957
(Continued)

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas ¹
— — — — — Million board feet — — — — —						
SOUTHWEST						
Softwood:						
Loblolly pine	2,270.2	1,038.3	790.7	346.1	95.1	...
Shortleaf pine	604.8	170.4	311.6	104.2	18.6	..
Longleaf pine	118.2	26.8	62.9	14.5	14.0	..
Slash pine	...	..	..	..	..	..
Other pines	51.2	35.5	8.4	7.3	..	..
Other softwoods	266.4	224.1	32.7	7.3	2.3	...
Total	3,310.8	1,495.1	1,206.3	479.4	130.0	..
Hardwood:						
Red oaks	584.7	217.6	125.6	197.2	43.0	1.3
White oaks	266.9	92.6	68.9	80.7	24.7	..
Hickory	213.8	68.8	55.3	72.3	17.4	..
Sweetgum	421.3	232.0	74.6	83.9	30.8	...
Black and tupelo gums	175.3	88.9	31.3	50.0	3.9	1.2
Other hardwoods	769.1	391.8	191.3	159.9	26.1	...
Total	2,431.1	1,091.7	547.0	644.0	145.9	2.5
All species	5,741.9	2,586.8	1,753.3	1,123.4	275.9	2.5
SOUTH						
Softwood:						
Loblolly pine	1,667.2	650.5	683.8	241.9	84.4	6.6
Shortleaf pine	392.2	43.3	229.0	96.0	23.9	..
Longleaf pine	1,436.7	89.8	732.2	415.5	131.4	67.8
Slash pine	962.3	72.5	578.5	217.2	80.1	14.0
Other pines	209.0	82.8	91.1	29.9	5.2	..
Other softwoods	67.8	29.8	16.4	8.4	13.2	..
Total	4,735.2	968.7	2,331.0	1,008.9	338.2	88.4
Hardwood:						
Red oaks	384.6	92.5	72.9	172.4	38.6	8.2
White oaks	166.0	34.4	43.6	68.2	19.8	..
Hickory	155.1	40.3	36.0	62.0	16.8	..
Sweetgum	201.6	76.7	62.2	53.9	8.8	..
Black and tupelo gums	612.7	201.2	243.5	144.7	22.4	.9
Other hardwoods	543.7	143.6	216.7	175.1	8.3	...
Total	2,063.7	588.7	674.9	676.3	114.7	9.1
All species	6,798.9	1,557.4	3,005.9	1,685.2	452.9	97.5
DELTA						
Softwood:						
Loblolly pine	36.5	31.6	..	4.9	..	..
Shortleaf pine	88.4	4.8	63.1	18.4	2.1	..
Longleaf pine	..	..	..	..	..	..
Slash pine	...	..	..	..	..	..
Other pines	..	..	..	..	..	..
Other softwoods	147.9	96.4	17.6	16.6	4.1	13.2
Total	272.8	132.8	80.7	39.9	6.2	13.2
Hardwood:						
Red oaks	443.5	213.8	28.4	154.9	46.4	..
White oaks	319.2	157.9	37.7	88.2	33.1	2.3
Hickory	302.4	194.9	24.6	48.2	34.7	..
Sweetgum	430.4	223.2	54.6	105.3	47.3	..
Black and tupelo gums	71.5	29.1	24.4	18.0	..	..
Other hardwoods	1,231.8	790.8	159.7	190.6	90.1	.6
Total	2,798.8	1,609.7	329.4	605.2	251.6	2.9
All species	3,071.6	1,742.5	410.1	645.1	257.8	16.1

¹ Includes areas not classified elsewhere.

Table 24. *Sawtimber volume by species and Survey region, 1957*

Species	State of Mississippi	North	Central	Southwest	South	Delta
— — — — Million board feet — — — —						
Softwood:						
Loblolly pine	6,679.6	358.3	2,347.4	2,270.2	1,667.2	36.5
Shortleaf pine	3,280.0	966.6	1,228.0	604.8	392.2	88.4
Longleaf pine	1,611.4	.	56.5	118.2	1,456.7	.
Slash pine	962.3	.	.	.	962.3	...
Other pines	439.0	.	178.8	51.2	209.0	...
Other softwoods	565.1	46.9	36.1	266.4	67.8	147.9
Total	13,537.4	1,371.8	3,846.8	3,310.8	4,735.2	272.8
Hardwood:						
Black, scarlet, and southern red oaks	999.8	390.0	186.9	203.9	160.9	58.1
Cherrybark, Shumard, and northern red oaks	376.9	107.7	58.5	138.8	15.4	56.5
Water oaks	1,167.9	149.9	238.8	242.0	208.3	328.9
White oak (<i>Quercus alba</i>)	877.4	328.4	242.4	162.1	91.7	52.8
Other white oaks	852.6	213.4	193.7	104.8	74.3	266.4
Pecan	354.7	16.5	5.2	71.6	1.9	259.5
Other hickories	781.0	226.3	216.4	142.2	153.2	42.9
Sweetgum	1,934.8	448.8	432.7	421.3	201.6	430.4
Black & tupelo gums	1,318.2	163.2	295.5	175.3	612.7	71.5
Cottonwood	453.5	25.4	2.3	113.7	15.0	297.1
Willow	318.5	49.9	.	44.4	3.6	220.6
Soft maples	89.5	23.8	16.3	4.1	28.5	16.8
Yellow-poplar	498.9	86.1	107.4	137.4	99.6	68.4
Sweetbay and magnolia	327.6	12.8	7.0	20.1	279.9	7.8
White elm	258.9	40.8	20.6	53.5	3.3	140.7
Other elms	228.1	53.1	31.3	39.5	10.8	93.4
Ash	271.8	61.9	32.1	49.2	34.0	94.6
Hackberry	161.7	26.0	20.2	27.3	8.9	79.3
Beech	241.5	25.8	54.8	119.4	27.4	14.1
Sycamore	240.5	55.4	6.5	54.5	1.8	122.3
Other hardwoods	255.5	23.7	18.2	106.0	30.9	76.7
Total	12,009.3	2,528.9	2,186.8	2,431.1	2,063.7	2,798.8
All species	25,546.7	3,900.7	6,033.6	5,741.9	6,798.9	3,071.6

Table 25. *Average sawtimber volume per acre by forest type and Survey region, 1957*

Forest type	State of Mississippi	North	Central	Southwest	South	Delta
— — — — Board feet — — — —						
Softwood types:						
Longleaf-slash pine	1,172		992	3,027	1,148	
Loblolly-shortleaf pine	2,094	1,151	2,065	2,847	2,363	1,489
Oak-pine	1,079	627	1,204	1,389	1,293	1,230
Average	1,597	907	1,764	2,386	1,506	1,371
Hardwood types:						
Oak-hickory	990	748	1,028	1,412	678	1,647
Elm-ash-cottonwood	2,421	1,412	1,778	2,128	2,198	2,958
Oak-gum-cypress	1,645	1,462	1,588	2,255	2,081	1,316
Average	1,353	943	1,242	1,756	1,480	1,616
All types	1,486	928	1,591	2,090	1,500	1,602

Table 26. Average sawtimber volume per acre by stand size and forest type, 1957

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
<i>Board feet</i>						
Softwood types:						
Longleaf-slash pine	1,172	4,193	3,727	918	280	217
Loblolly-shortleaf pine	2,094	7,414	4,690	840	232	127
Oak-pine	1,079	4,393	2,935	836	359	209
Average	1,597	6,425	4,170	853	283	206
Hardwood types:						
Oak-hickory	990	4,005	2,549	706	274	79
Elm-ash-cottonwood	2,421	5,672	3,957	800	436	90
Oak-gum-cypress	1,645	4,263	3,265	934	426	369
Average	1,353	4,374	2,979	803	338	152
All types	1,486	5,176	3,760	827	306	190

Includes areas not classified elsewhere.

Table 27. Softwood sawtimber volume by log grade and stand quality, by species group, and by Survey region, 1957

Species group and Survey region	All grades	Grade 1	Grade 2	Grade 3			Grade 4		
				Total	In fair and better stands	In poor stands	Total	In fair and better stands	In poor stands
— Million board feet —									
Species group:									
Loblolly pine	6,679.6	155.1	867.3	2,399.8	888.6	1,511.2	3,257.4	1,153.9	2,103.5
Shortleaf pine	3,280.0	30.8	368.6	1,318.5	477.1	841.4	1,562.1	457.6	1,104.5
Longleaf pine	1,611.4	1.8	128.8	467.3	45.2	422.1	1,013.5	99.4	914.1
Slash pine	962.3	8.9	132.8	518.6	112.2	406.4	302.0	66.4	235.6
Other pines	439.0	4.0	27.6	194.2	80.3	113.9	213.2	82.5	130.7
Other softwoods	565.1	66.6	75.6	152.2	111.2	41.0	270.7	186.9	83.8
Total	13,537.4	267.2	1,600.7	5,050.6	1,714.6	3,336.0	6,618.9	2,046.7	4,572.2
Survey region:									
North	1,371.8	26.9	153.7	498.4	148.9	349.5	692.8	194.5	498.3
Central	3,846.8	44.9	409.2	1,536.3	515.0	1,021.3	1,856.4	582.7	1,273.7
Southwest	3,310.8	122.4	465.6	1,181.6	557.4	624.2	1,541.2	759.8	781.4
South	4,735.2	54.5	548.8	1,789.9	478.2	1,311.7	2,342.0	462.2	1,879.8
Delta	272.8	18.5	23.4	44.4	15.1	29.3	186.5	47.5	139.0
Total	13,537.4	267.2	1,600.7	5,050.6	1,714.6	3,336.0	6,618.9	2,046.7	4,572.2

Table 28. Hardwood sawtimber volume by log class and stand quality, by species group, and by Survey region, 1957

Species group and Survey region	All classes	Standard lumber logs					Tie and timber logs		
		Grade 1	Grade 2	Grade 3			Total	In fair and better stands	In poor stands
				Total	In fair and better stands	In poor stands			
----- Million board feet -----									
Species group:									
Red oaks	2,544.6	77.7	311.9	1,175.4	265.4	910.0	979.6	191.0	788.6
White oaks	1,730.0	54.2	271.2	941.4	213.3	728.1	463.2	91.7	371.5
Hickory	1,135.7	88.4	190.8	598.4	125.7	472.7	258.1	53.9	204.2
Sweetgum	1,934.8	100.9	341.2	1,017.4	426.8	590.6	475.3	145.8	329.5
Black and tupelo gums	1,318.2	75.9	270.3	756.3	341.8	414.5	215.7	61.5	154.2
Other hardwoods	3,346.0	252.2	698.2	1,628.1	784.7	843.4	767.5	249.0	518.5
Total	12,009.3	649.3	2,083.6	6,117.0	2,157.7	3,959.3	3,159.4	792.9	2,366.5
Survey region:									
North	2,528.9	81.5	377.6	1,411.1	405.1	1,006.0	658.7	130.0	528.7
Central	2,186.8	60.8	242.8	1,055.4	297.2	758.2	827.8	157.6	670.2
Southwest	2,431.1	97.7	457.1	1,311.7	507.1	804.6	564.6	182.9	381.7
South	2,063.7	115.5	292.7	1,047.3	387.1	660.2	608.2	179.5	428.7
Delta	2,798.8	293.8	713.4	1,291.5	561.2	730.3	500.1	142.9	357.2
Total	12,009.3	649.3	2,083.6	6,117.0	2,157.7	3,959.3	3,159.4	792.9	2,366.5

Table 29. Annual cut of growing stock and sawtimber by species group and county, 1956

County	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	— Million cubic feet —			— Million board feet —		
Adams	7.6	2.0	5.6	31.4	9.6	21.8
Alcorn	2.7	0.8	1.9	10.5	3.2	7.3
Amite	9.5	5.6	3.9	39.2	25.0	14.2
Attala	7.2	3.0	4.2	23.4	10.7	12.7
Benton	1.5	0.6	0.9	5.9	2.6	3.3
Bolivar	5.4	0.1	5.3	19.6	0.5	19.1
Calhoun	3.3	0.9	2.4	13.9	4.3	9.6
Carroll	4.7	1.3	3.4	18.7	6.0	12.7
Chickasaw	3.2	0.8	2.4	11.5	2.8	8.7
Choctaw	4.6	1.7	2.9	16.0	5.6	10.4
Claiborne	6.4	1.6	4.8	23.8	6.1	17.7
Clarke	15.4	8.8	6.6	56.5	31.8	24.7
Clay	2.3	0.4	1.9	9.8	1.7	8.1
Coahoma	3.6	0.2	3.4	14.8	0.8	14.0
Copiah	12.7	5.3	7.4	43.0	17.2	25.8
Covington	4.8	2.3	2.5	13.9	5.8	8.1
De Soto	2.0	0.1	1.9	6.7	0.5	6.2
Forrest	7.6	4.7	2.9	25.8	15.6	10.2
Franklin	10.2	5.9	4.3	35.1	21.7	13.4
George	5.0	2.9	2.1	19.7	10.5	9.2
Greene	6.4	4.3	2.1	22.2	14.4	7.8
Grenada	3.7	1.6	2.1	16.1	7.8	8.3
Hancock	4.6	4.1	0.5	13.6	11.5	2.1
Harrison	5.3	4.3	1.0	16.8	13.2	3.6
Hinds	8.1	2.1	6.0	27.4	6.5	20.9
Holmes	7.9	1.8	6.1	28.0	6.6	21.4
Humphreys	3.1	0.1	3.0	12.1	0.6	11.5
Issaquena	5.9	0.2	5.7	26.1	1.3	24.8
Itawamba	2.7	1.2	1.5	12.0	6.1	5.9
Jackson	6.3	4.4	1.9	20.8	12.7	8.1
Jasper	11.6	6.0	5.6	34.0	17.2	16.8
Jefferson	7.5	2.7	4.8	28.3	10.8	17.5
Jefferson Davis	3.7	2.0	1.7	12.1	6.2	5.9
Jones	9.1	3.6	5.5	27.4	12.0	15.4
Kemper	9.0	5.7	3.3	36.6	24.1	12.5
Lafayette	4.2	1.5	2.7	16.0	6.3	9.7
Lamar	6.4	3.9	2.5	24.9	15.1	9.8
Lauderdale	11.0	6.9	4.1	39.0	24.2	14.8
Lawrence	7.4	3.5	3.9	20.5	7.6	12.9
Leake	4.9	2.3	2.6	14.7	6.8	7.9
Lee	1.4	0.2	1.2	4.6	0.7	3.9
Leflore	4.6	0.3	4.3	18.2	1.4	16.8
Lincoln	9.4	5.0	4.4	31.7	18.1	13.6
Lowndes	4.3	1.1	3.2	17.7	4.3	13.4

Table 29. Annual cut of growing stock and sawtimber by species group and county, 1956 (Continued)

County	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	— Million cubic feet —			— Million board feet —		
Madison	4.4	0.9	3.5	15.7	2.1	13.6
Marion	7.6	3.2	4.4	23.8	9.2	14.6
Marshall	2.9	0.7	2.2	11.5	3.3	8.2
Monroe	5.8	3.0	2.8	25.8	15.0	10.8
Montgomery	4.6	2.4	2.2	19.7	11.6	8.1
Neshoba	5.7	2.7	3.0	20.7	9.7	11.0
Newton	7.2	3.6	3.6	22.6	10.2	12.4
Noxubee	4.8	2.4	2.4	18.8	9.2	9.6
Oktibbeha	3.1	1.2	1.9	11.0	4.6	6.4
Panola	3.6	0.1	3.5	13.6	0.5	13.1
Pearl River	7.6	4.0	3.6	26.1	12.7	13.4
Perry	6.0	3.6	2.4	20.1	13.1	7.0
Pike	8.0	4.0	4.0	25.1	11.6	13.5
Pontotoc	2.9	1.2	1.7	9.4	3.3	6.1
Prentiss	1.8	0.7	1.1	6.4	2.7	3.7
Quitman	2.9	0.1	2.8	11.6	0.6	11.0
Rankin	10.4	4.6	5.8	37.5	16.6	20.9
Scott	11.8	6.0	5.8	39.7	19.7	20.0
Sharkey	3.5	0.1	3.4	12.9	0.5	12.4
Simpson	6.3	2.9	3.4	19.3	8.3	11.0
Smith	6.6	3.5	3.1	24.5	14.2	10.3
Stone	6.4	4.2	2.2	26.0	17.1	8.9
Sunflower	2.9	0.1	2.8	10.2	0.3	9.9
Tallahatchie	3.2	0.2	3.0	12.4	1.1	11.3
Tate	1.7	0.1	1.6	6.4	0.3	6.1
Tippah	3.0	1.2	1.8	12.6	5.6	7.0
Tishomingo	6.8	4.1	2.7	29.5	19.1	10.4
Tunica	2.8	0.1	2.7	11.5	0.3	11.2
Union	2.4	0.7	1.7	9.0	2.8	6.2
Walthall	3.8	1.6	2.2	11.3	3.5	7.8
Warren	10.6	0.4	10.2	45.4	1.9	43.5
Washington	4.6	0.4	4.2	17.7	1.8	15.9
Wayne	9.8	4.5	5.3	36.7	16.5	20.2
Webster	3.6	1.0	2.6	13.9	4.2	9.7
Wilkinson	14.8	6.6	8.2	65.1	32.3	32.8
Winston	6.7	3.4	3.3	24.4	11.9	12.5
Yalobusha	3.0	0.8	2.2	10.6	3.0	7.6
Yazoo	5.6	0.3	5.3	23.5	1.1	22.4
All counties	477.4	198.4	279.0	1,742.0	719.0	1,023.0

Table 30. Annual cut of sawtimber and growing stock, by species group and class of timber, by Survey region, 1956

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
Million cubic feet			Million board feet			
STATE OF MISSISSIPPI						
Sawtimber trees	356.1	137.3	218.8	1,742.0	719.0	1,023.0
Poletimber trees	121.3	61.1	60.2	..	..	...
Total	477.4	198.4	279.0	1,742.0	719.0	1,023.0
NORTH						
Sawtimber trees	69.5	23.5	46.0	338.6	127.6	211.0
Poletimber trees	16.3	5.8	10.5	...	..	...
Total	85.8	29.3	56.5	338.6	127.6	211.0
CENTRAL						
Sawtimber trees	84.1	41.2	42.9	412.0	214.8	197.2
Poletimber trees	34.5	20.6	13.9	.	.	..
Total	118.6	61.8	56.8	412.0	214.8	197.2
SOUTHWEST						
Sawtimber trees	73.8	30.4	43.4	365.7	160.9	204.8
Poletimber trees	24.9	11.5	13.4	..	...	..
Total	98.7	41.9	56.8	365.7	160.9	204.8
SOUTH						
Sawtimber trees	73.5	38.7	34.8	361.7	196.7	165.0
Poletimber trees	34.2	22.2	12.0	...	...	...
Total	107.7	60.9	46.8	361.7	196.7	165.0
DELTA						
Sawtimber trees	55.2	3.5	51.7	264.0	19.0	245.0
Poletimber trees	11.4	1.0	10.4	..	...	...
Total	66.6	4.5	62.1	264.0	19.0	245.0

Table 31. Annual cut of sawtimber and growing stock by species, 1956

Species	Growing stock	Sawtimber
	Million cubic feet	Million board feet
Softwood:		
Pines	193.2	695.2
Other softwoods	5.2	23.8
Total	198.4	719.0
Hardwood:		
Red oaks	71.8	266.6
White oaks	33.2	127.9
Hickory	11.8	41.4
Other hard hardwoods	27.6	109.9
Black and tupelo gums	27.3	105.1
Sweetgum	75.0	239.3
Other soft hardwoods	32.3	132.8
Total	279.0	1,023.0
All species	477.4	1,742.0

Table 32. Net annual growth per acre of sawtimber and growing stock, by forest-type group and Survey region, 1956

Survey region	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
	— — Cubic feet — —			— — Board feet — —		
North	26	28	25	77	91	67
Central	44	49	34	153	183	94
Southwest	41	48	33	165	199	127
South	35	37	28	135	149	89
Delta	28	29	28	86	83	86
Average	35	40	29	124	154	88

Table 33. Net annual growth of sawtimber and growing stock by species and class of timber, by Survey region, 1956

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
Million cubic feet			Million board feet			
STATE OF MISSISSIPPI						
Sawtimber trees	390.7	240.7	150.0	2,135.5	1,371.5	764.0
Poletimber trees	211.7	92.7	119.0	.	.	.
Total	602.4	333.4	269.0	2,135.5	1,371.5	764.0
NORTH						
Sawtimber trees	63.9	27.4	36.5	325.4	152.2	173.2
Poletimber trees	47.1	16.2	30.9	.	.	.
Total	111.0	43.6	67.4	325.4	152.2	173.2
CENTRAL						
Sawtimber trees	106.6	76.3	30.3	581.7	434.6	147.1
Poletimber trees	61.0	31.0	30.0	.	.	.
Total	167.6	107.3	60.3	581.7	434.6	147.1
SOUTHWEST						
Sawtimber trees	73.4	44.7	28.7	453.4	279.5	173.9
Poletimber trees	40.0	17.9	22.1	.	.	.
Total	113.4	62.6	50.8	453.4	279.5	173.9
SOUTH						
Sawtimber trees	114.1	89.2	24.9	610.9	492.5	118.4
Poletimber trees	43.0	26.9	16.1	.	.	.
Total	157.1	116.1	41.0	610.9	492.5	118.4
DELTA						
Sawtimber trees	32.7	3.1	29.6	164.1	12.7	151.4
Poletimber trees	20.6	.7	19.9	.	.	.
Total	53.3	3.8	49.5	164.1	12.7	151.4

Table 34. Number of growing stock trees by species group and Survey region (1957) and change since 1948

Diameter class (inches)	Softwood		Hardwood	
	Thousand trees	Percent change	Thousand trees	Percent change
STATE OF MISSISSIPPI				
2-4	1,835,767	+ 75	3,582,084	+ 32
6-8	353,911	+ 25	449,501	+ 9
10-12	103,331	+ 10	158,049	+ 3
14-18	34,053	+ 5	63,249	- 18
20 and up	3,794	- 3	11,481	- 37
Total	2,330,856	+ 59	4,264,364	+ 27
NORTH				
2-4	343,813	+ 91	916,541	+ 57
6-8	73,696	+ 44	119,902	+ 36
10-12	14,820	+ 22	40,619	+ 10
14-18	3,297	+ 33	14,166	- 2
20 and up	247	- 31	1,824	- 22
Total	435,873	+ 77	1,093,052	+ 51
CENTRAL				
2-4	622,647	+ 90	1,016,211	+ 22
6-8	115,804	+ 18	118,993	- 18
10-12	30,818	+ 10	39,333	- 7
14-18	9,274	+ 21	11,689	- 32
20 and up	871	+ 26	1,548	- 44
Total	779,414	+ 68	1,187,774	+ 14

Softwood		Hardwood	
Thousand trees	Percent change	Thousand trees	Percent change
SOUTHWEST			
351,192	+ 46	666,144	+ 18
60,747	+ 22	73,954	+ 13
17,114	+ 1	25,549	- 6
9,228	+ 12	12,983	- 22
1,660	+ 13	2,677	- 47
439,941	+ 39	781,307	+ 15
SOUTH			
492,804	+ 69	581,152	+ 131
98,898	+ 25	81,601	+ 48
38,738	+ 9	33,901	+ 51
11,605	- 9	11,841	+ 6
776	- 3	1,376	- 35
642,821	+ 53	709,871	+ 107
DELTA			
25,311	+ 212	402,036	- 16
4,766	- 6	55,051	- 6
1,841	+ 25	18,647	- 26
649	+ 51	12,570	- 28
240	- 59	4,056	- 31
32,807	+ 98	492,360	- 16

STANDARD TABLES

Tables identical in format to those that follow will be found in all State reports issued by the Forest Survey. Their purpose is to facilitate compilation of data for various States and regions.

