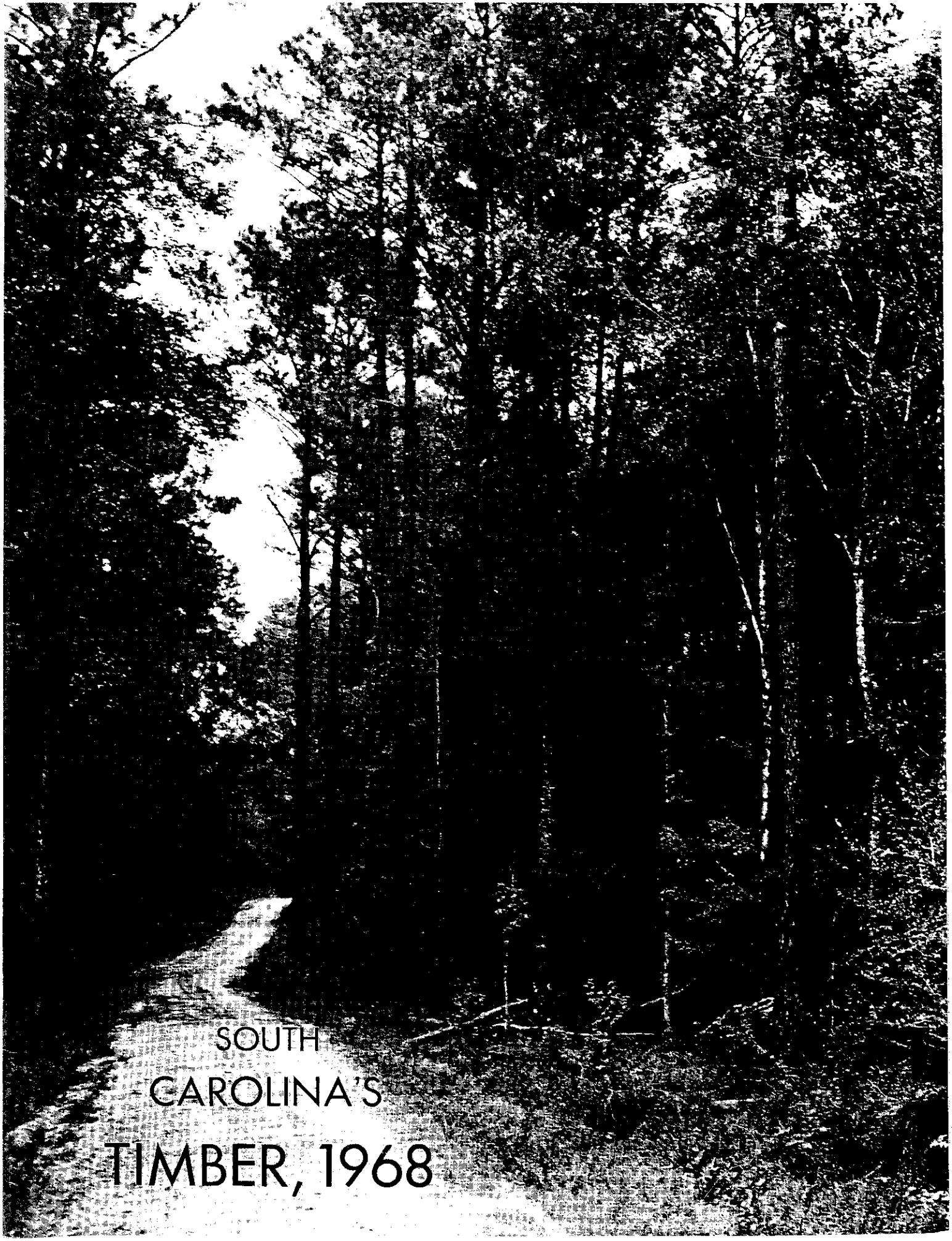
SOUTH
CAROLINA'S
TIMBER, 1968

Foreword

This report represents the principal findings of the fourth Forest Survey of South Carolina's timber resource. The survey was started in August 1966 and completed in July 1968. Findings of the three previous surveys, completed in 1936, 1947, and 1958, provide the basis for measuring changes that have occurred and trends that have developed over the past 32 years. However, in this report, the primary emphasis is on the changes and trends that have taken place since the last survey.

More detailed breakdowns of these data, including many county tables, are found in three Survey Unit reports issued as the Survey progressed through the State. Copies of these reports are available from the Southeastern Forest Experiment Station.

The South Carolina Survey is part of the nationwide effort, authorized by Congress in the McSweeney-McNary Forest Research Act of 1928, to maintain a current inventory of the Nation's timber supply. The general objective is to inventory periodically the forest lands, their extent, condition, and volume of timber, and to ascertain rates of forest growth and depletion. The regional experiment stations of the Forest Service, U.S.D.A., conduct periodic surveys to keep the information up to date to provide a sound basis for the formulation of forest policies and programs.

The combined efforts of many people have gone into the Forest Survey in South Carolina. Appreciation is expressed to all Station personnel who participated in the field and office work. The Southeastern Station also wishes to acknowledge the cooperation and assistance of the South Carolina State Commission of Forestry and Clemson University Extension Service, particularly for their survey of timber products output, which provided additional information for this report.

Joe P. McClure, Project Leader of the Forest Survey in the Southeast, planned and coordinated the various phases of the Survey. Noel D. Cost was in charge of data collection. William H. B. Haines was in charge of the computations and also supervised the preparation and interpretation of aerial photographs. Richard L. Welch was responsible for compiling timber removal and mortality information. Herbert A. Knight was in charge of analysis and reporting. John D. Nesbit supervised the collection of all field data, and Thomas R. Bellamy was responsible for the special studies on volume, ownership, and utilization.

The discussion of other recognized forest values in South Carolina—water, fish and wildlife, and recreation—is beyond the scope of this report. The purpose of this publication is to appraise the timber situation.

Walton R. Smith

WALTON R. SMITH, Assistant Director
Watershed, Utilization, Resources,
and Marketing Research

The authors wish to express their thanks to the South Carolina State Commission of Forestry for providing the cover photograph and the illustrations on pages 2, 13, and 18.

Knight, Herbert A., and McClure, Joe P.
1969. South Carolina's Timber, 1968. Southeast. Forest Exp. Sta., U.S.D.A. Forest Serv. Resource Bull. SE-13, 44 pp.

A fourth Forest Survey in South Carolina shows substantial improvement in most of the vital components of the timber resource between 1958 and 1968. Area of commercial forest land increased from 11.9 to 12.4 million acres, or 4 percent, as the result of an extensive tree planting effort and the natural reversion of idle agricultural lands to forest. Volume of growing-stock timber increased from 10.3 to about 12.2 billion cubic feet, or 19 percent. In 1967, net growth of growing stock exceeded removals by over 200 million cubic feet, or 48 percent. An upward trend in annual wood requirements, however, stresses the need for accelerated efforts to increase timber growth in South Carolina.

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U.S.D.A. FOREST SERVICE
RESOURCE BULLETIN SE-13

SOUTH CAROLINA'S TIMBER, 1968

by

HERBERT A. KNIGHT, Associate Resource Analyst

and

JOE P. McCLURE, Principal Resource Analyst

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

SOUTHEASTERN FOREST EXPERIMENT STATION
ASHEVILLE, NORTH CAROLINA

1969

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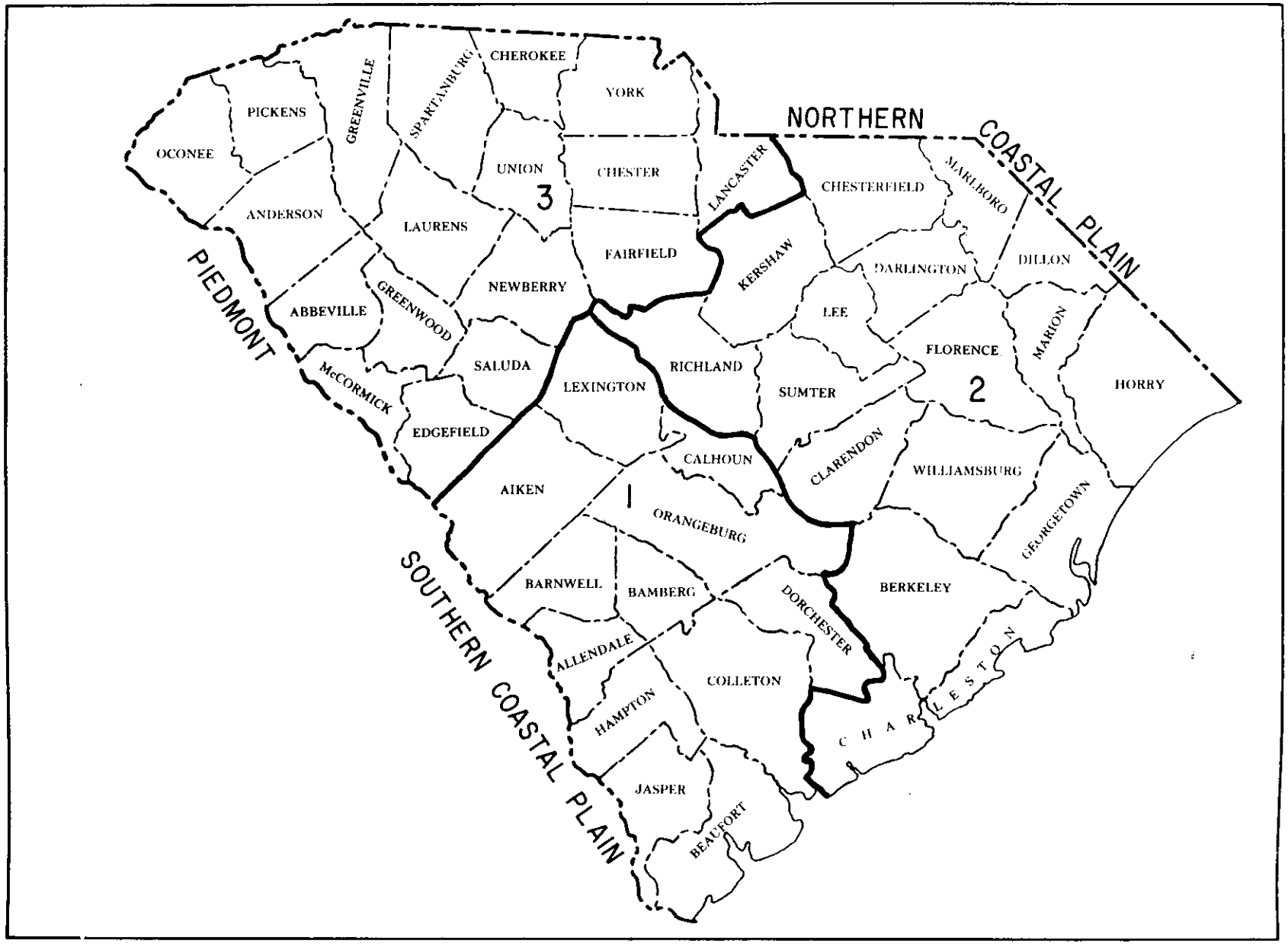

Figure 1.—*Forest Survey Units in South Carolina.*

Highlights

Since the third Forest Survey in South Carolina was completed in 1958—

—area of commercial forest has increased from 11.9 to 12.4 million acres, a gain of 4 percent. Almost two-thirds of this gain occurred in the Piedmont, where the reversion of former agricultural lands to forest is especially noticeable. Most of the remaining increase occurred in the Southern Coastal Plain, where a large share of the tree planting effort in South Carolina has been concentrated. In the Northern Coastal Plain, loss of commercial forest land to other uses just about offset gains.

—area of commercial forest owned by farm operators has decreased from 6.8 to 5.0 million acres, or 27 percent. This decline in farmer-owned forest land was most evident in the Piedmont. Ownership of most of this timberland apparently shifted to the miscellaneous private category, which includes business and professional people, wage earners, housewives, retired people, and other miscellaneous private groups. Collectively, these people now own almost 4.3 million acres of the commercial forest land in the State, and within this group interest in timber growing ranges from none to the most intense. Forest industries have increased their holdings from 1.7 to over 2.0 million acres, mostly in the Northern Coastal Plain. The area of public-owned forest land has remained at about 1.1 million acres.

—area of commercial forest occupied with pine and oak-pine types has increased from 6.7 to over 7.6 million acres, or 14 percent. In contrast, area occupied with hardwood types has been reduced by about 9 percent. These findings indicate a substantial amount of stand conversion and reflect pine planting and management in the State.

—area of commercial forest occupied with sapling and seedling stands has increased from 2.7 to 3.6 million acres, or 33 percent. There has been little change in the total area occupied with poletimber and sawtimber. The area of nonstocked forest land has been reduced by almost one-half. Across the State, about 7 percent of the timber stands originated wholly or in part as the result of artificial regeneration since 1958, and this figure increases to over 10 percent in the Southern Coastal Plain.

—stocking on commercial forest land has increased; however, about one out of every four acres is still poorly stocked with growing-stock trees. Average basal area of all live trees 5.0 inches d.b.h. and larger increased from 50 to 57 square feet per acre. On the average, there are about 65 more sapling-size trees per acre than in 1958. A major obstacle to improved stocking is that rough trees (suitable only for fiber or fuel), rotten trees, and other inhibiting vegetation occupy about one-fourth of the growing space.

—volume of growing stock has increased from 10.3 to about 12.2 billion cubic feet, or 19 percent. This increase, which reverses a downward trend in timber volume between the two previous surveys, is attributed to stepped-up efforts aimed at increasing the timber supply in South Carolina and to a general decline in annual removals up until 1961. Increases in the volume of loblolly and slash pine accounted for almost one-half of the net gain in volume, even though these species make up only 29 percent of the inventory. As a group, the red oaks accounted for 20 percent of the net gain. Less encouraging is the finding that the volume of water tupelo, swamp blackgum, and sweet-

gum increased relatively little. These species are particularly vital to the hardwood veneer industry.

—net annual growth has climbed steadily and now exceeds 650 million cubic feet, or about 53 cubic feet per acre. Impressive and encouraging as these growth statistics are, when compared to past growth rates, net annual growth of timber in South Carolina is still only about two-thirds of the potential if all timberlands were under optimum management. For example, on forest industry, National Forest, and other public forest lands where a large share of the stands are responding to fairly intensive management, net annual growth of growing stock already averages 67 cubic feet per acre. On the farmer and miscellaneous private timberlands, the average is only 48 cubic feet per acre. Of course, some of the difference may be attributed to differences in site or age class distribution among the ownerships.

—annual removals began to increase rapidly after 1961, reversing a downward trend that was particularly evident in the removals of pine. Apparently, during the fifties, a decline in the removals of saw logs, together with the continuing decline in the use of fuelwood, more than offset the increased removals of pulpwood and veneer logs. This slack in wood requirements was temporary, however, and is now being taken up very rapidly. In 1967, net annual growth of growing stock exceeded removals by over 200 million cubic feet, or 48 percent. However, the prospective increase in wood requirements and other removals could consume this surplus by the end of this century, or perhaps sooner. National projections indicate that total supply of all sizes and species will fall below projected removals before 1985.

Timber Trends

MORE COMMERCIAL FOREST LAND

The area of forest land in South Carolina has been on the increase ever since the first Forest Survey back in 1936; today, commercial forests occupy 12.4 million acres or 64 percent of the total land area. Since 1958, about 910,000 acres of commercial forest were added, while 435,000 acres were diverted to other land uses (table I). During this period, almost two-thirds of the net gain occurred in the Piedmont, where the reversion of former agricultural lands to forest is most evident (fig. 1). Most of the remaining gain occurred in the Southern Coastal Plain, where a large share of the tree planting effort has been concentrated.

Although this upward trend in forest area is encouraging to forestry interests and may continue for a short while, increased competition from alternate land uses should not be underestimated over the long run. Food and fiber needs will determine to a large degree the shifts between forest and agricultural use; however, the permanent diversion of forest land from future timber production is a matter of some concern. For example, since 1958, about 185,000 acres of commercial forest land were lost to reservoirs, highways, and urban development. As the population increases, more and more of this permanent diversion of forest land is inevitable. The point is that, in the not-too-distant future, timber requirements will have to be met with a decreasing forest acreage.

NEW OWNERSHIP PATTERN

In earlier Forest Surveys in South Carolina, the private, nonindustrial forest owner was generally a small farmer whose livelihood depended in part upon the sale of timber from his lands. Today, the situation is somewhat different in that the private, nonindustrial forest owner is often a wage earner, doctor, lawyer, or other business or professional person who might not be heavily dependent on his forest land. The implications as to how the trend will affect the timber supply are vague and hard to analyze. Questions like these immediately arise: What are the management intentions of the new owners? Will timber on these lands be available for harvest now and in the years ahead? Will these lands be held for speculation, future development, recreation, or some other purpose—or will they be managed in a positive way to improve their yields of high-quality timber products?

Table I.—*Changes in area of commercial forest land, by Survey Unit, South Carolina, 1958-1968*

Survey Unit	Area of commercial forest land in:		Net change	Changes							
				Total gain	Additions from:		Total loss	Diversions to:			
	1968	1958			Non-forest	Noncommercial forest		Noncommercial forest	Agriculture	Urban and other	Water
	Thousand acres										
Southern Coastal Plain	3,269.4	3,112.9	+156.5	260.7	260.7	...	104.2	1.6	57.0	37.8	7.8
Northern Coastal Plain	4,687.4	4,676.2	+ 11.2	206.3	206.3	...	195.1	12.3	109.9	70.3	2.6
Piedmont	4,453.9	4,145.8	+308.1	443.4	431.5	11.9	135.3	...	68.6	45.8	20.9
State	12,410.7	11,934.9	+475.8	910.4	898.5	11.9	434.6	13.9	235.5	153.9	31.3

Answers to these questions are not found in this report, although many of the data are broken down by ownership. Hopefully, however, the questions themselves will give the reader a better understanding of the importance of ownership patterns to timber supply.

Since 1958, area of commercial forest owned by farm operators decreased from 6.8 to 5.0 million acres, whereas area of commercial forest in the miscellaneous private category increased from 2.4 to almost 4.3 million acres. The shift is most evident in the Piedmont. Over this same period, forest industries increased their commercial forests from 1.7 to 2.0 million acres, and the area of public-owned forest land has remained at about 1.1 million acres.

From these findings, the fact remains that farmers and miscellaneous private groups and individuals still own three-fourths of the commercial forest land in South Carolina. Their forestry attitudes and actions will determine to a large degree the future timber supply.

PINE AND OAK-PINE TYPES INCREASE

Previous Forest Surveys in South Carolina have indicated a downward trend in the area of commercial forest occupied with pine and oak-pine types, with hardwood types on the increase. The new findings show a reversal of these trends, with pine and oak-pine stands up 14 percent and hardwood stands down 9 percent since 1958.

These changes in forest type are attributed to a number of factors: First of all, forestry efforts in South Carolina have been oriented toward growing more pine timber, and the results of these efforts are now appearing in the statistics. Except for fire protection, an equal effort has not been put forth to grow more hardwood. The conversion of scrub oak and other low-quality hardwood stands to pine has become common practice. Another contributing factor has been that pines have seeded in naturally and stocked many acres of idle or abandoned agricultural land. In fact, pines dominate the hardwoods on over 80 percent of all new forest land added since 1958, regardless of origin. Finally, the diversion of commercial forest land to other uses has taken a heavier bite out of the hardwood stands.

Loblolly pine is the leading cover type in South Carolina and occupies over 2.9 million acres. Oak-hickory, with 2.3 million acres, is the second leading type. Close behind is the oak-pine type, which occupies over 2.1 million acres. In this type, southern pine makes up at least 25, but less than 50, percent of the live-tree stocking.[1]

MORE SAPLING AND SEEDLING STANDS

Since 1958, the area of commercial forest occupied by sapling and seedling stands increased from 2.7 to 3.6 million acres, or 33 percent. This increase is attributed to the extensive tree planting programs in South Carolina, as well as to the natural reversion of old fields back to forest. *Tree Planters' Notes,* published by the U.S.D.A., Forest Service, show that about 900,000 acres were planted with trees over this period. The Forest Survey findings show that, across the State, about 850,000 acres of forest land originated wholly, or in part, from artificial regeneration since 1958. Of course, some of the plantings were unsuccessful, and some sapling and seedling stands grew to poletimber or were diverted to other land uses. Altogether, the figures are reasonably consistent for concluding that about one-fourth of the sapling and seedling stands in South Carolina are well-stocked pine plantations established within the past 10 years. With adequate protection and good management, these young stands will make a substantial contribution to the future timber supply.

IN GENERAL, STANDS STILL POORLY STOCKED

Although there has been a measurable build-up in live-tree stocking since 1958, less than 20 percent of the commercial forest land is fully stocked with growing-stock trees, based on a standard that varies by tree size but is set at 75 square feet of basal area per acre for 6-inch trees. This standard is the minimum stocking that will fully utilize the growth potential of the land. By this same standard, about 1 out of every 4 acres is poorly stocked. As might be expected, commercial forest land on the National Forests and forest land owned by forest industry are significantly better stocked, on the average, than forest land owned by farmers and the miscellaneous private

[1] A map detailing the major forest types in the South is available, upon request, from the Southeastern Forest Experiment Station.

group. For example, a third of the National Forest lands and about a fourth of the forest industry lands are fully stocked with growing-stock trees. State forests and some of the other public lands also have a high proportion of fully stocked stands; however, this fact is not evident in some of the tables because of grouping of the data.

It is recognized that, at any given time, a substantial area of the commercial forest under intensive management is in a regeneration stage and shows up as poorly stocked in the Forest Survey. This does not alter the fact, however, that most stands are less than adequately stocked to utilize fully the growth potential. For example, rough trees and rotten trees, together with inhibiting vegetation, occupy 40 percent of the growing space in the poorly stocked stands and 25 percent of the growing space when all stands are included. Even on the poorly stocked stands, only about 22 percent of the growing space is nonstocked; and this average drops to less than 9 percent when all stands are included. The stocking situation, therefore, will not improve in many instances without site preparation or site preparation and planting where there is an inadequate or undesirable seed source.

The stocking problem is greatly magnified if a stricter standard than growing stock is used to define the desirable or crop trees. Only about half of the growing-stock trees have quality characteristics which do not limit their use for the more demanding products. In other words, about half of the growing-stock trees are acceptable but do not qualify as desirable.

INVENTORY VOLUME RECOVERS

Between 1947 and 1958, volume of growing stock declined about 5 percent, causing concern among forestry interests in South Carolina. Perhaps, then, the most significant finding of the new survey is that this downward trend in volume has been reversed (fig. 2). Gains were made in each of the three Survey Units and across all diameter classes. The recovery is attributed to the success of intensified efforts aimed at increasing the timber supply and to a general decline in annual removals up until about 1961.

Since 1958, volume of growing stock increased from 10.3 to about 12.2 billion cubic feet, or 19 percent. Increases in the volume of loblolly and slash pine accounted for almost one-half of the net gain, even though these

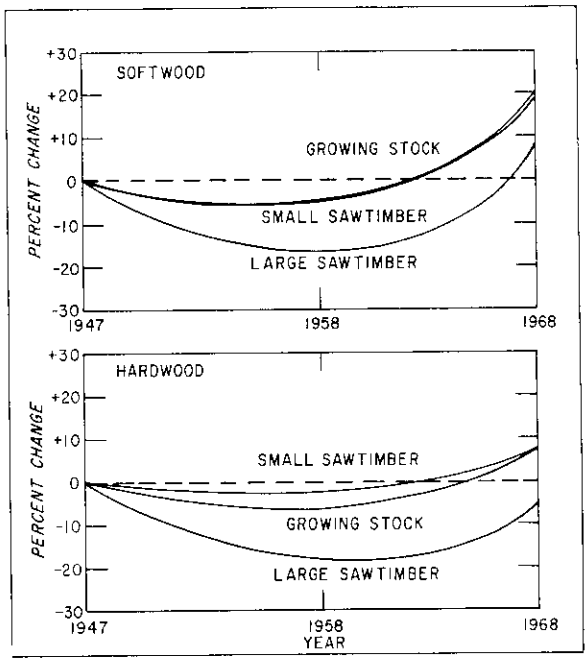

Figure 2. *Percent change in timber volume in South Carolina since 1947.*

species make up only 29 percent of the inventory. As a group, the red oaks accounted for another 20 percent of the net gain, although they make up only 12 percent of the inventory. The fact that the most desirable red oaks make up only a small part of this volume removes some of the luster from the increase. Less desirable species, such as laurel, water, and willow oaks, are the primary red oaks in South Carolina in terms of volume.

One disturbing aspect of the volume trends is that volume of water tupelo, swamp blackgum, sweetgum, and soft-textured hardwoods in general has increased relatively little. These species are vital to some of the hardwood industries, particularly the veneer industry.

Another major species in South Carolina, shortleaf pine, is actually on the decline. This species occurs mainly in the Piedmont, and over the years has been particularly susceptible to littleleaf disease. In managed stands seriously infected with the disease, a common practice has been to remove the shortleaf pine and to convert the stands to some other species of pine.

In this section, the analysis of volume trends has been based on cubic volume of growing stock; however, volume changes in sawtimber since 1958 follow a similar pattern. Currently, almost half of the sawtimber in South Carolina is found in the Northern Coastal Plain (fig. 3).

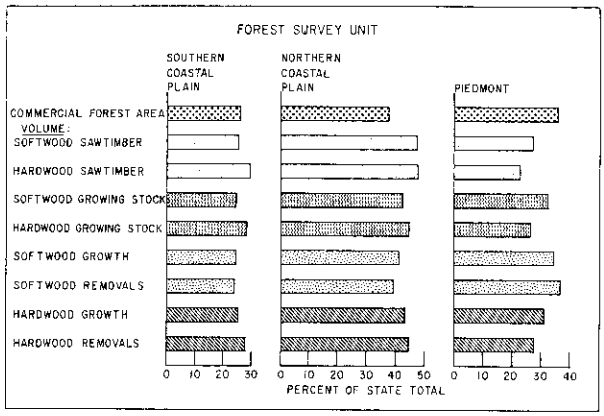

Figure 3. *Relative importance of forest resource by Survey Unit, South Carolina, 1968.*

There, average volume per acre exceeds 3,500 board feet, well above the average in the other two Survey Units.

In the past, questions have sometimes arisen among the readers of Forest Survey reports concerning the terminology used in the breakdowns and discussion of timber volume. Although the definition of terms in the appendix is intended to answer the questions, perhaps a few statements here will help to clarify some of the most common misinterpretations:

1. Volume of all timber includes the net cubic volume of all live trees 5.0 inches d.b.h. and larger from the 1-foot stump to 4.0 inches d.o.b. (In table 11, the volume of salvable dead trees is added.)
2. Volume of growing stock differs from the above in that rough trees and rotten trees are excluded.
3. Volume of sawtimber is the net board-foot volume in the saw-log portion of all live, softwood growing-stock trees 9.0 inches d.b.h. and larger, and of all live, hardwood growing-stock trees 11.0 inches d.b.h. and larger.

To provide a basis for valid comparisons, we have applied current volume equations and merchantability standards to the stem counts made in the previous surveys. This means that the volumes published previously have been adjusted, and any change in volumes between surveys reflects only the change in number of trees by size.

GROWTH EXCEEDS REMOVALS

Net annual growth has responded to the improvement in stocking and increase in inventory and, in 1967, exceeded removals by over 200 million cubic feet, or 48 percent. This is an improved situation over that in the two previous surveys (fig. 4).

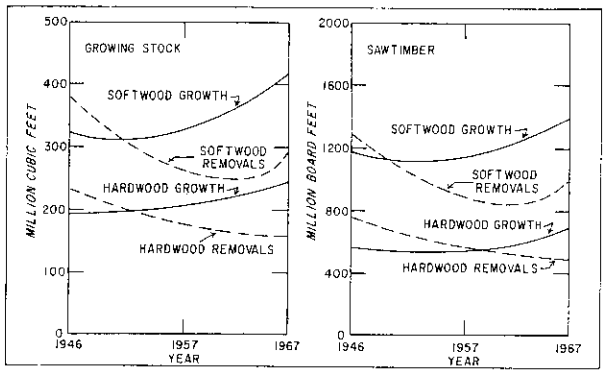

Figure 4. *Trend in net growth and timber removals in South Carolina since 1946.*

The remeasurement of permanent sample plots, established in 1957 and 1958, made possible a more efficient and accurate procedure for determining growth, removals, and mortality. The procedure also provided data for a more detailed breakdown and analysis of these components of change (table II). For example, the findings show that survivor growth accounted for 85 percent of the gross growth in 1967. Survivor growth is the volume increment of growing-stock trees 5.0 inches d.b.h. and larger which were in the inventory at the beginning of the year and were still in the inventory at the end of the year. Ingrowth accounted for about 12 percent of the gross growth, but ranged as high as 16 percent in the Piedmont. Ingrowth is the net volume of growing-stock trees which grew into the 6-inch diameter class during the year. Growth on ingrowth, growth on removals before cutting, and growth on mortality before death made up the remaining 3 percent.

In 1967, mortality of growing stock amounted to 67.5 million cubic feet and reduced the gross

Table II.—*Annual components of change in the volume of growing stock on commercial forest land, by Survey Unit and by softwood and hardwood, South Carolina, 1967*

Survey Unit and species group	Gross growth	Components of growth					Mortality	Net growth	Removals	Net change
		Survivor growth	Ingrowth	Growth on ingrowth	Growth on removals	Growth on mortality				
	Million cubic feet									
Southern Coastal Plain:										
Softwood	109.5	93.2	12.1	2.1	1.9	0.2	8.2	101.3	69.2	+ 32.1
Hardwood	78.6	71.0	6.0	0.7	0.7	0.2	16.5	62.1	43.0	+ 19.1
Total	188.1	164.2	18.1	2.8	2.6	0.4	24.7	163.4	112.2	+ 51.2
Northern Coastal Plain:										
Softwood	181.3	156.6	18.7	2.4	3.3	0.3	11.3	170.0	113.0	+ 57.0
Hardwood	119.9	108.3	9.4	0.9	1.1	0.2	15.3	104.6	68.3	+ 36.3
Total	301.2	264.9	28.1	3.3	4.4	0.5	26.6	274.6	181.3	+ 93.3
Piedmont:										
Softwood	151.3	117.4	28.5	2.5	2.8	0.1	10.2	141.1	105.5	+ 35.6
Hardwood	81.4	70.6	9.1	0.9	0.7	0.1	6.0	75.4	42.7	+ 32.7
Total	232.7	188.0	37.6	3.4	3.5	0.2	16.2	216.5	148.2	+ 68.3
State:										
Softwood	442.1	367.2	59.3	7.0	8.0	0.6	29.7	412.4	287.7	+124.7
Hardwood	279.9	249.9	24.5	2.5	2.5	0.5	37.8	242.1	154.0	+ 88.1
Total	722.0	617.1	83.8	9.5	10.5	1.1	67.5	654.5	441.7	+212.8

growth by about 10 percent. This indicates that mortality has been greatly reduced since 1958; however, it should be remembered that previous estimates of mortality were determined without the benefit of remeasurement plots and therefore were subject to considerable error. Nevertheless, the fact remains that mortality is still taking a substantial toll from the growth each year. Suppression and disease are the leading identifiable causes of death, but pine bark beetles, fire, and weather have also taken their toll. Fire control efforts in South Carolina have been successful; however, fire always poses a serious threat, particularly during extended periods of drought such as those experienced in recent years. A large share of the mortality reported with cause unknown was either directly or indirectly caused by wildfire.

After mortality is deducted, net growth of growing stock amounted to 654.5 million cubic feet in 1967, which averages out at about 53 cubic feet per acre. This means that growth is still well below the potential (75 cubic feet or more) if most forest land were under good timber management. On forest industry, National Forest, and other public forest lands where a large share of the stands are responding to fairly intensive management, net annual growth of growing stock already averages 67 cubic feet per acre. In contrast, on the farmer-owned and miscellaneous private timberlands, the average is only 48 cubic feet per acre. One of the most significant aspects of this finding is that the gap is widening: the gain in average growth per acre on public and industrial lands since the previous survey is double the gain on the private, nonindustrial lands.

Timber Products Output

TIMBER VITAL TO SOUTH CAROLINA'S ECONOMY

The forest products industry is one of the largest and most important industries in the Palmetto State and contributes approximately $600 million to the economy each year. In terms of value added by manufacture, the forest products industry ranks third in the State and is exceeded only by the textile and chemical industries. The primary wood-using industries in South Carolina provide direct employment for about 25,000 persons whose wages and salaries amount to approximately $130 million annually. In 1967, there were about 295 primary wood-using plants operating in the State, with the highest concentration of large plants located in the Northern Coastal Plain (fig. 5).

Output of timber products totaled about 450 million cubic feet in 1967. In terms of volume, this is equivalent to a block of solid wood 1-¾ miles high if stacked between the goal lines and sidelines of a standard-size football field. Pines and other softwoods provided over two-thirds of the total product output.