Table I. *Land area, by major classes of land, Mississippi, 1957*

Class of land	Area
	<i>Thousand acres</i>
Forest:	
Commercial	17,193.6
Noncommercial:	
Productive-reserved	31.5
Unproductive	...
Total forest	17,225.1
Nonforest	12,927.2
All land	30,152.3

Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. *Commercial forest land area, by ownership class, Mississippi, 1957*

Ownership class	Area
	<i>Thousand acres</i>
Federally owned or managed:	
National forest	1,114.9
Indian	12.3
Bureau of Land Management	8.3
Other	129.7
Total	1,265.2
State	54.5
County and municipal	397.2
Private:	
Farm	7,410.5
Industrial and other	8,066.2
Total	15,476.7
All ownerships	17,193.6

Table III. *Area of commercial forest land, by major forest types, Mississippi, 1957*

Forest type	Area
	<i>Thousand acres</i>
Longleaf-slash pine	2,043.9
Loblolly-shortleaf pine	4,596.1
Oak-pine	2,727.4
Oak-hickory	4,070.1
Oak-gum-cypress	3,273.8
Elm-ash-cottonwood	482.3
Total	17,193.6

Table IV. *Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, Mississippi, 1957*

Stand-size class	Sawtimber	Growing stock
	<i>Million board feet</i>	<i>Million cubic feet</i>
Sawtimber stands	17,937.8	4,262.9
Poletimber stands	5,868.7	2,660.1
Seedling and sapling stands	1,616.4	631.9
Nonstocked and other areas not elsewhere classified	123.8	34.1
Total	25,546.7	7,589.0

Table V. *Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, Mississippi, 1957*

Ownership class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Federally owned or managed:		
National forest	3,299.5	819.7
Indian	34.1	9.6
Bureau of Land Management	14.0	3.7
Other	252.5	68.8
Total	3,600.1	901.8
State	83.9	21.5
County and municipal	519.9	178.5
Private:		
Farm	8,167.9	2,753.7
Industrial and other	13,174.9	3,733.5
Total	21,342.8	6,487.2
All ownerships	25,546.7	7,589.0

Table VI. *Net volume of live sawtimber and growing stock on commercial forest land, by species, Mississippi, 1957*

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Longleaf and slash pines	2,573.7	652.6
Shortleaf and loblolly pines	9,959.6	2,449.4
Other southern yellow pines	439.0	96.6
Cypress	530.1	99.9
Other eastern softwoods	35.0	14.8
Total	13,537.4	3,313.3
Hardwoods:		
White oaks (<i>Quercus alba</i> and <i>michauxii</i>)	975.5	327.8
Red oaks (<i>Q. rubra</i> , <i>falcata</i> var. <i>pagodaefolia</i> , and <i>shumardii</i>)	376.9	117.4
Other white oaks	754.5	336.9
Other red oaks	2,167.7	813.6
Sugar maple	2.4	3.4
Soft maples	89.5	56.5
Beech	241.5	67.2
Sweetgum	1,934.8	751.9
Tupelo and blackgum	1,318.2	464.2
Ash	271.8	101.1
Hickory	1,135.7	385.2
Cottonwood	453.5	86.8
Basswood	37.6	9.7
Yellow-poplar	498.9	134.9
Black walnut	7.2	4.9
Other eastern hardwoods	1,743.6	614.2
Total	12,009.3	4,275.7
All species	25,546.7	7,589.0

Table VII. *Net volume of live sawtimber on commercial forest land, by diameter class groups and species, Mississippi, 1957*

Species	Diameter class groups						Total
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	
— — — — Million board feet — — — —							
Southern yellow pines	2,719.0	2,956.0	2,578.6	1,952.4	1,208.7	1,537.6	12,972.3
Other eastern softwoods	31.5	49.5	67.8	76.2	126.5	213.6	565.1
White oaks (<i>Quercus alba</i> and <i>michauxii</i>)	.	207.2	259.4	206.1	102.2	200.6	975.5
Other white oaks	.	179.3	154.8	105.5	94.7	220.2	754.5
Red oaks (<i>Q. rubra</i> , <i>falcata</i> var. <i>pagodaefolia</i> , and <i>shumardii</i>)	.	81.7	63.6	64.7	50.2	116.7	376.9
Other red oaks	.	435.7	436.7	416.4	312.6	566.3	2,167.7
Sugar maple	.	.	2.4	.	.	.	2.4
Beech	.	21.7	41.2	62.7	34.5	81.4	241.5
Sweetgum	.	429.1	502.0	362.4	292.0	349.3	1,934.8
Tupelo and blackgum	.	396.2	317.9	245.6	150.2	208.3	1,318.2
Yellow-poplar	...	76.8	122.6	116.7	63.3	119.5	498.9
Other eastern hardwoods	...	678.5	789.8	593.0	420.3	1,257.3	3,738.9

Table VIII. *Net volume of all timber on commercial forest land, by class of material and species group, Mississippi, 1957*

Class of material	Total	Softwoods	Hardwoods
— — — — Million cubic feet — — — —			
Growing stock:			
Sawtimber trees:			
Sawlog portion	4,162.8	2,230.1	1,932.7
Upper stem portion	879.8	220.5	659.3
Total	5,042.6	2,450.6	2,592.0
Poletimber trees	2,546.4	862.7	1,683.7
Total growing stock	7,589.0	3,313.3	4,275.7
Other material:			
Sound cull trees	1,468.9	27.3	1,441.6
Rotten cull trees	433.1	10.2	422.9
Hardwood limbs	498.7		498.7
Salvable dead trees	8.6	2.0	6.6
Total other material	2,409.3	39.5	2,369.8
Total, all timber	9,998.3	3,352.8	6,645.5

Table IX. *Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, Mississippi, 1956*

Item	Sawtimber			Growing stock		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
— — — — Million board feet — — — —				— — — — Million cubic feet — — — —		
Net annual growth	2,135.5	1,371.5	764.0	602.4	333.4	269.0
Annual mortality	188.1	82.1	106.0	63.4	22.4	41.0
Annual cut						
Timber products	1,652.5	706.5	946.0	397.9	188.1	209.8
Logging residues	89.5	12.5	77.0	79.5	10.3	69.2
Total annual cut	1,742.0	719.0	1,023.0	477.4	198.4	279.0

Table X. Output of timber products and annual cut of live sawtimber and growing stock, Mississippi, 1956

Product	Output of timber products					Annual cut of sawtimber			Annual cut of growing stock		
	Volume in standard units		Roundwood volume								
	Standard units	Number	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
			Thousand cubic feet			Thousand board feet			Thousand cubic feet		
Sawlogs	MBM ¹	1,145,827	179,606	97,292	82,314	1,089,334	544,836	544,498	220,575	103,778	116,797
Veneer logs & bolts	MBM ¹	89,914	12,588		12,588	99,355		99,355	18,163		18,163
Cooperage logs & bolts	MBM ¹	18,627	2,651		2,651	20,710		20,710	4,307		4,307
Pulpwood	Std. cords ²	2,069,033	157,811	89,343	68,468	257,314	107,211	150,103	145,020	77,430	67,590
Fuelwood	Std. cords ²	1,024,970	76,873	5,952	70,921	132,922	9,047	123,875	49,198	3,809	45,389
Piling	M linear feet	4,181	2,619	2,619		15,131	15,131		3,081	3,081	
Poles	M pieces	599	7,216	7,216		41,713	41,713		8,488	8,488	
Posts	M pieces	16,443	7,650	1,416	6,234	16,159	199	15,960	6,003	1,279	4,724
Hewn ties	M pieces	280	1,966	28	1,933	14,966	208	14,758	3,467	38	3,429
Miscellaneous ³	M cu. ft.	5,811	5,811	553	5,258	35,955	613	35,342	10,765	510	10,255
Total			454,791	204,419	250,372	1,723,559	718,958	1,004,601	469,067	198,413	270,654

¹ International 1/4-inch rule.² Rough wood basis.³ Not including 6.4 million cubic feet of wood from mill residues used for pulp.⁴ Not including 77.6 million cubic feet of wood from mill residues used for domestic and industrial fuel.⁵ Includes handle stock, other miscellaneous dimension products, etc.⁶ Not including 3.3 million cubic feet of mill residues used for miscellaneous products.⁷ Not including 18.4 million board feet of wood killed by cultural operations.⁸ Not including 8.3 million cubic feet of wood killed by cultural operations.

FOREST SURVEY RELEASE 81

SOUTHERN FOREST EXPERIMENT STATION

New Orleans, Louisiana

Forest Service, U.S. Department of Agriculture

1958

SOUTHERN PULPWOOD PRODUCTION, 1958





SOUTHERN PULPWOOD PRODUCTION, 1958

Joe F. Christopher

and

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in cooperation with

SOUTHERN PULPWOOD CONSERVATION ASSOCIATION
Atlanta, Georgia

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THE PULP INDUSTRY IN THE SOUTH is now larger than in all other parts of the Nation combined. In the years since 1946, construction of 25 new mills and the expansion of existing mills has more than doubled plant capacity. The annual cut of pulpwood bolts has increased proportionately, and a new source of raw material has been developed from the coarse residues at sawmills.

PULPWOOD PRODUCTION

In 1958 the South produced 20,232,800 cords of pulpwood (table 1). Of this volume 18,447,400 cords were shipped as rough bolts. The rest were chiefly slabs and edgings salvaged at pine sawmills—a source non-existent in 1946.

Table 1. *Pulpwood production in the South during 1958 and change since 1957*

State	Round pulpwood and residues	Change
	Thousand cords	Percent
Alabama	2,624.6	+14
Arkansas	1,314.4	+26
Florida	1,834.9	- 8
Georgia	4,092.9	+ 6
Louisiana	1,583.6	+ 1
Mississippi	1,885.0	- 9
North Carolina	1,896.1	+ 2
Oklahoma	63.1	+ 5
South Carolina	1,747.8	(1)
Tennessee	354.6	+ 4
Texas	1,386.0	- 2
Virginia	1,449.8	- 5
All states	20,232.8	+ 2

1 Negligible.

Pulpwood production in 1946 was 8.8 million cords, and has since risen steadily (fig. 1). Only in 2 years—1949 and 1957—has the harvest failed to reach new highs. The 1958 cut was nearly three-fifths of all the pulpwood processed in the Nation. For the postwar era as a whole, the South cut over 54 percent of the pulpwood consumed in the United States.

The rapid growth of pulpwood cutting has helped maintain the timber economy of the South, offsetting the decline of traditional forest products such as lumber and cooperage.

Pulpwood may eventually replace sawlogs as the dominant product of the southern forests.

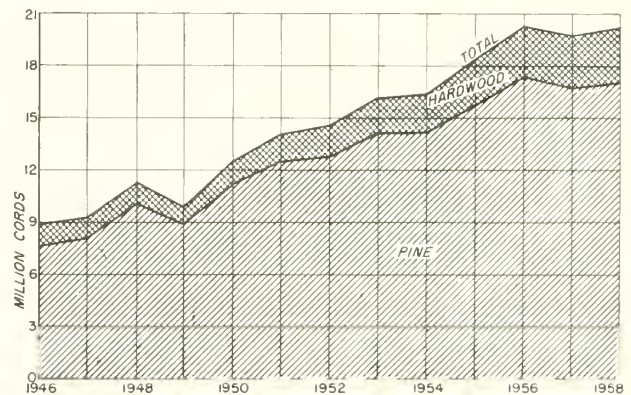


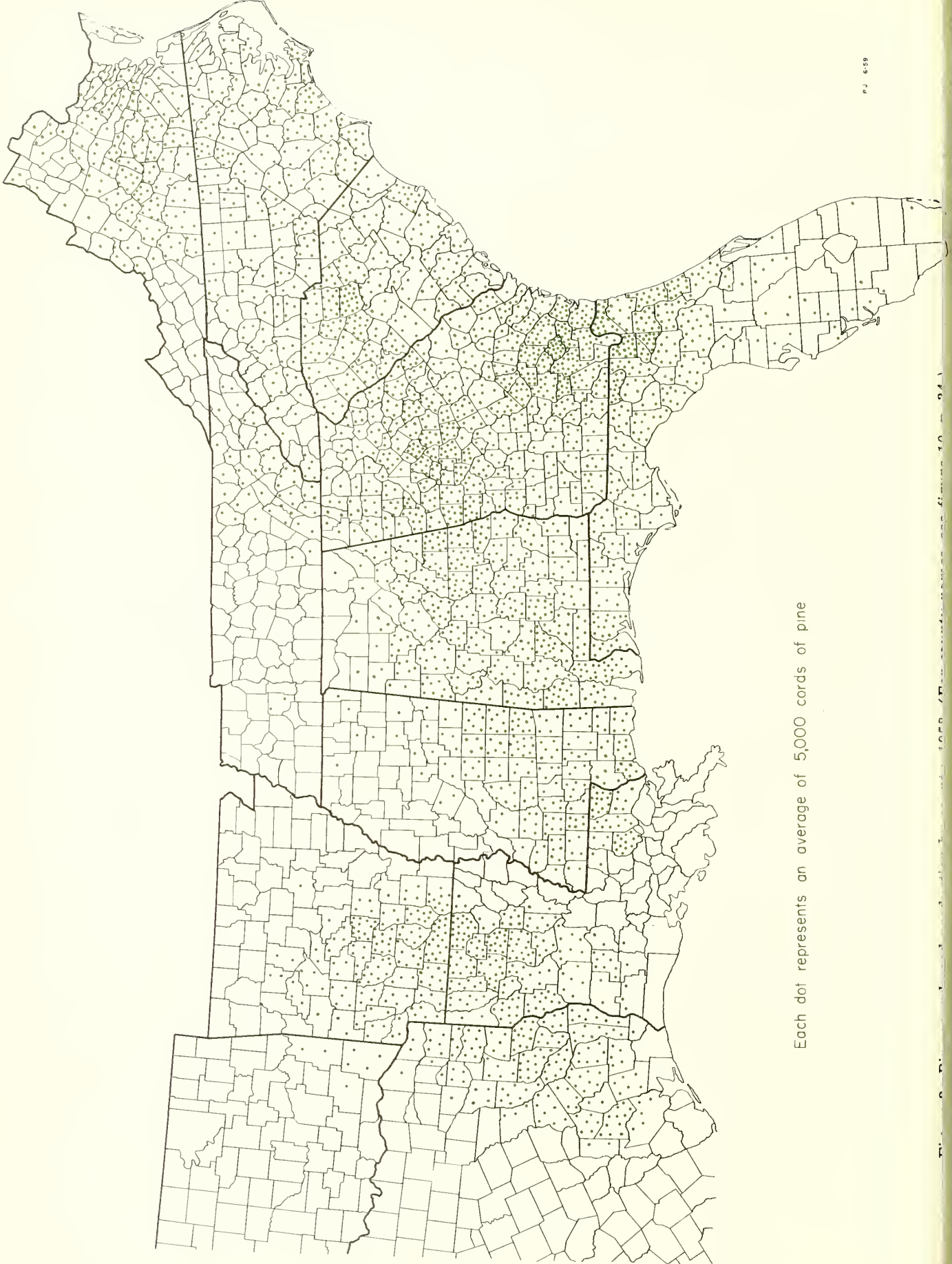
Figure 1. *Pulpwood production in the South, 1946-1958 (includes residues).*

Roundwood

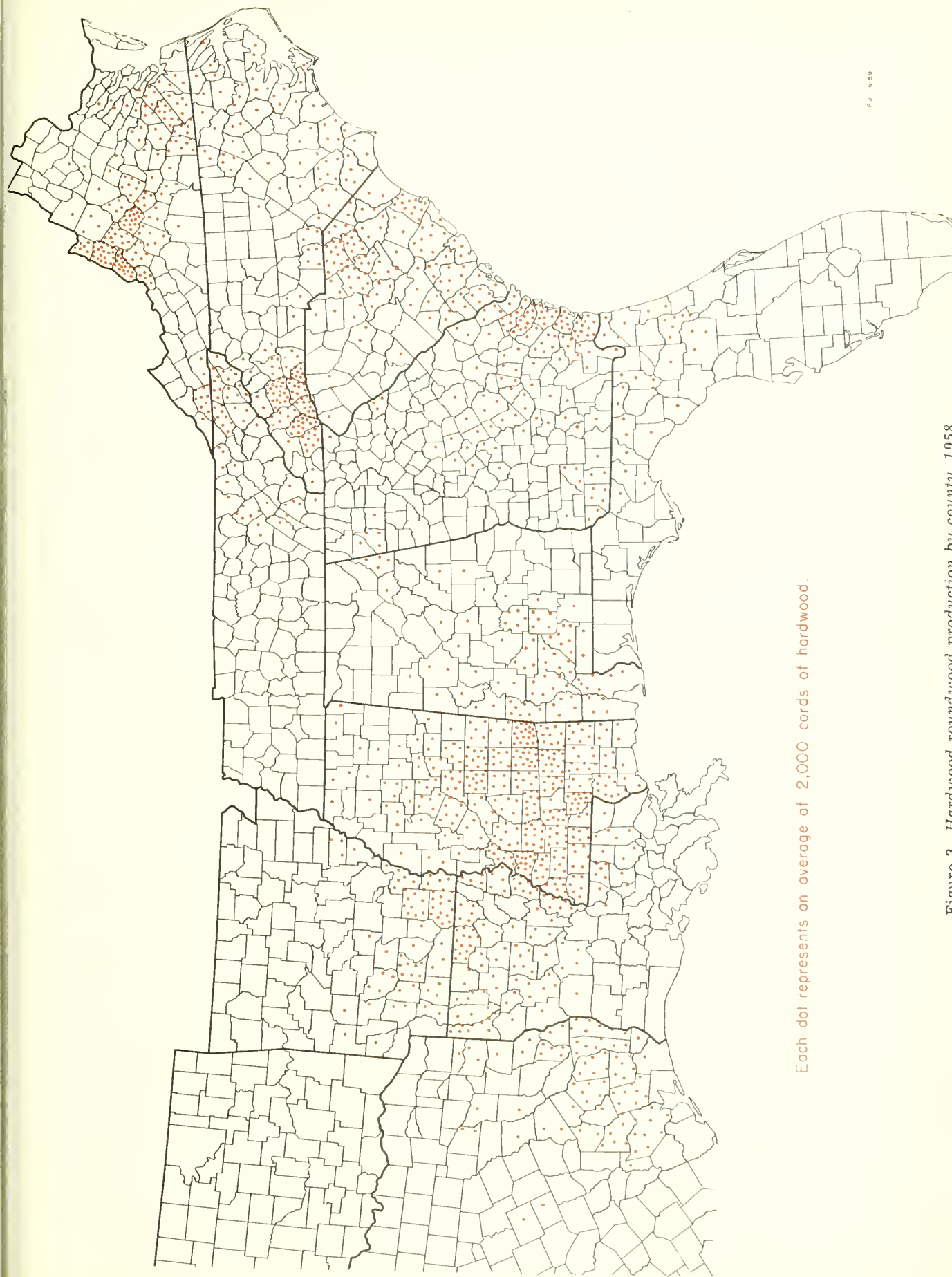
Southern pines are the mainstay of the industry, as they have been for 50 years. They are currently providing four-fifths of the raw material. In 1958, all but 13 of the South's 75 mills relied wholly or in part on pine.