PULPWOOD SURPASSES SAW LOGS

Since 1950, pulpwood production in South Carolina has increased 2½ times, and in 1967 totaled 216 million cubic feet. This means that the annual output of pulpwood now exceeds the output of saw logs and is the leading timber product in terms of volume. Pines have provided most of the actual increase in pulpwood production; however, the increased use of hardwood for this product is also striking (fig. 6).

Hardwood pulpwood bolts accounted for 20 percent of the total production in 1967, compared to less than 10 percent in 1950. Another relatively recent and important source for both pine and hardwood pulpwood is byproducts from sawmills and other wood-using plants. With the installation of debarkers and chippers, these plants are now able to provide about one-fifth of the pulpwood produced in South Carolina each year. The sale of chips and byproducts to the pulpmills has not only improved timber utilization, but has often meant the difference between profit and loss to sawmill operators.

The 1962 study, "Timber Trends in the United States," projected that the use of pulpwood in the Nation would double by 1995. A more recent study, "Projected Demands for Paper and Board," Forest Resource Report No. 18, December 1967, indicates that the 1962 production will double some 10 years sooner, or by 1985. Although these projections are not necessarily applicable to any particular state, they do suggest that the annual production of pulpwood in South Carolina can be expected to climb to around 350 million cubic feet within the next 20 years.

In 1967, there were five pulpmills in operation in South Carolina. In addition, several pulpmills located outside the State drew wood from South Carolina.

LUMBER PRODUCTION PERKS UP

The lumber industry in South Carolina has changed considerably over the past 25 years as the result of market fluctuations, increased production costs, and competition from other products. Between the peak years of World War II and 1962, annual lumber production declined from 1.1 to less than 0.6 billion board feet, and more than a thousand small, portable sawmills disappeared from the scene. In recent years, however, the decline in lumber production has been reversed, particularly in the case

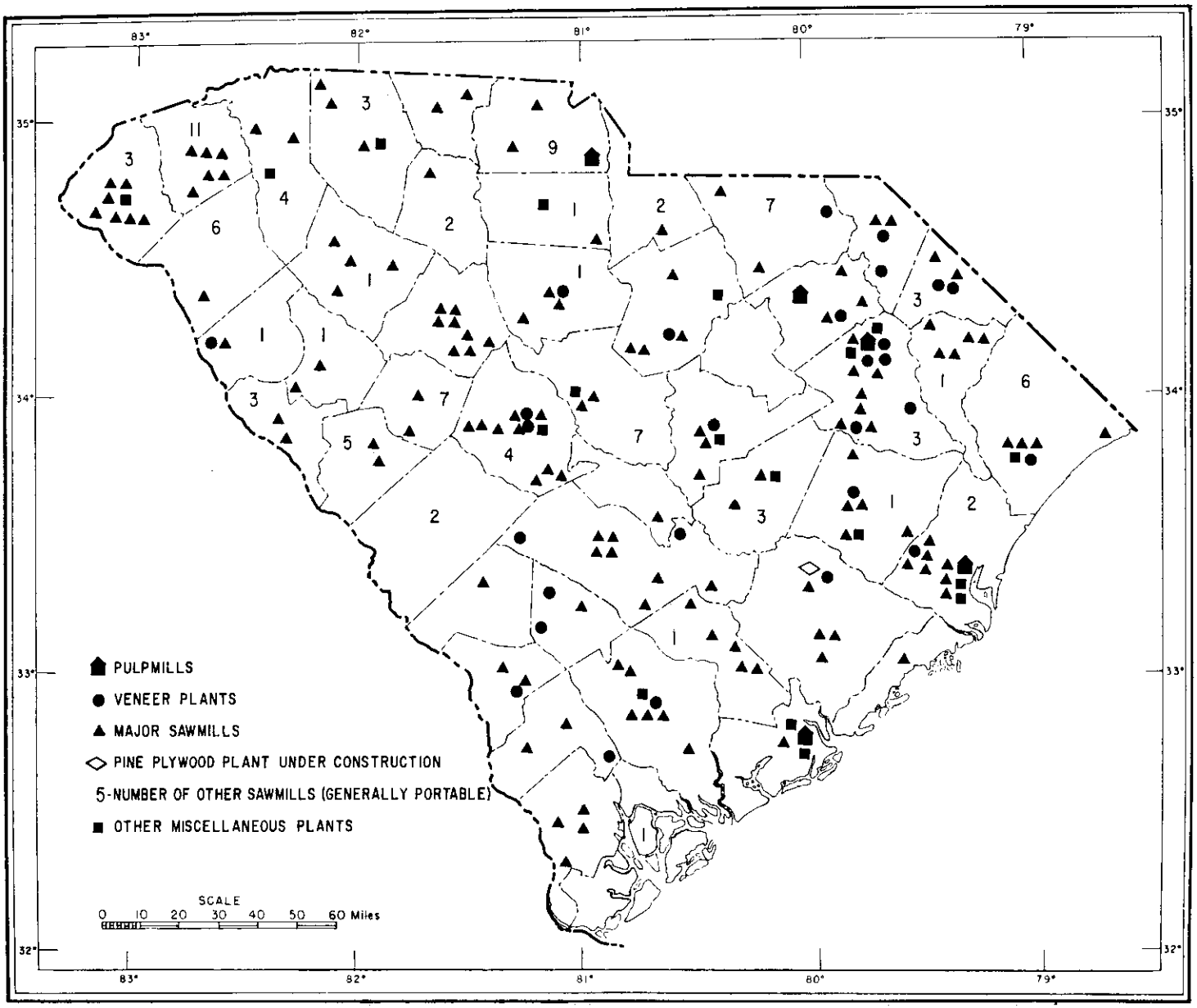

Figure 5. *Location of primary wood-using industries in South Carolina, 1967.*

of softwood (fig. 7). Data on lumber production since 1966 are not yet available from the Bureau of the Census, but from the Forest

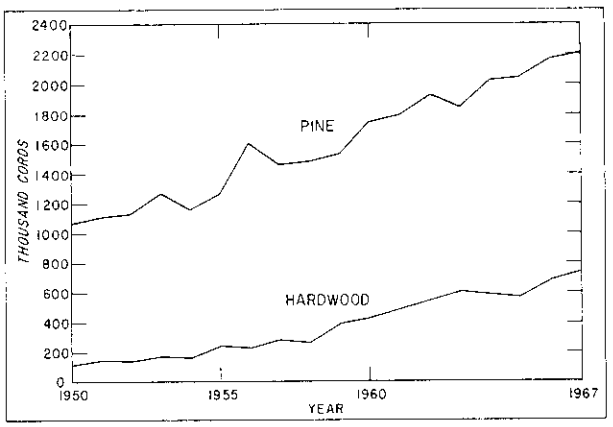

Figure 6. *Pulpwood production in South Carolina, including byproducts, 1950 to 1967.*

Survey findings and the State's timber products output study, saw-log production in 1967 was estimated at over 980 million board feet,

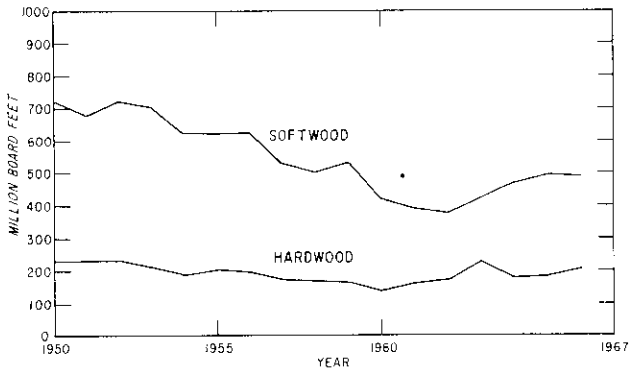

Figure 7. *Lumber production in South Carolina, 1950 to 1967. Source: Bureau of the Census. (Data for 1967 are not available.)*

or about 150 million cubic feet. Softwoods, primarily pines, provided over 70 percent of this total.

The timber products output study showed 254 sawmills operating in South Carolina in 1967. Most are stationary mills, and many have added log debarkers, chippers, and other modern equipment for improving utilization and for more efficient production.

It would be extremely difficult to predict with any reliability the future wood requirements for the lumber industry in South Carolina; however, several important factors have been publicized and merit stating again: Over the next few decades, the Nation is faced with the major task of building new houses for some 100 million people, plus major repair and replacement of older housing. Urban rehabilitation appears likely to require tremendous volumes of building materials. Demands for furniture, other manufactured products, and shipping and handling materials continue to increase. The production of wooden pallets has just about doubled within the past 10 years, and the annual production of crossties has turned upward in recent years after a long decline. The conclusion is that lumber production in South Carolina will very likely continue its recent upward trend.

HARDWOOD VENEER LOG OUTPUT DOWN

Over the years, the bottomland hardwoods in South Carolina have supported an active veneer and plywood industry with water tupelo, swamp blackgum, sweetgum, and yellow-poplar being the key species. The number of veneer plants increased from 25 in 1936 up to about 50 plants during the early fifties, when the annual production of veneer logs exceeded 140 million board feet. The number of plants declined to 28 in 1967 and, in recent years, production seems to have leveled off at around 85 million board feet, or 13 million cubic feet annually. Softwoods accounted for only about 6 percent of the production in 1967.

This industry is quite diversified in South Carolina. Large quantities of veneer are used by the furniture and hardwood plywood manufacturers, as well as by manufacturers of crates and baskets sold to fruit and vegetable shippers. Generally, however, the specifications for hardwood veneer logs are more demanding in terms of tree size and quality than for most other products. For this reason, the timber supply, rather than the markets, has often been the limiting factor in the growth and expansion of this industry. In addition to the problem of procuring an adequate supply of quality timber, the industry has met with increasing competition from foreign imports of hardwood plywood and veneer since the early fifties. Although projected growth in construction, furniture, and other markets suggests substan-

tial increases in the future use of hardwood plywood, imports may supply most of these additional demands.

PINE PLYWOOD PLANT NEARS COMPLETION

South Carolina's first pine plywood plant, now nearing completion in Berkeley County, will employ about 300 people. Based on announced capacity, it will require over 7 million cubic feet of pine veneer logs annually. This plant represents a major expansion in forest industry and will mean a substantial boost in annual timber requirements.

Southern pine plywood is a new forest industry which has moved into the South with almost unprecedented speed. The first such plant was started in Fordyce, Arkansas, in 1963; and over 30 plants are now in operation or under construction in the South. Eventually, this new product is likely to have a significant effect on timber requirements throughout the South.

OTHER INDUSTRIAL PRODUCTS

In addition to the pulpmills, sawmills, and veneer plants, there were some 15 to 20 other primary wood-using plants operating in South Carolina in 1967. Their products ranged from poles, piling, and posts to hardboard and cooperage. Output of all these miscellaneous products totaled about 10 million cubic feet. About 94 percent of this volume came from softwood timber, mainly pine.

MOST PLANT RESIDUES USED

The primary wood-using plants in South Carolina produced an estimated 75 million cubic feet of wood residues in 1967, excluding bark. Over two-thirds of this material was subsequently used in the manufacture of fiber products, specialty items, or for fuel, litter, etc. It is estimated that about 22 million cubic feet were not used for any purpose. Of this amount, about 19 million cubic feet were fine residues, such as sawdust and shavings.

FUELWOOD USE CONTINUES TO DECLINE

Over the past 25 years, annual fuelwood consumption in South Carolina has declined from over 200 million cubic feet to about 60 million cubic feet because of the substitution of oil, gas, coal, and electricity in home cooking, heating, and other uses. This decline in the use of fuelwood released substantial volumes of timber for other products, but will be less of a factor in future changes in wood requirements. Over half of the fuelwood consumed is hardwood.

LOGGING RESIDUES AND OTHER REMOVALS

In 1967, about 17 percent of the merchantable volume of growing stock removed from the inventory was not used for any product. In hardwood removals, this figure ran as high as 30 percent. For all species, the volume of logging residues and other removals was estimated at 76 million cubic feet, with logging residues accounting for over half of this volume. Although it can be assumed that most of the volume left in the woods as logging residue is of poor quality and has limited use, the fact remains that a substantial volume of usable wood fiber is currently being wasted.

Other removals were estimated to total about 32 million cubic feet and include the volume of growing stock removed from the inventory by cultural operations, land clearing, reservoir construction, and urban development. These kinds of removals must be taken into account to comprehend fully the current demands on South Carolina's timber resource.

Timber Supply Outlook

This appraisal of the timber situation in South Carolina would be incomplete if it did not provide a basis for judging whether the timber supply will be adequate to support the wood requirements over the next few decades. Although timber is a renewable resource, forestry is a longterm undertaking, and changes in forestry practices and programs usually do not produce tangible results for many years following implementation. Because of this fact, the current timber situation carries more than the usual implications for future supplies.

The basic indicators outlined in the "Timber Trends" section of this report suggest a rather bright outlook for the timber supply: Volume of growing stock is increasing; net annual growth exceeds removals by a fairly wide margin; and more land seems to be available for timber production, at least temporarily. These should be recognized as general, Statewide conditions, however, which may very well mask deficiencies in certain areas throughout the State. For this reason, the further expansion of forest industry should be orderly and well planned to prevent any over-reaction to the apparent increase in the supply of timber.

PROSPECTIVE AVAILABLE CUT

A projection of the current timber supply in South Carolina to the year 2000 indicates that the prospective available cut of growing stock will increase to about 830 million cubic feet annually. This is almost double the volume of removals in 1967. The projection allows for a further buildup in the inventory from the present 12.2 billion cubic feet to about 15.1 billion cubic feet. Current growth and mortality rates were applied throughout the projection, and this assumes that forest management will be able to counteract any tendency for mortality to increase and radial growth to decrease in response to higher stand densities. The primary control in the projection, however, was an assumption that the current margin between growth and removals will gradually diminish over the next 32 years until growth and removals are in balance by the year 2000.

Separate projections were made for softwoods and hardwoods (fig. 8). As might be

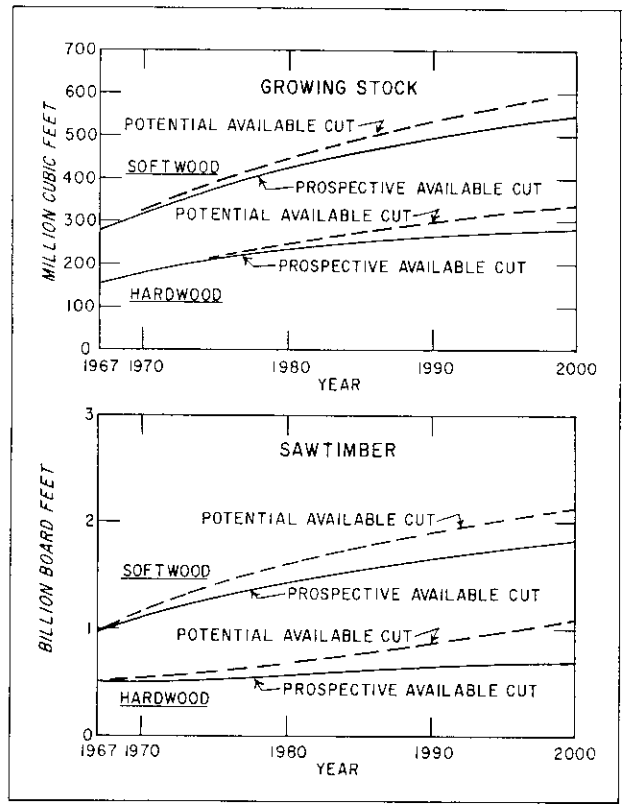

Figure 8. *Prospective and potential available cut, South Carolina, 1967-2000.*

expected, the results show that softwoods will provide about two-thirds of the increase in the prospective available cut of growing stock and over 80 percent of the prospective increase

in available sawtimber. Hardwoods occupy roughly one-half of the growing space in South Carolina's forests and make up about one-half of the total volume of growing stock; yet, in 1967, hardwoods provided only about one-third of the net growth. These findings should not be interpreted to mean that hardwoods on good sites will not produce as much timber as well-managed pine stands on good sites. The findings simply reflect the greater efforts that have been put forth to grow more pine timber compared to the small effort put forth for the hardwoods. For example, *Tree Planters' Notes* show that almost 1.5 million acres have been planted with trees in South Carolina and that practically all of these plantings have been pine (table III). The Forest Survey findings confirm that over 1.1 million acres of the commercial forests now in the State originated wholly or in part from artificial regeneration (table IV). The above statements are not meant to imply that planting is also the answer to hardwoods.

Table III.—*Acres of forest planting,*[1] *by ownership class, South Carolina, 1957-1967*

Fiscal year	Ownership class				All ownerships	Accumulative total
	National Forest	Other public	Forest industry	Other private		
	Acres					
						[2] 396,944
1957	271	12,034	21,086	32,421	65,812	462,756
1958	429	12,598	8,732	55,785	77,544	540,300
1959	790	16,464	28,274	122,723	168,251	708,551
1960	705	11,622	20,427	154,939	187,693	896,244
1961	753	6,211	21,539	133,475	161,978	1,058,222
1962	1,442	9,272	19,063	58,677	88,454	1,146,676
1963	2,667	8,227	15,623	41,683	68,500	1,215,176
1964	2,944	13,334	22,776	34,044	73,098	1,288,274
1965	3,634	14,548	23,265	31,594	73,041	1,361,315
1966	3,402	10,542	26,230	24,970	65,144	1,426,459
1967	4,861	5,898	15,160	33,159	59,078	1,485,537

[1] Includes acres of planting by direct seeding. Source: U. S. Department of Agriculture, Forest Service, *Tree Planters' Notes*, 1957-1967.
[2] Accumulative total prior to FY 1957.

The peak planting years were 1959, 1960, and 1961, when the yearly average exceeded 170,000 acres. With adequate protection and management, all of the pine plantations now established should develop into well-stocked sawtimber stands by the year 2000, if allowed to grow. In the meantime, the stands can be thinned periodically to provide additional timber. Currently, tree planting continues in South Carolina at the rate of about 60,000 acres per year.

Although efforts to improve and perpetuate the supply of hardwood timber have not matched efforts devoted to growing more pine timber, fire protection has contributed to a fairly rapid buildup of young hardwoods. Too many of the hardwoods, however, are on dry, upland sites unsuitable for the best development of quality hardwood sawtimber. Also, many hardwood stands have been left in poor condition for management and without any hope of adequate natural regeneration following logging. As the result of many years of high grading, almost one-fifth of the hardwood growth is being added onto rough trees and rotten trees. Although this growth will add to the supply of wood fiber, it will not contribute directly to any increase in the supply of sawtimber. In the projection, a continuation of this loss of potential growth was assumed.

The projection indicates that there will be only a 40-percent increase in the prospective available cut of hardwood sawtimber by the

Table IV.—*Area of commercial forest land, by stand origin and Survey Unit, South Carolina, 1968*

Stand origin	All Survey Units		Survey Unit					
			Southern Coastal Plain		Northern Coastal Plain		Piedmont	
	M acres	*Percent*	*M acres*	*Percent*	*M acres*	*Percent*	*M acres*	*Percent*
Natural stands with no evidence of artificial regeneration	11,267.5	90.8	2,760.3	84.4	4,359.6	93.0	4,147.6	93.1
Stands originating wholly or in part from artificial regeneration since 1958	852.1	6.9	346.9	10.6	247.0	5.3	258.2	5.8
Stands originating wholly or in part from artificial regeneration prior to 1958	291.1	2.3	162.2	5.0	80.8	1.7	48.1	1.1
All stands	12,410.7	100.0	3,269.4	100.0	4,687.4	100.0	4,453.9	100.0

year 2000. This is the smallest increase predicted in the projection and suggests that the outlook for any substantial increase in the supply of hardwood sawtimber is certainly less optimistic than the outlook for pine sawtimber. This projection supports a growing concern over the possibility that serious deficits may develop in the hardwood timber supply in the last third of this century, unless greater efforts are put forth in the management of the hardwoods.

POTENTIAL AVAILABLE CUT

A second projection was made to obtain estimates of the potential available cut, based on an assumption that both the inventory and growth of timber could be increased over the next 50 years through accelerated timber management of South Carolina's forest land. Results from this projection indicate a potential available cut from growing stock of about 940 million cubic feet by the year 2000. This estimate of potential cut can be compared to the prospective estimate of 830 million cubic feet.

To sustain an annual cut of 940 million cubic feet on 12.4 million acres of commercial forest land would require that net annual growth average about 75 cubic feet per acre. This is not an unrealistic growth rate according to the site data collected in South Carolina, and is perhaps a conservative estimate of potential growth if the gains that could be made through accelerated timber management, including tree improvement and forest fertilization programs, are considered. To achieve this growth rate by the year 2000, however, would certainly call for an intensification of forest management, particularly on the private, nonindustrial forest lands. As mentioned earlier, net annual growth of growing stock now averages less than 55 cubic feet per acre on all ownerships, and less than 50 cubic feet per acre on the private, nonindustrial timberlands.

TIMBER AVAILABILITY

It is unfortunate, yet understandable, that Forest Survey cannot provide a direct measure of the volume of timber available to industry. It must be remembered that the survey is designed to measure the physical attributes of the total timber resource, rather than the owners' attitudes concerning the disposition of their timber. The projections presented in this report provide estimates of total available cut; however, many complex and interacting factors will determine how much of this timber will actually be available to industry at any given time. Of course, one of these factors will be the timber owners' willingness to sell the timber they grow. As the population continues to increase and people have more leisure time, the aesthetic value and recreational uses of the forests will also grow. One likely result of these trends is that more and more owners will tend to withhold their timber from the markets in favor of nontimber uses, unless the concept of multiple use is more widely accepted and practiced.

Some timber is not economically available because of location, low volumes per acre, small size, or undesirable characteristics. Tables 31, 32, and 33 in the appendix are presented to help answer some of the questions concerning availability and operability. For example, only about half of the commercial forest land in South Carolina has 1,500 or more board feet of sawtimber per acre. Some saw-log producers might consider all other areas inoperable because of the low volume per acre. Furthermore, about 30 percent of the forest land with 1,500 or more board feet per acre is found in deep swamps, bays, stream margins, mountains, or other physiographic classes where accessibility and logging conditions might further affect the availability of the timber. With the current trend toward increased mechanization in timber harvesting to offset increasing labor costs, it will likely become more difficult to channel all of the available timber into the supply stream. In other words, it may not be practical or profitable to operate some of the more sophisticated and expensive equipment in scattered stands with low volumes or in some of the more inaccessible areas. Before the end of this century, the forest may be planned to facilitate the harvest rather than the harvest planned to fit the forest. In contrast with this line of thought, however, many timber managers strongly advise management systems that will yield the greatest fiber growth, and depend upon the engineers to develop the necessary harvesting machinery.

Finally, timber quality rather than timber quantity often determines availability, particu-

larly in the case of hardwoods. Although the movement has been toward the production of the greatest quantity of wood fiber over the shortest period of time, there will continue to be a demand for wood with certain characteristics found only in some of the preferred hardwood species. These woods bring premium prices wherever they can be found; however, low prices paid for hardwood stumpage in general contribute to the hardwood availability problem. The statistics clearly explain why some of the hardwood users are experiencing difficulty in procuring an adequate supply of timber from an inventory that totals 8.1 billion cubic feet. First of all, 24 percent, or almost 2.0 billion cubic feet, is in trees that do not qualify as growing stock because of internal rot, roughness, poor form, or species. Most of this material is suitable only for fiber products, fuelwood, or other local consumption. Another 23 percent, or 1.9 billion cubic feet, is in trees too small for sawtimber. When another 6 percent is deducted for volume in the upper-stem portions of sawtimber trees, less than half of the original total remains. This means that the maximum volume of hardwood in the present inventory that can be manufactured into lumber, ties, timbers, and veneer is less than 3.8 billion cubic feet. If the product specifications call for grade 1 and 2 logs, the maximum available volume drops to about 1.5 billion cubic feet. In spite of the high grading that has occurred in the harvesting of so many hardwood stands, the findings indicate some improvement in the quality of hardwood since the previous survey. For example, in 1958, only about 30 percent of the hardwood sawtimber volume met the specifications for log grades 1 and 2, compared to about 40 percent in this latest survey. In conclusion, it may be that technology will minimize the need for top quality timber; however, it seems likely that both intensified forest management to improve timber quality and research to improve wood utilization will be economically desirable in the foreseeable future.

EXPANSION OF FOREST INDUSTRIES

The Forest Survey findings indicate that the timber resource in South Carolina can support further expansion of existing forest industries or the establishment of new forest industries that can use pine and low-quality hardwood in some areas. Careful attention should be given to the county data provided in the three Unit reports before new plant locations are selected. Until more favorable trends develop, a more cautious approach is recommended in any major expansion of forest industry which will require large quantities of quality hardwood. In any eventuality, the momentum generated in improving the timber supply in South Carolina will need to be sustained.

Management Opportunities

In the earlier chapters of this report, the objectives have been to describe trends in the timber supply and timber products output and to evaluate the timber supply outlook in South Carolina. The findings substantiate the improvement made in the timber supply since the previous survey, but also emphasize the fact that there is still a wide gap between the current and potential annual growth of timber. Although the recommendation of specific treatments and programs falls outside the scope of Forest Survey and this report, this chapter will present some of the opportunities for increasing timber production as suggested by the Survey findings.

If the total area of commercial forest land, by forest type, in South Carolina is broken down into proportions occupied by the various tree classes and sizes, a broad picture of needed action unfolds (table V). This analysis shows that desirable trees occupy 35 percent of the growing space; acceptable trees 32 percent; and that the remaining 33 percent is either nonstocked or occupied by rough trees, rotten trees, and inhibiting vegetation. The analysis further shows that desirable sawtimber trees occupy only about 14 percent of the total growing space.

STOCKING COULD BE GREATLY IMPROVED

To achieve potential growth, stands must be adequately stocked with growing-stock trees. The findings show that over one-half of the commercial forest land in South Carolina is fully stocked with live trees, but that only 1 acre in 6 is fully stocked with growing stock.

Table V.—*Commercial forest area by major type of action suggested by current spatial occupancy, by forest type, 1968*

Type of action suggested	Commercial forest area		Current forest type			
			Pine	Oak-pine	Upland hardwood	Bottomland hardwood
	Percent	*Thousand acres*				
No treatment needed:						
Sawtimber	13.6	1,684.0	653.2	290.1	271.7	469.0
Poletimber	7.7	962.3	449.9	161.9	214.0	136.5
Sapling and seedling	13.5	1,672.6	1,013.0	296.8	268.7	94.1
Total	34.8	4,318.9	2,116.1	748.8	754.4	699.6
Stand improvement:						
Sawtimber	15.1	1,876.0	847.0	293.1	301.2	434.7
Poletimber	11.2	1,392.2	788.8	203.6	254.4	145.4
Sapling and seedling	5.6	690.8	398.2	120.3	134.8	37.5
Total	31.9	3,959.0	2,034.0	617.0	690.4	617.6
Regeneration:						
Without site preparation	8.7	1,079.7	561.3	161.7	242.6	114.1
With site preparation	24.6	3,053.1	812.9	597.3	970.0	672.9
Total	33.3	4,132.8	1,374.2	759.0	1,212.6	787.0
Total	100.0	12,410.7	5,524.3	2,124.8	2,657.4	2,104.2

About one-fourth of the growing space is occupied with rough trees, rotten trees, and other inhibiting vegetation, which are producing an estimated 90 million cubic feet of low-grade growth each year. Although this growth produces wood fiber, the material is of limited use and is considered a liability rather than an asset to the future timber supply. Another 8 to 10 percent of the growing space within the commercial forests is nonstocked with trees of any kind, and therefore is contributing no growth whatsoever. Altogether then, about one-third of the growing space, or 4.1 million acres of commercial forest, is either nonstocked or occupied with rough trees, rotten trees, and other inhibiting vegetation. If these 4.1 million acres were fully stocked with desirable trees, they could contribute an additional 300 million cubic feet of growth annually. This will not happen under natural conditions, but will require site preparation and regeneration.

The remaining two-thirds of the growing space, 8.3 million acres, is occupied with growing-stock trees; however, about half of these trees do not qualify as desirable, or crop trees, because of defects and characteristics which limit their present or prospective use for timber products. For this reason, thinning and other stand improvement to favor the better-quality trees and more desirable species could greatly improve the quality and value, and to some extent the quantity, of timber produced.

PART OF THE IDLE FARMLAND SHOULD BE PLANTED WITH TREES

The findings show that there are about 850,000 acres of idle farmland in South Carolina. Some of this land may be returned to crops and improved pasture and some will be used for urban development, but in the past much of this land was allowed to revert to forest. The prompt planting of these idle acres to trees provides a faster and more direct opportunity for increasing the timber supply. If only half of this idle farmland were planted with tree species suitable to the local site conditions over the next few years, it could increase the annual growth of timber by over 30 million cubic feet by the year 2000. The opportunity for increasing forest acreage is most apparent in the Piedmont, where there are over one-half million acres of idle farmland. As the demand grows for nonforest land use, the opportunity for increasing the timber supply by expanding the forest acreage is likely to diminish.

MORTALITY LOSS COULD BE FURTHER REDUCED

In 1967, almost 68 million cubic feet of growing stock was lost to mortality. Although this is less than half the volume of mortality reported in the previous Forest Survey, it still represents a substantial loss of potential timber growth each year—about 10 percent of the gross growth in 1967. Much of the mortality is so widely scattered throughout the stands that very little is salvaged in the course of normal harvest operations. No single primary cause of death stands out above all others, with the possible exception of littleleaf disease on shortleaf pine in the Piedmont. There, on managed stands, losses have been reduced by favoring loblolly pine over shortleaf pine on known littleleaf sites. Generally, fire, insects, disease, suppression, weather, and other natural destructive agents all take a toll; and it is not until the losses are added together that the full impact of mortality is realized.

Because of the excellent fire control in South Carolina over the past decade, timber losses to wildfire have been confined to relatively small areas, with few exceptions (table VI). All forest lands in the State are protected from fire; and the success of the program has reduced, but not eliminated, the risk of widespread loss. Continued cooperation from the general public, particularly during prolonged periods of

Table VI.—*Forest area under fire protection, protected area burned, number of fires, and average size of fires, South Carolina, 1957-1967*[1]

Year	Forest area protected		Protected area burned		Fires	Average size of fires
	Thousand acres	*Percent*	*Thousand acres*	*Percent*	*Number*	*Acres*
1957	11,797	100	39	0.33	3,305	12
1958	11,795	100	28	0.24	3,593	8
1959	11,794	100	31	0.26	3,458	9
1960	11,798	100	45	0.38	4,034	11
1961	11,798	100	57	0.48	4,655	12
1962	11,796	100	45	0.38	3,988	11
1963	11,796	100	77	0.66	5,718	14
1964	12,687	100	29	0.23	2,733	11
1965	12,693	100	41	0.33	3,882	11
1966	12,698	100	138	1.09	4,940	28
1967	12,698	100	83	0.65	5,107	16

[1] Source: U. S. Department of Agriculture, Forest Service, *Forest Fire Statistics, 1957-1967.*

drought, is essential to protect and encourage the efforts required for intensive timber management. In contrast to wildfire, prescribed or controlled burning is a valuable tool in timber protection and management, but it must be applied with caution and skill and only under appropriate conditions.

Some mortality losses are inevitable, and perhaps the greatest opportunities for holding them to a minimum over the long run are to be found in the indirect approaches to the protection problem. In other words, it is probably best to adjust management plans and silvicultural practices to reduce the risks of widespread mortality, rather than to rely so heavily upon the direct control of the damaging agents. For example, in regeneration efforts, it is important that the tree species be properly matched with the site and that, subsequently, proper spacing within the stand be maintained throughout the rotation. Once mortality occurs, however, direct control and salvage operations must be quickly implemented to confine the spread and reduce losses.

TIMBER UTILIZATION COULD BE IMPROVED

Another opportunity for conserving the timber supply is to produce more products from the same amount of timber through improved harvesting practices and manufacturing techniques. Much progress has been made in using plant residues and harvesting more of the timber on logging operations; however, the waste of usable wood fiber is still apparent. For example, in 1967, combined logging and plant residues totaled 66 million cubic feet, and other removals resulted in the loss of another 32 million cubic feet of unused growing stock. If only half of this wood fiber were used for products, the annual output of timber products could be increased by 10 percent without any increase in timber removals.

TREE IMPROVEMENT AND FOREST FERTILIZATION

Beyond the opportunities available for increasing the timber supply in South Carolina through a more intense application of the proved and conventional management, protection, and utilization practices, some of the newer and bolder ideas certainly merit mention in this report. There is a growing interest in the possibilities which improved genetic stock and forest fertilization offer. It is not the intent here to segregate tree improvement and forest fertilization from stand density control and the other aspects of intensive silviculture, but to treat them in proper perspective in terms of the knowledge available.