Some 15.5 million cords of round pine pulpwood were harvested in 1958, as compared to 7.6 million cords in 1946. Figure 2 shows the county patterns of pine production. The bulk of the cut comes from coastal areas (where most of the mills are located), but the proportion from inland areas is steadily rising.

Though the pioneering mills, by virtue of their location, subsisted mainly on slash and longleaf, all pine species in the South are pulped today. Loblolly and shortleaf provide



Each dot represents an average of 5,000 cords of pine



Each dot represents an average of 2,000 cords of hardwood

the bulk of the cut, with slash and longleaf next. Virginia, spruce, and sand pine are locally important. Generally speaking, the postwar pulpwood market is encouraging increasing numbers of landowners to manage their pine timber. Recent forest surveys in several states have shown that pine pulpwood supplies are increasing.

Production of hardwoods for pulp in 1958 was 2,944,600 cords, a record for the eighth consecutive year. Hardwood output has increased 1-½ times since 1946; it now accounts for 16 percent of the total roundwood harvest. Sixty-two southern mills now use or are experimenting with hardwoods in their pulping processes.

Some hardwood is cut in every southern state (fig. 3), but about one-fourth originates in Mississippi. Central Virginia, western North Carolina, and southeastern Georgia are also large suppliers.

The most significant aspect of hardwood use is the industry's preference for the soft-textured species. As the leading producer of hardwood bolts, Mississippi perhaps offers the best example of a situation that is developing rapidly, and soon may become critical in other states. Almost 90 percent of the bolts are from gums and other soft-textured species — which comprise only 40 percent of the hardwood timber supply. The firm-textured species, such as oaks and hickories, not only make up the major portion of the hardwood forest, but are adding most to the State's hardwood growth. Obviously, the soft-textured species will be in shorter supply in coming years, and competition for them will intensify. Meanwhile, the problem of utilizing the increasing oversupply of firm-textured hardwoods becomes more serious.

Tables 9 to 20 show production of pine and hardwood bolts by county during 1958.

Residues

In the late 1940's, a study by the Southern Forest Experiment Station disclosed the possibilities of securing large amounts of high-quality chips from residues of pine sawmills — chiefly the slabs and edgings customarily burned as waste. It was demonstrated that the coarse residues from the sawing of a thousand board feet of lumber could yield about the

same volume of chips as could be obtained from half a cord of roundwood.

In 1952 the Southern Lumber Company, of Warren, Arkansas, one of the mills that cooperated in the study, installed equipment for converting such material into chips. Chips must be largely bark-free, and the cost of machines for debarking the incoming sawlogs at first limited the production of chips to large mills. As manufacturers developed less expensive debarkers, more mills made installations. Today over 400 southern plants convert residues to pulp chips, and many more are ordering the requisite machinery.

In 1958 southern pulpmills received residues equivalent to 1.8 million cords, a gain of 48 percent over 1957 (fig. 4). Of last year's total, 97 percent arrived at the pulpmills as chips from sawmills and veneer plants; the rest was received unchipped, mainly in the form of veneer cores, cull crossties, and pole and piling ends. Of the residues received at mills as chips since 1952, all but 7 percent have been pine.

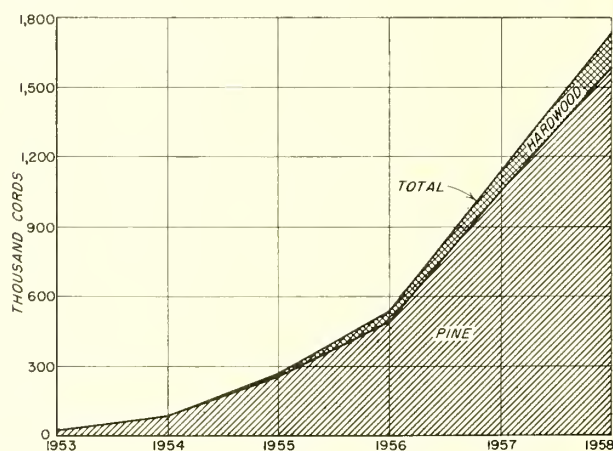


Figure 4. Chipped-residue production in the South, 1953-1958.

Utilization of residues has been the most notable postwar trend in the southern pulp industry. The outlook for further development is bright. A total of 4 million cords of pine chips theoretically could be made available from wood residues each year. Much of this potential is at mills whose annual production is too small to justify the installation of barking and chipping equipment. Awareness of the values involved, however, has led to the establishment of concentration yards where slabs from small mills are debarked and chipped.

Chipping of hardwood residues at sawmills is still in its infancy, nor have hardwood veneer mills reached their potential.

Production by State and County

In 1958, Georgia produced 4 million cords of pulpwood (roundwood and residues combined) to maintain the production lead she has held in the South since 1948 (fig. 5). Alabama ranked second for the fourth consecutive year. North Carolina moved from fifth to third position. Mississippi, though now cutting nearly 2 million cords annually, is in fourth place; in 1946 she led the region with 1.2 million cords. Only Tennessee and Oklahoma cut less than a million cords in 1958.

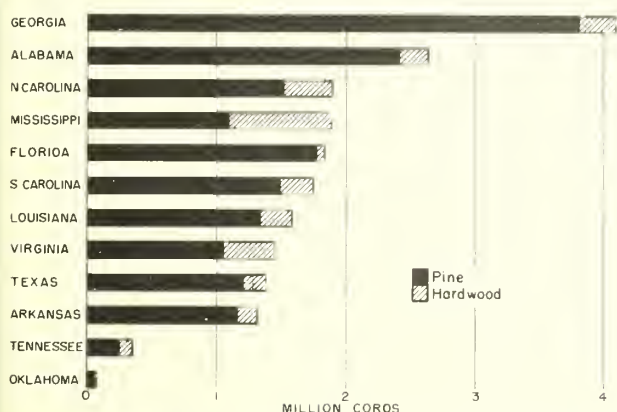


Figure 5. 1958 pulpwood production by state (includes residues).

As in most other postwar years, Baldwin County, Alabama, produced more rough bolts than any other southern county; the 1958 cut was 135,000 cords. Others cutting more than 100,000 cords were Union Parish, Louisiana, Camden, Ware, and Wayne Counties in Georgia, Union County, Arkansas, and Fairfield County, South Carolina. Seventeen other counties produced between 75,000 and 100,000 cords, and 69 harvested between 50,000 and 75,000 cords. Overall, counties producing more than 50,000 cords accounted for 35 percent of the South's roundwood production.

MILLS INCREASE IN SIZE AND NUMBER

The South now has most of the country's pulping capacity—the proportion being 56 per-

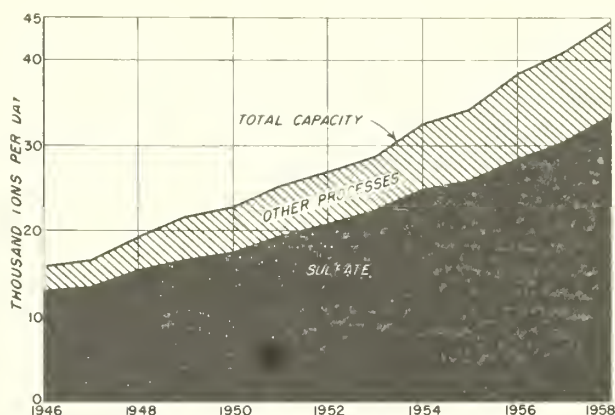


Figure 6. Pulping capacity in the South, 1946-1958.

cent, as compared to 47 percent of the national total in 1946.

Total southern mill capabilities have increased from 16,000 tons of pulp per day in 1946 to over 44,000 tons (fig. 6, table 2). The average mill now can manufacture 590 tons of pulp daily, as compared to 320 tons a dozen years ago. The daily capacity of individual mills ranges from 25 to 2,050 tons.

Table 2. Pulping capacity in the South by state, 1958 and 1946

State	Pulp capacity, 24 hrs. :	
	1958	1946
	Tons	Tons
Alabama	4,103	1,106
Arkansas	2,115	635
Florida	8,100	2,045
Georgia	6,750	1,360
Louisiana	5,605	3,283
Mississippi	2,962	1,348
North Carolina	3,810	1,322
Oklahoma	90	
South Carolina	3,530	1,975
Tennessee	1,832	350
Texas	2,305	665
Virginia	3,300	1,850
All states	44,502	15,939

1 Southern Pulp and Paper Manufacturer, vol. 21, no. 10 (Oct. 1, 1958); and other sources

The South now has 75 pulp mills (fig. 9, page 23), with 5 new ones planned or under construction. These additions will increase pulping capacity by some 1,375 tons daily. Options have been taken on other mill sites, and further expansions of existing mills are planned. Because so many of the mills have been built or modernized recently, they incorporate the latest technological improvements. Their operating efficiency, among other advantages, puts

them in top competitive position in the industry.

Florida has 18 percent of the South's total pulping capacity. The number of mills per state ranges from 1 in Oklahoma to 10 in Florida, Georgia, and Louisiana.

The kraft or sulfate process, whose first southern use was at Roanoke Rapids, N. C., in 1909, dominates the industry today, accounting for 76 percent of the southern mill capacity. Twelve percent of the capacity is groundwood or other mechanical processes, 8 percent semi-chemical, and 4 percent soda and other chemical processes.

Unbleached sulfate pulp goes primarily into products with high strength requirements, such as bags, wrapping papers, and container boards. The pulping of southern pines by the sulfate process also yields valuable byproducts, primarily sulfate turpentine and tall oil.

Bleaching sulfate pulp causes some loss in strength and yield, but makes the fiber suitable for fine packaging material as well as for tissues and waxed papers. Bleached-sulfate capacity is 4 times as great as in 1946, and has moved from one-fifth to one-third of total southern sulfate capacity.

Groundwood is a high-yielding process for pulp in which strength and brightness are not important. Groundwood pulp is also the chief constituent of newsprint, but for this use it is normally blended with pulps having higher strength characteristics. Five mills are producing newsprint from southern pine. Other mechanical pulps are largely made into building papers and insulating and hardboards. Semichemical pulp goes mainly into corrugating and food board. A variety of pulps supply material for the manufacture of products like rayon and transparent cellulose sheeting.

PULPWOOD MOVEMENT AND COMPETITION

The South's pulpwood moves mostly by rail-car and truck. In recent years, the amount of water-transported wood has increased.

A mill's procurement territory will vary with the amount of woodland that the mill owns, and with regional timber supplies, competition among buyers, and transportation costs. In 1958, about 70 percent of the South's pulpwood came from within 100 miles of the purchasing

mills, while only 5 percent moved farther than 200 miles.

Pine bolts are carried farther for processing than hardwood. Southern mills transported almost a third of their pine pulpwood over 100 miles in 1958, but only 12 percent of the hardwood was hauled that far. Table 3 shows known wood movement to pulp mills.

Table 3. *Pulpwood movement in the South, 1958, expressed as proportion of bolts traveling various airline distances to mill*

Distance to mill (miles)	All species	Pine	Hardwood
	Percent	Percent	Percent
Under 50	43	40	63
50 to 100	28	29	25
100 to 200	24	26	11
200 and more	5	5	1

Wood is hauled a greater average distance in the Southeast than in the Midsouth. About one-third of all rough bolts procured by mills in Florida, Georgia, North Carolina, South Carolina, and Virginia traveled more than 100 miles. In contrast, Midsouth mills carried only 17 percent of their 1958 wood over 100 miles.

Rising demand is stimulating competition among buyers. Though the industry is growing more and more of its own timber, most wood is still bought on the open market. Overlapping of procurement territories is illustrated in figures 7 and 8.

More than 90 percent of the 927 southern counties marketed pulpwood bolts in 1958. Nonproducing counties—chiefly in the south Louisiana Delta, the western portions of Oklahoma and Texas, northern Arkansas, and western Tennessee—either had little pulpable timber or difficult logging conditions.

One barometer for degree of competition is the number of mills procuring wood in a county. In 40 percent of the producing counties buyers from four to seven mills were active. Stronger competition occurred in 93 counties where 8 or more companies bought bolts; about 20 percent of the 1958 bolt harvest came from these areas.

From these facts, it appears that the days are past when a company can be assured, for long, of exclusive pulpwooding rights in a southern county. But by the same token, the growth of the industry has provided nearly every forest owner with a strong incentive for managing his timber.

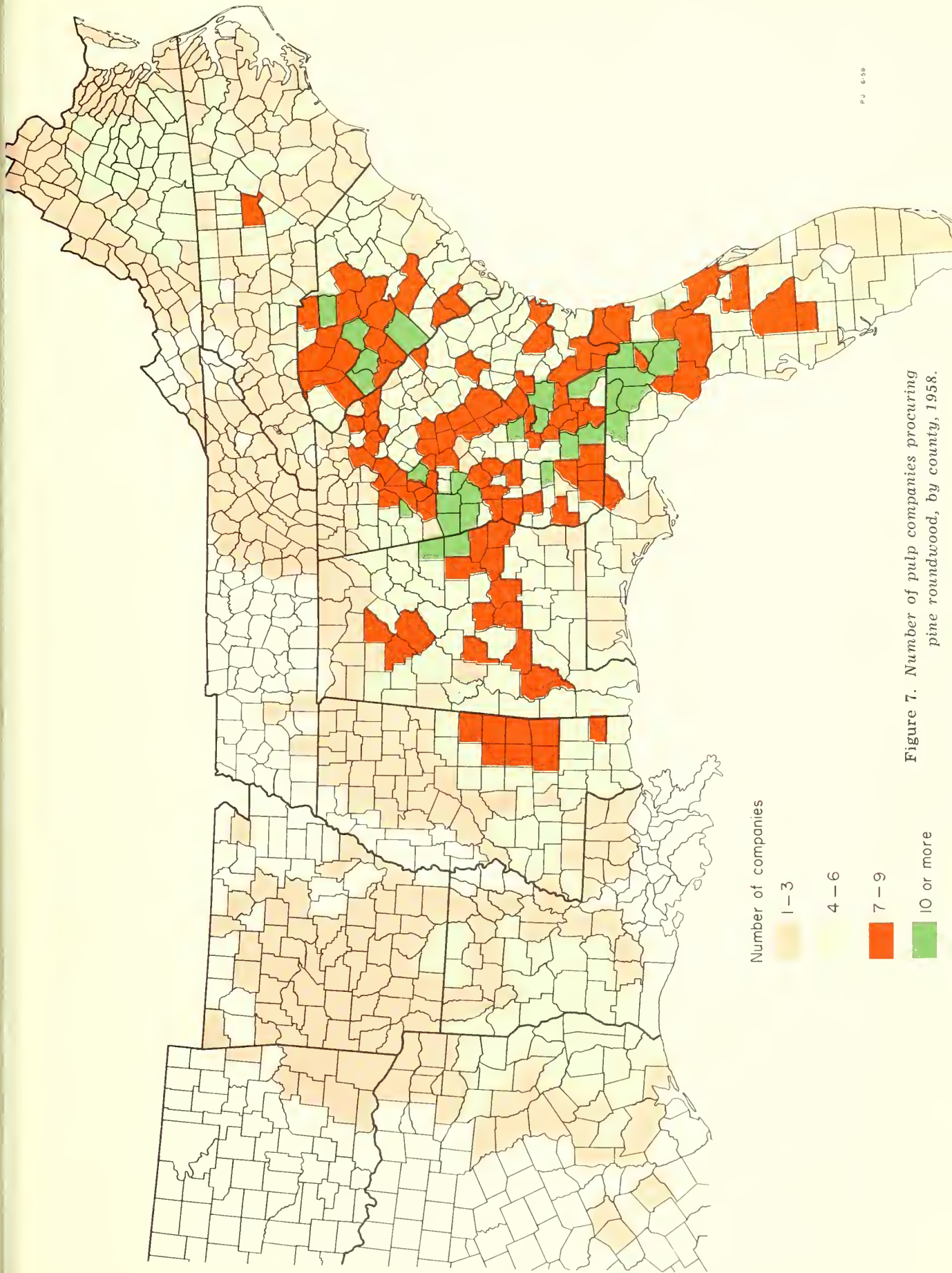
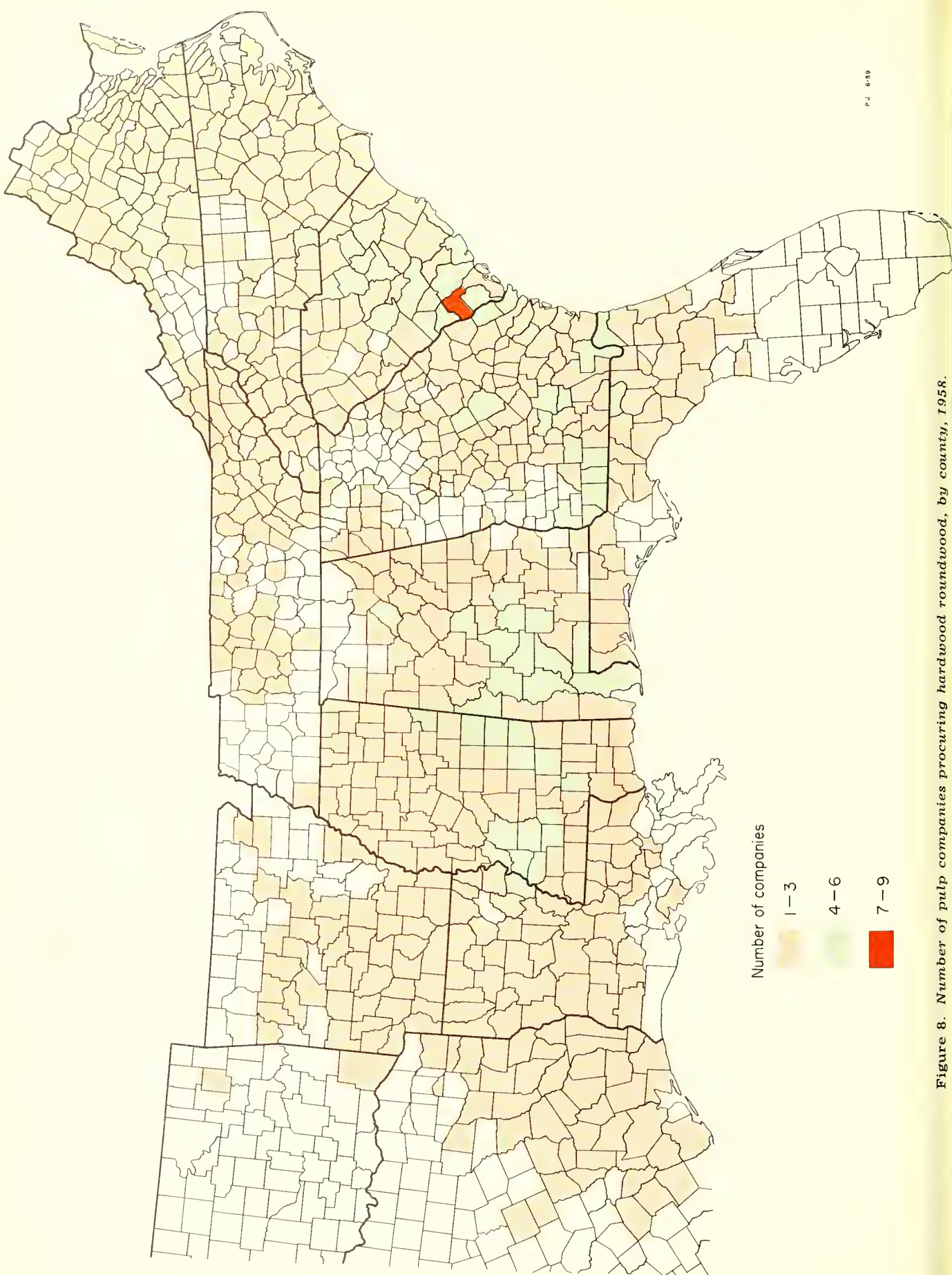


Figure 7. Number of pulp companies procuring pine roundwood, by county, 1958.



Number of companies

1 - 3

4 - 6

7 - 9

Figure 8. Number of pulp companies procuring hardwood roundwood, by county, 1958.