Tree improvement efforts are not new in forestry, but progress in improving the genetic makeup of trees has been slower than the progress in food and other fiber plants. The wide-scale use of forest fertilization as a practical means of increasing timber yields, however, is relatively new. Neither of the treatments necessarily has to accompany the other, but the objective in their application would generally be the same—to grow more wood on fewer acres and on a shorter rotation.

At the risk of oversimplification, it can be stated that the basic concept in tree improvement is that trees with superior external and internal characteristics can be propagated through the proper choice in seed selection and planting stock. The basic concept in forest fertilization is that on certain sites it is economically feasible to speed up timber growth without sacrificing desirable tree characteristics, through the wide-scale application of fertilizers. It is certainly conceivable that forest geneticists will develop strains of trees with a high response to fertilizers, and whose rapid growth will not be offset by reduced specific gravity or other adverse effects. Forest fertilization might then become almost as common as site preparation and planting.

CULTIVATE MORE INTEREST IN THE PRODUCTION OF TIMBER

In conclusion, perhaps the greatest opportunity for perpetuating and improving the timber supply in South Carolina is to promote more interest among private, nonindustrial forest owners in growing timber. Collectively, these people own three-fourths of the commercial forest land, and their actions and attitudes hold the key to any substantial increase in the timber supply simply because of the large share of productive forest land involved and the economic location of these holdings. Some of these owners, for various reasons, are simply not interested in growing timber for the markets; however, many others are willing to make the

necessary investments for improving the management of their forests. Where such interest and willingness are found, it is important that the owner or forest manager have access to the best professional advice and silvicultural knowledge available so that there can be optimum returns from the investment. Major forestry programs must be flexible enough to encompass both the timber and nontimber interests among the private landowners.

Appendix

SURVEY PROCEDURE

The basic data presented in this report were obtained by a sampling procedure designed for use, with some regional variation, by Forest Survey units throughout the Nation. The method of survey is intended to provide reliable statistics primarily at the State level, and to assure that these statistics have a certain degree of comparability with similar data collected across the Nation. The basic steps of the procedure used in South Carolina were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 106,887 sample points systematically spaced on the latest aerial photographs available.

2. The initial estimates of area by land-use class were either verified or adjusted on the basis of a ground check at 6,501 of these sample points.

3. Estimates of timber volume and forest classifications were based on measurements recorded at 4,230 of the ground check locations which fell within commercial forest land. A 10-point cluster of plots systematically spaced on an acre was measured at each of these sample locations using a basal area factor of 37.5 square feet per acre. Trees less than 5.0 inches d.b.h. were tallied on fixed-radius plots around the point centers.

4. Equations prepared from detailed measurements collected on the trees tallied at one out of every 20 sample locations were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations. The same 5-percent subsample of plots used for the tree-volume study also served as a quality control of field measurements. Felled trees were measured at approximately 100 active cutting operations to provide utilization factors for product and species groups and to supplement the standing tree-volume study.

5. Some 3,646 permanent sample plots established in 1956 and 1957 were reconstructed, and their remeasurement provided the primary estimates of growth, removal, and mortality. A 1967 survey of timber products output, conducted by the South Carolina State Commission of Forestry and Clemson University Extension Service foresters, along with the annual pulpwood production study in the South, provided additional information for breakdowns of removals by product.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched in cards and stored on magnetic tape for computer processing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

ACCURACY OF THE SURVEY

Statistical analysis of the data indicates a sampling error of ±0.5 percent for the estimate of total forest area, 1.5 percent for total cubic volume, and 1.3 percent for total cubic-volume growth. At the State level, the cubic-foot removal estimates are consistent with the growth figures and the changes in inventory over the remeasurement periods. As the totals are broken down by forest type, species, tree diameter, and other subdivisions, the sampling error increases. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable, in terms of one standard error, or two chances out of three.

Forest area	Sampling error [1]	Cubic volume	Sampling error [1]	Net cu.-ft. growth	Sampling error [1]
Thousand acres	*Percent*	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Percent*
12,493.6	0.5				
3,123.4	1.0	12,250.9	1.5	654.5	1.3
780.8	2.0	6,891.1	2.0	276.5	2.0
347.0	3.0	3,062.7	3.0	122.9	3.0
195.2	4.0	1,722.8	4.0	69.1	4.0
124.9	5.0	1,102.6	5.0	44.2	5.0
31.2	10.0	275.6	10.0	11.1	10.0
13.9	15.0	122.5	15.0	4.9	15.0
7.8	20.0	68.9	20.0	2.8	20.0
5.0	25.0	44.1	25.0	1.8	25.0

[1] By random-sampling formula.

DEFINITIONS OF TERMS

Acceptable trees.—Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Available cut.—The volume of timber that would be available for cutting on commercial forest land during a given period under specified assumptions concerning growth, cut, mortality, and forest management practices.

Basal area.—The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.—Tree species suitable for industrial wood products.

Cropland.—Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.—Growing-stock trees of commercial species having no serious defects in quality that limit present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.—A classification of trees based on diameter outside bark, measured at breast height (4½ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.00 through 6.99 inches d.b.h., inclusive.

Farm.—Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.—A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.—Lands owned by farm operators.

Forest-industry lands.—Lands owned by companies or individuals operating wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.—A classification of forest land based upon the species forming a plurality of live-tree stocking.

White pine-hemlock.—Forests in which eastern white pine or hemlock, singly or in combination, comprises a plurality of the stocking. (Common associates include birch and maple.)

Longleaf-slash pine.—Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.—Forests in which upland oaks or hickory, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 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 tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 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 elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.—Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.—Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.—Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hack-

berry, loblolly-bay, silverbell (in mts.), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.—Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.—Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.—All roundwood products except fuelwood.

Ingrowth.—The number or net volume of trees that grow large enough during a specified year to qualify as saplings, poletimber, or sawtimber.

Inhibiting vegetation.—Cover sufficiently dense to prevent the establishment of tree seedlings.

Land area.

Bureau of the Census.—The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, resorvoirs, and ponds less than 40 acres in area.

Forest Survey.—The same as the Bureau of the Census, except minimum width of streams, etc., is 120 feet, and minimum size of lakes, etc., is 1 acre.

Log grade.—A classification of logs based on external characteristics as indicators of quality or value.

Logging residues.—The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.—Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands—corporate.—Lands owned by private corporations other than forest industry.

Miscellaneous private lands—individual.—Privately owned lands other than forest industry, farmer-owned, or corporate lands.

Mortality.—Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.—Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.—The increase in volume for a specific year.

Net volume.—Gross volume of wood less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests and lands formerly forested where timber production is precluded by development for other uses.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

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

Other public lands.—Publicly owned lands other than National Forests.

Other removals.—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber stand improvement, land clearing, and other changes in land use that result in the removal of the trees from the commercial forest.

Overstocked areas.—Areas where growth of trees is significantly reduced by excessive numbers of trees.

Plant byproducts.—Wood products, such as pulp chips, obtained incidental to production of other manufactured products.

Plant residues.—Wood materials from manufacturing plants not utilized for some product.

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Quality class.—A classification of sawtimber volumes by log or tree grades.

Rangeland.—Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.—(a) Live trees of commercial species that do not contain at least one 12-foot saw log now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Roundwood products.—Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Salvable dead trees.—Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.—Live trees 1.0 inch to 5.0 inches in diameter at breast height.

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.—That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.—Live trees of commercial species containing at least a 12-foot saw log and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.—Net volume of the saw-log portion of live sawtimber in board-foot International ¼-inch rule.

Seedlings.—Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.—Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.—Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.—Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.—Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.—Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.—Yellow pine species which include loblolly, longleaf, slash, pond, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.—White pine, hemlock, cypress, eastern redcedar, whitecedar, spruce, and fir.

Stand-size class.—A classification of forest land based on the diameter class of growing-stock trees on the area.

Sawtimber stands.—Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber and poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.—Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.—Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.—The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard of approximately 75 square feet of basal area per acre, depending on tree size, to fully utilize the growth potential of the land.

Fully stocked.—100 percent or more stocking

Medium stocked.—60 to 100 percent stocking

Poorly stocked.—Less than 60 percent stocking

Survivor growth.—The increase in volume of growing-stock trees that survive cutting and mortality for a specified year.

Timber products.—Roundwood products and plant byproducts.

Timber removals.—The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.—Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.—That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.—Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

CONVERSION FACTORS

Cubic feet of wood per average cord (excluding bark)

D.b.h.	Pine	Other softwoods	Hardwood
6	60.9	68.1	59.6
8	68.0	76.2	68.2
10	72.9	81.2	73.2
12	76.5	85.2	76.3
14	79.3	88.0	78.3
16	81.5	90.3	79.7
18	83.2	92.2	80.7
20	84.7	93.6	81.5
22	86.7	96.1	82.5
24+	90.0	100.5	83.8
Average	74.2	86.3	74.9

Rough cords per M cubic feet (without bark) $= a + b\left(\frac{1}{\text{D.b.h.}}\right) + c\left(\frac{1}{\text{D.b.h.}}\right)^2$

Where		*Pine*	*Other softwoods*	*Hardwood*
a	=	10.01850	9.15960	11.68410
b	=	34.42135	28.75793	3.74431
c	=	22.73994	25.54418	157.39417

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Table 1.—*Area by land classes, South Carolina, 1968*

Land class	Area
	Thousand acres
Forest land:	
Commercial	12,410.7
Productive-reserved	70.3
Unproductive	12.6
Total	12,493.6
Nonforest land:	
Cropland	4,033.7
Pasture and range	1,027.2
Other [1]	1,811.5
Total	6,872.4
All land [2]	19,366.0

[1] Includes swampland, industrial and urban areas, other nonforest land, and 191,700 acres classed as water by Forest Survey standards but defined by Bureau of Census as land.

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

Table 2.—*Area of commercial forest land, by ownership classes, South Carolina, 1968*

Ownership class	Area
	Thousand acres
National Forest	550.9
Other Federal:	
Bureau of Land Management	...
Indian	...
Miscellaneous Federal	289.6
Total other Federal	289.6
State	205.8
County and municipal	26.9
Forest industry [1]	2,047.4
Farmer-owned	4,995.6
Miscellaneous private:	
Individual	3,963.4
Corporate	331.1
Total miscellaneous private	4,294.5
All ownerships	12,410.7

[1] Not including 9,100 acres of farmer-owned and miscellaneous private lands leased to forest industry.

Table 3.—*Area of commercial forest land, by stand-size and ownership classes, South Carolina, 1968*

Stand-size class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
	Thousand acres				
Sawtimber	4,907.6	368.0	213.6	880.0	3,446.0
Poletimber	3,455.2	136.9	132.9	511.4	2,674.0
Sapling and seedling	3,649.4	46.0	153.4	613.6	2,836.4
Nonstocked	398.5	...	22.4	42.4	333.7
All classes	12,410.7	550.9	522.3	2,047.4	9,290.1

Table 4.—*Area of commercial forest land, by stand-volume and ownership classes, South Carolina, 1968*

Stand volume per acre [1]	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
	Thousand acres				
Less than 1,500 board feet	6,046.9	71.3	262.2	927.4	4,786.0
1,500 to 5,000 board feet	3,864.9	208.2	151.6	573.3	2,931.8
More than 5,000 board feet	2,498.9	271.4	108.5	546.7	1,572.3
All classes	12,410.7	550.9	522.3	2,047.4	9,290.1

[1] International ¼-inch rule.

Table 5.—*Area of commercial forest land, by stocking classes based on selected stand components, South Carolina, 1968*

Stocking percentage	Stocking classified in terms of:					
	All live trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
	Thousand acres					
160	40.0	...	...	...	...	...
150-159	97.0	9.3	...	...	...	...
140-149	212.0	43.7	...	2.6	...	...
130-139	606.7	136.6	4.3	7.4	...	...
120-129	1,271.2	280.7	4.8	25.4	7.6	...
110-119	2,119.1	587.5	11.8	68.8	28.1	...
100-109	2,416.4	1,014.2	69.2	123.7	37.7	...
90-99	1,921.9	1,490.5	124.3	194.6	86.0	...
80-89	1,481.3	2,020.7	346.6	313.8	70.1	...
70-79	869.5	1,830.4	648.1	486.1	128.2	...
60-69	581.1	1,540.2	973.6	862.5	323.4	5.8
50-59	298.8	1,268.2	1,456.1	1,094.9	611.1	24.1
40-49	194.1	812.8	1,912.8	1,617.2	1,109.9	38.5
30-39	120.2	501.0	1,985.5	2,001.0	1,839.5	74.1
20-29	96.3	408.3	1,980.1	2,126.5	2,490.4	171.3
10-19	42.9	228.8	1,685.5	1,872.6	2,960.1	450.4
Less than 10	42.2	237.8	1,208.0	1,613.6	2,718.6	11,646.5
Total	12,410.7	12,410.7	12,410.7	12,410.7	12,410.7	12,410.7

Table 6.—*Area of commercial forest land, by ownership and stocking classes,[1] with percent occupancy by selected stand components, South Carolina, 1968*

Ownership and stocking class	Area	Stand components					
		Growing-stock trees			Rough and rotten trees	Inhibiting vegetation	Nonstocked
		Total	Desirable	Acceptable			
	M acres	*Percent of area*					
National Forest:							
Fully stocked stands	182.2	89.5	36.0	53.5	10.1	[2]	0.4
Medium stocked stands	269.1	76.3	36.5	39.8	18.9	0.9	3.9
Poorly stocked stands	99.6	48.7	20.4	28.3	26.3	4.3	20.7
All stands	550.9	76.6	33.8	42.8	16.9	1.2	5.3
Other public:							
Fully stocked stands	82.3	92.1	38.7	53.4	7.7	[2]	0.2
Medium stocked stands	276.4	74.3	40.5	33.8	18.8	0.9	6.0
Poorly stocked stands	163.6	33.8	17.2	16.6	41.3	1.5	23.4
All stands	522.3	65.2	33.2	32.0	23.6	0.9	10.3
Forest industry:							
Fully stocked stands	480.4	88.8	40.4	48.4	10.8	0.2	0.2
Medium stocked stands	1,206.1	73.2	41.1	32.1	20.5	1.0	5.3
Poorly stocked stands	360.9	39.6	23.2	16.4	33.5	4.2	22.7
All stands	2,047.4	71.3	37.8	33.5	20.3	1.3	7.1
Farmer & misc. private:							
Fully stocked stands	1,327.1	89.2	43.9	45.3	10.1	0.1	0.6
Medium stocked stands	5,130.2	72.6	38.4	34.2	21.3	1.0	5.1
Poorly stocked stands	2,832.8	37.7	20.8	16.9	37.4	3.5	21.4
All stands	9,290.1	65.0	34.1	30.9	24.2	1.6	9.2
All ownerships:							
Fully stocked stands	2,072.0	89.3	42.1	47.2	10.2	0.1	0.4
Medium stocked stands	6,881.8	72.9	39.0	33.9	20.9	1.0	5.2
Poorly stocked stands	3,456.9	38.0	20.9	17.1	36.8	3.5	21.7
All stands	12,410.7	66.7	34.8	31.9	23.1	1.5	8.7

[1] Based on degree of growing-stock stocking.
[2] Negligible.

Table 7.—*Area of commercial forest land, by site and ownership classes, South Carolina, 1968*

Site class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
	Thousand acres				
165 cu. ft. or more	23.2	...	...	7.8	15.4
120 to 165 cu. ft.	274.0	25.4	4.0	49.6	195.0
85 to 120 cu. ft.	2,145.5	123.5	53.0	500.5	1,468.5
50 to 85 cu. ft.	7,429.2	340.2	298.5	1,161.2	5,629.3
Less than 50 cu. ft.	2,538.8	61.8	166.8	328.3	1,981.9
All classes	12,410.7	550.9	522.3	2,047.4	9,290.1

Table 8.—*Area of commercial forest land, by forest types and ownership classes, South Carolina, 1968*

Type	All ownerships	Public	Private
	Thousand acres		
Softwood types:			
White pine-hemlock	8.7	...	8.7
Longleaf pine	507.3	118.9	388.4
Slash pine	574.2	72.6	501.6
Loblolly pine [1]	2,916.5	327.6	2,588.9
Shortleaf pine	875.0	102.1	772.9
Virginia pine	162.6	10.9	151.7
Redcedar	90.0	1.2	88.8
Pond pine	385.4	40.7	344.7
Pitch pine	4.6	...	4.6
Total	5,524.3	674.0	4,850.3
Hardwood types:			
Oak-pine	2,124.8	154.0	1,970.8
Oak-hickory	2,300.5	98.5	2,202.0
Southern scrub oak	356.9	29.8	327.1
Oak-gum-cypress	1,817.3	83.3	1,734.0
Elm-ash-cottonwood	286.9	33.6	253.3
Total	6,886.4	399.2	6,487.2
All types	12,410.7	1,073.2	11,337.5

[1] Includes 5,600 acres of spruce pine type.

Table 9.—*Area of noncommercial forest land, by forest types, South Carolina, 1968*

Type	All areas	Productive-reserved areas	Unproductive areas
	— — *Thousand acres* — —		
White pine-hemlock	...	...	...
Longleaf-slash pine	3.4	3.4	...
Loblolly-shortleaf pine	2.5	2.5	...
Oak-pine	12.4	12.4	...
Oak-hickory	59.1	50.4	8.7
Oak-gum-cypress	5.5	1.6	3.9
Elm-ash-cottonwood	...	...	...
All types	82.9	70.3	12.6

Table 10.—*Number of growing-stock trees on commercial forest land, by species and diameter classes, South Carolina, 1968*

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand trees										
Softwood:											
Longleaf pine	65,849	22,845	15,869	12,683	8,094	4,071	1,612	493	115	63	4
Slash pine	52,295	37,950	8,925	3,248	1,055	674	316	71	40	16	..
Shortleaf pine	142,678	75,997	38,454	16,416	7,426	2,966	899	354	126	40	..
Loblolly pine	349,740	154,338	77,592	47,560	30,051	18,877	10,949	5,266	2,828	2,212	67
Virginia pine	21,372	11,257	5,666	2,825	1,100	396	72	27	17	12	..
Pitch pine	914	350	343	92	89	15	25	..	..	..	..
Pond pine	48,660	19,525	11,663	7,985	5,280	2,175	1,162	554	192	124	..
Spruce pine	2,320	783	644	268	263	135	82	73	44	28	..
Table-Mountain pine	102	..	41	..	19	..	25	10	7	..	..
Eastern white pine	1,213	466	308	39	252	44	14	28	9	49	4
Eastern hemlock	358	205	84	..	43	..	..	20	..	6	..
Cypress	23,312	6,232	4,671	3,616	3,344	2,370	1,390	831	393	387	78
Other eastern softwoods	11,192	7,728	2,216	835	256	101	24	11	12	9	..
Total softwoods	720,005	337,676	166,476	95,567	57,272	31,824	16,570	7,738	3,783	2,946	153
Hardwood:											
Select white oaks [1]	36,778	15,362	9,147	4,794	3,079	2,028	1,030	606	306	382	44
Select red oaks [2]	9,259	2,505	2,441	1,450	1,027	826	377	247	163	206	17
Other white oaks	20,749	8,569	4,470	3,109	1,664	1,165	721	361	272	338	80
Other red oaks	108,761	45,588	25,840	15,349	8,585	5,208	3,219	2,096	1,134	1,543	199
Hickory	23,601	9,942	5,375	2,747	2,172	1,454	755	543	297	279	37
Hard maple	452	194	41	119	51	30	..	10	7	..	..
Soft maple	29,088	12,763	6,737	3,581	2,364	1,519	934	592	273	307	18
Beech	1,052	253	335	123	48	69	29	104	27	61	3
Sweetgum	111,081	52,421	24,365	12,846	8,718	5,527	3,163	1,812	915	747	67
Tupelo and blackgum	84,093	22,929	18,480	14,856	10,994	7,732	4,802	2,314	1,061	875	50
Ash	18,329	7,574	4,154	2,653	1,657	999	692	321	96	177	6
Cottonwood	2,673	994	451	500	211	192	143	58	35	63	26
Basswood	52	..	..	26	12	..	14	..	..	..	..
Yellow-poplar	22,976	7,447	5,112	3,417	2,717	1,789	1,120	715	352	280	27
Black walnut	217	60	43	62	..	32	..	..	14	6	..
Black cherry	998	676	250	55	10	..	7	..	..	..	..
Elm	13,682	5,072	4,027	2,070	1,083	626	335	246	94	121	8
Sycamore	1,826	251	379	314	330	123	146	119	65	87	12
Birch (except yellow)	4,762	1,624	1,446	580	534	269	97	103	62	47	..
Other eastern hardwoods	10,534	5,087	2,132	1,478	797	454	250	170	94	61	11
Total hardwoods	500,963	199,311	115,725	70,129	46,053	30,042	17,834	10,417	5,267	5,580	605
All species	1,220,968	536,987	282,201	165,696	103,325	61,866	34,404	18,155	9,050	8,526	758

[1] Includes white, swamp white, and swamp chestnut oaks.
[2] Includes cherrybark, northern red, and Shumard oaks.

Table 11.—*Volume of timber on commercial forest land, by class of timber and by softwood and hardwood, South Carolina, 1968*

Class of timber	All species	Softwood	Hardwood
	– – Million cubic feet – –		
Sawtimber trees:			
Saw-log portion	8,049.4	4,283.9	3,765.5
Upper-stem portion	804.4	318.7	485.7
Total	8,853.8	4,602.6	4,251.2
Poletimber trees	3,397.1	1,503.2	1,893.9
All growing stock trees	12,250.9	6,105.8	6,145.1
Rough trees:			
Sawtimber-size trees	714.1	65.5	648.6
Poletimber-size trees	983.2	123.5	859.7
Total	1,697.3	189.0	1,508.3
Rotten trees:			
Sawtimber-size trees	416.9	28.6	388.3
Poletimber-size trees	53.0	1.6	51.4
Total	469.9	30.2	439.7
Salvable dead trees:			
Sawtimber-size trees	10.9	7.3	3.6
Poletimber-size trees	12.1	8.2	3.9
Total	23.0	15.5	7.5
Total, all timber	14,441.1	6,340.5	8,100.6

Table 12.—*Volume of growing stock and sawtimber on commercial forest land, by ownership classes and by softwood and hardwood, South Carolina, 1968*

Ownership class	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	– – Million cubic feet – –			*– – Million board feet [1] – –*		
National Forest	889.9	622.8	267.1	2,951.7	2,292.0	659.7
Other public	500.6	312.8	187.8	1,442.6	989.6	453.0
Forest industry	2,526.0	1,250.6	1,275.4	7,262.1	3,807.0	3,455.1
Farmer and misc. private	8,334.4	3,919.6	4,414.8	23,359.2	12,378.6	10,980.6
All ownerships	12,250.9	6,105.8	6,145.1	35,015.6	19,467.2	15,548.4

[1] International ¼-inch rule.

Table 13.—*Volume of growing stock on commercial forest land, by species and diameter classes, South Carolina, 1968*

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	– Million cubic feet –										
Softwood:											
Longleaf pine	654.2	51.4	92.6	145.1	150.5	113.4	61.4	25.2	7.7	6.1	0.8
Slash pine	214.4	64.4	45.4	38.3	22.5	22.6	13.4	3.6	2.8	1.4	...
Shortleaf pine	786.9	146.3	195.8	165.2	131.3	82.4	36.4	18.3	7.6	3.6	...
Loblolly pine	3,367.8	275.5	400.1	491.2	528.3	519.0	428.3	282.0	198.9	230.1	14.4
Virginia pine	128.1	25.0	33.5	33.2	20.4	10.2	2.7	1.0	1.0	1.1	...
Pitch pine	5.5	0.6	1.6	0.8	1.3	0.5	0.7	...	...	...	...
Pond pine	394.3	37.5	55.1	75.5	84.6	54.7	39.2	25.6	12.0	10.1	...
Spruce pine	30.0	1.5	3.6	2.8	4.9	3.5	3.3	4.4	3.1	2.9	...
Table-Mountain pine	2.4	...	0.3	...	0.4	...	0.8	0.4	0.5	...	...
Eastern white pine	18.1	0.9	1.8	0.4	4.7	1.3	0.5	1.5	0.6	5.7	0.7
Eastern hemlock	3.4	0.3	0.4	...	1.1	...	...	0.9	...	0.7	...
Cypress	455.8	13.9	29.4	46.7	74.8	79.5	64.5	50.2	30.6	44.8	21.4
Other eastern softwoods	44.9	15.2	11.1	8.4	4.6	2.6	0.7	0.5	0.9	0.9	...
Total softwoods	6,105.8	632.5	870.7	1,007.6	1,029.4	889.7	651.9	413.6	265.7	307.4	37.3
Hardwood:											
Select white oaks [1]	403.0	32.2	52.0	52.9	60.0	58.8	42.3	32.8	20.5	40.5	11.0
Select red oaks [2]	140.5	6.0	13.7	15.9	18.3	22.6	14.3	12.9	11.2	22.1	3.5
Other white oaks	240.5	16.4	21.9	29.2	26.6	29.0	25.5	16.9	16.4	38.1	20.5
Other red oaks	1,285.0	101.2	145.6	171.1	164.9	150.4	129.2	115.1	83.1	174.1	50.3
Hickory	283.3	19.2	26.1	29.1	39.3	43.0	31.4	30.4	22.0	33.5	9.3
Hard maple	4.3	0.5	0.2	1.0	0.8	0.9	...	0.3	0.6	...	...
Soft maple	346.4	31.9	43.4	45.6	47.4	48.6	39.0	34.8	20.2	32.1	3.4
Beech	24.2	0.5	1.7	1.5	0.9	1.9	1.2	6.1	1.8	7.8	0.8
Sweetgum	1,165.0	102.0	139.4	150.7	180.0	175.2	137.6	105.6	71.2	86.5	16.8
Tupelo and blackgum	1,258.4	45.7	105.3	177.3	217.7	232.1	193.1	124.3	72.5	81.3	9.1
Ash	221.9	17.7	28.1	34.8	35.6	31.2	28.6	19.0	6.8	18.9	1.2
Cottonwood	54.3	2.5	3.0	6.5	4.8	6.2	7.0	3.6	3.0	8.4	9.3
Basswood	1.0	...	...	0.2	0.2	...	0.6	...	...	...	...
Yellow-poplar	350.5	18.1	31.3	42.2	55.2	52.7	47.7	41.0	25.0	30.2	7.1
Black walnut	3.6	0.2	0.5	0.7	...	0.7	...	...	1.2	0.3	...
Black cherry	4.7	1.8	1.5	0.7	0.2	...	0.5	...	...	...	...
Elm	154.7	11.1	23.1	24.7	21.5	19.2	14.7	15.5	7.1	15.3	2.5
Sycamore	45.6	0.6	2.5	3.9	6.5	3.6	6.3	6.5	4.4	9.0	2.3
Birch (except yellow)	54.4	3.5	9.3	6.3	10.0	7.5	3.8	5.3	3.9	4.8	...
Other eastern hardwoods	103.8	11.1	11.6	17.2	14.9	12.7	10.3	9.6	6.5	7.6	2.3
Total hardwoods	6,145.1	422.2	660.2	811.5	904.8	896.3	733.1	579.7	377.4	610.5	149.4
All species	12,250.9	1,054.7	1,530.9	1,819.1	1,934.2	1,786.0	1,385.0	993.3	643.1	917.9	186.7

[1] Includes white, swamp white, and swamp chestnut oaks.
[2] Includes cherrybark, northern red, and Shumard oaks.

Table 14.—*Volume of sawtimber on commercial forest land, by species and diameter classes, South Carolina, 1968*

Species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Million board feet								
Softwood:									
Longleaf pine	2,285.2	591.1	678.9	532.0	294.6	122.2	35.6	27.3	3.5
Slash pine	400.9	129.3	89.4	93.9	55.3	15.8	11.6	5.6	...
Shortleaf pine	1,810.6	613.4	541.4	359.1	163.4	84.3	32.8	16.2	...
Loblolly pine	11,543.1	1,788.3	2,193.7	2,275.3	1,932.4	1,293.5	917.3	1,076.4	66.2
Virginia pine	244.7	112.7	75.6	36.6	9.6	2.8	3.6	3.8	...
Pitch pine	12.6	2.6	5.2	2.3	2.5	...	...	...	...
Pond pine	1,288.3	285.5	353.1	244.8	180.9	120.4	56.2	47.4	...
Spruce pine	92.9	8.8	17.8	12.0	12.7	17.2	12.3	12.1	...
Table-Mountain pine	7.8	...	1.2	...	3.3	1.4	1.9	...	...
Eastern white pine	64.0	0.7	17.1	5.6	1.7	7.0	2.8	26.0	3.1
Eastern hemlock	12.5	...	4.6	...	...	4.5	...	3.4	...
Cypress	1,644.5	139.9	264.2	318.4	273.0	224.0	137.6	197.5	89.9
Other eastern softwoods	60.1	25.8	14.9	9.2	2.5	1.8	2.1	3.8	...
Total softwoods	19,467.2	3,698.1	4,257.1	3,889.2	2,931.9	1,894.9	1,213.8	1,419.5	162.7
Hardwood:									
Select white oaks [1]	885.6	...	176.4	199.5	147.9	114.3	71.5	140.8	35.2
Select red oaks [2]	401.7	...	61.9	82.7	56.9	52.3	43.2	91.5	13.2
Other white oaks	604.9	...	86.5	101.3	87.3	60.2	57.4	135.7	76.5
Other red oaks	3,180.3	...	522.6	536.6	489.5	434.0	317.3	680.8	199.5
Hickory	766.4	...	125.4	158.6	114.3	115.0	82.8	133.0	37.3
Hard maple	8.0	...	2.8	2.8	...	0.4	2.0	...	...
Soft maple	718.2	...	128.7	147.9	133.0	116.4	69.2	114.2	8.8
Beech	67.0	...	2.5	6.0	3.1	20.1	6.1	26.5	2.7
Sweetgum	3,090.1	...	585.5	689.7	585.7	468.7	312.5	372.5	75.5
Tupelo and blackgum	3,303.5	...	629.4	813.1	721.2	484.7	291.2	324.9	39.0
Ash	477.4	...	96.4	108.7	99.8	68.4	26.2	72.9	5.0
Cottonwood	157.8	...	13.4	21.7	25.1	14.0	12.6	32.2	38.8
Basswood	3.6	...	0.9	...	2.7	...	...	...	...
Yellow-poplar	1,064.5	...	184.0	209.0	212.7	179.8	110.9	137.0	31.1
Black walnut	8.7	...	...	3.0	...	...	4.5	1.2	...
Black cherry	2.3	...	0.4	...	1.9	...	...	...	...
Elm	330.2	...	64.7	63.6	52.0	55.8	25.8	57.8	10.5
Sycamore	146.0	...	20.9	10.5	26.4	23.6	18.8	38.1	7.7
Birch (except yellow)	100.5	...	24.6	21.6	11.8	14.7	11.7	16.1	...
Other eastern hardwoods	231.7	...	42.9	41.8	39.5	36.6	25.6	36.3	9.0
Total hardwoods	15,548.4	...	2,769.9	3,218.1	2,810.8	2,259.0	1,489.3	2,411.5	589.8
All species	35,015.6	3,698.1	7,027.0	7,107.3	5,742.7	4,153.9	2,703.1	3,831.0	752.5

[1] Includes white, swamp white, and swamp chestnut oaks.
[2] Includes cherrybark, northern red, and Shumard oaks.

Table 15.—*Volume of sawtimber on commercial forest land, by species and quality classes, South Carolina, 1968*

Species	All grades	Log or tree grade			
		1	2	3	4
	Million board feet				
Softwood:					
Yellow pines [1]	17,686.1	4,643.1	3,059.9	9,983.1	(2)
Eastern white pine [3]	64.0	...	8.7	33.8	21.5
Other eastern softwoods [3]	1,717.1	330.6	608.8	770.6	7.1
Total	19.467.2	4,973.7	3,677.4	10,787.5	28.6
Hardwood: [4]					
Select white and red oaks	1,287.3	193.2	300.6	565.6	227.9
Other white and red oaks	3,785.2	631.4	795.2	1,673.3	685.3
Hickory	766.4	97.9	154.8	360.1	153.6
Hard maple	8.0	..	1.5	2.8	3.7
Sweetgum	3,090.1	423.8	732.7	1,484.7	448.9
Ash, walnut, and black cherry	488.4	66.4	129.5	267.0	25.5
Yellow-poplar	1,064.5	165.6	182.2	444.8	271.9
Other hardwoods	5,058.5	1,013.7	1,136.0	2,628.1	280.7
Total	15,548.4	2,592.0	3,432.5	7,426.4	2,097.5
All species	35,015.6	7,565.7	7,109.9	18,213.9	2,126.1

[1] Based on *Southern Pine Tree Grades for Yard and Structural Lumber*, Research Paper SE-40, published by the Southeastern Forest Experiment Station in 1968.
[2] Not applicable.
[3] Based on *Trial Log Grades for Eastern White Pine* prepared by the Northeastern Forest Experiment Station in 1960.
[4] Graded according to *Hardwood Log Grades for Standard Lumber* published by the U. S. Forest Products Laboratory in 1953. Specifications for the grade 4 tie and timber logs are based chiefly on knot size and log soundness.