DETAILED TABLES

Table 4. Round pulpwood production in the South, by state and species group, 1958 and 1957

State	Change from 1957	1958			1957		
		All species	Pine	Hardwood	All species	Pine	Hardwood
	Percent	Thousand cords					
Alabama	+11	2,370.2	2,187.8	182.4	2,134.4	1,997.2	137.2
Arkansas	+25	1,041.5	893.5	148.0	832.2	709.9	122.3
Florida	-10	1,752.3	1,690.8	61.5	1,947.4	1,921.4	26.0
Georgia	+2	3,860.4	3,583.5	276.9	3,773.3	3,543.3	230.0
Louisiana	(1)	1,438.2	1,207.6	230.6	1,440.2	1,180.8	259.4
Mississippi	-11	1,786.0	1,035.8	750.2	1,995.8	1,105.9	889.9
North Carolina	-3	1,706.0	1,342.7	363.3	1,763.1	1,437.1	326.0
Oklahoma	-21	47.0	38.0	9.0	49.4	51.3	8.1
South Carolina	-4	1,592.7	1,346.3	246.4	1,655.0	1,384.7	270.3
Tennessee	+4	348.5	241.1	107.4	334.3	236.1	98.2
Texas	-8	1,126.9	954.0	172.9	1,226.2	1,065.7	160.5
Virginia	-3	1,377.7	981.7	396.0	1,418.3	1,080.2	338.1
All states	-1	18,447.4	15,502.8	2,944.6	18,579.6	15,713.6	2,866.0

1 Negligible.

Table 5. Wood residues used for pulp manufacture in the South, by state and species group, 1958 and 1957

State	Change from 1957	1958			1957		
		All species	Pine	Hardwood	All species	Pine	Hardwood
	Percent	Thousand cords					
Alabama	+59	254.4	211.1	43.3	159.8	136.4	23.4
Arkansas	+30	272.9	265.0	7.9	210.2	206.2	4.0
Florida	+65	82.6	79.3	3.3	50.1	48.9	1.2
Georgia	+171	232.5	211.6	20.9	85.7	70.4	15.3
Louisiana	+17	145.4	125.6	19.8	124.0	113.8	10.2
Mississippi	+24	99.0	49.2	49.8	79.9	28.4	51.5
North Carolina	+85	190.1	174.5	15.6	102.7	85.3	17.4
Oklahoma	(1)	16.1	16.1	...	.5	.5	..
South Carolina	+76	155.1	134.9	20.2	88.0	76.8	11.2
Tennessee	-12	6.1	.3	5.8	6.9	..	6.9
Texas	+33	259.1	254.4	4.7	195.1	194.7	.4
Virginia	-28	72.1	67.0	5.1	100.1	97.0	3.1
All states	+48	1,785.4	1,589.0	196.4	1,203.0	1,058.4	144.6

1 1957 production negligible.

Table 6. Wood residues used for pulp manufacture in the South, by state and type of residue, 1958

State	All types	Sawmill chips			Other residues 1		
		All species	Pine	Hardwood	All species	Pine 2	Hardwood
		Thousand cords					
Alabama	254.4	245.5	208.6	36.9	8.9	2.5	6.4
Arkansas	272.9	267.8	263.0	4.8	5.1	2.0	3.1
Florida	82.6	82.0	79.0	3.0	.6	.3	.3
Georgia	232.5	223.6	210.7	12.9	8.9	.9	8.0
Louisiana	145.4	144.0	125.2	18.8	1.4	.4	1.0
Mississippi	99.0	91.6	49.1	42.5	7.4	.1	7.3
North Carolina	190.1	176.8	173.5	3.3	13.3	1.0	12.3
Oklahoma	16.1	16.1	16.1	..	..	..	..
South Carolina	155.1	146.7	134.7	12.0	8.4	.2	8.2
Tennessee	6.1	5.4	.3	5.1	.7	..	.7
Texas	259.1	258.0	253.9	4.1	1.1	.5	.6
Virginia	72.1	69.4	67.0	2.4	2.7	..	2.7
All states	1,785.4	1,726.9	1,581.1	145.8	58.5	7.9	50.6

1 Veneer cores, pole and piling trim, cull crossties, etc.

2 Includes a negligible amount of hemlock.

Table 7. Pulpwood production by state and survey region, 1958, in territory served by Southeastern and Southern Forest Experiment Stations

Round pulpwood and residues	Survey region ¹	All species	Pine	Hardwood
No.		Standard cords		
SOUTH				
Roundwood		18,447,363	15,502,786	2,944,577
Wood residues		1,785,390	1,588,924	196,466
All pulpwood		20,232,753	17,091,710	3,141,043
SOUTHEASTERN STATION				
FLORIDA				
Roundwood	1	1,145,209	1,091,947	53,262
	2	429,055	421,807	7,248
	3	143,914	142,906	1,008
	4	34,100	34,100	
Total		1,752,278	1,690,760	61,518
Wood residues		82,605	79,287	3,318
All pulpwood		1,834,883	1,770,047	64,836
GEORGIA				
Roundwood	1	1,664,889	1,477,009	187,880
	2	401,309	360,980	40,329
	3	1,009,049	980,751	28,298
	4	610,048	603,218	6,830
	5	175,154	161,499	13,655
Total		3,860,449	3,583,457	276,992
Wood residues		232,468	211,622	20,846
All pulpwood		4,092,917	3,795,079	297,838
NORTH CAROLINA				
Roundwood	1	568,705	499,182	69,523
	2	337,508	289,063	48,445
	3	480,604	418,196	62,408
	4	319,177	136,281	182,896
Total		1,705,994	1,342,722	363,272
Wood residues		190,107	174,494	15,613
All pulpwood		1,896,101	1,517,216	378,885
SOUTH CAROLINA				
Roundwood	1	321,599	261,120	60,479
	2	592,017	429,974	162,043
	3	679,027	655,194	23,833
Total		1,592,643	1,346,288	246,355
Wood residues		155,136	134,959	20,177
All pulpwood		1,747,779	1,481,247	266,532
VIRGINIA				
Roundwood	1	440,932	342,089	98,843
	2	442,659	381,385	61,274
	3	233,784	179,295	54,489
	4	230,263	73,353	156,910
	5	30,055	5,617	24,438
Total		1,377,693	981,739	395,954
Wood residues		72,116	67,009	5,107
All pulpwood		1,449,809	1,048,748	401,061

Round pulpwood and residues	Survey region ¹	All species	Pine	Hardwood
No.		Standard cords		
SOUTHERN STATION				
ALABAMA				
Roundwood	1	373,458	334,974	38,484
	2	438,141	365,781	72,360
	3	735,239	700,004	35,235
	4	289,630	272,970	16,660
	5	500,199	481,213	18,986
	6	33,563	32,854	709
Total		2,370,230	2,187,796	182,434
Wood residues		254,406	211,070	43,336
All pulpwood		2,624,636	2,398,866	225,770
ARKANSAS				
Roundwood	1	57,345	26,755	30,590
	2	92	54	38
	3	822,608	710,644	111,964
	4	126,349	123,231	3,118
	5	35,069	32,864	2,205
Total		1,041,463	893,548	147,915
Wood residues		272,893	264,945	7,948
All pulpwood		1,314,356	1,158,493	155,863
LOUISIANA				
Roundwood	1	90,850	27,822	63,028
	2	15,175	7,241	7,934
	3	347,477	314,855	32,622
	4	268,765	242,836	25,929
	5	715,948	614,795	101,153
Total		1,438,215	1,207,549	230,666
Wood residues		145,382	125,657	19,725
All pulpwood		1,583,597	1,333,206	250,391
MISSISSIPPI				
Roundwood	1	71,984	9,539	62,445
	2	143,372	73,574	69,798
	3	616,866	380,861	236,005
	4	572,917	372,256	200,661
	5	380,943	199,584	181,359
Total		1,786,082	1,035,814	750,268
Wood residues		98,932	49,151	49,781
All pulpwood		1,885,014	1,084,965	800,049
OKLAHOMA ²				
Roundwood		46,934	37,999	8,935
Wood residues		16,126	16,126	
All pulpwood		63,060	54,125	8,935
TENNESSEE				
Roundwood	1	9,763	9,561	202
	2	700	162	538
	3	1,745		1,745
	4	68,984	47,907	21,077
	5	267,304	183,470	83,834
Total		348,496	241,100	107,396
Wood residues		6,133	271	5,862
All pulpwood		354,629	241,371	113,258
TEXAS				
Roundwood	1	658,731	519,199	139,532
	2	439,232	418,063	21,169
	3	28,923	16,752	12,171
Total		1,126,886	954,014	172,872
Wood residues		259,086	254,333	4,753
All pulpwood		1,385,972	1,208,347	177,625

¹ For location of Survey regions, see figure 9, p. 23.

² All units.

Table 8. *Pulpwood production during 1958 in territory served by Southeastern and Southern Forest Experiment Stations*

Station and source of wood	All species	Pine	Hardwood
<i>Standard cords</i>			
Southeastern			
Roundwood	10,289,057	8,944,966	1,344,091
Residues	732,432	667,371	65,061
Total	11,021,489	9,612,337	1,409,152
Southern			
Roundwood	8,158,306	6,557,820	1,600,486
Residues	1,052,958	921,553	131,405
Total	9,211,264	7,479,373	1,731,891
All pulpwood	20,232,753	17,091,710	3,141,043

Table 9. *Round pulpwood production in Alabama,¹ 1958*

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Autauga	25,437	24,939	498	Houston	9,407	8,905	502
Baldwin	134,589	121,197	13,392	Jackson	4,804	4,804	
Barbour	43,374	43,357	17	Jefferson	36,287	35,462	825
Bibb	41,378	38,946	2,432	Lamar	12,338	11,641	697
Blount	10,941	10,401	540	Lauderdale			
Bullock	29,902	29,480	422	Lawrence	424	424	
Butler	72,752	61,873	10,879	Lee	48,364	48,250	114
Calhoun	16,345	16,125	220	Limestone	1,924	1,924	
Chambers	37,388	37,287	101	Lowndes	56,338	46,749	9,589
Cherokee	28,412	19,789	8,623	Macon	28,560	28,517	43
Chilton	30,684	29,140	1,544	Madison	2,207	2,207	
Choctaw	64,465	50,107	14,358	Marengo	48,655	43,885	4,770
Clarke	78,714	64,601	14,113	Marion	7,697	7,595	102
Clay	39,078	37,543	1,535	Marshall	6,648	6,637	11
Cleburne	23,319	22,354	965	Mobile	61,347	52,402	8,945
Coffee	29,704	29,684	20	Monroe	95,811	82,863	12,948
Colbert	1,021	1,021		Montgomery	36,485	33,537	2,948
Conecuh	62,179	48,885	13,294	Morgan	4,574	4,574	
Coosa	63,919	63,343	576	Perry	38,246	34,784	3,462
Covington	37,740	36,155	1,585	Pickens	48,068	45,345	2,723
Crenshaw	25,830	22,888	2,942	Pike	30,755	30,730	25
Cullman	16,584	16,384	200	Randolph	63,602	63,330	272
Dale	18,968	18,795	173	Russell	29,736	29,736	
Dallas	23,517	21,942	1,575	St. Clair	32,614	32,535	79
De Kalb	7,468	6,786	682	Shelby	66,216	64,516	1,700
Elmore	43,734	42,075	1,659	Sumter	29,438	25,954	3,484
Escambia	50,619	45,833	4,786	Talladega	37,192	36,223	969
Etowah	23,058	21,355	1,703	Tallapoosa	75,263	73,079	2,184
Fayette	27,852	26,801	1,051	Tuscaloosa	60,984	57,981	3,003
Franklin	4,493	4,477	16	Walker	35,685	34,906	779
Geneva	12,732	12,732		Washington	89,163	79,387	9,776
Greene	32,483	30,680	1,803	Wilcox	58,879	49,486	9,393
Hale	20,584	19,197	1,387	Winston	6,947	6,947	
Henry	26,309	26,309		All counties	2,370,230	2,187,796	182,434

¹ County locations are shown in figure 10, p. 24.

Table 10. Round pulpwood production in Arkansas, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Arkansas				Lincoln	7,027	6,215	812
Ashley	78,273	47,998	30,275	Little River	13,571	12,989	582
Baxter	348	348		Logan	13,734	13,624	110
Benton	806	806		Lonoke	42		42
Boone				Madison			
Bradley	46,138	44,683	1,455	Marion			
Calhoun	34,267	32,921	1,346	Miller	23,771	23,482	289
Carroll				Mississippi			
Chicot	7,047		7,047	Monroe	229	229	
Clark	68,063	59,520	8,543	Montgomery	25,123	24,101	1,022
Clay				Nevada	20,042	16,257	3,785
Cleburne	669	669		Newton	598	598	
Cleveland	27,972	27,347	625	Ouachita	55,797	39,173	16,624
Columbia	49,871	44,581	5,290	Perry	11,173	11,173	
Conway	2,634	2,466	168	Phillips	3,382	92	3,290
Craighead	20		20	Pike	23,759	21,989	1,770
Crawford	1,022	1,001	21	Poinsett			
Crittenden				Polk	11,056	9,900	1,156
Cross				Pope	10,626	10,547	79
Dallas	58,227	55,334	2,893	Prairie			
Desha	12,088	1	12,087	Pulaski	6,304	6,236	68
Drew	42,778	22,324	20,454	Randolph			
Faulkner	1,119	931	188	St. Francis			
Franklin	852	683	169	Saline	19,368	19,050	318
Fulton				Scott	4,424	4,424	
Garland	16,801	16,374	427	Searcy	17	17	
Grant	67,856	65,290	2,566	Sebastian	106	106	
Greene	72	54	18	Sevier	17,232	16,195	1,037
Hempstead	22,319	18,305	4,014	Sharp			
Hot Spring	31,807	31,497	310	Stone			
Howard	19,433	18,963	470	Union	102,000	96,806	5,194
Independence	2,809	2,335	474	Van Buren	168	143	25
Izard	602	602		Washington			
Jackson				White	4,380	3,617	763
Jefferson	20,713	20,218	495	Woodruff			
Johnson	8,419	8,101	318	Yell	18,260	18,243	17
Lafayette	19,432	14,990	4,442	All counties	1,041,463	893,548	147,915
Lawrence							
Lee	6,817		6,817				

Table 11. Round pulpwood production in Florida, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Alachua	48,042	46,614	1,428	Lake	6,426	6,363	63
Baker	88,241	88,184	57	Lee	2,645	2,645	...
Bay	16,532	16,532	...	Leon	23,746	22,311	1,435
Bradford	55,523	55,523	...	Levy	45,729	45,708	21
Brevard	10,102	10,102	...	Liberty	18,406	18,406	...
Broward	577	577	...	Madison	40,650	37,019	3,631
Calhoun	29,366	29,366	...	Manatee	1,665	1,665	...
Charlotte	6,863	6,863	...	Marion	89,282	82,284	6,998
Citrus	2,604	2,604	...	Martin	1,298	1,298	...
Clay	64,433	63,665	768	Monroe	...	...	...
Collier	6,757	6,757	...	Nassau	89,127	83,262	5,865
Columbia	63,199	56,413	6,786	Okaloosa	24,928	24,826	102
Dade	3,541	3,541	...	Okeechobee	1,081	1,081	...
De Soto	4,173	4,173	...	Orange	7,028	7,028	...
Dixie	43,516	40,956	2,560	Osceola	23,568	23,568	...
Duval	54,104	51,429	2,675	Palm Beach	5,560	5,560	...
Escambia	44,882	44,630	252	Pasco	4,695	4,695	...
Flagler	59,504	59,004	500	Pinellas	1,838	1,838	...
Franklin	7,358	7,358	...	Polk	17,217	17,217	...
Gadsden	26,084	23,501	2,583	Putnam	70,795	59,595	11,200
Gilchrist	8,644	8,371	273	St. Johns	67,868	64,839	3,029
Glades	1,180	1,180	...	St. Lucie	1,038	1,038	...
Gulf	12,484	12,484	...	Santa Rosa	71,096	70,959	137
Hamilton	73,882	68,917	4,965	Sarasota	9,726	9,726	...
Hardee	12,496	12,496	...	Seminole	14,118	14,118	...
Hendry	5,679	5,679	...	Sumter	8,378	8,378	...
Hernando	7,618	6,673	945	Suwannee	23,338	23,086	252
Highlands	2,071	2,071	...	Taylor	63,215	61,914	1,301
Hillsborough	8,072	8,072	...	Union	27,521	27,368	153
Holmes	17,739	17,734	5	Volusia	52,519	52,519	...
Indian River	...	...	...	Wakulla	23,734	22,557	1,177
Jackson	35,798	35,792	6	Walton	37,820	37,816	4
Jefferson	14,733	13,212	1,521	Washington	24,349	24,323	26
Lafayette	16,077	15,277	800	All counties	1,752,278	1,690,760	61,518

Table 12. Round pulpwood production in Georgia, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
Standard cords				Standard cords			
Appling	81,849	80,558	1,291	Hall	15,504	15,504	...
Atkinson	58,674	57,058	1,616	Hancock	41,922	41,149	773
Bacon	42,217	41,682	535	Haralson	10,948	10,738	210
Baker	7,944	7,944	...	Harris	62,465	62,465	...
Baldwin	20,653	19,905	748	Hart	5,327	5,327	...
Banks	2,804	2,804	...	Heard	12,754	12,754	...
Barrow	11,434	11,434	...	Henry	38,253	37,815	438
Bartow	23,701	20,831	2,870	Houston	19,373	16,213	3,160
Ben Hill	12,114	10,279	1,835	Irwin	10,795	9,050	1,745
Berrien	35,609	33,711	1,898	Jackson	14,820	14,820	...
Bibb	9,315	6,677	2,638	Jasper	39,192	37,823	1,369
Bleckley	5,051	3,859	1,192	Jeff Davis	45,616	43,809	1,807
Brantley	72,439	64,041	8,398	Jefferson	22,633	21,827	806
Brooks	12,942	12,900	42	Jenkins	15,628	15,153	475
Bryan	60,577	44,126	16,451	Johnson	6,493	5,860	633
Bulloch	33,589	30,606	2,983	Jones	55,059	52,294	2,765
Burke	13,705	13,590	115	Lamar	14,043	13,791	252
Butts	20,298	19,973	325	Lanier	15,508	14,838	670
Calhoun	6,091	6,091	...	Laurens	30,156	23,944	6,212
Camden	106,687	82,189	24,498	Lee	4,450	4,450	...
Candler	12,224	11,604	620	Liberty	49,312	27,832	21,480
Carroll	45,095	45,095	...	Lincoln	8,341	8,341	...
Catoosa	2,667	2,667	...	Long	37,211	33,179	4,032
Charlton	89,891	79,875	10,016	Lowndes	32,754	30,812	1,942
Chatham	10,189	5,205	4,984	Lumpkin	4,369	4,369	...
Chattahoochee	16,317	16,317	...	McDuffie	16,244	15,956	288
Chattooga	12,102	9,827	2,275	McIntosh	42,476	26,444	16,032
Cherokee	12,773	12,741	32	Macon	10,636	9,613	1,023
Clarks	4,801	4,801	...	Madison	5,197	5,197	...
Clay	4,527	4,527	...	Marion	11,528	11,528	...
Clayton	7,300	7,300	...	Meriwether	34,730	34,730	...
Clinch	60,133	60,023	110	Miller	9,070	9,070	...
Cobb	14,456	14,435	21	Mitchell	27,233	22,096	5,137
Coffee	59,431	57,960	1,471	Monroe	53,484	51,661	1,823
Colquitt	32,462	31,554	908	Montgomery	27,606	23,593	4,013
Columbia	36,804	36,057	747	Morgan	19,140	19,140	...
Cook	8,942	7,548	1,394	Murray	10,781	10,781	...
Coweta	36,729	36,729	...	Muscogee	11,884	11,684	200
Crawford	25,646	24,136	1,510	Newton	42,608	42,608	...
Crisp	7,846	7,651	195	Oconee	11,906	11,906	...
Dade	554	529	25	Oglethorpe	22,014	21,964	50
Dawson	1,831	1,831	...	Paulding	22,840	22,840	...
Decatur	43,761	35,395	8,366	Peach	11,418	10,490	928
De Kalb	4,707	4,707	...	Pickens	6,423	6,421	2
Dodge	49,617	45,720	3,897	Pierce	87,043	85,786	1,257
Dooly	12,471	11,640	831	Pike	11,317	11,317	...
Dougherty	16,029	16,029	...	Polk	15,465	15,283	182
Douglas	27,168	27,168	...	Pulaski	4,222	3,898	324
Early	12,889	10,511	2,378	Putnam	20,678	19,758	920
Echols	36,478	36,352	126	Quitman	11,553	11,553	...
Effingham	39,819	32,767	7,052	Rabun	4,934	2,924	2,010
Elbert	25,812	20,605	5,207	Randolph	11,958	11,958	...
Emanuel	28,356	27,308	1,048	Richmond	8,040	8,015	25
Evans	7,831	7,398	433	Rockdale	3,898	3,898	...
Fannin	5,348	4,971	377	Schley	9,877	9,877	...
Fayette	15,260	15,049	211	Screven	20,194	16,378	3,816
Floyd	30,636	25,408	5,228	Seminole	15,719	12,492	3,227
Forsyth	5,241	5,241	...	Spalding	18,706	18,216	490
Franklin	19,301	19,280	21	Stephens	7,947	7,947	...
Fulton	15,410	15,410	...	Stewart	32,979	32,979	...
Gilmer	4,656	4,656	...	Sumter	17,817	17,561	256
Glascock	3,690	3,690	...	Talbot	31,540	31,540	...
Glynn	69,720	52,983	16,737	Taliaferro	9,232	9,157	75
Gordon	16,886	16,270	616	Tattnall	38,700	35,547	3,153
Grady	26,078	21,499	4,579	Taylor	29,532	29,469	63
Greene	42,635	42,210	425				
Gwinnett	37,233	37,233	...				
Habersham	7,043	7,043	...				