Table 16.—*Net annual growth and removals of growing stock on commercial forest land, by species, South Carolina, 1967*

Species	Net annual growth	Annual timber removals
	Million cubic feet	
Softwood:		
Yellow pines	396.5	274.8
Eastern white pine	1.1	3.2
Cypress	10.9	7.7
Other eastern softwoods	3.9	2.0
Total	412.4	287.7
Hardwood:		
Select white and red oaks	24.7	14.3
Other white and red oaks	73.0	29.2
Hickory	9.1	5.0
Hard maple	0.1	0.2
Sweetgum	48.5	36.0
Ash, walnut, and black cherry	7.8	5.1
Yellow-poplar	21.3	14.6
Other hardwoods	57.6	49.6
Total	242.1	154.0
All species	654.5	441.7

Table 17.—*Net annual growth and removals of growing stock on commercial forest land, by ownership classes and by softwood and hardwood, South Carolina, 1967*

Ownership class	Net annual growth			Annual timber removals		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet					
National Forest	41.9	32.0	9.9	18.1	17.5	0.6
Other public	30.8	22.6	8.2	7.8	4.7	3.1
Forest industry	136.6	91.0	45.6	106.3	74.4	31.9
Farmer and misc. private	445.2	266.8	178.4	309.5	191.1	118.4
All ownerships	654.5	412.4	242.1	441.7	287.7	154.0

Table 18.—*Net annual growth and removals of sawtimber on commercial forest land, by species, South Carolina, 1967*

Species	Net annual growth	Annual timber removals
	Million board feet	
Softwood:		
Yellow pines	1,342.1	927.0
Eastern white pine	3.1	15.9
Cypress	49.9	33.7
Other eastern softwoods	2.6	2.6
Total	1,397.7	979.2
Hardwood:		
Select white and red oaks	71.1	47.6
Other white and red oaks	189.6	83.6
Hickory	23.3	16.3
Hard maple	0.2	...
Sweetgum	139.0	119.6
Ash, walnut, and black cherry	22.3	13.0
Yellow-poplar	74.7	52.9
Other hardwoods	175.4	165.5
Total	695.6	498.5
All species	2,093.3	1,477.7

Table 19.—*Net annual growth and removals of sawtimber on commercial forest land, by ownership classes and by softwood and hardwood, South Carolina, 1967*

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million board feet					
National Forest	156.1	128.6	27.5	67.6	65.5	2.1
Other public	104.7	81.5	23.2	22.6	12.8	9.8
Forest industry	454.3	314.4	139.9	355.6	252.6	103.0
Farmer and misc. private	1,378.2	873.2	505.0	1,031.9	648.3	383.6
All ownerships	2,093.3	1,397.7	695.6	1,477.7	979.2	498.5

Table 20.—*Mortality of growing stock and sawtimber on commercial forest land, by species, South Carolina, 1967*

Species	Growing stock	Sawtimber
	Million cu. ft.	*Million bd. ft.*
Softwood:		
Yellow pines	28.1	71.5
Eastern white pines	...	...
Cypress	1.2	2.9
Other eastern softwoods	0.4	1.3
Total	29.7	75.7
Hardwood:		
Select white and red oaks	2.0	6.9
Other white and red oaks	13.0	36.3
Hickory	2.2	8.9
Hard maple	...	...
Sweetgum	5.7	16.5
Ash, walnut, and black cherry	1.8	2.4
Yellow-poplar	0.5	0.8
Other hardwoods	12.6	28.1
Total	37.8	99.9
All species	67.5	175.6

Table 21.—*Mortality of growing stock and sawtimber on commercial forest land, by ownership classes and by softwood and hardwood, South Carolina, 1967*

Ownership class	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet			*Million board feet*		
National Forest	6.0	4.4	1.6	17.4	11.9	5.5
Other public	3.6	0.8	2.8	8.8	2.7	6.1
Forest industry	12.5	5.4	7.1	29.8	12.6	17.2
Farmer and misc. private	45.4	19.1	26.3	119.6	48.5	71.1
All ownerships	67.5	29.7	37.8	175.6	75.7	99.9

Table 22.—*Mortality of growing stock and sawtimber on commercial forest land, by causes and by softwood and hardwood, South Carolina, 1967*

Cause of death	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet			*Million board feet*		
Fire	2.1	1.1	1.0	4.0	1.1	2.9
Insects	2.7	2.7	...	7.9	7.9	...
Disease	8.4	6.1	2.3	17.7	11.4	6.3
Other	20.8	8.3	12.5	49.6	18.0	31.6
Unknown	33.5	11.5	22.0	96.4	37.3	59.1
All causes	67.5	29.7	37.8	175.6	75.7	99.9

Table 23.—*Output of timber products, by product, by source of material, and by softwood and hardwood, South Carolina, 1967*

Product and species group	Standard units	Total output		Roundwood products		Plant byproducts	
		Number of units	Thousand cubic feet	Number of units	Thousand cubic feet	Number of units	Thousand cubic feet
Saw logs:							
Softwood	M bd. ft. [1]	710,677	111,572	710,677	111,572	...	...
Hardwood	M bd. ft. [1]	275,986	42,838	274,950	42,605	[5] 1,036	[5] 233
Total	M bd. ft. [1]	986,663	154,410	985,627	154,177	[5] 1,036	[5] 233
Veneer logs and bolts:							
Softwood	M bd. ft. [1]	5,599	851	5,599	851	...	...
Hardwood	M bd. ft. [1]	81,448	12,135	81,448	12,135	...	...
Total	M bd. ft. [1]	87,047	12,986	87,047	12,986	...	...
Pulpwood:							
Softwood	Std. cords [2]	2,204,846	163,599	1,776,068	131,784	428,778	31,815
Hardwood	Std. cords [2]	742,657	52,803	595,284	42,325	147,373	10,478
Total	Std. cords [2]	2,947,503	216,402	2,371,352	174,109	576,151	42,293
Cooperage:							
Softwood	M bd. ft. [1]	...	...	...	...	...	...
Hardwood	M bd. ft. [1]	1,892	207	1,892	207	...	...
Total	M bd. ft. [1]	1,892	207	1,892	207	...	...
Piling:							
Softwood	M linear ft.	8,558	3,673	8,558	3,673	...	...
Hardwood	M linear ft.	...	...	...	...	...	...
Total	M linear ft.	8,558	3,673	8,558	3,673	...	...
Poles:							
Softwood	M pieces	170	2,552	170	2,552	...	...
Hardwood	M pieces	...	...	...	...	...	...
Total	M pieces	170	2,552	170	2,552	...	...
Mine timbers (round):							
Softwood	M cu. ft.	...	...	...	...	...	...
Hardwood	M cu. ft.	...	...	...	...	...	...
Total	M cu. ft.	...	...	...	...	...	...
Posts (round and split):							
Softwood	M pieces	1,789	1,399	1,789	1,399	...	...
Hardwood	M pieces	342	204	342	204	...	...
Total	M pieces	2,131	1,603	2,131	1,603	...	...
Other: [3]							
Softwood	M cu. ft.	1,558	1,558	1,520	1,520	38	38
Hardwood	M cu. ft.	218	218	21	21	197	197
Total	M cu. ft.	1,776	1,776	1,541	1,541	235	235
Total industrial products:							
Softwood		...	285,204	...	253,351	...	31,853
Hardwood		...	108,405	...	97,497	...	10,908
Total		...	393,609	...	350,848	...	42,761
Fuelwood: [4]							
Softwood	Std. cords	297,453	22,071	271,051	20,112	26,402	1,959
Hardwood	Std. cords	445,149	31,650	419,973	29,860	25,176	1,790
Total	Std. cords	742,602	53,721	691,024	49,972	51,578	3,749
All products:							
Softwood		...	307,275	...	273,463	...	33,812
Hardwood		...	140,055	...	127,357	...	12,698
Total		...	447,330	...	400,820	...	46,510

[1] International ¼-inch rule.
[2] Rough-wood basis (includes chips converted to equivalent standard cords).
[3] Includes hewn ties, excelsior bolts, shingle bolts, turnery bolts, and chemical wood.
[4] Excludes approximately 6,310 thousand cubic feet of plant byproducts used for industrial fuel.
[5] Veneer cores sawed into lumber.

Table 24.—*Output of roundwood products, by product, by source, and by softwood and hardwood, South Carolina, 1967*

Product and species group	All sources	Growing-stock trees [1]			Rough and rotten trees [1]	Salvable dead trees [1]	Other sources [2]
		Total	Sawtimber	Poletimber			
	Thousand cubic feet						
Saw logs:							
Softwood	111,572	110,294	107,469	2,825	80	...	1,198
Hardwood	42,605	40,325	39,711	614	2,117	...	163
Total	154,177	150,619	147,180	3,439	2,197	...	1,361
Veneer logs and bolts:							
Softwood	851	844	844	...	...	...	7
Hardwood	12,135	12,041	12,041	...	...	...	94
Total	12,986	12,885	12,885	...	...	...	101
Pulpwood:							
Softwood	131,784	121,101	67,158	53,943	2,621	1,749	6,313
Hardwood	42,325	36,100	21,049	15,051	3,116	448	2,661
Total	174,109	157,201	88,207	68,994	5,737	2,197	8,974
Cooperage:							
Softwood	..	...	...	...	...	...	..
Hardwood	207	206	206	...	...	...	1
Total	207	206	206	...	...	...	1
Piling:							
Softwood	3,673	3,594	3,594	...	...	...	79
Hardwood	...	...	...	...	...	...	...
Total	3,673	3,594	3,594	...	...	...	79
Poles:							
Softwood	2,552	2,499	2,499	...	...	...	53
Hardwood	...	...	...	...	...	...	...
Total	2,552	2,499	2,499	...	...	...	53
Mine timbers (round):							
Softwood	..	...	...	...	...	...	..
Hardwood	..	...	...	...	...	...	..
Total	..	...	...	...	...	...	..
Posts (round and split):							
Softwood	1,399	1,256	300	956	58	5	80
Hardwood	204	107	19	88	88	...	9
Total	1,603	1,363	319	1,044	146	5	89
Other:							
Softwood	1,520	1,474	1,277	197	9	11	26
Hardwood	21	19	16	3	2	...	...
Total	1,541	1,493	1,293	200	11	11	26
Total industrial products:							
Softwood	253,351	241,062	183,141	57,921	2,768	1,765	7,756
Hardwood	97,497	88,798	73,042	15,756	5,323	448	2,928
Total	350,848	329,860	256,183	73,677	8,091	2,213	10,684
Fuelwood:							
Softwood	20,112	17,238	4,422	12,816	1,617	...	1,257
Hardwood	29,860	18,669	10,885	7,784	9,128	58	2,005
Total	49,972	35,907	15,307	20,600	10,745	58	3,262
All products:							
Softwood	273,463	258,300	187,563	70,737	4,385	1,765	9,013
Hardwood	127,357	107,467	83,927	23,540	14,451	506	4,933
Total	400,820	365,767	271,490	94,277	18,836	2,271	13,946

[1] On commercial forest land.

[2] Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas, or material from noncommercial forest land or nonforest land such as fence rows or suburban areas.

Table 25.—*Annual timber removals from growing stock on commercial forest land, by items, and by softwood and hardwood, South Carolina, 1967*

Item	All species	Softwood	Hardwood
	– Thousand cubic feet –		
Roundwood products:			
Saw logs	150,619	110,294	40,325
Veneer logs and bolts	12,885	844	12,041
Pulpwood	157,201	121,101	36,100
Cooperage logs and bolts	206	...	206
Piling	3,594	3,594	...
Poles	2,499	2,499	...
Mine timbers	...	...	...
Posts	1,363	1,256	107
Other	1,493	1,474	19
Fuelwood	35,907	17,238	18,669
All products	365,767	258,300	107,467
Logging residues	43,600	16,409	27,191
Other removals	32,358	13,006	19,352
Total removals	441,725	287,715	154,010

Table 26.—*Annual timber removals from live sawtimber on commercial forest land, by items, and by softwood and hardwood, South Carolina, 1967*

Item	All species	Softwood	Hardwood
	– Thousand board feet –		
Roundwood products:			
Saw logs	702,679	527,760	174,919
Veneer logs and bolts	63,206	5,121	58,085
Pulpwood	391,245	301,573	89,672
Cooperage logs and bolts	1,300	...	1,300
Piling	18,747	18,747	...
Poles	13,035	13,035	...
Mine timbers	...	...	...
Posts	1,315	1,218	97
Other	5,996	5,920	76
Fuelwood	74,672	28,298	46,374
All products	1,272,195	901,672	370,523
Logging residues	124,310	37,685	86,625
Other removals	81,146	39,843	41,303
Total removals	1,477,651	979,200	498,451

Table 27.—*Volume of unused residues at primary manufacturing plants, by industry and type of residue, and by softwood and hardwood, South Carolina, 1967*

Species group and type of residues	All industries	Lumber	Veneer and plywood	Other
	– – – – – Thousand cubic feet – – – – –			
Softwood:				
Coarse [1]	1,623	1,619	...	4
Fine [2]	12,776	12,683	25	68
Total	14,399	14,302	25	72
Hardwood:				
Coarse [1]	2,038	1,963	16	59
Fine [2]	5,956	5,718	150	88
Total	7,994	7,681	166	147
All species:				
Coarse [1]	3,661	3,582	16	63
Fine [2]	18,732	18,401	175	156
Total	22,393	21,983	191	219

[1] Material, such as slabs, edgings, and veneer cores.
[2] Material, such as sawdust and shavings.

Table 28.—*Projections of net annual growth, available cut and inventory of sawtimber and growing stock on commercial forest land, by softwood and hardwood, South Carolina, 1967 to 1997* [1]

Species group	1967 (Inventory year)	Projections		
		1977 (Inventory year plus 10 years)	1987 (Inventory year plus 20 years)	1997 (Inventory year plus 30 years)
	GROWING STOCK (In thousand cubic feet)			
Softwood:				
Cut	287,700	397,800	479,300	537,800
Growth	412,400	480,100	523,800	544,900
Inventory [2]	6,105,800	7,100,600	7,715,900	7,955,100
Hardwood:				
Cut	154,000	218,100	252,500	278,900
Growth	242,100	263,400	276,800	282,400
Inventory [2]	6,145,100	6,696,100	7,032,900	7,161,100
Total:				
Cut	441,700	615,900	731,800	816,700
Growth	654,500	743,500	800,600	827,300
Inventory [2]	12,250,900	13,796,700	14,748,800	15,116,200
	SAWTIMBER (In thousand board feet)			
Softwood:				
Cut	979,200	1,353,000	1,620,000	1,800,000
Growth	1,397,700	1,601,000	1,732,000	1,792,000
Inventory [2]	19,467,200	22,706,000	24,411,000	24,871,000
Hardwood:				
Cut	498,500	541,000	626,000	689,000
Growth	695,600	657,000	682,000	691,000
Inventory [2]	15,548,400	17,024,000	17,848,000	18,103,000
Total:				
Cut	1,477,700	1,894,000	2,246,000	2,489,000
Growth	2,093,300	2,258,000	2,414,000	2,483,000
Inventory [2]	35,015,600	39,730,000	42,259,000	42,974,000

[1] Based on the assumption that cut starting at the 1967 level will be in balance with the growth by the year 2000, and that forestry progress will continue at the rate indicated by recent trends.
[2] Inventory as of January 1 of the following year.