Table 12. Round pulpwood production in Georgia, 1958 (Continued)

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Telfair	54,098	49,483	4,615	Walton	8,993	8,993	
Terrell	3,681	3,681		Ware	120,444	120,065	379
Thomas	22,441	20,326	2,115	Warren	11,930	11,930	
Tift	10,185	9,249	936	Washington	34,887	33,865	1,022
Toombs	20,141	15,937	4,204	Wayne	103,030	91,921	11,109
Towns	...	...	...	Webster	10,379	10,365	14
Treutlen	11,563	11,268	295	Wheeler	35,457	33,355	2,102
Troup	53,334	53,334		White	2,835	2,835	
Turner	7,859	7,469	390	Whitfield	12,019	12,019	
Twiggs	20,018	18,319	1,699	Wilcox	23,248	21,836	1,412
				Wilkes	35,806	34,869	937
Union	1,182	1,182		Wilkinson	40,606	38,962	1,644
Upson	30,424	30,192	232	Worth	13,439	13,110	329
Walker	6,467	6,247	220	All counties	3,860,449	3,583,457	276,992

Table 13. Round pulpwood production in Louisiana, 1958

Parish	All species	Pine	Hardwood	Parish	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Acadia	3,938	3,920	18	Madison	9,956	...	9,956
Allen	38,920	38,162	758	Morehouse	29,504	16,914	12,590
Ascension	407	...	407	Natchitoches	63,712	52,193	11,519
Assumption	...	...	...	Orleans	...	...	...
Avoyelles	2,457	2,094	363	Ouachita	20,082	16,714	3,368
Beauregard	8,075	7,701	374	Plaquemines	5	5	
Bienville	74,360	69,901	4,459	Pointe Coupee	2,348	...	2,348
Bossier	40,028	35,003	5,025				
Caddo	29,582	8,839	20,743	Rapides	47,536	39,265	8,271
Calcasieu	16,984	16,766	218	Red River	17,511	13,927	3,584
Caldwell	37,243	34,287	2,956	Richland	32	32	
Cameron	...	...	...				
Catahoula	13,935	10,638	3,297	Sabine	60,863	59,058	1,805
Claiborne	60,977	57,271	3,706	St. Bernard	...	...	...
Concordia	11,932	8	11,924	St. Charles	...	...	...
				St. Helena	16,853	14,460	2,393
De Soto	55,196	53,833	1,363	St. James	82	...	82
				St. John the Baptist	368	...	368
East Baton Rouge	1,969	188	1,781	St. Landry	864	402	462
East Carroll	7,603	...	7,603	St. Martin	...	...	...
East Feliciana	20,256	10,986	9,270	St. Mary	145	...	145
Evangeline	9,030	8,834	196	St. Tammany	30,955	30,913	42
Franklin	950	230	720	Tangipahoa	54,198	46,786	7,412
				Tensas	16,811	...	16,811
Grant	33,052	30,160	2,892	Terrebonne	...	...	...
Iberia	...	...	...	Union	127,080	99,319	27,761
Iberville	325	...	325				
Jackson	73,336	69,236	4,100	Vermilion	...	...	...
Jefferson	...	...	...	Vernon	30,352	28,946	1,406
Jefferson Davis	2,912	2,834	78				
Lafayette	...	...	...	Washington	75,141	73,480	1,661
Lafourche	...	...	...	Webster	41,124	33,319	7,805
La Salle	36,041	30,936	5,105	West Baton Rouge	2,012	...	2,012
Lincoln	41,603	37,951	3,652	West Carroll	127	...	127
Livingston	69,393	66,023	3,370	West Feliciana	2,224	820	1,404
				Winn	97,826	85,195	12,631
				All parishes	1,438,215	1,207,549	230,666

Table 14. Round pulpwood production in Mississippi, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Adams	17,734	2,898	14,836	Lincoln	52,500	33,965	18,535
Alcorn	3,762	2,333	1,429	Lowndes	5,720	3,964	1,756
Amite	33,459	20,461	12,998	Madison	15,437	7,590	7,847
Attala	26,907	10,923	15,984	Marion	50,572	24,847	25,725
Benton	2,238	2,057	181	Marshall	6,384	2,543	3,841
Bolivar	2,126		2,126	Monroe	4,036	3,083	953
Calhoun	2,460	401	2,059	Montgomery	9,292	2,595	6,697
Carroll	11,546	2,252	9,294	Neshoba	39,732	18,645	21,087
Chickasaw	4,433	3,004	1,429	Newton	40,534	26,492	14,042
Choctaw	12,999	6,090	6,909	Noxubee	10,938	9,170	1,768
Claiborne	37,746	5,584	32,162	Oktober	12,286	8,254	4,032
Clarke	93,944	49,234	44,710	Panola	2,990	95	2,895
Clay	2,628	589	2,039	Pearl River	38,708	19,288	19,420
Coahoma	84		84	Perry	24,998	17,359	7,639
Copiah	57,100	31,171	25,929	Pike	42,857	30,470	12,387
Covington	33,550	19,665	13,885	Pontotoc	7,243	6,123	1,120
De Soto	2,760		2,760	Prentiss	5,038	4,082	956
Forrest	31,255	19,921	11,334	Quitman	383		383
Franklin	45,089	30,473	14,616	Rankin	47,229	34,258	12,971
George	26,147	19,158	6,989	Scott	29,866	20,978	8,888
Greene	43,634	26,823	16,811	Sharkey	2,958		2,958
Grenada	5,113	1,034	4,079	Simpson	36,953	17,664	19,289
Hancock	35,612	32,358	3,254	Smith	34,061	20,665	13,396
Harrison	32,065	30,334	1,731	Stone	22,312	14,034	8,278
Hinds	28,549	12,645	15,904	Sunflower	359		359
Holmes	21,898	7,628	14,270	Tallahatchie	6,463	658	5,805
Humphreys	3,003		3,003	Tate	116		116
Issaquena	432		432	Tippah	1,426	835	591
Itawamba	337	290	47	Tishomingo	7,635	6,412	1,223
Jackson	35,346	31,656	3,690	Tunica	980		980
Jasper	87,203	54,841	32,362	Union	8,602	5,967	2,635
Jefferson	28,907	14,952	13,955	Walthall	15,293	11,298	3,995
Jefferson Davis	12,576	9,956	2,620	Warren	21,882	988	20,894
Jones	61,601	31,561	30,040	Washington	3,743		3,743
Kemper	48,397	39,256	9,141	Wayne	45,635	25,535	20,100
Lafayette	4,109	1,678	2,431	Webster	11,957	7,469	4,488
Lamar	23,752	15,652	8,100	Wilkinson	21,565	9,375	12,190
Lauderdale	48,445	38,430	10,015	Winston	24,066	14,482	9,584
Lawrence	39,861	22,811	17,050	Yalobusha	7,597	2,186	5,411
Leake	48,591	25,823	22,768	Yazoo	6,596	214	6,382
Lee	665	238	427	All counties	1,786,082	1,035,814	750,268
Leflore	1,077	51	1,026				

Table 15. Round pulpwood production in North Carolina, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
Standard cords				Standard cords			
Alamance	5,549	5,549	...	Lee	12,455	11,935	520
Alexander	2,325	2,325	...	Lenoir	11,184	10,674	510
Alleghany	...	...	...	Lincoln	8,511	7,876	635
Anson	35,972	28,833	7,139	McDowell	29,930	17,246	12,684
Ashe	120	...	120	Macon	20,217	1,266	18,951
Avery	1,584	...	1,584	Madison	8,674	4,155	4,519
Beaufort	26,988	20,726	6,262	Martin	21,931	16,450	5,481
Bertie	20,554	19,077	1,477	Mecklenburg	13,777	9,932	3,845
Bladen	54,477	43,323	11,154	Mitchell	1,688	188	1,500
Brunswick	50,471	46,213	4,258	Montgomery	5,614	5,447	167
Buncombe	69,196	24,431	44,765	Moore	28,468	27,529	939
Burke	19,769	16,710	3,059	Nash	16,101	11,809	4,292
Cabarrus	22,104	21,714	390	New Hanover	18,281	17,240	1,041
Caldwell	13,382	12,818	564	Northampton	15,546	13,924	1,622
Camden	5,551	4,000	1,551	Onslow	60,942	59,116	1,826
Carteret	37,043	35,823	1,220	Orange	8,137	8,137	...
Caswell	1,073	1,073	...	Pamlico	7,510	7,114	396
Catawba	4,491	4,457	34	Pasquotank	4,595	4,595	...
Chatham	25,233	22,331	2,902	Pender	42,987	35,469	7,518
Cherokee	30,269	25,337	4,932	Perquimans	3,200	2,173	1,027
Chowan	3,234	1,974	1,260	Person	15,883	15,883	...
Clay	...	...	...	Pitt	17,427	16,338	1,089
Cleveland	6,867	6,867	...	Polk	24,209	6,944	17,265
Columbus	58,993	48,264	10,729	Randolph	4,912	4,912	...
Craven	35,712	28,507	7,205	Richmond	35,087	28,975	6,112
Cumberland	23,380	21,529	1,851	Robeson	31,732	26,290	5,442
Currituck	...	...	...	Rockingham	8,748	8,238	510
Dare	...	...	...	Rowan	4,760	4,760	...
Davidson	4,722	4,534	188	Rutherford	27,526	18,256	9,270
Davie	5,932	5,433	499	Sampson	22,409	18,818	3,591
Duplin	42,355	38,221	4,134	Scotland	6,724	4,551	2,173
Durham	17,468	16,980	488	Stanly	6,325	6,252	73
Edgecombe	21,301	16,862	4,439	Stokes	2,838	2,838	...
Forsyth	4,828	4,828	...	Surry	21,978	21,978	...
Franklin	51,136	42,346	8,790	Swain	8,506	6,620	1,886
Gaston	18,904	17,299	1,605	Transylvania	20,671	3,307	17,364
Gates	11,860	9,769	2,091	Tyrrell	15,000	15,000	...
Graham	1,144	1,144	...	Union	14,951	14,629	322
Granville	8,765	8,510	255	Vance	6,576	6,546	30
Greene	2,096	2,096	...	Wake	27,665	24,898	2,767
Guilford	9,279	9,221	58	Warren	38,884	34,687	4,197
Halifax	42,008	39,171	2,837	Washington	3,538	2,995	543
Harnett	16,998	14,423	2,575	Watauga	...	...	...
Haywood	16,808	3,077	13,731	Wayne	6,514	5,610	904
Henderson	29,180	9,113	20,067	Wilkes	4,405	4,403	2
Hertford	4,182	2,579	1,603	Wilson	7,915	7,368	547
Hoke	2,667	2,267	400	Yadkin	...	...	...
Hyde	16,312	12,809	3,503	Yancey	557	189	368
Iredell	14,662	13,683	979	All counties	1,705,994	1,342,722	363,272
Jackson	43,077	6,277	36,800				
Johnston	16,283	13,916	2,367				
Jones	24,202	22,723	1,479				

Table 16. Round pulpwood production in Oklahoma, 1958

County ¹	All species	Pine	Hardwood
<i>Standard cords</i>			
Adair	307	307	...
Choctaw	850	850	...
Haskell	30	30	...
Latimer	1,988	1,988	...
Le Flore	11,406	11,406	...
McCurtain	19,300	19,194	106
Mayes	8,829	...	8,829
Pushmataha	4,224	4,224	...
All counties	46,934	37,999	8,935

¹ Counties with no pulpwood production are omitted.

Table 17. Round pulpwood production in South Carolina, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
<i>Standard cords</i>				<i>Standard cords</i>			
Abbeville	36,179	36,165	14	Jasper	29,160	20,765	8,395
Aiken	31,823	31,024	799	Kershaw	66,714	49,359	17,355
Allendale	22,935	18,284	4,651	Lancaster	38,906	34,698	4,208
Anderson	36,085	36,071	14	Laurens	31,183	31,183	...
Bamberg	15,834	11,042	4,792	Lee	18,478	9,214	9,264
Barnwell	9,443	6,473	2,970	Lexington	14,956	14,282	674
Beaufort	18,105	15,038	3,067	McCormick	23,669	23,655	14
Berkeley	64,059	48,353	15,706	Marion	15,382	12,061	3,321
Calhoun	9,349	8,454	895	Marlboro	14,825	9,053	5,772
Charleston	39,474	31,835	7,639	Newberry	76,139	71,465	4,674
Cherokee	17,658	17,297	361	Oconee	23,444	21,970	1,474
Chester	50,593	48,804	1,789	Orangeburg	30,739	25,392	5,347
Chesterfield	44,412	20,659	23,753	Pickens	9,475	8,988	487
Clarendon	19,086	16,641	2,445	Richland	45,148	35,447	9,701
Colleton	67,321	55,937	11,384	Saluda	11,063	11,063	...
Darlington	36,983	21,605	15,378	Spartanburg	44,698	43,724	974
Dillon	14,417	11,177	3,240	Sumter	24,940	17,657	7,283
Dorchester	37,362	26,772	10,590	Union	48,150	47,236	914
Edgefield	39,200	37,200	2,000	Williamsburg	24,175	19,389	4,786
Fairfield	100,054	96,061	3,993	York	27,944	26,888	1,056
Florence	35,042	26,942	8,100	All counties	1,592,643	1,346,288	246,355
Georgetown	99,680	74,772	24,908				
Greenville	27,382	26,307	1,075				
Greenwood	37,205	36,419	786				
Hampton	34,572	27,657	6,915				
Horry	29,202	25,810	3,392				

Table 18. Round pulpwood production in Tennessee, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
Standard cords				Standard cords			
Anderson	10,277	9,761	516	Lauderdale	...	...	...
Bedford	...	...	...	Lawrence	...	...	...
Benton	4	...	4	Lewis	68	...	68
Bledsoe	1,942	1,731	211	Lincoln	...	...	...
Blount	13,640	13,177	463	Loudon	1,009	392	617
Bradley	9,152	8,692	460	McMinn	21,850	15,775	6,075
Campbell	9,022	6,757	2,265	McNairy	...	...	...
Cannon	...	...	...	Macon	55	...	55
Carroll	...	...	...	Madison	...	...	...
Carter	8,989	...	8,989	Marion	3,440	3,440	...
Cheatham	215	...	215	Marshall	...	...	...
Chester	...	...	...	Maurry	102	...	102
Claiborne	12,381	6,055	6,326	Meigs	8,715	7,569	1,146
Clay	...	...	...	Monroe	24,678	23,412	1,266
Cocke	17,434	15,593	1,841	Montgomery	66	...	66
Coffee	...	...	...	Moore	...	...	...
Crockett	...	...	...	Morgan	19,968	8,513	11,455
Cumberland	9,636	4,763	4,873	Obion	...	...	...
Davidson	288	...	288	Overton	738	738	...
Decatur	...	...	...	Perry	39	...	39
De Kalb	...	...	...	Pickett	...	...	...
Dickson	468	...	468	Polk	15,443	13,691	1,752
Dyer	...	...	...	Putnam	233	188	45
Fayette	...	...	...	Rhea	10,060	7,921	2,139
Fentress	7,717	7,613	104	Roane	6,796	4,176	2,620
Franklin	...	...	...	Robertson	2	...	2
Gibson	...	...	...	Rutherford	4	...	4
Giles	4	...	4	Scott	8,297	6,175	2,122
Grainger	1,695	1,021	674	Sequatchie	2,126	2,126	...
Greene	10,493	5,468	5,025	Sevier	10,079	9,847	232
Grundy	3,433	3,433	...	Shelby	202	...	202
Hamblen	1,284	1,152	132	Smith	2	...	2
Hamilton	9,167	9,167	...	Stewart	...	...	...
Hancock	893	398	495	Sullivan	12,301	...	12,301
Hardeman	1,921	1,921	...	Sumner	194	...	194
Hardin	162	162	...	Tipton	...	...	...
Hawkins	22,090	6,301	15,789	Trousdale	...	...	...
Haywood	...	...	...	Unicoi	4,512	...	4,512
Henderson	7,640	7,640	...	Union	7,811	6,563	1,248
Henry	...	...	...	Van Buren	486	486	...
Hickman	388	...	388	Warren	1,460	1,458	2
Houston	...	...	...	Washington	15,413	8,566	6,847
Humphreys	39	...	39	Wayne	...	...	...
Jackson	...	...	...	Weakley	...	...	...
Jefferson	...	...	...	White	486	486	...
Johnson	1,555	...	1,555	Williamson	345	...	345
Knox	9,587	8,773	814	Wilson	...	...	...
Lake	...	...	...	All counties	348,496	241,100	107,396

Table 19. Round pulpwood production in Texas,
1958

County ¹	All species	Pine	Hardwood
<i>Standard cords</i>			
Anderson	19,084	16,622	2,462
Angelina	43,259	42,708	551
Austin	443		443
Bastrop	1,245	1,245	
Bowie	10,373	10,373	
Brazoria	303		303
Brazos	315		315
Camp	3,371	3,243	128
Cass	32,296	31,490	806
Chambers	1,755	1,079	676
Cherokee	40,662	38,692	1,970
Colorado	992	365	627
Falls	1,885		1,885
Fayette	105		105
Fort Bend	360		360
Franklin	960	960	
Gregg	10,537	9,669	868
Grimes	12,391	11,739	652
Hardin	37,663	26,621	11,042
Harris	42,561	25,784	16,777
Harrison	45,037	41,757	3,280
Henderson	1,790	1,790	
Houston	45,719	42,276	3,443
Jasper	56,448	43,140	13,308
Jefferson	2,395	1,346	1,049
Lee	309	309	
Leon	286		286
Liberty	46,701	31,552	15,149
McLennan	1,571		1,571
Madison	43		43
Marion	21,265	18,607	2,658
Montgomery	69,810	54,753	15,057
Morris	5,947	5,947	
Nacogdoches	65,713	64,747	966
Newton	51,710	38,304	13,406
Orange	6,838	5,685	1,153
Panola	28,885	27,157	1,728
Polk	55,437	42,632	12,805
Red River	6,944	6,944	
Robertson	41		41
Rusk	32,729	31,756	973
Sabine	28,739	25,732	3,007
San Augustine	40,384	31,001	9,383
San Jacinto	11,982	10,525	1,457
Shelby	65,056	61,135	3,921
Smith	20,130	18,721	1,409
Titus	1,871	1,871	
Trinity	29,574	27,375	2,199
Tyler	49,898	37,028	12,870
Upshur	21,870	21,870	
Van Zandt	4,025		4,025
Walker	37,858	31,658	6,200
Waller	2,427	1,304	1,123
Wharton	392		392
Wood	6,502	6,502	
All counties	1,126,886	954,014	172,872

¹ Counties with no pulpwood production are omitted.

Table 20. Round pulpwood production in Virginia, 1958

County	All species	Pine	Hardwood	County	All species	Pine	Hardwood
Standard cords				Standard cords			
Accomack	6,045	6,042	3	Lancaster	8,752	8,752	
Albermarle	21,782	20,205	1,577	Lee	1,592	5	1,587
Alleghany	56,012	15,064	40,948	Loudoun	142	142	
Amelia	20,875	18,799	2,076	Louisa	17,087	16,822	265
Amherst	61,214	26,195	35,019	Lunenburg	15,126	13,762	1,364
Appomattox	38,768	28,139	10,629	Madison	2,162	2,162	
Arlington	21	21		Mathews	2,033	2,033	
Augusta	14,143	7,369	6,774	Mecklenburg	15,309	14,473	836
Bath	43,926	3,309	40,617	Middlesex	7,876	7,837	39
Bedford	42,980	30,091	12,889	Montgomery	220	220	
Bland	5	5		Nansemond	8,118	4,584	3,534
Botetourt	22,693	7,886	14,807	Nelson	22,162	14,579	7,583
Brunswick	51,728	36,639	15,089	New Kent	14,750	13,598	1,152
Buchanan				Norfolk	644	616	28
Buckingham	56,319	41,385	14,934	Northampton	52	45	7
Campbell	46,235	39,576	6,659	Northumberland	4,180	4,180	
Caroline	21,282	21,201	81	Nottoway	25,943	24,456	1,487
Carroll	8	8		Orange	17,107	15,133	1,974
Charles City	19,924	15,971	3,953	Page	557	538	19
Charlotte	18,325	11,802	6,523	Patrick	1,654	1,654	
Chesterfield	19,831	12,883	6,948	Pittsylvania	31,018	30,018	1,000
Clarke	264	264		Powhatan	12,115	12,024	91
Craig	21,978	9,632	12,346	Prince Edward	34,047	31,831	2,216
Culpeper	6,668	4,751	1,917	Prince George	20,994	15,588	5,406
Cumberland	14,958	14,706	252	Prince William	18,195	17,537	658
Dickenson				Princess Anne	13	13	
Dinwiddie	34,236	29,805	4,431	Pulaski	5	5	
Elizabeth City				Rappahannock	124	124	
Essex	6,337	6,337		Richmond	6,044	6,044	
Fairfax	5,622	5,622		Roanoke	3,252	3,252	
Fauquier	2,979	2,942	37	Rockbridge	34,210	8,757	25,453
Floyd	276	276		Rockingham	4,351	2,578	1,773
Fluvanna	15,831	12,882	2,949	Russell	881		881
Franklin	28,749	28,742	7	Scott	17,008	40	16,968
Frederick	9,805	8,889	916	Shenandoah	3,712	3,692	20
Giles	210	9	201	Smyth			
Gloucester	11,963	10,667	1,296	Southampton	29,678	19,013	10,665
Goochland	28,108	26,492	1,616	Spotsylvania	9,117	8,311	806
Grayson				Stafford	2,943	2,880	63
Greene	2,520	2,495	25	Surry	19,236	11,820	7,416
Greensville	18,205	8,776	9,429	Sussex	32,504	12,120	20,384
Halifax	17,895	17,786	109	Tazewell	10		10
Hanover	5,018	4,470	548	Warren	1,659	1,419	240
Henrico	3,911	3,911		Warwick	432	432	
Henry	22,343	22,141	202	Washington	9,134	4,591	4,543
Highland	13,701	704	12,997	Westmoreland	6,638	6,638	
Isle of Wight	10,979	6,557	4,422	Wise	248		248
James City	11,968	10,797	1,171	Wythe	458	458	
King and Queen	26,546	25,374	1,172	York	11,273	10,773	500
King George	341	295	46	All counties	1,377,693	981,739	395,954
King William	19,401	18,278	1,123				

Table 21. *Companies drawing pulpwood from the South, 1958*

State and plant location	Name of company and map code ¹	Pulp capacity 24 hrs. ²	State and plant location	Name of company and map code ¹	Pulp capacity 24 hrs. ²
Tons			Tons		
ALABAMA			MISSISSIPPI		
Brewton	(1) Container Corp. of America	300	Meridian	(45) Flintkote Co.	132
Coosa Pines	(2) Coosa River Newsprint Co.	600	Moss Point	(46) International Paper Co.	650
Demopolis	(3) Gulf States Paper Corp.	300	Natchez	(47) International Paper Co.	900
Tuscaloosa	(4) Gulf States Paper Corp.	400	Natchez	(48) Johns-Manville Products Corp.	300
Mobile	(5) International Paper Co.	1,290	Laurel	(49) Masonite Corp.	800
Naheola	(6) Marathon Southern Corp.	315	Greenville	(50) United States Gypsum Co.	180
Mobile	(7) National Gypsum Co.	300	NORTH CAROLINA		
Mobile	(8) Ruberoid Co.	48	Canton	(51) Champion Paper and Fibre Co.	935
Mobile	(9) Scott Paper Co., Southern Div.	550	Roanoke		
ARKANSAS			Rapids	(52) Halifax Paper Co.	500
Crossett	(10) The Crossett Co.	620	Sylva	(53) Mead Corp.	225
Pine Bluff	(11) Dierks Paper Co.	150	Plymouth	(54) North Carolina Pulp Co.	1,450
Camden	(12) International Paper Co.	615	Acme	(55) Riegel Carolina Corp.	700
Pine Bluff	(13) International Paper Co.	730	OHIO		
FLORIDA			Circleville	(56) Container Corp. of America	100
Pensacola	(14) Armstrong Cork Co.	130	Chillicothe	(57) Mead Corp.	210
Foley	(15) The Buckeye Cellulose Corp.	600	OKLAHOMA		
Fernandina	(16) Container Corp. of America	600	Pryor	(58) Bestwall Gypsum Co.	90
Palatka	(17) Hudson Pulp and Paper Corp.	850	PENNSYLVANIA		
Panama City	(18) International Paper Co.	1,620	York Haven	(59) International Paper Co.	65
Jacksonville	(19) Owens-Illinois Glass Co.	500	Spring Grove	(60) P. H. Glatfelter Co.	190
Fernandina	(20) Rayonier, Inc.	350	SOUTH CAROLINA		
Port St. Joe	(21) St. Joe Paper Co.	1,200	Georgetown	(61) International Paper Co.	1,990
Jacksonville	(22) St. Regis Paper Co.	1,500	Hartsville	(62) Sonoco Products Co.	590
Pensacola	(23) St. Regis Paper Co.	750	Charleston	(63) West Virginia Pulp and Paper Co.	950
GEORGIA			TENNESSEE		
Macon	(24) Armstrong Cork Co.	200	Calhoun	(64) Bowaters Southern Paper Corp.	1,375
Brunswick	(25) Brunswick Pulp and Paper Co.	460	Harriman	(65) Mead Corp.	112
Savannah	(26) Certain-teed Products Corp.	60	Kingsport	(66) Mead Corp.	240
Savannah	(27) Continental Can Co.	600	Knoxville	(67) Southern Extract Co.	105
Macon	(28) Georgia Kraft Co.	675	TEXAS		
Valdosta	(29) Owens-Illinois Glass Co.	630	Pasadena	(68) Champion Paper and Fibre Co.	650
Jesup	(30) Rayonier, Inc.	600	Evadale	(69) East Texas Pulp and Paper Co.	315
Rome	(31) Rome Kraft Co.	675	Dallas	(70) Ruberoid Co.	60
St. Marys	(32) St. Marys Kraft Corp.	800	Diboll	(71) Southern Pine Lumber Co.	130
Savannah	(33) Union Bag-Camp Paper Corp.	2,050	Lufkin	(72) Southland Paper Mills	1,150
LOUISIANA			VIRGINIA		
Shreveport	(34) Bird and Son	60	West Point	(73) Chesapeake Corp. of Virginia	600
Elizabeth	(35) Calcasieu Paper Co.	240	Hopewell	(74) Continental Can Co.	700
Hodge	(36) Continental Can Co., Inc.	580	Columbia	(75) James River Pulp Corp.	25
New Orleans	(37) Flintkote Co.	60	Lynchburg	(76) Mead Corp., Heald Division	175
Bogalusa	(38) Gaylord Container Corp.	1,175	Big Island	(77) Owens-Illinois Glass Co.	150
Bastrop	(39) International Paper Co. (Bastrop Mill)	590	Jarratt	(78) Southern Johns-Manville Products Corp.	200
Bastrop	(40) International Paper Co. (Louisiana Mill)	595	Franklin	(79) Union Bag-Camp Paper Corp.	600
Springhill	(41) International Paper Co.	1,420	Covington	(80) West Virginia Pulp and Paper Co.	850
West Monroe	(42) Olin Mathieson Chemical Corp.	650			
St. Francisville	(43) St. Francisville Paper Co.	235			
MARYLAND					
Luke	(44) West Virginia Pulp and Paper Co.	325			

¹ Corresponds to numbers at mill locations in fig. 9.² Southern Pulp and Paper Manufacturer, vol. 21, no. 10 (Oct. 1, 1958); and other sources.

Table 22. Pulpmills under construction or announced in the South

State and plant location	Name of company and map code ¹	Pulp capacity 24 hrs. ²
		Tons
GEORGIA		
Augusta	(81) Continental Can Co.	350
LOUISIANA		
Baton Rouge	(82) Noralyn Paper Mill, Inc.	150
SOUTH CAROLINA		
Catawba	(83) Bowaters Board Company	175
Catawba	(84) Bowaters Carolina Corp.	400
TENNESSEE		
Counce	(85) Tennessee River Pulp and Paper Co.	300

¹ Corresponds to numbers at mill location in fig. 9.

² Southern Pulp and Paper Manufacturer, and other sources.

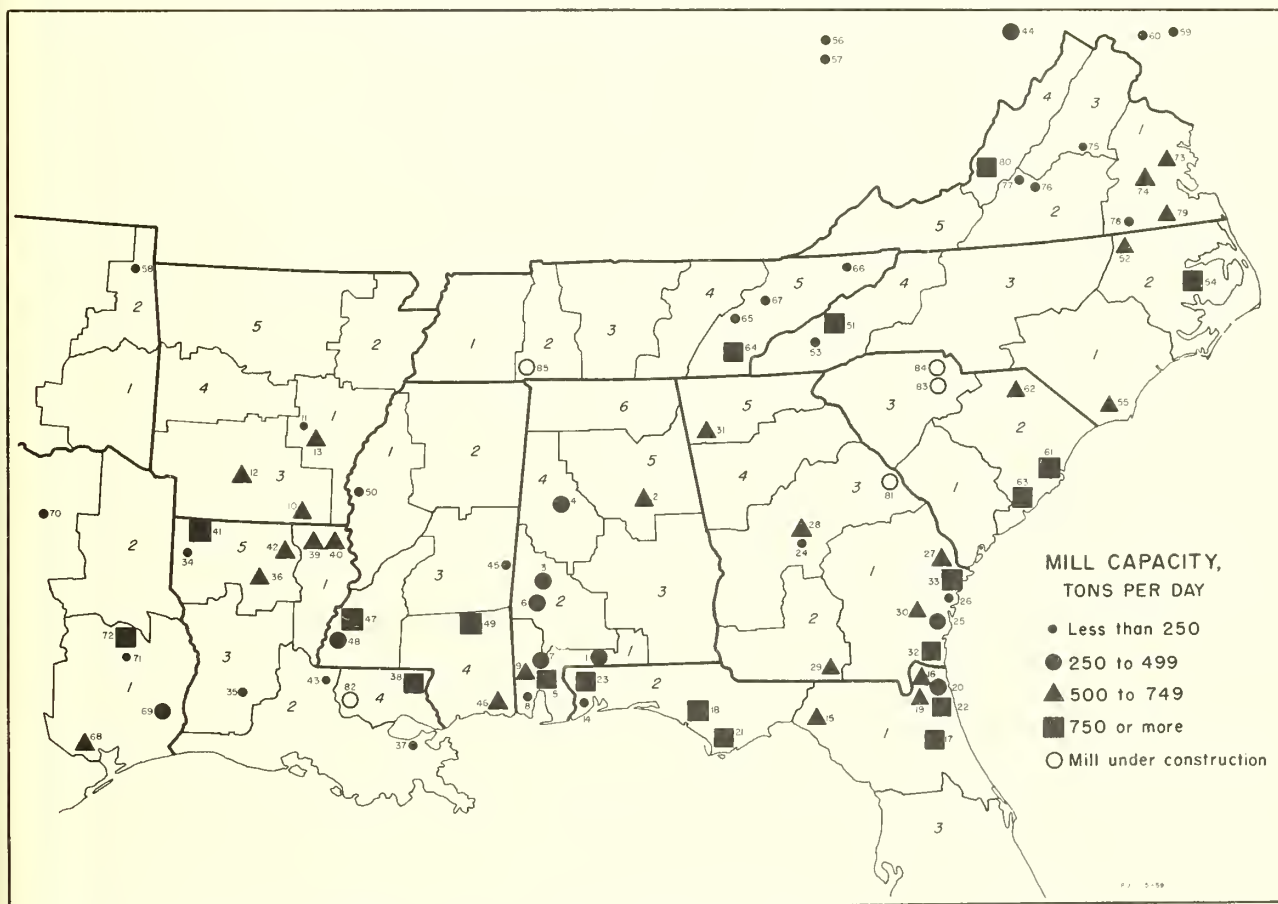


Figure 9. Pulpmills drawing wood from the South, 1958. Numbered areas are Forest Survey regions. Small numbers at mill locations correspond to numbers in tables 21 and 22.

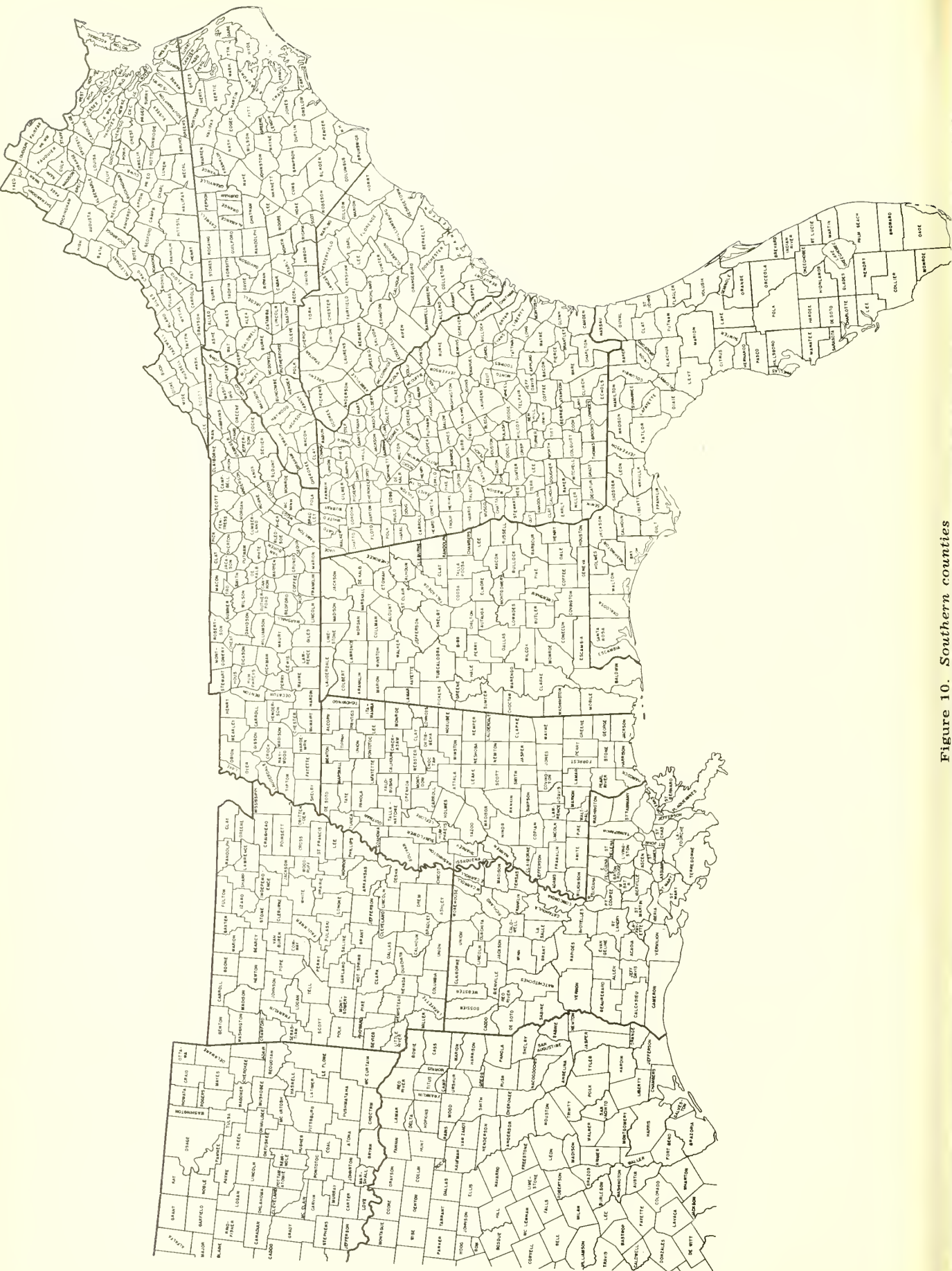


Figure 10. Southern counties



FOREST SURVEY RELEASE 82

SOUTHERN FOREST EXPERIMENT STATION

New Orleans, Louisiana

Forest Service, U.S. Department of Agriculture

1959

SOFTWOOD DISTRIBUTION MAPS FOR THE SOUTH





SOFTWOOD DISTRIBUTION MAPS FOR THE SOUTH

Paul L. Janssen

and

Melvin R. Weiland

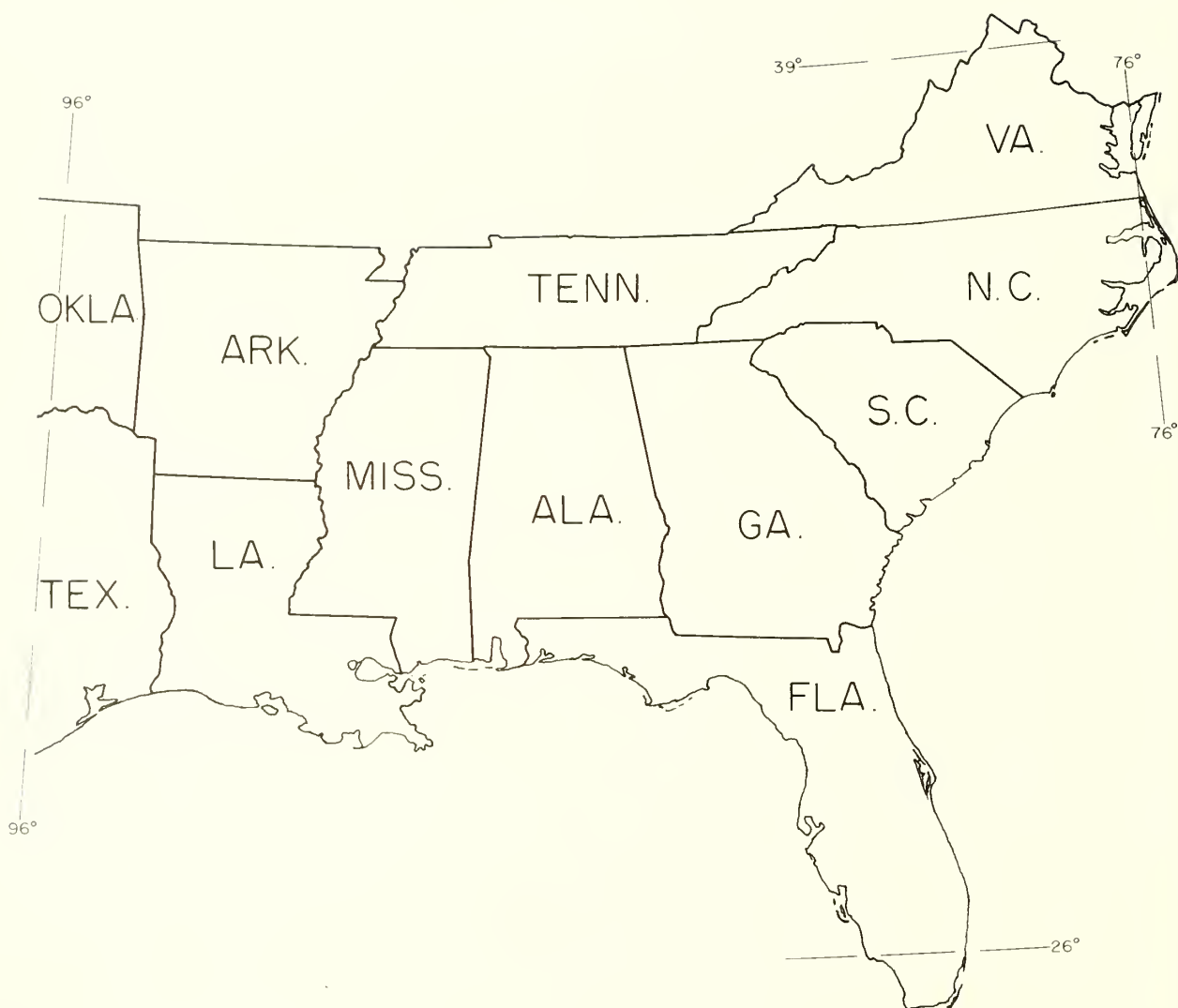
SOUTHERN FOREST EXPERIMENT STATION
New Orleans, Louisiana
and
SOUTHEASTERN FOREST EXPERIMENT STATION
Asheville, North Carolina
of the
Forest Service, U. S. Department of Agriculture

1960

Photo on cover by Louisiana Forestry Commission

SPECIES MAPPED

	<i>Page</i>
Longleaf pine (<i>Pinus palustris</i>)	2
Slash pine (<i>Pinus elliottii</i>)	3
Loblolly pine (<i>Pinus taeda</i>)	4
Shortleaf pine (<i>Pinus echinata</i>)	5
Pond pine (<i>Pinus serotina</i>)	6
Virginia pine (<i>Pinus virginiana</i>)	7
Sand pine (<i>Pinus clausa</i>)	8
Cypress (<i>Taxodium distichum</i>)	9
White pine (<i>Pinus strobus</i>)	10
Hemlock (<i>Tsuga</i> spp.)	11
Redcedar (<i>Juniperus</i> spp.)	12



THE MAPS IN THIS REPORT describe the relative concentration as well as the approximate range of 11 softwoods in 12 southern States—extending from the Atlantic Coast westward to about the 96th meridian in Oklahoma and Texas. The data upon which the maps are based were gathered during 1947-57 by the Forest Surveys of the Southern and Southeastern Forest Experiment Stations of the Forest Service, U. S. Department of Agriculture.

Each dot represents a stated volume of timber growing stock within a county, as determined from a systematic sample of plots averaging 2 to 4 miles apart. Within each county the dots have been placed so as to generalize local concentrations or absence of timber—conditions that the ground sampling was too light to measure closely. In counties with less than half the volume of timber indicated by a dot, no volume is shown.

To simplify the maps, county lines have been omitted and only State boundaries are shown. The growing stock is expressed in net cubic volume, inside bark, of trees from stump to a minimum 4.0-inch top diameter of central stem. Only sound, well-formed trees at least 5.0 inches in diameter at breast height are included.