Table 29.—*Basal area per acre of growing stock and rough and rotten trees 5.0 inches d.b.h. and larger, by forest type and Survey Unit, South Carolina, 1968*

Forest type	State	Southern Coastal Plain	Northern Coastal Plain	Piedmont
	Square feet			
White pine-hemlock:				
Growing stock	60.1	...	...	60.1
Rough and rotten trees	15.0	...	...	15.0
All trees	75.1	...	...	75.1
Longleaf-slash pine:				
Growing stock	33.7	31.5	36.1	...
Rough and rotten trees	2.4	2.5	2.4	...
All trees	36.1	34.0	38.5	...
Loblolly-shortleaf pine:				
Growing stock	47.6	45.5	52.9	42.7
Rough and rotten trees	6.1	5.5	6.2	6.3
All trees	53.7	51.0	59.1	49.0
Oak-pine:				
Growing stock	39.2	36.8	40.0	39.8
Rough and rotten trees	9.4	7.9	9.3	11.0
All trees	48.6	44.7	49.3	50.8
Oak-hickory:				
Growing stock	35.5	23.8	37.2	42.1
Rough and rotten trees	13.0	10.9	13.8	13.5
All trees	48.5	34.7	51.0	55.6
Oak-gum-cypress:				
Growing stock	66.6	63.4	68.7	...
Rough and rotten trees	27.7	23.8	30.3	...
All trees	94.3	87.2	99.0	...
Elm-ash-cottonwood:				
Growing stock	59.0	74.6	59.5	44.9
Rough and rotten trees	24.2	25.3	26.5	19.8
All trees	83.2	99.9	86.0	64.7
All types:				
Growing stock	45.7	42.6	49.4	42.1
Rough and rotten trees	11.7	11.2	13.3	9.4
All trees	57.4	53.8	62.7	51.5

Table 30.—*Number of growing stock and rough and rotten trees 1.0-4.9 inches d.b.h. per acre, by forest type and Survey Unit, South Carolina, 1968*

Forest type	State	Southern Coastal Plain	Northern Coastal Plain	Piedmont
	Number of trees			
White pine-hemlock:				
Growing stock	93	...	...	93
Rough and rotten trees	201	...	...	201
All trees	294	...	...	294
Longleaf-slash pine:				
Growing stock	266	283	242	...
Rough and rotten trees	137	145	127	...
All trees	403	428	369	...
Loblolly-shortleaf pine:				
Growing stock	416	314	384	463
Rough and rotten trees	245	237	288	222
All trees	661	551	672	685
Oak-pine:				
Growing stock	271	204	280	306
Rough and rotten trees	398	338	439	395
All trees	669	542	719	701
Oak-hickory:				
Growing stock	216	177	211	241
Rough and rotten trees	460	512	493	407
All trees	676	689	704	648
Oak-gum-cypress:				
Growing stock	219	237	204	...
Rough and rotten trees	518	506	527	...
All trees	737	743	731	...
Elm-ash-cottonwood:				
Growing stock	128	172	74	146
Rough and rotten trees	382	352	445	348
All trees	510	524	519	494
All types:				
Growing stock	300	244	273	369
Rough and rotten trees	351	354	393	304
All trees	651	598	666	673

Table 31.—*Area of commercial forest land, by stand volume (board feet) and ownership classes, by physiographic classes, South Carolina, 1968*

Ownership class and stand volume per acre [1]	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sandhills	Other misc. classes
	Thousand acres									
National Forest:										
Less than 1,500 bd. ft.	71.3	...	...	3.1	...	31.0	12.4	24.8	...	...
1,500 to 5,000 bd. ft.	208.2	3.4	...	6.8	30.7	92.2	10.2	64.9	...	...
More than 5,000 bd. ft.	271.4	17.0	3.4	27.1	3.4	95.0	27.1	95.0	...	3.4
All classes	550.9	20.4	3.4	37.0	34.1	218.2	49.7	184.7	...	3.4
Other public:										
Less than 1,500 bd. ft.	262.2	2.5	2.5	5.0	...	40.0	5.0	49.9	152.3	5.0
1,500 to 5,000 bd. ft.	151.6	10.8	2.7	19.0	5.4	35.2	2.7	43.3	27.1	5.4
More than 5,000 bd. ft.	108.5	...	13.6	16.3	2.7	10.9	10.8	27.1	16.3	10.8
All classes	522.3	13.3	18.8	40.3	8.1	86.1	18.5	120.3	195.7	21.2
Forest industry:										
Less than 1,500 bd. ft.	927.4	16.8	7.2	28.8	...	439.7	69.6	274.0	74.5	16.8
1,500 to 5,000 bd. ft.	573.3	30.9	21.4	42.8	2.4	309.2	38.1	114.2	9.5	4.8
More than 5,000 bd. ft.	546.7	114.1	61.0	34.5	...	252.1	18.6	50.4	2.7	13.3
All classes	2,047.4	161.8	89.6	106.1	2.4	1,001.0	126.3	438.6	86.7	34.9
Farmer and misc. private:										
Less than 1,500 bd. ft.	4,786.0	6.2	32.1	285.7	22.5	1,384.6	136.4	2,019.7	790.6	108.2
1,500 to 5,000 bd. ft.	2,931.8	101.4	95.3	368.5	73.6	1,197.3	92.1	850.2	113.5	39.9
More than 5,000 bd. ft.	1,572.3	171.1	137.9	317.3	11.0	595.7	52.4	217.9	30.3	38.7
All classes	9,290.1	278.7	265.3	971.5	107.1	3,177.6	280.9	3,087.8	934.4	186.8
All ownerships:										
Less than 1,500 bd. ft.	6,046.9	25.5	41.8	322.6	22.5	1,895.3	223.4	2,368.4	1,017.4	130.0
1,500 to 5,000 bd. ft.	3,864.9	146.5	119.4	437.1	112.1	1,633.9	143.1	1,072.6	150.1	50.1
More than 5,000 bd. ft.	2,498.9	302.2	215.9	395.2	17.1	953.7	108.9	390.4	49.3	66.2
All classes	12,410.7	474.2	377.1	1,154.9	151.7	4,482.9	475.4	3,831.4	1,216.8	246.3

[1] Sawtimber volume, International ¼-inch rule.

Table 32.—*Area of commercial forest land, by stand volume (cubic feet) and ownership classes, by physiographic classes, South Carolina, 1968*

Ownership class and stand volume per acre [1]	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sandhills	Other misc. classes
	Thousand acres									
National Forest:										
Less than 500 cu. ft.	53.6	...	...	...	...	30.2	13.3	10.1	...	...
500 to 1,000 cu. ft.	117.6	...	...	6.7	13.6	53.7	3.3	40.3	...	...
More than 1,000 cu. ft.	379.7	20.4	3.4	30.3	20.5	134.3	33.1	134.3	...	3.4
All classes	550.9	20.4	3.4	37.0	34.1	218.2	49.7	184.7	...	3.4
Other public:										
Less than 500 cu. ft.	236.4	...	2.7	2.7	...	28.7	5.3	44.4	149.9	2.7
500 to 1,000 cu. ft.	106.9	5.3	...	13.4	...	31.3	2.6	28.8	22.9	2.6
More than 1,000 cu. ft.	179.0	8.0	16.1	24.2	8.1	26.1	10.6	47.1	22.9	15.9
All classes	522.3	13.3	18.8	40.3	8.1	86.1	18.5	120.3	195.7	21.2
Forest industry:										
Less than 500 cu. ft.	764.2	7.7	7.7	22.2	...	360.7	63.1	220.5	72.3	10.0
500 to 1,000 cu. ft.	401.8	10.3	7.7	17.3	...	230.6	24.3	96.9	7.2	7.5
More than 1,000 cu. ft.	881.4	143.8	74.2	66.6	2.4	409.7	38.9	121.2	7.2	17.4
All classes	2,047.4	161.8	89.6	106.1	2.4	1,001.0	126.3	438.6	86.7	34.9
Farmer and misc. private:										
Less than 500 cu. ft.	3,754.3	...	20.4	176.3	12.3	1,113.1	125.2	1,466.1	761.3	79.6
500 to 1,000 cu. ft.	2,133.6	20.1	35.0	179.4	27.5	844.6	48.8	846.7	107.0	24.5
More than 1,000 cu. ft.	3,402.2	258.6	209.9	615.8	67.3	1,219.9	106.9	775.0	66.1	82.7
All classes	9,290.1	278.7	265.3	971.5	107.1	3,177.6	280.9	3,087.8	934.4	186.8
All ownerships:										
Less than 500 cu. ft.	4,808.5	7.7	30.8	201.2	12.3	1,532.7	206.9	1,741.1	983.5	92.3
500 to 1,000 cu. ft.	2,759.9	35.7	42.7	216.8	41.1	1,160.2	79.0	1,012.7	137.1	34.6
More than 1,000 cu. ft.	4,842.3	430.8	303.6	736.9	98.3	1,790.0	189.5	1,077.6	96.2	119.4
All classes	12,410.7	474.2	377.1	1,154.9	151.7	4,482.9	475.4	3,831.4	1,216.8	246.3

[1] Growing-stock volume.

Table 33.—*Average net volume and growth per acre on commercial forest land, by physiographic class, tree class, and species group, South Carolina, 1968*

Physiographic class and tree class	Net volume per acre						Net growth per acre					
	Softwood		Hardwood		Total		Softwood		Hardwood		Total	
	Cubic feet	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*
Deep swamps:												
Growing stock	461.0	1,769	2,054.6	5,679	2,515.6	7,448	12.8	62	61.9	198	74.7	260
Rough and rotten trees	47.7	...	644.9	...	692.6	...	0.6	...	14.0	...	14.6	...
Total	508.7	1,769	2,699.5	5,679	3,208.2	7,448	13.4	62	75.9	198	89.3	260
Broad stream margins:												
Growing stock	251.3	1,013	1,952.8	6,208	2,204.1	7,221	9.2	44	61.9	223	71.1	267
Rough and rotten trees	8.9	...	495.4	...	504.3	...	0.2	...	11.4	...	11.6	...
Total	260.2	1,013	2,448.2	6,208	2,708.4	7,221	9.4	44	73.3	223	82.7	267
Narrow stream margins:												
Growing stock	319.3	1,180	1,243.5	3,325	1,562.8	4,505	13.8	57	43.8	142	57.6	199
Rough and rotten trees	10.9	...	383.5	...	394.4	...	0.5	...	10.2	...	10.7	...
Total	330.2	1,180	1,627.0	3,325	1,957.2	4,505	14.3	57	54.0	142	68.3	199
Mountain tops and slopes:												
Growing stock	463.2	1,450	741.6	1,713	1,204.8	3,163	25.9	86	30.2	83	56.1	169
Rough and rotten trees	14.7	...	221.1	...	235.8	...	5.0	...	6.2	...	11.2	...
Total	477.9	1,450	962.7	1,713	1,440.6	3,163	30.9	86	36.4	83	67.3	169
Flatwoods and dry pocosins:												
Growing stock	659.9	2,298	353.0	862	1,012.9	3,160	44.5	167	15.8	45	60.3	212
Rough and rotten trees	18.9	...	118.0	...	136.9	...	1.5	...	3.5	...	5.0	...
Total	678.8	2,298	471.0	862	1,149.8	3,160	46.0	167	19.3	45	65.3	212
Bays and wet pocosins:												
Growing stock	505.8	1,775	515.8	1,277	1,021.6	3,052	29.3	107	16.5	49	45.8	156
Rough and rotten trees	23.5	...	184.7	...	208.2	...	1.3	...	4.7	...	6.0	...
Total	529.3	1,775	700.5	1,277	1,229.8	3,052	30.6	107	21.2	49	51.8	156
Rolling uplands:												
Growing stock	476.4	1,310	269.4	572	745.8	1,882	36.7	110	13.3	32	50.0	142
Rough and rotten trees	17.4	...	84.1	...	101.5	...	1.8	...	2.9	...	4.7	...
Total	493.8	1,310	353.5	572	847.3	1,882	38.5	110	16.2	32	54.7	142
Sandhills:												
Growing stock	278.8	811	38.1	69	316.9	880	25.1	79	2.2	4	27.3	83
Rough and rotten trees	8.7	...	43.8	...	52.5	...	0.9	...	1.1	...	2.0	...
Total	287.5	811	81.9	69	369.4	880	26.0	79	3.3	4	29.3	83
Other misc. classes:												
Growing stock	442.2	1,550	776.3	1,888	1,218.5	3,438	16.7	54	27.8	82	44.5	136
Rough and rotten trees	17.1	...	252.4	...	269.5	...	0.9	...	7.1	...	8.0	...
Total	459.3	1,550	1,028.7	1,888	1,488.0	3,438	17.6	54	34.9	82	52.5	136
All classes:												
Growing stock	502.4	1,645	519.0	1,338	1,021.4	2,983	33.7	117	20.1	59	53.8	176
Rough and rotten trees	17.7	...	165.1	...	182.8	...	1.4	...	4.5	...	5.9	...
Total	520.1	1,645	684.1	1,338	1,204.2	2,983	35.1	117	24.6	59	59.7	176

Table 34.—*Land area, by class, major forest type, and survey completion date, 1947, 1958, and 1968*

Land use class	Survey completion date			Change
	1947	1958	1968	1958-1968
	Thousand acres			
Forest land:				
Commercial forest land:				
Pine and oak-pine types	7,324.1	6,683.6	7,649.1	+965.5
Hardwood types	4,575.4	5,251.3	4,761.6	−489.7
Total	11,899.5	11,934.9	12,410.7	+475.8
Noncommercial forest land:				
Productive-reserved	40.2	73.9	70.3	− 3.6
Unproductive	2.9	7.0	12.6	+ 5.6
Total	43.1	80.9	82.9	+ 2.0
Nonforest land	7,385.4	7,206.2	6,680.7	−525.5
All land [1]	19,328.0	19,222.0	19,174.3	− 47.7

[1] Excludes all water areas.

Table 35.—*Volume* [1] *of sawtimber, growing stock, and all live timber on commercial forest land, by species group, diameter class, and survey completion date, South Carolina, 1947, 1958, and 1968*

Species group	Year	All classes	Diameter class (inches at breast height)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 and larger
SAWTIMBER (In million board feet, International ¼-inch rule)											
Softwood	1947	17,175.7	...	...	3,085.0	3,537.1	3,412.1	2,639.8	1,703.8	1,024.7	1,773.2
	1958	15,485.4	...	...	3,191.3	3,433.8	2,905.6	2,345.8	1,553.9	871.0	1,184.0
	1968	19,467.2	...	...	3,698.1	4,257.1	3,889.2	2,931.9	1,894.9	1,213.8	1,582.2
Hardwood	1947	15,814.2	...	...	...	2,501.5	3,102.3	2,717.2	2,343.7	1,531.8	3,617.7
	1958	13,893.9	...	.	.	2,515.2	2,957.6	2,516.2	1,938.4	1,360.5	2,606.0
	1968	15,548.4	...	...	...	2,769.9	3,218.1	2,810.8	2,259.0	1,489.3	3,001.3
GROWING STOCK (In million cubic feet)											
Softwood	1947	5,147.4	433.6	671.3	840.8	854.6	778.7	586.2	371.8	224.0	386.4
	1958	4,889.3	481.2	734.1	869.4	829.8	664.7	521.8	339.1	190.9	258.3
	1968	6,105.8	632.5	870.7	1,007.6	1,029.4	889.7	651.9	413.6	265.7	344.7
Hardwood	1947	5,737.6	308.9	471.2	670.4	817.1	863.3	707.5	599.2	386.0	914.0
	1958	5,411.4	352.4	540.9	716.4	821.3	823.1	656.0	497.7	343.8	659.8
	1968	6,145.1	422.2	660.2	811.5	904.8	896.3	733.1	579.7	377.4	759.9
ALL LIVE TIMBER (In million cubic feet)											
Softwood	1947	5,323.6	476.9	718.5	874.6	869.2	784.6	588.6	374.3	226.1	410.8
	1958	5,065.8	529.7	785.8	904.4	843.9	669.8	523.9	341.4	192.7	274.2
	1968	6,325.0	698.2	932.1	1,048.2	1,046.6	896.4	654.7	416.2	268.1	366.5
Hardwood	1947	7,492.2	524.4	699.3	918.8	1,053.4	1,047.0	841.4	711.4	469.3	1,227.2
	1958	7,107.2	598.3	801.4	980.5	1,055.7	997.7	778.9	589.6	417.8	887.3
	1968	8,093.1	717.9	976.6	1,110.5	1,163.9	1,086.3	870.0	686.9	458.2	1,022.8

[1] In order to provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used in previous surveys.

Table 36.—*Volume of all live timber, by species group and Survey Unit, South Carolina, 1947, 1958, and 1968*

Species group and Survey Unit	1947	1958	Change 1947-1958	1968	Change 1958-1968
	Million cu. ft.	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Percent*
Softwood:					
Southern Coastal Plain	1,281.9	1,213.6	− 5.3	1,568.5	+29.2
Northern Coastal Plain	2,333.5	2,166.7	− 7.1	2,689.9	+24.1
Piedmont	1,708.2	1,685.5	− 1.3	2,066.6	+22.6
All units	5,323.6	5,065.8	− 4.8	6,325.0	+24.9
Hardwood:					
Southern Coastal Plain	2,036.2	2,089.6	+ 2.6	2,315.4	+10.8
Northern coastal Plain	3,833.1	3,212.1	−16.2	3,626.8	+12.9
Piedmont	1,622.9	1,805.5	+11.3	2,150.9	+19.1
All units	7,492.2	7,107.2	− 5.1	8,093.1	+13.9

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