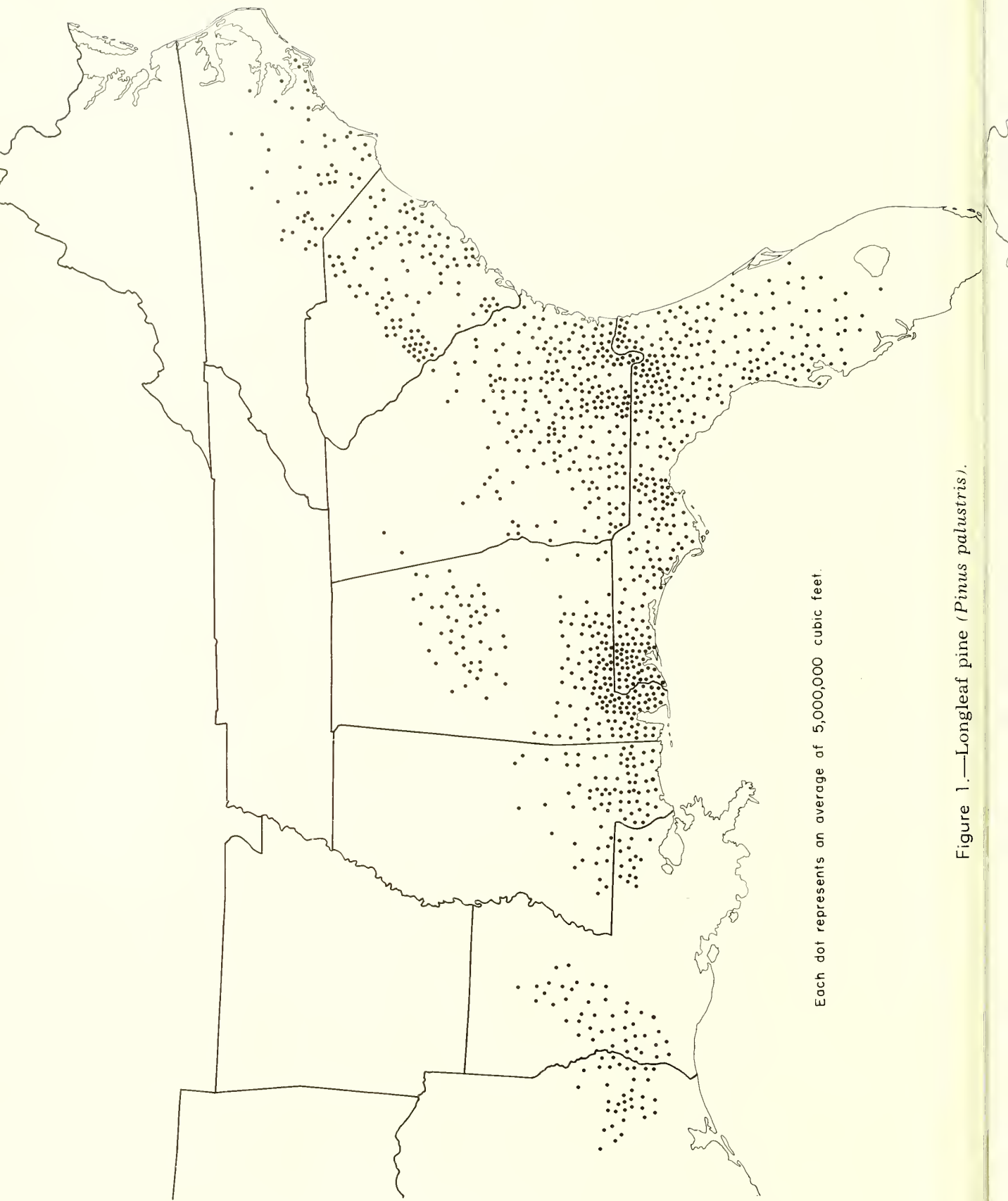


Figure 1.—Longleaf pine (*Pinus palustris*).

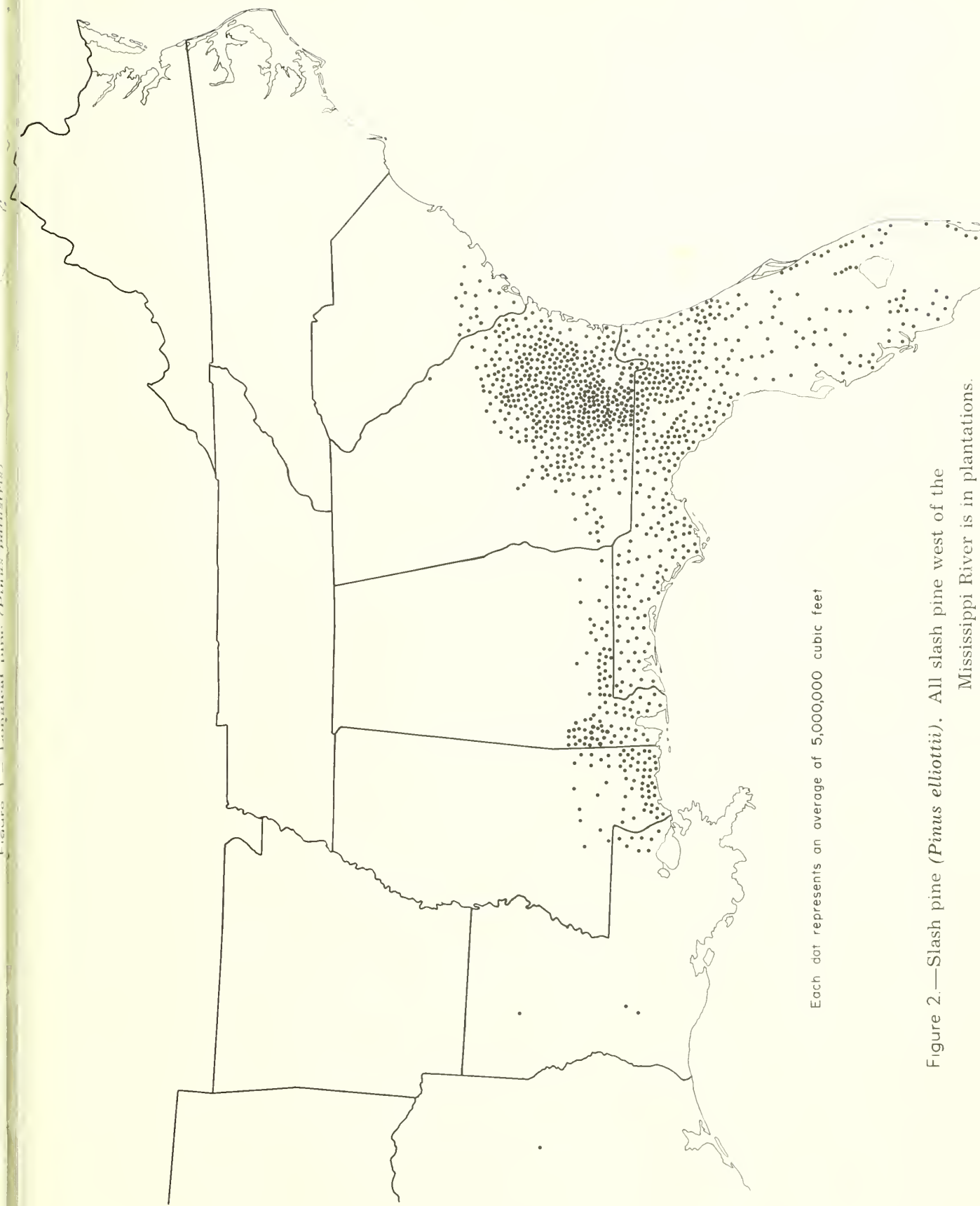


Figure 2.—Slash pine (*Pinus elliottii*). All slash pine west of the Mississippi River is in plantations.

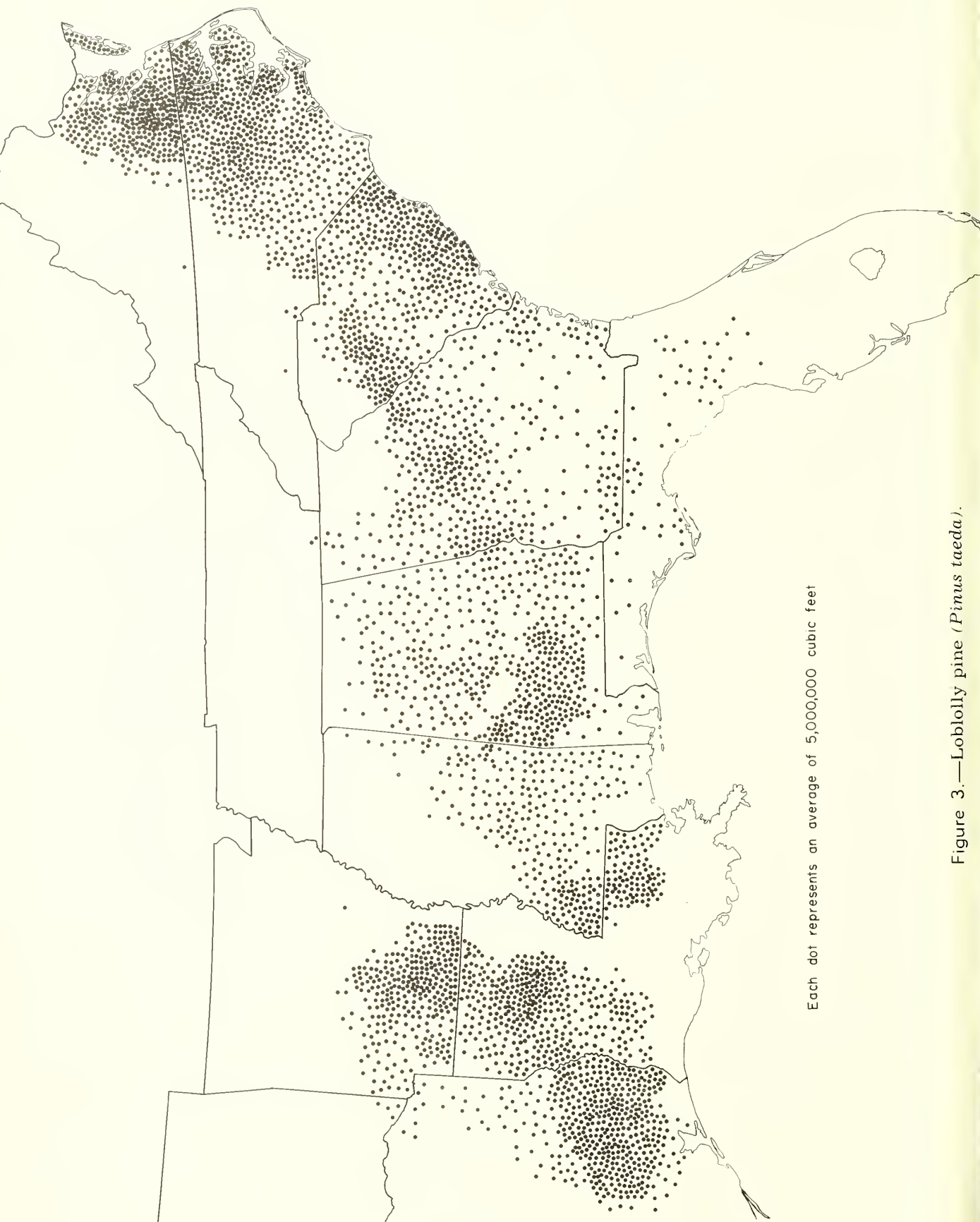
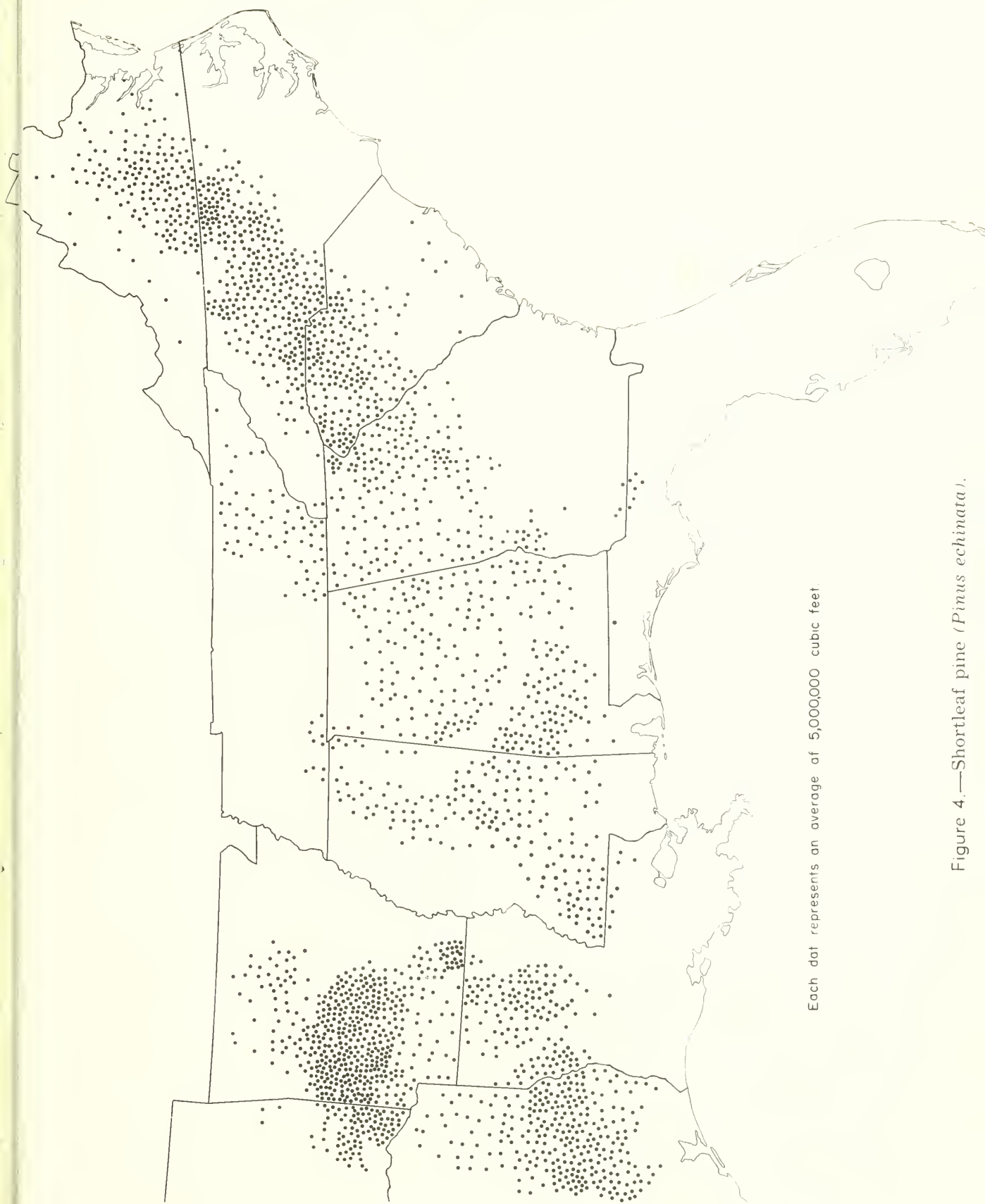


Figure 3.—Loblolly pine (*Pinus taeda*).



Each dot represents an average of 5,000,000 cubic feet.

Figure 4.—Shortleaf pine (*Pinus echinata*).

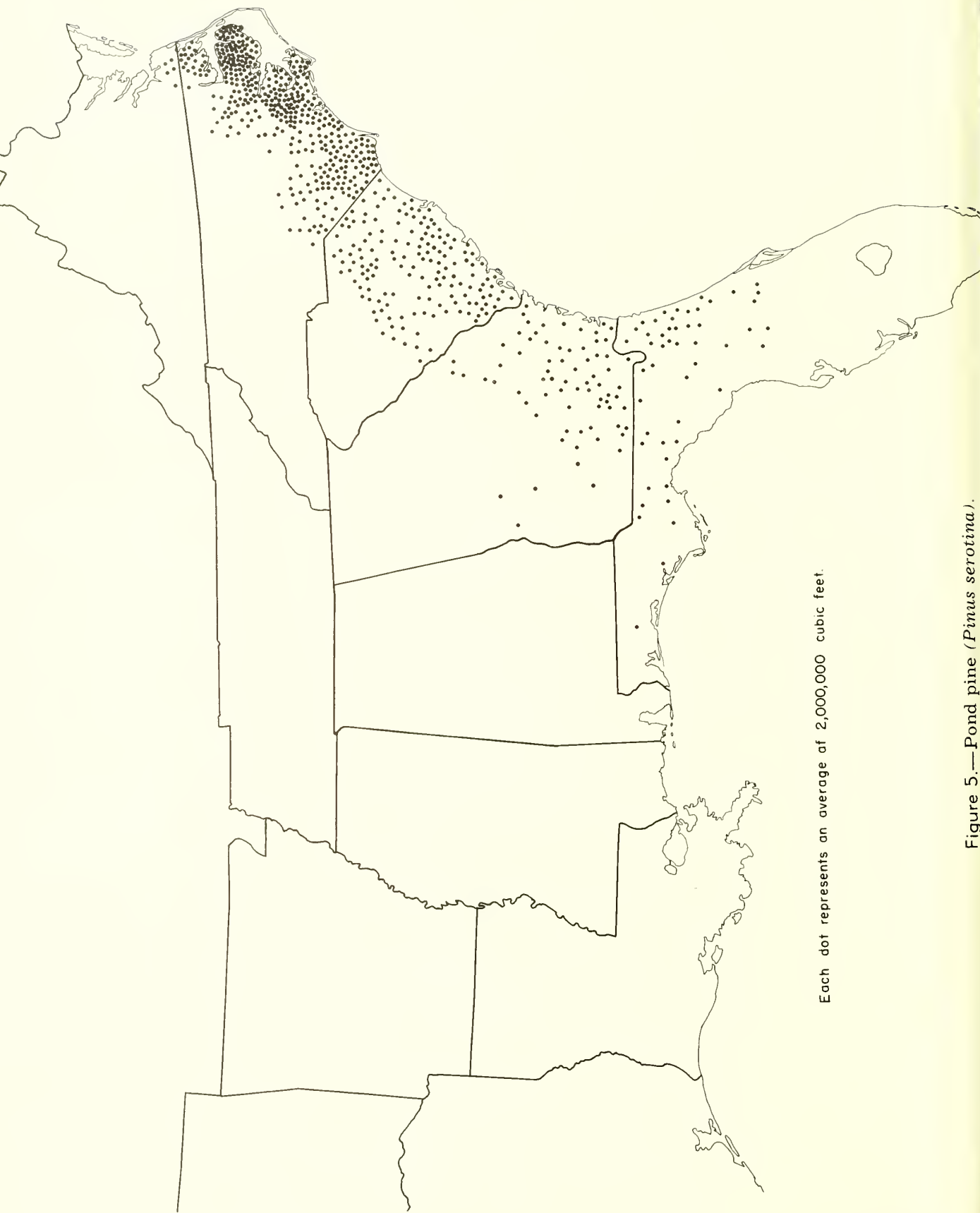


Figure 5.—Pond pine (*Pinus serotina*).

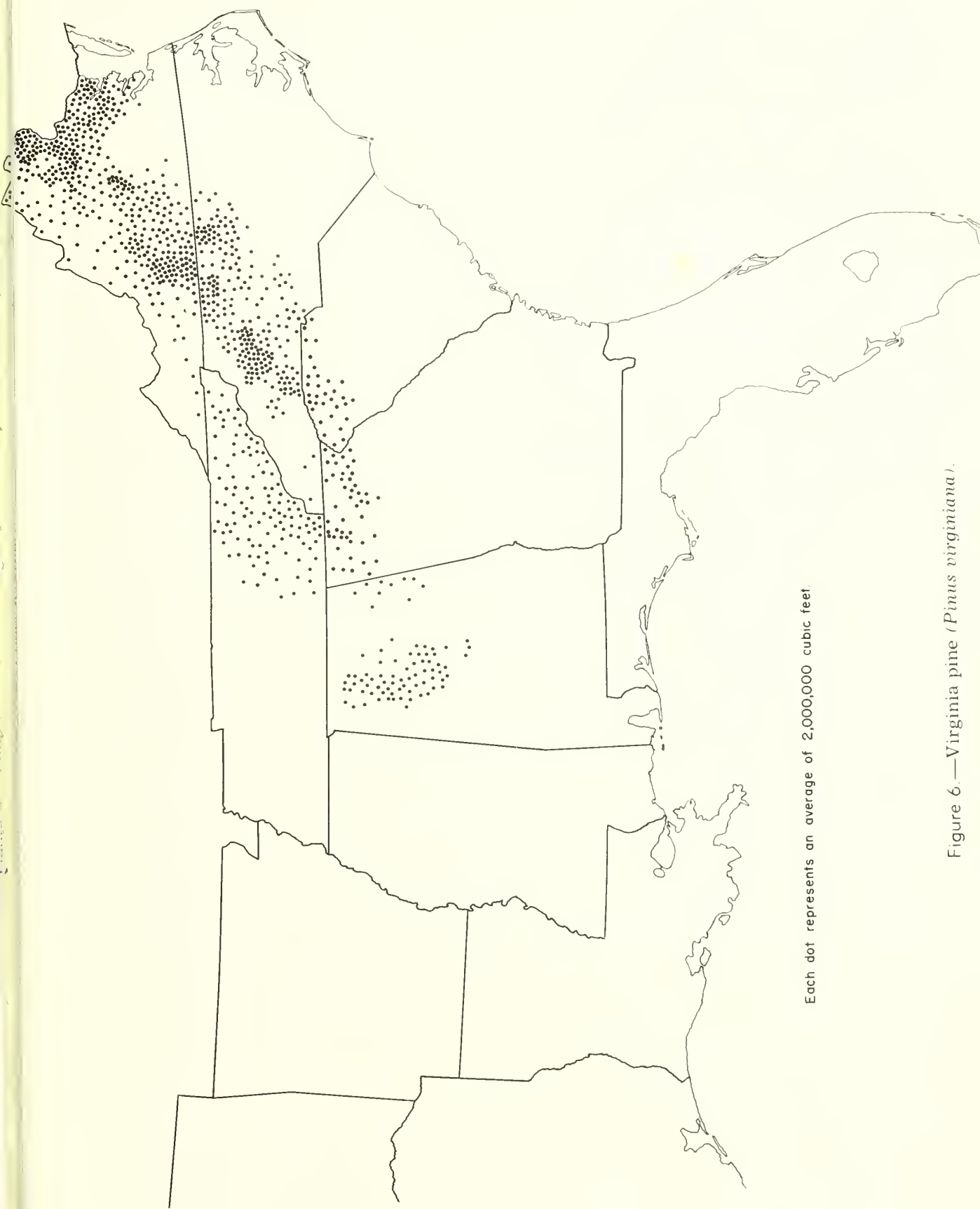
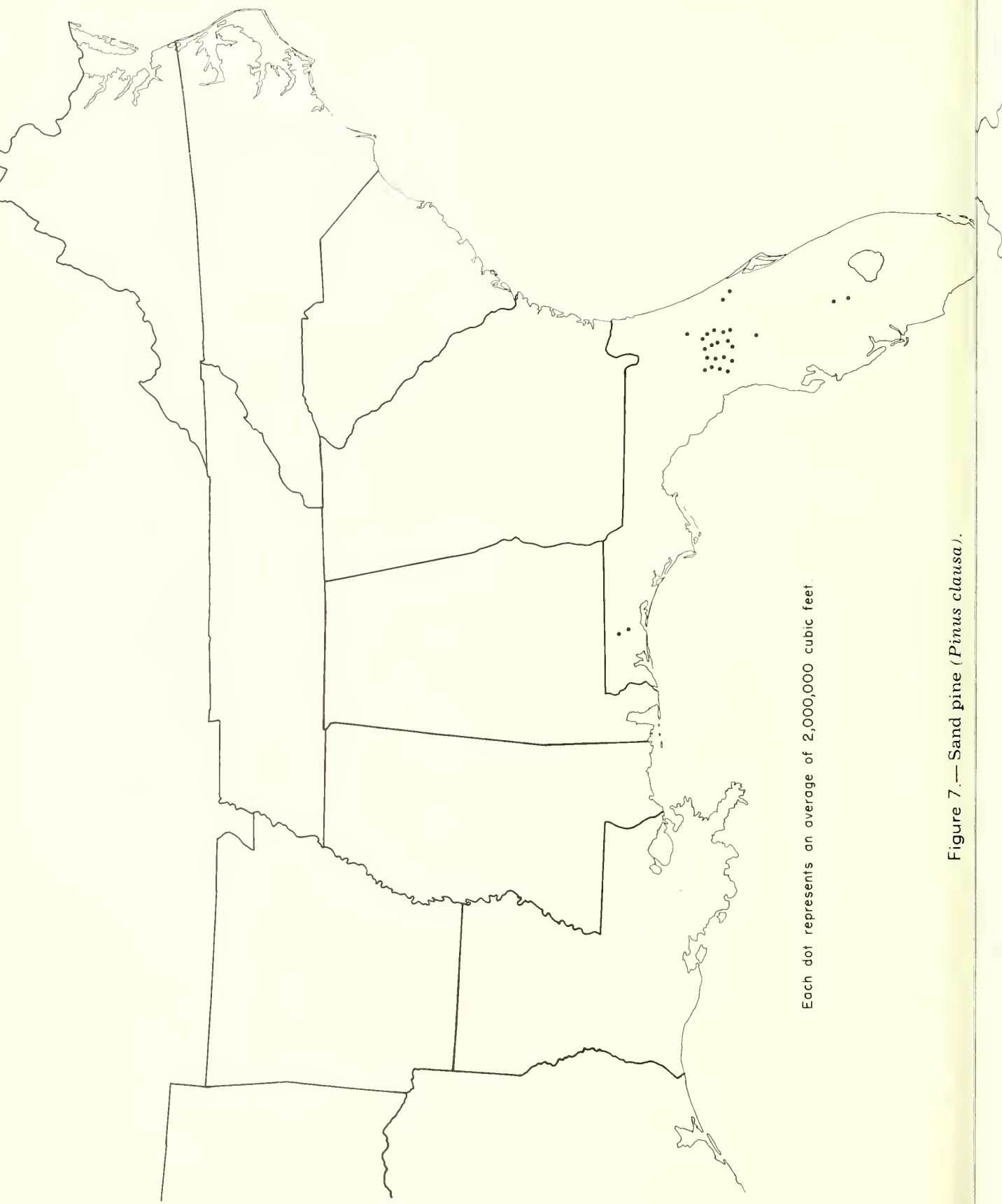


Figure 6.—Virginia pine (*Pinus virginiana*).



Each dot represents an average of 2,000,000 cubic feet

Figure 7.— Sand pine (*Pinus clausa*).

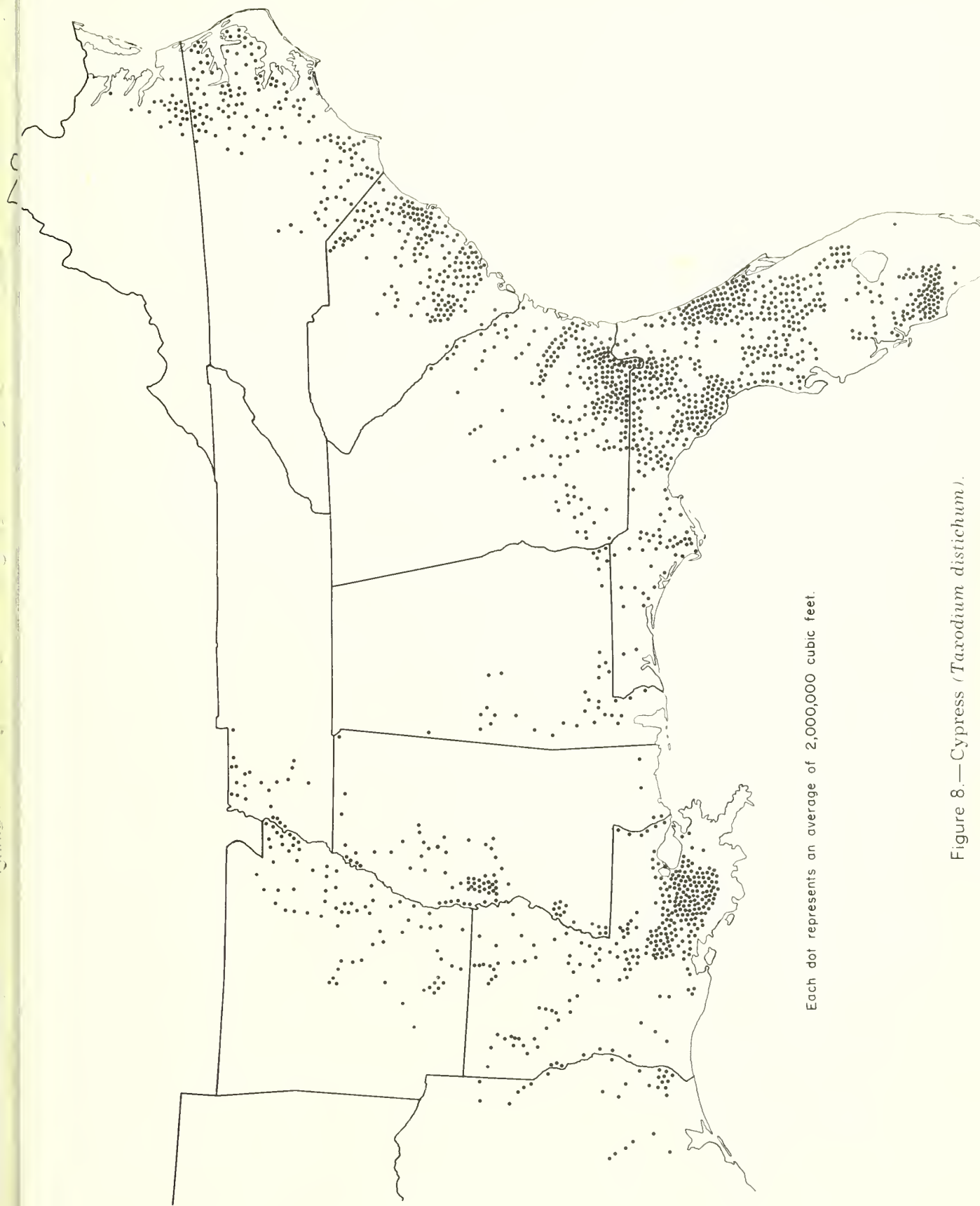


Figure 8.—Cypress (*Taxodium distichum*).

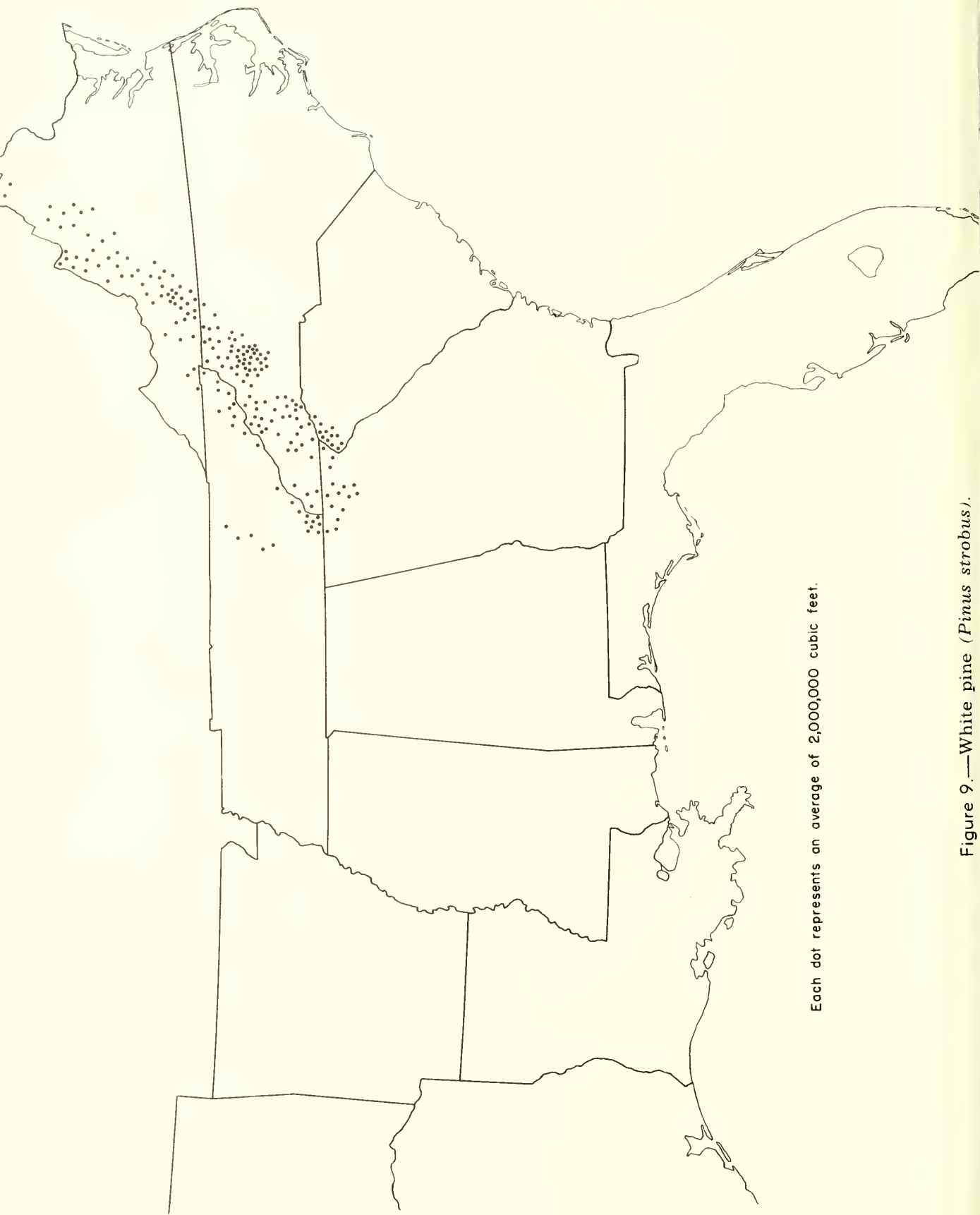


Figure 9.—White pine (*Pinus strobus*).

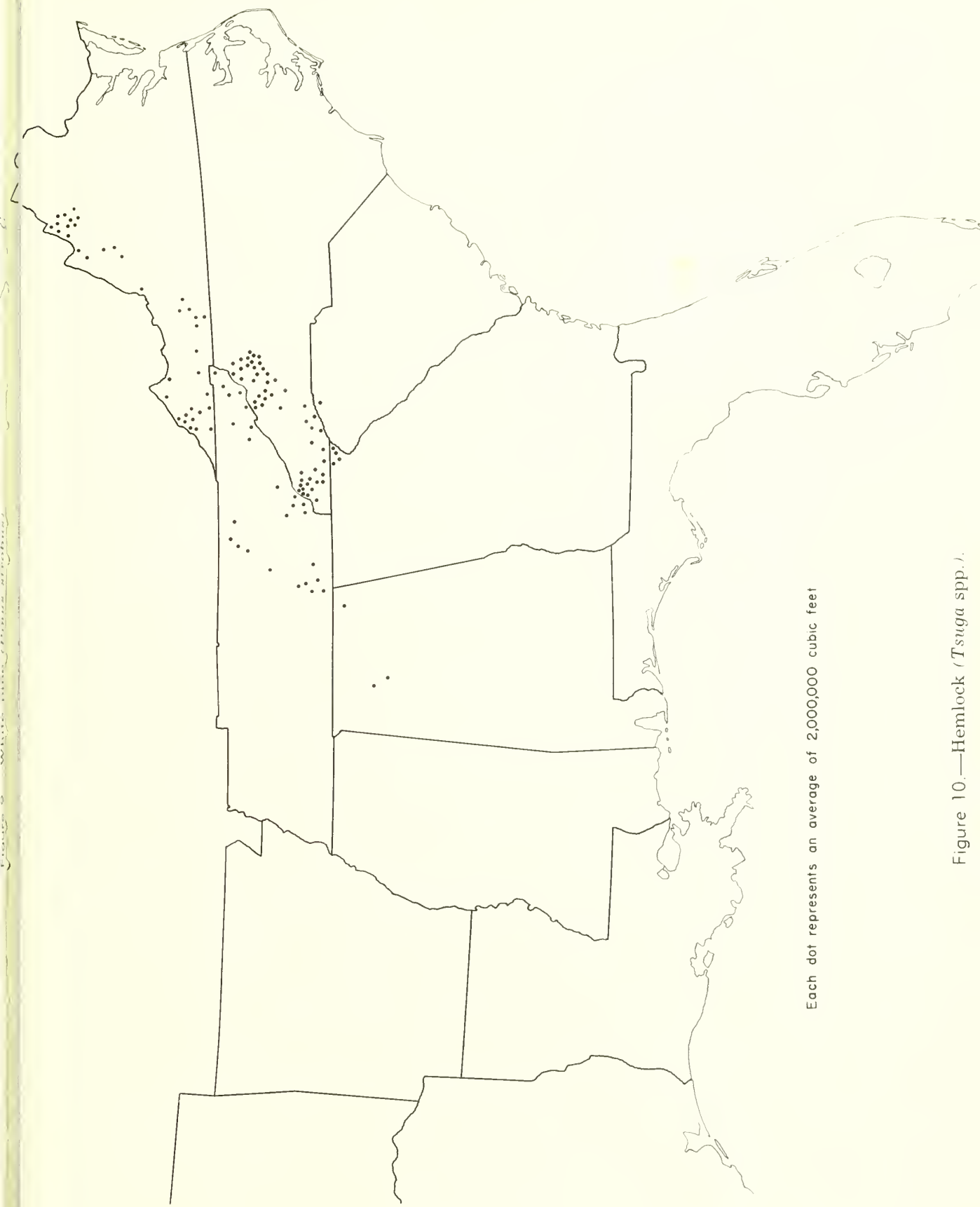
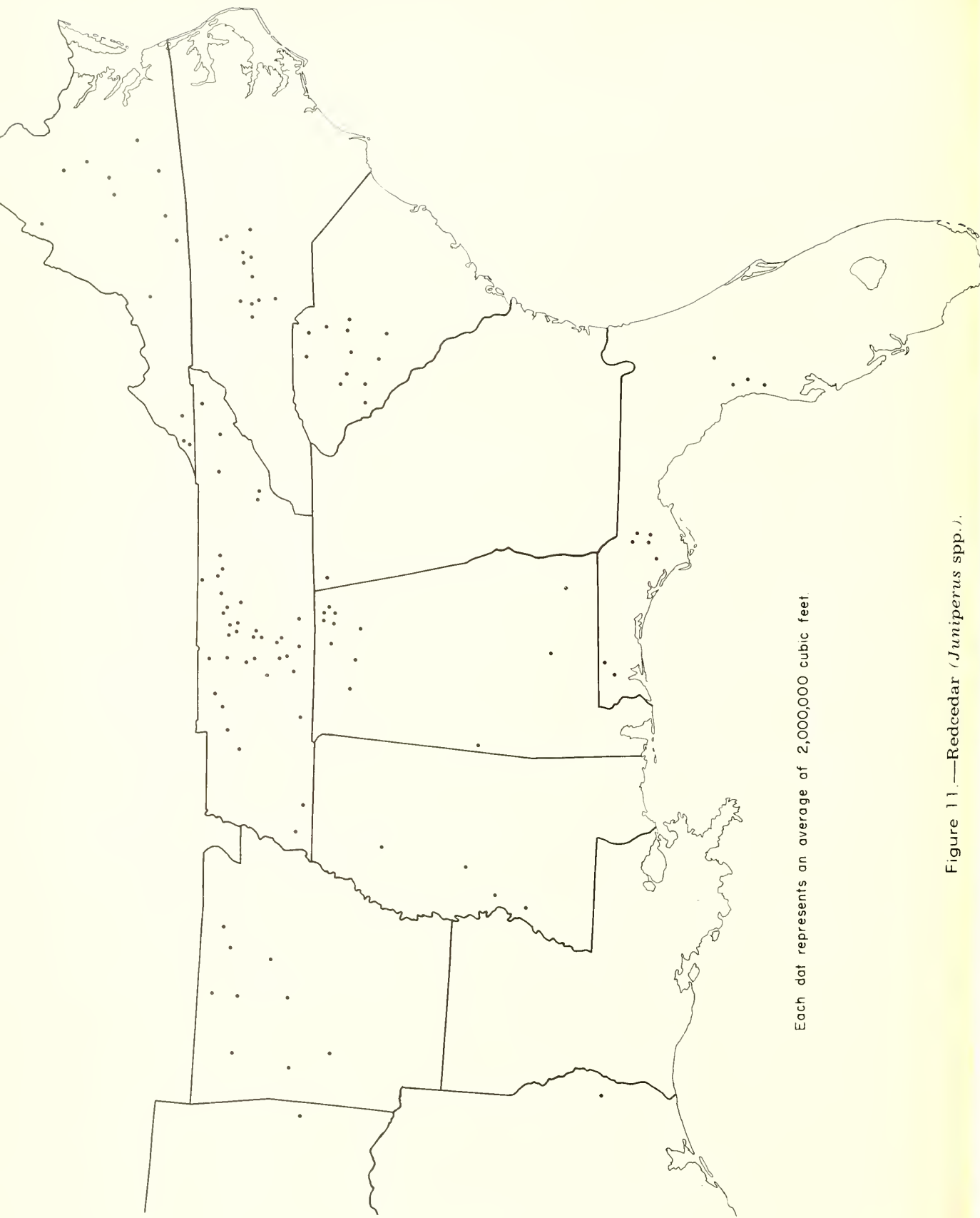


Figure 10.—Hemlock (*Tsuga* spp.).



Each dot represents an average of 2,000,000 cubic feet.

Figure 11.—Redcedar (*Juniperus* spp.).



FOREST SURVEY RELEASE 83

SOUTHERN FOREST EXPERIMENT STATION

New Orleans, Louisiana

Forest Service, U.S. Department of Agriculture

1960

